STRATEGIES FOR PRIVATELY OWNED BEST MANAGEMENT PRACTICES

STORMWATER MANAGEMENT GUIDANCE MANUAL

APRIL 2023

YAKIMA COUNTY

EVERGREEN STORMH2O

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Introduction to the Manual

Chapter Contents

1.1 Manual Purpose and Background

Washington State allows discharges from Municipal Separate Storm Sewer Systems (MS4s) under a combined National Pollutant Discharge Elimination System (NPDES) and State Waste Discharge General Permit. The Washington State Department of Ecology (Ecology) regulates Permittees as entities that manage discharges to MS4s that meet population thresholds defined by the Phase I Permit for the State of Washington or the Eastern Washington (EWA) or Western Washington (WWA) Phase II Permit (Permit). Specifically, the Phase I Stormwater Permit covers incorporated cities with a population of over 100,000 and unincorporated counties with populations over 250,000 based on the 1990 Census (Ecology, 2022). The Phase II Stormwater Permit covers a subset of small MS4s (populations less than 100,000) referred to as “regulated small MS4s.” Automatic designation of regulated small MS4s occurs for urban areas with a population of at least 50,000 (previously defined as "urbanized areas" by the Bureau of the Census). Designation of small MS4s located outside urbanized areas with populations over 10,000 occurs on a case-by-case basis by the NPDES permitting authority (United States Environmental Protection Agency, n.d.).

The Phase I and Phase II MS4 Permits require Permittees to reduce the discharge of pollutants to MS4s to the Maximum Extent Practicable (MEP) using All Known, Available, and Reasonable methods of prevention, control, and Treatment (AKART). This manual focuses on the EWA and WWA Phase II Permits (Phase II MS4 Permits)—specifically, requirements related to inspecting and maintaining Best Management Practices (BMPs) on private property. Phase II Permittees are required to select, design, install, operate, and maintain BMPs to manage stormwater runoff from new development, redevelopment, and construction sites to a regulated MS4. This requirement applies to both private and public development. Ecology’s Stormwater Management Manuals, or another equivalent stormwater manual approved by Ecology, provides a selection of BMPs that meet these requirements. The effectiveness of structural BMPs can degrade over time if not properly maintained. Therefore, Permittees must inspect and enforce maintenance standards so that structural BMPs continue to operate as designed to protect water quality (Washington State Department of Ecology, 2019a; Washington State Department of Ecology, 2019b). Discussions with Permittees and a review of literature (journal articles, municipal documents, etc.) reveals it is difficult for Permittees to ensure long-term design-based performance for privately owned BMPs due to challenges with identifying and correcting operational and maintenance (O&M) problems (Blecken, Hunt III, Al-Rubaei, Viklander, & Lord, 2017). In response to this need, Yakima County conducted a study titled *BMP Inspection and Maintenance*

Responsibilities for Privately Owned Facilities (Yakima County study), to identify and evaluate commonly used strategies for inspection, maintenance, and enforcement of privately owned stormwater BMPs. The identified strategies focused on who inspects and/or maintains privately owned BMPs: the Permittee, the BMP owner, a qualified third party, or different combinations of these groups. The study evaluated these strategies based on survey and interview responses from Permittees in Washington, Oregon, Idaho, and Montana (Yakima County, et al., 2021).

Results from the Yakima County study indicated that the Permittees used a total of ten different combinations of who inspects and/or maintains privately owned BMPs, with no clear pattern identifying the most effective strategies. However, the study asked Permittees to identify the different elements of their programs, such as ease of jurisdictional access to BMPs or BMP owners' willingness to pay for required maintenance. Then a literature search was conducted to identify elements that appear to support a successful program and Permit compliance. Survey results from the Yakima County study indicated that Permittees who self-reported their programs as effective had more program elements similar to the elements identified as part of the literature search (Yakima County, et al., 2021). **Table 1-1** provides a summary of these successful program elements identified from the literature search (Blecken, Hunt III, Al-Rubaei, Viklander, & Lord, Stormwater control measure (SCM) maintenance considerations to ensure designed functionality, 2017; Richardson D. , 2019; Flynn, Linkous, & Buechter, 2012; Doll & Lindsey, 1999; Rafter, Stormwater Management, 2000; Heron, Stepenuck, & Green, 2009; Aldous & Buys, 2009).

Table 1-1. Reported elements of successful programs

Resources & Access			
Jurisdiction has sufficient funding to perform inspection, maintenance, and enforcement activities.	Jurisdiction has the appropriate equipment available to conduct maintenance for all BMPs.	Jurisdictions can access BMPs on private property to perform inspection and/or maintenance.	BMP owners are willing to pay for required maintenance.
O&M Protocol, Training, and Education & Outreach (E&O)			
Jurisdiction has sufficient funding to develop proper training for staff and E&O materials.	Jurisdiction provides training for all staff who perform inspection, maintenance, and enforcement of BMPs on private property.	E&O and training materials target specific groups (e.g., HOA, businesses) and are available in multiple languages.	Jurisdiction provides O&M protocol and/or educational materials to BMP owners.
Documentation and Recordkeeping			
Inspection and maintenance documentation is kept up to date and complete for all BMPs on private property.	Jurisdiction has a consistent, complete, and easy-to-use documentation process for tracking inspection and maintenance.	When ownership changes, jurisdiction has a process for communicating all BMP responsibilities to the new property owner.	BMP owners can demonstrate compliance with jurisdiction's requirements.
Incentives and Penalties			

Jurisdiction provides incentives to encourage property owners to conduct required maintenance.	Jurisdiction has mechanisms to penalize BMP owners for failing to demonstrate compliance with requirements.

Results from the study illustrate the variety and uniqueness of jurisdictional programs and priorities. As such, one of the study's recommendations included developing a guidance manual with options and examples that could assist Permittees with developing a program that best fits their jurisdictions' needs and priorities (Yakima County, et al., 2021). Consequently, Yakima County applied for and received an Ecology Stormwater Grant of Regional or Statewide Significance (GROSS grant) to develop this guidance manual using the **Table 1-1** elements as a framework for developing the manual contents. Providing a resource that assists jurisdictions to develop and improve programs based on strategies best suited to meet their needs helps keep privately owned BMPs maintained and functioning to design-based standards.

1.2 Phase II Permit Requirements

The 2019–2024 EWA and WWA Phase II MS4 Permits require maintenance and inspection of privately owned BMPs. However, the Phase II MS4 Permits differ in some respects. This manual seeks to assist Permittees to build programs that help satisfy the requirements of both Phase II MS4 Permits. The Phase II MS4 Permits include separate requirements for construction-phase and post-construction BMPs. This manual focuses on post-construction BMPs.

Table 1-2 provides an overview of the applicable requirements for both Phase II MS4 Permits, and the appendices at the end of this chapter provide tables with a complete list of all applicable permit requirements for easy reference. Subsequent chapters detail the notable differences between the Phase II MS4 Permits as they apply to this manual's guidance. *Note: Phase II MS4 Permit language has been included throughout this manual as points of reference for the reader and to provide context for why the manual contents were included. Phase II MS4 Permits are updated and reissued every five years. Please refer to the current version of the Phase II MS4 Permit that applies to your jurisdiction to confirm the exact permit language that applies to your jurisdiction.*

Table 1-2. Summary of relevant EWA and WWA Phase II MS4 Permit requirements

Minimum Technical Requirements
Develop an ordinance or other regulatory mechanism that requires project proponents and property owners to adhere to the minimum technical requirements in Appendix 1. (**EWA S5.B.5 and WWA S5.C.6**)
BMP Implementation
Develop local requirements for project proponents and property owners to site, design, and implement runoff treatment, flow control, and source control BMPs to protect water quality, reduce the discharge of pollutants to the MEP, and satisfy State requirements. (**EWA S5.B.5 and WWA S5.C.6**)
Mapping Requirements
Continue to maintain and periodically update a map of the MS4, including mapping of all known connections from privately owned stormwater systems to the MS4. (**EWA S5.B.3 and WWA S5.C.4**)

Operations and Maintenance
Adopt ordinances or other regulatory mechanisms to ensure adequate ongoing long-term operation and maintenance of the BMPs that are approved by the Permittee. Implement maintenance standards that are as or more protective of BMP function than those specified in the Stormwater Management Manual for Western Washington, Eastern Washington, or an Ecology approved equivalent manual. (**EWA S5.B.5 and WWA S5.C.6, S5.C.7**)
Inspection Authority
Develop ordinances or other regulatory mechanisms including legal authority for both construction phase and post-construction access for Permittees to inspect and enforce maintenance standards for stormwater BMPs on private properties that discharge to the MS4. (**EWA S5.B.5 and WWA S5.C.6, S5.C.7**)
Inspection
Inspect structural BMPs at least once every five years after final installation, or more frequently, as determined by the Permittee in EWA. Inspect stormwater treatment and flow control BMPs/facilities that discharge to the MS4 and were permitted by the Permittee according to S5.C.6.c, unless there are maintenance records to justify a different frequency, in WWA. (**EWA S5.B.5 and WWA S5.C.6, S5.C.7**)
Tracking and Records Requirements
Include a procedure for keeping records of inspections and enforcement actions by staff, including inspection reports, warning letters, notices of violations, and other enforcement records. Records of maintenance inspections and maintenance activities shall be maintained. Track the number of inspections performed, follow-up actions as a result of inspections, official enforcement actions taken, and types of public education activities implemented as required for each SWMP component. This information shall be included in the Annual Report. Each Permittee is required to keep all records related to this Permit for at least five years. (**EWA S9.A, S5.A.5, S5.B.5 and WWA S9.B, S5.A.3, S5.C.7**)
Enforcement
Include appropriate, escalating enforcement procedures and actions in ordinances or other regulatory mechanisms. (**EWA S5.B.1 and WWA S5.C.2**)

1.3 How to Use the Manual

This manual's content was developed using information collected during the Yakima County study, a literature search of journal articles and municipal documents, and interviews with Permittees from Washington State and/or states with similar permit requirements. The manual includes strategies, descriptions of how these strategies can support overall program success and permit compliance, case studies of the different ways Permittees implement these strategies, and lessons learned. The intent is that Permittees will use the manual to select the strategies that will support their Phase II MS4 Permit compliance and best align with their jurisdictions' goals to develop and/or improve inspection,

maintenance, and enforcement programs for privately owned BMPs. The manual also provides examples and templates that Permittees can use or modify in their programs.

1.4 Manual Organization

Each chapter utilizes a similar format for consistency and ease of use. The chapters begin with an overview of the content and a summary of Phase II MS4 Permit requirements applicable to that chapter. Each chapter then describes the topic focus, related strategies and their advantages and disadvantages, and examples of how Permittees have implemented these strategies. Included with each chapter is an appendix with examples, weblinks to additional resources, and/or templates. Topics in the manual and the purpose of each chapter include:

- **Chapter 1 – Introduction to the Manual** describes the manual's intended use and audience, relevant Permit requirements, the reason the manual was developed, and its organization.
- **Chapter 2 – Inspection and Maintenance Strategies** provides examples of different maintenance and inspection strategies categorized by who is responsible for the inspection or maintenance: Permittees, BMP owners, or a qualified third party.
- **Chapter 3 – Resources and Funding** outlines program funding and staffing needs and suggestions for calculating the required program funding needs. This chapter also reviews various funding sources.
- **Chapter 4 – Required Documentation and Recordkeeping** provides examples of mapping and documentation methods for jurisdictions and BMP owners. This chapter also describes the documentation and reporting permit requirements, as well as guidance for selecting an asset management software platform.
- **Chapter 5 – BMP Ownership** provides an overview of the types of BMP owners, BMP owner responsibilities, and examples of how various jurisdictions document the owners' responsibilities.
- **Chapter 6 – Regulatory Mechanisms** summarizes permit requirements for adopting ordinances or other regulatory mechanisms for BMPs on private property. This chapter also provides guidance on developing regulatory mechanisms, including recommended ordinance elements.
- **Chapter 7 – Incentive Mechanisms** provides examples of mechanisms to incentivize BMP owners to comply with inspection and maintenance requirements. This chapter also describes things to consider when developing an incentive program.
- **Chapter 8 – Enforcement Mechanisms** describes different enforcement mechanisms for Permittees to implement when BMP owners fail to comply with inspection and maintenance requirements. This chapter also describes things to consider when developing an enforcement strategy.
- **Chapter 9 – Education and Outreach** provides an overview of common E&O strategies Permittees can use to inform property owners about proper maintenance and inspection of BMPs on private property. This chapter also describes things to consider when developing an E&O strategy.

1.5 Appendices

1.5.1 Appendix 1-A – EWA Phase II MS4 Permit Requirements

Table A-1. EWA Phase II MS4 Permit requirements for inspection, maintenance, & enforcement of privately owned BMPs

Permit Section # & Title	Section #	Permit Language
Stormwater Management Plan	S5.A.5.a.i	Each Permittee shall track the number of inspections performed, follow-up actions as a result of inspections, official enforcement actions taken, and types of public education activities implemented as required for each SWMP component. This information shall be included in the Annual Report.
Public Education and Outreach	S5.B.1.a.i	All Permittees shall continue to implement a public education and outreach program designed to reach target audiences identified in i-iii below, and achieve improvements in the target audiences' understanding of the problem and what they can do to solve it. The program shall, at a minimum address the following, based on the land uses and priority target audiences found within the community. Permittees shall provide subject area information to the target audience on an ongoing or strategic schedule. i. *Target audiences:* General public, including homeowners, teachers, school-age children, or overburdened communities. Provide information about the following subject areas: (a) The importance of improving water quality and protecting beneficial uses of waters of the State. (b) The potential impacts from stormwater discharges. (c) Methods for avoiding, minimizing, reducing, and/or eliminating the adverse impacts of stormwater discharges. (d) Actions individuals can take to improve water quality, including encouraging participation in local environmental stewardship activities and programs.
Illicit Discharge Detection and Elimination	S5.B.3.a.vi	a. Each Permittee shall continue to maintain and periodically update a map of the MS4. Update maps, if necessary, to meet the requirement of this Section no later than August 1, 2023. At a minimum, the maps shall include the following information: vi. All known connections from the MS4 to a privately owned stormwater system.
	S5.B.3.d.iii	Procedures for eliminating the discharge, including notification of appropriate authorities (including appropriate owners or operators of interconnected MS4s); notification of the property owner; technical assistance; follow-up inspections; and use of the compliance strategy developed pursuant to

Permit Section # & Title	Section #	Permit Language
		S5.B.3.b.vi, including escalating enforcement and legal actions if the discharge is not eliminated.
Post-Construction Stormwater Management for New Development & Redevelopment	S5.B.5a	No later than December 31, 2022, Permittees shall implement an ordinance or other regulatory mechanism that requires post-construction stormwater controls at new development and redevelopment projects. The ordinance or other regulatory mechanism shall include mechanisms to ensure compliance.
	S5.B.5.b.ii	The Permittee shall develop an ordinance or other regulatory mechanism that requires project proponents and property owners to adhere to the minimum technical requirements in Appendix 1 and shall include BMP selection, design, installation, operation, and maintenance standards necessary to protect water quality, reduce the discharge of pollutants to the MEP, and satisfy state AKART requirements.
	S5.B.5.b.ii.(b)	The Permittee shall develop an ordinance or other regulatory mechanism that includes requirements for project proponents and property owners to implement appropriate runoff treatment, flow control, and source control BMPs considering the proposed land use at the site to minimize adverse impacts to water quality.
	S5.B.5.b.ii(c)	The Permittee shall develop an ordinance or other regulatory mechanism that includes requirements to ensure adequate ongoing long-term operation and maintenance of the BMPs approved by the Permittee.
Post-Construction Stormwater Management for New Development & Redevelopment	S5.B.5.b.iii	The ordinance or other regulatory mechanism shall include provisions for both construction-phase and post-construction access for Permittees to inspect stormwater BMPs on private properties that discharge to the MS4. If deemed necessary for post-construction access, the ordinance or other regulatory mechanism may, in lieu of requiring that continued access be granted to the Permittee's staff or qualified personnel, instead require private property-owners to provide annual certification by a qualified third party that adequate maintenance has been performed and the facilities are operating as designed to protect water quality.
	S5.B.5.b.iv	The Permittee shall develop an ordinance or other regulatory mechanism that includes appropriate, escalating enforcement procedures and actions.

Permit Section # & Title	Section #	Permit Language
	S5.B.5.b.v	The Permittee shall implement an enforcement strategy and the enforcement provisions of the ordinance or other regulatory mechanism.
	S5.B.5.d.ii	Structural BMPs shall be inspected at least once every five years after final installation, or more frequently, as determined by the Permittee to be necessary to prevent adverse water quality impacts, to ensure that adequate maintenance is being performed. The inspection shall be performed by qualified personnel.
	S5.B.5.d.iii	Recommended operation and maintenance standards for structural BMPs in the *Stormwater Management Manual for Eastern Washington*, or another technical stormwater manual approved by Ecology, shall be met.
	S5.B.5.e	Provide adequate training for all staff involved in permitting, planning, review, inspection, and enforcement to carry out the provisions of this SWMP component [S5.B.5].
Post-Construction Stormwater Management for New Development & Redevelopment	S5.B.5.g	To comply with these provisions, Permittees shall keep records of all projects disturbing one acre or more, and all projects of any size that are part of a common plan of development or sale that is one acre or more. **i**. Permittees shall keep project records for five years or until construction is completed, whichever is longer, with the following exceptions: approved site plans and O&M Plans shall be kept, as needed, to comply with the ongoing inspection requirements of this Permit.
Reporting Requirements	S9.A	Each Permittee is required to keep all records related to this Permit for at least five years

1.5.2 Appendix 1-B – WWA Phase II MS4 Permit Requirements

Table A-2. WWA Phase II MS4 Permit requirements for inspection, maintenance, & enforcement of privately owned BMPs

Category	Section	Permit Language
Stormwater Management Plan	S5.A.3.b	Each Permittee shall track the number of inspections, follow-up actions as a result of inspections, official enforcement actions and types of public education activities as required by the respective program component. This information shall be included in the annual report.
Public Education and Outreach	S5.C.2.a.i.(a)	Each Permittee shall implement an education and outreach program for the area served by the MS4. The program design shall be based on local water quality information and target audience characteristics to identify high priority target audiences, subject areas, and/or BMPs. Based on the target audience's demographic, the Permittee shall consider delivering its selected messages in language(s) other than English, as appropriate to the target audience. i. *General awareness*. To build general awareness, Permittees shall annually select at a minimum one target audience and one subject area from either (a) or (b): (a) Target audiences: General public (including overburdened communities, or school age children) or businesses (including home-based, or mobile businesses). Subject areas: • General impacts of stormwater on surface waters, including impacts from impervious surfaces. • Low impact development (LID) principles and LID BMPs.
	S5.C.2.a.i (b)	General Awareness. To build general awareness, Permittees shall annually select at a minimum one target audience and one subject area from either (a) or (b). (b) Target audiences: Engineers, contractors, developers, or land use planners. Subject areas: • Stormwater Treatment and flow control BMPs/facilities.
	S5.C.2.a.ii	To affect behavior change, Permittees shall select, at a minimum, one target audience and one BMP. (a) Target Audiences: Residents, landscapers, property managers/owners, developers, school age children, or businesses (including home based or mobile businesses). *BMPs:* • Stormwater facility maintenance, including LID facilities.
	S5.C.4.a.vii	*Ongoing Mapping:* Each Permittee shall maintain mapping data for the features listed below:

Category	Section	Permit Language
MS4 Mapping and Documentation		vii. All connections to the MS4 authorized or allowed by the Permittee after February 16, 2007.
	S5.C.4.b.ii	*New Mapping:* Each Permittee shall: ii. No later than August 1, 2023, complete mapping of all known connections from the MS4 to a privately owned stormwater system.
Controlling Runoff from New Development, Redevelopment, and Construction Sites	S5.C.6.a	Implement an ordinance or other enforceable mechanism that addresses runoff from new development, redevelopment, and construction site projects.
	S5.C.6.b.i	The Permittee shall develop an ordinance or other enforceable mechanism that includes the Minimum Requirements, thresholds, and definitions in Appendix 1, or the 2013 Appendix 1 amended to include the changes identified in Appendix 10, or Phase I program approved by Ecology and amended to include Appendix 10, for new development, redevelopment, and construction sites.
	S5.C.6.b.ii	The Permittee shall develop local requirements that include site planning requirements, BMP selection design, BMP design criteria, BMP infeasibility criteria, LID competing needs criteria, and BMP limitations when used to implement Appendix 1 to protect water quality, reduce the discharge of pollutants to the MEP, and satisfy State requirements.
	S5.C.6.b.iii	The ordinance or other enforceable mechanism shall include the legal authority, through the approval process for new development and redevelopment, to inspect and enforce maintenance standards for private stormwater facilities approved under the provisions of this Section that discharge to the Permittee's MS4.
	S5.C.6.c.v	Inspect all permitted development sites upon completion of construction and prior to final approval or occupancy to ensure installation of permanent stormwater facilities. The Permittee shall verify that a maintenance plan is completed and responsibility for maintenance is assigned for stormwater treatment and flow control BMPs/facilities.
	S5.C.6.c.v.iii	An enforcement strategy shall be implemented to respond to issues of non-compliance.
	S5.C.6.e	Each Permittee shall ensure that all staff whose primary job duties are implementing the program to control stormwater

Category	Section	Permit Language
		runoff from new development, redevelopment, and construction sites, including permitting, plan review, construction site inspections, and enforcement, are trained to conduct these activities. Follow-up training must be provided as needed to address changes in procedures, techniques, or staffing. Permittees shall document and maintain records of the training provided and the staff trained.
Operations and Maintenance	S5.C.7.a	Each Permittee shall implement maintenance standards that are as protective, or more protective, of facility function than those specified in the *Stormwater Management Manual for Western Washington* or a Phase I program approved by Ecology. For facilities which do not have maintenance standards, the Permittee shall develop a maintenance standard. No later than June 30, 2022, Permittees shall update their maintenance standards as necessary to meet the requirements of this Section.
	S5.C.7.a.i.	The purpose of the maintenance standard is to determine if maintenance is required. The maintenance standard is not a measure of the facility's required condition at all times between inspections. Exceeding the maintenance standard between inspections and/or maintenance is not a permit violation.
	S5.C.7.a.ii	Unless there are circumstances beyond the Permittee's control, when an inspection identifies an exceedance of the maintenance standard, maintenance shall be performed: • Within 1 year for typical maintenance of facilities, except catch basins. • Within 6 months for catch basins. • Within 2 years for maintenance that requires capital construction of less than $25,000. Circumstances beyond the Permittee's control include denial or delay of access by property owners, denial or delay of necessary permit approvals, and unexpected reallocations of maintenance staff to perform emergency work. For each exceedance of the required timeframe, the Permittee shall document the circumstances and how they were beyond their control.
	S5.C.7.b.i	The Permittee shall develop a maintenance program that includes provisions to verify adequate long-term O&M of stormwater treatment and flow control BMPs/facilities that

Category	Section	Permit Language
		are permitted and constructed pursuant to S.5.C.6.c and shall be maintained in accordance with S5.C.7.a.
	S5.C.7.b.i.a	The Permittee shall implement an ordinance or other enforceable mechanism that: • Clearly identifies the party responsible for maintenance in accordance with maintenance standards established under S5.C.7.a. • Requires inspection of facilities in accordance with the requirements in (b), below. • Establishes enforcement procedures.
	S5.C.7.b.i(b)	Annual inspections of all stormwater treatment and flow control BMPs/facilities that discharge to the MS4 and were permitted by the Permittee according to S5.C.6.c, including those permitted in accordance with requirements adopted pursuant to the 2007-2019 Ecology municipal stormwater permits, unless there are maintenance records to justify a different frequency. Permittees may reduce the inspection frequency based on maintenance records of double the length of time of the proposed inspection frequency. In the absence of maintenance records, the Permittee may substitute written statements to document a specific less frequent inspection schedule. Written statements shall be based on actual inspection and maintenance experience and shall be certified in accordance with G19 – Certification and Signature.
Operations and Maintenance	S5.C.7.b.i(b).ii	Compliance with the inspection requirements in (b), above, shall be determined by the presence and records of an established inspection program designed to inspect all facilities, and achieving at least 80% of required inspections.
	S5.C.7.b.i(b).iii	The program shall include a procedure for keeping records of inspections and enforcement actions by staff, including inspection reports, warning letters, notices of violations, and other enforcement records. Records of maintenance inspections and maintenance activities shall be maintained.
	S5.C.7.e	Implement an ongoing training program for employees of the Permittee whose primary construction, operations, or maintenance job functions may impact stormwater quality. The training program shall address the importance of protecting water quality, operation and maintenance standards, inspection procedures, relevant SWPPPs, selecting appropriate BMPs, ways to perform their job activities to

Category	Section	Permit Language
		prevent or minimize impacts to water quality, and procedures for reporting water quality concerns. Follow-up training shall be provided as needed to address changes in procedures, techniques, requirements, or staffing. Permittees shall document and maintain records of training provided. The staff training records to be kept include dates, activities or course descriptions, and names and positions of staff in attendance.
Reporting Requirements	S9.B	Each Permittee is required to keep all records related to the Permit and the SWMP for at least 5 years.

Chapter 2
Inspection and Maintenance Strategies

Chapter Contents

2.1 Chapter Overview

This chapter describes the importance of BMP maintenance and inspection and provides examples of common maintenance and inspection strategies for BMPs on private property. These strategies specifically focus on who maintains and/or inspects the BMP: the Permittee, the property owner, or a qualified third party. Each strategy is outlined in this chapter, along with examples and case studies of existing programs that Permittees have implemented. Several tables are also included throughout the chapter that provide an overview of the advantages and disadvantages of each strategy, identified through a review of literature as well as discussions with Permittees during the Yakima County study and the development of this manual. The Appendices at the end of this chapter include examples of templates and checklists that Permittees may adopt or modify to use in their programs.

2.2 Permit Requirements

Both the EWA and WWA Phase II MS4 Permits require inspection and maintenance of BMPs on private property discharging to the Municipal Separate Storm Sewer System (MS4). Section S5.B.5 of the EWA Permit and Sections S5.C.6 and S5.C.7 of the WWA Phase II MS4 Permit detail the requirements for inspection and maintenance of privately owned BMPs. **Table 2-1** presents a summary of the requirements in the EWA and WWA Phase II MS4 Permits pertaining to this chapter.

Table 2-1. Summary of EWA and WWA Phase II MS4 Permit inspection and maintenance requirements

EWA Phase II	WWA Phase II
Mapping Requirements	
S5.B.3.a.vi Each Permittee shall continue to maintain and periodically update a map of the MS4, including mapping of all known connections from privately owned stormwater systems to the MS4.	**S5.C.4.a.vii** *Ongoing Mapping:* Each Permittee shall maintain mapping data for the features listed below: vii. All connections to the MS4 authorized or allowed by the Permittee after February 16, 2007. **S5.C.4.b.ii** *New Mapping:* Each Permittee shall:

EWA Phase II	WWA Phase II
	ii. No later than August 1, 2023, complete mapping of all known connections from the MS4 to a privately owned stormwater system.
Operations and Maintenance	
S5.B.5.b.ii.(c) The ordinance or other regulatory mechanism shall include requirements to ensure adequate ongoing long-term operation and maintenance of the BMPs approved by the Permittee. **S5.B.5.d.iii** Recommended operation and maintenance standards for structural BMPs in the *Stormwater Management Manual for Eastern Washington*, or another technical stormwater manual approved by ecology, shall be met.	**S5.C.6.c.v** The Permittee shall verify that a maintenance plan is completed and responsibility for maintenance is assigned for stormwater treatment and flow control BMPs/facilities. Enforce as necessary based on the inspection. **S5.C.7.a** Each Permittee shall implement maintenance standards that are as or more protective of facility function than those specified in the *Stormwater Management Manual for Western Washington,* or a Phase I program approved by Ecology. **S5.C.7.a.ii** Unless there are circumstances beyond the Permittee's control, when an inspection identifies an exceedance of the maintenance standard, maintenance shall be performed: • Within 1 year for typical maintenance of facilities, except catch basins. • Within 6 months for catch basins. • Within 2 years for maintenance that requires capital construction of less than $25,000. **S5.C.7.b.i** The program shall include provisions to verify adequate long-term O&M of stormwater treatment and flow control BMPs/facilities that are permitted and constructed pursuant to S.5.C.6.c and shall be maintained in accordance with S5.C.7.a.
Inspection	
S5.B.5.b.iii The ordinance or other regulatory mechanism shall include provisions for both construction phase and post construction access for Permittees to inspect stormwater BMPs on private properties that	**S5.C.6.b.iii** Each Permittee shall adopt and make affective ordinances or other enforceable mechanism that gives legal authority, through the approval process for new development and

EWA Phase II	WWA Phase II
discharge to the MS4. If deemed necessary for post-construction access, the ordinance or other regulatory mechanism may, in lieu of requiring that continued access be granted to the Permittee's staff or qualified personnel, instead require private property owners to provide annual certification by a qualified third party that adequate maintenance has been performed and the facilities are operating as designed to protect water quality. **S5.B.5.d.ii** Structural BMPs shall be inspected at least once every five years after final installation, or more frequently, as determined by the Permittee to be necessary to prevent adverse water quality impacts, to ensure that adequate maintenance is being performed. The inspection shall be performed by qualified personnel. **S5.A.5.a.i** Each Permittee shall track the number of inspections performed, follow-up actions as a result of inspections, official enforcement actions taken, and types of public education activities implemented as required for each SWMP component. This information shall be included in the Annual Report.	redevelopment, to inspect and enforce maintenance standards for private stormwater facilities approved under the provisions of this Section that discharge to the Permittee's MS4. **S5.C.7.b.i (b)** Annual inspections of all stormwater treatment and flow control BMPs/facilities that discharge to the MS4 and were permitted by the Permittee according to S5.C.6.c, including those permitted in accordance with requirements adopted pursuant to the 2007-2019 Ecology municipal stormwater permits, unless there are maintenance records to justify a different frequency. Permittees may reduce the inspection frequency based on maintenance records of double the length of time of the proposed inspection frequency. In the absence of maintenance records, the Permittee may substitute written statements to document a specific less frequent inspection schedule. Written statements shall be based on actual inspection and maintenance experience and shall be certified in accordance with G19 – Certification and Signature. **S5.A.3.b** Each Permittee shall track the number of inspections, follow-up actions as a result of inspections, official enforcement actions and types of public education activities as required by the respective program component. This information shall be included in the annual report.

2.3 Inspection Strategies

Proper BMP maintenance on private property often falls short due to the property owner's lack of knowledge, sense of responsibility, and/or willingness to pay maintenance expenses (Yakima County, et al., 2021). Therefore, inspections, while a large investment to many jurisdictions, are important to maintain long-term functionality of privately owned stormwater BMPs (Blecken, Hunt III, Al-Rubaei, Viklander, & Lord, 2017). The three inspection approaches described in this section correspond to who inspects the BMP: Permittees, property owners, or a qualified third party.

The EWA and WWA Phase II MS4 Permits describe two types of inspections: construction-phase inspections and post-construction inspections. This manual focuses on post-construction inspections. As described in **Table 2-1**, per the 2019–2024 Phase II MS4 Permits, EWA structural BMPs require inspection a minimum of once every five years post-construction, while WWA Permittees must inspect stormwater treatment and flow control facilities on an annual basis, unless operating under an approved alternative schedule.

The following subsections describe strategies for inspections conducted by Permittees, property owners, and qualified third parties. Permittees may choose to combine or use more than one of these strategies within their jurisdiction. For example, a Permittee may give property owners the option of hiring a third party or request that the Permittee provide the inspection. Also included in the following subsections are specific examples of how Permittees use a combination of strategies.

2.3.1 Permittee Inspects

Permittee inspections involve the Permittee making site visits to BMPs on private property and conducting the BMP inspection to ensure proper maintenance occurs and the stormwater BMP functions as designed. A review of literature, as well as results from the Yakima County study, found this strategy to be the most common approach Permittees use (Bruce & Barnes, 2008; Yakima County, et al., 2021). The following subsections describe common program elements.

2.3.1.1 Identifying BMPs Requiring Inspection

Prior to inspecting BMPs on private property, the type of BMP(s) on the property should be identified. Thus, Permittees assuming inspection responsibility need to locate and record all private BMPs connecting to the MS4 within their jurisdiction. A common documentation approach includes using a mapping platform, such as GIS (Geographic Information Systems) or CAD (Computer-Aided Design) (Smith & Devine, 2006), as described in **Section 4.3**. Both Phase II Permits require an ongoing program for MS4 mapping and documentation. **Chapter 4** describes mapping requirements and methods in more detail.

Many jurisdictions also review their previous inspection records prior to beginning an inspection. This allows the Permittee to identify which BMPs require inspection during the current inspection cycle and the number of inspections needed to meet permit requirements (Interview #1, 2021). Another approach utilizes a software platform to provide inspection notification reminders for specific BMPs. From discussions with Permittees, using a software platform can help improve efficiency (Wadzuk, et al., 2021). **Section 4.4** further details methods for tracking and reporting.

2.3.1.2 Notifying BMP Owner of Inspection

The Permittee typically communicates with the property owner when a BMP on private property requires inspection. A common approach involves sending a letter or an email to the property owner to give them notice of a scheduled inspection. Some jurisdictions invite the property owner to voluntarily attend when the inspection occurs (Interview #96, 2021), while others may require the owner's attendance (Rafter, 2000). If the property owner is not typically included in the inspection, communicating with them before the inspection is recommended to confirm the BMP location and that Permittee staff can access the BMP(s). Communicating with the property owner either before or during

the inspection allows the Permittee to explain why the inspection is occurring, the importance of maintenance, and inquire about any existing issues with the BMP.

Appendix 2-A provides an example of an inspection notification letter or email.

2.3.1.3 Inspecting the BMP

Trained staff should conduct the BMP inspections. From discussion with participants during the Yakima County study, Permittees who conduct their own inspections often have staff dedicated to inspecting BMPs (Interview #1, 2021). Permittees often use checklists or manuals that outline Operations and Maintenance (O&M) standards as guidance for the inspection. These checklists or manuals are typically either a paper copy form or are embedded within a software platform uploaded on a tablet for field use. **Appendix 2-B** provides examples of inspection checklists for different BMPs. During the inspection, the Permittee will need to document inspection observations and, if necessary, any non-compliances. If the property owner is present during the inspection, the Permittee can provide feedback regarding any maintenance the owner has performed well and steps the owner can take to improve their maintenance activities (Interview #96, 2021). If the owner is not present, the Permittee can follow up with the owner regarding the inspection results, as described in **Section 2.3.1.4**.

An owner may refuse property access. While found to be uncommon in the Yakima County study, the Permittee can work with the jurisdiction's legal department to develop a process for responding to this situation. This process will vary based on the legal authority granted to the Permittee. **Case Study 2.1** describes how one jurisdiction handled a property owner refusing access**.**

Figure 2-1. BMP on private property before (top) and after (bottom) construction

Being familiar with the BMP and how it looks and operates can save Permittee resources by reducing time to perform inspections. This is an advantage for Permittees who utilize the same inspectors during and post-construction.

2.3.1.4 Post-Inspection Follow-up

Many Permittees follow up with the owner via email or letter to provide the inspection results (Interview #96, 2021). Follow-up may also include providing the owner with guidance for remediating the BMP. Other items, such as photos or observational notes, may also be helpful. Some jurisdictions conduct follow-up inspections if corrective actions are required (Interview A, 2022). Permittees can also use follow-up correspondence for scheduling second inspections. **Appendix 2-C** provides examples of follow-up notifications.

