Appendix B
City of Seattle 2013 Stormwater Management Program-March 2013

ATTACHMENT A

CITY OF SEATTLE

2013 NPDES PHASE I MUNICIPAL STORMWATER PERMIT STORMWATER MANAGEMENT PROGRAM

March 2013

Seattle Public Utilities

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CITY OF SEATTLE NPDES STORMWATER MANAGEMENT PROGRAM

Submitted to the Washington Department of Ecology in compliance with the 2012 Phase I Municipal Stormwater National Pollutant Discharge Elimination System and State Discharge General Permit for discharges from Large and Medium Municipal Separate Storm Sewer Systems

WAR04-4503

City of Seattle

Seattle Public Utilities

Seattle, Washington

Date: March 31, 2013

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I. INTRODUCTION

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I.1 Introduction

This document comprises the compilation of the Stormwater Management Program (SWMP) for the City of Seattle (City) under the 2012 National Pollution Discharge Elimination System (NPDES) Phase I Municipal Stormwater Permit (Permit) (Ecology 2012a) and the 2013 Permit (Ecology 2012b). This SWMP applies to the municipal separate storm sewers owned or operated by the City within the geographical boundaries established by the Permit. Existing City programs relevant to the SWMP are outlined with minimum performance requirements, principal responsibilities, information links and summaries of current status and upcoming work. This compilation of the SWMP is included as Attachment A to the Annual Report Form, and addresses the activities that the Permit requires (Ecology 2012a, Ecology 2012b) to be completed in 2013 (January 1, 2013 to December 31, 2013). This SWMP will be reviewed and updated annually according to the Permit requirement. This version of the SWMP has been updated to incorporate modifications to, or additional sets of actions, that have been implemented to comply with the required components listed in S5 of the permit.

Permit Condition S5 outlines the ten components of the SWMP that have required programs and activities, which include reporting and minimum performance measures. Section II of this document is organized to follow these Permit requirements in a parallel structure and describes the set of actions that the City is or will be implementing to comply with S5 of the permit. Many of these components involve existing programs conducted by the City's various departments and organizational structure. This SWMP compiles this information in a single document that will not only meet Permit requirements but will also aid the City's implementation of its NPDES stormwater management program. The acronyms and terms used in this document are defined in Section V.

There are six City departments primarily responsible for implementing the SWMP components and associated activities and projects. Seattle Public Utilities (SPU) has the designated lead role for managing stormwater, conducting water quality programs, and managing drainage-related capital projects. Other departments with major Permit-related responsibilities include the Department of Planning and Development (DPD), Seattle Parks and Recreation (Parks), Seattle Department of Finance and Administrative Services (FAS)(formerly known as the Seattle Department of Fleets and Facilities), Seattle City Light (SCL), and Seattle Department of Transportation (SDOT). These departments and SPU have been implementing many of the Permit-required programs for many years and in some cases well before the first NPDES municipal separate storm sewer system (MS4) permit was issued in 1995.

I.1.1 Background

The NPDES program is a key element of the Federal Clean Water Act[1] aimed at controlling and reducing waterborne pollutants discharged from point sources such as wastewater and stormwater. The Washington State Department of Ecology (Ecology) has jurisdiction for implementing the federal NPDES program in the State of Washington. In implementing this program, Ecology issues NPDES permits to cover individual facilities or groups of multiple entities with common activities under a general NPDES permit. These permits must meet federal minimum requirements. For regulated municipal stormwater discharges, the

[1] Note: The "Clean Water Act" as a term refers to the body of law that includes: Federal Water Pollution Control Act (1972), Clean Water Act (1977), and the Water Quality Act (1987), as may be amended from time to time.

NPDES program requires permits for large, medium and small MS4s as defined in federal regulations. The Phase I regulations of the MS4 program went into effect in 1990 and apply to MS4s in municipalities with populations of more than 100,000 (medium and large MS4s).

The first Phase I MS4 permit was issued by Ecology in July 1995 to the cities of Seattle and Tacoma and counties of Clark, King, Pierce and Snohomish. The MS4s owned or operated by the Washington State Department of Transportation (WSDOT) located in these cities and counties were also regulated under the 1995 permits. To meet the requirements of the 1995 Permit, the City prepared and managed stormwater under a SWMP that was approved by Ecology in 1997. The City provided updates on stormwater management activities to Ecology in annual reports that were submitted from 1996 to 2005. The new format for SWMPs and Annual Reports pursuant to the 2007 Permit replaces the City's 1997 SWMP.

On January 17, 2007, Ecology re-issued the Phase I MS4 permit. The Permit became effective on February 16, 2007, was modified on June 17, 2009 and September 1, 2010 and bears an expiration date five years later, February 15, 2012. (The Phase II MS4 permit was issued concurrently and applies to approximately 90 small cities and counties in Western Washington and approximately 30 cities and counties in Eastern Washington).

On August 1, 2012, Ecology re-issued, with limited changes, the Phase I MS4 permit, effective September 1, 2012 and having an expiration date of July 31, 2013 (Ecology, 2012a). Ecology also reissued the updated 2013-2018 Phase I MS4 permit on August 1, 2012, to become effective on August 1, 2013 (Ecology 2012b). The 2013 permit was appealed to the Washington State Pollution Control Hearing Board.

I.1.2 City of Seattle Drainage

Drainage infrastructure in the City's system was developed with the primary purpose of conveying stormwater runoff in order to protect people and property. Prior to 1890, Seattle relied on an assortment of sewers and cesspools that, at best, drained into surrounding lakes and salt water. Faced with recurring threats of waterborne diseases including typhoid and cholera, Seattle's first centralized combined sewage system was planned in 1891. This plan sought to remove as much city sewage as possible into the salt water of Elliott Bay and the Puget Sound with more limited drainage into the fresh water of Lake Washington. Although originally untreated, the City undertook a succession of steps starting in the late 1910's to remove solids, begin primary sewage treatment, and eventually separate storm water from raw sewage. Metropolitan King County took over the City's wastewater treatment responsibilities in the 1960's, but Seattle continues to manage its network of municipal combined and separated storm sewers.

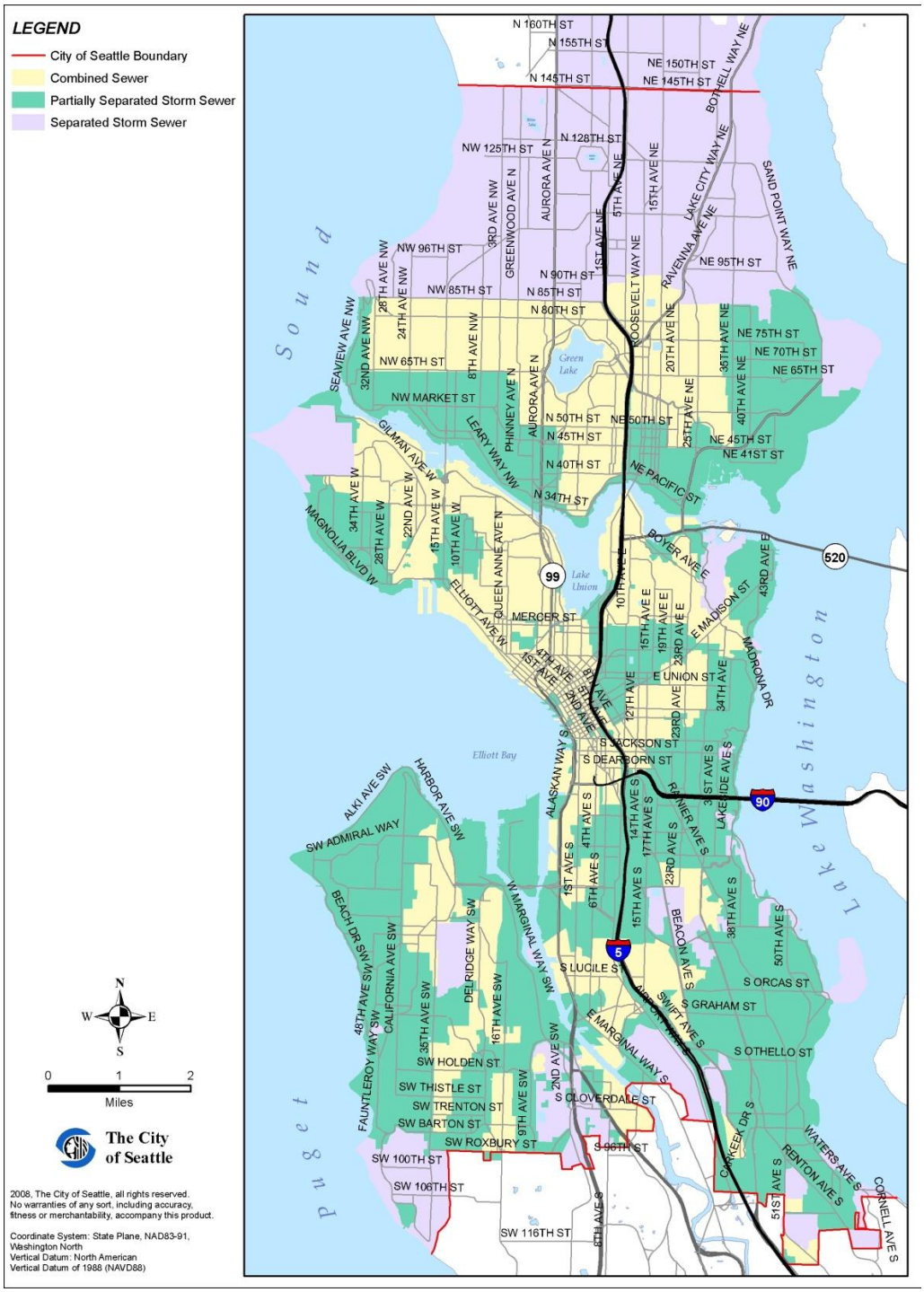
The City's current drainage infrastructure includes three different types (Figure I.1.1): the separate storm sewer system (in purple), the partially separated system (in green), and the combined sewer system (in yellow) each serving approximately one third of the geographical area of Seattle.

In the separate system, storm drainage is directed to a separate storm drain system, while wastewater goes to a sanitary sewer and on to the wastewater treatment plant before discharge. While parts of the City's separated drainage system are formal and piped, some parts of the separate stormwater runoff are managed primarily through an informal system of ditches and culverts, most of which drain to creeks or larger receiving waters. The area north of NE 85th Street, which the City annexed in 1954, is an example of an area still served primarily by ditch and culvert drainage systems.

In partially separated sewer areas of the City, all drainage once flowed in the combined system. During the 1960's, storm drain separation projects were built that diverted street runoff in pipes to the separate storm drainage system and receiving waters. Rooftop and other private property drainage continue to be directed to wastewater treatment plants.

The combined sewer system is a formal piped system that continues to carry both sanitary wastewater and stormwater runoff from some parts of the City to one of the area's wastewater treatment plants. Combined sewers and areas of the City that drain to combined sewers, are outside the NPDES municipal stormwater permit structure. The City's SWMP is implemented for discharges from, and property draining to, the City's separate storm sewer system and partially separated system (MS3s or MS4 for short). Because of the scope of the MS4 permit, the City's SWMP is not implemented for discharges to or from the combined sewer system or for areas that drain to the combined sewer system.

Figure I.1-1 Map of City Drainage Systems



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II. NPDES STORMWATER MANAGEMENT PROGRAM

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II.1 Legal Authority-S5.C.1

II.1.1 Requirements

The Permit (Section S5.C.1) requires the SWMP to demonstrate certain legal authorities for controlling stormwater discharges to the City's MS4. Section S5.C.1 of the Permit outlines these areas, but does not require specific products, submittals, reports or a schedule for completing required activities because this requirement has been in effect since the 1995 NPDES permit. Many of these legal authorities are expressed in the requirements of the other SWMP components, some of which have Permit-required products and completion schedules, including the authorities needed for controlling stormwater related to:

- Industrial activity
- Illicit discharges, spills and dumping
- Inter-jurisdictional agreements
- Development and redevelopment
- Construction inspections

II.1.2 Program description

Legal authority enabling the City to control discharges to and from the MS4 is primarily established by Seattle Municipal Code (SMC), Stormwater Code (SMC 22.800 – 22.808) effective on November 30, 2009, including revisions, achieving equivalency with the Department of Ecology's 2005 Stormwater Management Manual for Western Washington. The Directors of SPU and DPD share responsibility for issuance of notices of violation, stop work orders, and corrective actions for violation of the Stormwater Code. The Stormwater Code is designed to control, through regulation and ordinance, the contribution of pollutants to the MS4. It prohibits illicit discharges, spills and illegal dumping, and authorizes inspections, surveillance and monitoring to determine compliance and meet the ongoing Permit requirements.

The Side Sewer Code (SMC 21.16) regulates side sewers and, for example, prohibits discharge of certain materials; requires maintenance of detention facilities; provides a right of entry for inspection; requires repair of inoperative or inadequate sewers, drains, or natural watercourses; and regulates the construction, alteration, repair, and connection of side sewers and service drains. The Side Sewer Code was amended in 2010, signed by Mayor on December 20, 2010 and effective on January 5, 2011.

The City's Regulations for Environmentally Critical Areas (Ch. 25.09 SMC) also provide protections and standards relevant to municipal stormwater.

II.1.3 Responsible City Departments

The City Attorney's Office provides legal advice to the City about implementation of legal authority for SMC and Directors' Rules, further discussed in II.1.4, related to the management of stormwater.

II.1.4 Completed Activities

In September of 2009 Mayor Greg Nickels signed into law three new ordinances relating to stormwater and grading. Among other changes, the revised Stormwater Code requires the use of green stormwater infrastructure to the maximum extent feasible (MEF). Green stormwater infrastructure is defined as a drainage control facility that uses infiltration, evapotranspiration, or stormwater reuse. Examples of green stormwater infrastructure include permeable pavement, bioretention facilities and green roofs. Changes to the Code were effective on November 30, 2009, achieving equivalency to Appendix 1 of the permit, Minimum Technical Requirements for New Development and Redevelopment as required in S5.C.5 of the permit.

The purpose of this revised Stormwater Code and its associated Directors' Rules are to protect life, property, public health, and the environment from the adverse impacts of urban stormwater runoff. These adverse impacts can include flooding, pollution, landslides, and erosion. The revisions were drafted to the Stormwater Code and Directors' Rules in order to account for advances in urban stormwater runoff management practices since the Stormwater Code was last comprehensively updated in 2000 and to reflect the requirements of the 2007 Permit.

Table II.1-I Components of the Stormwater Code and Directors' Rules

Seattle Municipal Code	Effective Date	Directors' Rules		Effective Date	Title
		DPD	SPU		
22.800 – 22.808	11/30/09	15-2009	2009-003	12/1/09	Vol. I– Source Control Technical Requirements Manual
		16-2009	2009-004		Vol. II – Construction Stormwater Controls Technical Requirements Manual
		17-2009	2009-005		Vol. III – Stormwater Flow Control and Water Quality Treatment Technical Requirements Manual
		18-2009	2009-006		Vol. IV – Stormwater Code Enforcement Manual

II.1.5 Current and Planned Activities

Ecology has determined that the revised draft Stormwater Code and Directors' Rules dated March 16, 2009, are equivalent to Appendix 1 of the permit, Minimum Technical Requirements for New Development and Redevelopment. The determination of equivalency by Ecology indicates that the revised Stormwater Code is appropriate for implementation of the minimum requirements in Appendix 1, and will protect water quality, reduce the discharge of pollutants to the maximum extent practicable, and satisfy the state requirement under chapter 90.48 RCW to apply all known, available, and reasonable methods of prevention, control and treatment (AKART).

Figure II.1-1 describes the progress made in implementation of permit requirements and the planned next steps for meeting permit requirements.

Current Activities

Figure II.1-1 Timeline Showing Progress and Next Steps

2013

- ✓ Demonstrate legal authority which authorizes City to control discharges to and from MS4.
- ✓ Continue to control, through Stormwater Code and Directors' Rules enforcement, the contribution of pollutants to the MS4.
- ✓ Continue to prohibit, through Stormwater Code and Directors' Rules enforcement, illicit discharges.
- ✓ Continue to control, through Stormwater Code and Directors' Rules enforcement, the discharge of spills and the dumping or disposal of materials into the MS4.
- ✓ Continue to require compliance with Stormwater Code and Directors' Rules through inspections, surveillance and monitoring to determine compliance or non-compliance with permit condition.

Legend: ✓ Implemented ❒ Planned

For More Information

- City of Seattle Attorney web site: http://www.seattle.gov/law/
- Stormwater Code: http://www.seattle.gov/dpd/Codes/StormwaterCode/Codes/default.asp
- City Clerk web site for SMC and other information: http://www.seattle.gov/leg/clerk/clerk.htm
- Seattle Public Utilities Green Stormwater Infrastructure information: http://www.seattle.gov/util/environmentconservation/projects/drainagesystem/greenstormwaterinfrastructure/
- For general questions about this SWMP or more information about this section, email swmp@seattle.gov or visit http://www.seattle.gov/util/myservices/drainagesewer/aboutthedrainagesewersystem/stormwatermanagementplan/

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II.2 Mapping-S5.C.2

II.2.1 Requirements

The Permit (Section S5.C.2) requires the City to:

- Map all known municipal separate storm sewer outfalls, receiving waters, and structural stormwater treatment and flow control Best Management Practices (BMPs) owned, operated or maintained by the City.
- Map connection points between municipal separate storm sewers owned or operated by the City and other municipalities or other public entities.
- Map the following attributes for all storm sewer outfalls with a 24-inch nominal diameter or larger or equivalent cross-section for non-pipe systems: land use, tributary conveyance (indicating type, material, and size where known), and associated drainage area.
- Develop and maintain a map of all connections to the municipal separate storm sewer authorized or allowed by the City after the Permit's effective date.
- Map existing, known connections over 8 inches to the municipal separate storm sewers tributary to all storm sewer outfalls with a 24-inch nominal diameter or larger or equivalent cross-section for non-pipe systems.
- Map geographic areas served by the City's MS4 that do not discharge stormwater to surface water.
- Make available to Ecology, Co-Permittees and Secondary Permittees maps depicting the Permit-required information, upon request.

II.2.2 Ongoing Mapping Program

The City's mapping program provides the ongoing means to document and maintain the City-owned or operated municipal separate storm drainage system including connections, outfalls, drainage infrastructure, drainage areas, land uses, receiving waters, treatment and flow control BMPs and other elements. The City's drainage systems are described in Section I.1.2.

The history of Seattle's Geographic Information System (GIS) spans 19 years, evolving from a small installation in the former Seattle Engineering Department to GIS capabilities that are now firmly integrated in the daily business functions of at least six City departments.

The City's GIS was originally built primarily to improve the way the City manages and operates its utility infrastructure. The City's GIS system has matured and can now support complex business functions in most of the City's departments. For example, GIS data and capabilities are used today at the City to inform decision makers and planners, help deliver services to the public, dispatch Police and Fire personnel, and manage City real property. The City's GIS system and data are and will continue to be an important tool for stormwater management.

II.2.3 Responsible City Departments

GIS support for stormwater management is provided by SPU's GIS Section of the Information Technology Division (GIS Section). The GIS Section will continue to develop and maintain a map of all connections to the MS4 and is responsible for updating the drainage-related GIS layers with information obtained from City-led capital improvement projects and side sewer as-built drawings. Side sewer drawings are obtained from documentation supporting development permit applications submitted to DPD. All work that is conducted under permits issued by DPD is mapped by the Permittee by hand or other methods and is reviewed and approved by the DPD inspector. These side sewer site plans are scanned by DPD, and then sent to the GIS Section. The side sewer infrastructure plans are then digitized by the SPU GIS Section and placed into the working GIS directory for use by GIS users within the City.

II.2.4 Current and Planned Mapping Activities

II.2.4.1 Mapping of known storm sewer outfalls, receiving waters and structural stormwater treatment and flow control BMPs.

The City has a project in place to map all known municipal separate storm sewer outfalls and structural stormwater treatment and flow control BMPs owned, operated or maintained by the City. This mapping continues as new outfalls are found and new BMPs are constructed that fit this description. As developed, these data are being incorporated into existing data sets and are being made available for use by GIS users within the City. For example, the illicit discharge, detection and elimination (IDDE) program can utilize the outfall data when planning the screening program for compliance with the permit requirements in S5.C.8.

II.2.4.2 Develop a program to map connection points between the City's MS4 and those owned and operated by other municipalities or other public entities

The City has a project in place to map connection points between the City's MS4 and those owned and operated by other municipalities or other public entities. Any new connections of this type must be permitted and will follow the methods outlined in III.2.4.3 below. The SPU GIS team is conducting research to determine if there are existing unknown connections between the City's MS4 and others. After discovery, the City will work with the other municipalities or other public entities to share data and update the City's GIS data set.

II.2.4.3 Map Attributes for all storm sewer outfalls with a 24 inch or larger diameter

The permit requires the City to map attributes of the MS4 that have 24-inch or greater nominal diameter, or equivalent cross-sectional area for non-pipe systems. City's GIS System contains data and attributes for the mapped MS4 on the conveyance type, pipe material and diameter of the pipe. Most of the City's MS4 outfall drainage basins have been delineated to identify which portions of the City are served by the system. Information on the land use is mapped and contained in the land use data set, which is part of the parcel data maintained by King County and available to City employees and the public in the City's GIS data set.

II.2.4.4 Map all known connections greater than 8 inches to storm sewer outfalls greater than 24 inches and map connections after Permit effective date

Existing, known connections greater than 8 inches to storm sewer outfalls greater than 24 inches are currently mapped in SPU's GIS system. The City also has a program to map all connections to the City MS3 authorized or allowed by the City after the effective date of the permit. DPD issues a side sewer permit for connections to the City's MS4 before work begins on a side sewer, including new installations, alterations, repairs, capping, relocations, removals, and conditional and temporary dewatering work. Applicants are

required to submit a site plan during the planning stage and, later, an as-built plan which is reviewed by the site inspector. A permit cannot be finalized without as-built approval. Approved as-built for side sewers are then circulated from DPD staff to SPU GIS staff for processing into to SPU's GIS system.

II.2.4.5 Map Geographic Areas Served by the Permittee's MS4 that do not Discharge Stormwater to Surface Waters

In Seattle, features of the MS4 that discharge into the ground rather than to surface waters are mapped and available in the City's GIS dataset.

Figure II.2-1 describes the progress made in implementation of permit requirements and the planned next steps for meeting permit requirements.

Figure II.2-1 Timeline Showing Progress and Next Steps

2013

- ✓ Map all known storm sewer outfalls and receiving waters, and structural stormwater treatment and flow control BMPs.
- ✓ Map existing, known connections over 8 inches to MS3s tributary to all storm sewer outfalls with a 24-inch nominal diameter or larger, or an equivalent cross-sectional area for non-pipe systems.
- ✓ Make maps available to Ecology upon request.
- ✓ Include notification of updated GIS layers in Annual Report.
- ✓ Initiate program to map connection points between the City's MS4s and MS3s of other municipalities or public entities.

Legend: ✓ Implemented ❒ Planned

For More Information

- The Public may request map information in person at the Map Counter in the Public Resource Center, Seattle Municipal Tower 20th floor, or by phone at 206.684.0965 or via email at gismap@seattle.gov.
- The public can view standard GIS maps and find out more information at the web site: http://web6.seattle.gov/mnm/.
- For general questions about this SWMP or more information about this section, email swmp@seattle.gov or visit http://www.seattle.gov/util/myservices/drainagesewer/aboutthedrainagesewersystem/stormwatermanagementplan/.

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II.3 Coordination-S5.C.3

II.3.1 Requirements

The Permit (Section S5.C.3) requires internal coordination of municipal stormwater activities among City departments and external coordination between the City and outside agencies. Minimum performance measures include:

- Implementing a written internal coordination agreement or Executive Directive to facilitate compliance with the terms of the Permit.
- Establishing coordination mechanisms between physically interconnected municipal separate storm sewers (MS3s) of the City and any other Permittee covered by a municipal stormwater permit.
- Coordinating stormwater management activities for shared water bodies among other MS4 Permittees and Secondary Permittees to avoid conflicting plans, policies and regulations.
- Documenting the coordination efforts.

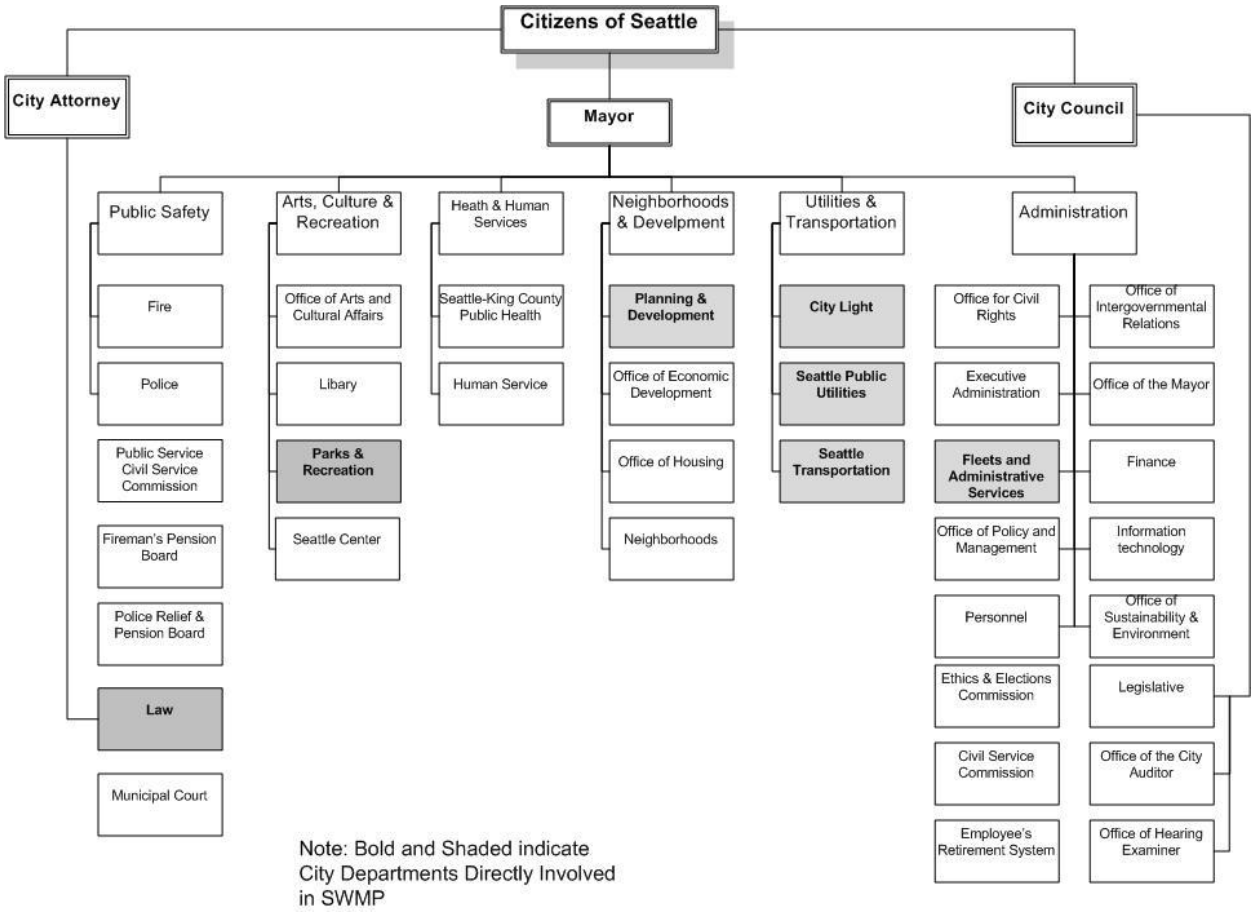
II.3.2 Coordination Program

SPU is the lead department for coordinating Permit and municipal stormwater related activities among City departments, as designated by a mayoral Executive Order dated January 29, 2008 (Appendix 1). External coordination mechanisms and coordinating municipal stormwater activities were required by February 16, 2009. SPU has established external coordination mechanisms with King County, University of Washington and Seattle Public Schools (see Section III.3.4.3) and is coordinating with other Permittees and Secondary Permittees for shared waterbodies.

II.3.3 Responsible City Departments

SPU is the lead City department for implementing Permit coordination requirements in the SWMP. Among the many City departments serving the residents of Seattle, there are six departments (highlighted on Figure II.3-1) primarily responsible for implementation of programs and projects for stormwater management within the City's MS4. These are SPU, DPD, Parks, FAS, SCL, and SDOT.

Figure II.3-1 City Organizational Chart



II.3.3.1 Seattle Public Utilities

SPU is the City-designated lead department for managing municipal stormwater, including meeting Phase I Permit requirements, conducting water quality programs, and managing drainage-related capital projects. SPU conducts inspections, maintenance and repair of stormwater facilities in the right-of-way.

II.3.3.2 Department of Planning and Development

DPD is the City department responsible for developing, administering, and enforcing development standards. DPD issues development permits as required under the Stormwater Code and other ordinances and inspects sites prior to and during construction. SPU and DPD share complaint response and enforcement (i.e., inspection and response) responsibilities. Both SPU and DPD have authority to issue notices of violation and initiate enforcement for drainage related issues. DPD manages customer complaints and inquiries related to current construction activities. SPU manages customer complaints and inquiries unrelated to development permits.

II.3.3.3 Seattle Parks and Recreation

Parks is responsible for several hundred parks and park facilities and plays a key role in environmental stewardship. Parks trains its staff in comprehensive BMPs for various maintenance activities, works in partnership with SPU on creek improvement projects, and is involved in programs designed to reduce pesticide use, remove invasive plants, and replant native species on property managed by Parks.

II.3.3.4 Seattle Department of Fleets and Administrative Services

FAS manages most of the City's non-utility real estate portfolio, oversees the design, construction and occupancy of City facilities, maintains City buildings, and purchases, maintains and repairs the City's fleet of vehicles. FAS trains its staff in BMPs related to its business activities and works to reduce impacts on stormwater. FAS is responsible for implementation of the Stormwater Code at facilities under its management.

II.3.3.5 Seattle City Light

Created by the citizens of Seattle in 1902, SCL provides customers with electricity and related services. SCL is dedicated to managing all of its activities in an environmentally responsible manner. SCL trains its staff in BMPs related to its business activities and works to reduce adverse impacts on stormwater. SCL is responsible for implementation of the Stormwater Code at facilities under its management.

II.3.3.6 Seattle Department of Transportation

SDOT is responsible for the City's streets, bridges, sidewalks, bike paths, street trees, and traffic operations. SDOT performs such roadway maintenance activities as street sweeping and snow and ice control. The Capital Projects Division of SDOT oversees all aspects of Transportation Capital Improvement Programs (CIPs) and coordinates development and implementation of large-scale City projects. SPU works with SDOT during implementation of projects to design stormwater facilities in the right-of-way. At project completion, SPU takes over operation and maintenance of all stormwater facilities in the right-of-way.

II.3.4 Current and Planned Coordination Activities

II.3.4.1 Internal Coordination

SPU leads inter-departmental meetings to coordinate the City's stormwater management and Permit reporting efforts. These meetings are typically held quarterly, and have enabled the different departments to better coordinate stormwater-related policies, programs and projects.

II.3.4.1.1 Executive Directive

The Permit requires SPU to "establish, in writing…intra-governmental (internal) coordination agreement(s) or Executive Directive(s) to facilitate compliance with the terms of the permit." Executive Order # 01-08 (Appendix 1) (City of Seattle, 2008) was issued on January 29, 2008, by the Mayor of Seattle to meet this Permit requirement. The Executive Order prescribes the following responsibilities and orders all departments to coordinate all stormwater-related policies, programs, and projects:

- Each department director will be responsible for meeting the Permit requirements that apply to his or her respective department.
- SPU will serve as the lead department for overseeing City compliance with the Permit.
- SPU will provide each department with information, technical support, and a forum for inter-departmental coordination.
- All City departments must provide SPU with all necessary reporting elements and supporting material necessary to comply with the reporting requirements and associated deadlines of the Permit.

SPU will continue to coordinate with the various departments to facilitate the stormwater management program for the City. Coordination between Secondary Permittees with physically interconnected MS3s

The Port of Seattle, University of Washington, and Seattle Public Schools are currently the entities in Seattle that have submitted notice of intent for coverage as a secondary Permittee under the 2012 NPDES Phase I Municipal Stormwater Permit. The City communicates with these entities about the control of pollutants, coordination of stormwater management activities for shared waterbodies and provides technical assistance when requested. The City communicates with other Phase I and Phase II municipalities where there are interconnected MS3s, shared waterbodies, or both as needed to address issues or coordinate activities.

II.3.4.2 External Coordination

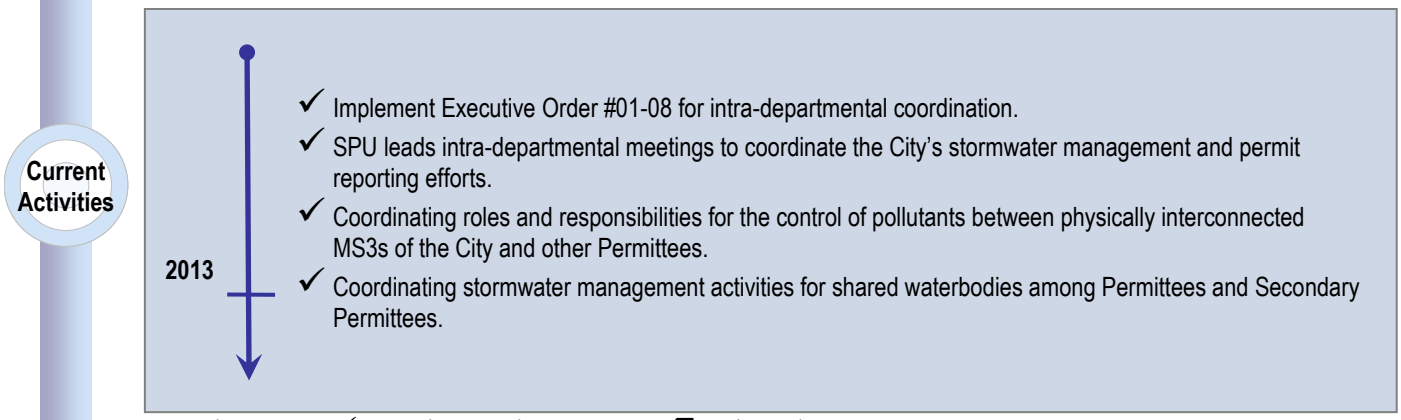
SPU represents the City at the Regional Permit Coordinators' Group, which meets to coordinate and discuss implementation of the Permit and coordination of stormwater management activities for shared waterbodies. In addition, the group discusses stormwater related issues; shares permit implementation information and identify solutions and potential future issues.

II.3.4.3 King County as Co-Permittee

King County is listed as Co-Permittee with the City in S1.C of the Permit for discharges from outfalls that King County owns or operates within the City of Seattle. King County's activities as a Co-Permittee are further explained in S6.F which states: "King County, as a Co-Permittee with the City of Seattle for the discharges from outfalls King County owns or operates in the City, shall participate in the City of Seattle's Stormwater Management Program in accordance with the Joint Stormwater Management Program element of the Memorandum of Agreement between the City and County dated September 25, 1995. The apportionment of responsibilities for stormwater management within the City shall be governed solely by the MOA or its amendment, provided the City's stormwater management program, including King County participation, shall fully comply with Section S5 of this permit. Any amendments to the MOA shall be approved by Ecology before becoming effective."

There have been no amendments to the MOA between the City and King County. The City and King County have and will continue to meet and coordinate on King County's participation in SWMP activities in the Lander and Densmore basins per the MOA. The City has and will continue to implement the stormwater management activities detailed in this SWMP in the Lander and Densmore basins.

Figure II.3-2 Timeline Showing Progress and Next Steps



Legend: ✓ Implemented ❒ Planned

For More Information

- City of Seattle: http://www.seattle.gov/
- Seattle Public Utilities: http://www.seattle.gov/util/index.htm
- Department of Planning and Development: http://www.seattle.gov/dpd/
- Seattle Parks and Recreation: http://www.seattle.gov/parks/
- Finance and Administrative Services: http://www.seattle.gov/fleetsfacilities/
- Seattle City Light: http://www.seattle.gov/light/
- Seattle Department of Transportation: http://www.seattle.gov/transportation/
- For general questions about this SWMP or more information about this section, email swmp@seattle.gov or visit http://www.seattle.gov/util/myservices/drainagesewer/aboutthedrainagesewersystem/stormwatermanagementplan/

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II.4 Public Participation During SWMP Development – S5.C.4

II.4.1 Requirements

The Permit (Section S5.C.4) requires the City to provide ongoing opportunities for public involvement in the SWMP and input on implementation priorities. The minimum performance measures include:

- Implementing a public participation process for considering input on development, implementation and update of the SWMP.
- Making the SWMP, required SWMP documentation, and all Permit-required submittals available to the public on the City's web site or via electronic submittals for posting on Ecology's web site.

II.4.2 Public Participation Program

Starting in February 2007 and continuing into the future, the City will provide a variety of opportunities for public involvement in the stormwater management program. Public comments on budget, Stormwater Codes and this SWMP also help to refine ongoing development of stormwater management activities.

II.4.3 Responsible City Departments

SPU is the lead City department responsible for implementing the public involvement and participation program for the SWMP and Permit-related activities. The City Council provides opportunities for public participation in public hearings.

II.4.4 Current and Planned Public Participation Activities

The public has several means of participating in the SWMP development process and associated activities. As described below, these opportunities have been in place since early 2007.

II.4.4.1 City Budget Process

The City budget process provides opportunities for public input on how monies are allocated for implementation of NPDES-related stormwater management. Adoption of the City Budget - one of the most important products of the work of City Council - always requires public hearings to be scheduled on two or more days. All meetings are held in Council Chambers unless otherwise noted. The public is encouraged to attend Council meetings, hear the debate, and offer public comment on issues. The City Council meeting schedule and methods for providing comments are listed on the City Council's web site: http://www.seattle.gov/council/default.htm.

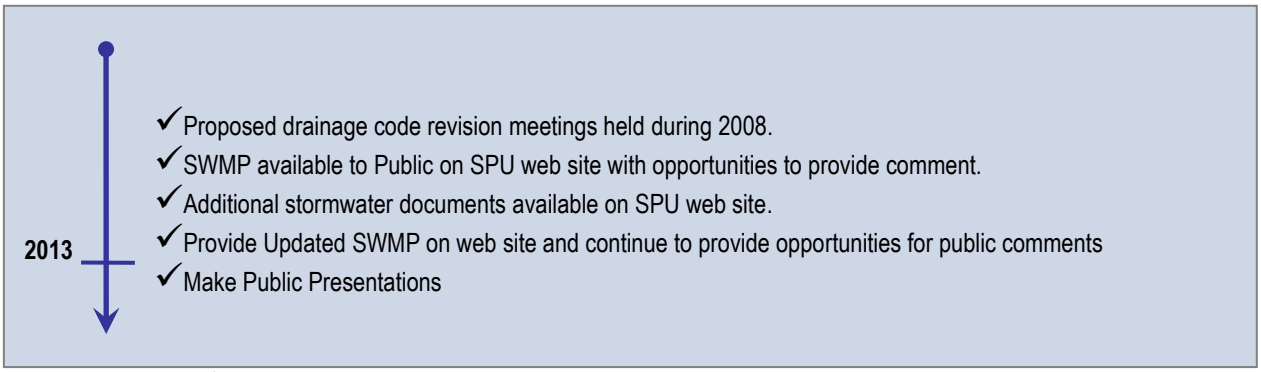
II.4.4.2 Public Participation during SWMP Development

SPU facilitates several citizen advisory groups that provide an on-going opportunity for citizens to participate in planning and development of policies and programs and to advise SPU and other pertinent City entities of its findings and recommendations. SPU will continue to engage citizen advisory groups to provide a diversity of viewpoints on implementation of stormwater management activities.

Current Activities

To provide for additional public input beyond that provided by the stakeholder groups, SPU has created a stormwater management web site to host an electronic version of the SWMP and other related stormwater management information and documents (see link in the "For More Information" box below). In addition, the web site provides contact information (swmp@seattle.gov) for citizens to provide comments and ask questions.