Table 2-2 summarizes some of the advantages and disadvantages of developing programs with Permittees inspecting BMPs.

Table 2-2. Advantages and disadvantages of Permittees conducting inspections

Advantages	Disadvantages
Inspections occur as required and with confidence that issue identification will occur, including illicit discharges (Interview #81, 2021; Interview #86, 2021; Interview #89, 2021).	This strategy, which is time and people intensive, requires more staff and funding for jurisdictions compared to other strategies described in this manual.
If Permittees conduct the inspection, they will likely become aware of a problem earlier and can implement or enforce Permit requirements and local codes sooner than when another entity conducts the inspection (Interview #92, 2021).	Permittees may not have access to BMPs, even if required by local code.
Opportunities may arise for Permittees to educate the owner about stormwater BMPs and build rapport with residents and businesses (Interview #81, 2021), which can improve successful maintenance (Rieck, et al., 2021).	Some Permittees report cultural and institutional resistance to enforcement during inspections on private property (Interview #92, 2021).
Using the same inspector during construction and post-construction can improve familiarity with the BMP(s) and their operation. This can reduce the time needed to perform inspections (Interview #96, 2021).	Obtaining accurate property owner contact information, especially when property owner or responsible party changes, creates challenges (Interview #23, 2021).
Using one entity to handle documentation and recordkeeping allows the inspector to access and review of inspection records in advance, which promotes consistency and efficiency (Interview #1, 2021).	

An effective strategy to improve long-term BMP functionality requires building an inspection program with Permittee staff responsible for conducting the inspections. However, this strategy also requires more jurisdictional resources than the other approaches described in this manual. The following two sections detail strategies that may require fewer jurisdictional resources.

2.3.2 Property Owner Inspects

Another Permittee inspection strategy involves property owner-conducted inspections. This includes homeowners associations, private businesses, or individual property owners inspecting their BMPs to confirm both proper maintenance and that the BMP(s) function as designed. A review of literature, as well as results from the Yakima County study, found this strategy to be the second most common approach Permittees use for jurisdictions outside Washington State (Bruce & Barnes, 2008; Yakima County, et al., 2021). Both the EWA and WWA Phase II MS4 Permits require qualified personnel to conduct inspections. The Phase II MS4 Permits define *qualified personnel* as, "someone who has had professional training in the aspects of stormwater management for which they are responsible and under the functional control of the Permittee. Qualified personnel may be staff members, contractors, and/or volunteers" (Washington State Department of Ecology, 2019a; Washington State Department of Ecology, 2019b). At the time this manual was written, the Phase II MS4 Permits do not include property owners within the definition of qualified personnel. Therefore, in the State of Washington, property

owners should not conduct their own BMP inspections on private property to meet the Permit's inspection requirement. While a property owner could possess the necessary training per the Permit's definition, they would not constitute a third party in the neutral sense, which is described in the following section.

2.3.3 Third Party Inspects

The final inspection strategy examined in this manual involves hiring a qualified third party to inspect the BMPs to confirm the BMP is being properly maintained and is functioning as designed. The Permittee can contract a qualified third party or require the BMP owner to hire a third party. A review of literature, as well as results from the Yakima County study, found this strategy to be the least common approach Permittees use for jurisdictions outside Washington State and the second most common approach for jurisdictions within Washington State (Bruce & Barnes, 2008; Yakima County, et al., 2021).

The following subsections describe the common program elements when using qualified third parties for privately owned BMP inspections.

Figure 2-2. Plant growing inside drywell

A third-party inspector discovered a plant growing inside of drywell during a routine inspection.

2.3.3.1 Developing Third-Party Inspection Requirement

The Permittee can establish an option or requirement for a third party to conduct inspections during program development (see **Figure 2-2**). The Permittee can document the option or requirement in a way that holds the BMP owner liable for the proper functionality of the BMP and defines whether the Permittee or BMP owner hires the third-party inspector. For example, the Permittee may update their ordinance to require BMP owners to certify that a qualified third party performed the inspection (City of Spokane, 2022). Other approaches for documenting this requirement include developing a formal property owner agreement or including the requirement in the property's deed. **Chapter 5** further describes documentation of inspections, including example agreements.

2.3.3.2 Defining and Documenting Qualifications for Third-Party Inspectors

To help ensure adequate inspections, the Permittee can specify the minimum qualifications third-party inspectors must meet to perform BMP inspections. Jurisdictions can achieve this by defining the minimum knowledge or experience inspectors must have in operations and maintenance standards for the types of BMPs allowed within their jurisdiction. Alternatively, the jurisdiction can require third-party certification and/or training, such as the University of Minnesota online Erosion and Stormwater Management Certification Program: Inspection and Maintenance of Permanent Stormwater Treatment Practices Certification, in order to conduct inspections. Another approach involves the jurisdiction providing a list of preselected, qualified third parties to property owners (Interview A, 2022). Property owners can then choose a third party from the list to conduct inspection. **Case Study 2.2** provides examples of how Permittees utilize qualified lists of third parties.

2.3.3.3 Inspecting the BMP

During the BMP inspection, the qualified third party should inspect the BMP at the frequency specified by the jurisdiction. Third-party inspectors should inspect the BMP to confirm maintenance occurs per the BMP's standards and document the inspection using checklists, forms, or templates as specified by the Permittee. Permittees may require property owners to submit the documentation to the Permittee by a specified date upon the inspection's completion (Interview C, 2022).

2.3.3.4 Performing Spot Check and Follow-up Inspections

Permittees may decide to perform periodic spot checks or follow-up inspections to confirm the required maintenance occurs. Follow-up inspections are more common when a jurisdiction does not receive documentation from the property owner confirming the required inspection occurred. Spot check inspections may also occur on private property upon receiving a complaint that indicates the BMP is not being maintained (Interview #87, 2021). **Case Study 2.3** provides an example of spot checks implemented by a jurisdiction.

Table 2-3 summarizes some of the advantages and disadvantages of developing programs with qualified third parties inspecting BMPs.

Table 2-3. Advantages and disadvantages of qualified third parties conducting inspections

Advantages	Disadvantages
Delegating the inspection responsibility to a qualified third party reduces workload and cost for the Permittee (Interview #2, 2021).	Recording and tracking inspections provided by several different entities may create challenges and require additional Permittee time (Interview #2, 2021).
Making the property owner responsible for hiring a third party may provide the BMP owner a better understanding of their system's contribution and connection to the MS4 (Interview #35, 2021). This may result in more proactive maintenance instead of reactive repairs (Lord & Hunt, 2008).	Requires up-front effort by the Permittee to determine and document third-party qualifications or create a list of third-party inspectors.
Empowers BMP owners to choose who inspects their BMP(s), which could result in cost savings for the BMP owner, compared to paying for these inspections through utility or permit fees (Interview #72, 2021; Interview #2, 2021).	For jurisdictions that lack a list of third-party inspectors, the property owner must find a qualified inspector, which might present challenges.
Inspections are performed by qualified personnel who can provide professional assurance that the BMP operates as intended (Blecken, Hunt III, Al-Rubaei, Viklander, & Lord, 2017).	Not all Permittees or property owners will confirm the third-party qualifications, which may result in uncertainty regarding the inspection's adequacy. Inadequate inspections may also result in improper BMP maintenance, which can result in diminished BMP function (Rieck, et al., 2021).
	Obtaining accurate property owner contact information, especially when property owner or responsible party changes, can present challenges (Interview #23, 2021).

Hiring a qualified third-party inspector may reduce Permittee staff workload and require fewer resources compared to the Permittee conducting inspections. Properly trained and knowledgeable third-party inspectors improve the likelihood the needed maintenance occurs as intended. Research found that requiring inspections by a professional who provides proof and professional assurance that the BMP operates as intended supported more reliable BMP function (Blecken, Hunt III, Al-Rubaei, Viklander, & Lord, 2017).

2.4 Maintenance Strategies

A properly maintained stormwater BMP is more likely to continue functioning as designed. Lack of proper maintenance can result in stormwater and pollutants bypassing the facility without treatment or flow attenuation. This negates the financial investment made in designing and constructing the BMP to perform specific functions. The authors of the 2015 Blecken, Hunt III, Al-Rubaei, Viklander, & Lord article suggest that obvious failures may also lead to a loss of public confidence in stormwater treatment technologies.

As mentioned in **Section 2.2**, post-construction inspections of BMPs must occur once every five years by the 2019–2024 EWA Phase II MS4 Permit and annually by the 2019–2024 WWA Phase II MS4 Permit. The EWA Phase II MS4 Permit indicates that when BMP inspections identify problems, the Permittee must require and confirm that the necessary operation, maintenance, and/or repair occurs as soon as practicable (Washington State Department of Ecology, 2019a). In WWA, when an inspection identifies a deficiency, maintenance must typically occur within one year (Washington State Department of Ecology, 2019b).

The following sections detail strategies for maintenance conducted by Permittees, property owners, and qualified third parties. Permittees may choose to combine or use more than one of these strategies within their jurisdiction(s). For example, a Permittee may give property owners the option of hiring a third party or perform the maintenance themselves. The following sections also include examples of combined strategies but focus primarily on the use of the individual strategies. Regardless of the strategy selected, the maintenance performed should be consistent with the activities described in the Stormwater Management Manual for Western Washington (SWMMWW) and the Stormwater Management Manual for Eastern Washington (SWMMEW) or an approved equivalent manual.

2.4.1 Permittee Maintains

One potential maintenance strategy places the responsibility for maintaining BMPs on private property on the Permittees. This strategy requires the property owner to provide the Permittee access to the BMP and then the Permittee performs the BMP maintenance, including providing the necessary equipment and labor. For this strategy, the Permittee may charge the property owner an inspection fee or implement higher stormwater utility fees to cover costs. A review of literature, as well as results from the Yakima County study, found this strategy to be the least common approach Permittees use (Bruce & Barnes, 2008; Yakima County, et al., 2021). While implemented infrequently, those jurisdictions using this strategy were found to only apply the strategy to a portion of the privately owned BMPs. For example, the jurisdiction may only perform the required maintenance if they find a BMP is consistently neglected (see **Figure 2-3**) or poorly maintained (Rafter, 2000).

In the Yakima County study, of the 26 respondents, only two Permittees indicated their jurisdiction would maintain privately owned BMPs and this would only occur under certain circumstances.

Specifically, one respondent indicated they provide the option for property owners to either allow the Permittee access to the BMP for maintenance or to hire a third party to perform maintenance. The other respondent indicated they accept the maintenance responsibility depending on the BMP's priority, as defined by its potential to impact a water body, and if there is an existing maintenance agreement (Yakima County, et al., 2021). While it is the least common maintenance strategy, some jurisdictions may still find it applicable under certain circumstances. The following subsections describe the common program elements of this strategy.

Figure 2-3. Sediment buildup

Routine maintenance prevents sediment buildup in the bottom of structures.

2.4.1.1 Developing Prioritized BMP Categories

When developing or refining programs, Permittees may elect to provide maintenance for "high priority" BMPs. For example, BMPs categorized as high priority may include those that: are located upstream of a 303d, TMDL, or sensitive water body; use proprietary treatment technologies that require specialized training to maintain; or have unique BMP design or maintenance requirements differing from typical practices (Interview #72, 2021). For other BMPs not falling into this category, maintenance responsibilities would fall on the property owner (see **Section 2.4.2**) or a qualified third party (see **Section 2.4.3**).

2.4.1.2 Developing Maintenance Agreements or Other Contracts

Permittees may elect to provide maintenance only for facilities with an accepted maintenance agreement (Interview #73, 2021). In this case, the maintenance agreement would document the party responsible for maintenance. Also, it may define the BMP design and specifications installed on the private property, as well as the required maintenance and maintenance frequency. Other contracts used to assign responsibility of maintenance to the Permittee may include language tied to the plat or parcel, such as an O&M declaration page. An O&M declaration page consists of a notarized single-page document that records the property, site owner information, and BMP O&M requirements. The document is sent to the local Assessor's office or other office that records property or tax lot information (Interview #59, 2021). Contracts such as maintenance agreements and O&M declaration pages can provide the Permittee the option of performing maintenance and sending the property owner a bill or placing a lien on the property. **Chapter 5** further describes documenting maintenance responsibilities and includes example agreements.

2.4.1.3 Identifying BMPs Requiring Maintenance

Before performing maintenance, Permittees can determine which BMPs require maintenance through issues identified during recent inspections or according to a seasonal or specified maintenance frequency (Interview #1, 2021). As detailed in **Section 2.3.1.3**, Permittees often use checklists while inspecting BMPs to confirm whether required maintenance occurred or additional maintenance is needed. The inspection findings, determined by items on the checklist not meeting requirements, commonly generate a list of required maintenance needs, such as the trimming of vegetation or the

removal of trash or other solids. Some Permittees choose to perform maintenance on a specified frequency regardless of inspection results (Kang, Wiess, Wilson, & Gulliver, 2008).

2.4.1.4 Notifying Property Owner of Maintenance

When a BMP on private property requires maintenance by the Permittee, the jurisdiction can communicate with the property owner by sending a letter or an email providing notice of the date the Permittee will perform the maintenance. This letter may reference a recent inspection indicating why and what BMP maintenance tasks will occur. The letter may also reference a previous maintenance agreement or other contract indicating the Permittee's right to enter the property and perform maintenance. **Appendix 2-A** provides an example template of a notification letter or email. One challenge Permittees may face includes identifying the appropriate contact information for property owners (Interview #23, 2021). **Chapter 5** describes approaches to address this challenge.

2.4.1.5 Performing BMP Maintenance

Only trained staff should perform BMP maintenance. Permittees typically use checklists or manuals outlining appropriate O&M procedures. Alternatively, Permittees may develop a BMP-specific maintenance manual similar to the bioretention maintenance guide developed for Montgomery County, Maryland (Richardson D., 2019) or the WWA LID O&M Manual (Herrera Environmental Consultants, Inc., Washington Stormwater Center, 2013). Alternatively, Permittees may use the maintenance sections of design manuals (e.g., SWMMEW and SWMMWW). In all cases, maintenance must conform to the standards included in the SWMMEW and SWMMWW or in manufacturer's specifications for proprietary devices.

Table 2-4 summarizes some of the advantages and disadvantages of programs with Permittees maintaining BMPs on private property.

Table 2-4. Advantages and disadvantages of Permittees conducting maintenance on BMPs

Advantages	Disadvantages
When Permittees inspect all high-priority BMPs, it improves the likelihood that Permittee's will monitor and subsequently maintain the greatest potential threats to receiving waters (Interview #72, 2021).	Permittees performing BMP maintenance involves staff time and resources (Rieck, et al., 2021). Additionally, adequate funding to perform maintenance may fall short if development of the inspection and maintenance program occurred after setting utility rates.
The likelihood that BMPs receive the proper maintenance to support their function as designed increases with the awareness of the SWMMWW and SWMMEW O&M standards. Permittee's maintenance staff are likely more aware of the O&M standards than property owners.	The property owner may install a BMP not typically installed and maintained by the Permittee. As such, Permittees may need to provide their staff additional training to maintain all BMPs installed on private property within their jurisdiction, adding to their additional workload.
Permittees are more likely than a private property owner to have access to the required equipment needed to maintain BMPs. For example, Permittees likely have vactor trucks used to clean catch basins, whereas a private property owner may need to hire a contractor for that work.	A property owner may install a BMP not typically maintained by the Permittee. This may require the Permittee to purchase or rent additional or specialized equipment to maintain unique BMPs, which can be costly.

Advantages	Disadvantages
	A property owner may install a proprietary BMP that requires costly specialized maintenance by a Permittee-hired third party.

Maintenance programs with Permittees responsible for maintaining BMPs may be an effective strategy to maintain long-term functionality of the BMPs. However, this strategy requires more Permittee resources than other approaches detailed in this manual. The following two sections describe strategies that may require fewer Permittee resources.

2.4.2 Property Owner Maintains

A common strategy used to maintain BMPs on private property involves the Permittee delegating responsibility of maintenance to the property owner. This approach requires homeowners associations, private businesses, or individual property owners to handle BMP maintenance on their property (Rafter, 2000). A review of literature, as well as results from the Yakima County study, found this strategy to be the most common approach Permittees use (Bruce & Barnes, 2008; Yakima County, et al., 2021). Observations reported by a stormwater operations and maintenance firm in Florida supported the findings of these two studies and indicated most of the jurisdictions delegate responsibility to the property owner (Rafter, 2000). The following subsections describe the common program elements of this strategy.

2.4.2.1 Notifying Property Owner When Maintenance is Required

The jurisdiction can communicate with a property owner when BMP maintenance is required by sending a letter or an email instructing the property owner to provide proof of maintenance by a specified date (Interview A, 2022). This notification may reference a recent inspection, as well as Section S5.B.5 of the EWA Phase II MS4 Permit and Sections S5.C.6 and S5.C.7 of the WWA Phase II MS4 Permit, which identify requirements for implementation, maintenance, and inspection of BMPs on private property. The notification may also reference a previous maintenance agreement or an ordinance as part of the maintenance reminder to the property owner. When referencing a recent inspection, the Permittee may provide a list of specific required maintenance actions for the property owner to perform. The letter or email may also include photos or maps to better illustrate the required maintenance (Interview A, 2022). One challenge Permittees may face includes identifying the appropriate contact information for property owners (Interview #23, 2021). **Chapter 5** describes approaches to address this challenge.

2.4.2.2 Conducting Education and Outreach

The Permittee may conduct Education and Outreach (E&O) efforts with property owners who maintain their own BMPs. The E&O efforts consist of information about the BMP as well as methods to disseminate that information. Methods of dissemination may include one-on-one meetings with property owners, workshops, or mailed information with a reminder notice of required maintenance. E&O materials typically include information regarding the importance of BMP maintenance and appropriate maintenance activities for specific BMPs. Dissemination of this information may occur via brochures, postcards, websites, and social media posts. This information should support proper BMP maintenance per the jurisdiction's standards or specifications. Providing this information to the property owner can help reduce their confusion about the maintenance activities they need to conduct (Interview

#92, 2021). Maintenance manuals are another type of E&O material used by Permittees, similar to the bioretention maintenance guide developed for Montgomery County, Maryland (Richardson D., 2019). Additionally, covenants or other documents transferred during property sales transactions can provide information on how to maintain the property's BMPs, which increases the likelihood the information gets passed along during a transfer or sale (Interview #59, 2021; Interview #96, 2021). **Chapter 9** further describes E&O.

2.4.2.3 Requesting Records of BMP Maintenance

Jurisdictions may require the property owner to submit records or photos to prove that maintenance or an inspection (see **Section 2.3.2**) occurred according to standards and specifications in the SWMMEW, SWMMWW, or per manufacturer's specifications for a proprietary device. Examples of Permittees requesting this information include requiring property owners to submit the documentation to the Permittee by a specific date each year, or the Permittee specifically requesting the documentation through email or a letter in the mail. This requirement may be outlined in the Permittee's code, a maintenance agreement, or some other regulatory mechanism.

Table 2-5 summarizes some of the advantages and disadvantages of developing programs where the property owner is responsible for maintaining BMPs on their property.

Table 2-5. Advantages and disadvantages of property owners conducting maintenance of BMPs

Advantages	Disadvantages
Delegating maintenance responsibility to the property owner reduces workload and cost for the Permittee (Interview #41, 2021; Interview #59, 2021; Interview #24, 2021).	Transferring knowledge of maintenance requirements to new property owners may present challenges, resulting in unmaintained BMPs (Interview #86, 2021).
When maintenance does not depend on Permittee staff availability and resources, inspections to keep BMPs functioning as designed may occur more regularly (Interview #83, 2021).	Property owners may lack proper training, resulting in inadequate BMP maintenance or no maintenance at all (Interview #3, 2021).
Property owners maintaining BMPs improves their awareness of the BMPs and the discharges emanating from their property (Interview #62, 2021). Property owners can assist with finding and addressing issues (Interview #15, 2021).	Challenges in tracking maintenance responsibilities (Interview #100, 2021) may, in turn, impact the accuracy of the Permittee's records.
	There may be challenges associated with recording an O&M agreement and getting the property owner to willingly comply (Interview #76, 2021; Interview #15, 2021).
	Continued program growth and the time-intensive nature involved with consistent outreach can present challenges with tracking down the current property owner (Interview #87, 2021). Without proper education, adequate BMP maintenance may not occur.

Implementing programs that delegate maintenance responsibilities to property owners can reduce Permittee workload and require fewer resources compared to programs with the Permittee conducting maintenance. While savings in time and resources may result, the quality of the maintenance relies on the willingness and ability of the property owner to comply with maintenance agreements; therefore, E&O plays an important role when implementing this strategy.

2.4.3 Third Party Maintains

The final maintenance strategy involves a qualified third party, hired by the Permittee or the property owner, conducting BMP maintenance. A review of literature, as well as results from the Yakima County study, found this strategy to be the second most common approach Permittees use (Bruce & Barnes, 2008; Yakima County, et al., 2021). With this approach, some Permittees also provide property owners with a list of approved vendors to provide maintenance similar to third-party inspections described in **Section 2.3.3.2**.

The following subsections describe common program elements when utilizing qualified third parties to maintain privately owned BMPs.

2.4.3.1 Documenting Third-Party Maintenance Requirements

As programs evolve, the Permittee can establish the third-party maintenance requirements, including recordkeeping, in a way that holds the BMP owner liable for the functionality of the BMP (City of Spokane, 2022). Permittees can implement these requirements using ordinances like those described in **Section 2.3.3.1** and detailed further in **Chapter 6.** Permittees may also establish the requirements using formal BMP owner agreements or include the requirements in the property's deed. The requirements may define the design and specifications for the installed BMP, the required maintenance frequency, and qualifications for the third-party vendor. **Chapter 5** further describes documentation of maintenance responsibilities.

2.4.3.2 Defining and Documenting Qualifications for Third Party

To limit inadequate maintenance, the Permittee can define the qualifications the third party must meet to perform acceptable BMP maintenance. **Section 2.3.3.2** describes approaches for this program element; however, Permittees determine qualifications for third parties to perform maintenance instead of an inspection.

2.4.3.3 Notifying Property Owner When Maintenance is Required

When BMPs require maintenance, the jurisdiction can communicate with the property owner by sending a letter or an email providing notice of the required maintenance, potentially including a deadline. **Section 2.4.2.1** describes approaches for this program element.

2.4.3.4 Requesting Records of BMP Maintenance

Permittees may require records verifying maintenance occurred according to standards and specifications in the SWMMEW, SWMMWW, or per manufacturer's specifications if the BMP is for a proprietary device. **Section 2.4.2.3** describes approaches for this program element.

Table 2-6 summarizes some of the advantages and disadvantages of developing programs requiring the property owner to hire a qualified third party to maintain BMPs.

Table 2-6. Advantages and disadvantages of qualified third parties conducting maintenance

Advantages	Disadvantages
Delegating maintenance to a qualified third party reduces workload and cost for the Permittee (Interview #2, 2021).	Recording and tracking maintenance provided by several different entities can present challenges and require Permittee time (Interview #2, 2021).
The BMP owner may have or develop a better understanding of how their system connects and contributes to the MS4 (Interview #35, 2021). This may result in more proactive maintenance instead of reactive repairs.	Hiring a third party (when hired by the Permittee) to provide maintenance is more expensive than when the property owner provides the maintenance.
It empowers BMP owners to choose who maintains the BMP. The BMP owner may find it more cost effective compared to paying for maintenance fees through utility or permit fees (Interview #2, 2021).	If the third party's qualifications to provide maintenance are not confirmed, they may not provide proper maintenance, which could result in inadequately maintained BMPs.
Maintenance performed by qualified personnel often results in adequately functioning BMPs (Licher, 2016).	

Delegating maintenance to a qualified third party may reduce Permittee workload and require fewer resources compared to other strategies, similar to strategies delegating maintenance responsibilities to property owners. Using this strategy allows the property owner to better understand their system's connection to the MS4. The maintenance performed by a professional may result in higher quality maintenance than if performed by the property owner.

2.5 Case Studies

2.5.1 Case Study 2.1 – Property Access Refusal

A participant in the BMP Inspection and Maintenance Responsibilities for Privately Owned Facilities Study developed a process for property access refusal. If refused access, the jurisdiction's legal department sends the property owner a letter. If access is still refused, the jurisdiction asks the property owner to sign a letter assuming BMP noncompliance. Once signed, the noncompliance constitutes an illicit discharge and the Permittee administers the property owner a fine without going through the jurisdiction's legal system (Interview #59, 2021).

2.5.2 Case Study 2.2 – Providing Third-Party Suggestions

A Western Washington Permittee requires BMP owners to maintain BMPs on private property, which may involve hiring a qualified third party. The Permittee then conducts the BMP inspections. The Permittee sends out an email notifying the property owners of the required maintenance, including an alphabetized list of potential third-party maintenance contractors. The list includes contractor names, addresses, and descriptions of services provided. Each year, the Permittee contacts the contractors to verify their interest in remaining on the list, which has grown over the years. Although the jurisdiction provides a list of third-party maintenance contractors, hiring a third party does not guarantee passing the BMP inspection. The jurisdiction also does not recommend or endorse any specific third party.

An Eastern Washington Permittee requires a qualified third party to conduct inspections of BMPs on applicable private properties. To develop a list of possible vendors to provide inspections, the jurisdiction contacted another Permittee with a similar program who was willing to share their list. The jurisdiction then called each vendor to verify their interest in providing similar services in the jurisdiction's area. The list of vendors grew as a result of:

- Contacting other consultants and tech services in the area
- Posting an ad in the American Public Works Association newsletter
- Adding vendors at their request

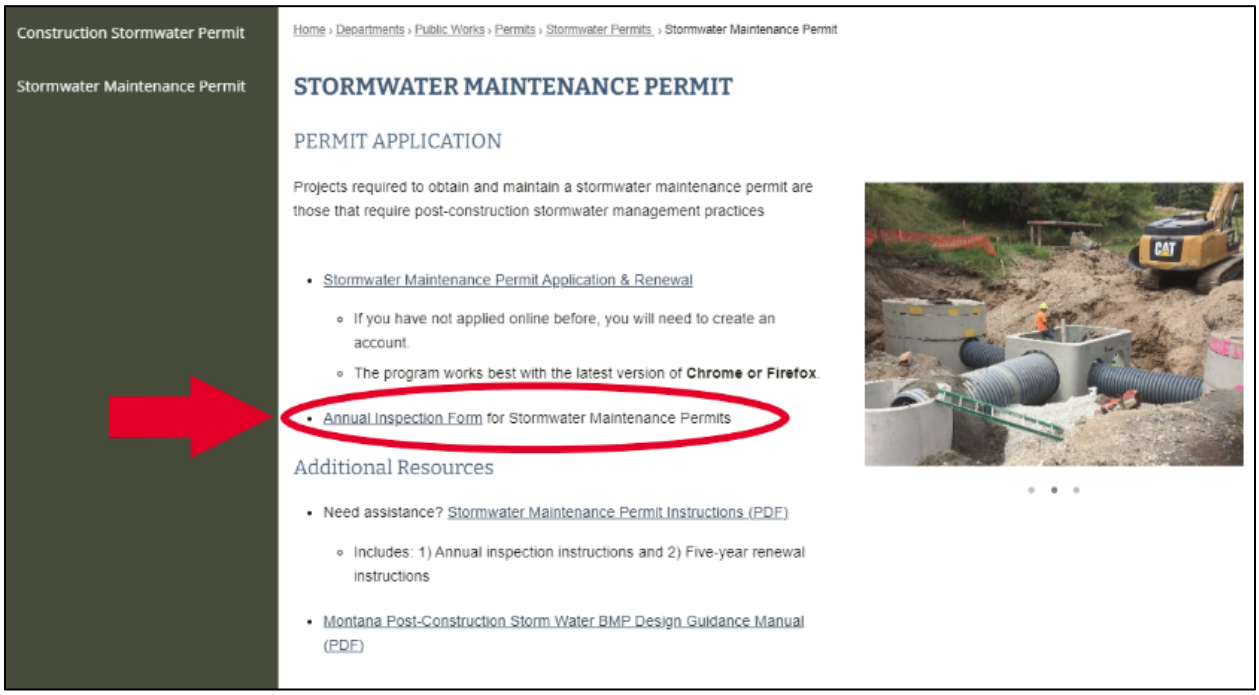
The jurisdiction includes a disclaimer on the vendor list stating that the list serves as an informational resource only. The jurisdiction does not endorse or prefer any provider and property owners do not need to limit contracting with those providers to conduct stormwater BMP inspection certifications.

2.5.3 Case Study 2.3 – Spot or Follow-Up Inspections

A jurisdiction in Montana places the responsibility of inspecting and maintaining stormwater BMPs on the private property owner. The jurisdiction requires BMP owners to submit annual documentation every October 1 demonstrating that a visual inspection occurred and the BMPs operate as designed. Before the annual due date, the jurisdiction sends out a reminder email to the BMP owners, which includes the following:

- Notice of the visual inspection and due date
- A link to the inspection forms on the jurisdiction's website
- A copy of the permit agreement and terms
- Detailed instructions for submitting inspection documentation

- A screenshot of the Stormwater Maintenance Permit webpage showing the location of permit information, forms, and additional resources (shown below)



Failing to meet the October 1 documentation submittal deadline triggers a second reminder/past due email to the BMP owner. The jurisdiction's regulatory agency requires documentation of annual high-priority BMP inspections, so if the inspection form continues to go unsubmitted, the jurisdiction conducts a spot or follow-up inspection to confirm the BMP has been maintained. The jurisdiction also inspects BMPs on private property for BMPs appearing out of compliance or if they receive a complaint. When asked about the benefits of the jurisdiction's BMP inspection and maintenance program structure, the jurisdiction expressed that assigning responsibility to the BMP owners reduced the workload for staff, which provided more capacity for other program elements. The program also allows flexibility for the jurisdiction to conduct all necessary spot or follow-up checks by assigning the due date of October 1, three months in advance of the regulatory agency's required deadline.

2.6 Appendices

2.6.1 Appendix 2-A – Notification of Inspection Template

Dear Permittee:

The Stormwater Maintenance Permit at your facility/on your property **requires a visual inspection** of the permitted stormwater feature **by** **[Date].**

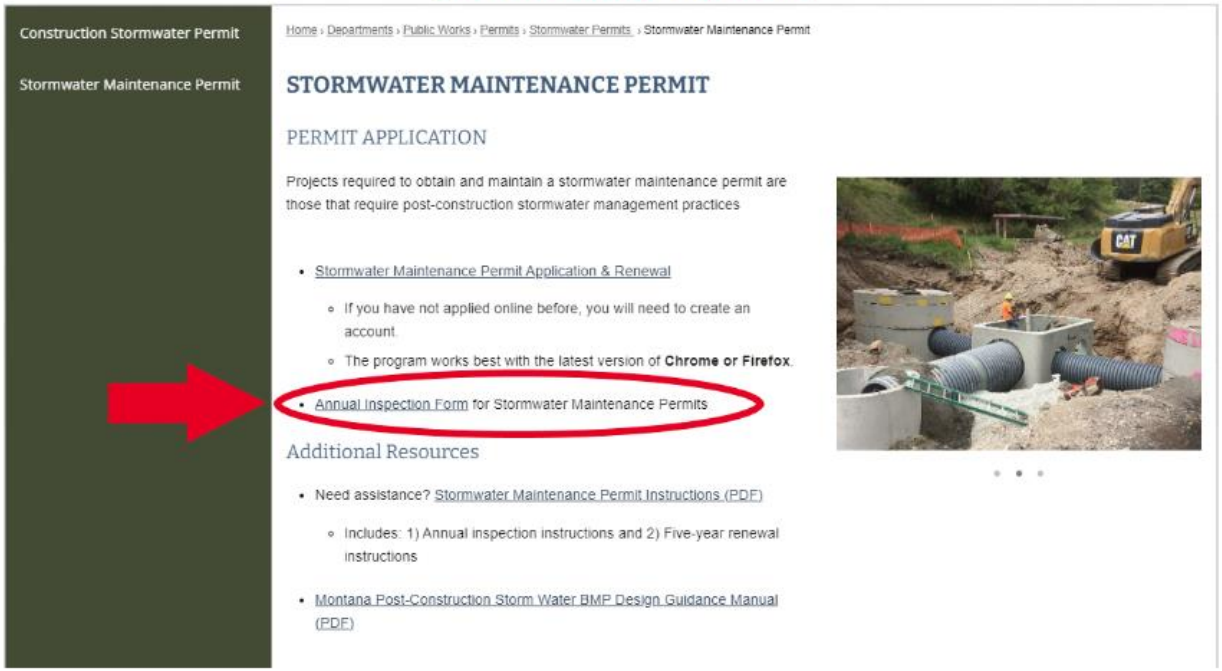
Inspection forms for Stormwater Maintenance Permits are located online at [Add website link] Below is a copy of the permit agreement and terms.

Attached and linked are detailed instructions for submitting the inspections: [Add website link]

Please call or email if you have any questions or need additional information.

Sincerely,
Name

[Insert screenshot or other helpful visuals]



2.6.2 Appendix 2-B – Example Inspection Checklists

Documents included:

- The template on the following page can be found at the Washington Stormwater Center's website: https://www.wastormwatercenter.org/wp-content/uploads/5_Post-const_Perm_BMP_checklist_110518_final_editable.pdf
- Stormwater Maintenance Inspection – Example 2

[City/County Name]
[Department Name]
[Address Line 1]
[Address Line 2]

Add Logo Here

Post-Construction of Permanent Stormwater BMPs/Facilities Inspection Checklist

Objective: Post-construction inspection(s) should verify proper installation, maintenance, and performance of permanent best management practices (BMPs).

Project Information

Project Name:	Project/Permit Number:
Location:	
Property Owner Information Owner Name: _____ Owner Phone Number: _____ Owner Email Address: _____	**Inspection Information** Inspector Name: _____ Date of Inspection: _____ Time of Inspection: _____
Contractor Information Contractor Name: _____ Lead Contact Name: _____ Lead Phone Number: _____ Lead E-mail Address: _____	**Certified Erosion and Sediment Control Lead (CESCL)** CESCL Name: _____ CESCL Certification Expiration Date: _____ CESCL Phone Number: _____ CESCL E-mail Address: _____
Has the required documentation been submitted to the [City/County] prior to formal project turnover? ☐ Yes ☐ Action required ☐ Unknown	
Date that the stormwater drainage system was last cleaned: _____	
Upcoming Inspections ☐ Infiltration testing for permanent bioretention or permeable pavement facilities ☐ Stormwater Performance and Maintenance Bond estimated inspection date: _____ ☐ N/A	

Permanent Stormwater BMPs/Facilities

Item #	Inspection Item	Applicable BMPs/Specifications	Satisfactory?
13A	Have LID BMPs (infiltration and dispersion) been protected from: • Siltation • Compaction	• Construction sequencing	☐ Yes ☐ Action required ☐ N/A
13D	Have proper soil amendments been provided in planting and turf/lawn areas?	• See **Post-Construction Soil Quality and Depth** BMP in the Stormwater Management Manual for Western Washington	☐ Yes ☐ Action required ☐ N/A
13E	Has appropriate vegetation and mulch been installed?	• Site is permanently stabilized	☐ Yes ☐ Action required ☐ N/A

[City/County Name]
[Department Name]
[Address Line 1]
[Address Line 2]

Add Logo Here

Item #	Inspection Item	Status	Infiltration Test Results (if required)
B-1	Bioretention	☐ Facility was installed as designed; no maintenance needed ☐ Facility was not installed as designed ☐ Soils were scarified along the dispersion flow path, if disturbed during construction ☐ Tested infiltration rate (if required) meets design infiltration rate ☐ Action required ☐ Maintenance required ☐ N/A	Tested infiltration rate(s): _____ _____ _____ _____ Design infiltration rate: _____ **Attach additional pages if necessary*
P-1	Permeable pavement driveways	☐ Facility was installed as designed; no maintenance needed ☐ Facility was not installed as designed ☐ Tested infiltration rate (if required; using the 5-gallon bucket test, ASTM C1701, or ASTM C1781) meets design infiltration rate ☐ Action required ☐ Maintenance required ☐ N/A	5-gallon bucket test observations: ☐ Scant amount of puddles runs off the surface ☐ Significant runoff occurs ASTM C1701 or ASTM C1781 results: Tested infiltration rate(s): _____ _____ _____ Design infiltration rate: _____ **Attach additional pages if necessary*
P-2	Permeable pavement roads and parking lots	☐ Facility was installed as designed; no maintenance needed ☐ Facility was not installed as designed ☐ Tested infiltration rate (if required; using ASTM C1701 or ASTM C1781) meets design infiltration rate ☐ Action required ☐ Maintenance required ☐ N/A	ASTM C1701 or ASTM C1781 results: Tested infiltration rate(s): _____ _____ _____ Design infiltration rate: _____ **Attach additional pages if necessary*
A-1	Other permanent BMPs/facilities	☐ Facility was installed as designed; no maintenance needed ☐ Facility was not installed as designed ☐ Maintenance required ☐ Action required ☐ N/A	

Notes/Comments:

Summary of Corrective Actions

Are corrective actions needed? ☐ Yes, see following table ☐ No, none required

Item#	Description and Location	Action Required	Completion Date	Initials

Attach additional page(s) if needed.