Figure II.4-1 Timeline Showing Progress and Next Steps



Legend: ✓ Implemented ❒ Planned

For More Information

- City Council : http://www.seattle.gov/council/councilcontact.htm , or via email at: budget@seattle.gov , or call Council reception at (206) 684-8888
- Stormwater Code information on DPD web site: http://www.seattle.gov/dpd/Codes/StormwaterCode/Codes/default.asp
- For general questions about this SWMP or more information about this section, email swmp@seattle.gov or visit: http://www.seattle.gov/util/myservices/drainagesewer/aboutthedrainagesewersystem/stormwatermanagementplan/

II.5 Controlling Runoff from New Development, Redevelopment and Construction Sites-S5.C.5

II.5.1 Requirements

The Permit (Section S5.C.5) requires the City to develop, implement, and enforce a program to prevent and control the impacts of stormwater runoff from new development, redevelopment and construction site activities. The minimum performance measures include the following main areas with more detailed requirements included in the Permit text:

- Implement enforceable regulations (codes, standards, or both) to meet or exceed the minimum technical requirements (thresholds) in Appendix 1 of the Permit, or equivalent as determined by Ecology.
- Implement a plan review process and a BMP selection and design process that meets maximum extent practicable (MEP) and all known, available and reasonable methods of prevention, control and treatment (AKART) conditions.
- Allow non-structural preventive actions and source reduction approaches such as Low Impact Development (LID) techniques.
- Implement a local program that meets the requirements above (enforceable requirements, technical standards, and manual(s)). The program must be reviewed and approved by Ecology.
- Establish legal authority to inspect private stormwater facilities and enforce maintenance standards for all new development and redevelopment approved by the local program.
- A process of permits, plan review, inspections, enforcement capability and record keeping to meet permit conditions during and post construction for public and private new development and redevelopment.
- Make Ecology's Notice of Intent (NOI) documents for construction and industrial activities available to project proponents. Enforce local ordinances for these sites covered by other Ecology permits.
- Provide training to staff whose primary job duties are implementing the program to control runoff from new development, redevelopment and construction sites, and document the training. Training to include revisions to the Stormwater Code, and resulting new standards, processes and procedures.

II.5.2 Development Standards Program

SMC Chapters 22.800 through 22.808 contains the City's Stormwater Code, which is the City's primary means of implementing stormwater standards required by the Permit. The Stormwater Code is listed in Appendix 10 of the Permit as an equivalent program for runoff controls for new and redevelopment and Construction Sites as it was adopted with accompanying Grading Code and Directors' Rules below. The purpose of the Stormwater Code is to protect, to the greatest extent practicable, life, property, and the environment from loss, injury, and damage by pollution, erosion, flooding, landslides, and other adverse impacts from urban stormwater runoff. Seattle's Stormwater Code includes the following requirements: (1) to practice stormwater pollution prevention during construction; (2) to reduce the introduction of pollutants into stormwater runoff as close to the source as possible; and (3) to install flow control, stormwater treatment

facilities, or both depending on the size and nature of a project. The Stormwater Code is implemented through the four Directors' Rules, promulgated jointly by the Director of SPU and the Director of DPD. These Directors' Rules provide specifications, guidelines, and additional information needed for meeting the requirements of the Stormwater Code. The four Directors' Rules currently in place are:

- Vol. I - Source Control Technical Requirements Manual: DPD Director's Rule 15-2009/SPU Director's Rule 2009-003
- Vol. II – Construction Stormwater Control Technical Requirements Manual: DPD Director's Rule 16-2009/SPU Director's Rule 2009-004
- Vol. III – Stormwater Flow Control and Water Quality Treatment Technical Requirements Manual: DPD Director's Rule 17-2009/SPU Director's Rule 2009-005
- Vol. IV – Stormwater Code Enforcement Manual: DPD Director's Rule 18-2009/SPU Director's Rule 2009-06

The City's Side Sewer Code (Ch. 21.16 SMC), Grading Code (Ch. 22.170 SMC), Land Use Code (Ch. 23 SMC), Street and Sidewalk Use (Ch. 15 SMC) and Regulations for Environmentally Critical Areas (Ch. 25.09 SMC) also provide protections and standards relevant to municipal stormwater.

II.5.3 Responsible City Departments

The DPD is the City department primarily responsible for developing, administering, and enforcing development standards. SDOT issues Street Use permits to parties conducting ground disturbing activities in the City right-of-way. DPD and SDOT issue development permits as required under the Stormwater Code and other ordinances and inspects sites prior to and during construction. SPU, DPD and SDOT conduct complaint response and enforcement (inspection and response) activities. Both SPU and DPD have authority to issue notices of violation and initiate enforcement for drainage related issues. DPD manages customer complaints and inquiries related to current construction activities. SPU manages customer complaints and inquiries unrelated to development permits. SDOT manages customer complaints and inquires related to projects in the right-of-way. All complaints and inquiries related to existing public owned or operated stormwater facilities are directed to SPU Customer Service.

II.5.4 Current and Planned Activities

The following sections outline completed or planned activities needed to meet the key Permit requirements.

II.5.4.1 Stormwater Code

Ecology has determined that the City of Seattle's Stormwater Code is equivalent to the minimum requirements in Appendix 1, and will protect water quality, reduce the discharge of pollutants to the maximum extent practicable, and satisfy the state requirement under chapter 90.48 RCW to apply all known, available, and reasonable methods of prevention, control and treatment (AKART).

The Stormwater Code (SMC 22.800-22.808) was adopted by the City Council on September 28, 2009 and signed by the Mayor on September 30, 2009, with an effective date of November 30, 2009.

II.5.4.2 Authority to Inspect Private Facilities

Legal authority for inspection of private facilities for new development and redevelopment is established by SMC 22.807.090.B, which states:

> "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."

Entry onto properties is subject to the requirements and limitations of local, state and federal laws.

II.5.4.3 Permitting Program

DPD is the City department primarily responsible for issuance of permits for new development and redevelopment for projects located on private property. DPD's routine permitting procedures are outlined below:

II.5.4.3.1 DPD Permit Application Process

Step 1. The permitting process begins with an optional but recommended step of applicant coaching. In this step, either a DPD land use planner, or permit leader, meets with the potential applicant to identify unique or particular issues of the proposed project. Coaching helps to determine what is allowed on a piece of property, what development standards apply, what types of permits the project will require, and what the permit process will entail. If the project is a multifamily or commercial building and there are special circumstances or issues unresolved during coaching, the proponent can request a pre-submittal conference for clarification on what standards will apply to the proposed project.

Step 2. The next step for an applicant is to research and prepare a preliminary site plan. The site plan depicts where the structure(s) and BMPs will be located, the amount of new & replaced impervious surfaces that will result, the general topography of the site, and the existing level of street and alley improvements in the rights-of-way abutting the site.

For those projects that involve ground disturbance, DPD requires a Pre-Application Site Visit (PASV). This is performed by a DPD site inspector prior to permit application intake. The PASV confirms existing site conditions, including steep slopes, sensitive areas, and erosion control issues that can be anticipated with the project due to site conditions. A PASV report is generated for the applicant and plan reviewer's use. Second, after a permit is issued for projects with ground disturbance, but prior to any ground disturbance occurring, the applicant is required to schedule a first ground disturbance (FGD) inspection with a DPD Site Inspector. The FGD inspection requirement is codified in the Seattle Building Code (SMC 22.100 – 22.204). The purpose of the FGD inspection is for the applicant and inspector to identify potential erosion control issues that may be encountered during construction and map out BMPs that are acceptable to prevent sediment from leaving the site.

Step 3. Prior to permit issuance on projects that have ground disturbance and a high likelihood of erosion control issues due to steep slopes, the applicant nominates a geotechnical special inspector. The geotechnical special inspector is charged with determining that adequate

temporary and permanent erosion control measures are in place throughout the construction of the project.

Step 4. The applicant submits an application, including plans, to the DPD Applicant Services Center on the 20th Floor of the Seattle Municipal Tower. These are reviewed for compliance with applicable adopted codes, and the building permit is issued when the plans comply with these codes and the permit fees are paid.

Step 5. After the building permit is issued for projects with ground disturbance, but prior to any ground disturbance occurring, the applicant is required to schedule a first ground disturbance (FGD) inspection with a DPD Site Inspector. The FGD inspection requirement is codified in the Seattle Building Code (SMC 22.100 – 22.204). The purpose of the FGD inspection is for the applicant and inspector to identify potential erosion control issues that may be encountered during construction and map out BMPs that are acceptable to prevent sediment from leaving the site.

Step 6. Once the building permit has been issued, the applicant, or more typically the contractor, applies for the Side Sewer Permit. This permit contains the drainage plan that was approved during the building permit review, and also includes the Memorandum of Drainage Control, which lists the BMP's to be constructed, and is the mechanism to allow future inspections of these facilities by City staff.

II.5.4.3.2 SDOT Street Use Permitting Process

Any private development that triggers permanent improvements in the City's public right of way requires a Street Improvement Permit issued by the Street Use Division of SDOT in addition to the permits required by DPD. Examples of these kinds of improvements are street drainage facilities, curbs and sidewalks, trees and street or alley paving.

SDOT Street Use section issues street use permits for private and public activities in the City's public right of way under SMC Title 15. SDOT tracks permits, inspections and enforcement actions of permitted projects. Each permit type requires a specific number of inspections during the construction process. Most permit types require an initial and final inspection to determine compliance with the permit. The construction and source control BMPs listed in the Stormwater Code (SMC 22.800-22.808) apply, and failure to implement these BMPs constitutes a violation of the street use permit.

SDOT's Street Use & Urban Forestry Division inspects and approves permanent erosion controls, including tree and plant installations within the right of way, prior to the DPD issuance of the certificate of occupancy.

II.5.4.3.3 Inspections of Permitted Parcel Based Projects

After all required Pre-Application Site Visits (PASVs) are completed and a building permit is issued, a DPD inspector checks to make sure that work is done according to code. Customers with permits are responsible for arranging inspections.

There are six types of site inspections that can occur after a permit is issued.

1. First ground disturbance (FGD) inspection - DPD Site Inspectors conduct a site visit prior to ground disturbance to determine erosion potential and review and tailor construction stormwater erosion and sediment control (CSESC) measures to the site. The FGD inspection requirement is codified in the Seattle Building Code (SMC 22.100 – 22.204). The purpose of the FGD inspection is for the applicant and inspector to identify potential erosion control issues that may be encountered during construction and map out BMPs that are acceptable to prevent sediment from leaving the site.

2. Pre-construction inspection – This inspection typically includes the Contractor, building inspector, Site Inspector, and if applicable, geo-technical special inspector. Inspection of the installed CSESC measures and BMP's identified as necessary in the FGD inspection occurs at this time
3. Side sewer inspection - During this inspection, DPD and the contractor verify that the proper connection is made between the building's side sewer and the City's mainlines. Permanent stormwater treatment, flow control facilities, and GSI BMPs are inspected during this inspection.
4. Special inspection - This type of inspection is both applied to structural work and for geotechnical for special grading, excavation and filling involved with ground disturbance.
5. Site Final inspection – permanent erosion control and stormwater facilities, including Green Stormwater Infrastructure are inspected during this inspection.
6. Final inspection - After successful completion of all inspections, the permittee is granted approval to occupy or Certificate of Occupancy.

II.5.4.3.4 Enforcement

DPD's Code Compliance staff enforces the Stormwater Code and Directors' Rules that govern construction, land use, and environmental protection. Enforcement can take the form of notices, fines and legal action.

SDOT Street Use Inspectors use written warnings, citations, and stop work orders, or revoke the permit if compliance is not achieved. This process is documented in SMC Title 15.

II.5.4.4 Ecology Notice of Intent

DPD has made and will continue to make available copies of the "Notice of Intent for Construction Activity" (Ecology, 2010b), "Notice of Intent for Industrial Activity" (Ecology, 2009), or both to City permit applicants in the Applicant Services Center.

II.5.4.5 Training

DPD and SDOT have revised the temporary erosion and sediment control (TESC) training that is provided to City staff and the public involved in ground disturbing activities to reflect the changes in the 2009 Stormwater Code. This new training, called stormwater construction controls (SWCC), is offered to City staff and the public on a regular basis or as needed. DPD conducts on the job and classroom training for all staff whose primary job duties relate to implementing the City's program to Control Stormwater Runoff from New Development, Redevelopment, and Construction Sites, which helps confirm that those individuals are properly trained. Training topics include permitting, plan review, construction site inspections, and enforcement procedures.

SDOT conducts training for all Street Use Inspectors on the required BMPs, inspection procedures and enforcement for Street Use Permits. The City has and will continue to provide training to City staff on the revised Stormwater Code and its associated Directors' Rules on an as needed basis.

Current Activities

Figure II.5-1 Timeline Showing Progress and Next Steps

2013 -

- ✓ Legal authority already exists to inspect private facilities.
- ✓ Make information on Ecology Construction General Permit or Industrial Permit available
- ✓ Continue Program to issue permits, review site plans, conduct inspections and enforce the Stormwater Code and Directors' Rules
- ✓ Train staff on revised Stormwater Code Continue implementation of program for runoff control from new development, redevelopment and construction sites.

Legend: ✓ Implemented ❒ Planned

For More Information

- The Stormwater Code and Directors' Rules are available on the DPD web site at:

  http://www.seattle.gov/dpd/Codes/StormwaterCode/Codes/default.asp

- Information on the permitting process for new and redevelopment is available on the DPD web site at:

  http://www.seattle.gov/dpd/permits/

- Information on Green Stormwater Infrastructure from SPU is available at:

  http://www.seattle.gov/util/environmentconservation/projects/drainagesystem/greenstormwaterinfrastructure/

- Information from SDOT on Street Use Permits is available at:

  http://www.seattle.gov/transportation/stuse_permits.htm

- Information from SDOT on the Seattle Right-of-Way Improvements Manual is available at:

  http://www.seattle.gov/transportation/rowmanual/

- For general questions about this SWMP or more information about this section, email swmp@seattle.gov or visit http://www.seattle.gov/util/myservices/drainagesewer/aboutthedrainagesewersystem/stormwatermanagementplan/

II.6 Structural SW Controls-S5C.6

II.6.1 Requirements

The Permit (Section S5.C.6) requires the City to:

- Implement a Structural Stormwater Control Program (SSCP) that is designed to control stormwater impacts that are not adequately controlled by other required actions of the SWMP. The SSCP may also include a program designed to implement small scale projects that are not planned in advance.
- Describe the SSCP in the SWMP document, including goals, planning process, budgets, and public involvement, the prioritization process, procedures and criteria used to select the projects.
- Provide a list of planned SSCP projects to be implemented during the term of the Permit; update the list annually.
- For each planned project, provide information on estimated pollution reduction, expected outcomes, environmental benefits, and planned or completed monitoring or evaluation.
- Include updated information on the SSCP in each annual report.

II.6.2 Structural Stormwater Control Program

The key elements of the City's SSCP are described below under Current and Planned Activities. The SSCP includes water quality and flow control projects.

II.6.3 Responsible City Departments

SPU is the lead City department for development and implementation of the SSCP.

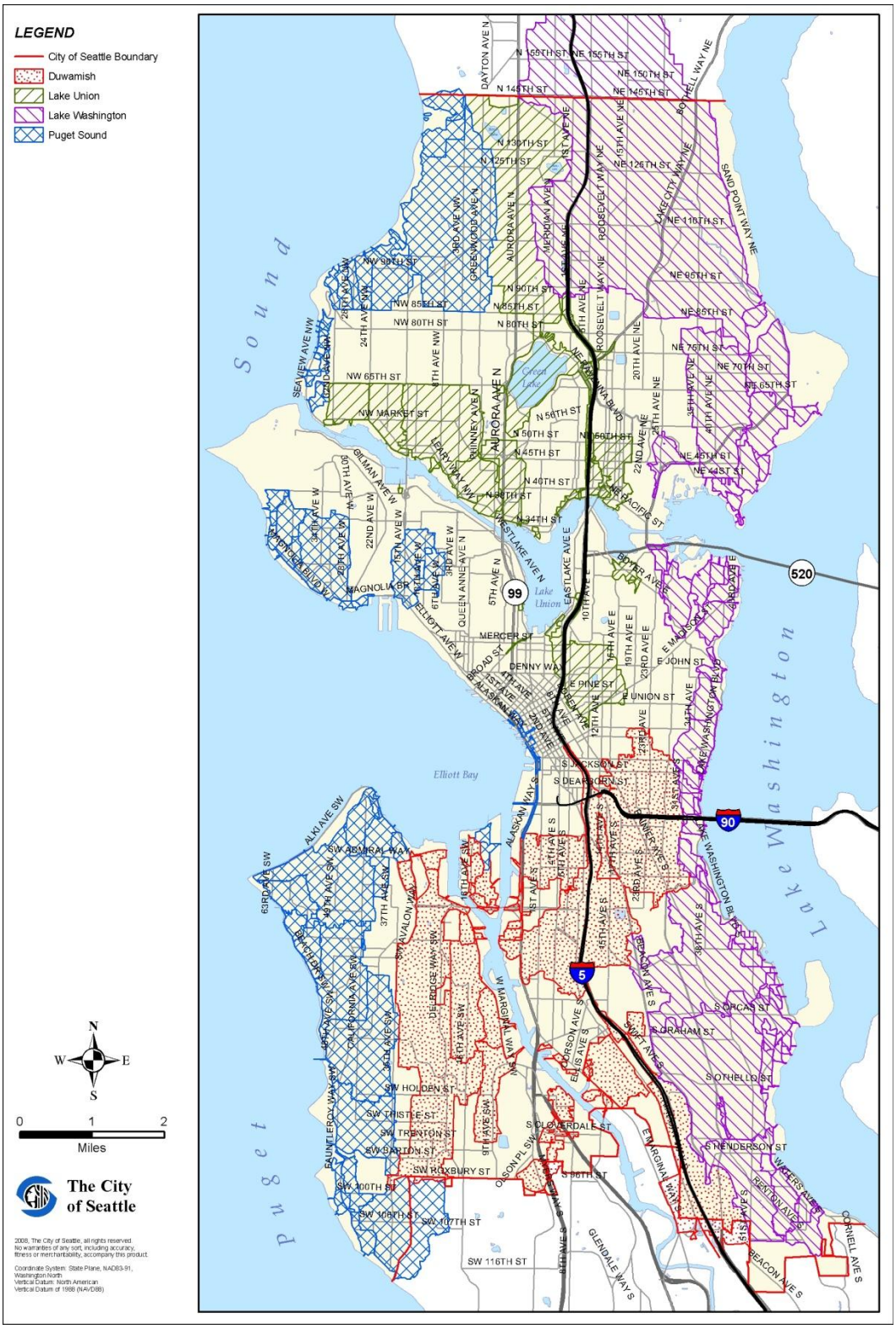
II.6.4 Current and Planned Activities

The following sections outline the goals of the City's SSCP, which is to implement projects that protect, and/or improve the beneficial uses of certain receiving water bodies, reflect asset management principles and are not otherwise required actions in the SWMP.

II.6.4.1 Planning Process and Considerations

A comprehensive planning process is in place to support the SSCP. The geographic scale of the program is the area served by the City's MS4 and the MS4-related receiving water bodies. This area is evaluated based on the watersheds of the four major receiving water bodies; Puget Sound, Lake Washington, Duwamish River, and the Ship Canal/Lake Union (Figure II.6-1). Regulations and issues considered during the SSCP development process included: 303 (d) listed and other impaired water bodies, TMDLs, Stormwater Code requirements, Superfund and MTCA sites, as well as opportunity, feasibility, and available funding.

Figure II.6-1 Major Receiving Water Bodies



The SSCP program develops and prioritizes projects by using asset management principles. The type of treatment facilities evaluated for a project is based on project goals, site conditions, and consideration of AKART and MEP principles as they apply in a fully developed urban area. Projects are prioritized by SPU staff based on an assessment of receiving water body conditions, anticipated benefits of the project, regulatory compliance needs, opportunity, and application of asset management principles that have been adopted by SPU under the guidance of the Asset Management Committee (AMC). Projects must pass through several AMC evaluation screens and funding allocation phases before they are formally approved by SPU management for implementation. Asset management is the process by which projects are evaluated for their whole-life cycle cost benefit including social, economic, and environmental factors (the triple bottom line). This rigorous process assures that the City's SSCP needs are being addressed with the most effective use of ratepayer dollars by the time a project breaks ground. Additionally, project implementation is dependent upon City Council budget approval.

The public involvement process related to SSCP development includes (as appropriate): Seattle City Council budget process, public review of the Comprehensive Drainage Plan (Seattle, 2005), involvement of the CDWAC, State Environmental Policy Act (SEPA) review, and Joint Aquatic Resources Permit Application (JARPA) review.

The City of Seattle, Seattle Public Utilities is conducting a structural stormwater control planning project called the Integrated Plan. The Integrated Plan is listed as an optional task in the City's Consent Decree for NPDES Combined Sewer Overflow (CSO) control and is not required by the MS4 Permit. The Integrated Plan is designed to plan structural stormwater control projects that will provide significant benefits towards improving water quality in the receiving water bodies in and around Seattle sooner and beyond those that would be achieved by the implementation of the approved CSO projects alone. If successful, the structural stormwater control projects will likely be built between 2015 and 2025, and construction of some CSO projects will be deferred past 2025. The projects that are proposed in the Integrated Plan will meet the Structural Stormwater Control program requirements contained in S5.C.6. The Integrated Plan is updating the planning process for Structural Stormwater Control project planning. The project will evaluate LID BMPs, retrofitting existing treatment or flow control facilities and constructing new water quality facilities. All projects will consider AKART and MEP principles during the design process. The Integrated Plan will contain opportunities for the public and stakeholders to learn about the projects and provide comments and feedback.

II.6.4.2 Structural Project List

SSCP projects are summarized in Table II.6-1. The projects are grouped by status. SSCP projects currently in construction have a high probability of being constructed on the anticipated schedule. For those projects currently in preliminary engineering (PE) or design, there is greater uncertainty associated with technical issues, schedule, available funding, and other unforeseen items that may result in changes to the project.

For projects that are primarily intended to provide stormwater treatment, the estimated pollutant load reduction (total suspended solids [TSS] kg/year) is shown in Table II.6-1. The concentration of TSS is used to represent estimated pollutant load because it is the target pollutant for "basic" stormwater treatment (Ecology, 2005) and is often related to other particle-bound pollutants such as total metals, total phosphorus, and certain organic chemicals. For projects that are primarily intended to provide flow control, the expected outcome of the project is shown in Table II.6-1. For all projects, other expected environmental benefits are shown in Table II.6-1. Anticipated monitoring or evaluation and anticipated construction dates are shown in Table II.6-1. The estimated annual capital budget (2013) for each project is presented in Table II.6-2. A brief summary of each project included in the SSCP is provided below.

Table II.6-I Structural Stormwater Control Projects – Summary

	Stormwater Treatment	Flow Control	Other Expected Environmental Benefits	Planned Monitoring or Evaluation ?	Anticipated Construction
Project	**Estimated median TSS Reduction (kg/year)**	**Expected Outcome**			
Construction/Closeout Phase					
Norfolk Water Quality Project	9,000 – 35,000		• Stormwater treatment of other pollutants		Constructed in 2011; Project close-out in 2013.
Midvale & 107th Drainage Project	6,000 – 22,000		• Flood control project enhanced to provide water quality benefits • Stormwater treatment of other pollutants		Constructed in 2012/2013; Project close out in 2014
PE or Design Phase					
Capitol Hill Water Quality Project	8,000 – 43,000		• Increased green space	To be determined	2012 - 2018
Venema NDS Project	900 – 5,200	• Volume reduction: 80 ac-ft/yr (71% decrease) •	• Stormwater treatment of other pollutants • Increased green space	Flow	2014-2015
South Park Water Quality Project	12,000 – 50,000		• Stormwater treatment of other pollutants		To be determined
Street Sweeping for Water Quality Program	approx 150,000		• Prevents other pollutants(in addition to TSS) from entering MS4 • Improved air quality		Ongoing

Table II.6-II. Structural Stormwater Control Projects – Estimated Budget Projections

Project	2013
Construction/Close-out Phase	
Norfolk Water Quality Project	$40,000
Midvale & 107th Drainage Project[1]	$651,000
PE or Design Phase	
Capitol Hill Water Quality Project	$3,305,000
Venema NDS Project	$594,000
South Park Water Quality Project[1]	$408,000
Implementation Phase	
Street Sweeping for Water Quality Program	$1,067,000

1. Estimated budget for the water quality portion of these joint water quality and flood control projects.

Norfolk Water Quality Project

The Norfolk Water Quality Project is a regional stormwater wet pond that treats stormwater draining to the Duwamish Waterway from a 216-acre industrial basin. The Norfolk Water Quality Project was constructed in 2011, has begun operations and will be completed in 2013. The Norfolk Water Quality Project is a component of the Norfolk-MLK Way Stormwater Improvement Project which also included conveyance improvements at the site.

Figure II.6-2 Norfolk Water Quality Project with I-5 in the Background

Midvale & 107th Drainage Project

The Midvale & 107th Drainage Project is a combined detention and wet pool facility located in north Seattle. The primary objective of the project is to reduce surface flooding in the area. Dead storage was added to the design of the facility to provide stormwater quality treatment for a 1,100-acre urban residential and commercial basin which drains to the Lake Washington Ship Canal and Lake Union. The project was constructed in 2012 and 2013 with close out activities to be conducted in 2014. Project details can be viewed: http://www.seattle.gov/util/myservices/drainagesewer/projects/midvalestormwaterproject/

Figure II.6-3 Midvale & 107th Drainage Project

Capitol Hill Water Quality Project

The Capitol Hill Water Quality Project (aka Swale on Yale) will be an innovative, regional-scale stormwater facility consisting of four blocks of biofiltration swales with an infiltration and underdrain component that will treat stormwater draining to Lake Union from a 626-acre high density commercial and residential basin (Figures II.6-4 and II.6-5). SPU is teaming with private development during the redevelopment of this highly urbanized area to incorporate a regional stormwater treatment facility while increasing green space in the right of way. This is a multi-phase project; the first phase of the project began construction in 2012. The Capitol Hill Water Quality Project received $1,000,000 in grant funding for construction of the first phase of the project from the Ecology FY 2011 Stormwater Retrofit and LID Competitive Grant Program. In addition, the Capitol Hill Water Quality Project received a $1,857,000 loan for the first phase of the project from the Ecology FY 2012 State Revolving Fund Program. Project details can be viewed: http://www.seattle.gov/util/myservices/drainagesewer/projects/swaleonyale/.

Figure II.6-4 Artist depiction of Capitol Hill Water Quality Project

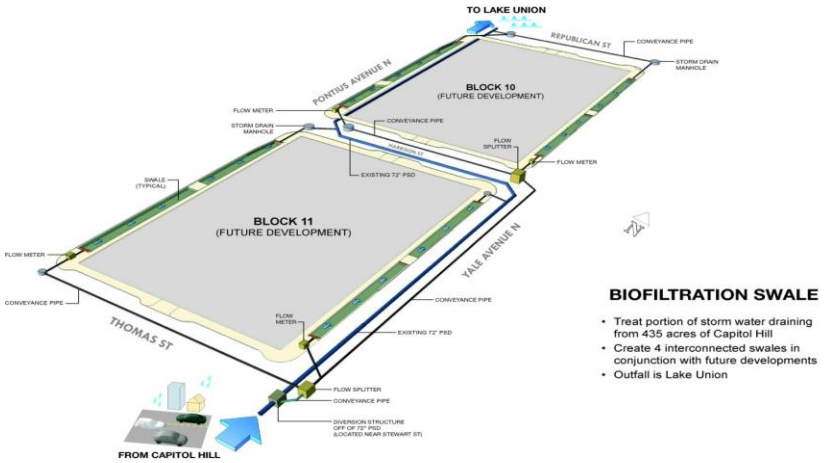


Figure II.6-5 Artist depiction of Street View of Capital Hill Water Quality Project

Venema Natural Drainage System

The Venema Natural Drainage System (NDS) Project is located in the Piper's Creek Watershed in northwest Seattle. The Venema NDS Project will provide flow control and water quality treatment for a significant portion of the 85-acre basin draining to Venema Creek (a tributary to Piper's Creek which drains to Puget Sound). The Venema NDS system was initially designed to consist of a hybrid of "SEAStreet" type and "Cascade type" swales along one side of 8.5 blocks in a residential neighborhood. The design is currently being reevaluated based on additional geotechnical investigations and community input. Additionally, the Venema NDS project is being coordinated with the Broadview Sanitary Sewer Overflow Program (SSO) to help manage the additional flows to the creek that will result from excluding stormwater from the leaky Broadview sanitary sewer system as a way to prevent sewage from overflowing into basements, streets and the creek. Venema NDS project will do this by: (1) providing needed information regarding deep infiltration as a tool to infiltrate stormwater in areas where soil infiltration rates are low and/or mounding issues are of concern, and (2) potentially reducing inflow and infiltration to sanitary sewer lines down gradient of the Venema basin. Pre-project flow and stormwater quality monitoring is being conducted. This project will be in design in 2013 with construction beginning in 2014. The Venema NDS Project will be receiving $1,000,000 in grant funding for construction from the Ecology FY 2011 Stormwater Retrofit and LID Competitive Grant Program.

South Park Water Quality Project

The South Park Water Quality Project will be a regional water quality treatment facility located at the downstream end of the existing 7th Avenue South drainage basin (220 acres) which drains to the Duwamish Waterway. Stormwater will be conveyed to the water quality facility by a new pump station which draws from just upstream of the drainage basin's existing outfall to the Duwamish Waterway. Under the current design, the South Park Water Quality Facility will provide water quality treatment using Stormfilters® zeolite/perlite/granular activated carbon (ZPG) filter media cartridges in an above grade concrete structure measuring approximately 50-feet wide by 100-feet long by 12-feet high. Treated stormwater will mix with untreated flow from the high flow bypass and will gravity flow back to the existing outfall. However, at this time the treatment technology is being reevaluated. The construction schedule will be determined after the reevaluation is complete. The South Park Water Quality Project is associated with other conveyance improvements in the 7th Avenue South basin, including the construction of the new pump station.

Street Sweeping for Water Quality Program

In 2011, Seattle launched its city-wide Street Sweeping for Water Quality (SS4WQ) Program to remove pollutants from Seattle's roadways prior to entering the MS4. The SS4WQ Program utilizes high efficiency street sweepers and is focused on curbed arterial and industrial roadways that drain to the MS4. Based on program effectiveness studies including the *Seattle Street Sweeping Pilot Study* (http://www.seattle.gov/util/myservices/drainagesewer/projects/streetsweep/) and additional life-cycle cost analysis, high-efficiency street sweeping has been found to be a cost-effective means to remove pollutants in Seattle's highly urbanized, road dense environment compared to conventional structural stormwater controls.

In 2012, the program was expanded by 40 percent. On an annual basis, approximately 560 lane miles (422 or 75% drain to the MS4) are swept. This translates to approximately 10,000 curb miles per year that drain directly to the MS4 and includes 20 routes; night shift sweeps 4 weekly and 12 biweekly routes, and day shift sweeps four biweekly routes. In 2013, the program will focus on optimization and efficiency measures.

Figure II.6-6 Timeline Showing Progress and Next Steps

Current Activities

2013

✓Developed and updated SSCP.
✓List and schedule of projects planned for implementation during permit term.
✓Estimated TSS load reductions anticipated for listed projects.

Legend: ✓ Implemented ❒ Planned

For More Information

- For general questions about this SWMP or more information about this section, email swmp@seattle.gov or visit http://www.seattle.gov/util/myservices/drainagesewer/aboutthedrainagesewersystem/stormwatermanagementplan/

II.7 Source Control Program for Existing Development-S5C.7

II.7.1 Requirements

The Permit (Section S5.C.7) requires the City to continue implementing an ongoing program to reduce pollutants in runoff from areas that drain to the municipal separate storm sewers owned or operated by the City. The minimum performance measures include these areas with more detailed requirements included in the Permit text:

- Enforce an ordinance, or other enforceable documents, requiring the application of source control BMPs for pollutant generating sources associated with existing land uses and activities as detailed in Appendix 8 of the Permit.
- Identify land uses/businesses, based on Appendix 8 of the Permit, which are potentially pollution generating, update the inventory or list, and include a complaint-based response to identify other pollution generating sources such as mobile or home-based businesses.
- Implement an audit/inspection program for the identified land uses/businesses and provide information about activities that may generate pollutants and the source control requirements applicable to those activities. The program shall inspect 20% of the identified land uses/businesses annually to determine BMP effectiveness and compliance with source control requirements. Inspect all sites identified by legitimate complaints.
- Implement a progressive enforcement policy to require sites to come into compliance with stormwater requirements within a reasonable time period.
- All staff whose primary job duties are implementing the source control program are trained to conduct these activities. Training shall cover legal authority, source control BMPs and their proper application, inspection protocols, and enforcement procedures. Follow-up training and documentation are required.

II.7.2 Source Control Program

Source control is regulated by the Stormwater Code and associated Directors' Rules. The Stormwater Code regulates pollution generating activities and defines the operational and structural BMPs required for those activities.

Ecology determined that the revised draft Stormwater Code and Directors' Rules dated March 16, 2009, are equivalent to Appendix 1 of the permit, Minimum Technical Requirements for New Development and Redevelopment. The determination of equivalency by Ecology indicates that the revised Stormwater Code is appropriate for implementation of the minimum requirements in Appendix 1, and will protect water quality, reduce the discharge of pollutants to the maximum extent practicable, and satisfy the state requirement under chapter 90.48 RCW to apply all known, available, and reasonable methods of prevention, control and treatment (AKART). The revised Stormwater Code and Directors' Rules became effective on November 30, 2009.

In addition to the activities outlined above, the City conducts education and outreach activities to the public on issues related to stormwater. Examples of education and outreach activities related to source control include the publicly-listed Water Quality Hotline (206-684-7587) and the Resource Venture, an SPU funded resource conservation program, which provides free site visits, spill kits and technical assistance to Seattle businesses.

Documentation on the City's proposed Source Control Program was submitted to Ecology on February 15, 2008 as required by S5.C.7.b.i.

II.7.3 Responsible City Departments

SPU is the lead department for development and implementation of the City's Source Control Program.

II.7.4 Current and Planned Activities

The following sections outline completed or planned activities needed to meet the key Permit requirements.

II.7.4.1 Business Inspection Program

The Source Control Team (SC) within SPU has been conducting and will continue to conduct business audit/inspections within areas of the City served by the MS4. SC works with businesses and residents to provide education and technical assistance regarding stormwater pollution prevention and enforce the City's Stormwater Code. A progressive enforcement process is in place to address non-compliance and egregious violations.

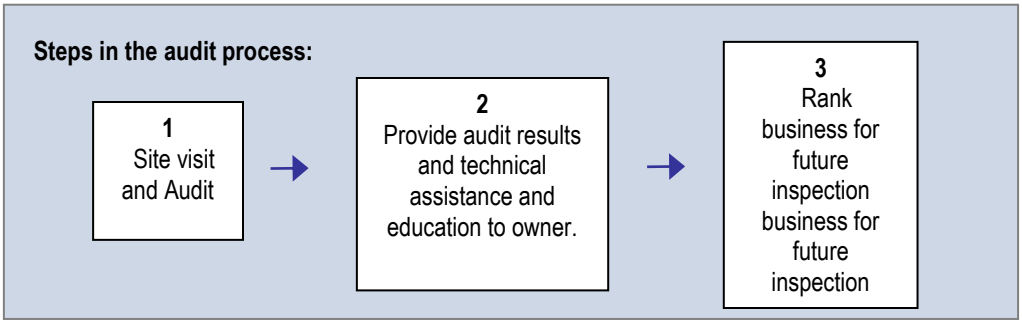
Education and technical assistance provided by SC is delivered in person during site visits, inspections, or complaint investigations and also through outreach materials, such as BMP sheets. Enforcement is used when the inspection process has failed to gain compliance voluntarily. The Resource Venture, a free resource conservation program for Seattle businesses that is currently being implemented by Cascadia Consulting under contract with SPU, provides outreach and education to the business community regarding stormwater pollution prevention. Current efforts include the "Get on the Map" Program, which is a green business program aimed at encouraging businesses to adopt environmental actions. The Resource Venture also facilitates the Spill Kit Incentive Program (SKIP), which provides free spill kits and spill plans to Seattle businesses.

To meet the 2007 Permit requirements as defined in S5.C.7.b.ii and iii, SPU has established a program to identify sites which are potentially pollution generating and implementation of an audit/inspection program for identified sites that drain to the City's MS3s. SPU developed a list of potentially pollution generating businesses, as outlined in Appendix 8 of the Permit in 2008, and continuously refines the list through field reconnaissance. The list is generated using a combination of GIS mapping, which analyzes land use and drainage infrastructure, the Seattle business license database, which provides active business license and NAIC Code information, and actual field observations.

SPU uses a suite of inspection types to conduct inspections of business that drain to the City's MS4 areas. The suite of inspection types was developed to address the complexity in achieving permit compliance and utilizing limited resources to achieve maximum water quality benefit. The first is an "audit" inspection, whereby businesses are visited by an SPU Inspector who conducts a site inspection and informs the business of their source control requirements and relevant Code changes. The business is left with a copy of its required corrective actions. Depending on the activities occurring on site and the best management practices being implemented, the business is ranked as High, Medium or Low priority based on its potential to pollute. The current inspection cycle for businesses is every 2 years for High, 4 years for Medium and 6 years for Low. This approach allows SPU to focus more frequent inspections on those businesses with the highest risk

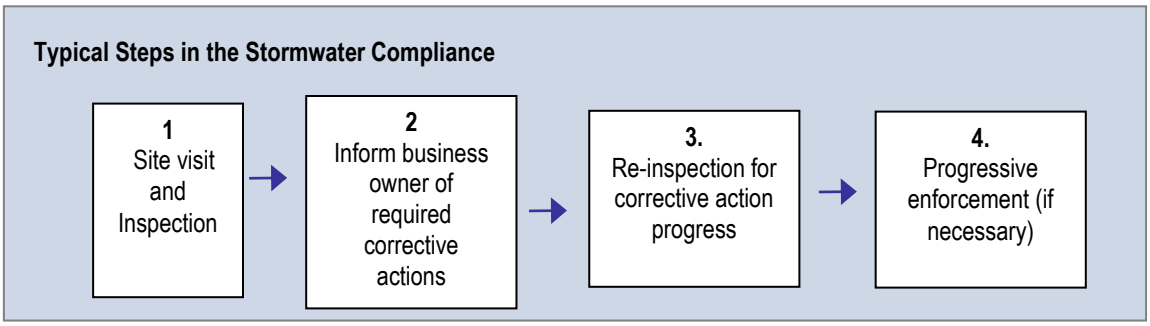
of pollution, thus achieving the maximum potential for water quality benefit. Businesses who are involved in a complaint reported to SC, or a spill, or an IDDE event and businesses in the Superfund areas will continue to be inspected using the "stormwater compliance inspection" and Superfund business inspections described below.

Figure II.7-1 Audit Process



The second inspection type is a "stormwater compliance inspection," whereby businesses are visited by an SPU Inspector and informed of the corrective actions necessary for their site to come into compliance with the City's Stormwater Code. Inspectors follow up with the business after the compliance deadline to require that the necessary corrective actions have been implemented and will proceed with progressive enforcement when necessary. The "stormwater compliance inspection" is used for water quality complaint response at businesses or if an egregious violation is found during an "audit" inspection.

Figure II.7-2 Stormwater Compliance Inspection Process



The third approach to business inspections is directed at businesses that discharge to areas where the City is currently engaged in a comprehensive process for sediment cleanup of the Lower Duwamish Waterway and the East Waterway in partnership with Ecology and the U.S. Environmental Protection Agency (EPA). Business inspections within the Superfund Cleanup areas focus on stormwater pollution prevention, as well as hazardous waste management and industrial waste management and follow the same process as the stormwater compliance inspection. If hazardous waste or industrial compliance issues are not resolved at the re-inspection, they are referred to other agencies for follow up.