STORMWATER MAINTENANCE INSPECTION

Submitted By: Anonymous user **Submitted Time:** 09/20/2022 9:30 AM

LOCATION OF STORMWATER CONTROL

Stormwater Maintenance Permit Number:
Type of Control: Proprietary
Location Description:

Date of Inspection: September 20, 2022 7:45 AM
Weather: Cloudy

DAMAGES & DISCHARGES

Do you suspect that any physical changes or damages to the stormwater control may have occurred since the last inspection?

No

Are there any stormwater discharges at the time of the inspection?

No

Are there any prohibited discharges at the time of the inspection and/or any signs of prohibited discharges since the last inspection?

No

PROPRIETARY TREATMENT DEVICES

Sediment Conditions Acceptable

Slopes	Conditions Acceptable
Vegetation	Not Applicable
Contaminants & Pollution	Conditions Acceptable
Structural Damage	Conditions Acceptable
Outfall - Structural Damage	Conditions Acceptable
Erosion	Conditions Acceptable
Pipes	Conditions Acceptable
Animal Burrows	Conditions Acceptable
Contaminants & Pollution - Within Control	Maintenance Required
Required Maintenance	Minor trash observed in separator. Will return on or before 9/30/22 to remove trash. Sediment level is minimal and removal not warranted at this time.
Encroachments	Conditions Acceptable
Safety Devices	Not Applicable
Algae & Vegetation	Not Applicable
Ground Surface	Not Applicable
Function	Conditions Acceptable
Additional Controls	Conditions Acceptable

Other Required Maintenance

None.

PHOTOS

Condition Rating Very Good

Did the owner perform the inspection? No
Inspector's Name
Owner's Name

CONTACT INFORMATION

Email
Phone Number
Owner's Signature

2.6.3 Appendix 2-C – Example Follow-Up Notifications

INSERT HEADER/LOGO

[Date]

[Name]
[Street Address]
[City, State Zip Code]

Re: Storm Drain Facility at [Address]

Dear Property Owner/Manager:

The enclosed documents explain the work that must be done to restore your private stormwater system to meet the [Jurisdiction] and Department of Ecology standards. A recent inspection of your storm drain facility shows that it needs maintenance and/or repairs. We request that [Facility] identified in the photos and prints attached be cleaned out by [Date]. If you are unable to meet this deadline, please call us. Upon completing the cleaning and/or maintenance of this facility, please submit copies of the receipts to the [Jurisdiction] and notify us to reinspect the system if needed.

The [Jurisdiction] has no easement or maintenance obligations for this facility. Private stormwater facility owners are responsible for regular maintenance of their storm drainage facility to perform as designed. By keeping your drainage facility maintained, you not only satisfy [Jurisdiction] regulations but also reduce the chance of flooding on your property and downstream properties and help protect the essential waters of the state.

If you have any questions, you may contact me at (XXX) XXX-XXX.

Sincerely,
[Jurisdiction]

Name
Role
Department

Enclosures

INSERT HEADER/LOGO

[Date]

SUBJECT: Findings of Private Stormwater System Inspection at [Address]

Dear Property Owner/Manager:

On [Inspection Date], the [Jurisdiction] inspected the private stormwater system at [Address] and found that your private stormwater system needs maintenance work to function correctly.

The enclosed documents explain the work that must be done to restore your private stormwater system to meet the [Jurisdiction] and Department of Ecology standards. [As the designated representative for this system, we request a response from you to this notice.] OR [We request that the property owners responsible for this system coordinate the response to this notice and designate a representative as our contact person.]

The [City/County] must receive a response to this notice within [XX] days and have the work done no later than [Date], telling us how and who will accomplish the job. Please include the Invoice of work when finished.

The [City/County] recommends obtaining multiple bids from private contractors before beginning work. When the work is completed, please return a copy of the invoice and the work performed signed by the designated representative or contractor who performed the work.

Please see the enclosed documents:

- Map of your stormwater system and maintenance that is needed
- List of licensed maintenance contractors

If you have any questions, please contact [Name] at [Email Address] or [Phone Number].

I appreciate your cooperation. Together we can prevent flooding and help keep our lakes, rivers, streams, and Puget Sound clean.

Sincerely,

[Name]
[Role]
[Department]

INSERT HEADER/LOGO

[Date]

[Name]
[Street Address]
[City, State Zip Code]

via certified mail and email
Notice of Violation

Re: Illicit Discharge at [Address]

Dear [Property Owner/Manager] OR [Name]:

[City/County] staff observed that the subject site contains an illicit discharge of what appears to be [Enter Description] entering the on-site storm system. This is a violation of the [Jurisdiction] Code.

Prohibited Activities:

- Failure to provide protection for the waters of the state
- [Enter Description]
- [Enter Description]

Violation:

You are hereby notified that the activities are in violation of:
[Code Number and Title]
[Code Language]

Required Corrective Actions:

In order to prevent recurrence of these violations, the following corrective actions must be taken:

- Cease and desist all activities which result in [Enter Description] being leaking onto surface
- [Enter Description]
- [Enter Description]

These Corrective Actions must be completed immediately.

Penalty for Non-Compliance

Failure to comply with this notice in the timeframe allotted may result in the [Jurisdiction] pursuing penalties of up to $XXX.XX per day as allowed by [Cite Code]. If you do not comply with corrective actions within the timeline stated above, the [Jurisdiction] will issue you a citation which will require [Enter Description].

INSERT HEADER/LOGO

If you have any questions, you may contact me at (XXX) XXX-XXX.

Sincerely,
[Jurisdiction]

Name
Role
Department

[Attach Photos or Other Documentation]

Chapter 3
Resources and Funding

Chapter Contents

3.1 Chapter Overview

Achieving long-term BMP performance and Permittee compliance with respective Phase II MS4 Permits involves properly budgeting and allocating resources for these programs (Flynn, Linkous, & Buechter, 2012). This chapter examines program funding needs as well as methods and tools Permittees can use to calculate their required funding and determine the resources needed for the inspection and maintenance strategy (**Chapter 2**) they use to meet their Phase II MS4 Permit requirements for BMPs on private property. This chapter also reviews potential funding sources, including advantages and disadvantages of different financing approaches. The Appendices include tools Permittees may use or adopt to meet jurisdictional needs.

3.2 Permit Requirements

There are no Phase II MS4 Permit requirements that pertain to funding for inspection and maintenance of privately owned BMPs.

3.3 Identifying Program Funding Needs

Identifying and understanding the needs of a jurisdiction's maintenance and inspection program for BMPs on private property requires estimating and allocating resources and funding for the programs (Flynn, Linkous, & Buechter, 2012). This section details common elements of these programs to consider when determining both the program and resource needs, and it provides suggested methods for calculating the associated funding needs. In the context of this chapter, program and resource needs are defined as follows.

- *Program needs* – all the different program elements needed to administer, coordinate, and implement an inspection and maintenance program.
- *Resource needs* – all the staff, equipment, and materials needed to support a program that meets Phase II MS4 Permit requirements and the jurisdiction's goals.

After identifying program and resource needs, a jurisdiction can then estimate the funding needed. One method includes using a jurisdiction's existing data if it is available. For example, Permittees can use financial records for previous maintenance and inspection program expenditures to estimate future program needs by scaling up the program cost to include any missing or additional components

(Naumann, Davis, Kaphengst, Pieterse, & Rayment, 2011). If existing data is not available, program costs can be estimated using data (such as materials used or time to complete specific tasks) collected in the field during an inspection or maintenance visit, with the equations presented in **Section 3.3.3** (Houle, Roseen, Ballestero, Puls, & Sherrard Jr., 2013). Using data from nearby jurisdictions or consulting literature can also help in estimating program costs. The subsequent sections describe estimating and calculating funding needs in more detail.

3.3.1 Determining Program Needs

Permittees can determine their program needs for an inspection and maintenance program for BMPs on private property by first identifying the different elements of their program and then gathering the information needed to define the level of effort for all elements of the program. **Table 3-1** provides a list of these elements and the information to gather or consider when determining program needs. When reviewing this list and identifying which elements apply to a jurisdiction, Permittees can record or estimate the time needed to implement each program task. Then Permittees can multiply the frequency of the task by the time needed to perform the task to estimate funding and staffing needs (see example in **Section 3.3.3**). Consistent units, such as hours per year or hours per permit cycle, should be used to determine the total time required for all activities.

Table 3-1 provides a starting point to assist Permittees with identifying the different elements of their program as well as the information the Permittees should consider when determining their program needs. However, each jurisdiction is unique, and this table may not include all the different elements of each jurisdiction's program, or the information needed. As such, each jurisdiction will have to assess whether there are other elements of their program that are not listed, as well as the subsequent additional information needed to fully determine their program needs. The information can be gathered from a Permittee's existing records, such as previous inspections or education and outreach (E&O) campaign documentation, or data collected in the field, such as the time and materials used for past inspection and maintenance activities. Other sources of information include literature (**Section 3.3.3.1**) and/or interviews with staff from their jurisdiction or neighboring jurisdictions. Permittees can also extrapolate the information gathered to inform future program and resource needs for Phase II MS4 Permit-related program development or desired program improvement aspirations.

Table 3-1. Information needed to determine program needs

Program Needs[1]	Information Needed[2] about Different Program Elements
Administration and Financial Management	*Calculate the amount of time required to do the following:* • Create and implement policies, including writing policies, resolutions, and ordinances and coordination with other departments • Determine fee breakdowns (who gets charged what) and collect fees • Handle fee appeals • Write job descriptions, advertise for jobs, and conduct the interview and hiring process for maintenance and inspection staff
Operations and Maintenance Requirements	*Determine the following:* • Departments involved in BMP maintenance as well as coordination needs to schedule maintenance • Amounts and types of BMPs maintained

Program Needs[1]	Information Needed[2] about Different Program Elements
(for jurisdictions responsible for maintenance)	• BMP design and maintenance standards as well where they reside (e.g., as-builts, manuals) • Types of routine maintenance needed • Routine BMP maintenance frequency • Time required to complete routine maintenance actions for each BMP type • Materials and equipment required for routine maintenance and percentage of time dedicated to private BMPs • Types of nonroutine maintenance that occur (e.g., replacement of structures, media, or entire BMP); some jurisdictions may classify replacement of a BMP as a capital project and, if so, replacement costs may not reside in the Operations and Management (O&M) budget • Nonroutine maintenance frequency • Materials and equipment required for nonroutine maintenance • Average required time to plan, including coordinating with staff who were involved in designing the BMP and complete nonroutine maintenance • Phase II MS4 Permit-required training frequency of maintenance staff, including seasonal staff, as well as the time commitment required to perform or attend the training
Operations and Maintenance Requirements (for jurisdictions *not* responsible for maintenance)	*If a third party maintains, identify the following*: • The required qualifications needed • How frequently a list of third parties needs updating • The types of third-party training or E&O offered and their frequency (see Public Involvement and Education Requirements in this table for additional information) • The verification needed to ensure maintenance occurred *If the property owner maintains, identify the following:* • The types of training or E&O offered to property owners, and their frequency (see Public Involvement and Education Requirements for additional information) • The verification needed to ensure maintenance occurred
Inspection Requirements (for jurisdictions responsible for inspection)	*Identify the following:* • Departments involved in inspecting BMPs as well as scheduling to coordinate inspections • Types of BMPs inspected • Number of each BMP type • Inspection frequencies • Time required to complete an inspection for each BMP type, including average travel time • Phase II MS4 Permit-required training frequency for inspection staff, including seasonal staff
Inspection Requirements (for jurisdictions *not* responsible for inspection)	*If a third party inspects, identify the following:* • The required qualifications needed • How frequently a list of third parties needs updating

Program Needs[1]	Information Needed[2] about Different Program Elements
	• The types of third-party training or E&O offered and their frequency (see Public Involvement and Education Requirements for additional information)
Regulation and Enforcement Requirements	*Determine the following:* • Departments involved in a typical enforcement action, and the coordination that needs to occur • Regulations or policies enforced or that can result in an enforcement action • Types of enforcement actions or progressive enforcement implemented • Number of times an enforcement action can occur • Enforcement frequency • Frequency of changes to regulations, ordinances, or other requirements, as well as the types of training needed when that occurs
Public Involvement and Education Requirements	*Determine the following:* • Materials, modes of communication, and events used to perform public outreach and education • Number of events attended or organized annually, as well as the event coordination needed • E&O or materials needed at the event • Departments involved in organizing or attending the event • Annual (or more frequent) required E&O material creation or updates • E&O or material distribution mechanisms • E&O material distribution frequency
Recordkeeping and Reporting Requirements	*Identify the following:* • Records, data, and information kept to support the inspection and maintenance program • Software or system used to maintain the records • Time commitment required to submit the necessary records and reports to regulatory agencies

1. Program needs and potential program elements were identified from the following sources as well as the manual authors' professional experience (Flynn, Linkous, & Buechter, 2012; Treadway & Reese, 2000; Yakima County, et al., 2021).
2. Information collected should include the quantities, time needed, and the frequency of the tasks to meet program needs.

3.3.2 Determining Resource Needs

After identifying the program needs, the next step is to identify the resources (staffing, equipment, and materials) necessary to meet those needs. **Table 3-2** lists examples of resources that may be needed for each program element. This list is also intended to serve as a starting point (same as **Table 3-1**) and will not reflect all the resources used by every jurisdiction. The staff referred to in **Table 3-2** includes a variety of experience levels, which may range from entry-level or seasonal staff to senior- or management-level staff, depending on how the Permittee addresses each program need. Understanding a jurisdiction's staff experience levels is important because it may influence staff hourly rates or the time needed to complete a task.

Table 3-2. Resources needed for program elements

Program Needs	Staff, Equipment, and Material Needs
Administration and Financial Management	*Determine staff needed to do the following:* • Write policies, resolutions, and ordinances, and coordinate with other departments • Assess fee breakdowns and collect fees • Address fee appeals • Write job descriptions, advertise for jobs, and perform steps during the interview and hiring process
Operations and Maintenance Requirements (for jurisdictions responsible for maintenance)	*Determine equipment and materials needed to perform maintenance and the staff needed to do the following:* • Schedule and coordinate maintenance • Perform maintenance • Conduct training • Document and maintain maintenance records
Operations and Maintenance Requirements (for jurisdictions *not* responsible for maintenance)	*Determine staff needed to do the following:* • Define qualifications required for a third party (as applicable) • Maintain a list of qualified maintenance providers and website (assuming publication of the list is on the website) • Verify performed maintenance • Document and maintain maintenance records • Conduct training for third party or property owners
Inspection Requirements (for jurisdictions responsible for inspection)	*Determine equipment and materials needed to perform inspections and the staff needed to do the following:* • Coordinate and schedule inspections • Perform inspections • Conduct training • Document and maintain inspection records
Inspection Requirements (for jurisdictions *not* responsible for inspection)	*Determine staff needed to do the following:* • Define qualifications required for a third party (as applicable) • Verify performed inspections • Document and maintain inspection records • Conduct training for third party or property owners
Regulation and Enforcement Requirements	*Determine staff needed to do the following:* • Coordinate and deliver enforcement
Public Involvement and Education Requirements	*Determine staff needed to do the following:* • Coordinate and attend events • Develop materials • Perform public involvement and outreach
Recordkeeping and Reporting Requirements	*Determine staff needed to do the following:* • Request and maintain records, data, and other information • Submit required reports and data

3.3.3 Calculating Program Funding Needs

After identifying the program and resource needs detailed in the previous two sections, this information can be used to develop a cost estimate for funding needed to support an inspection and maintenance program for BMPs on private property. As previously noted, the information collected in **Table 3-1** should include quantities, time needed, and frequency of tasks to meet program needs. The information in **Table 3-2** should include the staff, materials, and equipment needed to complete the tasks. For detailed calculations, this information can be applied to estimate funding needs using the equations below. The subsequent paragraphs after the equations define the variables in each equation. An example calculator has been included in **Appendix 3-A** that uses these equations to assist Permittees in determining program funding needs. **Table 3-3** includes some O&M costs collected from literature that can be used to estimate funding needs without the equations. **Figure 3-1** illustrates how these equations can be used to calculate funding needs.

Equation 1: $$Funding\ Needs = Staff\ Cost + Equipment\ Cost + Material\ Cost$$

Equation 2: $$Staff\ Cost = (Quantity * Time\ Needed * Frequency * Staff\ Rates * Overhead\ Rate)$$

Equation 3: $$Number\ of\ Staff\ Needed = Quantity * Time\ Needed * Frequency$$

Equation 4: $$Equipment\ Cost = (Number\ of\ Staff\ Needed * Equipment\ per\ Staff * Cost\ \ per\ Unit) + (Monthly\ Charge\ for\ Equipment * Cost\ Sharing\ Proportion * Months\ Used\ Per\ Year) + Overhead\ Costs$$

Equation 5: $$Material\ Cost = \ (Quantity * Frequency * Cost\ per\ Unit) + (Quantity * Cost\ Sharing\ Proportion * Cost\ per\ Unit)$$

The variables in *Equation 1* are defined as follows:

- ***Funding Needs*** equates to the sum of the resource (staff, equipment, and material) costs.
- ***Staff Cost*** relies on an estimate of staff needed, including time to administer, coordinate, and implement an inspection and maintenance program. Staff cost also includes an overhead rate, which may account for ongoing costs such as staff benefits, building space, office furnishings (e.g., desks, chairs), and office equipment (e.g., computers, software).
- ***Equipment Cost*** accounts for the equipment needed for inspection and maintenance. Typical equipment, rented or purchased, might include field vehicles, safety equipment, GPS equipment, and so on. Before including equipment costs, double check whether the jurisdiction covers the cost of office furnishings and computer equipment in staff overhead costs to avoid double counting these costs.
- ***Material Cost*** accounts for the materials needed to implement an inspection and maintenance program. Typical materials include software; paper for letters, fliers, and other communications; and E&O supplies. *Equation 1* should include all applicable material costs specific to a jurisdiction that may not be included in this chapter to estimate the total funding needed.

Equation 2 separates staff cost into additional variables. This equation: applies to each task performed to meet program needs; factors in time for specific staff; and includes unit conversions. Also, this calculation should reflect needs during a defined period, such as annually or per Permit cycle.

- ***Quantity*** refers to the number of times a required task occurs (e.g., number of BMPs to inspect or number of events attended to distribute E&O materials). The quantity equals one for tasks that occur only once during a given period.
- ***Time Needed*** refers to the total time needed to perform the task by a particular staff member.
- ***Frequency*** refers to the number of times the task repeatedly occurs by a staff member over the period evaluated. For example, if the period funding is being estimated for is five years, E&O materials may be updated once per year or a total of five times during the funding cycle. If one enforcement action typically occurs every two years, the annual frequency equates to 0.5 enforcement per year. In some cases, the Phase II MS4 Permit defines the frequency (see **Section 2.2**).
- ***Staff Rates*** refers to the hourly rate of the staff performing the task.
- ***Overhead Rate*** refers to a factor applied to the staff rate to account for costs, such as employee benefits.

The product of quantity, time needed, frequency, and staff rates will generate the cost associated with a task performed by that staff member. Excel or similar tools can be used to readily repeat this calculation using the equation. The product of quantity, time needed, and frequency generates an estimate for the number of staff needed (*Equation 3*). The product will give an amount of time over a specific period, easily converted to full-time staff equivalents (FTE), assuming a certain number of staff hours worked per year. The calculation can be used to estimate staffing, hiring, and equipment needs (*Equation 4*).

Equation 4 estimates funding for equipment. Equipment needs are calculated in terms of the quantity of equipment needed per staff and cost sharing proportions. *Equation 4* can be used when Permittees know the equipment needed per staff, such as the quantity of safety equipment, field computers, or field vehicles needed per crew member, or the proportion of cost shared for larger purchases, such as field vehicles.

- **Number of Staff Needed** is calculated from *Equation 3*.
- **Equipment per Staff** represents the number of items of equipment needed per individual or group. For example, one field computer purchased for every full-time inspector, but one field computer purchased for every two engineers employed.
- **Cost per Unit** represents the cost per unit of equipment.
- **Monthly Charge for Equipment** refers to the monthly fee or cost of rented or leased equipment, or equipment acquired on a long-term payment schedule. Monthly charges may apply to larger purchases, such as field vehicles.
- **Cost Sharing Proportion** represents situations where stormwater departments pay for a proportion of equipment costs. This may occur via an even split between the number of departments using equipment or some other method of division.
- **Months Used per Year** is applicable in instances when renting or paying for equipment for part of the year.

Equation 5 calculates material costs in terms of quantity and frequency used and cost sharing proportions. The costs exclude materials needed for maintenance-related tasks, as jurisdictions rarely take on responsibility for private facility maintenance (see **Chapter 2**).

- **Quantity** in this case may refer to the number of software licenses, reams of paper, or laminated posters purchased.
- **Frequency** indicates the frequency with which the materials need to be generated; for example, paper needed to produce E&O materials generated for multiple events in one year or cost for printing the material using a commercial vendor.
- **Cost per Unit** represents the cost per unit of material purchased.
- **Cost Sharing Proportion** represents situations where stormwater departments pay for a proportion of material costs (e.g., software). This may occur via an even split between the number of departments using equipment or some other method of division.

The example calculator in **Appendix 3-A** uses these equations and general approach. This calculator can serve as a starting point, similar to **Table 3-1** and **Table 3-2**.

3.3.3.1 Basing O&M Costs Estimates on Literature Sources

Literature sources can provide another means to estimate program funding. The following includes a summary of potential sources of information for annual O&M cost estimates, including time needed and maintenance frequency. No cost estimates for other program needs, such as administrative, E&O, or reporting, were identified in the literature search for this manual. Some important considerations when using the cost estimates identified in the literature include:

- Depending on the location of the study, the estimates may not address climate and other regional influences.
- Depending on the age of the study, the estimates may not reflect recent cost changes or inflation since the study's publication.
- Published fees may need adjusting for inflation or to account for cost-of-living differences between the city where the costs were reported and the jurisdiction applying the fees.
- Different jurisdictions may use the same BMP name, but the BMP design guidance may be different, which may affect the maintenance tasks and maintenance frequency.

Cost and other estimates obtained from literature provide a good starting point for Permittees to calculate their program funding needs; however, they may require a critical review to determine applicability. Once adjusted as necessary to accurately represent a specific jurisdiction, the BMP maintenance cost estimates can be used in the equations presented in **Section 3.3.3** to obtain the overall maintenance funding needs. The subsequent sections provide guidance and resources to estimate funding needs based on available literature.

3.3.3.1.1 BMP Maintenance Cost Estimates

To estimate BMP maintenance costs, annual O&M cost estimates for various BMPs, as well as a BMP lifecycle cost estimate tool, were identified in the literature search for this manual. The BMP lifecycle tool was developed by the Mile High Flood District and is available on its website (https://mhfd.org/resources/software/). The tool is intended to provide a planning-level lifecycle cost for BMPs and was developed using recommendations and methods listed in the Urban Storm Drainage

Criteria Manual (USDCM). The user manual for the tool suggests that the tool should only be used in areas where the USDCM is valid (Denver, Colorado, metropolitan area); therefore, this tool may not be suitable for use beyond a preliminary cost estimate, or cost of living factors should be applied to adjust for differences in costs where the jurisdiction is located.

If the above tool is not suitable for a specific jurisdiction, BMP maintenance costs can be estimated using the annual O&M cost estimates identified in three articles of the literature search. The costs were developed in California (Caltrans, 2004), in Philadelphia (AKRF, Inc., PWD, 2011), and at the University of New Hampshire (Houle, Roseen, Ballestero, Puls, & Sherrard Jr., 2013). **Table 3-3** summarizes the findings of the studies.

Table 3-3. Estimated annual O&M cost estimates

BMP Type	Annual O&M Cost by Study		
	Houle, 2013	Caltrans, 2004	PWD, 2011
	$/year/sf impervious area treated	$/ft3 of runoff volume managed by BMP	$/sf impervious area managed by BMP
Vegetated Swale/ Biofiltration	$0.02	$2.10	
Wet Pond/Wet Basin	$0.07	$12.80	
Dry Pond/ Infiltration Basin	$0.06	$2.29	
Sand Filter	$0.07	$2.21	
Gravel Wetland	$0.05		
Bioretention	$0.05		$0.29–$0.92
Porous Asphalt	$0.02		
Extended Detention Basin		$2.35	
Infiltration Trench		$2.01	
Subsurface Infiltration			$0.01–$1.03
Vegetated Practices			$0.06–$1.28
Non-Vegetated Practices			$0.01–$0.06

3.3.3.1.2 BMP Time and Frequency Estimates

If time or frequency estimates are not available, rough estimations from staff who do this type of work or from literature may provide a starting point. Flynn, Linkous, & Buechter, 2012, used survey data from municipalities to provide a general estimate of 1–4 hours per BMP for both inspection and maintenance depending on the type of the BMP. The survey data also indicated over half of the municipalities typically maintain surface filters, filter strips, dry and wet ponds, and swales on an annual basis, with permeable pavements and underground sedimentation devices receiving maintenance more frequently than on an annual basis. No other time and frequency estimates were identified in the literature. Permittees can use this information to estimate the time and frequency required for inspection and maintenance requirements in the Phase II MS4 Permits, adjusting the approximate timeframe based on individual jurisdictional needs, such as available equipment, staff experience, transportation time

between BMPs, and types of BMPs. For example, if the previously-mentioned survey provided a general estimate of 1–4 hours for a BMP inspection, and the jurisdiction's staff is made up of senior-level personnel, the Permittee may estimate 1–2 hours, rather than 3–4 hours. This is because the staff's experience and knowledge may allow them to complete a task faster compared to a jurisdiction with predominantly entry-level staff.

Figure 3-1. Example of funding calculations

Assume a stormwater department evaluates the cost of a seasonal inspector to inspect 300 BMPs. It takes a seasonal inspector two hours on average to inspect a BMP on private property and update the GIS database for the BMP. Since this calculation evaluates the cost of the seasonal inspector for one year, assume the frequency (i.e., number of times this task needs to happen) equals one. A seasonal inspector earns $30 per hour and has an overhead rate of 1.2. To keep this example brief, it will focus on the cost to inspect the BMPs, cost of the equipment, and cost of materials.

Using *Equation 2*, we can calculate the staff cost:

Staff Cost = (300 BMPs x 2 hours per BMP x 1 x $30 per hour x 1.2) = $21,600

We can also check whether the workload requires more than one seasonal inspector using *Equation 3*. Assume the seasonal inspector works full time for five months each year (e.g., starting May 1 and ending by September 30).

Number of Staff Needed = 300 BMPs x 2 hours per BMP x 1 = 600 hours = 15 weeks = 75 working days

For 300 BMP inspections, one seasonal inspector should suffice.

Assume the jurisdiction wants to purchase a tablet for the seasonal inspector to collect data in the field. The tablet costs $500. The seasonal inspector will also use a field vehicle, which the stormwater department splits evenly with the parks and wastewater department for the five months. The field vehicle has a monthly charge of $1,600. Assume no overhead equipment costs.

Equipment Cost = (1 seasonal inspector x 1 tablet per inspector x $500 per tablet) +
($1,600 per month x 0.33 x 5 months) = $3,140

Assume the seasonal inspector delivers an E&O flyer during each BMP inspection. The flyers, printed on single sheets of paper, cost $0.10 per sheet. The seasonal inspector also needs to update the GIS database. The stormwater department pays for 0.2 of a shared license. The license costs $700.

Material Cost = (300 sheets of paper x 1 x $0.10 per sheet of paper) +
(1 license x 0.2 x $700 per license) = $170

The total cost of the seasonal inspector is the sum of the staff cost, equipment cost, and material cost.

Funding needed = $21,600 + $3,140 + $170 = $24,910

3.4 Identifying Funding Sources

Once program funding needs have been calculated, a funding strategy can be developed to finance the Permittee's inspection, maintenance, and enforcement programs. According to a report developed by Rieck, et al., municipalities will benefit most from funding strategies tailored to their communities. The report states, *"Approaches should be complementary of other programs/services, be structurally consistent with local regulations, and incorporate regionally appropriate lessons/strategies"* (Rieck, et al., 2021). Funding stormwater management can be a challenge because it is not typically recognized by community members as a utility service with fees, such as drinking water or wastewater (Rieck, et al., 2021), which can make it more challenging to get public and council support to fully fund the program needs. According to the Yakima County study, while most respondents indicated there was enough funding available for inspection and maintenance of privately owned BMPs, one-third of respondents indicated the jurisdiction had insufficient funding to meet all the needs of their stormwater department (Yakima County, et al., 2021).

There are several approaches to funding maintenance and inspection of BMPs on private property. These approaches can be broken up into primary methods and secondary methods of funding. Stormwater programs are commonly funded by using a mixture of both methods (Treadway & Reese, 2000). *Primary funding methods* generally have the capacity to fund most of a stormwater program. These include general fund revenues and stormwater user fees (Treadway & Reese, 2000). *Secondary funding methods*, such as various fees, grants, and connection charges, typically have conditions that limit their applicability to specific participants in the stormwater program. These methods can be used to improve equity or simplicity in the overall funding strategy (Treadway & Reese, 2000). An article detailing financial strategies for stormwater suggests Permittees should consider the following questions when selecting an appropriate funding method (Treadway & Reese, 2000):

- What is the political acceptance of this funding method?
- Is it equitable? Are the benefits accruing to those who pay?
- Is it feasible to implement?
- Is it relatively easy to administer?
- Is it legally defensible?
- Can it generate sufficient funds to get the job done?
- Will it provide a dedicated source of funds, or will others be competing for the same dollars?

The following subsections describe and provide examples of different primary and secondary funding methods.

3.4.1 Primary Funding Methods

Primary funding methods generally fund a majority of a stormwater program, including inspection and maintenance of BMPs on private property. These funding methods are typically stable and reliable to help meet the demands of the Permit goals. Primary funding methods are made up of two categories: general fund reserves and stormwater utility fees (Treadway & Reese, 2000). Each category is described in this section.

- **General Fund:** A general fund is a basic account for a jurisdiction for all financial resources except those required to be accounted for in some other fund (Washington State Office of Financial Management, 2019). Some Permittees use a general fund to finance stormwater programs through property taxes. This would apply to all taxpaying properties and is based on assessed property value (Estornell & Newman, 2008). Property value has no relationship to the cost of stormwater service for an individual property; therefore, this funding method may not be as equitable as other methods. Additionally, property tax does not apply to tax-exempt properties, such as governmental property, schools, and universities, which can be major contributors to stormwater runoff (Estornell & Newman, 2008). Even if this funding method applied to all properties in an equitable manner, money in general funds is distributed between several municipal programs, and stormwater is often a low priority. As permit requirements increase and require more funding, the amount of the general fund distributed to stormwater will not necessarily increase to meet those needs. For these reasons, developing a separate stormwater utility, utilizing user fees, has become popular among Permittees (Estornell & Newman, 2008).
- **Stormwater Utility Fee:** A stormwater utility, like a water or electric utility, is based on user charges related to the level of service provided. Because the fees collected are managed in a separate fund, the revenue is dedicated to financing local stormwater programs (Doll & Lindsey, 1999). Funding inspection, maintenance, and enforcement through stormwater utility fees was the most common funding strategy reported in both the Yakima County study and the North Carolina study (Yakima County, et al., 2021; Bruce & Barnes, 2008). According to a fact sheet developed by the Environmental Protection Agency titled *Funding Stormwater Programs*, stormwater fees apply to taxpaying and tax-exempt properties and are usually based on area of the parcel and/or area of impervious surface (Estornell & Newman, 2008). **Table 3-4** presents three common methods used to calculate stormwater utility fees, as well as advantages and disadvantages of each (Estornell & Newman, 2008). An example of a Permittee using the Equivalent Residential Unit (ERU) to calculate a stormwater utility fee is presented in **Case Study 3.1**.

3.4.2 Secondary Funding Sources

The ability to fund stormwater programs based solely on taxes and fees is uncommon, especially as permit requirements continue to increase with each new permit cycle (Rieck, et al., 2021). Permittees can therefore supplement primary funding sources with secondary funding methods, such as various fees, grants, and connection charges. As mentioned in **Section 3.4**, secondary funding methods are also used to enhance the equity and/or simplicity of stormwater program funding (Treadway & Reese, 2000). Common examples of secondary funding methods, as well as advantages and disadvantages of each, are presented in **Table 3-5**.

Table 3-4. Methods for calculating stormwater fees per parcel

Method	Description	Advantages	Disadvantages
Equivalent Residential Unit (ERU)	The most popular method among stormwater utilities. The fee is based on the area of impervious surface of a representative single-family residential (SFR) parcel determined from a sample of SFR parcels in the jurisdiction. The impervious surface area of the representative SFR parcel is equal to ERU. The impervious surface of non-SFR parcels is individually measured. Each non-SFR impervious area is divided by the ERU to determine the number of ERUs to be billed.	• The relationship between impervious area and impact to stormwater is relatively easy to explain to the public. • Only impervious area must be reviewed on each parcel. Pervious area analysis is not required, resulting in less time to determine ERUs than other methods.	• Potential impact of pervious area is not reviewed. As a result, this method is sometimes considered less equitable than other methods because runoff-related expenses are recovered from a smaller base area. • Only developed parcels are billed.
Intensity of Development (ID)	The fee is based on the intensity of development (ID), defined as the percent impervious surface of each parcel. Rates are calculated and billed for different impervious percentage intervals (i.e., 0%, 1–20%, 21–50%, 51–75%, 76–100%).	• Considered more equitable because it accounts for stormwater runoff from the impervious and pervious area of each parcel. • Both undeveloped and developed parcels can be billed.	• Parcels are billed in impervious surface percent intervals and not in direct proportion to the stormwater runoff of each parcel. • Impervious areas and pervious areas need to be reviewed and measured, increasing review times. • This method is more complicated to explain to the public.
Equivalent Hydraulic Area (EHA)	The fee is based on the area of both the impervious and pervious surface of the parcel. A different rate is set per square foot for impervious (generally much higher) and pervious areas. The impervious and pervious areas are multiplied by the respective rates and added together for the total fee.	• Considered more equitable because it accounts for stormwater runoff from the impervious and pervious areas of each parcel. • Both undeveloped and developed parcels can be billed. • Considered to be more equitable than the ID method because parcels are billed on direct measurements of impervious and pervious surface.	• Impervious areas and pervious areas need to be reviewed and measured, increasing review times. • This method is more complicated to explain to the public.