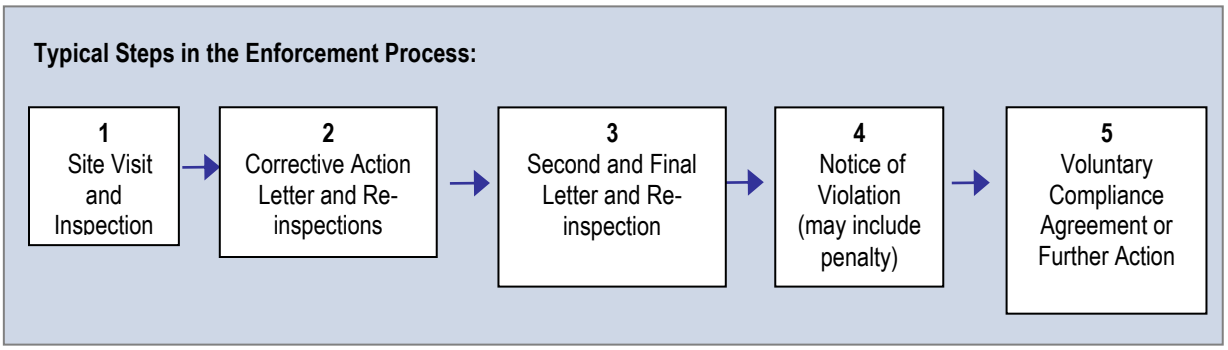
Mobile and home-based businesses that drain to the City's MS3s are included in this program in one of two ways. Inspectors move geographically through watersheds so each business site is evaluated based on pollution generating activities, regardless of whether they are mobile or home based. The second way that these business types are included is if a call is made to the City's Water Quality Hotline (206-684-7587). Inspectors will respond to these calls and treat the mobile and home-based business in the same manner as other businesses

II.7.4.2 Progressive Enforcement Program

SC uses a progressive enforcement program to achieve source control implementation at inspected businesses. The following describes the typical steps in enforcement, though cases vary. SC Inspectors start by issuing a corrective action letter for lack of specific best management practices. Businesses are given 30 days to comply with source control requirements, at which time a re-inspection is conducted to ensure implementation. If best management practices have not been implemented, a 'Second and Final' letter is issued, which provides a shorter deadline for compliance and acts as a warning of impending enforcement. If the site remains out of compliance, a Notice of Violation is issued. A penalty may also be issued at the same time or may be suspended pending implementation of the requirements by the deadline provided in the Notice of Violation. Egregious violations and illicit discharge violations typically receive a penalty and request for payment at the issuance of the Notice of Violation.

The enforcement process is closely linked to the inspection process. Figure II.7-3 summarizes typical steps in the enforcement process.

Figure II.7-3 Enforcement Process



II.7.4.3 Enforcement Criteria and Procedure

If a serious violation occurs, or if the corrective action process does not result in compliance, a Notice of Violation (NOV) may be issued. An inspector who believes that a NOV is necessary to achieve compliance consults with the program lead to determine the merits of proceeding with enforcement and weighs it against established criteria. In some cases, cost recovery may also appropriate to pursue where the City has expended resources to terminate the polluting activity.

II.7.4.3.1 Voluntary Compliance Agreement

Either before or after a Notice of Violation is issued, a property owner may choose to enter into a Voluntary Compliance Agreement (VCA) with the City, if the City is willing.

A Voluntary Compliance Agreement may be appropriate in the following situations:

- where a capital investment may be necessary to achieve compliance, or
- where the steps to achieve compliance are difficult or technically complex, or
- where obvious alternatives are not available.

SC will work with the property owner at each of the steps in the agreement to require the business owner or property manager to meet milestones and make progress toward compliance. If the Voluntary Compliance Agreement target dates pass without compliance, further enforcement steps may be taken.

II.7.4.3.2 Records Management

The Source Control Program tracks its inspection and enforcement records through a database and file management system. The inspection database is based in Sequel Server and Microsoft Access and tracks information for both source control inspections and drainage system maintenance inspections. The database records all site inspection information, generates corrective action letters, tracks compliance deadlines and reports inspections outcomes and other information. The database also has a QA/QC element. In addition, all hard copy inspection records are kept in a filing system by address. In general, the file includes all previous inspection information, correspondence, maps and other relevant site information. Records are managed in accordance with the state record keeping requirements.

II.7.5 Training for Staff Involved in Source Control Program

The SC group will use the following training methods and classes to ensure that all staff whose primary job duties are involved in implementation of the Source Control Program are knowledgeable of the current policies and procedures.

II.7.5.1 Basic Inspector Training

Each SC staff member involved in inspections attends the EPA-sponsored Basic Inspector Training course. The course provides an overview of all aspects of inspection preparation, conduct, and follow-up. The course also introduces various federal environmental laws and regulations. The policy is that all personnel hired by SC whose primary job duties are implementing the source control program will attend this training, either in classroom or by CD when the class is not offered in Seattle, WA.

II.7.5.2 On-the-job Training

All SC staff that are responsible for implementing the source control program are trained in the use and application of the Stormwater Code, Director's Rules and SC Inspection Procedure Manual to help establish that the program is implemented in a consistent, repeatable manner and upholds technical and customer-driven principles.

II.7.5.3 Inspector Meetings

SC staff hold bimonthly team meetings to present information and discuss issues, problems and lessons learned during field visits. Staff present and discuss investigations and assist each other with troubleshooting.

II.7.5.4 Ongoing Training

As new inspection training opportunities arise, typically through Interagency Resource for Achieving Cooperation or the U.S. Environmental Protection Agency (EPA), inspectors take advantage of these opportunities. Professional Conferences related to source control are also part of professional development.

Figure II.7-4 Timeline Showing Progress and Next Steps

Current Activities

2013

- ✓ Enforcement of revised Stormwater Code and Directors' Rules.
- ✓ Identify businesses draining to the MS4 that are potentially pollution generating sites.
- ✓ Continue audit/inspection program for businesses identified as potentially pollution generating sites.
- ✓ Implement progressive enforcement policy based upon revised Stormwater Code and Directors' Rules.
- ✓ Continue ongoing training for Source Control Staff.

Legend: ✓ Implemented ❒ Planned

For More Information

- **Business Inspection Program:** http://www.seattle.gov/util/myservices/drainagesewer/pollutioncontrol/inspections/businessinspections/

- For general questions about this SWMP or more information about this section, email swmp@seattle.gov or visit http://www.seattle.gov/util/myservices/drainagesewer/aboutthedrainagesewersystem/stormwatermanagementplan/

II.8 Illicit Connections and Illicit Discharge Detection and Elimination Program-S5C.8

II.8.1 Requirements

The Permit (Section S5.C.8) requires the City to continue implementing an ongoing program to detect, remove and prevent illicit connections, illicit discharges, connections, including any spills, into the municipal separate storm sewers owned or operated by the City. The minimum performance measures include these nine main areas with more detailed requirements included in the Permit text:

- Continue implementing an ongoing IDDE program.
- Evaluate, and if necessary update, existing ordinances or other regulatory mechanisms to effectively prohibit non-stormwater illegal discharges and/or dumping into the City's MS4. Certain non-stormwater discharges are subject to meeting conditions stated in the Permit in order to be permissible, and these must be addressed in the SWMP.
- Train all municipal field staff who are responsible for identification, investigation, termination, cleanup and reporting of illicit discharges, including spills, improper disposal and illicit connections to conduct these activities.
- Train all municipal field staff, which as part of their normal duties, may come into contact with or otherwise observe an illicit connection or illicit discharge to the storm sewer system, on identification and proper procedures for reporting and responding. Provide follow-up training as needed to address changes and maintain training records.
- Publicly list a hotline or other local telephone number for public reporting of spills and other illicit discharges.
- Conduct on-going screening to detect illicit connections, including field screening and source tracing. Prioritize conveyances and outfalls for screening, and screen at least 12 percent according to 2012 Permit terms.
- Upon discovery or receiving a report of a suspected illicit connection, initiate an investigation within 21 days to determine sources and the nature of the connection, and the responsible party.
- Upon confirmation of the illicit nature of a connection, use enforcement authority in a documented effort to eliminate the illicit connection within six months.
- Contact Ecology immediately upon discovering an illicit connection that presents a severe threat to human health or the environment.
- Participate in a regional emergency response program, or develop and implement procedures to respond to spills and improper disposal into the City's MS4.
- Track and maintain records of illicit discharge detection and elimination program, including documentation of inspections, complaint/spill response and other enforcement records.

II.8.2 IDDE Program

The City continues to implement the Illicit Connection and Discharge Detection and Elimination (IDDE) Program developed under the previous Cedar/Green NPDES general permit issued by Ecology in 1995. SPU's Source Control (SC) team is responsible for the development and implementation of the City's IDDE program. The IDDE program is focused on preventing, identifying and eliminating non-stormwater discharges to the City's MS3 (permissible non-stormwater discharges are described below). The IDDE program addresses the following illicit discharges:

- Illicit connections –any man-made conveyance that is connected to the City's municipal separate storm sewer without a permit, excluding roof drains and other similar type connections. An example is an industrial floor drain connected into the stormwater system instead of the separated or combined sanitary sewer system.
- Illegal dumping – discharge of solid or liquid waste into the City's MS3. Examples include washing trash or dumping used motor oil into a storm drain.
- Spills – an unintentional discharge of any size into the City's MS4. Examples include fluids released from a vehicle involved in an accident.

Reports of illicit discharges are received from a variety of sources such as the SPU Complaint Hotline, SPU Spill Response Program, as well as the SPU Business Inspection Program and SPU Stormwater Facility Inspection Program. Each program is tracked using a database which documents each event and enforcement records. Two major components of the IDDE program are the publicly-listed, 24-hour citizen complaint telephone number (Water Quality Hotline 206-684-7587) and web form for reporting water quality complaints. In addition to citizen reports, the hotline is used to capture complaints from other departments and agencies.

II.8.3 Responsible City Departments

SPU is the lead department for development and implementation of the IDDE Program.

II.8.4 Current and Planned Activities

The following sections outline completed or planned activities needed to meet the key Permit requirements.

II.8.4.1 Field Screening and Source Tracing

SC has developed a field screening and source tracing program for compliance with S5.C.8.b.vi based upon literature review and in consultation with other jurisdictions to determine appropriate methods for detection of illicit discharges. SC has incorporated and modified the approaches from these various programs to develop procedures that will serve the urban setting.

The SPU program uses the following field screening elements designed to identify and characterize continuous dry-weather flows and identify suspect intermittent and transitory flows: prioritize the conveyance system, perform field characterization which may include water and sediment chemical screening at conveyance system locations, and use trigger values to initiate source tracing efforts. Source tracing investigations will be started when a sample exceeds the trigger level. Follow up source tracing can include additional water or sediment sampling, visual tracing, side sewer research, dye testing, smoke testing, business inspections, stream walks, and closed circuit TV filming of piped systems. These investigations may require the participation of other City inspectors, operations and maintenance staff, and the participation of other agencies.

If and when an IDDE event is identified by field screening and source tracing, SC will continue to use the SC Inspection Procedure Manual to define procedures for conducting and documenting investigations, gaining rights of entry, conducting source tracing, collecting samples, pursuing enforcement measures and managing data. The manual also contains information and contacts for interagency cooperation. In addition to the inspection procedure manual, SC currently uses decision and sampling guidance developed by the City as part of program implementation.

II.8.4.2 Permissible Non-stormwater Discharges

The Stormwater Code and Directors' Rules prohibit non-stormwater discharges (SMC 22.802.020), and allow the following non-stormwater discharges into the City's MS3 when specific conditions are met, as is allowed by the Permit. (SMC 22.802.030).

II.8.4.2.1 Potable Water Sources

Discharges from potable water sources, including flushing of potable water lines, hyperchlorinated water line flushing, fire hydrant system flushing, and pipeline hydrostatic test water must meet the following conditions to be permissible. Planned discharges shall be de-chlorinated to a concentration of 0.1 ppm or less, pH-adjusted if necessary, and volumetrically and velocity controlled to prevent resuspension of sediments in the drainage system. (SMC 22.802.030.A.1).

II.8.4.2.2 Lawn and Other Irrigation Runoff

The Stormwater Code allows discharges of runoff from lawn watering and discharges from irrigation runoff, including irrigation water from agricultural sources that is commingled with urban stormwater (SMC 22.802.030.A.8 - 9). Education and outreach on these subjects are provided to the public, landscapers, and property owners by a variety of City programs and are explained in Section III.10 of this document.

II.8.4.2.3 Swimming Pool Discharges

The Stormwater Code allows discharges from swimming pools, hot tubs, fountains, or similar aquatic recreation facilities and constructed water features, provided the discharges have been dechlorinated to a concentration of 0.1 ppm or less, pH-adjusted and reoxygenated if necessary, and volumetrically and velocity controlled to prevent resuspension of sediments in the drainage control system (SMC 22.802.030.A.13).

II.8.4.2.4 Street and Sidewalk Wash Water

The Stormwater Code allows discharges of runoff from street and sidewalk wash-water that do not use detergents or chemical additives, water used to control dust, and water from routine external building washdown that does not use detergents or chemical additives (SMC 22.802.030.A. 14-16) as long as the discharge does not cause a visual discoloration or contain a prohibited discharge. Education and outreach on these subjects are provided to the public, landscapers, and property owners by a variety of City programs and are explained in Section III.10 of this document.

II.8.4.2.5 Other Non-Stormwater Discharges

The Stormwater Code addresses discharges of runoff from other non-stormwater discharges, and discharges that are in compliance with the requirements of an approved stormwater pollution prevention plan (SWPPP) that addresses such discharges (SMC 22.802.030.A.19). In addition to discharges addressed above, the following types of other non-stormwater discharges are permissible unless the City determines that the type of discharge is causing or contributing to a Permit violation or a water quality problem:

- Discharges from washing or rinsing of potable water storage reservoirs, dechlorinated as described in the Code, addressed above

- Discharges from surface waters, including diverted stream flows
- Discharges of uncontaminated groundwater, including uncontaminated groundwater infiltration (as defined at 40 CFR 35.2005(2)), uncontaminated pumped groundwater, and rising ground waters
- Discharges from foundation drains
- Discharges of air conditioning condensation
- Discharges from springs
- Discharges of uncontaminated water from crawl space pumps
- Discharges from riparian habitats and wetlands
- Discharges from approved footing drains and other subsurface drains or, where approval is not required, installed in compliance with this subtitle and rules promulgated pursuant to this subtitle
- Discharges that are in compliance with a separate individual or general NPDES permit
- Discharges that are from emergency fire fighting activities

II.8.4.3 Training for Staff Involved in the IDDE Program

The SC group staff members are responsible for identification, investigation, termination and reporting of illicit discharges, including spills, improper disposal and illicit connections. SC will use the following training methods and classes to provide that Environmental Compliance Inspectors within SC involved in identification, investigation, termination and reporting associated with the IDDE program are knowledgeable of the current policies and procedures.

II.8.4.3.1 Basic Inspector Training

Each SC staff member involved in inspections attends the EPA sponsored Basic Inspector Training course. The course provides an overview of all aspects of inspection preparation, conduct, and follow-up. The course also introduces various federal environmental laws and regulations.

II.8.4.3.2 Spill Training

Spill Training for SC staff includes attending the 40-hour Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) training. Staff attends an 8 hour HAZWOPER refresher as needed.

II.8.4.3.3 On-the-job Training

All SC staff that are responsible for implementing the source control program are trained in the use and application of the SC Inspection Procedure Manual to help establish that the program is implemented in a consistent manner and upholds technical and customer driven principles.

II.8.4.3.4 Inspector Meetings

SC staff hold meetings on a regular basis to present information and discuss issues, problems and lessons learned during field visits. Staff present and discuss investigations and assist each other with troubleshooting. Presentations on new information related to Illicit Discharge Detection and Elimination (IDDE) are included as appropriate.

II.8.4.3.5 Ongoing Training

As new inspection training opportunities arise, typically through Interagency Resource for Achieving Cooperation or the U.S. Environmental Protection Agency (EPA), inspectors take advantage of these opportunities. Such training topics include environmental chemistry and sampling protocol.

II.8.4.3.6 City Staff Training

All municipal field staff, which as part of their normal job duties may come into contact with or otherwise observe an illicit connection or illicit discharge to the storm sewer system, were trained during a City-wide Federal Permit Training session occurring spring 2008. The training consisted of classroom and field exercises designed to provide instruction on how to identify illicit discharges and connections and how to properly report and/or respond to them. On-going training on this subject is provided via a DVD of the City-wide Federal Permit Training so that existing employees can refresh their knowledge to added changes in procedures or techniques and so new employees can be properly trained.

II.8.4.4 Water Quality Hotline

The City provides a publicly listed Water Quality Hotline and web form (http://www2.seattle.gov/util/forms/surfacewater/surfacewaterForm.asp) for the public to report potential stormwater, illicit discharge and other water quality related violations. This is part of the City's procedure to prioritize complaints to respond to illicit connections and to investigate and respond to spills and improper disposal into MS3s owned or operated by the City. The phone number is listed in the government section of the phone book and is available on the SPU web page. SPU maintains the hotline and responds to calls, which are left on a message system and set off a messaging system to alert responders. SC also receives complaints directly from other City departments and agencies. SC has a staff of Environmental Compliance Inspectors who respond to water quality complaints within Seattle City limits. The inspectors attempt to locate the source of the water quality problem and the responsible party, and then provide technical assistance including education on best management practices for pollution prevention and information on the Stormwater Code and Directors' Rules, and provide clean up assistance when necessary. If a spill is reported, the caller is directed by staff at the Water Quality Hotline to call the Operation Response Center (ORC) at 206-386-1800 to report the spill so that a Spill Coordinator can be dispatched immediately.

All of the complaints, regardless of the suspected cause, are responded to within three business days. The person reporting the potential violation is notified of investigation results if they leave contact information.

Water Quality Investigation data is kept in an Access database and is stored in GIS.

II.8.4.5 On-going Illicit Discharge and Illicit Connection Screening

The City has designed its on-going IDDE screening and source tracing program to meet the Permit requirement to screen 12% of the MS4 in the Permit period (2012 – 2013 Permit) and to employ a systematic approach to finding illicit discharges and illicit connections using dry weather field screening and source tracing at key locations in the MS4. Field screening is designed to identify and characterize dry-weather flows and attempt to identify pollutants which may indicate illicit discharges or connections. The dry weather field screening element attempts to find illicit discharges/connections by:

1. Prioritizing drainage basins for field screening using existing data and basin characteristics to evaluate the potential for illicit discharges and illicit connections.
2. Identifying screening parameters to use as indicators of discharges
3. Performing field screening which consists of characterization and chemical screening at key locations within selected basins

4. Conducting data review to compare screening results to trigger levels
5. Source tracing where the comparison suggests that problems exist
6. Identifying and removing sources of illicit discharges and connections when found

II.8.4.5.1 Prioritization of Drainage Basins

Drainage basins are prioritized for field screening using existing data to weight the potential for illicit discharges and illicit connections. Factors considered during prioritization include: drainage basin size, previous data collection efforts, areas of the MS4 that discharge to 303(d) listed water bodies, areas of the MS4 that discharge in the vicinity of public water access, and areas where storm drain separation projects have occurred in the past. These screening factors are tabulated and weighted by drainage basin to generate a priority list for IDDE screening.

II.8.4.5.2 Parameters of Concern

The field screening consists of visual observations, field measurements, and laboratory analysis of chemical and biological parameters to characterize flowing discharges. When flow is not present, the field screening element relies on visual observations, such as damage or staining of the MS4 infrastructure as an indication of the presence of intermittent or transitory discharges. Table II.8.1 details the parameters typically used to identify and characterize flow types and to determine if an illicit discharge or illicit connection is suspected at each sample location. Literature has indicated that these screening parameters have been useful for identifying and characterizing residential, commercial, and industrial discharges (Brown, Caraco & Pitt, 2004).

Table II.8-I IDDE Screening Parameters

Screening Parameter	Parameter Type	Trigger Parameter
Color	Field observation	Yes
Odor	Field observation	Yes
Floatables	Field observation	Yes
Turbidity	Field observation	Yes
Conductivity	Field analysis	Yes
pH	Field analysis	Yes
Temperature	Field analysis	Yes
Estimated flow	Field analysis	No
Fluoride	Laboratory analysis – SPU Water Quality Lab	Yes
Surfactants	Field analysis	Yes
Ammonia	Field analysis	Yes
Potassium	Laboratory analysis – SPU Water Quality Lab	Yes
Fecal Coliform	Laboratory analysis - SPU Water Quality Lab	Yes

II.8.5 Field Screening

The general approach to field screening is to begin at an accessible location at or near the discharge point of a drainage basin, such as an outfall, maintenance hole, ditch, or other MS4 structure. Field screening is performed at multiple key locations in most drainage basins instead of relying on one observation at the MS4 outfall. The size of the drainage basin is used to determine the number of locations screened. In large MS4 basins, key upstream maintenance holes representing major branches of the MS4 are screened to help detect discharges that may be diluted, and therefore, masked by blended flows at downstream locations.

IDDE staff are responsible for field sampling and collection of samples for laboratory analyses. Sample collection consists of grab samples of flowing water. Field screening is conducted during the summer months during dry weather conditions.

For the purposes of the IDDE program, dry weather means no more than 0.04 inches of rainfall in the preceding six-hour period, with no more than 0.02 inches of rainfall in any one hour period. If runoff can be observed entering the drainage system, samples cannot be collected, regardless of rainfall measured.

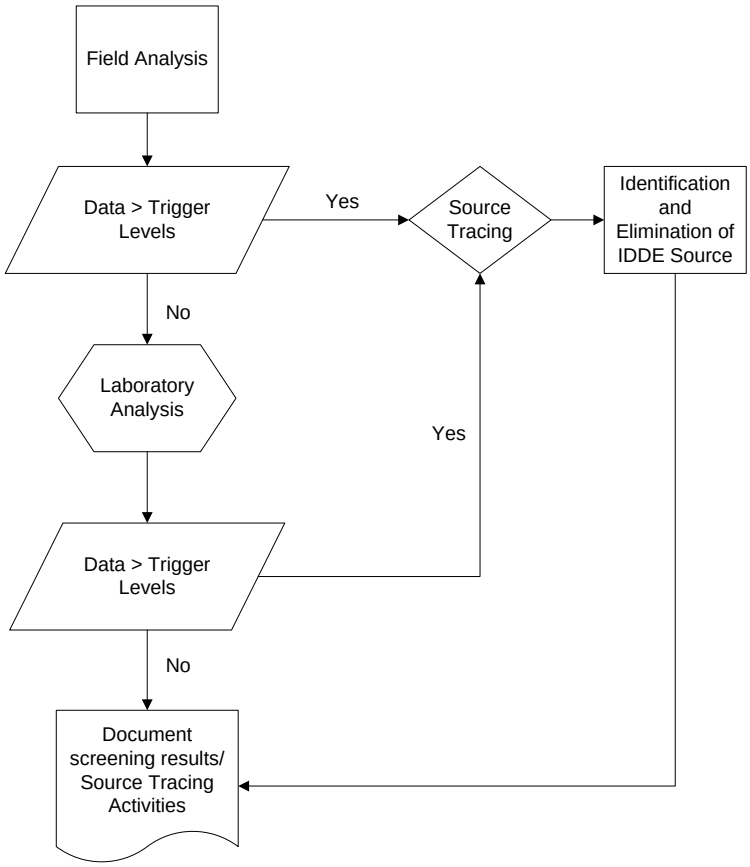
The sampling schedule must also account for tidal intrusion in areas of the City influenced by tidal flows.

The principal components of SPU's field screening element are:

- Field observations of the physical and environmental conditions at each site
- Field analyses by in-situ chemical screening
- Source tracing if illicit discharges or illicit connections are suspected based on the field observations or field analyses
- Laboratory analysis of the collected samples for the remaining chemical parameters
- Additional source tracing based on laboratory analyses

Typical field screening and source tracing procedures are shown in Figure II.8-1.

Figure II.8-1 IDDE Field Screening Flow Chart



II.8.5.1 Field Survey of Physical and Environmental Conditions

At each screening location, SC staff will document the date, time sample taken, a City specific unique asset identifier, initials of staff taking samples, sample number (which is also written on the sample bottles), field observations of the physical and environmental conditions of each field screening location (estimated flow,

color, odor, turbidity, and floatables), and field parameter values and other general information regarding screening. This information is captured and stored in a geodatabase in ArcMap using field laptops.

II.8.5.2 Chemical Screening by Field Analyses

SC staff conduct the following field analyses if flow is present: temperature, pH, conductivity, surfactants, and ammonia. This information is captured and stored in a geodatabase in ArcMap using field laptops.

II.8.5.3 Laboratory Analysis of Collected Samples

The data review process involves comparing all of the screening parameters from field observations and field analyses to the trigger levels to verify that source tracing has been initiated for all results over the trigger levels. In some instances, source tracing may be recommended after the data review process when the screening results are not over the trigger levels but the data suggest the potential for an illicit discharge or connection.

II.8.6 Source Tracing

Source tracing in response to a field observation or analysis is initiated when one or more of the trigger levels for parameters listed in Table II.8.1 have been reached. Many of the MS4 maintenance holes in the City of Seattle have several inlets; therefore several samples may be taken at each location which can result in detection of multiple triggers. Thus, source tracing is prioritized based on public health and safety. For instance, flows with elevated fecal coliform values are prioritized over flows with elevated fluoride values as fecal coliform is an indicator of sewage which has the potential to be a public health risk. Additional source tracing based upon laboratory analysis of samples follows the same process as detailed in the field analysis section. However, rather than beginning immediately, tracing will generally occur within 3 days after receiving and reviewing laboratory results.

Occasionally, source tracing a specific trigger, such as conductivity, does not lead to an obvious pollution source, and SC field staff have reason to believe the trigger source is from a natural occurrence. In these instances the surrounding area will be investigated visually for any potential pollution source(s), and field and lab data will be carefully reviewed to identify the most likely cause of the trigger to be natural. In some cases there may be outstanding triggers as the IDDE dry field season ends. In these instances, field staff will review the field and laboratory data to assess each individual trigger in relation to public health and safety. Triggers suspected to be a potential severe threat to human health or the environment will be investigated further into the wet season following 'dry weather' conditions: maximum of 0.04 inches of rainfall in the preceding six-hour period, with no more than 0.02 inches of rainfall in any one hour period. Techniques such as closed circuit television (CCTV), smoke testing, and basic source tracing (i.e. visual observations, odor etc.) may be used to trace and locate sources.

II.8.6.1 Response to Illicit Connections

Illicit connections are considered a top priority complaint and are most often responded to the same business day or within 24 hours. It is a SC policy to notify Ecology within 24 hours of a discovery of an illicit connection, regardless of the threat potential. Ecology is contacted immediately if an illicit connection presents a severe threat to human health or the environment. The contact date, time and Environmental Response Tracking System (ERTS) number assigned are recorded on the SPU Complaint Inspection form and tracked in the SC database. SC uses progressive enforcement tools to eliminate all illicit connections within 6 months.

II.8.6.2 Emergency Response

Spill response at the City is handled by a variety of departments dependent on the source and type of spill. This is part of the City's procedure to investigate and respond to spills, improper disposal and illegal dumping into MS3s owned or operated by the City. SPU is responsible for response to spills that have the potential to enter, or have entered the City's MS4. In cases where a City Department other than SPU responds and cleans up a spill, the Department's procedures direct them to notify SPU of all spills that enter or have the potential to enter the MS4.

The SPU Spill Response Program is staffed by a Senior Spill Coordinator and a network of on-call Spill Coordinators. Spill Coordinators work in shifts and are available 24 hrs/ 7 days week. The Spill Coordinator is responsible for responding to the spill, coordinating cleanup and filing a report form to the Senior Spill Coordinator.

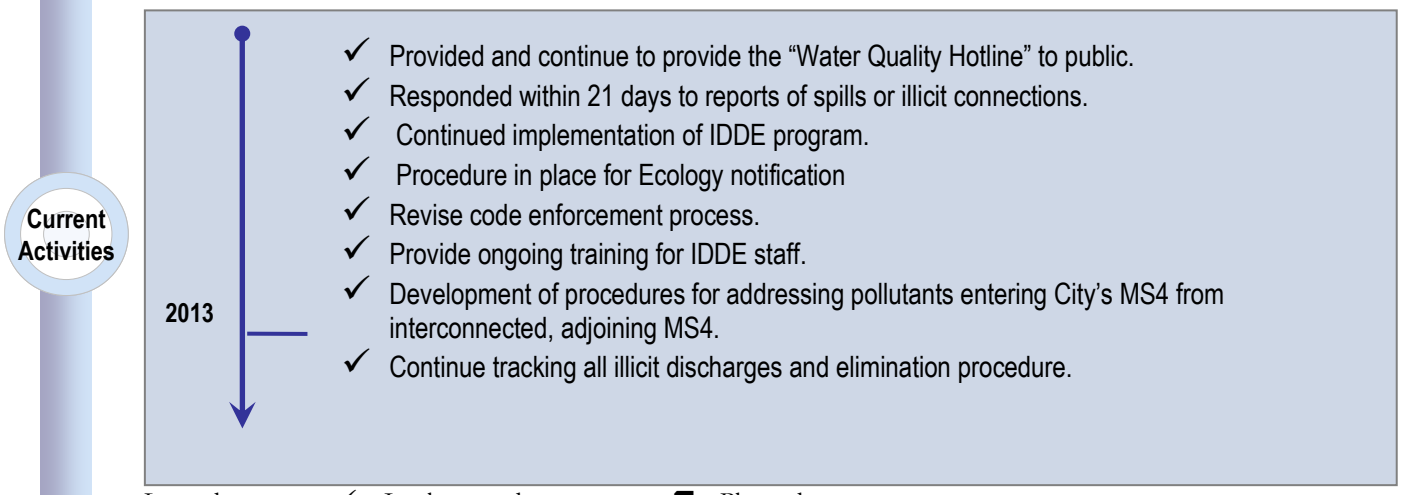
Spill response calls are dispatched through the SPU Operations Response Center (ORC) and are received via a publicly available phone number (206-386-1800). Once a spill call is received, the Dispatcher contacts the SPU on-call Spill Coordinator and advises them of the situation.

Spill Coordinators follow written procedures for investigation, clean up and reporting to appropriate agencies. Spill Response Guidelines were established by SPU in 2000, revised in 2008, and cover spill classifications, training requirements, safety procedures, documentation, disposal, interagency cooperation and regulatory notification.

II.8.6.3 Record Tracking

Enforcement actions are tracked both in the SC database and electronically in a separate folder on the City network. All enforcement documentation, inspection reports, warning letters, notices of violations, and other enforcement records are kept on file. SPU utilizes its progressive enforcement procedures in situations where a spill has occurred.

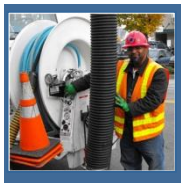
Figure II.8-2 Timeline Showing Progress and Next Steps



Legend: ✓ Implemented ❒ Planned

For More Information

- Water Quality Hotline: 206-684-7587
- Report a Spill - SPU Operations Control Center: 206-386-1800
- Water Quality Hotline information and online form: http://www.seattle.gov/util/myservices/drainagesewer/pollutioncontrol/surfacewaterqualityinvestigations/
- For information on the IDDE: http://www.seattle.gov/util/myservices/drainagesewer/pollutioncontrol/dryweatherscreening/
- For information on the Spill Response Program: http://www.seattle.gov/util/myservices/drainagesewer/pollutioncontrol/spillresponse/
- For general questions about this SWMP or more information about this section, email swmp@seattle.gov or visit http://www.seattle.gov/util/myservices/drainagesewer/aboutthedrainagesewersystem/stormwatermanagementplan/



II.9 Operation and Maintenance-S5C.9

II.9.1 Requirements

The Permit (Section S5.C.9) requires the City to develop and implement an operations and maintenance (O&M) program to reduce stormwater impacts associated with the City's municipal separate stormwater system and regulate municipal operations and maintenance activities in areas served by the City's MS3. The minimum performance measures include the following areas with more detailed requirements included in the Permit text:

- Implement maintenance standards for facilities that are as protective, or more protective, of facility function than those specified in Chapter 4 of Volume V of the 2005 Stormwater Management Manual for Western Washington (Ecology, 2005).
- Implement ordinances or other enforceable documents to require maintenance of existing permanent stormwater facilities regulated by the City. Establish an initial and ongoing inspection program for stormwater facilities and catch basins regulated by the City.
- Implement an inspection schedule for all known, permanent stormwater treatment and flow control facilities (other than catch basins) regulated by the City to enforce compliance with adopted maintenance standards as needed based on the inspection.
- Implement an on-going inspection schedule to annually inspect all stormwater treatment and flow control facilities (other than catch basins) regulated by the City.
- Manage maintenance activities to inspect all new permanent stormwater treatment and flow control facilities, including catch basins, in new residential development every 6 months during the period of heaviest construction to identify maintenance needs and enforce compliance.
- Require cleaning of catch basins regulated by the City if found to be out of compliance during source control or IDDE program activities or if part of treatment or flow control system inspected under this O&M program.
- Implement an inspection process for all permanent stormwater facilities owned or operated by the City. Conduct spot checks of potentially damaged stormwater facilities after storm events. Conduct repairs or maintenance actions in compliance with maintenance standards.
- Implement a program to annually inspect all catch basins and inlets owned or operated by the City.
- Maintain records of inspections and repair activities conducted by the City.
- Establish and implement processes and procedures to reduce stormwater impacts associated with runoff from municipal operation and maintenance activities including but not limited to streets, parking lots, roads or highways owned or maintained by the City, and to reduce pollutants in discharges from all lands owned or maintained by the City.
- Train employees who have primary construction, operations or maintenance job functions that could impact stormwater quality. Track and maintain training records.

- Develop and implement SWPPPs for all heavy equipment maintenance or storage yards, and material storage facilities owned or operated by the City in areas covered by the Permit that are not covered by another Ecology-issued stormwater discharge permit.

II.9.2 O&M Program

The City's municipal stormwater permit-related O&M program is comprised of the activities outlined below.

II.9.3 Responsible City Departments

SPU is responsible for operation and maintenance of stormwater facilities owned, operated or maintained by the City and located in the right of way and for conducting inspections of private stormwater facilities to determine that those stormwater facilities meet operation and maintenance standards. Other City Departments, SDOT, FAS, Parks, and SCL are responsible for operation and maintenance of stormwater facilities and implementation of operation and maintenance policies and procedures specific to the properties they manage.

II.9.4 Current and Planned Activities

The following sections outline completed or planned activities needed to meet the key Permit requirements.

II.9.4.1 Maintenance Standards

The City has a program based on maintenance standards in place to reduce stormwater impacts associated with runoff from impervious surfaces and operation and maintenance of stormwater facilities that discharge to the City's MS4. This program follows the current Stormwater Code (2009) and the current Director's Rule DR 17-2009, SPU 2009-005, Vol. III - Stormwater Flow Control and Water Quality Treatment Technical Requirements Manual, Appendix D of Vol. III outlines inspection, maintenance, and record keeping requirements for stormwater management facilities, both public and private, in the City. In some cases, the City owns or operates facilities with site-specific maintenance requirements that require facility-specific maintenance standards. For these situations the City has developed facility specific standard operating procedures that incorporate the inspection and maintenance requirements of Appendix D as well as detailed information such as the location and access restrictions of facilities, necessary equipment, safety procedures and maintenance procedures.

II.9.4.2 Maintenance Standards for Private Stormwater Facilities Regulated by the City

The SC group at SPU is responsible for inspecting private facilities regulated by the City, based on maintenance standards established by the City in the Stormwater Code and DR 17-2009, SPU 2009-005, Vol. III - Stormwater Flow Control and Water Quality Treatment Technical Requirements Manual. During a facility inspection, all aspects of the system are inspected (e.g., flow control devices, catch basins). When any part of that system (including catch basins) is found to be out of compliance with Stormwater Code requirements for maintenance, a corrective action letter is sent to the facility owner, and the owner must certify that the work has been completed to correct the noncompliance.

SPU and other City departments have revised the public and private facility maintenance programs to reflect the new requirements of the Permit and revised Stormwater Code.

There are approximately 1,800 privately-owned water quality and flow control facilities regulated by the City (hereafter in this subsection, "facilities") that drain to the City's MS3s, and up to 250 are added each year due to new development or redevelopment requirements. Maintenance standards for private stormwater facilities regulated by the City Stormwater Code are defined and described in Appendix D of the 2009 DR 17-2009,

SPU 2009-005, Vol. III - Stormwater Flow Control and Water Quality Treatment Technical Requirements Manual. The Directors' Rule provides a summary of the inspection and maintenance requirements. The inspection and maintenance requirements include information about what features to inspect at each facility, when and how often these private systems should be inspected, and how to identify specific defects that warrant corrective action. Corrective actions are described that should be taken to maintain system performance.

The permit requires that the City implements an ongoing inspection schedule to annually inspect all stormwater treatment and flow control facilities (other than catch basins) regulated by the City in areas that drain to the City's MS3s. To comply with this requirement, SPU conducted a study during 2010 of private stormwater facility compliance to evaluate whether there would be sufficient justification to reduce the frequency of inspections of private storm water facilities from the level specified in the permit (annually starting in 2012). The study was completed, and the results support a change in the inspection frequency of private stormwater facilities.

Starting on January 1, 2012, SPU changed the inspection frequency for all private stormwater facilities that discharge to the City of Seattle's MS4 to once every two years. However, if SPU receives a complaint about a private stormwater facility via its Water Quality Hotline or SPU determines during a Source Control Inspection that a site's stormwater facility is out of compliance, SPU will use progressive enforcement to bring the private stormwater facility into compliance with the City ordinances and rules.

II.9.4.3 Maintenance of Catch Basins Owned or Operated by the Permittee

SPU has continued its catch basin maintenance and inspection program that focuses on maintaining catch basins for public health, safety and property and by nature includes water quality benefits. Staff implemented a catch basin inspection and maintenance program to meet Permit requirements. FAS, SCL and Parks each continue to implement programs for catch basin inspection and maintenance for catch basins on City owned properties that the department manages or operates.

II.9.4.4 Inspection and Maintenance of Private Stormwater Facilities

The SC group at SPU is responsible for inspections of privately owned stormwater flow control and treatment facilities that drain to the City's MS4. The inspection determines that the system functions as designed and is properly maintained. Inspectors conduct a site inspection and inform the owner of the stormwater facility of the required maintenance. SC uses the progressive enforcement process as detailed in DR 18-2009, SPU 2009-006, Vol. 4: Stormwater Code Enforcement Manual. SC has developed an alternative inspection schedule as provided in S5. C.9.b.ii.3., which results in each system being inspected every 2 years effective September 1, 2013. The one-year permit is effective until September 1, 2013, and 28.6% (440 facilities) of the private stormwater facilities will be inspected during the Permit term. Facility owners may self certify that the work needed for compliance has been completed by providing a signed copy of the corrective action letter with a copy of the work detail performed. SC performs random re-inspections of self-certified properties to for quality control of this process.

DPD is responsible for conducting inspections of private stormwater facilities in new development and during the period of heaviest construction to identify maintenance needs and enforcing compliance as needed. DPD is incorporating this requirement into the inspection process described in Section II.5.4.3.2.

II.9.4.5 Inspection and Maintenance of City-Owned Stormwater Facilities

SPU has asset managers that schedule and coordinate inspection and maintenance of conventional and innovative (e.g., Green Stormwater Infrastructure (GSI)) stormwater facilities owned or operated by the City on an annual basis and following 10-year 24-hour storm events. The Field Operations and Maintenance Division (FOM) at SPU is responsible for the actual inspection and maintenance of stormwater facilities

located in the right-of-way and owned, operated or maintained SPU. Stormwater facilities owned by the City, but located outside of the right-of-way, are inspected and maintained by the City Department that manages the property unless there is an agreement between SPU and the City Department.

SPU and the other City Departments have developed and implemented an inspection program to annually inspect all permanent stormwater facilities owned or operated by the City. The program is designed to determine if maintenance is needed and implement the needed maintenance in accordance to the Directors' Rules or a facility-specific maintenance standard.

II.9.4.6 Records of Inspections, Maintenance, or Repair

II.9.4.6.1 Private Stormwater Facilities

The SC group tracks private facility inspection and enforcement records through a Microsoft Access database and file management system. The database tracks information for both source control inspections and drainage system maintenance inspections. Records are managed in accordance with the State record keeping requirements. Enforcement actions are tracked both in the database and electronically in a separate folder on the City network. Any enforcement paperwork is kept with the file.

II.9.4.6.2 City-Owned Stormwater Facilities

SPU has asset managers that oversee inspection and maintenance of conventional and innovative (e.g., GSI) facilities for which SPU is responsible. The asset managers track inspection data and facilitate maintenance as needed following the applicable maintenance standard.