Table 3-5. Secondary funding methods

Method	Description	Advantages	Disadvantages
Plan Review & Developer Fees	A one-time fee is charged to developers to recover stormwater costs necessary to manage stormwater generated because of development, redevelopment, or other improvements that result in additional impervious surface. Fees may be based on the impervious surface resulting from the development (Southeast Metro Stormwater Authority, 2022) or could be based on an hourly rate as determined by the length of time needed to review the design package (Spokane County).	• Fee is directly related to the stormwater impact generated by the proposed development. • Fee is often determined at the pre-application meeting, which can be used as an E&O opportunity with developers. • Plan review and development fees often already exist, reducing the need for public E&O efforts associated with developing a new type of fee.	• Funding generated relies on new development and can be highly variable. • One-time fee. • Funding is generally dedicated to specific operating activities (Treadway & Reese, 2000).
Inspection/ Maintenance Fees	A fee charged to the BMP owner for the Permittee conducting inspection and/or maintenance, in the situation where the Permittee is responsible for the inspection and/or maintenance.	• Recurring fee. • Fee is directly related to the cost of the inspection or maintenance that is being performed and paid by those involved in the program.	• Developing a new fee can require time and resource-intensive E&O efforts to inform the public.
BMP Inspection/ Maintenance Filing Fees	A fee charged to the BMP owner for submitting certified proof of maintenance and/or inspection performed on a privately owned BMP, in the situation where the BMP owner is responsible for the inspection and/or maintenance (Stormwater Equipment Manufacturers Association, 2020).	• Recurring fee. • Fee is directly related to inspection and maintenance program costs and paid by those involved in the program.	• Developing a new fee can require time and resource-intensive E&O efforts to inform the public. • A filing fee may discourage owners from submitting inspection and maintenance reports.
Connection Charges	One-time fee charged to new customers connecting to the stormwater system. The fee is typically based on parcel size and/or impervious surface area (Estornell & Newman, 2008).	• Fee is directly related to the infrastructure expansion required to serve the customer. • This fee is like connection charges for drinking water and wastewater, presenting a familiar concept to the public.	• Funding generated relies on new development and can be highly variable. • One-time fee. • There must be adequate capacity in the current stormwater system to accept the connection.

Method	Description	Advantages	Disadvantages
Grants	Permittees can apply for water quality-related funding opportunities at the state and federal level. Funding opportunities vary by source, funding category, and project type (Washington State Department of Ecology, 2022).	• Opportunities for Permittees to apply every year. • Grant values can often cover large portions of project costs.	• Grants are usually tied to specific projects and not general stormwater costs. • Completing grant applications can be time- and resource-intensive. • Understanding grant requirements can be a challenge. • Grants are competitive and in high demand.
Municipality Collaboration	While not a direct source of funding, municipality collaboration can help reduce program development costs by creating collective training programs; templates for inspection/maintenance and ordinances updates; E&O materials and efforts; and joint purchasing of contracts and/or equipment (Rieck, et al., 2021).	• Collaboration can reduce program costs and staff needs. • Collaboration on program materials offers greater perspective and input to develop a quality product. • Promotes building relationships with adjacent jurisdictions.	• Not all jurisdictions will have the same needs, even if adjacent, requiring different program materials.

3.5 Case Study

3.5.1 Case Study 3.1 – Example of ERU Stormwater Utility Fee

An Eastern Washington Permittee requires BMP owners to maintain BMPs on private property, while the jurisdiction assumes the responsibility for inspection. The inspections are funded by a stormwater utility fee, which has been in effect since the early 1990s. At the time the stormwater utility fee was first implemented, the jurisdiction chose to calculate the fee using the Equivalent Residential Unit (ERU) method because it was one of the most common methods and relatively straightforward to calculate and defend. After annexing a new area, the jurisdiction decided to complete a rate study in 2020 to update the stormwater utility fee using the same method.

A consultant was hired to complete the rate study. As part of the study, a survey was conducted, randomly selecting several hundred single-family residential parcels and measuring the impervious surface using development plans and an up-to-date aerial image. The average impervious surface for the residential parcels was 4,000 square feet (SF), which was set to equal 1 ERU. Then the equivalent ERUs of every other parcel type (commercial, industrial, multi-family) were determined by measuring the impervious surface of each parcel and dividing by 4,000 SF. It was determined that there was a total of 27,000 ERUs within the jurisdiction. The consultant then helped determine the total revenue required to fund the stormwater department and divided that total dollar amount by 27,000 to calculate the fee for 1 ERU. Property owners were then billed by the number of equivalent ERUs. When possible, the bill was combined with other utilities, such as sewer or water. If the parcel was not served by any other utility, the property owner received an individual stormwater bill.

The total rate increase was applied incrementally over a five-year period. Before the stormwater utility fee was increased, the jurisdiction conducted education and outreach efforts to inform citizens. This consisted of speaking at public meetings, including informational inserts in current stormwater bills, and mailing individual letters to those who would be impacted most. The jurisdiction did receive some pushback from property owners. When asked how this was handled, the jurisdiction said it was very helpful to create a map showing how the impervious surface was calculated for each parcel. This gave them something to point to when the public asked about certain parcels or wanted to know why a property owner had to pay a specific rate. If a customer was not satisfied with the referenced map, the jurisdiction offered to come out to the customer's property to further explain or remeasure the impervious surface in person. This sometimes resulted in updating the map and adjusting the rate.

When asked about the challenges of using the ERU method, the jurisdiction expressed that keeping the impervious surface current can be difficult. It can also be hard for customers to understand exactly what they are paying for, so the jurisdiction is always looking for new and better ways to conduct education and outreach. One of the most challenging aspects overall of using a stormwater utility fee is the unexpected rise of the rate of inflation. One tip the jurisdiction offered to help combat this challenge was to add an additional percent increase, such as 3.5 percent, each year beyond the incremental rate increase. This helped smooth the spike in necessary rises in stormwater utility fees.

3.6 Appendices

3.6.1 Appendix 3-A – Program Funding Needs Calculator

The following pages provide screen shots of each worksheet in the Funding Needs Estimation Calculator that was developed in Excel®. The calculator can be accessed at the following link: Funding Needs Estimation FINAL.xlsx. The calculator will need to be downloaded to edit.

0-Instructions

Strategies for Privately Owned BMPs

Funding Estimator

Table of Contents

Tab #	Tab Title	Description/Purpose
0	Instructions	General instructions for funding needs
1	Funding Summary	Summary of full time employee (FTE), funding estimated
2	Staff Input Options	Provides list of staff to populate drop downs in all following tabs
3	Materials Input Options	Identifies and summarizes materials used to support program
4	Equipment Input Options	Identifies and summarizes equipment used to support program
5	Administration	Identifies funding needs due to administrative tasks
6	Inspection	Identifies funding needs due to inspection-related tasks
7	Maintenance Qualifications & Training	Identifies funding needs due to tasks related to maintenance qualifications and training
8	Regulation & Enforcement	Identifies funding needs due to tasks related to regulation and enforcement
9	Education & Outreach	Identifies funding needs due to tasks related to education and outreach
10	Recordkeeping & Reporting	Identifies funding needs due to tasks related to recordkeeping and reporting

What to expect

This funding estimator spreadsheet is intended to supplement Chapter 3 of the Strategies for Privately Owned Best Management Practices Manual. The focus of this tool is therefore aspects of an operation and maintenance program related to BMPs on private property. This spreadsheet is intended to be used as a starting point, and is not expected to encompass every jurisdiction's program needs.

Each tab has been populated with example calculations in italics, which will also appear in the funding summary page. **Please delete these prior to finalizing the funding and staffing estimations.** Each tab also includes a "Notes" section which contains additional information and instructions relevant to that tab. There are no safety factors included in these calculations.

Instructions

Enter information into tabs 2-10 in the yellow-highlighted cells. Review Tables 3-1 and 3-2 in Chapter 3 (questions have also been included where applicable in Notes section of each tab). Tab 1-Funding Summary will automatically populate estimates of hours per year, number of full time employees (FTE), and cost.

Color Scheme

Cell Color	Definition
	User of this spreadsheet will need to add in information
	No need to edit this cell (it contains formulas)

1-Funding Summary

Funding Summary

Total Funding Needed

Category	FTE	Cost
Staff	#DIV/0!	$ 426
Equipment	-	#VALUE!
Materials	-	$ 680.00
	Total	#VALUE!

Staff Summary

Staff Type	Hours Per Year	FTE	Cost
Maintenance Lead	0.0	0.000	$ -
Seasonal Inspector	387.5	9.688	$ 426
Stormwater Engineer	185.6	#DIV/0!	$ -
E&O Coordinator	24.0	#DIV/0!	$ -
Lead Code Enforcer	64.0	#DIV/0!	$ -
Administrative	0.0	#DIV/0!	$ -
Graphic Designer	8.0	#DIV/0!	$ -
Surveyor	0.0	#DIV/0!	$ -
CAD	0.0	#DIV/0!	$ -
GIS	64.0	#DIV/0!	$ -

2-Staff Input Options

Staff Input Options

Staff Options

Staff Type	Staff Category	Department	Role Description	Cost/hr	Overhead Rate	Hours Per Year	Adjusted Cost/hr
Maintenance Lead	*Maintenance*	*Streets/Park, etc.*	*Performs maintenance on stormwater BMPs and connected storm network*	*40*	*1.2*	1864	*40*
Seasonal Inspector	*Inspection*	*Code Enforcement*	*Performs inspection of stormwater BMPs and connected storm network*	*40*	*1.1*	1864	*40*
Stormwater Engineer						1864	*40*
E&O Coordinator						1864	*40*
Lead Code Enforcer						1864	*40*
Administrative						1864	*40*
Graphic Designer						1864	*40*
Surveyor						1864	*40*
CAD						1864	*40*
GIS						1864	*40*

Notes:
-*All staff type drop-down menus pull from this table.* To add rows for additional staff types, please insert a row above the final gray row.
- Hours per year is equal to the product of 52 weeks per year and 40 hours per week, less 12 federal holidays (8 hours each) and 3 weeks of PTO (40 hours per week of PTO).
-Overhead rate is meant to cover benefits, PTO, etc. Overhead rate may also cover cost of office equipment, buildings, etc. depending on the jurisdiction. Office equipment may also be entered as a one-time cost in tab 4-Equipment Input Options. Both options may be used if desired.

3-Materials Input Options

Materials Input Options

Software Options

Software	Use	Cost per License or User	Units	Quantity	Cost Sharing Proportion	Cost
GIS	*Mapping of stormwater infrastructure*	*$ 1,000.00*	*per license*	*1*	*0.33*	*$ 330.00*
						$ -
						$ -
						$ -
					Total Cost:	$ 330.00

Paper & Other Materials Options

Material	Use	Average Quantity Used Per Year	Units	Quantity	Cost/Unit	Cost
Fliers	*E&O*	*500*	*Sheets of paper*	*500*	*$ 0.10*	*$ 50.00*
Mailing Service	*Distribute inspection notices*	*1*	*Mailing service subscription*	*1*	*$ 300.00*	*$ 300.00*
						$ -
						$ -
					Total Cost:	$ 350.00

Notes:
Cost sharing proportion is meant to represent situations where stormwater departments pay for a proportion of equipment costs. This may be an even split between the number of departments using equipment, or some other method of division.

When filling out this tab, consider the following:

- What software or other system is used to maintain the records?
- What materials are used to perform public outreach and education?
- What materials are used to communicate upcoming inspections, fee notices, enforcement actions, etc.?

4-Equipment Input Options

Equipment Input Options

Equipment Options (Monthly and Cost Sharing Charges)

Equipment Type	Use	Cost Sharing Proportion	Monthly Charge	Months Per Year Paid	Cost Per Year
Field vehicle	*Travelling to inspections*	*0.4*	*$ 1,600.00*	*12*	*$ 7,680.00*
Safety equipment rentals	*Safety equipment*	*1*	*$ 20.00*	*6*	*$ 120.00*
					$ -
					$ -
				Total Cost:	$ 7,800.00

Equipment Options (Single Purchases, Office Worker)

Equipment Type	Use	Staff Using	Cost per Unit	Units	#/Staff	Quantity of Equipment Needed	Cost
Field Computer/Tablet	*Document inspections*	*Seasonal Inspector*	*1000*	*per computer/tablet*	*1*	*9.69*	*$ 9,687.50*
Office Overhead	*Office equipment i.e., computer*	*Lead Code Enforcer*	*1000*	*per staff*	*1*	-	*#VALUE!*
						-	$ -
						-	$ -
						Total Cost:	#VALUE!

Notes:
Cost sharing proportion is meant to represent situations where stormwater departments pay for a proportion of equipment costs. This may be an even split between the number of departments using equipment, or some other method of division.

"Quantity of Equipment Needed" in the Equipment Options (Single Purchases, Office Worker) has been left as a decimal for informational purposes.

Examples of equipment which may be needed include:

- Office equipment, which may be estimated through a set overhead cost (see example row 14). Office equipment may also be included in overhead rate in tab 2-Staff Input Options. Both options may be used if desired.
- Safety Equipment (such as rain gear, high visibility vests, a uniform or t-shirt with jurisdiction's logo, a boot allowance, etc.)
- Electronic equipment for gathering of field data (field computer/tablet, hot spots for internet connection, camera, etc.)
- GPS equipment to track coordinates of structures, BMPs, etc.
- Miscellaneous equipment (manhole keys, lid pullers, machetes, survey rods, etc.)

5-Adminstration

Administration and Financial Management

Policy Creation & Hiring

Task Category	Time to Perform Task	Frequency	Staff Type	Hours Per Year
-	*hours*	*times/year*	-	*hours/year*
Policy Creation	*40*	*0.2*	*Stormwater Engineer*	*8*
Hiring -Develop Job Description	*16*	*0.5*	*Stormwater Engineer*	*8*
				0
				0
			Total Hours:	16

Fee collection (Proportion of Salary)

Task Category	Staff Type	Cost Sharing Proportion	Hours Per Year
-	-	-	*hours/year*
Breakdown of Fees			
Addressing Fee Appeals	*Administrative*	*0.1*	*0*
			-
			-
		Total Hours:	0

Notes:
Cost sharing proportion is meant to represent situations where stormwater departments pay for a proportion of the fee collection staff's salary, equivalent to the proportion of stormwater fees collected to the jurisdiction's total revenue. If staff submitting no tices for fees, addressing fee appeals, etc. are not accounted for using a proportion, hours per year can be estimated in the first table.

When filling out this tab, consider the following:

- How much time is required create and implement policies, including writing policies, resolutions, and ordinances and coordination with other departments?
- How much time is required to determine fee breakdowns (who gets charged what) and collect fees?
- How much time is needed to handle fee appeals?
- How much time is needed to write job descriptions, advertise for jobs, and conduct the interview process and hiring process for staff who will provide maintenance and inspection?

Staff Summary

Staff Type	Hours Per Year	FTE
Maintenance Lead	0	0.000
Seasonal Inspector	0	0.000
Stormwater Engineer	16	#DIV/0!
E&O Coordinator	0	#DIV/0!
Lead Code Enforcer	0	#DIV/0!
Administrative	0	#DIV/0!
Graphic Designer	0	#DIV/0!
Surveyor	0	#DIV/0!
CAD	0	#DIV/0!
GIS	0	#DIV/0!

6-Inspection

Inspection Requirements

Jurisdiction IS responsible for inspection:

Routine Inspection

BMP Inspection

Types of BMPs	Time to Inspect Per	Quantity	Frequency	Staff Type	Hours Per Year
	hours	*# of BMPs*	*times/year*	-	*hours/year*
Biofiltration	*1*	*300*	*0.2*	*Seasonal Inspector*	*60*
Bioretention	*1*	*450*	*0.2*	*Seasonal Inspector*	*90*
					0
					0
				Total Hours:	150

Structure Inspection

Structure Type	Time to Inspect Per	Quantity	Frequency	Staff Type	Hours Per Year
	hours	*# of structures*	*times/year*	-	*hours/year*
Catch Basin	*0.25*	*1900*	*0.5*	*Seasonal Inspector*	*237.5*
					0
					0
					0
				Total Hours:	237.5

Pipe Maintenance

Location/Area	Time to Inspect Per	Quantity	Frequency	Staff Type	Hours Per Year
	hours	*# of pipes*	*times/year*	-	*hours/year*
					0
					0
					0
					0
				Total Hours:	0

Staff Training

Task Category	Time to Perform Task	Frequency	Staff Type	Hours Per Year
	hours	*times/year*	-	*hours/year*
				0
				0
				0
				0
			Total Hours:	0

Staff Summary

Staff Type	Hours Per Year	FTE
Maintenance Lead	0	0.000
Seasonal Inspector	387.5	9.688
Stormwater Enginee	0	#DIV/0!
E&O Coordinator	0	#DIV/0!
Lead Code Enforce	0	#DIV/0!
Administrative	0	#DIV/0!
Graphic Designer	0	#DIV/0!
Surveyor	0	#DIV/0!
CAD	0	#DIV/0!
GIS	0	#DIV/0!

Notes:
When filling out this tab, consider the following:

- What departments are involved in inspection of BMPs? What coordination needs to occur to schedule an inspection?
- What types of BMPs are inspected?
- How many of each type are inspected?
- How frequently are inspections conducted?
- How much time is required to complete an inspection for each BMP type?
- How frequently is training of inspection staff needed (if seasonal staff perform maintenance, as required by permit, etc.)?

Inspection

Jurisdiction is NOT responsible for inspection:

Define Third Party Qualifications

Task Category	Time to Perform Task	Frequency	Staff Type	Hours Per Year
	hours	*times/year*	-	*hours/year*
Time to Develop Qualifications	*24*	*0.2*	*Stormwater Engineer*	*4.8*
Time to Update Qualifications	*8*	*0.5*	*Stormwater Engineer*	*4*
				0
				0
			Total Hours:	8.8

Staff Training

Task Category	Time to Perform Task	Frequency	Staff Type	Hours Per Year
	hours	*times/year*	-	*hours/year*
Staff Training	*24*	*1*	*Stormwater Engineer*	*24*
Training for Third Parties/ Property Owners	*4*	*1*	*Stormwater Engineer*	*4*
				0
				0
			Total Hours:	28

Confirmation of Maintenance

Task Category	Time to Perform Task	Frequency	Staff Type	Hours Per Year
	hours	*times/year*	-	*hours/year*
Verification of Maintenance	*4*	*4*	*Lead Code Enforcer*	*16*
				0
				0
				0
			Total Hours:	16

Notes:
When filling out this tab, consider the following:
If a third party inspects:
- What qualifications need to be defined for the third party?
- If a list of third parties is developed, how frequently does the list need to be updated?
- What training or E&O is offered specifically for third parties, and how often?

If the property owner inspects:
- What training or E&O is offered for property owners, and how often?
- What verification is needed to ensure inspection has occurred?

Staff Summary

Staff Type	Hours Per Year	FTE
Maintenance Lead	0	0.000
Seasonal Inspector	0	0.000
Stormwater Engineer	36.8	#DIV/0!
E&O Coordinator	0	#DIV/0!
Lead Code Enforcer	16	#DIV/0!
Administrative	0	#DIV/0!
Graphic Designer	0	#DIV/0!
Surveyor	0	#DIV/0!
CAD	0	#DIV/0!
GIS	0	#DIV/0!

7-Maintenance Qualifications and Training

Operations and Maintenance Requirements

Note: this tab assumes the jurisdiction is NOT responsible for maintenance on private property.

Define Third Party Qualifications

Task Category	Time to Perform Task	Frequency	Staff Type	Hours Per Year
-	*hours*	*#/year*	-	*hours/year*
Time to Develop Qualifications	*24*	*0.2*	*Stormwater Engineer*	*4.8*
Time to Update Qualifications	*8*	*0.5*	*Stormwater Engineer*	*4*
				0
				0
			Total Hours:	8.8

Staff Training

Task Category	Time to Perform Task	Frequency	Staff Type	Hours Per Year
-	*hours*	*#/year*	-	*hours/year*
Staff Training	*24*	*1*	*Stormwater Engineer*	*24*
Training for Third Parties/Property Owners	*4*	*1*	*Stormwater Engineer*	*4*
				0
				0
			Total Hours:	28

Confirmation of Maintenance

Task Category	Time to Perform Task	Frequency	Staff Type	Hours Per Year
-	*hours*	*#/year*	-	*hours/year*
Verification of Maintenance	*4*	*4*	*Lead Code Enforcer*	*16*
				0
				0
				0
			Total Hours:	16

Notes:
When filling out this tab, consider the following:
If a third party maintains:
- What qualifications need to be defined for the third party?
- If a list of third parties is developed, how frequently does the list need to be updated?
- What training or E&O is offered specifically for third parties, and how often?
- What verification is needed to ensure maintenance has occurred?

If the property owner maintains:
- What training or E&O is offered for property owners, and how often?
- What verification is needed to ensure maintenance has occurred?

Staff Summary

Staff Type	Hours Per Year	FTE
Maintenance Lead	0	0.000
Seasonal Inspector	0	0.000
Stormwater Engineer	36.8	#DIV/0!
E&O Coordinator	0	#DIV/0!
Lead Code Enforcer	16	#DIV/0!
Administrative	0	#DIV/0!
Graphic Designer	0	#DIV/0!
Surveyor	0	#DIV/0!
CAD	0	#DIV/0!
GIS	0	#DIV/0!

8-Regulations and Enforcement

Regulation and Enforcement Requirements

Enforcement Actions

Regulations/Policies Enforced	Enforcement Actions	Average Times Taken	Time Required Per Action	Average Time Needed	Frequency Taken	Staff Type	Average Hours Per Year
-	-	#	hours	hours	#/year	-	hours/year
Allow access to inspector	Fine	1	8	8	2	Lead Code Enforcer	16
							0
							0
							0
						Total Hours:	16

Regulation Updates

Task Category	Description of Task	Time to Perform Task	Frequency	Staff Type	Hours Per Year
-	-	hours	#/year	-	hours/year
Training of staff	Training following update	16	1	Lead Code Enforcer	16
					0
					0
					0
				Total Hours:	16

Notes:
When filling out this tab, consider the following:

- What departments are involved in a typical enforcement action? What coordination needs to occur?
- What regulations or policies are enforced or can result in an enforcement action?
- What types of enforcement actions or progressive enforcement can be implemented?
- How many times can an enforcement action be taken?
- How frequently is enforcement necessary?
- How frequently do regulations, ordinances, or other requirements change? What training is needed when that occurs?

Staff Summary

Staff Type	Hours Per Year	FTE
Maintenance Lead	0	0.000
Seasonal Inspector	0	0.000
Stormwater Engineer	0	#DIV/0!
E&O Coordinator	0	#DIV/0!
Lead Code Enforcer	32	#DIV/0!
Administrative	0	#DIV/0!
Graphic Designer	0	#DIV/0!
Surveyor	0	#DIV/0!
CAD	0	#DIV/0!
GIS	0	#DIV/0!

9-Education and Outreach

Public Involvement and Education Requirements

Material Development & Distribution

Task Type	Task Category	Description of Task	Time to Perform Task	Frequency	Staff Type	Hours Per Year
-	-	-	*hours*	*#/year*	-	*hours/year*
Update E&O flier	*Development of materials*		*16*	*0.5*	*Graphic Designer*	*8*
Host Booth at County Fair	*Distribution of Materials*		*24*	*1*	*Stormwater Engineer*	*24*
Host Booth at County Fair	*Distribution of Materials*		*24*	*1*	*E&O Coordinator*	*24*
						0
						0
					Total Hours:	56

Staff Summary

Staff Type	Hours Per Year	FTE
Maintenance Lead	0	0.000
Seasonal Inspector	0	0.000
Stormwater Engineer	24	#DIV/0!
E&O Coordinator	24	#DIV/0!
Lead Code Enforcer	0	#DIV/0!
Administrative	0	#DIV/0!
Graphic Designer	8	#DIV/0!
Surveyor	0	#DIV/0!
CAD	0	#DIV/0!
GIS	0	#DIV/0!

Notes:

When filling out this tab, consider the following:

- What materials, modes of communication, and events are used to perform public outreach and education?
- How many events are attended or organized each year? What coordination is needed for each event?
- What E&O or other materials are needed at the event?
- What departments are involved in organizing or attending the event?
- What E&O or other materials need to be created or updated each year (or more frequently)?
- How are E&O or other materials distributed?
- How frequently are E&O materials distributed?

10-Recordkeeping and Reporting

Recordkeeping and Reporting Requirements

Recordkeeping

Record Type	Task Category	Description of Task	Time to Perform Task	Frequency	Staff Type	Hours Per Year
-	-	-	*hours*	*#/year*	-	*hours/year*
Inspection Records	*Collection of records*		*8*	*4*	*Stormwater Engineer*	*32*
Inspection Records	*Upload/storage of records*		*16*	*4*	*GIS*	*64*
						0
						0
					Total Hours:	96

Reporting

Report Type	Time to Perform Task	Description of Task	Frequency	Staff Type	Hours Per Year
-	*hours*	-	*#/year*	-	*hours/year*
Annual Report	*40*		*1*	*Stormwater Engineer*	*40*
					0
					0
					0
				Total Hours:	40

Mapping

Task Category	Staff Type	Cost Sharing Proportion	Hours Per Year
-	-	-	*hours/year*
Location verification in field	*Surveyor*	*0.2*	*0*
Adding mapped BMPs to GIS	*GIS*	*0.5*	*0*
			-
			-
		Total Hours:	0

Staff Summary

Staff Type	Hours Per Year	FTE
Maintenance Lead	0	0.000
Seasonal Inspector	0	0.000
Stormwater Engineer	72	#DIV/0!
E&O Coordinator	0	#DIV/0!
Lead Code Enforcer	0	#DIV/0!
Administrative	0	#DIV/0!
Graphic Designer	0	#DIV/0!
Surveyor	0	#DIV/0!
CAD	0	#DIV/0!
GIS	64	#DIV/0!

Notes:
Cost sharing proportion is meant to represent situations where stormwater departments pay for a proportion of staff's salary, equivalent to the proportion of stormwater fees collected to the jurisdiction's total revenue or some other proportion. If staff performing mapping tasks are not accounted for using a proportion, hours per year can be estimated in the Reporting table.

When filling out this tab, consider the following:

- What records, data, or other information is kept to support the inspection and maintenance program?
- What is the time commitment to submit the necessary records and reports to regulatory agencies?

3.6.2 Appendix 3-B – Program Cost Example

Position Title	No. of Positions	Responsibility
Utility Superintendent	1.0	Reports to Public Works Director. Has overall responsibility for the Storm Water Utility including planning, management of staff, budget development and management, asset management, and compliance with permits and regulations.
Administrative Assistant	1.0	Assists with the daily operation of the Storm Water Utility by providing general administrative and clerical support.
Regulatory Compliance Specialist	1.0	Responsible for the monitoring, execution, and documentation associated with the 6 minimum control measures required by the MS4 Permit, levee inspections, high hazard dam inspections, and any other storm water regulatory compliance requirements.
GIS Technician	0.5	Responsible for management and analysis of GIS data and preparation of mapping and exhibits.
Utility Billing Clerk	0.3	Responsible for utility billing.
Field Maintenance Technician	4.0	Responsible for the inspection, operation and maintenance of the City's storm water system, levees, detention basins, and roadside ditches.

Item	Unit Price	Unit	FY2019 Quantity	FY2019 Total	FY2020 Quantity	FY2020 Total	FY2021 Quantity	FY2021 Total	FY2022 Quantity	FY2022 Total	FY2023 Quantity	FY2023 Total
UTILITY MANAGEMENT, ADMINISTRATION & REGULATORY COMPLIANCE												
Staff Working Time												
Utility Superintendent	$44	hour	1928	$87,377	1928	$89,998	1928	$92,698	1928	$95,479	1928	$98,344
Administrative Assistant	$24	hour	1928	$47,660	1928	$49,090	1928	$50,563	1928	$52,080	1928	$53,642
Regulatory Compliance Specialist	$36	hour	1928	$71,490	1928	$73,635	1928	$75,844	1928	$78,119	1928	$80,463
GIS Technician (1/2 position)	$36	hour		$0		$0	964	$37,922	964	$39,060	964	$40,231
Utility Billing Clerk (1/3 position)	$24	hour	643	$15,887	643	$16,363	643	$16,854	643	$17,360	643	$17,881
Computer Equipment	$3,000	each	1	$3,090		$0	2.5	$8,195		$0	4	$13,911
MS4 Permit Compliance Requirements												
MCM 1 Public Education and Outreach	$20,000	lump	1	$20,600	1	$21,218	1	$21,855	1	$22,510	1	$23,185
MCM 2 Public Involvement and Participation	$10,000	lump	1	$10,300	1	$10,609	1	$10,927	1	$11,255	1	$11,593
MCM 3 Illicit Discharge Detection and Elimination	$10,000	lump	1	$10,300	1	$10,609	1	$10,927	1	$11,255	1	$11,593
MCM 4 Construction Site Storm Water Management	$15,000	lump	1	$15,450	1	$15,914	1	$16,391	1	$16,883	1	$17,389
MCM 5 Post-Construction Storm Water Management	$10,000	lump	1	$10,300	1	$10,609	1	$10,927	1	$11,255	1	$11,593
MCM 6 Pollution Prevention and Good Housekeeping	$10,000	lump	1	$10,300	1	$10,609	1	$10,927	1	$11,255	1	$11,593
MT DEQ Permit Fees - MS4 Permit and Outfall Permit	$11,000	lump	1	$11,330	1	$11,670	1	$12,020	1	$12,381	1	$12,752
Training, Certification, Licensing & Travel Expenses	$6,000	lump	1	$6,180	1	$6,365	1	$6,556	1	$6,753	1	$6,956
Safety Gear and Equipment	$5,000	lump	1	$5,150	1	$5,305	1	$5,464	1	$5,628	1	$5,796
Staff Vacation and Holiday Time												
Utility Superintendent	$44	hour	152	$6,889	152	$7,095	152	$7,308	152	$7,527	152	$7,753
Administrative Assistant	$24	hour	152	$3,757	152	$3,870	152	$3,986	152	$4,106	152	$4,229
Regulatory Compliance Specialist	$36	hour	152	$5,636	152	$5,805	152	$5,979	152	$6,159	152	$6,344
GIS Technician (1/2 position)	$36	hour		$0		$0	76	$2,990	76	$3,079	76	$3,172
Utility Billing Clerk (1/3 position)	$24	hour	51	$1,252	51	$1,290	51	$1,329	51	$1,369	51	$1,410
Field Maintenance Technician 1	$36	hour		$0		$0	152	$5,979	152	$6,159	152	$6,344
Field Maintenance Technician 2	$36	hour		$0		$0	152	$5,979	152	$6,159	152	$6,344
Field Maintenance Technician 3	$36	hour		$0		$0		$0		$0	152	$6,344
Field Maintenance Technician 4	$36	hour		$0		$0		$0		$0	152	$6,344
Subtotal				**$342,949**		**$350,055**		**$421,622**		**$425,830**		**$465,203**
Contingency - utility mgmt, admin and reg comp	20%			$68,590		$70,011		$84,324		$85,166		$93,041
Total Utility Management, Administration & Regulatory Compliance				**$411,539**		**$420,065**		**$505,947**		**$510,995**		**$558,243**

Item	Unit Price	Unit	FY2019 Quantity	FY2019 Total	FY2020 Quantity	FY2020 Total	FY2021 Quantity	FY2021 Total	FY2022 Quantity	FY2022 Total	FY2023 Quantity	FY2023 Total
STORM WATER SYSTEM OPERATION AND MAINTENANCE												
Equipment												
Service Truck	$30,000	each		$0		$0	1	$32,782		$0	1	$34,778
Vactor Truck (from Wastewater)	$10,000	each		$0		$0	1	$10,927		$0		$0
Utility Tractor (75 hp)	$40,000	each		$0		$0	1	$43,709		$0		$0
Rotary Mower	$2,000	each		$0		$0	1	$2,185		$0		$0
Equipment Debt Service	calculated	lump		$0		$0	1	$14,565	1	$14,565	1	$20,359
Fuel	$3	gallon	480	$1,483	480	$1,528	1920	$6,294	1920	$6,483	2400	$8,347
Vehicle Maintenance	$250	quarterly	4	$1,030	4	$1,061	16	$4,371	16	$4,502	20	$5,796
Temporary Traffic Control Devices and Signage	$8,000	lump		$0		$0	1	$8,742	1	$9,004	1	$9,274
Sump, Inlet and Manhole Maintenance												
Field Maintenance Technician 1	$36	hour		$0		$0	1336	$52,556	1336	$54,132	1416	$59,095
Field Maintenance Technician 2	$36	hour		$0		$0	1336	$52,556	1336	$54,132	1416	$59,095
Field Maintenance Technician 3	$36	hour		$0		$0		$0		$0	1624	$67,776
Field Maintenance Technician 4	$36	hour		$0		$0		$0		$0	1624	$67,776
Equipment and Materials	$5,000	lump		$0		$0	1	$5,464	1	$5,628	1	$5,796
Sump Replacement (Contract)	$60,000	lump		$0	1	$63,654	1	$65,564	1	$67,531	1	$69,556
Mowing (20 acres 6 times per year)												
Field Maintenance Technician 2	$36	hour		$0		$0	192	$7,553	192	$7,780	192	$8,013
Materials	$100	day		$0		$0	24	$2,623	24	$2,701	24	$2,782
Miscellaneous Maintenance												
Field Maintenance Technician 1	$36	hour		$0		$0	488	$19,197	488	$19,773	512	$21,368
Field Maintenance Technician 2	$36	hour		$0		$0	296	$11,644	296	$11,993	320	$13,355
Equipment	$10,000	lump		$0		$0	1	$10,927	1	$11,255	1	$11,593
Materials	$10,000	lump		$0		$0	1	$10,927	1	$11,255	1	$11,593
Subtotal				**$2,513**		**$66,243**		**$362,585**		**$280,734**		**$476,353**
Contingency - storm water system operation and mainte	20%			$503		$13,249		$72,517		$56,147		$95,271
Total Storm Water System Operation and Maintenance				**$3,016**		**$79,491**		**$435,103**		**$336,881**		**$571,623**

Chapter 4
Required Documentation & Recordkeeping

Chapter Contents

4.1 Chapter Overview

This chapter describes the mapping, documentation, and recordkeeping for the maintenance and inspection of BMPs on private property required by the Eastern Washington (EWA) and Western Washington (WWA) Phase II MS4 Permits. Developing effective tools for documenting maintenance activities and inspections is essential for maintaining organization and permit compliance (Smith & Devine, 2006). In addition to being a permit requirement, documenting maintenance activities and inspections can help Permittees to better understand maintenance needs and frequencies and improve cost projections for program budgets (Clary, Earles, Leisenring, & Pankani, 2018). Common methods for mapping, documentation, and recordkeeping are outlined in this chapter, including the advantages and disadvantages of each approach (see **Table 4-1**). The end of this chapter provides case studies showing examples of how Permittees have implemented these approaches (see **Case Study 4.1** and **Case Study 4.2**).