Inspection and maintenance of stormwater facilities for which SPU is responsible are tracked by the computer program MAXIMO at SPU. This program is used to generate work orders for facility inspections and maintenance and to record the results of these activities. The other City Departments use a variety of methods to record inspections and maintenance results.

II.9.4.7 Stormwater Practices to Reduce Impacts Associated with Parking Lots, Streets, and Roads

The City's Stormwater Code and Volume 1 and 2 of the Directors' Rules establish practices to reduce the stormwater impacts associated with parking lots, streets and roads owned or operated by the City and that drain to the City's MS3s.

In addition to the Stormwater Code, the SDOT has established and has implemented practices to reduce stormwater impacts associated with runoff from City road maintenance activities through the use of Maintenance Management System Performance Sheets that reference BMPs and elements of the Regional Road Maintenance initiative.

Parks, FAS and SCL follow the Stormwater Codes and Directors' Rules in place for management of stormwater from roads and parking lots under their departments' management outside the City rights of way. The departments follow the Stormwater Code and use appropriate BMPs when they conduct construction and maintenance activities on or near streets, parking lots and roads. City managed capital projects are inspected for Stormwater Code compliance and BMPs by the responsible department. The individual City Departments have implemented and will continue to implement a spill program and provide training on spill and source control.

II.9.4.8 Policies and Procedures to Reduce Pollutants from City-Owned or Maintained Lands

The Stormwater Code (2009) and DR 15-2009, SPU 2009-003, Vol. I - Source Control Technical Requirements Manual, presents approved methods, criteria, details, and general guidance for controlling pollutants at their source and establishes policies and procedures to reduce pollutants in discharges from lands owned or maintained by the City that drain to the City's MS3s. The Office of Sustainability and Environment (OSE) collaborates with City agencies to protect and enhance Seattle's distinctive environmental quality and livability. For example OSE has established a Pesticide Reduction Program for the City. This program has two main goals: (1) to eliminate the use of the most potentially hazardous herbicides and insecticides and (2) to achieve a 30 percent reduction in overall pesticide use by City departments.

The following policies and procedures have been established by OSE and are implemented by the City Departments.

Integrated Pest Management

Policies for addressing application of fertilizer, pesticides and herbicides are addressed under BMP 20: Landscaping and Lawn and Vegetation Management in DR 15-2009, SPU 2009-003, Vol. I - Source Control Technical Requirements Manual, which requires the development of an integrated pest management (IPM) program that, at a minimum, includes the requirements outlined in Appendix B of DR 15-2009, SPU 2009-003, Example of Integrated Pest Management Program and Plan.

Environmental Management Program Chemical Use Policy

The purpose of this policy is to establish a chemical use program to provide for consistent evaluation of hazardous materials used by City employees, to phase out products that pose human health or environmental risks, and to promote the use of non-hazardous alternatives by the City that are protective of human health and the environment (Seattle, 2008e).

Landscape and Grounds Management Policy

The purpose of this policy is to establish that City landscapes are designed, constructed, and maintained in a manner that protects and enhances our region's natural resources and public health; that City landscapes are models of environmental stewardship in the eyes of the public; that the City establishes a leadership role in developing both aesthetically pleasing and ecologically sensitive landscapes; and that there is a consistent standard of environmental stewardship observed by City departments managing landscapes and other grounds (Seattle, 2008e).

Landscape and Grounds Management Guidelines

The guidelines are intended to provide a framework for environmental responsibility in how the City plans, designs, constructs, commissions, manages, and maintains parks, rights of way, and other landscaped areas. The focus of the guidelines is on environmental stewardship of City-owned lands.

The SDOT's Street Use and Urban Forestry Division limits the use of fertilizers, pesticides and herbicides in accordance with City policies and procedures. This division also has policies and procedure in place to address erosion and sediment control, landscape maintenance, and vegetation disposal on lands owned and maintained by SDOT. Urban Forestry uses Resource-efficient Natural Landscaping: Design – Build – Maintain (Seattle, 2007a), as a BMP reference. These practices will continue in 2013 and into the future.

Parks operates under City regulations, policies and procedures including but not limited to the Stormwater Code, Parks BMPs for Landscape Horticulture and Forestry (Seattle, 2000a) and the Seattle Biological Evaluation BMPs (Seattle, 2007b). Parks has an active Integrated Pest Management program to control and

reduce pesticide use. Parks has been maintaining 14 parks without the use of any pesticides since 2001. The program is expanding to include eight more parks and about 25 more acres, for a total of 22 parks and about 50 acres.

Trash Management

Policies for addressing trash management are addressed under Citywide BMP 3: Dispose of Fluids and Wastes Properly and Citywide BMP 4: Proper Storage of Solid Wastes in DR 15-2009, SPU 2009-003, Vol. I - Source Control Technical Requirements Manual.

Building Exterior Cleaning and Maintenance

Policies for addressing Building Exterior Cleaning and Maintenance are addressed under BMP 9: Washing, Pressure Washing, and Steam Cleaning of Vehicles, Equipment and Buildings in DR 15-2009, SPU 2009-003, Vol. I - Source Control Technical Requirements Manual.

II.9.4.9 Training Program

The City has developed and implemented the "Water Rules!" Federal and State permit training, for workers who work on projects that may impact water bodies, which includes employees of the City who have primary construction, operations or maintenance job functions that could impact stormwater quality. This training, first offered in 2008, includes information on BMPs for construction and operation and maintenance projects. A DVD on this training has been developed to provide opportunities for on-going training. DPD provides training to City Staff on temporary erosion and sediment control (TESC).

SDOT Street Maintenance employees receive stormwater BMP training for their work and are provided with stormwater BMP reference manuals. Fourteen separate field manuals provide information in the field for implementation of appropriate stormwater BMPs.

SPU, SDOT, Parks, FAS and SCL all have spill prevention training and source control training in place. These departments are evaluating their existing training and updating as needed to comply with the Permit.

II.9.4.10 Stormwater Pollution Prevention Plans

An umbrella SWPPP that includes operational BMPs that meet the Stormwater Code and Directors' Rules has been developed and then customized for each facility to include site specific requirements and structural BMPs. The SWPPPs have been implemented and will be revised as needed.

Figure II.9-1 Timeline Showing Progress and Next Steps

Current Activities

2013

- ✓ Inspect permanent treatment and flow control facilities in new residential development every 6 months during heaviest construction.
- ✓ Continue implementing annual maintenance and inspection program for City-owned permanent treatment and flow control facilities.
- ✓ Continue implementing spot check program for City-owned permanent treatment and flow control facilities following large storms.
- ✓ Continue implementing program to annually inspect City-owned catch basins.
- ✓ Continue implementing ongoing inspection schedule to annually inspect private treatment and flow control facilities.
- ✓ Continue implementing SWPPPs for City-owned equipment maintenance or storage yards and material storage facilities.

Legend: ✓ Implemented ❒ Planned

For More Information

- **Private Stormwater Facility Inspections:** http://www.seattle.gov/util/services/drainage_&_sewer/pollutioncontrol/inspections/privateinspections/
- **Office of Sustainability and Environment:** http://www.seattle.gov/environment/
- For general questions about this SWMP or more information about this section, email swmp@seattle.gov or visit http://www.seattle.gov/util/myservices/drainagesewer/aboutthedrainagesewersystem/stormwatermanagementplan/

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II.10 Education and Outreach-S5C.10

II.10.1 Requirements

The Permit (Section S5.C.10) requires the City to perform the following minimum performance measures:

- Implement or participate in an education and outreach program that uses a variety of methods to target the audiences to educate them to help reduce or eliminate behaviors and practices that cause or contribute to adverse stormwater impacts.
- Have program elements designed to measure understanding and adoption of the targeted behaviors for at least one targeted audience in at least one subject area. Use this information to direct education and outreach resources most effectively and evaluate changes in adoption of targeted behaviors.
- Track and maintain records of public education and outreach activities.

II.10.2 Education and Outreach Program

The City is using a variety of educational programs (Table III.10-1) to engage the citizens of Seattle in source control and stormwater management. These programs provide educational materials, instruction or designs that citizens can use at their home, business or in the community at large. The City uses community based social marketing approaches (CBSM) to evaluate the audiences' understanding of how their actions can have negative impacts on stormwater and how they can take an active role in the improvement of stormwater quality. The evaluations are used to direct education and outreach programs most effectively and to evaluate changes in the audiences' adoption of the target behavior.

II.10.3 Education and Outreach Tracking

The June 17, 2009 permit modification changed the requirement that each of the programs in place or being developed for the Education and Outreach requirements of the permit has or will have a mechanism in place to track and maintain records of the City's public education activities to requiring the City to implement or participate in an effort to measure understanding and adoption of the targeted behaviors for at least one targeted audience in at least one subject area.

II.10.4 Responsible City Departments

SPU is the lead department for implementation of the education and outreach programs for Permit compliance. Several programs have cooperative elements in other departments.

II.10.5 Current and Planned Activities

The City has conducted and will be conducting the activities outlined in Table III.10-1 and described in the following sections for each target audience.

Table II.10-I Education and Outreach Activities

Audience	Target Behavior/Practice		City Education and Outreach Program
General Public	General Impacts of Stormwater		Restore Our Waters (ROW) Community and Youth Programs
	Impacts of Impervious Surfaces		
	Source Control BMPs	Pet Waste	Doo Diligence - Pet Waste Program
		Vehicle Maintenance	Auto Maintenance Program (AMP)
		Landscaping/Buffers	Natural Soil Building Program (NSB) & reLeaf
General Public and Businesses including Mobile	Chemical Storage BMPs	Spills	Spill Kits
		Car Wash Soap	AMP & Car Wash Program
		Cleaning Supplies	STORM/Puget Sound Starts Here and Resource Venture
		Automotive Products	AMP and Spill Kits
		Illicit Discharges	Water Quality Hotline
Homeowners, Landscapers and Property Managers	Yard care Techniques		Green Gardening Program & NSB
	BMPs for Storage of Pesticides and Fertilizers		
	BMPs for Carpet Care		Resource Venture
	BMPs for Auto Repair and Maintenance		AMP
	Low Impact Development		RainWise
	Stormwater Treatment and Flow Control		
Engineers, Contractors, Developers, Review Staff, and Land Use Planners	Technical Standards for Stormwater Site and Erosion Control Plans		Stormwater Construction Control Plans, and On-The-Job (OJT) Training,
	Low Impact Development		Natural Landscaping Professional Development (NLPD)

II.10.5.1 Audience: General Public

II.10.5.1.1 Restore Our Waters (ROW) Community and Youth Programs

Seattle Public Utilities' Restore Our Waters program (ROW) includes a variety of education and outreach elements targeted at adult and community audiences as well as a robust youth program for K-12 audiences. These programs educate the general public about the impacts of storm water flows into surface waters and the impacts associated with impervious surfaces.

The Urban Watershed School Program is a K-12 program conducted via a partnership between SPU, Seattle Parks and Seattle Public Schools and includes teacher training, stormwater lessons and materials, and an urban creek field trip program. The program is linked closely with school science curriculum and includes community service activities and lesson extensions that disseminate stormwater BMPs into the adult community. Outcomes are measured through teacher evaluations. This program reaches a diverse geographic audience in the City and engages the public in hands-on learning.

In addition, ROW community outreach and education programs engage the public in stewardship and educational activities to promote social and environmental values, encourage behavior change, and build capacity around stormwater BMPs and projects. These programs are audience focused and include direct education, social marketing, partnerships, inclusive engagement and personal stewardship strategies to promote water quality and watershed health. Examples include: Annual Watershed Forum, public tours of creek watersheds and stormwater projects, printed materials, Stormwater Jeopardy, Enews, social media and website, storm drain markers and stenciling programs, beverage coasters, Salmon Watcher and Salmon Steward programs, watershed community advisory councils, Green Infrastructure Partnership (a collaborative GSI forum), public events and festival participation.

II.10.5.1.2 Doo Diligence Pet Waste Program

Doo Diligence is a City-wide outreach program that promotes and educates the general public about the impacts of pet waste on water quality. In 2013 the program will continue to provide tools, educational materials, and resources to the general public that promote the adoption of source control BMP's. The Doo Diligence pet waste program will support more than 50 pet waste dispenser locations. A map of dispenser locations will be posted on the Doo Diligence web page and outreach materials will be distributed with pet licenses. The program will maintain strong partnerships with Block Watch organizations, Neighborhood Community Councils, Seattle Animal Control, Seattle Parks and Recreation, and King County.

II.10.5.1.3 Auto Maintenance Program (AMP)

The Automotive Maintenance program educates the general public about BMPs for the source control and storage of products related to vehicle maintenance. In 2013, AMP will seek to educate more residents about the impacts of vehicle fluids on stormwater quality through continued training programs and a targeted media outreach campaign. The program, funded through a grant with WA Department of Ecology, will include approximately 98 trainings over the two-year grant period (mid-2012 through mid-2014), with a large percentage of those occurring in 2013. In addition, SPU in partnership with King County, WA Department of Ecology and others will develop and implement a targeted media campaign in April 2013 focused on educating residents about the impacts of vehicle leaks and actions they can take to reduce their impact on the Puget Sound.

II.10.5.1.4 Natural Soil Building (NSB)

The Natural Soil Building (NSB) program educates homeowners, landscapers and property managers about yard care techniques protective of water quality. This program is targeted at the residential gardening public to increase adoption of natural yard care practices. The NSB Program has two components: the Master Composter Soil Builder volunteer training and outreach program, and the Garden Hotline (which answers phone and email requests, and also conducts classes especially for underserved and ESL audiences). The NSB program conducts outreach on natural yard care (including pesticide and fertilizer reduction) and also on RainWise (see section II.10.5.3.5) techniques for residents, property owners and landscape professionals. In 2013, additional outreach will be focused on ESL, immigrant, and underserved residents King County-wide.

II.10.5.1.5 Seattle reLeaf

The Seattle reLeaf program focuses on increasing forest cover on private property. reLeaf targets residents with education and outreach on environmental stewardship, and actions and opportunities to implement BMPs related to landscaping and buffers. reLeaf's Trees for Neighborhoods project enables Seattle residents to plant appropriate trees in yards and along streets. One thousand free trees are available in the fall. Program participants also receive free watering bags, training in proper planting and care, ongoing watering reminders and tree care support. reLeaf"s Tree Ambassador project engages Seattle residents as local leaders in urban forest stewardship. Tree Ambassadors create community stewardship events in their neighborhoods such as public tours of community trees, mulching and tree care workdays, and attend local neighborhood events to answer urban forestry related questions.

II.10.5.2 Audience: General Public and Business

II.10.5.2.1 Spill Kits

To supplement inspections and provide outreach to small businesses, SPU funds Resource Venture, a free resource conservation program for Seattle businesses, currently being implemented by Cascadia Consulting, under contract with SPU[1]. Under this contract, Resource Venture provides supplemental site specific technical assistance to businesses, develops targeted outreach materials in multiple languages, organizes and hosts industry-specific stormwater pollution prevention workshops, and implements SPU's Spill Kit Incentive Program, which provides free spill kits and assistance in developing a spill plan. Since its inception in 2005, SPU and Resource Venture have reached over 1,000 Seattle businesses that have created spill plans and received free spill kits. The spill kit program is promoted on the web and during inspections.

[1] The Resource Venture contract is administered by Cascadia Consulting, but also subcontracts to ECOSS (Environmental Coalition of South Seattle) and Herrera Consulting are sub-contractors. The technical assistance provided by these three companies is available through the Resource Venture Contract.

Resources and information on use and storage of automotive chemicals, hazardous cleaning supplies, carwash soaps and other hazardous materials are provided directly to the general public and business owners to help reduce behaviors that cause or contribute to adverse stormwater impacts.

II.10.5.2.2 Auto Maintenance Program (AMP)

Please see description for this program in Section II.10.5.1.3.

II.10.5.2.3 Car Wash Program

The Car Wash Program targets the general public with information and resources to reduce the adverse water quality impacts of car washing activities and provide environmentally safe alternatives. Outreach to fundraising groups in 2013 will direct them to the Brown Bear/ Puget Sound Car Wash Association's (PSCWA) ticket-based fundraising program and to host sites where car wash fundraisers can occur without negatively impacting water quality. Outreach will also be conducted to illicit car wash fundraising sites (locations that drain to the City's MS3s) to encourage these locations to sunset their practices of hosting carwash fundraisers on-site. The do-it-yourself car wash audience will be reached with joint messaging and outreach through SPU's Automotive Maintenance Program. In addition, PSCWA and Brown Bear Car Wash coupons will be provided for individual residents through SPU direct mail publications such as utility bill inserts.

In 2013, the Car Wash Program will review the effectiveness of current efforts and determine if host sites are the most appropriate BMP for charity car washes.

II.10.5.2.4 STORM/ Puget Sound Starts Here Campaign (PSSH)

The City of Seattle participates in STORM (Stormwater Outreach for Regional Municipalities) and the Puget Sound Starts Here (PSSH) regional campaign that focuses on stormwater BMPs for cars, pets, yard care and home cleaning. The Campaign includes a website and additional media with information to education the general public about impacts of individual behaviors on stormwater and alternatives. The Campaign reaches a substantial audience in Seattle and includes mechanisms to evaluate the impact of the program. Seattle Public Utilities supports STORM as a participating member of the Core Team and the local Stormwater Outreach Group. SPU staff also share resources and information with other STORM members individually and through formal presentations at meetings.

II.10.5.2.5 Resource Venture

Please see description for this program in Section II.10.5.3.3.

II.10.5.2.6 Water Quality Hotline

The City staffs a 24-hour Water Quality Hotline to allow citizens and businesses to report illicit discharges, illegal dumping, and spills into the MS4. Violators receive education and technical assistance to help address violations voluntarily; non-compliance can potentially result in legal action. This BMP provides a mechanism for the public to take an active role in stormwater pollution prevention and help the City increase awareness of activities that have negative impacts on stormwater. The Water Quality Hotline is promoted mainly to residents. Outreach to the public includes stickers, magnets and creek-watershed newsletters. Calls are tracked and resolution information is recorded to evaluate changes in program performance.

II.10.5.3 Audience: Homeowners, Landscapers, and Property Managers

II.10.5.3.1 Green Gardening Program

The Green Gardening program targets nursery staff, landscape maintenance professionals and horticulture students to increase understanding and reduce the impacts of landscaping practices on water quality. In 2013,

the program will continue to outreach to underserved populations, offering classes to English as a Second Language (ESL) landscape maintenance professionals, and to increase its reach to medium and large private landscape companies. The program will also seek to increase partnership with horticulture academic and research staff in universities.

II.10.5.3.2 Natural Soil Building

Please see description of this program in II.10.5.1.4

II.10.5.3.3 Resource Venture

To supplement inspections and provide outreach to small businesses, SPU funds Resource Venture, a free resource conservation program for Seattle businesses, currently being implemented by Cascadia Consulting, under contract with SPU[2]. Under this contract, Resource Venture provides supplemental site specific technical assistance to businesses, develops targeted outreach materials in multiple languages, organizes and hosts industry-specific stormwater pollution prevention workshops. Resources and information on use and storage of chemicals, hazardous cleaning supplies and other hazardous materials are provided directly to the general public and property managers to help reduce behaviors that cause or contribute to adverse stormwater impacts.

II.10.5.3.4 Auto Maintenance Program (AMP)

Please see description for this program in Section II.10.5.1.3.

II.10.5.3.5 RainWise

The RainWise program provides education to the general public, homeowners, landscapers and property managers about low impact development techniques, including site design, pervious paving, retention and expansion of existing vegetation, and installation of rain gardens and cisterns within City of Seattle MS4 areas. This program provides education and outreach on how to slow, spread, filter and infiltrate stormwater. The program will implement the following educational/technical elements to raise awareness about Green Stormwater Infrastructure (GSI), including stormwater treatment and flow control:

- SPU will post rain garden designs, plant lists and maintenance guidelines that can be downloaded from the internet. The RainWise program provides information and brochures on various GSI techniques on our website (www.seattle.gov/util/rainwise) as well as in hardcopy.
- RainWise Tools (www.rainwise.seattle.gov) is an internet-based education, recruitment, tracking and marketplace outreach tool that helps educate property owners about GSI techniques they can use on their property.
- SPU will hold rain garden construction training workshops to the landscape contractor community.
- School and community demonstration rain gardens and cisterns will be installed at target locations throughout the city.