Table 4-1. Summary of mapping, tracking, and reporting advantages and disadvantages

Topic & Description		Advantages	Disadvantages
Mapping	**Computer-Aided Design (CAD)**	• CAD features (BMPs, storm drains, catch basins, etc.) are drawn in detail and to scale. • Features are drawn in two-dimensions (2D) or three-dimensions (3D). • Many jurisdictions already have CAD licenses.	• Startup software costs can be expensive. • Training to use CAD software is often necessary and the learning curve can be steep, demanding staff time. • Drawing a coordinate system may use an arbitrary origin that is not tied to a geographic location, making it challenging to use CAD drawings for mapping. • Digitizing paper record drawings from older construction projects can be costly and time consuming.[1]

Topic & Description		Advantages	Disadvantages
	Geographic Information Systems (GIS)	• GIS uses geographic coordinate systems, describing an actual geographic location using latitude, longitude, and elevation. • Data can be reviewed and updated in real time.[3] • Various spatial data layers (e.g., land cover, zoning, soil, other utilities) can be combined in GIS to perform analysis and address planning, operation, and management issues.[4] • Mapping can be combined with maintenance and inspection recordkeeping, storing information regarding a specific feature in one location. This increases efficiency for Permittees.[4] • Many existing maintenance programs already include GIS features. • Information could be available on tablets used in the field for updating and tracking work.	• Startup software costs can be expensive.[4] • Time and cost to compile and digitize data can be substantial.[4] • Training to use GIS software is often necessary and the learning curve can be steep, demanding staff time.[4] • GIS features are often drawn with minimal detail (e.g., a BMP might be represented by a simple rectangle or other symbol regardless of exact shape or size). • Inspection and maintenance activities and notes recorded on paper must be manually re-entered into a database, requiring additional staff time and resources.[5]
Tracking & Reporting	**Hard Copies**	• Hard copy documentation does not require expensive software costs. • A hard copy of an inspection provides backup in case the electronic copy is deleted or overwritten.	• Hard copy documentation can be physically lost or damaged. • Hard copy documentation can take up a significant amount of space. • Requires manually tracking and scheduling maintenance and inspections. • Inspection and maintenance activities and notes recorded on paper may require manually re-entering into a database, requiring additional staff time and resources.[4] • Mapping errors cannot be fixed in the field.[4]
	Asset Management Software	• Using asset management software to record maintenance activities and inspection results in the field reduces time and resources spent on post-inspection office data entry.[4]	• Software can be expensive to purchase and maintain.[5] • Training staff to use the software can be time consuming.[5] • Getting buy-in and support from key stakeholders and decision

Topic & Description		Advantages	Disadvantages
		• Software can also be used for other Stormwater Management Program elements, such as source control or IDDE.[4] • Automates several processes for documenting and tracking BMP inspections and maintenance,[4] increasing efficiency and reducing use of Permittee time and resources. • Software can also provide a mechanism for developing and managing cost budgets for stormwater assets.[5]	makers can be challenging. Staff may resist institutional change.[5] • A mobile device with internet capability is required to perform many tasks in the field with asset management software.[4] This may be an additional cost for the Permittee.

Citations: [1] (Adams, 2002), [2] (Debo & Reese, 2002), [3] (Shamsi, 2005), [4] (Kurz, 2013), [5] (PG Environmental, N.D.)

4.2 Permit Requirements

Sections S5.A, S5.B.3, S5.B.5, and S9 of the EWA Phase II MS4 Permit and Sections S5.A, S5.C.4, S5.C.7, and S9 of the WWA Phase II MS4 Permit detail requirements involving mapping, documentation, and recordkeeping of inspection and maintenance of privately owned BMPs. **Table 4-2** presents a summary of the specific permit requirements pertaining to this chapter. This information includes mapping components, the types of documents that must be retained, and the required retention period.

Table 4-2. Summary of EWA and WWA Phase II MS4 Permit documentation and recordkeeping requirements

EWA Phase II	WWA Phase II
Information to Track and Include in Annual Report	
S5.A.5.i Each Permittee shall track the number of inspections performed, follow-up actions as a result of inspections, official enforcement actions taken, and types of public education activities implemented as required for each SWMP component. This information shall be included in the Annual Report.	**S5.A.3.b** Each Permittee shall track the number of inspections, follow-up actions as a result of inspections, official enforcement actions and types of public education activities as required by the respective program component. This information shall be included in the Annual Report.
Mapping Requirements	
S5.B.3.a.vi Each Permittee shall continue to maintain and periodically update a map of the MS4, including mapping of all known connections from privately owned stormwater systems to the MS4.	**S5.C.4.a.vii** *Ongoing Mapping:* Each Permittee shall maintain mapping data for the features listed below: vii. All connections to the MS4 authorized or allowed by the Permittee after February 16, 2007. **S5.C.4.b.ii** *New Mapping:* Each Permittee shall:

EWA Phase II	WWA Phase II
	ii. No later than August 1, 2023, complete mapping of all known connections from the MS4 to a privately owned stormwater system.
Records Requirements	
S5.B.5.g To comply with these provisions, Permittees shall keep records of all projects disturbing one acre or more, and all projects of any size that are part of a common plan of development or sale that is one acre or more. i. Permittees shall keep project records for five years or until construction is completed, whichever is longer, with the following exceptions: approved site plans and O&M Plans shall be kept, as needed, to comply with the ongoing inspection requirements of this Permit. ii. The training records to be kept include dates, activities or course descriptions, and names and positions of staff in attendance.	**S5.C.7.b.i(b).ii** Compliance with the inspection requirements in (b), above, shall be determined by the presence and records of an established inspection program designed to inspect all facilities, and achieving at least 80% of required inspections. **S5.C.7.b.i(b).iii** The program shall include a procedure for keeping records of inspections and enforcement actions by staff, including inspection reports, warning letters, notices of violations, and other enforcement records. Records of maintenance inspections and maintenance activities shall be maintained. **S5.C.7.e** Permittees shall document and maintain records of training provided. The staff training records to be kept include dates, activities or course descriptions, and names and positions of staff in attendance.
Document Retention Period	
S9.A Each Permittee is required to keep all records related to this Permit for at least five years.	**S9.B** Each Permittee is required to keep all records related to this Permit and the SWMP for at least five years.

4.3 Mapping

Historically, mapping and documentation of stormwater systems were captured through paper record drawings developed once a design and construction project was complete (Adams, 2002). However, with advances in technology, programs such as CAD and GIS have become more popular options for generating and storing mapped information about a jurisdiction's stormwater system. In addition, both the EWA and WWA Phase II MS4 Permits require mapping and documentation of the MS4 system in an electronic format, including all known connections to the MS4 from privately owned stormwater systems (Washington State Department of Ecology, 2019a; Washington State Department of Ecology, 2019b). Electronic formats accepted by the Washington State Department of Ecology (Ecology) include

the following (Washington State Department of Ecology, 2019a; Washington State Department of Ecology, 2019b):

- Geographic Information Systems
- Computer-Aided Design
- Other software that can map and store points, lines, polygons, and associated attributes

The following sections describe two common electronic mapping methods, CAD and GIS, as well as data to collect for developing a BMP inventory.

4.3.1 Computer-Aided Design (CAD)

CAD can be used to develop two-dimensional (2-D) or three-dimensional (3-D) drawings of a design that are then used to guide construction. Record drawings are developed once a construction project is complete, which reflect changes to the original design made during construction (Adams, 2002). Mapping a jurisdiction's MS4 in CAD, including connections to all known private BMPs, generally involves referencing electronic versions of record drawings and digitizing the remaining portions of the jurisdiction's stormwater system. Older record drawings that were hand drafted and are only available in a paper format can also be digitized into CAD (Adams, 2002). This can be particularly important for older paper drawings since paper can deteriorate, making even scanned or PDF drawings difficult to interpret and maintain (ESRI, 2022). Converting paper or PDF drawings to an electronic format can improve efficiency with accessing, sharing, and interpreting data related to the MS4 system. It also allows for regularly reviewing and updating the mapped information.

Using CAD to meet Phase II MS4 Permit mapping requirements of privately owned BMPs has typically been less popular than using GIS. This is because CAD drawings commonly use 2-D and 3-D Cartesian coordinate systems that locate data at x-, y-, and z- coordinates relative to an arbitrary geometric origin (0,0,0) compared to a geographic location at a regional or global scale (like GIS). Consequently, geometric accuracy and design intent are often the primary focus of the drawing (ESRI, 2016). However, CAD mapping software now exists that allows the user to work in coordinate systems that describe locations on the surface of the earth and project the map in two dimensions (GIS Geography, 2022). **Figure 4-1** depicts a storm drain profile that was created using CAD. As previously described, the drawing includes geometric and design details, such as pipe diameter and invert elevation.

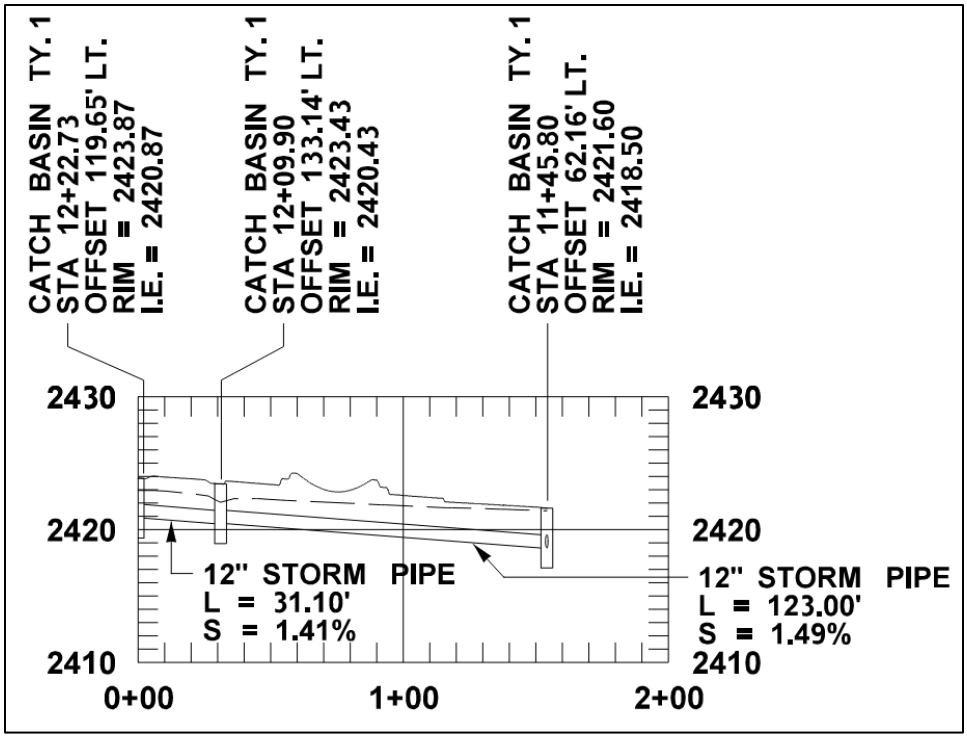


Figure 4-1. Profile of storm drain network developed in CAD

4.3.2 Geographical Information Systems (GIS)

GIS is a system with a database of spatially distributed features and procedures that are used to collect, store, retrieve, and display geographic data (Shamsi, 2005). GIS uses geographic coordinate systems that consider the curvature of the earth and describes locations in terms of longitude, latitude, and elevation. The focus of mapping BMP features in GIS is the actual geographic location, compared to using CAD, which is primarily utilized for designing and drawing BMPs with geometric accuracy and to scale (ESRI, 2016). Permittees can map MS4 features in GIS platforms by collecting surface data through a combination of methods such as on-site surveys, remote sensing, global positioning system (GPS) processes, and photogrammetry. Another method includes transferring data into GIS from record drawings, either manually or by converting the CAD file to a geodatabase within GIS. **Figure 4-2** depicts a utility map that includes stormwater features created using GIS.

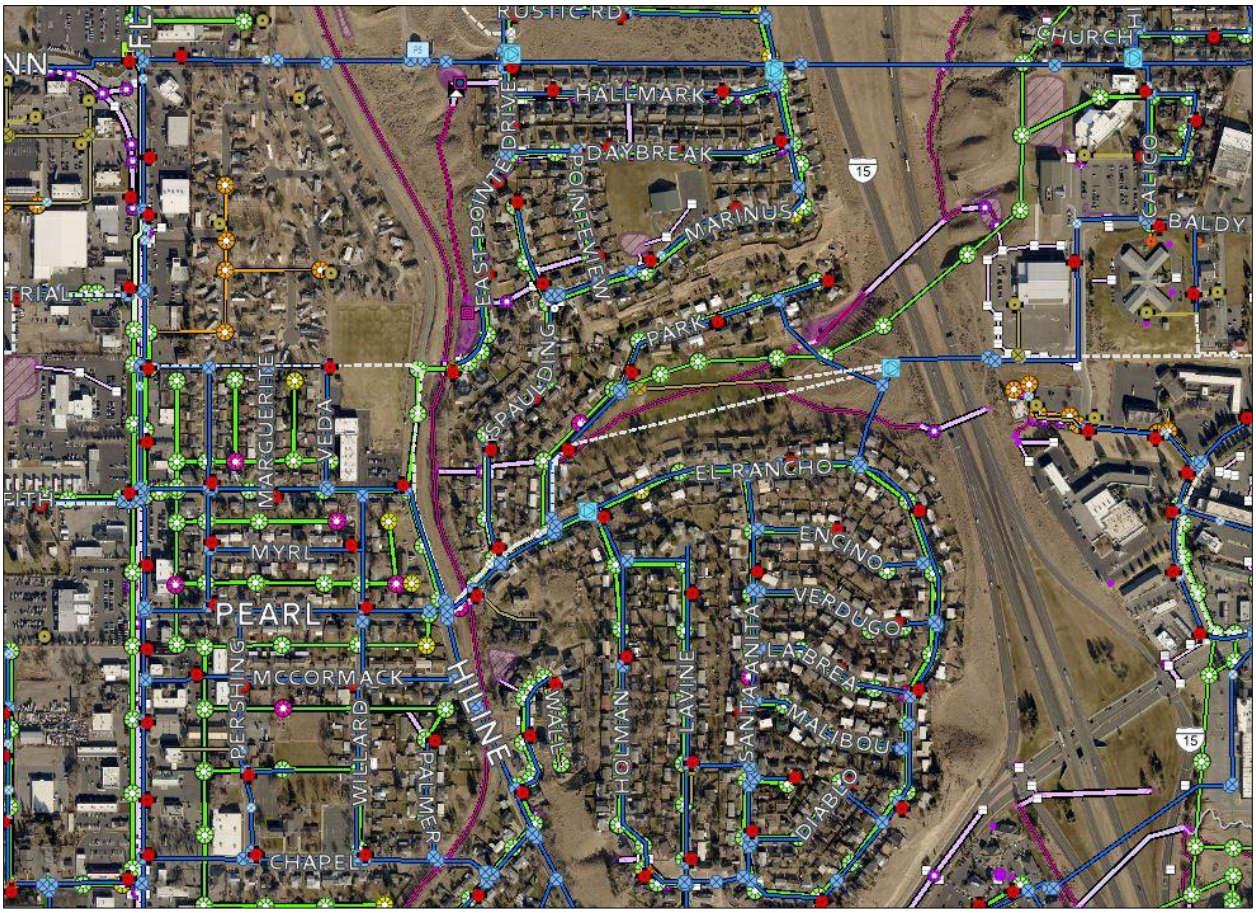


Figure 4-2. Utility map created using GIS

Unlike CAD drawings, GIS features are often mapped with symbols, which incorporates less detail. For example, **Figure 4-3** shows a common representation of a stormwater manhole in CAD compared to GIS. Databases linked to each specific feature store attributes (Debo & Reese, 2002) for stormwater features such as size, invert depth, material, and condition. This provides the Permittee readily available information to review and update after performing maintenance activities or an inspection. Other spatial features commonly mapped in GIS include land use, soil types, slopes, and land cover. Permittees can utilize this spatial data in combination with the stormwater system data (e.g., location of stormwater system, diameter of pipes, slope of pipes, invert elevation) when conducting stormwater analyses. Also, many GIS software platforms can integrate into asset management software platforms, linking inspections and maintenance records to each BMP. **Section 4.4.3** contains details about asset management software.

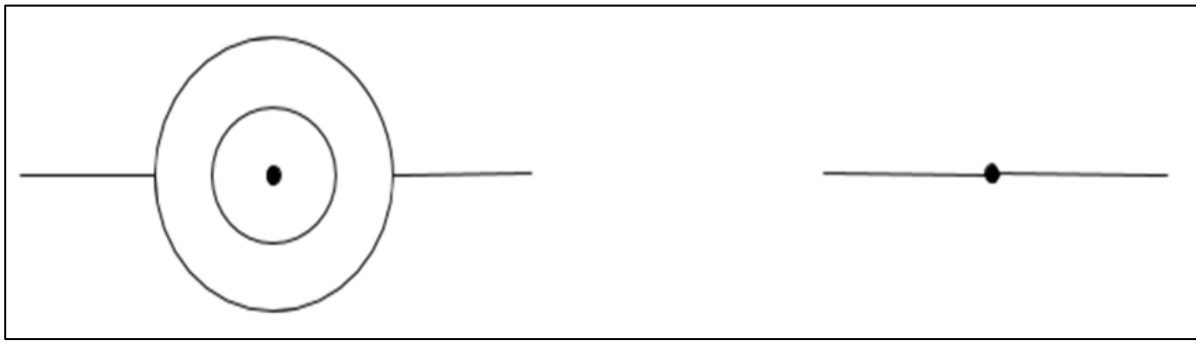


Figure 4-3. Common representation of a stormwater manhole in CAD compared to GIS

The graphic on the left displays a stormwater manhole symbol in CAD compared to a stormwater manhole symbol used in GIS, shown on the right **(Badhrudeen, Boria, Fonteix, Siciliano, & Derrible, 2022)**.

4.3.3 BMP Inventory

As mentioned in **Section 2.3.1.1**, prior to inspecting BMPs, the Permittee should develop an inventory of the applicable BMPs on each private property. An accurate inventory of BMPs is essential in planning maintenance and inspection tasks (Smith & Devine, 2006) so staff have the proper inspection forms and/or equipment when conducting these activities. An accurate list also helps Permittees determine which BMPs need to be inspected to meet Phase II MS4 Permit compliance. Confirming that all necessary BMPs have been identified and characterized correctly may require a collaborative effort between different staff, such as stormwater, operations and maintenance, management, and GIS (PG Environmental, 2017). Permittees can use the mapping methods described in **Sections 4.3.1** and **4.3.2** to develop an inventory and/or confirm all BMPs have been mapped during inspections.

The EWA and WWA Phase II MS4 Permits require mapping all known connections from the MS4 to privately owned stormwater systems. While not required, collecting the following information (if available) when developing the BMP inventory is recommended (PG Environmental, 2017). This additional information will assist with tracking inspections and the condition of the BMP. A database linked to each asset can store this information in GIS, as described in **Section 4.3.2**, or Permittees can use another form of documentation, such as a spreadsheet. Permittees should consult the Phase II MS4 Permits for the exact mapping requirements.

- BMP type
- BMP details (e.g., size, dimensions, material)
- Location (GPS)
- Photos
- Unique identifier
- Contributing area, if available
- Name/address/phone number for the responsible party/owner
- Year installed
- Maintenance schedules
- Maintenance and inspection records

If Permittees assume responsibility for BMP maintenance, consider also collecting the following information. While some of this information is not directly related to maintenance and inspections, gathering this information for cost projections and program budgeting is useful (Clary, Earles, Leisenring, & Pankani, 2018).

- Estimated lifespan (if known)
- Anticipated date of replacement, if applicable
- Approximate installation or replacement cost
- Serial numbers, if applicable

4.4 Methods for Tracking and Reporting

Retaining inspection records and documenting maintenance activities are Phase II MS4 Permit requirements, but Ecology does not specify a particular method Permittees must use. Developing a process best suited for the jurisdiction is up to the Permittee. Tracking and reporting have historically been conducted using hard copy checklists, logs, and manual data entry. However, many Permittees have transitioned to using asset management software platforms to help automate and streamline this process (Kurz, 2013). As stated in **Table 4-2**, the EWA and WWA Phase II MS4 Permits require tracking the following information for BMPs on private property (Washington State Department of Ecology, 2019a; Washington State Department of Ecology, 2019b):

- Maintenance inspections and maintenance activities
- Number of inspections performed and inspection reports
- Follow-up actions as a result of inspections
- Official enforcement actions taken, such as warning letters, notices of violation, and other enforcement records (see **Chapter 8**)
- Types of public education activities (see **Chapter 9**)
- Training records, such as dates, activities or course descriptions, and names and positions of attending staff

The following sections describe inspection and maintenance documentation and approaches to tracking and reporting BMPs on private property.

4.4.1 Inspection & Maintenance Documentation

Permittees must properly document all BMP inspections. The EWA and WWA Phase II MS4 Permits require documenting the number of inspections and maintenance activities, but the Permittee can decide the specific information the responsible party collects during inspection and maintenance. It is important to find a balance between gathering the minimum amount of information to accurately document inspection and maintenance and requiring too much information, which could cause the effort to conduct an inspection and document maintenance to become cumbersome and time consuming (Clary, Earles, Leisenring, & Pankani, 2018). Including the following information is recommended when developing inspection documentation. Permittees should also consult Appendix 5-A of the SWMMWW or Appendix 6-A of the SWMMEW for maintenance activities specific to each type of BMP, which Permittees can use to determine the unique items for each BMP requiring inspection. Examples of inspection checklists for different types of BMPs are provided in **Appendix 2-B**.

- Inspector name
- Inspection date
- Inspection time
- Weather conditions
- Unique BMP identifier
- BMP location
- BMP owner/responsible party information (e.g., name, email, phone number)
- BMP type
- BMP components (e.g., inlet structure, outlet structure, flow splitter, forebay)
- Visible flow/discharges (stormwater and/or illicit)
- Specific BMP parameters to inspect (e.g., condition of BMP components, presence of debris or trash, presence of erosion, condition/type of vegetation, presence of sediment accumulation)
- Required maintenance, if applicable
- Signatures of inspector and/or BMP owner/responsible party, if required
- Photos and any other inspection evidence or support

If a BMP inspection triggers maintenance, the EWA and WWA Phase II MS4 Permits require documentation of maintenance activities as well. Including the information below is recommended when documenting maintenance activities (Clary, Earles, Leisenring, & Pankani, 2018).

- Name of person performing maintenance
- Unique BMP identifier
- BMP location
- BMP owner/responsible party information (e.g., name, email, phone number)
- BMP type
- BMP components (e.g., inlet structure, outlet structure, flow splitter, forebay)
- Maintenance start date and end date
- Maintenance start time and end time
- Facility condition at time of maintenance
- Performed maintenance activities
- Opportunity for other comments
- Before and after photos
- Signatures of inspector and/or BMP owner/responsible party, if required
- Proof of maintenance from third party, if applicable

If Permittees track maintenance costs for budgeting purposes, collecting the following additional information is recommended.

- Number of workers
- Quantities of maintenance activities and materials used (e.g., approximate amount of mulch or media removed, number of cartridges replaced)
- Equipment used (e.g., vactor truck, sweeper, shovel)

4.4.2 Hard Copy Documentation

Hard copy documentation may be an appropriate method for Permittees who do not have the budget for asset management software or for inspecting and maintaining BMPs during the software development and implementation process before the software is deployed. The following sections outline the common components of this approach.

4.4.2.1 Tracking Maintenance and Inspections

Permittees can develop a detailed inspection approach and schedule, ensuring all necessary BMP inspections occur by the permit-required timeline. One approach includes dividing the jurisdiction into sections and inspecting BMPs in each section in the same order every inspection cycle (Interview A, 2022). Permittees can then determine the required number of inspections per week or per month and schedule the inspections using an electronic calendar. An electronic calendar can also be used for viewing the work required in the weeks ahead and setting up reminder notifications. If Permittees do not develop an inspection approach and schedule, they run the risk of missing a BMP inspection and not being compliant.

Inspectors using hard copy documentation commonly record results on paper. As described in **Section 2.3.1.3**, Permittees often use paper checklists for inspection guidance and recording results. A private property may contain more than one type of BMP, requiring separate checklists (Kurz, 2013); therefore, the inspector must be prepared with all necessary documentation before heading to the inspection site. Losing the information recorded on paper is a risk when using hard copy documentation. To reduce this risk, Permittees can manually enter the inspection and/or maintenance details into a database or spreadsheet, as soon as possible after the information is collected (Kurz, 2013). Scanning the paper records to PDF is another approach; however, handwriting on PDFs is not typically searchable when seeking specific information in a document.

A common approach for Permittees tracking maintenance and inspections of BMPs includes storing applicable documentation in a database or in separate computer files for each BMP (Kurz, 2013). Per EWA and WWA Phase II MS4 Permit requirements, the documentation should include inspection and maintenance records, follow-up actions (including education and outreach efforts), violations, and enforcement actions taken (Washington State Department of Ecology, 2019a; Washington State Department of Ecology, 2019b). Other helpful documents may include photos, maps, development plans, O&M manuals, and any correspondence with the BMP owner/responsible party. Permittees can also develop a master file, such as a spreadsheet, to track the total number of inspections and follow-up actions. This may assist with reporting, which is described in the following section.

4.4.2.2 Reporting

Permittees in EWA and WWA report information regarding BMPs on private property every year by March 31 as part of their annual reporting requirements. Permittees must fulfill this requirement regardless of the documenting and tracking methods they choose to use. Appendix 3 of each Permit outlines the reporting requirements. Following is a list of the reporting requirements in the annual report pertaining to BMPs on private property for each permit for the 2019–2024 permit cycle (Washington State Department of Ecology, 2019a; Washington State Department of Ecology, 2019b). Since permit requirements can change with each new permit cycle, it is recommended that Permittees confirm the required reporting with the most current version of their permit.

EWA 2019–2024 Phase II MS4 Permit Reporting Requirements

- Confirm Permittee revised ordinance or other regulatory mechanism and enforcement procedures to address post-construction stormwater controls runoff to the MS4 from new development and redevelopment, as described in S5.B.5.a. Cite code reference in the *Comments* field.
- Confirm Permittee inspected post-construction structural BMPs at least once every five years after installation. List the number of BMPs inspected during the reporting period (S5.B.5.d.ii).
- List number of enforcement actions taken as a result of these inspections during the reporting period (S5.B.5.d).
- Confirm Permittee trained staff involved in permitting, plan review, inspection, and enforcement for post-construction stormwater controls (S5.B.5e).
- Confirm Permittee provided information to design professionals about training available on how to comply with the requirements of Appendix 1 of the Stormwater Management Manual for Eastern Washington (SWMMEW) and apply the BMPs described in the SWMMEW (or another technical stormwater manual approved by Ecology). Describe information provided, and cite the manual used, in the *Comments* field (S5.B.5.f).

WWA 2019–2024 Phase II MS4 Permit Reporting Requirements

- Confirm Permittee revised ordinance or other enforceable mechanism to effectively address runoff from new development, redevelopment, and construction sites per the requirements of S5.C.6.b.i-iii. Cite code reference in the *Comments* field.
- Confirm Permittee verified a maintenance plan is completed and the responsibility for maintenance is assigned for projects prior to final approval and occupancy being granted (S5.C.6.c.v). Confirm Permittee verified that maintenance was performed per the schedule in S5.C.7.a.ii, when a section identified an exceedance of the maintenance standard (meaning the BMP is not maintained as required). Attach documentation of maintenance time frame exceedances that were beyond the Permittee's control.
- Confirm Permittee implemented an ordinance, or other enforceable mechanisms, to verify long-term operation and maintenance of stormwater treatment and flow control BMPs/facilities regulated by the Permittee per S5.C.7.b.i(a).
- Confirm Permittee annually inspected stormwater treatment and flow control BMPs/facilities regulated by the Permittee per S5.C.7.b.i(b). If using a reduced inspection frequency for the first time during this permit cycle, attach documentation per S5.C.7.b.i(b).
- Confirm Permittee achieved at least 80% of scheduled inspections to verify adequate long-term O&M (S5.C.7.b.ii).
- Confirm Permittee implemented an ongoing training program for Permittee employees whose primary construction, operations, or maintenance job functions may impact water quality (S5.C.7.e).

Appendix 7 of the EWA Phase II MS4 Permit and Appendix 12 of the WWA Phase II MS4 Permit provide the required reporting information for each illicit discharge incident found, reported to, or investigated by the Permittee, which may occur during inspections of BMPs on private property. Permittees may use their own system or the WQWebIDDE form for recording the required information. If Permittees use their own system, submitting the information in a zipped .xml, following Ecology's provided schema, is required.

4.4.3 Asset Management Software

Another method for documenting, tracking, and reporting maintenance and inspections of BMPs on private property is using asset management software. The Environmental Protection Agency defines asset management as "…*the practice of managing infrastructure capital assets to minimize the total cost of owning and operating them, while delivering the service level customers desire"* (United States Environmental Protection Agency, 2022). An asset in a stormwater system is considered a component of the system with an independent physical and functional identity, such as manholes, catch basins, pipes, outfalls, and BMPs (PG Environmental, N.D.). Asset management software platforms can assist Permittees with managing the age and condition of their stormwater assets and with planning future capital improvement projects. Asset management software also allows Permittees to document, track, and report inspections and maintenance of stormwater facilities, including BMPs on private property. The following sections provide an overview of asset management software capabilities and common components used for inspection and maintenance. **Section 4.5** provides case studies, with examples of how Permittees are implementing asset management software for BMP inspections.

4.4.3.1 Asset Management Software Overview

A variety of industries use asset management software. Numerous software platforms are available, with specific features and capabilities to assist Permittees with managing and making decisions about assets (PG Environmental, 2017). Asset management software typically includes the following features. Some of these features are used for tasks beyond what is needed for stormwater inspection and maintenance (Debo & Reese, 2002).

- Database of system assets
- Database management capabilities
- Complaint processing and management system
- Work order processing system
- Mapping capability
- Report generating
- Financial and cost accounting and reporting
- Customer service systems
- Remote field input
- GIS internal graphics or CAD links
- Multi-user capabilities

There are two common options when procuring an asset management software platform: off-the-shelf or customized systems. Permittees can purchase "off-the-shelf" software platforms specifically designed for asset inventory and management; however, these platforms can be expensive and may include unnecessary features for smaller utilities with simple systems (PG Environmental, 2017). In this situation, the Permittee is left paying a large upfront cost or annual subscription for software elements that go unused. Some jurisdictions, especially those with large or complex systems, may use asset management software for several different departments, such as other utilities, transportation, parks and recreation, and facilities. It is likely these jurisdictions will utilize more software capabilities, so purchasing off-the-shelf software platforms may be beneficial. Another option for asset management software includes creating in-house databases that connect relevant data from different information systems, developing a customized asset management system (PG Environmental, 2017). Permittees can develop these customized systems if their staff possess the required skills, or they can hire a consultant to do the work. This process can be time consuming, but it may result in a product better suited for the Permittee than prepackaged software. Regardless of which option is selected, spending time understanding how the software can be incorporated into inspection and maintenance of BMPs and considering what features will be valuable is advised (Interview E, 2022). Considering the following asset management software elements is recommended for inspection and maintenance tasks (Kurz, 2013; PG Environmental, 2017).

- Intuitive user interface
- Ability to integrate with other applications utilized by the Permittee (e.g., GIS, CAD, Excel)
- Configurability
- Communication with a mobile application
- Inclusion of valuable operational modules, such as:
    - Data collection ability
    - Asset inventory module to create and manage BMP inventory
    - Mapping module with assets visible and selectable for inspection records and inventory updates
    - Inspection module to enter and record inspection data
    - Service request module for staff or citizens requesting work to be performed
    - Work order module to assign maintenance tasks
    - Tracking module to monitor progress
    - Reporting module to generate reports
    - Data export to spreadsheet ability, to assist with additional reporting

Appendix 4-A provides a checklist Permittees can use when comparing different asset management software platforms during the selection process. The following sections detail documenting, tracking, and reporting maintenance and inspection of BMPs on private property using asset management software.

4.4.3.2 Asset Management BMP Inventory

Using asset management software for inspection and maintenance requires a BMP inventory, as described in **Section 4.3.3**. Permittees may be able to use the software to create an inventory if one is not available. Asset management software may contain an internal database used for developing the inventory or it can link the software to the Permittee's mapping platform, such as GIS. Some software platforms also have data collection ability. This allows Permittee staff to capture assets in the field with the software (Curry, 2020) instead of relying on a survey or record drawings. Using asset management software with a mobile device also allows updating BMP data in the field (Rafter, 2000). When developing the BMP inventory, including the information listed in **Section 4.3.3** for each asset, if available, is recommended.

4.4.3.3 Inspection and Maintenance Documentation

Many processes for documenting maintenance activities and inspections can be automated using asset management software (Kurz, 2013). For example, once a BMP inspection is complete, some software platforms have the capability of immediately scheduling the next inspection at a user-specified time interval (Interview F, 2022). The software will then alert the Permittee when specific BMP inspections are needed, reducing the time the Permittee must spend developing an inspection schedule and approach.

Information related to a BMP on private property is often tied to a corresponding mapped asset when using asset management software. Permittee staff can click on the mapped asset and view data such as the BMP owner/responsible party contact information, the date of the last inspection, and inspection results. When conducting an inspection, Permittees can use a mobile device, such as a phone or tablet, with inspection checklists for collecting data. The inspector can upload the information to the software immediately if connected to cellular service or save the data on the tablet and upload the information once back at the office. This allows for recording all inspection data in the field and eliminates the need for post-inspection data re-entry for tracking purposes. If a BMP inspection triggers maintenance, some asset management software platforms can notify the responsible party. This may include developing a work order if the Permittee assumes maintenance responsibility or notifying the BMP owner/ responsible party via email. Storing maintenance documentation within the software platform is also a common feature.

4.4.3.4 Tracking Maintenance and Inspections

Tracking maintenance and inspections of BMPs on private property is another process automated by asset management software. Software platforms commonly have a configurable dashboard (see **Figure 4-4**) that can be customized to track different program elements or activities over a specified period (Interview F, 2022). This provides the Permittee with real-time data, allowing the Permittee to confirm whether inspection progress is on track to meet permit requirements.

Figure 4-4. Asset management dashboard used to track inspections (source: www.eloquens.com)

4.4.3.5 Reporting

Section 4.4.2.2 provides reporting requirements regarding BMPs on private property for the EWA and WWA Phase II MS4 Permits. Most asset management software platforms can be configured to query specific information and generate reports based on user-developed templates. Permittees can reduce time and resources developing portions of the Ecology annual report by automating the reporting and tracking processes (see **Section 4.4.3.4**) for inspections and maintenance using asset management software.

4.5 Case Studies

4.5.1 Case Study 4.1 – Asset Management Software for Inspecting BMPs – City of Wenatchee

The City of Wenatchee purchased Novotx, an asset management software platform, which is utilized by multiple departments, including stormwater, sanitary sewer, and parks. To select the software, the City assembled a team of people, with representatives from the different departments. The team received proposals from different software companies and attended demonstrations by the top candidates before making a final selection. The City then purchased the software as an off-the-shelf platform and made minor customizations to meet departmental needs.

The Stormwater Department uses the asset management software for inspecting BMPs on private property. Integrating the City's GIS into the software is one of the platform's useful features. The GIS map includes assets for each BMP with two types of attributes. The first type, *permanent state of being attributes*, includes attributes obtained from record drawings, such as BMP type, depths, and inverts, as well as owner information. The second type, *conditional attributes*, involves a set of dynamic fields stored in work order templates used during the inspection. There are specific templates for each type of BMP. The City sets up the correct template for the BMP when adding the BMP to GIS.

The asset management software is available for desktop and mobile applications, so the City can use it both in the office and in the field. The inspector starts the process by scheduling the required inspections while in the office. Once at the private property, the inspector utilizes the software for the inspections using a tablet. During the inspection, the inspector selects the BMP on the GIS map and starts a new work order. This opens the work order template specific to the BMP type, and the inspector then fills out the dynamic fields. The inspector can also add photos directly to the work order. Other software capabilities include tracking time and equipment. The City does not use these features for BMPs on private property, but other City staff, such as maintenance, use these features when maintaining City-owned facilities. If an inspection of a City-owned facility determines maintenance is required, the inspector can create a follow-up work order and assign it to the applicable department. The software also includes a dashboard meant for tracking inspections; however, the City does not inspect enough BMPs on private property each year to warrant the dashboard's use. Instead, the City manually tracks the inspections. After the inspection, the inspector generates a report while in the office. The software converts the dynamic fields into a professional-looking document, presenting the inspection information and results. The inspector then either emails or mails a report to the corresponding homeowners association or property owner.

Using an asset management software program to inspect BMPs on private property has advantages, but also presented challenges for the City. The benefits include: (1) the downsizing of paper records, (2) the software stores easily accessible information for multiple utilities, and (3) City staff can easily answer questions or gather information when a staff member is unavailable or out of the office. The challenges include: (1) using the software involves a steep learning curve, (2) ensuring assets and asset information are correct, and (3) continuing to update the GIS as construction occurs.

The City's advice for other jurisdictions selecting an asset management software program includes:

- Have the right people in the room to discuss each department's needs.
- Establish and understand the goal(s) for the software.
- Schedule demonstrations and ask to see numerous examples.

4.5.2 Case Study 4.2 – Asset Management Software for Inspecting BMPs – Idaho Permittee

A Permittee in Idaho uses Lucity for managing the City's assets, including inspecting stormwater BMPs on private property. The City purchased the software as an off-the-shelf platform and hired a consultant to develop customizations to meet the City's needs. One useful software feature includes the capability to connect to the City's GIS. When a new project is complete, the Engineering Department receives record drawings for review. Once approved, the engineering staff sends the drawings to the GIS Coordinator, who uploads the BMP information to GIS. The City built a specific software tool in ArcMap that renumbers assets based on type and then updates that information in Lucity. This tool pushes revisions made in GIS through to the software. City staff also enters BMP information necessary for inspections into a spreadsheet, including site ID, owner, record drawings, past issues, etc., and imports the data into the software. City staff are currently working on completing the City's BMP inventory by adding BMPs from older projects to their GIS database and the software using record drawings.

Other software capabilities include upcoming inspection reminders and documenting inspections in the field. The software-provided reminders can be both recurring and manually scheduled. For example, inspectors can set automatic reminders recurring over a specified time frame matching the inspection frequency requirements (e.g., every six months, annually, every two years). Or, if the BMP requires a one-time follow-up inspection, inspectors can manually set a reminder that will not disrupt the recurring inspection schedule. When a BMP requires inspection, the inspector conducts the inspection in the field using the software on a tablet device. The software does not contain inspection checklists tied to each individual BMP. Instead, during an inspection, the inspector minimizes the software and fills out a PDF checklist previously developed by the City. The inspector saves and uploads the checklist to the software once the inspection is complete. The software also stores helpful documents for each BMP, such as record drawings and inspection photos. Since it is an off-the-shelf platform, the software does not include reporting features. To add this capability, the City integrated Crystal Reports into the software for reporting purposes.

Using the software for inspecting BMPs on private property has advantages, but also presents challenges for the City. One benefit is the reporting feature. Crystal Reports generates satisfactory reports, automating the process for the City. The City also finds linking GIS to the software useful; however, the tool created to connect GIS to the software is only compatible with ArcMap, an older GIS platform. The City must make map edits through ArcMap and cannot make the edits directly in Lucity. Another challenge is understanding the software. This process involved a steep learning curve for some City staff.

Other departments also utilize the software, including water, sanitary sewer, and street operations. The Science and Environment Division's advice for other jurisdictions selecting an asset management software is to purchase a stormwater-specific asset management platform for maintenance, inspection, and reporting needs if other departments do not need asset management software. In this scenario, the software platform may require less customizations.

4.6 Appendix

4.6.1 Appendix 4-A – Asset Management Software Demonstration Checklist

Name of Software:	

General Information	
Base Cost	
Cost for Additional Users	
Implementation Timeframe	

Customer Ratings	
Overall	
Ease of Use	
Customer Service	

General Features		
Feature	**Included? Y/N**	**Comments**
Training Opportunities		
Customer Support		
Mobile Tracking		
Offline Mode		
Other		

NPDES MS4 Permitting Features		
Feature	**Included? Y/N**	**Comments**
Data collection ability		
Mapping features		
Compatible with ArcGIS or other necessary software		
Schedule inspections		
Customizable inspection templates		

Service requests		
Work orders		
Tracking ability/dashboard		
Reporting ability		
Export .xml file type		
Upload photos & attachments		

Additional Comments:

Chapter 5
BMP Ownership

Chapter Contents

5.1 Chapter Overview

This chapter describes the types of owners of BMPs on private property and common methods for documenting and communicating their responsibilities. Owners of BMPs on private property can include single-family homeowners, multi-family building owners, homeowners associations (HOAs), and commercial and industrial property owners. In some situations, the property owner may delegate BMP responsibilities to another party. For example, a commercial property owner may delegate the BMP responsibilities to property management staff of the organization that operates or rents the property. This chapter will describe potential responsible parties for each type of property. Findings of the Yakima County Effectiveness Study and other supporting literature indicate that good relationships with property owners and/or responsible parties, as well as clear, well-documented responsibilities are important to a successful program (Yakima County, et al., 2021). Participants in the Yakima study also indicated that having a positive relationship with BMP owners improved the jurisdictions' likelihood for achieving compliance because the property owners better understood the requirements expected of them. Conversely, a common issue reported by some participants included a lack of property owner awareness or understanding (Yakima County, et al., 2021). For example, many BMP owners were not aware of the BMP's purpose, and new property owners were not aware the BMP existed nor of their responsibilities and requirements to maintain it. This chapter outlines approaches for communicating responsibilities and methods of documenting responsibilities, including advantages and disadvantages of each approach. The Appendices (**Section 5.6**) include templates for private stormwater maintenance agreements for Permittee use or modification.

5.2 Permit Requirements

Sections S5.B.5 of the Eastern Washington (EWA) Phase II MS4 Permit and Sections S5.C.6 and S5.C.7 of the Western Washington (WWA) Phase II MS4 Permit include requirements for property owners to implement and maintain BMPs on their property. Permittees must adopt ordinances (described in **Chapter 6**) to enact and enforce these requirements. **Table 5-1** presents a summary of the requirements in the EWA and WWA Phase II MS4 Permits pertaining to BMP owners.

Table 5-1. Summary of EWA and WWA Phase II MS4 Permit requirements pertaining to BMP owners

EWA Phase II	WWA Phase II
Minimum Technical Requirements	
S5.B.5.b.ii The Permittee shall develop an ordinance or other regulatory mechanism that requires project proponents and property owners to adhere to the minimum technical requirements in Appendix 1 and shall include BMP selection, design, installation, operation, and maintenance standards necessary to protect water quality, reduce the discharge of pollutants to the MEP, and satisfy state AKART requirements.	**S5.C.6.b.i** The Permittee shall develop an ordinance or other regulatory mechanism that includes the Minimum Requirements, thresholds, and definitions in Appendix 1, or the 2013 Appendix 1 amended to include the changes identified in Appendix 10, or Phase I program approved by Ecology and amended to include Appendix 10, for new development, redevelopment, and construction sites.
BMP Implementation	
S5.B.5.b.ii.(b) The Permittee shall develop an ordinance or other regulatory mechanism that includes requirements for project proponents and property owners to implement appropriate runoff treatment, flow control, and source control BMPs considering the proposed land use at the site to minimize adverse impacts to water quality.	**S5.C.6.b.ii** The Permittee shall develop local requirements that include site planning requirements, BMP selection design, BMP design criteria, BMP infeasibility criteria, LID competing needs criteria, and BMP limitations when used to implement Appendix 1 to protect water quality, reduce the discharge of pollutants to the MEP, and satisfy State requirements.
Maintenance	
S5.B.5.b.ii.(c) The Permittee shall develop an ordinance or other regulatory mechanism that includes requirements to ensure adequate ongoing long-term operation and maintenance of the BMPs approved by the Permittee.	**S5.C.6.c.v** The Permittee shall verify that a maintenance plan is completed and responsibility for maintenance is assigned for stormwater treatment and flow control BMPs/facilities. **S5.C.7.b.i** The Permittee shall develop a maintenance program that includes provisions to verify adequate long-term O&M of stormwater treatment and flow control BMPs/facilities that are permitted and constructed pursuant to S.5.C.6.c and shall be maintained in accordance with S5.C.7.a.

5.3 Types of BMP Owners

There are several types of property owners with BMPs on private property. The most common include single-family residential owners, multi-family building owners, HOAs, and commercial and industrial property owners. Unclear ownership and/or owner responsibility for stormwater BMPs was identified asa barrier for property owners to conducting proper BMP maintenance (Blecken, Hunt III, Al-Rubaei, Viklander, & Lord, 2017); therefore, documenting and communicating inspection and maintenance responsibilities to BMP owners is essential to support the success of a jurisdiction's program. Two common approaches for documenting ownership and responsibilities are: (1) including the BMP obligations in the property deed (Interview A, 2022), or (2) developing a maintenance agreement between the Permittee and the property owner (Knox County Stormwater, 2013). **Section 5.4** provides details for each approach. While these approaches are common for documenting ownership, these methods are not perfect for communicating responsibilities; therefore, this section also provides additional ways to reinforce BMP owner obligations. The following sections describe the different types of BMP owners and methods for communication, common challenges, and approaches for addressing those challenges (see **Table 5-2**).

Table 5-2. Common challenges communicating BMP ownership and responsibilities

Topic	Common Challenges	Additional Approaches
Single-Family Residential	• Keeping the property owner informed when ownership changes • Educating property owners regarding proper BMP maintenance and inspection	• Permittee mails yearly reminders about maintenance • Permittee hosts workshops providing BMP maintenance information
Multi-Family Residential	• Property owner may not be involved in day-to-day operations • Knowledge loss from property management staff turnover	• Keep maintenance plan onsite • Conduct training regularly, especially when new staff are hired
HOA	• Educating HOA regarding proper BMP maintenance and inspection • Maintaining sufficient funding	• Permittee hosts workshops providing BMP maintenance information • Require an estimate of annual maintenance cost as part of a developer-recorded maintenance agreement • Identify an HOA member as the primary point of contact for correspondence
Commercial and Industrial	• Property owner may not be involved in day-to-day operations • Knowledge loss from property management staff turnover	• Keep maintenance plan onsite • Conduct training regularly, especially when new staff are hired

5.3.1 Single-Family Residential

A single-family dwelling or residence provides complete independent living facilities for one or more person(s) and is either a fully detached building or attached building with separate utilities and a ground-to-roof wall separating individual dwelling units (e.g., townhouses) (United States Census Bureau, n.d.; International Code Council, 2022). The responsibility for continued operation of BMPs on single-family residential properties ultimately falls on the property owner, regardless of whether the property owner is the primary resident or renting the single-family dwelling unit. **Figure 5-1** shows an example of a BMP on a single-family residential property.

Figure 5-1. BMP on single-family residential property (source: https://19january2017snapshot.epa.gov/green-infrastructure/what-green-infrastructure_.html)

Communicating BMP ownership to the property owner should occur during the sale of the property; however, Permittees are not always involved in this process. This can create a challenge for keeping property owners informed when the property owner changes. When using a deed of sale for documenting the responsibilities for BMPs, the BMP obligations may become buried in the large amount of documentation the new property owner must review and sign (Interview A, 2022). Overlooking the BMP ownership and requirements becomes a risk if it is not specifically brought to the new owner's attention. One method to address this challenge is for the Permittee to mail annual reminders or informational pamphlets to each single-family parcel with BMPs on the property.

Properly maintaining the BMP or knowing why it is important is another challenge for property owners, even if communicating the responsibilities for the BMP is successful. Hosting regular workshops that provide information about BMPs is one strategy to overcome this challenge (Rafter, 2000). **Chapter 9** provides more information regarding education and outreach. In addition, some Permittees, such as Thurston County, require the developer to create a BMP Maintenance Manual that is tied to the deed and transferred to the new owner when the property changes ownership.

Figure 5-2. Unmaintained stormwater pond on multi-family parcel

5.3.2 Multi-Family Residential

A multi-family residential building contains dwelling units built one on top of another and side by side, which do not have a ground-to-roof wall and may have

common facilities, such as a basement, plumbing, or heating (United States Census Bureau, n.d.). Like single-family residential property owners, the responsibility for continued operation of stormwater BMPs ultimately falls on the property owner. In this scenario, an organization may own the property, with property management staff overseeing the day-to-day property management, including the care of stormwater BMPs. Communicating the responsibility to the property owner should occur during the sale of the property; however, educating property management staff is the property owner's responsibility. **Figure 5-2** shows an unmaintained stormwater pond constructed for stormwater runoff from a multi-family parcel.

Communicating responsibilities for stormwater BMPs on multi-family residential properties to those caring for the BMPs may be challenging. The property owner signing the deed or maintenance agreement may not be involved in the day-to-day operations of the multi-family residential dwelling; therefore, BMP neglect is a risk if conveying the necessary information is not successful. One strategy for addressing this concern is to require a copy of the maintenance agreement at the property. Losing important BMP knowledge through staff turnover is another common challenge. Training staff on the importance of and how to properly care for stormwater BMPs should occur on a regular basis, especially when new staff are hired.

Figure 5-3. Swale leading to detention basin managed by HOA in Missoula, MT

Figure 5-4. Detention basin managed by HOA in Missoula, MT

5.3.3 Homeowners Association (HOA)

A homeowners association is a corporation, unincorporated association, or other legal entity where each member is an owner of property located in the association's jurisdiction and each member pays a fee or tax for improvement of property other than what is owned by the member (Washington State Legislature RCWs, 2021). A board of directors made up of volunteer members within the association's jurisdiction is responsible for representing and making decisions for the association. In some cases, the board of directors will hire an HOA manager who is responsible for the day-to-day operations (HOA Inc., 2022). The board of directors or HOA manager is typically responsible for maintenance and inspections of the BMPs within the association's jurisdiction. Property owners then pay for required maintenance or applicable inspection costs through a regular HOA fee set up by the association. **Figure 5-3** and **Figure 5-4** show examples of BMPs managed by an HOA.

Permittees can establish the HOA's responsibility for BMPs through a maintenance agreement recorded in the subdivision documents (Rafter, 2000). Developing

maintenance plans for the maintenance agreement, as well as outlining adequate funding requirements for long-term maintenance, is often required for subdivision developers before receiving a permit for construction (Rafter, 2000). After approval of the BMP record drawings (see **Section 4.3.1**), Permittees can meet with the developer and an HOA representative for a hand-off meeting. During this meeting, the developer transfers ownership of the BMP to the HOA. This meeting is also an opportunity for educating the HOA about the BMP and communicating responsibilities and obligations outlined in the maintenance agreement (City of Durham, 2018). **Section 5.4.2** describes maintenance agreements in more detail.

There are several challenges with BMPs owned by HOAs. Retaining knowledge of BMP responsibilities and obligations when the HOA board of directors changes members is one example. Requiring the HOA to maintain readily available copies of the subdivision documents can reduce this risk. Another approach for continuing to communicate BMP responsibilities includes requiring the HOA to identify a primary point of contact for all correspondence and the Permittee hosting regular workshops for HOAs, detailing how the BMPs should be cared for (Rafter, 2000). **Chapter 9** further describes education and outreach approaches.

Maintaining enough funding to cover BMP maintenance and any applicable inspection fees may also present a challenge. One strategy for overcoming this challenge is to increase HOA fees by a baseline percentage each year to account for inflation. Permittees may also require developers to outline the estimated cost of annual maintenance as part of the maintenance agreement to assist HOAs with calculating member fees. Some Permittees have experienced HOAs dissolving, causing difficulties with establishing who will maintain the subdivision stormwater facilities after the dissolution. Including a clause in a maintenance agreement or other ownership documentation to address this situation is recommended to protect the Permittee from inheriting maintenance responsibilities.

5.3.4 Commercial and Industrial Properties

Commercial property includes property or buildings that are used for business activities, such as grocery stores, offices, and malls (Chen, Mansa, & Logan, 2021). Commercial property can also include industrial sites and manufacturing facilities. In Washington State, specific categories of industrial activities are covered by the Industrial Stormwater General Permit (Washington State Department of Ecology, 2020). Regardless of the activity conducted at the property, commercial and industrial sites are required to implement runoff and flow control BMPs when required by the Phase II MS4 Permits for new development or redevelopment. For industrial properties with BMPs that are connected to the MS4, there may also be a Stormwater Pollution Prevention Plan that outlines additional requirements. Like single-family and multi-family residential properties, the responsibility for continued operation of BMPs on commercial and industrial properties ultimately falls on the property owner. Like multi-family residential properties,

Figure 5-5. BMP on commercial property

an organization may own the property, rather than an individual. In this case, though the obligation ultimately falls on the property owner, the property owner may delegate overseeing the BMP to the property management staff of the organization that operates or rents the property. Communicating the responsibility to the property owner should occur during the sale of the property; however, educating property management staff is the property owner's obligation. **Figure 5-5** shows a BMP on commercial property.

Like multi-family residential properties, businesses on commercial and industrial properties can experience high rates of staff turnover, which risks the loss of knowledge regarding the importance of and care for BMPs. Appropriate training should occur on a regular basis, especially when new staff are hired. An additional approach to overcoming this challenge includes requiring a copy of the maintenance agreement or maintenance plan to always remain onsite.

5.4 Documentation of BMP Ownership & Responsibilities

Permittees can choose between several approaches for documenting ownership of BMPs on private property. As **Section 5.2** describes, Permittees must adopt ordinances or other regulatory mechanisms (detailed in **Chapter 6**) to enact and enforce BMP ownership. Two additional approaches for documenting and communicating BMP ownership and responsibilities include using the property deed and using a private stormwater maintenance agreement. The following sections give an overview of both approaches and describe the advantages and disadvantages of each (see **Table 5-3**).

Table 5-3. Summary of advantages and disadvantages for documenting and communicating BMP ownership

Topic & Description	Advantages	Disadvantages
Property Deed	• Legally binding document if properly recorded • BMP ownership can appear in title search	• Pertinent information may be overlooked in property conveyance documents • Not recommended for communicating detailed information, such as maintenance standards, frequencies, and overall process
Private Stormwater Maintenance Agreement	• Legally binding document if properly recorded • Can provide more detailed information such as maintenance standards, frequencies, and overall process	• None identified
Ordinances	• Allows Permittees to enact and enforce BMP owner requirements	• Requires the Permittee's council and legal review process to amend

5.4.1 Property Deeds

Permittees can document the ownership of BMPs on private property using the property's deed. A property deed is a legal document conveying real property or interests in real property from a grantor to a grantee. In Washington State, transferring property ownership by deed is required (Macomber, 2019). The conditions for deeds in Washington state include that they: (1) be in writing, (2) contain a legal description of the property, and (3) contain a notarized signature of the grantor (Steinacker, n.d.). Deeds can also include information about the property, such as existing easements and stormwater BMPs, that transfer with the ownership of the property. If properly recorded, a property owner should become aware of the BMP ownership through a title search when purchasing the property (Interview D, 2022). Recording documents involves submitting a document to the County Recorder, or other appropriate authority, so the document becomes an official record of the County.

Figure 5-6. Unmaintained swale in EWA

When BMP owners do not know what they are responsible for, BMPs can be neglected.

There are advantages and disadvantages to documenting BMP ownership through a property deed. If properly notarized and recorded, the deed is a legally binding document. This may be helpful with property owner disputes (see **Figure 5-6**). However, a Permittee may want to communicate more than BMP ownership to the property owner. Including detailed information such as maintenance and inspection requirements and frequencies may be too much language to add to the deed itself, especially if there are multiple types of BMPs. To overcome this challenge, Permittees may require that a formal maintenance agreement or maintenance plan be recorded by the developer. The following section describes maintenance agreements. The deed may be accompanied by and buried in several additional documents, creating the risk that the property owner may overlook information regarding BMPs. **Case Study 5.1** describes one method the City of Missoula in Montana uses to reduce this risk.

5.4.2 Private Stormwater Maintenance Agreement

A stormwater maintenance agreement is a formal agreement between the Permittee and the BMP owner delineating BMP ownership and the responsibilities of the owner. The agreement can also grant the Permittee rights to access the BMP for inspection, maintenance, or repair (Thurston County Water Resources Division, 2022). For new development, developing maintenance agreements for BMPs often occurs during the permitting process (Interview D, 2022). This enables the Permittee to approve the BMP type and establish the owner and the owner's responsibilities before the BMP is constructed. Permittees can choose to require that copies of the maintenance agreement be kept at different locations, such as with the applicable recorder's office, with the corresponding jurisdiction, or onsite with the BMP. Requiring a copy onsite provides the owner easy access to review the BMP ownership responsibilities when necessary. Keeping a copy with the jurisdiction allows the Permittee to redistribute the agreement if the owner loses their copy or the property changes ownership.

If properly recorded, a maintenance agreement is also a legally binding document that can assist with disputes. Another advantage to using a maintenance agreement is the opportunity to provide the owner with detailed information regarding the BMP. This is especially advantageous if the property owner has more than one type of BMP or a complex BMP requiring extensive documentation. This may also reduce necessary language when developing ordinances. If the ordinance refers to maintenance agreements instead of describing the maintenance and inspection details, the Permittee may be able to revise the agreement without going through the typical council review process. **Chapter 6** describes ordinances in greater detail.

Appendix 5-A through **Appendix 5-D** provide examples of stormwater maintenance agreements.

5.5 Case Study

5.5.1 Case Study 5.1 – Notice of Private Stormwater Facility

The City of Missoula documents ownership and responsibilities of BMPs on private property using a maintenance agreement that is filed with the Missoula County Clerk and Recorder. The maintenance agreement is one of the documents that requires approval by the City during the permitting process before construction begins. The Developer is responsible for recording the maintenance agreement so property owners can find the agreement during a title search. To prevent property owners from overlooking the agreement, the City may draft and file a one-page notice, outlining the exact book and page of the agreement. The City provides a maintenance agreement template for Developer use. **Appendix 5-A** includes an example of the maintenance agreement and **Appendix 5-E** includes an example of the one-page notice.

5.6 Appendices

5.6.1 Appendix 5-A – General Stormwater Maintenance Agreements

Documents included:

- Private Stormwater Facility Maintenance Covenant and Right to Access – City of Missoula
- Washington State County Auditor/Recorder's Indexing Form – City of Gig Harbor
- Draft Stormwater Maintenance Agreement – Stormwater Equipment Manufacturers Association

After recording, return to:
City Clerk, City of Missoula
435 Ryman
Missoula, MT 59802

Private Stormwater Facility Maintenance Covenant and Right to Access

This Maintenance Covenant and Right to Access ("Agreement") is made this [INSERT DAY] day of [INSERT MONTH], [INSERT YEAR], between [INSERT OWNER NAME HER] ("Owner") whose address is [INSERT OWNER ADDRESS HERE] and the City of Missoula, 435 Ryman, Missoula, Montana 59802, a municipal corporation under the laws of the state of Montana (the "City").

RECITALS

A. Owner is the owner and developer of certain real property located in the City of Missoula, Missoula County, Montana, legally described as follows, and commonly known as (the "Development"):

B. Owner has developed or will develop at the Development, private stormwater management facilities as further described below:

   List the type, quantity, and location of all private stormwater facilities proposed and constructed within the development.

   _____
   _____
   _____
   _____
   _____

C. The City has approved construction plans submitted by Owner for the Development, including the on-site stormwater facilities as described above (together with any other stormwater facilities that may hereafter be constructed on the Development, the "Stormwater Facilities").

D. To protect future lot owners in the Development, as well as owners of neighboring property, the City requires Owner to enter into this Agreement as a condition to the City's approval of construction plans, building permit(s), if applicable, and the final plat, if applicable, for the Development.

E. The Stormwater Facilities enable development of property while mitigating the adverse impacts of additional surface water and pollutants associated with stormwater runoff prior to discharge from the property to the public stormwater system. The consideration for this Agreement is connection to the City's stormwater system.

F. The Stormwater Facilities are designed by a registered professional engineer to accommodate the anticipated volume of runoff and to detain and treat runoff in accordance with the City's regulations, engineering standards, administrative rules, and amendments.

G. Failure to inspect and maintain the Stormwater Facilities can result in an unacceptable impact to the public stormwater system.

AGREEMENT

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the City and Owner agree as follows:

1. Covenant to Maintain and Repair

Owner shall, at its sole expense, itself or through qualified independent contractors, at all times maintain the Stormwater Facilities in good working order, condition and repair, clear of all debris, and in compliance with all applicable state and local rules, regulations, and guidelines (including those adopted from time to time by the City and including the City's engineering standards).

2. Covenant to Inspect

The Owner shall perform annual inspections of all Stormwater Facilities covered by this agreement annually. Any work necessary to repair or maintain the facilities in good working order that is discovered during the annual inspection shall be completed by the Owner within a reasonable period of time after the annual inspection. Owner shall apply for renewed coverage under the City stormwater permit as required by City Code.

3. Right to Access

Owner hereby grants the City, its employees, independent contractors, and designees, a nonexclusive easement for ingress and egress over, across, and under the Development from time to time at the City's sole discretion to inspect, sample, and monitor components of the Stormwater Facilities and discharges therefrom, as well as allow the City to take the actions described in Sections 4 and 5 of the Agreement. Owner understands and agrees that this easement limits the ability of Owner, its successors, and assigns from constructing any permanent buildings, structures, landscaping, or other improvements that would interfere with the functioning of the Stormwater Facilities or the City's access to perform the inspection and maintenance required under this Agreement.

4. Failure to Perform Covenant

If the City, in its sole discretion, determines that the Owner is not in compliance with the covenant described in Sections 1 and 2, except in the case of an emergency, the City or its designee shall give the Owner written notice to perform the maintenance and/or repair work specified in the notice. If such work is not performed to the City's satisfaction within twenty (20) days after the date of such notice, or such other time as the City may, in its sole discretion, determine, the City, its employees, independent contractors, and designees may exercise their right under the Easement described in Section 3 of this Agreement to enter the Development to perform any and all work required bringing the Stormwater Facilities into compliance with this Agreement.

5. Emergency

If the City, in its sole discretion, determines that there exists or will likely exist an emergency on or about the Development with respect to the Stormwater Facilities, the City, its employees, independent contractors, and designees may immediately exercise their rights under the Easement described in Section 3 of this Agreement to immediately enter the Development to perform any and all work required to bring the Stormwater Facilities into compliance with the Agreement, and in such case the City shall use reasonable efforts to notify the Owner prior to entering the Development. Notwithstanding the above, the work performed may consist only of avoiding or mitigating the emergency and/or cleaning and repairing the Stormwater Facilities to their original condition and standards.

6. City Under No Obligation

Owner, for itself or its successors and assigns (including all owners of lots in the Development), agrees that the City, as well as its department, employees, independent contractors, and/or designees shall have no obligation to exercise its rights under this Agreement, including the right under Sections 4 and 5 of this Agreement to perform the work required of the Owner, or to perform any other maintenance or repair of the Stormwater Facilities. Owner also agrees that none of the City, as well as its departments, employees, independent contractors, and/or designees shall have any liability to Owner or any of

Owner's successors or assigns (including owners of lots in the Development) in connection with the exercise or non-exercise of such rights, the maintenance or repair of the Stormwater Facilities, or the failure to perform the same.

7. Owner Obligation

In addition to the covenants and easement described above, Owner agrees to the following additional obligation:

a. Owner shall construct the Stormwater Facilities as shown on City-approved construction plans.

b. Prior to the sale of any portion of the Development, Owner shall provide to the City's Development Services Department, a copy of the Operations and Maintenance Manual for the Stormwater Facilities, which shall include detailed diagrams and descriptions identifying the components and operations of the Stormwater Facilities.

c. Prior to final approval of the Development, Owner shall record this document in the deed records of Missoula County and provide a copy of the recorded documents to the City.

d. Owner shall notify the City's Public Works Director in writing of the person responsible for compliance with Owner's obligations under this covenant ("Owner Designee"), and of any change in the Owner Designee. Owner expressly agrees that the Owner Designee shall have the authority to bind Owner, its successors, and assigns with respect to the matters described in this Agreement.

e. Upon sale or transfer of the Development, or any portion thereof, including any lots in a subdivision, the Owner shall inform the purchaser of the obligations required under this Agreement.

8. Reimbursement

If the City exercises its right to enter the Development pursuant to the Easement described in Section 3 of this Agreement, Owner shall reimburse the City for all of its costs and expenses incurred in connection with any work performed pursuant to Section 4 or 5 of this Agreement within thirty (30) days after receipt of an invoice. If Owner fails to pay the invoiced amount within such period, such amount shall thereafter accrue interest at the statutory rate. The City may pursue any available means to collect such amount, together with interest, including placing a lien on the Development (and each of the lots contained therein). If the Development is owned by more than one person (i.e., multiple lot owners), each such owner shall be jointly and severally liable for payment of the amounts provided for in this Section.

9. Indemnification

Owner agrees to indemnify, defend (with legal counsel acceptable to the City), and hold harmless the City, its employees, independent contractors, and designees from and against

any liability, losses, costs, expenses (including reasonable attorney fees), claims, or suits arising from: (1) Owner's failure to perform its obligations under this Agreement, including among other things its obligation to properly design, construct, operate, and maintain the Stormwater Facilities, and (2) the exercise of the City's rights under this Agreement.

10. Run with the Land

The parties' rights and obligations contained herein touch and concern the land, and shall run with the land and be binding upon Owner and its successors and assigns (including, without limitation, subsequent owners of lots in the Development and any homeowner's association owning common areas in the Development). Those rights and obligations shall inure to the benefit of the City, as well as its successors and assigns.

11. Assignment

The obligations of Owner (and subsequent owners of lots in the Development) under this Agreement may not be assigned except (a) in connection with the sale of the property owned by such person (in which case the transferee will be deemed to assume such obligations), or (b) with the prior written consent of the City, to a homeowner's association that owns and maintains the common areas of the Development.

12. Authority

If Owner is an entity, the individual executing this Agreement on behalf of Owner represents and warrants to the City that he or she has the full powers and authority to do so and that the Owner has full right and authority to enter into this Agreement and perform its obligations under this Agreement.

IN WITNESS WHEREOF, the parties hereto have signed this Agreement as of the date below.

By: _____
Owner

_____
Title

STATE OF MONTANA)
) ss.
County of _____)

This instrument was acknowledged before me on _____, 20_____ ,
by _____, as _____ of
_____, an_____.

_____

Notary Public—State of Montana
My commission expires: _____

APPROVED:

By:_____
Jeremy Keene, PE, Public Works Director

CITY OF MISSOULA, MONTANA:

By: _____
John Engen, Mayor

ATTEST:

By: _____
Marty Rehbein, City Clerk

(Seal)

AFTER RECORDING RETURN TO:

The City of Gig Harbor
Attn: City Clerk
3510 Grandview St.
Gig Harbor, WA 98335

WASHINGTON STATE COUNTY AUDITOR/RECORDER'S INDEXING FORM

Document Title(s) (or transactions contained therein):
Agreement to Maintain Stormwater Facilities and to Implement a Pollution Source Control Plan

Grantor(s) (Last name first, then first name and initials)

Grantee(s) (Last name first, then first name and initials
City of Gig Harbor

Legal Description (abbreviated: i.e., lot, block, plat or section, township, range)

Assessor's Property Tax Parcel or Account Number:

Reference Number(s) of Documents assigned or released:

AGREEMENT TO MAINTAIN STORMWATER FACILITIES AND TO IMPLEMENT A POLLUTION SOURCE CONTROL PLAN

THIS AGREEMENT TO MAINTAIN STORMWATER FACILITIES AND TO IMPLEMENT A POLLUTION SOURCE CONTROL PLAN is made this _____ day of _____, 20____, by and between the City of Gig Harbor, a Washington municipal corporation (hereinafter the "City"), and _____, a _____organized under the laws of the State of _____, (hereinafter the "Owner").

RECITALS

WHEREAS, Owner is the owner of fee title or a substantial beneficial interest in certain real property located in Gig Harbor, Washington, commonly described as _____ located at _____ (hereinafter the "Property") and legally described in **Exhibit A**, which is attached hereto and incorporated herein by this reference; and

WHEREAS, in connection with the Owner's proposed development of the Property, the City has required and the Owner has agreed to construct stormwater facilities, a drawing of which is attached hereto as **Exhibit B** and incorporated herein by this reference, and to implement a pollution source control plan. The stormwater facilities and pollution source control plan were prepared by the engineering firm of _____, dated _____, 20___, for the Owner's Property; and

WHEREAS, the upkeep and maintenance of stormwater facilities and the implementation of pollution source control best management practices ("BMPs") is essential to the protection of water resources. All property owners are expected to conduct business in a manner that promotes environmental protection. This Agreement contains specific provisions with respect to maintenance of stormwater facilities and use of pollution source control BMPs; and

WHEREAS, Owner has constructed improvements, including but not limited to, buildings, pavement, and stormwater facilities on the Property, and in order to further the goals of the City to ensure the protection and enhancement of water resources, the City and Owner hereby enter into this Agreement;

NOW, THEREFORE, in consideration of the mutual agreements contained herein, as well as other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Owner and the City hereby agree as follows:

1. **MAINTENANCE.** Grantor shall perform the following:

1.1 Implement the stormwater facility maintenance program included herein as **Exhibit C**.

1.2 Implement the pollution source control program included herein as **Exhibit D**.

1.3 Execute the following periodic major maintenance on the subdivision's stormwater facilities: sediment removal from ponds, managing vegetation in wet ponds, resetting orifice sizes and elevations if damaged, and adding baffles unless the facilities have been dedicated to and accepted by the City.

1.4 Maintain a record (in the form of a log book) of steps taken to implement the programs referenced in (1) and (2) above. The log book shall be available for inspection by City staff at _____, during normal business hours. The log book shall catalog the action taken, who took it, when it was done, how it was done, and any problems encountered or follow-on actions recommended. Maintenance items ("problems") listed in **Exhibit C** shall be inspected as specified in the attached instructions or more often if necessary. Owner is encouraged to photocopy the individual checklists in **Exhibit C** and use them to complete its inspections. These completed checklists would then, in combination, comprise the log book.

1.5 Submit an annual report to the City regarding implementation of the programs referenced in 1.1 and 1.2 above. The report should be submitted to Gig Harbor Public Works Department, 3510 Grandview Street, Gig Harbor, WA 98335. The report must be submitted on or before May 15 of each calendar year and shall contain, at a minimum, the following:

(a) Name, address, and telephone number of the businesses, the persons, or the firms responsible for plan implementation, and the person completing the report.

(b) Time period covered by the report.

(c) A chronological summary of activities conducted to implement the programs referenced in section 1.1 and 1.2 above. A photocopy of the applicable sections of the log book, with any additional explanation needed, shall normally suffice. For any activities conducted by paid parties, include a copy of the invoices for services.

(d) An outline of planned activities for the next year.

1.6 Prevent any unauthorized modifications to the drainage system and prevent it from being dismantled, revised, altered or removed except as necessary for

maintenance, repair or replacement. Any such actions will be covered under section 1.5 above.

1.7 The Owner is hereby required to obtain written approval from the City Engineer prior to filling, piping, cutting or removing vegetation (except in routine landscape maintenance) in open vegetated drainage facilities (such as swales, channels, ditches, ponds, etc.), or performing any alterations or modifications to the drainage system.