[2] The Resource Venture contract is administered by Cascadia Consulting, but also subcontracts to ECOSS (Environmental Coalition of South Seattle) and Herrera Consulting as sub-contractors of the contract. The utilization of these 3 companies is available through the Resource Venture Contract.

II.10.5.4 Audience: Engineers, Contractors, Developers, Review Staff and Land Use Planners.

II.10.5.4.1 Temporary Erosion and Sediment Control / Stormwater Construction Control (SWCC)

DPD and SDOT have revised the temporary erosion and sediment control (TESC) training that is provided to City staff and the public involved in ground disturbing activities to reflect the changes in the 2009 Stormwater Code. This new training, called stormwater construction controls (SWCC), is offered to City staff and the public on a regular basis or as needed.

II.10.5.4.2 City Wide Training

The City trained staff who are engineers, review staff and land use planners at a City wide training held in spring 2010. City Staff received training on the revised draft Stormwater Code and Directors' Rules including technical standards for stormwater site and erosion control plans, LID techniques, and stormwater and flow control BMPs. On-going training on this subject is being developed so that existing employees can refresh their knowledge and new employees can be properly trained.

II.10.5.4.3 On the Job Training

All Departments within the City engage in on the job training to insure that staff members are current on policies, procedures, rules and requirements related to the management of stormwater. This training can take the form of classroom, informal meeting, and tailgate session. In addition, the City encourages employees to attend professional development training related to their business area.

II.10.5.4.4 Natural Landscaping Professional Development

This program is a series of well attended professional workshops focused on low impact development (LID) techniques including: sustainable site design, soil BMPs and retention of native vegetation, plant selection and maintenance options that reduce pesticide and fertilizer use, and Natural Drainage/LID strategies for on-site stormwater management, stormwater treatment and flow control. These workshops address the following subjects: technical standards and implementation of stormwater codes, construction site erosion and sediment control plans and methods, long term site BMPs for soil preservation, and restoration specified in Seattle's code and the State Stormwater Manual.

These workshops specifically target engineers, design professionals, landscape contractors (including Spanish-speakers), developers, builders, and land use planners. The program is built on extensive barriers and opportunities surveys and focus group work with these professionals and customers. Participants fill out in-class evaluations to measure their understanding, and identify (pledge) the actions they intend to take as a result of the training.

Figure II.10-1 Timeline Showing Progress and Next Steps

Current Activities

2013

- ✓ Implement public education and outreach program.
- ✓ Track and maintain records of public education activities.
- ✓ Continue implementation of Education and Outreach program and use results of measurements of participant understanding to direct education and outreach resources and evaluate changes in adoption of targeted behaviors.

Legend: ✓ Implemented ❒ Planned

For More Information

- For more information on Restore Our Waters visit: http://www.seattle.gov/util/environmentconservation/ourwatersheds/restoreourwaters/
- For more information on the Doo Diligence Pest Waste Program visit: http://www.seattle.gov/util/environmentconservation/ourwatersheds/restoreourwaters/preventpollution/petwaste/
- For more information on the Auto Maintenance Program visit: http://www.seattle.gov/util/EnvironmentConservation/OurWatersheds/RestoreOurWaters/PreventPollution/Motoroil/index.htm
- For more information on the Water Quality hotline visit: http://www.seattle.gov/util/myservices/drainagesewer/pollutioncontrol/surfacewaterqualityinvestigations/
- For more information on the Green Gardening program visit: http://www.seattle.gov/util/forbusinesses/landscapes/integrated_pest_management/greengardeningprogram/
- For more information on the Natural Soil Building program visit: http://www.seattle.gov/util/EnvironmentConservation/MyLawnGarden/CompostSoil/index.htm
- For more information on reLeaf visit: http://www.seattle.gov/trees/
- For more information on RainWise visit: http://www.seattle.gov/util/environmentconservation/projects/drainagesystem/greenstormwaterinfrastructure/residentialrainwise/
- For more information on Natural Landscape Professional Development visit: http://www.seattle.gov/util/ForBusinesses/Landscapes/index.htm
- For more information on Temporary Erosion and Sediment Control training visit: http://www.seattle.gov/dpd/news/events_classes/default.asp
- For more information on the Resource Venture, a free resource conservation program for Seattle businesses, visit www.resourceventure.org.
- For general questions about this SWMP or more information about this section, email swmp@seattle.gov or visit http://www.seattle.gov/util/myservices/drainagesewer/aboutthedrainagesewersystem/stormwatermanagementplan/

III. REFERENCES

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IV. LIST OF DEFINITIONS AND ACRONYMS

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IV.1 Definitions and Acronyms

All of the definitions listed in the table below are directly from the 2007 NPDES Phase I Permit. Acronyms in the Table of Acronyms that are specific to SPU that were added beyond what was listed in the Permit are denoted with an asterisk.

Table IV.1-I Definitions

Term	Definition
40 CFR	Title 40 of the Code of Federal Regulations, which is the codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government.
AKART	All Known, Available and Reasonable methods of prevention, control and treatment. See also State Water Pollution Control Act, Chapter 90.48.010 and 90.48.520 RCW. "All Known, Available and Reasonable methods of prevention, control and treatment" refers to the State Water Pollution Control Act, Chapter 90.48.010 and 90.48.520 RCW.
Applicable TMDL	A TMDL which has been approved by EPA on or before the date permit coverage is granted.
Beneficial Uses	Uses of waters of the state, which include but are not limited to: use for domestic, stock watering, industrial, commercial, agricultural, irrigation, mining, fish and wildlife maintenance and enhancement, recreation, generation of electric power and preservation of environmental and aesthetic values, and all other uses compatible with the enjoyment of the public waters of the state.
Best Management Practices	The schedules of activities, prohibitions of practices, maintenance procedures, and structural and/or managerial practices approved by Ecology that, when used singly or in combination, prevent or reduce the release of pollutants and other adverse impacts to waters of Washington State.
Bypass	The diversion of stormwater from any portion of a stormwater treatment facility.
Clean Water Act	The federal Clean Water Act (formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972) Pub.L. 92-500, as amended Pub. L. 95-217, Pub. L. 95-576, Pub. L. (6-483 and Pub. L. 97-117, 33 U.S.C. 1251 et.seq.
Component or Program Component	The elements of the stormwater management program listed in Special Condition S5 Stormwater Management Program for Permittees or S6 Stormwater Management Program for Co-Permittees and Secondary Permittees.
Co-Permittee	An owner or operator of a municipal separate storm sewer that has co-applied for permit coverage with another permittee, and that is only responsible for permit conditions relating to the discharge for which it is operator. See also 40 CFR 122.26(b)(1).
Director	The Director of the Washington State Department of Ecology, or an authorized representative.
Discharge	For the purpose of this permit, unless indicated otherwise, refers to discharges from municipal separate storm sewers of the Permittees. See also 40 CFR 122.2
Ecology	The Washington State Department of Ecology
Entity	A governmental body or a public or private organization.
General Permit	Permit which covers multiple dischargers of a point source category within a designated geographical area, in lieu of individual permits being issued to each discharger.
Ground water	Water in a saturated zone or stratum beneath the surface of the land or below a surface water body.
Heavy equipment maintenance or storage yard	An area where any heavy equipment, such as mowing equipment, excavators, dump trucks, backhoes, or bulldozers are washed or maintained, or where at least five pieces of heavy equipment are stored on a long term basis.
Hyperchlorinated	Water that contains more than 10 mg/Liter chlorine.
Illicit connection	An Illicit Connection is the discharge of pollutants or non-storm water materials into a storm sewer system via a pipe or other direct connection. Sources of illicit connections may include sanitary sewer taps, wash water from laundromats or carwashes, and other similar sources

Term	Definition
Illicit discharge	Any discharge to a municipal separate storm sewer that is not composed entirely of storm water except discharges pursuant to a NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from fire fighting activities.
Industrial or Construction Activity	Manufacturing, processing or raw materials storage areas at an industrial plant; or clearing, grading and/or excavation. These activities are required to have NPDES permit coverage in accordance with 40 CFR 122.26.
Integrated Pest Management	A coordinated decision-making and action process that uses the most appropriate pest control methods and strategy in an environmentally and economically sound manner to meet agency programmatic pest management objectives. The elements of integrated pest management include: (a) Preventing pest problems; (b) Monitoring for the presence of pests and pest damage; (c) Establishing the density of the pest population, that may be set at zero, that can be tolerated or correlated with a damage level sufficient to warrant treatment of the problem based on health, public safety, economic, or aesthetic thresholds; (d) Treating pest problems to reduce populations below those levels established by damage thresholds using strategies that may include biological, cultural, mechanical, and chemical control methods and that must consider human health, ecological impact, feasibility, and cost-effectiveness; and (e) Evaluating the effects and efficacy of pest treatments.
Low Impact Development (LID)	A stormwater management and land development strategy applied at the parcel and subdivision scale that emphasizes conservation and use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely mimic pre-development hydrologic functions.
Material Storage Facilities	An area where bulk materials (liquid, solid, granular, etc.) are stored in piles, barrels, tanks, bins, crates, or other means.
Maximum Extent Practicable (MEP)	Refers to paragraph 402(p)(3)(B)(iii) of the federal Clean Water Act which reads as follows: Permits for discharges from municipal storm sewers shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques, and system, design, and engineering methods, and other such provisions as the Administrator or the State determines appropriate for the control of such pollutants.
Municipal Separate Storm Sewer (MS3)	A conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains): - owned or operated by a state, city, town borough, county parish, district, association, or other public body (created by or pursuant to State Law) having jurisdiction over disposal of wastes, storm water, or other wastes including special districts under State Law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the U.S. - designed or used for collecting or conveying stormwater - which is not a combined sewer; and - which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.
Municipal separate storm sewer system (MS4)	All separate storm sewers that are defined as “large” or “medium” or “small” municipal separate storm sewer systems. See also 40 CFR 122.26(b)(18).
National Pollutant Discharge Elimination System (NPDES)	The national program for issuing, modifying, revoking, and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, 318, and 405 of the Federal Clean Water Act, for the discharge of pollutants to surface waters of the state from point sources. These permits are referred to as NPDES permits and, in Washington State, are administered by the Washington Department of Ecology.
Notice of Intent	The application for, or a request for coverage under a General NPDES Permit pursuant to WAC 173-226-200.
Outfall	Point source as defined by 40 CFR 122.2 at the point where a municipal separate storm sewer discharges to waters of the State and does not include open conveyances connecting two municipal separate storm sewers, or pipes, tunnels, or other conveyances which connect segments of the same stream or other waters of the State and are used to convey waters of the State.
Permittee	Any Primary Permittee, Co-Permittee, or Secondary Permittee unless specifically stated otherwise for a particular section of this permit.

Term	Definition
Pest	But is not limited to, any insect, rodent, nematode, snail, slug, weed, and any form of plant or animal life or virus, bacteria, or other microorganisms on or in a living person or other animal or in or on processed food or beverages or pharmaceuticals, which is normally considered to be a pest, or which the director of the department of agriculture may declare to be a pest.
Physically Interconnected	One municipal separate storm sewer is connected to a second municipal separate storm sewer in such a way that it allows for direct discharges to the second system. For example, the roads with drainage systems and municipal streets of one entity are physically connected directly to a municipal separate storm sewer belonging to another entity.
Qualified Personnel	Staff members or contractors who have had professional training in the aspects of stormwater management for which they are responsible and are under the functional control of the Permittee.
Runoff	Water that travels across the land surface, or laterally through the soil near the land surface, and discharges to water bodies either directly or through a collection and conveyance system. Runoff includes stormwater and water from other sources that travels across the land surface. See also "Stormwater."
Secondary Permittee	An operator of municipal separate storm sewer which is not a city, town or county. Secondary Permittees include special purpose districts and other public entities identified in S1.D which operate municipal separate storm sewers.
Shared Waterbodies	Waterbodies, including downstream segments, lakes and estuaries, that receive discharges from more than one permittee.
Stormwater	Runoff during and following precipitation and snowmelt events, including surface runoff, drainage, and interflow.
Stormwater Associated with Industrial and Construction Activity	The discharge from any conveyance which is used for collecting and conveying stormwater, which is directly related to manufacturing, processing or raw materials storage areas at an industrial plant, or associated with clearing grading ,excavation, or both is required to have an NPDES permit in accordance with 40 CFR 122.26.
Stormwater facilities regulated by the Permittee	Permanent stormwater treatment and flow control BMPs located in the geographic area covered by the permit and which are not owned by the Permittee, and are known by the permittee to discharge into municipal separate storm sewers owned or operated by the Permittee.
Stormwater Management Manual for Western Washington	The 5-volume technical manual (Publication Nos. 05-10-029 through 05-10-033) published by Ecology in February 2005.
Stormwater Management Program (SWMP)	A set of actions and activities designed to reduce the discharge of pollutants from the regulated small MS4 to the maximum extent practicable and to protect water quality, and comprising the components listed in S5 or S6 of this Permit and any additional actions necessary to meet the requirements of applicable TMDLs.
Total Maximum Daily Load (TMDL)	A water cleanup plan. A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The calculation must include a margin of safety to make certain that the water body can be used for the purposes the state has designated. The calculation must also account for seasonable variation in water quality. Water quality standards are set by states, territories, and tribes. They identify the uses for each water body, for example, drinking water supply, contact recreation (swimming), and aquatic life support (fishing), and the scientific criteria to support that use. The Clean Water Act, section 303, establishes the water quality standards and TMDL programs.
Urban/higher density rural sub-basins	All areas within or proposed to be within the urban growth area (UGA), or any sub-basin outside the UGA with 50 percent or more area comprised of lots less than 5 acres.
Vehicle Maintenance or Storage Facility	An uncovered area where any vehicles are regularly washed or maintained, or where at least 10 vehicles are stored.
Water Quality Standards	Surface Water Quality Standards, Chapter 173-201A WAC, Ground Water Quality Standards, Chapter 173-200 WAC, and Sediment Management Standards, Chapter 173-204 WAC.
Waters of the state	Includes those waters as defined as "waters of the United States" in 40 CFR Subpart 122.2 within the geographic boundaries of Washington State and "waters of the state" as defined in Chapter 90.48 RCW which includes lakes, rivers, ponds, streams, inland waters, underground waters, salt waters and all other surface waters and water courses within the jurisdiction of the State of Washington.

Table IV.1-II Acronyms

Acronym	Definition
AKART	All known, available and reasonable methods of prevention, control and treatment (See definition in definitions table.)
AMC*	Asset Management Committee
BMP	Best Management Practice (See definition in definitions table.)
CDWAC*	Creeks, Drainage Water and Wastewater Authority Committee
CIP*	Capital Improvements Program
DPD*	Department of Planning and Development
Ecology*	Washington State Department of Ecology
EPA*	U.S. Environmental Protection Agency
ERTS*	Environmental Response Tracking System
FAS*	Department of Finance and Administrative Services (Formerly FFD)
FGD*	first ground disturbance
GIS*	Geographic Information System
HAZWOPER*	Hazardous Waste Operations and Emergency Response
IDDE	Illicit Connection and Discharge Detection and Elimination
IFPT*	Integrated Federal Permit Training
JARPA*	Joint Aquatic Resources Permit Application
LID	Low Impact Development (See definition in definitions table.)
MEP	Maximum Extent Practicable (See definition in definitions table.)
MLK*	Martin Luther King
MS3	Municipal separate storm sewer (See definition in definitions table.)
MS4	Municipal separate storm sewer system (See definition in definitions table.)
MTCA*	Model Toxics Control Act
NDS*	Natural Drainage System
NOI*	Notice of Intent (See definition in definitions table.)
NOV*	Notice of Violation
NPDES	National Pollutant Discharge Elimination System (See definition in definitions table.)
O&M*	operations and maintenance
ORC*	Operations Response Center
OSE*	Office of Sustainability and Environment
Parks*	Seattle Parks and Recreation
PASV*	Pre-Application Site Visit
PCHB*	Pollution Control Hearings Board
PE*	preliminary engineering
Permit*	NPDES Phase I Municipal Stormwater Permit
QA/QC*	quality assurance/quality control
RCW	Revised Code of Washington State
SCL*	Seattle City of Light
SC*	Source Control
SDOT*	Seattle Department of Transportation
SEPA*	State Environmental Policy Act
SIC*	standard industrial classification
SKIP*	Spill Kit Incentive Program
SMC*	Seattle Municipal Code
SPU*	Seattle Public Utilities

Acronym	Definition
SSCP*	Structural Stormwater Control Program
Stormwater Code*	Seattle Municipal Code, Chapter 22.800 – 22.808, *The Stormwater Code*
SWMP	Stormwater Management Program (See definition in table.)
SWPPP*	Stormwater Pollution Prevention Plan
TCWQC*	Thornton Creek Water Quality Channel
TESC*	Temporary erosion and sediment control
TMDL	Total Maximum Daily Load (See definition in table.)
TSS*	total suspended solids
USM*	Utility System Management, an organization within SPU
WSDOT*	Washington State Department of Transportation
ZPG*	zeolite/perlite/granular activated carbon, a trademarked term by CONTECH Stormwater Solutions, Inc.

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APPENDIX 1

Mayor's Executive Order

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Office of the Mayor
City of Seattle
Gregory J. Nickels, Mayor

Executive Order: 01-08
NPDES Municipal Stormwater Permit

An Executive Order directing all City Departments to coordinate together to comply with the requirements of the City's National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permit, which has been issued to the City of Seattle by the Washington State Department of Ecology under the provisions of the federal Clean Water Act.

WHEREAS, the City of Seattle has long prided itself on its commitment to the environment;

WHEREAS, the Mayor's Executive Order 03-04 directs City departments with responsibilities for and connections to water quality and aquatic habitat issues to develop a shared, broad-based strategy know as 'Restore our Waters' to better protect and restore water quality and aquatic habitat within the City;

WHEREAS, managing municipal stormwater runoff is a critical component of any strategy to meet the City of Seattle's long-standing objective to protect, improve, and enhance the City's lakes, creeks, bays, rivers, and other surface and ground waters;

WHEREAS, the Washington State Department of Ecology has issued to the City a permit under the National Pollutant Discharge Elimination System (NPDES) of the federal Clean Water Act that contains a suite of conditions and requirements for managing municipal stormwater runoff;

WHEREAS, compliance with the City's NPDES Municipal Stormwater Permit is a responsibility of the entire city and all City departments;

WHEREAS, the City's NPDES Municipal Stormwater Permit contains a specific requirement to establish in writing an Executive Directive requiring internal coordination among all departments affected by the permit;

NOW, THEREFORE, I, GREGORY J. NICKELS, Seattle Mayor, do order all City departments to coordinate all stormwater-related policies, programs, and projects to the maximum extent practicable and I order all City departments to eliminate barriers to compliance with the terms of the permit.

FURTHERMORE, I direct all City departments to review the NPDES Municipal Stormwater Permit that has been issued by Ecology and to identify all requirements for which they are responsible and each Director will be responsible for meeting those requirements and associated deadlines that apply to his or her respective department.

FUTHERMORE, I direct Seattle Public Utilities to serve as the lead department in all matters related to overall City compliance with the permit.

FURTHERMORE, I direct Seattle Public Utilities to provide sufficient information to each department, including technical support, and providing a forum for intra-governmental coordination so the City is able to meet the requirements of the permit.

FURTHERMORE, I direct all City departments to provide to Seattle Public Utilities all necessary reporting elements and supporting material necessary to comply with the reporting requirements and associated deadlines of the permit.

FURTHERMORE, Seattle Public Utilities is directed to compile information received from other departments, and to prepare and submit on my behalf all reports to Ecology under the terms of the permit.

FURTHERMORE, the City of Seattle, is required by the permit to certify that all reports submitted to Ecology are true, accurate and complete. And the City of Seattle can be subject to penalties for submitting false information. Therefore, each department must ensure that documents and all attachments prepared in compliance with this permit are true, accurate, and complete before submitting them to Seattle Public Utilities. Seattle Public Utilities may issue additional direction to departments to ensure compliance with this requirement.

Questions regarding this Executive Order should be directed to Trish Rhay at 206-386-1832 (SPU), Darla Inglis, Ph.D. 206-233-7160 (SPU), and Robert D. Chandler, Ph.D., P.E., 206-386-4576 (SPU).

Dated this 29th day of January, 2008

Gregory J. Nickels
Mayor, City of Seattle

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