2. REMEDIES. If the facilities have not been dedicated to and accepted by the City, then:

2.1 If the City determines that maintenance, repair or retrofit work is required to be done to the stormwater facilties located in the subdivision, the City shall give notice of the specific maintenance and/or repair required. The City shall set a reasonable time in which such work is to be completed by the persons who were given notice. If the above required maintenance, repair and/or retrofit is not completed within the time set by the City, the City will assess financial penalties (chapter 12.17 of the Gig Harbor Municipal Code) and/or initiate enforcement proceedings.

2.2 If at any time the City determines that the existing system creates any imminent threat to public health, welfare or water quality, the City may take necessary measures to remedy the threat. No notice to Owner shall be required under such circumstances. All other responsibilities under this Agreement remain in effect.

3. ACCESS AND FAILURE TO MAINTAIN.

3.1 The Owner grants unrestricted authority to the City for access to any and all stormwater system features for the purpose of routine inspections and/or performing maintenance, repair and/or retrofit as may become necessary under section 2.2.

3.2 The Owner shall assume all responsibility for the cost of any maintenance and for repairs to the drainage system. Such responsibility shall include reimbursement to the City within 30 days after the City mails an invoice to the Owner for any work performed by the City under section 2. Delinquent payments will require payment of interest by the Owner at the current legal rate as liquidated damages.

4. NOTICES. All notices required or permitted hereunder shall be in writing and shall either be delivered in person or sent by certified U.S. Mail, return-receipt requested, and shall be deemed delivered on the sooner of actual receipt or three (3) days after deposit in the mail, postage prepaid, addressed to the City or the Owner at the addresses set forth below:

To City:

City Engineer
City of Gig Harbor
3510 Grandview Street
Gig Harbor, WA 98335

To Owner:

_____
_____
_____
_____

5. SUCCESSORS AND ASSIGNS. This Agreement is intended to protect the value and desirability of the real property described above and to benefit all the citizens of the City, and is intended to be and shall constitute a covenant running with the Property and shall inure to the benefit of and be binding upon the parties hereto and their respective heirs, successors and assigns.

6. SEVERABILITY. Any invalidity, in whole or in part, of any provision of this Maintenance Agreement and Covenant shall not affect the validity of any other provision.

7. WAIVER. No term or provision herein shall be deemed waived and no breach excused unless such waiver or consent is in writing and signed by the party claimed to have waived or consented.

8. GOVERNING LAW, DISPUTES. Jurisdiction of any dispute over this Maintenance Agreement and Covenant shall be solely with Pierce County Superior Court, Pierce County, Washington. This Maintenance Agreement and Covenant shall be interpreted under the laws of the State of Washington. The prevailing party in any litigation arising out of this Maintenance Agreement and Covenant shall be entitled to its reasonable attorneys' fees, costs, expenses and expert witness fees.

DATED this _____ day of _____, 2014.

THE CITY OF GIG HARBOR

By:_____
City Engineer

OWNER

By:_____
Its:_____
Print Name: _____

APPROVED AS TO FORM:

_____
City Attorney

STATE OF WASHINGTON)
) ss.
COUNTY OF _____)

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that (he/she) signed this instrument, on oath stated that (he/she) was authorized to execute the instrument and acknowledged it as the _____ of _____, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

DATED: _____

_____
Printed:_____
Notary Public in and for Washington
My appointment expires: _____

STATE OF WASHINGTON)
) ss.
COUNTY OF P I E R C E)

I certify that I know or have satisfactory evidence that STEPHEN T. MISIURAK is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the City Engineer of Gig Harbor, to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

DATED: _____

_____
Printed:_____
Notary Public in and for Washington
My appointment expires:_____

EXHIBIT A

PROPERTY LEGAL DESCRIPTION

EXHIBIT B

STORMWATER FACILITIES DRAWING

EXHIBIT C

STORMWATER FACILITY MAINTENANCE PROGRAM

A complete copy of the Stormwater Facility Maintenance Program is on file with the office of the Gig Harbor City Clerk.

EXHIBIT D

POLLUTION SOURCE CONTROL PLAN

A complete copy of the Pollution Source Control Plan is on file with the office of the Gig Harbor City Clerk.

DRAFT STORMWATER MAINTENANCE AGREEMENT

Stormwater Equipment Manufacturers Association

www.stormwaterassociation.com

DRAFT STORMWATER MAINTENANCE AGREEMENT

NOTICE:

This is a draft Stormwater Agreement for use by state and local government agencies in setting an ordinance requiring the maintenance of all stormwater Best Management Practices BMPs. Stormwater BMP's are practices whether land-based, proprietary or natural that provide a level of treatment and/or storage to improve the water quality of our watershed. These practices in one form or another are installed on every project. Like a car, these practices require routine maintenance and inspection. The Stormwater Equipment Manufacturers Association (SWEMA) recommends that any organization or person using this draft ordinance consult with their legal council to ensure the provisions contained in this document are in compliance with local laws and state requirements.

Maintenance:

The Stormwater Equipment Manufacturers Association is a strong advocate for the proper maintenance of all Best Management Practices (BMPs) used for stormwater systems. All systems require maintenance regardless of the type of BMP installed. The maintenance requirements vary with each BMP and should be tailored according to system and site specific needs. The property owner of the BMP should be aware of the annual maintenance costs associated with each BMP and should consider these in establishing the long term operations and maintenance plan.

Operation and Maintenance Agreement

The Operation and Maintenance (O&M) Agreement for a site is comprised of the following elements:

1. An Inspection and Maintenance Agreement signed by the developer or BMP owner.
2. A Long-term Maintenance Plan written by the design engineer or plan designer. The Maintenance Plan must include a description of the stormwater system and its components, inspection priorities, inspection schedule for each component, and a schematic for each BMP.
3. Drawing of easements on a plat or a system location map to enable owner or municipality to locate BMPs as needed.

A sample Operation and Maintenance Agreement is contained in this document that includes templates for inspection checklists for each type of structural BMP, including water quality buffers. The inspection checklists can also serve as an inspection report for each facility. As noted above, inspection priorities and schedules for each BMP type must be submitted to the designated authority when required by the owner or municipality, as a component of the long-term maintenance plan for the site. These templates are general guidelines and may be modified by the design engineer or plan designer as needed for site specific conditions.

INSPECTION and MAINTENANCE AGREEMENT for STORMWATER FACILITIES

Permit number: _____

Map & parcel number: _____

Project Name & Address:

THIS AGREEMENT, made this _____ day of _____, 20__, by and between *(insert full BMP owner's name)* _____, hereinafter referred to as the "OWNER(S)" of the following property and (NAME OF GOVERNMENT AGENCY) hereinafter referred to as the "AGENCY."

WITNESSETH, that

WHEREAS, the Landowner is the owner of certain real property, with full authority to execute deeds, mortgages, other covenants, do hereby covenant with the AGENCY and agree as follows:

1. The OWNER(S) covenant with the AGENCY that the OWNER(S) shall provide for adequate long term maintenance and continuation of the stormwater control measures described in the SWPPP (Stormwater Pollution Prevention Plan) and shown in the location map, deed of easement drawing or plat attached hereto to ensure that the facilities are and remain in proper working condition in accordance with approved design standards, rules and regulations and applicable laws. The OWNER(S) shall perform preventative maintenance activities at intervals described in the inspection schedule included in the Operations and Maintenance Plan along with necessary landscaping (grass cutting, etc.) and trash removal as part of regular maintenance.

2. The OWNER shall submit to the GOVERNMENT an annual report by ____(define the due date) each year. The report shall include the Operations and Maintenance Plan that documents the inspection schedule, times of inspection, remedial actions taken to repair, modify or reconstruct the system, the state of control measures and notification of any planned change in responsibility for the system.

3. The OWNER(S) shall grant to the GOVERNMENT or its agent or contractor the right of entry at reasonable times and in a reasonable manner for the purpose of inspecting, operating, installing, constructing, reconstructing, maintaining or repairing the facility.

4. The OWNER shall grant to the GOVERNMENT the necessary easements and rights-of-way and maintain perpetual access from public rights-of-way to the facility for the GOVERNMENT or its agent and contractor.

5. If, upon inspection, the GOVERNMENT finds that OWNER(S) has failed to properly maintain the facilities, the GOVERNMENT may order the work performed within ____ days. In the event the work is not performed within the specified time, the OWNER(S) agrees to allow the GOVERNMENT to enter the property and take whatever steps it deems necessary to maintain the stormwater control facilities. This provision shall not be construed to allow the GOVERNMENT to erect any structure of a permanent nature on the land of the OWNER(S) without first obtaining written approval of the OWNER(S).

6. The GOVERNMENT is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the GOVERNMENT. The OWNER(S) shall reimburse the GOVERNMENT upon demand the costs incurred in the maintenance of the facilities.

7. If the OWNER fails to pay the GOVERNMENT for the above expenses after _____ days written notice, the OWNER authorizes the GOVERNMENT to collect said expenses from the OWNER through appropriate legal action and the OWNER shall be liable for the reasonable expenses of collection, court costs, and attorney fees.

8. The OWNER(S) and the OWNER(S) heirs, administrators, executors, assigns and any other successor interest shall indemnify and hold harmless the GOVERNMENT and its officers, agents and employees for any and all damages, accidents, casualties, occurrences, claims or attorney's fees which might arise or be asserted, in whole or in part, against the GOVERNMENT from the construction, presence, existence, or maintenance of the stormwater control facilities subject to the Agreement. In the event a claim is asserted against the GOVERNMENT, its officers, agents or employees, the GOVERNMENT shall notify OWNER(S) and the OWNER(S) shall defend at OWNER(S) expense any suit based on such claim. If any judgment or claims against the GOVERNMENT, its officers, agents or employees, shall be allowed, the OWNER(S) shall pay all costs and expenses in connection therewith. The GOVERNMENT will not indemnify, defend or hold harmless in any fashion the OWNER(S) from any claims arising from any failure, regardless of any language in any attachment or other document that the OWNER(S) may provide.

9. The OWNER(S) shall not be able to transfer, assign or modify its responsibilities with respect to this agreement without the GOVERNMENT's written prior consent. Nothing herein shall be construed to prohibit a transfer by OWNER(S).

10. No waiver of any provision of this Agreement shall affect the right of any party thereafter to enforce such a provision or to exercise any right or remedy available.

11. The OWNER(S) shall record a plat showing and accurately defining the easements for stormwater control facilities. The plat must reference the Instrument Number where this Agreement and its or attachments are recorded and contain a note that the OWNER(S) is responsible for maintaining the stormwater management facilities.

12. The OWNER(S) shall record that Agreement in the Office of the Register of Deeds for the county of _____, state____, and the Agreement shall constitute a covenant running with the land and shall be binding upon the OWNER(S) and the OWNER(S) heirs, administrators, executors, assigns and any other successors in interest.

Attest by OWNER(S)

_____	_____
OWNER(S) Signature	OWNER(S) Signature
_____	_____
OWNER(S) Print Name	OWNER(S) Print Name
_____	_____
Date	Date

STORMWATER BMP MAINTENANCE GUIDELINES

The required maintenance interval for stormwater BMPs are often dependent upon the degree of pollutant loading from a particular drainage basin. BMP maintenance can best be broken into three categories: **inspection**, **routine maintenance**, and **major maintenance**. Though each BMP type has its own unique characteristics, **inspections** will generally consist of an assessment to assure its functionality and the general condition. **Routine maintenance** will generally consist of trash and vegetation removal, unclogging of drains, minor sediment removal and exchange of filter media where applicable. **Major maintenance** will be completed as required from inspections and generally consists of significant reconstruction due to failures in the BMP. Examples of Major Maintenance include dredging, excavation, removal of existing media, replacing fabric, replacing the under-drain, and reestablishment of vegetation. The following schedule is offered as a guideline for performing **Inspection** and **routine maintenance** for a range of BMP categories.

BMP	Inspection Frequency	Routine Maintenance Frequency
	Inspection Frequency key: *A = annual; M=monthly; S=after major storms; Q=Quarterly; SA=Semi Annually*	
Bioretention Systems	A, S	2 x /year
Cartridge or Module Media Filtration Structures	SA	1 – 2 x /year
Catch Basin Inserts (long term)	Q	3 – 4 x /year
Dry Pond	M	3 – 4 x /year
Dry Wells	A	1 x /year
Filter Strips or Swales	M	2 – 3 x /year
Green Roofs	SA; S	2 – 3 x /year
Hydrodynamic or Gravity Separators	SA	1 – 2 x /year
Infiltration Trenches	A; S	2 – 3 x /year
Permeable Pavement	A	2 – 3 x /year
Rainwater Gardens	SA; S	2 – 3 x /year
Rainwater Harvesting	SA; S	2 – 3 x /year
Sand Filter	Q first year; SA after	1 – 2 x/ year
Trash & Debris Screens	SA; S	2 – 3 x /year
Underground Storage Facilities	SA	1 x /year
Wetlands	SA	2 x /year
Wet Pond	Q	2 – 3 x /year

Above table developed by SWEMA as a general reference or guideline.

5.6.2 Appendix 5-B – Single-Family Residential Maintenance Agreement

After recording return to:

Thurston County Public
Works Stormwater Utility
9605 Tilley Rd S, Ste C
Olympia, WA 98512

Thurston County Project No.

_____

AGREEMENT TO MAINTAIN STORMWATER FACILITIES AND TO IMPLEMENT A POLLUTION SOURCE CONTROL PLAN

For purposes of this agreement and for indexing by the Auditor as required by R.C.W. Ch. 65.04, the parties of this agreement are, , **Grantor**, and Thurston County and succeeding jurisdictions through annexation, **Grantee**.

LEGAL DESCRIPTION OF PROPERTY: (Abbreviated legal description if complete legal will not fit here and reference to where complete legal can be found.)

Assessor Parcel No.(s)_____

(RESIDENTIAL VERSION)

AGREEMENT TO MAINTAIN STORMWATER FACILITIES AND TO IMPLEMENT A POLLUTION SOURCE CONTROL PLAN BY AND BETWEEN THURSTON COUNTY AND SUCCEEDING JURISDICTIONS THROUGH ANNEXATION, AND , AND ITS HEIRS, SUCCESSORS, OR ASSIGNS (HEREINAFTER "OWNER")

The upkeep and maintenance of stormwater facilities and the implementation of pollution source control best management practices (BMPs) are essential to the protection of water resources in Thurston County. All property owners are expected to conduct business in a manner that promotes environmental protection. This Agreement contains specific provisions with respect to maintenance of stormwater facilities and use of pollution source control BMPs. The authority to require maintenance and pollution source control is provided by Thurston County Code.

LEGAL DESCRIPTION:

RECITALS

WHEREAS, OWNER is the owner of certain real property in Thurston County, Washington, described as set forth in the legal description contained herein and referred to in this agreement as the "Property".

and

WHEREAS, in connection with the OWNER'S proposed development of the Property, Thurston County has required, and OWNER has agreed to construct stormwater facilities and to implement a pollution source control plan. The stormwater facilities and pollution source control plan were prepared by

for the OWNER'S property and is on file with Thurston

County. and

WHEREAS, OWNER has constructed improvements, including but not limited to, buildings, pavement, and stormwater facilities on the Property, in order to further the goals of Thurston County to ensure the protection and enhancement of Thurston County's water resources, THURSTON COUNTY and OWNER hereby enter into this Agreement. The responsibilities of each party to this Agreement are identified below.

OWNER SHALL:

(1) Implement the stormwater facility maintenance program included herein as Attachment "A".

(2) Implement the pollution source control program included herein as Attachment "B".

(3) Maintain a record (in the form of a logbook) of steps taken to implement the programs referenced in (1) and (2) above. The logbook shall be available for inspection by THURSTON COUNTY at during normal business hours. The logbook shall catalog the action taken, who took it, when it was done, how it was done, and any problems encountered, or follow-on actions recommended. Maintenance items ("problems") listed in Attachment "A" shall be inspected as specified in the attached instructions or more frequently if necessary. OWNER is encouraged to photocopy the individual checklists in Attachment "A" and use them to complete its monthly inspections. These completed checklists would then, in combination, comprise the logbook.

(4) Submit an annual report to THURSTON COUNTY regarding implementation of the programs referenced in (1) and (2) above. The report must be submitted on or before August 31 of each calendar year and shall contain, at a minimum, the following:

(a) Name, address, and telephone number of the business, the person, or the firm responsible for plan implementation, and the person completing the report.

(b) Time period covered by the report.

(c) A chronological summary of activities conducted to implement the programs referenced in
(1) and (2) above. A photocopy of the applicable sections of the logbook, with any additional explanation needed, shall normally suffice. For any activities conducted by paid parties not affiliated with OWNER, include a copy of the invoice for services.

(d) An outline of planned activities for the next year.

(5) Prevent any unauthorized modifications to the drainage system and prevent it from being dismantled, revised, altered or removed except as necessary for maintenance, repair or replacement. Any such actions will be covered under item 4 above and shall be approved of by THURSTON COUNTY. Modifications to the stormwater quantity control and stormwater quality system must be approved in advance by THURSTON COUNTY and may require the submittal of revised design drawings, supporting calculations, modifications to maintenance requirements, and applications for permits.

THURSTON COUNTY WILL, AS RESOURCES ALLOW:

(1) Provide technical assistance to OWNER in support of its operation and maintenance activities conducted pursuant to its maintenance and source control programs. Said assistance shall be provided upon request, as County time and resources permit, and at no charge to OWNER.

(2) Review the annual report and conduct occasional site visits to discuss performance and problems with OWNER.

(3) Review this agreement with OWNER and modify it as necessary.

REMEDIES:

(1) If THURSTON COUNTY determines that maintenance or repair work is required to be done to the stormwater facility existing on the OWNER'S property, THURSTON COUNTY shall give OWNER, and the person or agent in control of said property if different, written notice in accordance with the Notice Section of this Agreement, of the specific maintenance and/or repair required. THURSTON COUNTY shall set a reasonable time in which such work is to be completed by the persons who were given notice. If the above required maintenance and/or repair is not completed within the time set by THURSTON COUNTY, written notice will be sent to the persons who were given notice stating THURSTON COUNTY'S intention to perform such maintenance and bill the owner for all incurred expenses. THURSTON COUNTY may also adjust stormwater utility charges if required maintenance is not performed.

(2) If at any time THURSTON COUNTY determines that the existing system creates any imminent threat to public health, welfare or water quality THURSTON COUNTY may take immediate measures to remedy said threat. No notice to the persons listed in Remedies (1), above, shall be required under such circumstances, however, THURSTON COUNTY shall take reasonable steps to immediately notify OWNER of such imminent threat to the public health and welfare. All other responsibilities shall remain in effect.

(3) OWNER grants unrestricted authority to THURSTON COUNTY for access to any and all stormwater system features for the purpose of routine inspections and/or performing maintenance, repair and/or retrofits may become necessary under Remedies (1) and/or (2).

(4) OWNER shall assume all responsibility for the cost of any maintenance and for repairs to the stormwater facility. Such responsibility shall include reimbursement to THURSTON COUNTY within 30 days of the receipt of the invoice for any such work performed. Overdue payments will require payment of interest at the current legal rate for liquidated judgments. If legal action ensues, any costs or fees incurred by THURSTON COUNTY will be borne by the parties responsible for said reimbursements.

(5) OWNER hereby grants to THURSTON COUNTY a lien against the above-described property in an amount equal to the cost incurred by THURSTON COUNTY to perform the maintenance or repair work described herein.

(6) All OWNER obligations, benefits and remedies under this agreement apply in equal force to individual lot owners after conveyance and segregation of ownership within the subdivision. In the event obligations are not assigned to or assumed by a single entity or individual, such as a homeowner's association, all liabilities and costs shall be joint and shared as between each and every lot owner.

NOTICE:

Whenever a party is required or permitted under this Agreement to provide the other party with any notice, request, demand, consent, or approval ("Notice"), such Notice will be given in writing and will be delivered to the other party at the address or facsimile number set forth below: (a) personally; (b) by a reputable overnight courier service; (c) by certified mail, postage prepaid, return receipt requested; or

(d) by e-mail or facsimile transmission. A party may change its address for Notice by written notice to the other party delivered in the manner set forth above. Notice will be deemed to have been duly given: (i) on the date personally delivered; (ii) one (1) business day after delivery to an overnight courier service with next- day service requested; (iii) on the third (3rd) business day after mailing, if mailed using certified mail; or (iv) on the date sent when delivered by facsimile or e-mail (so long as the sender sends such facsimile or email on a business day and receives electronic confirmation of receipt and a copy of the Notice is sent by one of the other means permitted hereunder on or before the next business day). The initial addresses for Notice are as follows:

IF TO OWNER:

email:

phone:

fax:

IF TO THURSTON COUNTY:

Thurston County Public Works
Stormwater Utility
9605 Tilley Rd S, Ste C
Olympia, WA 98512
Telephone: (360) 867-2300
Web: www.thurstoncountywa.gov/sw

This Agreement is intended to protect the value and desirability of the real property described above and to benefit all the citizens of the County. It shall run with the land and be binding on all parties having or acquiring from OWNER or their successors any right, title, or interest in the property or any part thereof, as well as their title, or interest in the property or any part thereof, as well as their heirs, successors, and assigns. They shall inure to the benefit of each present or future successor in interest of said property or any part thereof, or interest therein, and to the benefit of all citizens of THURSTON COUNTY.

Dated at , Washington, this day of , . OWNER

By:

Address:

By:

Address:

STATE OF WASHINGTON)

)ss

COUNTY OF THURSTON)

On this day and year above personally appeared before me,
known to be the of , the company that executed the forgoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said company, for the uses and purposes therein mentioned, and on oath stated that he is authorized to execute the said instrument.

Given under my hand and official seal this day of , .

Notary Public in and for the State of

Washington, residing in

My commission expires

Dated at , Washington, this day of , .

APPROVED as to form only January 28, 2022:

ACCEPTED BY:

for THURSTON COUNTY

Date

5.6.3 Appendix 5-C – Subdivision Maintenance Agreement

After recording return to:

Thurston County Public
Works Stormwater Utility
9605 Tilley Rd S, Ste C
Olympia, WA 98512

RESIDENTIAL SUBDIVISION MAINTENANCE AGREEMENT

Thurston County Project No.

**RESIDENTIAL SUBDIVISION AGREEMENT
TO MAINTAIN STORMWATER FACILITIES AND TO IMPLEMENT A
POLLUTION SOURCE CONTROL PLAN**

For purposes of this agreement and for indexing by the Auditor as required by R.C.W. Ch. 65.04, the parties of this agreement are,

Grantor, and Thurston County and succeeding jurisdictions through annexation, **Grantee**.

LEGAL DESCRIPTION OF PROPERTY: (Abbreviated legal description if complete legal will not fit here and reference to where complete legal can be found.)

Assessor Parcel No.(s)

(RESIDENTIAL SUBDIVISION VERSION)

AGREEMENT TO MAINTAIN STORMWATER FACILITIES AND TO IMPLEMENT A POLLUTION SOURCE CONTROL PLAN BY AND BETWEEN THURSTON COUNTY AND SUCCEEDING JURISDICTIONS THROUGH ANNEXATION, AND , AND ITS HEIRS, SUCCESSORS, OR ASSIGNS (HEREINAFTER "OWNER")

The upkeep and maintenance of stormwater facilities and the implementation of pollution source control best management practices (BMPs) are essential to the protection of water resources in Thurston County. All property owners are expected to conduct business in a manner that promotes environmental protection. This Agreement contains specific provisions with respect to maintenance of stormwater facilities and use of pollution source control BMPs. The authority to require maintenance and pollution source control isprovided by Thurston County Code.

LEGAL DESCRIPTION:

RECITALS

WHEREAS, OWNER is the owner of certain real property in Thurston County, Washington, described as set forth in the legal description contained herein and referred to in this agreement as the "Property".

and

WHEREAS, In connection with the OWNER'S proposed development of the Property, Thurston County has required and OWNER has agreed to construct stormwater facilities and to implement a pollution source control plan. The stormwater facilities and pollution source control plan was prepared by

for the OWNER'S property and is on file with Thurston County.

and

WHEREAS, OWNER has constructed improvements, including but not limited to, buildings, pavement, and stormwater facilities on the Property, in order to further the goals of Thurston County to ensure the protection and enhancement of Thurston County's water resources, THURSTON COUNTY and OWNER hereby enter into this Agreement. The responsibilities of each party to this Agreement are identified below.

OWNER SHALL:

(1) Implement the stormwater facility maintenance program included herein as Attachment "A".

(2) Implement the pollution source control program included herein as Attachment "B".

(3) Maintain a record (in the form of a log book) of steps taken to implement the programs referenced in (1) and (2) above. The log book shall be available for inspection by THURSTON COUNTY at during normal business hours. The log book shall catalog the action taken, who took it, when it was done,how it was done, and any problems encountered, or follow-on actions recommended. Maintenance items
("problems") listed in Attachment "A" shall be inspected as specified in the attached instructions or more frequently if necessary. OWNER is encouraged to photocopy the individual checklists in Attachment "A" and use them to complete its monthly inspections. These completed checklists would then, in combination, comprise the log book.

(4) Submit an annual report to THURSTON COUNTY regarding implementation of the programs referenced in (1) and (2) above. The report must be submitted on or before August 31 of each calendar year and shall contain, at a minimum, the following:

(a) Name, address, and telephone number of the business, the person, or the firm responsible for plan implementation, and the person completing the report.

(b) Time period covered by the report.

(c) A chronological summary of activities conducted to implement the programs referenced in
(1) and (2) above. A photocopy of the applicable sections of the log book, with any additional explanation needed, shall normally suffice. For any activities conducted by paid parties not affiliated with OWNER, include a copy of the invoice for services.

(d) An outline of planned activities for the next year.

(5) Prevent any unauthorized modifications to the drainage system and prevent it from being dismantled, revised, altered or removed except as necessary for maintenance, repair or replacement. Any such actions will be covered under item 4 above and shall be approved of by THURSTON COUNTY. Modifications to the stormwater quantity control and stormwater quality system must be approved in advance by THURSTON COUNTY and may require the submittal of revised design drawings, supporting calculations, modifications to maintenance requirements, and applications for permits.

THURSTON COUNTY WILL, AS RESOURCES ALLOW:

(1) Provide technical assistance to OWNER in support of its operation and maintenance activities conducted pursuant to its maintenance and source control programs. Said assistance shall be provided upon request, as County time and resources permit, and at no charge to OWNER.

(2) Review the annual report and conduct occasional site visits to discuss performance and problems with OWNER.

(3) Review this agreement with OWNER and modify it as necessary.

REMEDIES:

(1) If THURSTON COUNTY determines that maintenance or repair work is required to be done to the stormwater facility existing on the OWNER'S property, THURSTON COUNTY shall give OWNER, and the person or agent in control of said property if different, written notice in accordance with the Notice Section of this Agreement, of the specific maintenance and/or repair required. THURSTON COUNTY shall set a reasonable time in which such work is to be completed by the persons who were given notice. If the above required maintenance and/or repair is not completed within the time set by THURSTON COUNTY, written notice will be sent to the persons who were given notice stating THURSTON COUNTY'S intention to perform such maintenance and bill the owner for all incurred expenses. THURSTON COUNTY may also adjust stormwater utility charges if required maintenance is not performed.

(2) If at any time THURSTON COUNTY determines that the existing system creates any imminent threat to public health, welfare or water quality THURSTON COUNTY may take immediate measures to remedy said threat. No notice to the persons listed in Remedies (1), above, shall be required under such circumstances, however, THURSTON COUNTY shall take reasonable steps to immediately notify OWNER of such imminent threat to the public health and welfare. All other responsibilities shall remain ineffect.

(3) OWNER grants unrestricted authority to THURSTON COUNTY for access to any and all stormwater system features for the purpose of routine inspections and/or performing maintenance, repair and/or retrofitas may become necessary under Remedies (1) and/or (2).

(4) OWNER shall assume all responsibility for the cost of any maintenance and for repairs to the stormwater facility. Such responsibility shall include reimbursement to THURSTON COUNTY within 30 days of the receipt of the invoice for any such work performed. Overdue payments will require payment of interest at the current legal rate for liquidated judgments. If legal action ensues, any costs or fees incurred by THURSTON COUNTY will be borne by the parties responsible for said reimbursements.

(5) OWNER hereby grants to THURSTON COUNTY a lien against the above-described property in an amount equal to the cost incurred by THURSTON COUNTY to perform the maintenance or repair work described herein.

(6) All OWNER obligations, benefits and remedies under this agreement apply in equal force to individual lot owners after conveyance and segregation of ownership within the subdivision. In the event obligations are not assigned to or assumed by a single entity or individual, such as a homeowner's association, all liabilities and costs shall be joint and shared as between each and every lot owner.

NOTICE:

Whenever a party is required or permitted under this Agreement to provide the other party with any notice, request, demand, consent, or approval ("Notice"), such Notice will be given in writing and will be delivered to the other party at the address or facsimile number set forth below: (a) personally; (b) by a reputable overnight courier service; (c) by certified mail, postage prepaid, return receipt requested; or (d) by e-mail or facsimile transmission. A party may change its address for Notice by written notice to the other party delivered in the manner set forth above.

Notice will be deemed to have been duly given: (i) on the date personally delivered; (ii) one (1) business day after delivery to an overnight courier service with next- day service requested; (iii) on the third (3rd) business day after mailing, if mailed using certified mail; or (iv) on the date sent when delivered by facsimile or e-mail (so long as the sender sends such facsimile or email on a business day and receives electronic confirmation of receipt and a copy of the Notice is sent by one of the other means permitted hereunder on or before the next business day). The initial addresses for Notice are as follows:

IF TO OWNER:

email:

phone:

fax:

IF TO THURSTON COUNTY:

Thurston County Public Works
Stormwater Utility
9605 Tilley Rd S, Ste C
Olympia, WA 98512
Telephone: (360) 867-2300
Web: www.thurstoncountywa.gov/sw

This Agreement is intended to protect the value and desirability of the real property described above and to benefit all the citizens of the County. It shall run with the land and be binding on all parties having or acquiring from OWNER or their successors any right, title, or interest in the property or any part thereof, as well as their title, or interest in the property or any part thereof, as well as their heirs, successors, and assigns. They shall inure to the benefit of each present or future successor in interest of said property or any part thereof, or interest therein, and to the benefit of all citizens of THURSTON COUNTY.

Dated at , Washington, this day of , .

OWNER

By:

Title:

STATE OF WASHINGTON)
) ss
COUNTY OF THURSTON)

On this day and year above personally appeared before me, known to be the of , the company that executed the forgoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said company, for the uses and purposes thereinmentioned, and on oath stated that he is authorized to execute the said instrument.

Given under my hand and official seal this day of , .

Notary Public in and for the State of
Washington, residing in
My commission expires

Dated at , Washington, this day of , .

APPROVED as to form only January 28, 2022:

ACCEPTED BY:

for THURSTON COUNTY

Date

5.6.4 Appendix 5-D – Commercial/Industrial Maintenance Agreement

After recording return to:

Thurston County Public
Works Stormwater Utility
9605 Tilley Rd S, Ste C
Olympia, WA 98512

COMMERCIAL/INDUSTRIAL MAINTENANCE AGREEMENT

Thurston County Project No.

COMMERCIAL/INDUSTRIAL AGREEMENT TO MAINTAIN STORMWATER FACILITIES AND TO IMPLEMENT A POLLUTION SOURCE CONTROL PLAN

For purposes of this agreement and for indexing by the Auditor as required by R.C.W. Ch. 65.04, the parties of this agreement are, , **Grantor**, and Thurston County and succeeding jurisdictions through annexation, **Grantee**.

LEGAL DESCRIPTION OF PROPERTY: (Abbreviated legal description if complete legal will not fit here and reference to where complete legal can be found.)

Assessor's Assessor Parcel No.(s)

(COMMERCIAL/INDUSTRIAL VERSION)

AGREEMENT TO MAINTAIN STORMWATER FACILITIES AND TO IMPLEMENT A POLLUTION SOURCE CONTROL PLAN BY AND BETWEEN THURSTON COUNTY AND SUCCEEDING JURISDICTIONS THROUGH ANNEXATION, AND

,

AND ITS HEIRS, SUCCESSORS, OR ASSIGNS (HEREINAFTER "OWNER")

The upkeep and maintenance of stormwater facilities and the implementation of pollution source control best management practices (BMPs) are essential to the protection of water resources in Thurston County. All property owners are expected to conduct business in a manner that promotes environmental protection. This Agreement contains specific provisions with respect to maintenance of stormwater facilities and use of pollution source control BMPs. The authority to require maintenance and pollution source control isprovided by Thurston County Code.

LEGAL DESCRIPTION:

RECITALS

WHEREAS, OWNER is the owner of certain real property in Thurston County, Washington, described as set forth in the legal description contained herein and referred to in this agreement as the "Property".

and

WHEREAS, In connection with the OWNER'S proposed development of the Property, Thurston County has required and OWNER has agreed to construct stormwater facilities and to implement a pollution source control plan. The stormwater facilities and pollution source control plan was prepared by

for the OWNER'S property and is on file with Thurston County.

and

WHEREAS, OWNER has constructed improvements, including but not limited to, buildings, pavement, and stormwater facilities on the Property, in order to further the goals of Thurston County to ensure the protection and enhancement of Thurston County's water resources, THURSTON COUNTY and OWNER hereby enter into this Agreement. The responsibilities of each party to this Agreement are identified below.

OWNER SHALL:

(1) Implement the stormwater facility maintenance program included herein as Attachment "A".

(2) Implement the pollution source control program included herein as Attachment "B".

(3) Maintain a record (in the form of a log book) of steps taken to implement the programs referenced in (1) and (2) above. The log book shall be available for inspection by THURSTON COUNTY at during normal business hours. The log book shall catalog the action taken, who took it, when it was done,how it was done, and any problems encountered, or follow-on actions recommended. Maintenance items ("problems") listed in Attachment "A" shall be inspected as specified in the attached instructions or more frequently if necessary. OWNER is encouraged to photocopy the individual checklists in Attachment "A" and use them to complete its monthly inspections. These completed checklists would then, in combination, comprise the log book.

(4) Submit an annual report to THURSTON COUNTY regarding implementation of the programs referenced in (1) and (2) above. The report must be submitted on or before August 31 of each calendar year and shall contain, at a minimum, the following:

(a) Name, address, and telephone number of the business, the person, or the firm responsible for plan implementation, and the person completing the report.

(b) Time period covered by the report.

(c) A chronological summary of activities conducted to implement the programs referenced in (1) and (2) above. A photocopy of the applicable sections of the log book, with any additional explanation needed, shall normally suffice. For any activities conducted by paid parties not affiliated with OWNER, include a copy of the invoice for services.

(d) An outline of planned activities for the next year.

(5) Prevent any unauthorized modifications to the drainage system and prevent it from being dismantled, revised, altered or removed except as necessary for maintenance, repair or replacement. Any such actions will be covered under item 4 above and shall be approved of by THURSTON COUNTY. Modifications to the stormwater quantity control and stormwater quality system must be approved in advance by THURSTON COUNTY and may require the submittal of revised design drawings, supporting calculations, modifications to maintenance requirements, and applications for permits.

THURSTON COUNTY WILL, AS RESOURCES ALLOW:

(1) Provide technical assistance to OWNER in support of its operation and maintenance activities conducted pursuant to its maintenance and source control programs. Said assistance shall be provided upon request, as County time and resources permit, and at no charge to OWNER.

(2) Review the annual report and conduct occasional site visits to discuss performance and problems with OWNER.

(3) Review this agreement with OWNER and modify it as necessary.

REMEDIES:

(1) If THURSTON COUNTY determines that maintenance or repair work is required to be done to the stormwater facility existing on the OWNER'S property, THURSTON COUNTY shall give OWNER, and the person or agent in control of said property if different, written notice in accordance with the Notice Section of this Agreement, of the specific maintenance and/or repair required. THURSTON COUNTY shall set a reasonable time in which such work is to be completed by the persons who were given notice. If the above required maintenance and/or repair is not completed within the time set by THURSTON COUNTY, written notice will be sent to the persons who were given notice stating THURSTON COUNTY'S intention to perform such maintenance and bill the owner for all incurred expenses. THURSTON COUNTY may also adjust stormwater utility charges if required maintenance is not performed.

(2) If at any time THURSTON COUNTY determines that the existing system creates any imminent threat to public health, welfare or water quality THURSTON COUNTY may take immediate measures to remedy said threat. No notice to the persons listed in Remedies (1), above, shall be required under such circumstances, however, THURSTON COUNTY shall take reasonable steps to immediately notify OWNER of such imminent threat to the public health and welfare. All other responsibilities shall remain ineffect.

(3) OWNER grants unrestricted authority to THURSTON COUNTY for access to any and all stormwater system features for the purpose of routine inspections and/or performing maintenance, repair and/or retrofitas may become necessary under Remedies (1) and/or (2).

(4) OWNER shall assume all responsibility for the cost of any maintenance and for repairs to the stormwater facility. Such responsibility shall include reimbursement to THURSTON COUNTY within 30 days of the receipt of the invoice for any such work performed. Overdue payments will require payment of interest at the current legal rate for liquidated judgments. If legal action ensues, any costs or fees incurred by THURSTON COUNTY will be borne by the parties responsible for said reimbursements.

(5) OWNER hereby grants to THURSTON COUNTY a lien against the above-described property in an amount equal to the cost incurred by THURSTON COUNTY to perform the maintenance or repair work described herein.

(6) All OWNER obligations, benefits and remedies under this agreement apply in equal force to individual lot owners after conveyance and segregation of ownership within the subdivision. In the event obligations are not assigned to or assumed by a single entity or individual, such as a homeowner's association, all liabilities and costs shall be joint and shared as between each and every lot owner.

NOTICE:
Whenever a party is required or permitted under this Agreement to provide the other party with any notice, request, demand, consent, or approval ("Notice"), such Notice will be given in writing and will be delivered to the other party at the address or facsimile number set forth below: (a) personally; (b) by a reputable overnight courier service; (c) by certified mail, postage prepaid, return receipt requested; or (d) by e-mail or facsimile transmission. A party may change its address for Notice by written notice to the other party delivered in the manner set forth above. Notice will be deemed to have been duly given: (i) on the date personally delivered;

(ii) one (1) business day after delivery to an overnight courier service with next- day service requested; (iii) on the third (3rd) business day after mailing, if mailed using certified mail; or (iv) on the date sent when delivered by facsimile or e-mail (so long as the sender sends such facsimile or email on a business day and receives electronic confirmation of receipt and a copy of the Notice is sent by one of the other means permitted hereunder on or before the next business day). The initial addresses for Notice are as follows:

IF TO OWNER:

email:

phone:

fax:

IF TO THURSTON COUNTY:

Thurston County Public Works
Stormwater Utility
9605 Tilley Rd S, Ste C
Olympia, WA 98512
Telephone: (360) 867-2300
Web: www.thurstoncountywa.gov/sw

This Agreement is intended to protect the value and desirability of the real property described above and to benefit all the citizens of the County. It shall run with the land and be binding on all parties having or acquiring from OWNER or their successors any right, title, or interest in the property or any part thereof, as well as their title, or interest in the property or any part thereof, as well as their heirs, successors, and assigns. They shall inure to the benefit of each present or future successor in interest of said property or any part thereof, or interest therein, and to the benefit of all citizens of THURSTON COUNTY.

Dated at , Washington, this day of , .

OWNER

By:

Title:

STATE OF WASHINGTON)
) ss
COUNTY OF THURSTON)

On this day and year above personally appeared before me, known to be the of , the company that executed the forgoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said company, for the uses and purposes thereinmentioned, and on oath stated that he is authorized to execute the said instrument.

Given under my hand and official seal this day of , .

Notary Public in and for the State of
Washington, residing in
My commission expires

Dated at , Washington, this day of , .

APPROVED as to form only January 28, 2022:

ACCEPTED BY:

for THURSTON COUNTY

Date

5.6.5 Appendix 5-E – Notice of Private Stormwater Facility

Return to:
City Clerk
City of Missoula
435 Ryman
Missoula, MT 59802

NOTICE OF PRIVATE STORMWATER FACILITY MAINTENANCE COVENANT AND RIGHT TO ACCESS

This instrument made this _____ day of _____, 2022, by the City of Missoula (City). The City hereby notifies, as set forth below, the current owners and future owners of property legally described as _____, in the County of Missoula, State of Montana**.**

NOTICE IS HEREBY GIVEN that the property identified above is subject to a Private Stormwater Facility Maintenance Covenant and Right to Access (Covenant) dated _____, 2020 and recorded on _____ , 2021, at Book XX, Page XX, in the property recorders of Missoula County. Specifically, the Covenant applies to all parcels commonly known as _____ and future phases where the Covenant will apply (Development).

NOTICE IS FURTHER GIVEN that the _____ Homeowners Association (HOA), is responsible for maintenance, repair, and inspection of all private stormwater facilities, and in the event the HOA fails to maintain the system the City may conduct repairs and seek reimbursement through a lien on the Development, including all lots contained therein.

IN WITNESS WHEREOF, the said City of Missoula has hereunto set their hand and seal the day and year in this instrument first above written.

BY: _____
Printed Name: _____, Stormwater Utility Superintendent

STATE OF MONTANA)
) ss
COUNTY OF MISSOULA)

On this _____ day of _____, 20____, before me, the undersigned, a Notary Public for the State of Montana, personally appeared, Tracy Campbell, Stormwater Utility Superintendent for the City of Missoula, known to me to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same, in the county of Missoula, MT.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal on the day and year in this certificate first above written.

(NOTARY SEAL)

_____
Notary Public for the State of Montana
Residing at _____
My Commission Expires _____

Chapter 6
Regulatory Mechanisms

Chapter Contents

6.1 Chapter Overview

This chapter describes the regulatory mechanisms Permittees use for developing the legal structure for the installation, maintenance, and inspection of BMPs on private property. Examples of regulatory mechanisms include ordinances, covenants, public or director's rules, and policies. Implementing these regulatory mechanisms gives Permittees the authority to enforce stormwater program provisions and remain compliant with the Phase II MS4 Permit. It also allows Permittees to enforce penalties and collect fines when BMP owners do not comply with requirements. Common regulatory mechanisms and how they are developed are outlined in this chapter, along with the advantages and disadvantages of each mechanism (see **Table 6-1**).

Table 6-1. Overview of regulatory mechanisms for inspection and maintenance of private BMPs

Regulatory Mechanism	Advantages	Disadvantages
Ordinance: A piece of legislation enacted by municipal authority	• Legally binding and enforceable • Allows Permittees to administer fines	• Lengthy development process • Development and modifications require council approval
Covenant: Private agreement regarding the use and improvement of real property	• Legally binding and enforceable • Allows Permittees to file for monetary damages	• Can be developed without legal review, causing some covenants to be more difficult to enforce • Terms can be "fixed in time" and become outdated
Public Rule/Director's Rule: Department or directive order	• Easier to modify than ordinances because modifications do not require council approval • Can provide more detail than ordinances	• Not all jurisdictions utilize public rule/director's rule • Public hearing may be required, lengthening the time to make modifications
Policy: Principle, procedure, or strategy adopted by a governing body	• Easier to modify than ordinances because modifications do not require council approval • Can provide more detail than ordinances	• Does not provide Permittees with enforcement authority • Does not allow Permittee to administer fines

6.2 Permit Requirements

Sections S5.B.5 of the Eastern Washington (EWA) Phase II MS4 Permit and Sections S5.C.6 and S5.C.7 of the Western Washington (WWA) Phase II MS4 Permit detail requirements concerning adopting ordinances or other regulatory mechanisms for the installation, maintenance, and inspection of BMPs on private property. **Table 6-2** presents a summary of the requirements in the EWA and WWA Phase II MS4 Permits pertaining to this chapter.

Table 6-2. Summary of regulatory mechanism requirements in the EWA and WWA Phase II MS4 Permits

EWA Phase II	WWA Phase II
Technical Requirements	
S5.B.5.b.ii The Permittee shall develop an ordinance or other regulatory mechanism that requires project proponents and property owners to adhere to the minimum technical requirements in Appendix 1 and shall include BMP selection, design, installation, operation, and maintenance standards necessary to protect water quality, reduce the discharge of pollutants to the MEP, and satisfy state AKART requirements.	**S5.C.6.b.i** The Permittee shall develop an ordinance or other regulatory mechanism that includes the Minimum Requirements, thresholds, and definitions in Appendix 1, or the 2013 Appendix 1 amended to include the changes identified in Appendix 10, or Phase I program approved by Ecology and amended to include Appendix 10, for new development, redevelopment, and construction sites.
BMP Implementation	
S5.B.5.b.ii.(b) The Permittee shall develop an ordinance or other regulatory mechanism that includes requirements for project proponents and property owners to implement appropriate runoff treatment, flow control, and source control BMPs considering the proposed land use at the site to minimize adverse impacts to water quality.	**S5.C.6.b.ii** The Permittee shall develop local requirements that include site planning requirements, BMP selection design, BMP design criteria, BMP infeasibility criteria, LID competing needs criteria, and BMP limitations when used to implement Appendix 1 to protect water quality, reduce the discharge of pollutants to the MEP, and satisfy State requirements.
Maintenance & Inspection Authority	
S5.B.5.b.ii.(c) The Permittee shall develop an ordinance or other regulatory mechanism that includes requirements to ensure adequate ongoing long-term operation and maintenance of the BMPs approved by the Permittee. **S5.B.5.b.iii** The ordinance or other regulatory mechanism shall include provisions for both construction phase and post-construction access for Permittees to inspect stormwater BMPs on private properties that discharge to the MS4. If	**S5.C.6.b.iii** The ordinance or other enforceable mechanism shall include the legal authority, through the approval process for new development and redevelopment, to inspect and enforce maintenance standards for private stormwater facilities approved under the provisions of this Section that discharge to the Permittee's MS4. **S5.C.7.b.i.a** The Permittee shall implement an ordinance or other enforceable mechanism that:

EWA Phase II	WWA Phase II
deemed necessary for post-construction access, the ordinance or other regulatory mechanism may, in lieu of requiring that continued access be granted to the Permittee's staff or qualified personnel, instead require private property owners to provide annual certification by a qualified third party that adequate maintenance has been performed and the facilities are operating as designed to protect water quality.	• Clearly identifies the party responsible for maintenance in accordance with maintenance standards established under S5.C.7.a. • Requires inspection of facilities in accordance with the requirements in (b), below.
Enforcement	
S5.B.5.b.iv The ordinance or other regulatory mechanism shall include appropriate, escalating enforcement procedures and actions. **S5.B.5.b.v** The Permittee shall implement an enforcement strategy and the enforcement provisions of the ordinance or other regulatory mechanism.	**S5.C.7.b.i.a** The Permittee shall implement an ordinance or other enforceable mechanism that: • Establishes enforcement procedures.

6.3 Regulatory Mechanisms

The Phase II MS4 Permits require Permittees to implement regulatory mechanisms for the maintenance and inspection of BMPs on private property; however, Permittees have the flexibility to choose which regulatory mechanisms best suit their jurisdiction(s). There are several types of regulatory mechanisms, including those that are legally binding, such as ordinances and covenants, and others that are administrative, such as policies and other supporting documents. Legally binding mechanisms are recommended for elements required by the Phase II MS4 Permit (see **Table 6-1**) (Herrera Environmental Consultants, Inc., 2022) because they give Permittees enforcement authority. Permittees can then supplement legally binding mechanisms with administrative mechanisms for outlining program details and methods for BMP owners to meet ordinance requirements. For example, Permittees can use an ordinance to require property owners to maintain BMPs per a Permittee-developed guidance manual, and then outline the specific maintenance activities in the guidance manual. Regardless of which approach Permittees choose, each Permittee should consult with their legal counsel to ensure the regulatory mechanisms are compliant with local, state, and federal laws and requirements (Stormwater Equipment Manufacturers Association, 2013). The following sections describe the different types of regulatory mechanisms, how they are developed, and the advantages and disadvantages of each.

6.3.1 Ordinances

The EWA and WWA Phase II MS4 Permits require Permittees to adopt ordinances or other regulatory mechanisms regarding installing, maintaining, and inspecting BMPs on private property. An ordinance is defined as *a piece of legislation enacted by municipal authority* (Debo & Reese, 2002). For stormwater management, ordinances are a tool available to Permittees for developing a legal structure for program requirements. Including permit-required elements (see **Table 6-2**) in an ordinance is recommended because ordinances are legally binding and provide enforcement authority to maintain compliance with Phase II MS4 Permits. Ordinances are best used for stating *what* should be accomplished and *why* (Debo & Reese, 2002). Permittees can then develop other regulatory mechanisms, such as public rules (**Section 6.3.3**) and policies (**Section 6.3.4**), outlining *how* the requirements are accomplished. **Section 6.4** provides recommended steps for developing ordinances (Debo & Reese, 2002), which can be applied to BMPs on private property.

6.3.1.1 Ordinance Advantages and Disadvantages

Adopted ordinances are enacted into law, resulting in an enforceable framework for maintaining and inspecting BMPs. For this reason, including permit-required elements in ordinances is suggested (Herrera Environmental Consultants, Inc., 2022). Ordinances can be written to reference regulatory documents, such as the permit and stormwater manuals, which further supports enforcement of using the correct documents. However, developing ordinances may be a lengthy process, involving extensive Permittee time and resources. Ordinances also require legal review, a public comment period, a public hearing, and council approval for all modifications, potentially resulting in several draft iterations before the ordinances are finalized. This may hinder the process for keeping regulatory mechanisms up to date as Phase II MS4 Permit requirements evolve.

6.3.2 Covenants

Permittees can use a covenant with the property owner to regulate maintenance and inspections of BMPs on private property. A covenant is defined as *a private agreement between parties regarding the use and improvement of real property* (Reed, N.D.). There are two types of covenants: personal covenants and covenants that run with the land. Personal covenants do not pertain to the occupation and enjoyment of the land; therefore, they would not be used for BMPs on private property. Personal covenants are also only binding between the parties who sign the agreement. In this situation, if a personal covenant were used to document BMP responsibilities, the responsibilities would only apply to the property owner who signed the agreement and would cease to exist if the property changed ownership. Covenants that run with the land pass on the covenant requirements to subsequent property owners (Reed, N.D.). If using covenants to document BMP responsibilities, Permittees should use a covenant that runs with the land.

Using covenants for maintenance and inspection of BMPs is common for subdivisions but can also be used for individual properties. Developers, Permittees, and/or lawyers typically develop covenants. The covenant requirements can appear in a variety of locations but are often written in deeds, leases, and other property conveyance documents (Reed, N.D.). For successful enforceability, it is recommended that a covenant that runs with the land meet the following conditions (Reed, N.D.):

- The parties intended the covenant to run with the land at the time of conveyance.
- The covenant "touches and concerns" the land (covenant must relate to the use, enjoyment, or occupation of the land).
- There is a relationship recognized by law between the two parties: the person claiming the benefit (Permittee) and the person holding the burden (property owner or homeowners association).
- The covenant is filed with the appropriate authority, such as the County Clerk or County Auditor.

An example of a covenant is a stormwater maintenance agreement. **Section 5.4.2** of **Chapter 5** describes private stormwater maintenance agreements and **Appendix 5-A** through **Appendix 5-D** provide examples of stormwater maintenance agreements for different types of properties. The City of Missoula in Montana requires a private maintenance agreement to hold property owners responsible for BMPs in subdivisions. The agreement is filed and recorded with the Missoula County Clerk and Recorder along with the subdivision plans and operations and maintenance (O&M) plan. A notice is then filed with each lot benefiting from the BMP, detailing the exact book and page of the agreement. This simplifies locating the agreement during a title search. **Case Study 5.1** in **Chapter 5** further describes this process.

6.3.2.1 Covenant Advantages and Disadvantages

When correctly developed, covenants are legally binding documents enforceable by court. The Permittee may seek a warning or stop work order if the covenant is breached and file for monetary damages, if necessary (Reed, N.D.). A benefit of covenants that run with the land includes BMP requirements that exist in perpetuity through subsequent property owners. Thurston County is another example of a Permittee using maintenance agreements to regulate BMPs on private property. The maintenance agreement is one of the requirements for final project acceptance and bond release for new development. The maintenance agreement, equivalent to a covenant, is a legally binding document reviewed by the County's legal department that runs with the land. An advantage of the County's maintenance agreement is that the agreement requires two additional site-specific elements attached as appendices: a Stormwater Facility Maintenance Program and a Stormwater Pollution Prevention Source Control Plan. This allows the County to hold property owners to the measures laid out in each plan and gives the County additional enforcement authority falling outside of the County's stormwater ordinances. **Case Study 6.1** further describes Thurston County's regulatory mechanisms.

A disadvantage of covenants is the agreement can be made without proper legal review or an official legislative process. Enforcing covenants may be more difficult than other regulatory methods, such as ordinances, if not properly developed and filed with the appropriate authority. Covenant terms that run with the land can also become "fixed in time," such that references in the original agreement may not allow for current technologies, materials, processes, etc. (Town of Olds, N.D.). A party involved in the agreement may have to present evidence showing the reasoning for updates if modifications are needed (Reed, N.D.).

Appendix 6-A provides examples of covenants for the inspection and maintenance of stormwater facilities and BMPs developed by King County and Clark County.

6.3.3 Public Rule/Director's Rule

A public rule and/or director's rule is defined as *a department order, directive order, or regulation that has the force of law* (Herrera Environmental Consultants, Inc., 2022). Permittees develop rules to assist with implementing new laws and providing detail on and guidance for laws already passed (City of Seattle, 2022). Developing rules is recommended for supplementing other regulatory mechanisms, such as ordinances, for outlining BMP inspection and maintenance details. This may include maintenance expectations and compliance timelines, inspection frequencies, and enforcement procedures. Unlike ordinances, a department director typically approves rules. Full council approval and adoption is not required (Herrera Environmental Consultants, Inc., 2022). The following is an example of how the City of Seattle develops rules (City of Seattle, 2022):

- Process generally begins as soon as a proposed ordinance becomes law.
- Draft rule is prepared prior to any public rule hearing.
- Draft rule is posted online for comment.
- Hearing may be scheduled for comment intake on the draft rule.
- Once rule is finalized, it is signed by the director and recorded by the City Clerk's office, making the rule effective on the filing date.
- New/updated rule is posted on director's rules webpage.

6.3.3.1 Public Rule/Director's Rule Advantages and Disadvantages

As mentioned above, department directors typically approve rules; therefore, modifying rules is easier than modifying ordinances. As a result, Permittees can update details and procedures for inspecting and maintaining BMPs in a timely manner and without council review and approval, as the Phase II MS4 Permit requirements evolve. However, not all jurisdictions utilize rules; as such, this regulatory mechanism may be unavailable to some Permittees (Herrera Environmental Consultants, Inc., 2022). **Appendix 6-B** provides weblinks to examples of director's rules for Seattle Public Utilities' Stormwater Facility Credit Program. The rule describes the program and its legislative authority, operational procedures, billing system, application, annual review, credit calculation, inspection, and enforcement.

6.3.4 Policy

A policy is defined as *a guiding principle, procedure, or strategy adopted by a governing body* (Vermont League of Cities and Towns, 2018). Unlike ordinances, covenants, and public/director's rules, policies generally do not have enforcement authority. Instead, Permittees often use policies for defining standards and setting expectations. These standards and expectations may be directed inward, guiding decision-making processes, or apply to specific facilities or the public (Vermont League of Cities and Towns, 2018). For example, regarding maintaining and inspecting BMPs on private property, Permittees may use policies for developing internal processes, such as how Permittees will document BMP ownership, or for communicating how Permittees are meeting Phase II MS4 Permit requirements by describing program policies in the annual Stormwater Management Plan. Policies are also recommended for outlining education and outreach approaches (see **Chapter 9**) and enforcement strategies (see **Chapter 8**) (Herrera Environmental Consultants, Inc., 2022).

Compared to other regulatory mechanisms, policies are relatively simple to adopt because they commonly do not require approval by a governing body; however, they do not have enforcement authority (Vermont League of Cities and Towns, 2018). Departments regulating stormwater management internally draft the policy and the policy is then approved by a higher authority, such as a director. Policy adoption may or may not require council approval, depending on the jurisdiction's internal processes (Herrera Environmental Consultants, Inc., 2022). It is recommended that policies be flexible enough to adapt when situations and conditions change, but consistent enough to establish clear-cut systematic methods (Vermont League of Cities and Towns, 2018).

6.3.4.1 Policy Advantages and Disadvantages

Permittees can develop policies to help establish the intent and methods for implementing other regulatory mechanisms, such as ordinances (Herrera Environmental Consultants, Inc., 2022). Like public rules/director's rules, modifying policies may be easier than modifying ordinances or covenants, so Permittees can update material regarding inspecting and maintaining BMPs as the Phase II MS4 Permit requirements evolve. One disadvantage of policies is the lack of enforcement authority, including the authority for Permittees to implement penalties or fines. Therefore, Permittees may need to develop additional regulatory mechanisms for inspecting and maintaining BMPs on private properties to meet Phase II MS4 Permit requirements.

6.4 Required and Recommended Ordinance Elements

As mentioned in **Section 6.3.1**, ordinances are adopted legislation providing the legal framework for stormwater programs. Permittees are required to provide ordinances or other regulatory mechanisms regarding BMPs on private property for the following program components. **Table 6-1** provides a full description of each element.

- Implementing appropriate stormwater BMPs
- Adhering to the applicable minimum technical requirements
- Provisions to ensure ongoing long-term operations and maintenance
- Authority to access private property to inspect BMPs
- Establishing enforcement procedures

Debo & Reese (2002) provide detailed guidance and recommendations for drafting local ordinances and regulations. A summary of their guidance is as follows. Additional information can be found in their book titled *Municipal Stormwater Management* (Debo & Reese, 2002).

Identify Gaps: Review existing ordinances in parallel with the applicable Phase II MS4 Permit requirements and identify whether there are any deficiencies in the existing ordinances, such as ordinances that need revisions, and/or whether new ordinance sections are required. This effort will define the scope and extent of the ordinance development effort.

Formulate Objectives: Establish stormwater program objectives so those involved in the stormwater program as well as those representing the local municipality are aware of the objectives and can communicate them to others. The objectives are helpful for guiding ordinance development and guiding feedback during the review process.

Draft Ordinances: Ordinances should be drafted as a collaborative effort, involving other departments such as engineering, public works, planning, environmental, legal, and any other Permittee staff who are affected by the changes. Some Permittees may prefer developing detailed ordinances covering all program elements. However, ordinances with performance-based criteria that use public rules and policies to provide the means and methods to accomplish the criteria may be more efficient. Keeping technical information up to date and modifying procedures is often easier when these items are not included in the ordinances. For example, Permittees may develop an ordinance requiring BMP maintenance, but detail the specific maintenance activities in a public rule or guidance manual. Lastly, the ordinances should undergo a legal review, to support alignment with local, state, and federal laws.

Public Participation: Public participation should be incorporated into the ordinance update process because some groups may be directly or indirectly impacted by the changes. Some may be involved in ordinance implementation and enforcement, while others are required to comply with the ordinance. Groups in the local community who may need to be included are citizens, developers, builders, realtors, politicians, consulting engineers and architects, landscape architects, environmentalists, and local government staff. Feedback is usually facilitated through a public comment period and/or public hearings. When possible, public feedback should be solicited during the initial ordinance drafting phase when issues/problems first arise, as well as seeking endorsement of the final draft. The initial comment period may also help with gaining public support for the changes.

Approve and Adopt Ordinances: A governing body, such as councils or commissioners, must review and adopt the ordinances before they become legally binding. Elected officials may not be actively aware of the importance of maintaining and inspecting stormwater BMPs or that the Phase II MS4 Permits require ordinances. Therefore, developing and presenting the ordinances to these elected officials in a manner that can be easily understood is recommended to assist them during the approval process.

Permittees have flexibility with the language and structure for incorporating the required elements into jurisdictional code. **Table 6-3** and **Table 6-4** provide examples of ordinance elements from EWA and WWA Permittees for inspecting and maintaining BMPs on private property. Permittees should consult with their legal counsel while developing ordinances to ensure the provisions are compliant with local, state, and federal laws and requirements (Stormwater Equipment Manufacturers Association, 2013).

Table 6-3. EWA private BMP maintenance and inspection ordinance elements

City of Spokane	City of Wenatchee	Yakima County
Implement Appropriate Stormwater BMPs		
17D.060.140 A Runoff and infiltration controls apply in all areas of the City except where exempt or modified.	**9.20.040 (1)** All new development and redevelopment unless otherwise exempted in accordance with WCC 9.20.030 shall be required to comply with the standards and requirements set forth by this chapter and the: (a) Public works preapproved plans and policies; and (b) The most current city of Wenatchee comprehensive stormwater plan as adopted by the city council; and (c) Stormwater Management Manual for Eastern Washington (SWMMEW).	**12.10.250 (1)** General. The design of stormwater BMPs shall consider public health, safety, and general welfare. All stormwater facilities and conveyance systems shall be designed in compliance with all applicable state and federal laws and regulations. All development and redevelopment shall apply source control BMPs selected, designed, and maintained in accordance with the regional stormwater manual, Chapter 5.
Minimum Technical Requirements/Design and Maintenance Standards		
17D.060.030 B Standard References: The following documents are hereby adopted by reference. They address general requirements and may be modified or supplemented in other specific sections. 1. Standard Specifications of the Washington State Department of Transportation, latest edition. 2. General Special Provisions of the City of Spokane, latest edition. 3. City of Spokane Design Standards and Standard Plans, latest edition. 4. The Spokane Regional Stormwater Manual (SRSM), latest edition.	**9.20.040 (3)** Stormwater BMPs shall be selected, designed, sized, constructed, operated and maintained in accordance with the latest version of the SWMMEW. **9.20.040 (4)** All stormwater BMPs and conveyance systems shall be designed in compliance with all applicable state and federal laws and regulations, including the Federal Clean Water Act and all applicable erosion and sediment control and flood plain regulations. To the extent practical, stormwater facilities shall not be located in areas determined to be jurisdictional waters through Section 404	**12.10.250 (8)** Stormwater Manual. Stormwater practices shall be designed, constructed, and maintained in accordance with the design and sizing criteria in the Yakima County Regional Stormwater Manual (regional stormwater manual). Use of the regional stormwater manual with Yakima County local conditions will be presumed to meet the minimum water quality performance standards of the Eastern Washington NPDES Phase II Municipal Stormwater Permit requirements. The use of BMPs from the Eastern Washington stormwater manual or emerging technologies approved by Ecology shall be consistent with Yakima County

City of Spokane	City of Wenatchee	Yakima County
5. Spokane Aquifer Water Quality Management Plan. Spokane County, Washington "208" Program. County engineers office. 6. Stormwater Management Manual for Eastern Washington (SWMMEW), Washington State Department of Ecology, latest edition. The above standard references are on file with the Director of Wastewater Management **17D.060.030 C** Low Impact Development is optional, however if low impact development techniques are used, then the Eastern Washington Low Impact Development Guidance Manual should be followed. **17D.060.050 B** Stormwater facilities shall be installed with adherence to the Best Management Practices referenced in the Spokane Regional Stormwater Manual (SRSM) and the Stormwater Management Manual for Eastern Washington (SWMMEW).	of the Federal Clean Water Act and/or applicable state regulations.	climate, soils, and specific site conditions appropriate for said BMP use and shall be subject to Public Services Director approval. The Public Services Director may require monitoring of said emerging technology BMP performance in order to demonstrate that they meet the minimum water quality performance standards of the Eastern Washington NPDES Phase II Municipal Stormwater Permit requirements.
Ensure Ongoing Long-Term Operations and Maintenance		
17D.060.050 A Every owner and occupant of premises must install, maintain and keep in good function and order any onsite stormwater facility in accord with applicable requirements. Such requirements may be reflected as conditions of land use or property development in plats,	**9.20.040 (9)** The property owner(s) shall be responsible for the continual performance, operation and maintenance of all stormwater facilities in accordance with the standards and requirements of the city and remain responsible for any liability as a result of	**12.10.330** (1) The property owner(s) shall be responsible for the continual performance, operation and maintenance of stormwater facilities in accordance with the approved standards and requirements of the County and shall remain responsible for any liability

City of Spokane	City of Wenatchee	Yakima County
building or special use permits, or other permits, or may be imposed as a consequence of other regulatory action, including code enforcement or nuisance abatement. **17D.060.140 E** The developer, property owner, or other responsible, authorized and designated entity acceptable to the Director of Wastewater Management (e.g., a homeowners association) shall be responsible for accepting and maintaining onsite stormwater facilities. The developer shall provide a perpetual maintenance plan, including funding mechanisms and appropriate financial security for such onsite stormwater facilities acceptable to the Director of Wastewater Management.	these duties. The property owner(s) shall maintain a log of maintenance activities. All stormwater facilities, BMPs, O&M plans, and records shall be subject to inspection by the director.	arising from neglect of their duties. Where structural BMPs are required, property owners shall operate and maintain the facilities in accordance with a County approved Operation and Maintenance (O&M) plan that is prepared in accordance with the provisions in the regional stormwater manual. The O&M plan shall address all proposed stormwater facilities and BMPs, and identify the party (or parties) responsible for maintenance and operation; the O&M plan must also address the long-term funding mechanism that will support proper O&M Inspections. At private facilities, a copy of the plan shall be retained onsite or within reasonable access to the site, and shall be transferred with the property to new owner(s). For public facilities, a copy of the plan shall be retained in the county road department. (2) Owners shall maintain a log of inspection and maintenance activities that is available for County inspection and shall provide to the County a copy of the inspection and maintenance log upon request.
Authority to Inspect BMPs on Private Property		
17D.060.140 E 1. Any private stormwater facilities that receive post-construction stormwater runoff from new development or redevelopment projects which (a) were approved in 2011 or later, and (b) whose disturbance was one	**9.20.080 (1)** Inspection and Sampling. The city shall be permitted to enter and inspect sites subject to regulation under this chapter as often as may be necessary to determine compliance.	**12.10.340** (1) Inspections of BMPs on a frequency established by the current Eastern Washington NPDES Phase II Municipal Stormwater Permit will be made by the County during and after construction for

City of Spokane	City of Wenatchee	Yakima County
acre or more, or projects that were less than one acre and are part of a larger common plan of development or sale, shall be inspected annually by a qualified stormwater professional. Private property owners, or other responsible person, authorized and designated entity shall provide annual certification by a qualified third party that adequate maintenance has been performed and the facilities are operating as designed to protect water quality.	Inspections may occur before, during and after construction.	documentation required within the Eastern Washington NPDES Phase II Municipal Stormwater Permit. (5) For stormwater BMPs on private properties within the stormwater utility boundary that discharge to the MS4 or water of Washington State, BMP owners shall provide annual certification by a qualified third party that adequate maintenance has been performed and the facilities are operating as designed to protect water quality. (6) For both construction-phase and post-construction within the stormwater utility boundary, access shall be granted for Yakima County Public Services personnel to inspect stormwater BMPs on private properties that discharge to the MS4 or water of Washington State. If deemed necessary for post-construction access, the property's owner may provide, in lieu of allowing continued access to be granted to Yakima County Public Services personnel, an annual certification record, as outlined in 12.10.340 (3), to Yakima County.
Establish Enforcement Procedures		
17D.060.075 This chapter may be enforced through the administrative hearings process or civil infraction process in chapter 1.05 SMC. Normally, simple violations are enforced through the civil infraction process. Normally,	**9.20.090 (1)** Violations. It shall be unlawful for any person to violate any provision or fail to comply with any of the requirements of this chapter. Any person who has violated or continues to violate the provisions of this chapter may be	**12.10.340 (4)** (c) Failure to Provide Adequate Maintenance. In the event that the stormwater BMP has not been maintained and/or becomes a danger to public safety or public health, the Public Services Director, or designee, shall

City of Spokane	City of Wenatchee	Yakima County
violations involving more complicated facts are enforced through the administrative hearings process. The decision of which track to use in any case is within the sole discretion of the enforcing official. The administrative hearing track is described in SMC 17D.060.080 through SMC 17D.060.100. **17D.060.070 D** The wastewater management department enforces maintenance requirements for onsite stormwater facilities after installation and determines any questions relating to proper functional level and efficiency of said facilities. Said department develops a record of onsite stormwater facilities locations and takes any enforcement action needed to keep them fully and efficiently functioning. Said department reviews plans or design specifications on file or otherwise accessible to determine the nature and extent of onsite stormwater facility requirements applicable to any specific premises, and may conduct further inquiry and/or site inspections as deemed necessary to enforce said requirements and this chapter.	subject to the enforcement actions outlined in this section or may be restrained by injunction or otherwise abated in a manner provided by law. In the event the violation constitutes an immediate danger to public health or public safety, the city is authorized to enter upon the subject private property, without giving prior notice, to take any and all measures necessary to abate the violation and/or restore the property. The city is authorized to seek costs of the abatement in accordance with WCC 4.10.100.	notify the responsible party by registered or certified mail. The notice shall specify the measures needed to comply with the maintenance agreement and the maintenance plan and shall specify that the responsible party has 30 days or other time frame mutually agreed to between the Public Services Director and the responsible party, within which such measures shall be completed. If such measures are not completed, then the Public Services Director shall pursue enforcement procedures pursuant to section 12.10.440 of this chapter. (d) If a responsible party fails or refuses to meet the requirements of an inspection report, maintenance agreement, or maintenance plan the Public Services Director or designee, after 30 days written notice (except, that in the event the violation constitutes an immediate danger to public health or public safety, 24-hour notice shall be sufficient), may correct a violation of the design standards or maintenance requirements by performing the necessary work to place the practice in proper working condition. The Public Services Director may assess the responsible party of the practice for the cost of repair work which shall be a lien on the property, or prorated against the beneficial users of the property, and may be placed on the tax bill and collected as ordinary taxes by Yakima County.

Table 6-4. WWA private BMP maintenance and inspection ordinance elements

Clark County	City of Lynnwood	City of Port Angeles
Implement Appropriate Stormwater BMPs		
13.26A.035 A(1) Existing development, current activities, and new development activities not covered by the Clark County stormwater and erosion control ordinance (Chapter 40.386) that are not listed in the exemptions of this subsection are required to apply stormwater quality BMPs listed in the Clark County Stormwater Manual. A BMP not included in this manual may be approved by the responsible official if the proponent demonstrates that it provides equivalent effectiveness. An exemption from the requirement to use BMPs does not provide an exemption allowing prohibited discharges.	**13.40.050** For purposes of this chapter, projects are classified as large site, small site, or minor site projects as described below, primarily based on the extent of impervious surface generated and the type of land-disturbing activities that will occur. A. Large site projects involve: 1. One acre or more of land-disturbing activity; or 2. Projects that disturb less than one acre of land that are part of a larger common plan of development or sale where land-disturbing activity involves one acre or more. **13.40.060 C** 1. Large site projects shall meet the large site minimum requirements outlined in the Supplemental Stormwater Guidelines.	See **Minimum Technical Requirements/Design and Maintenance Standards** for reference to the use of the minimum requirements, thresholds and definitions defined in Appendix 1 of the City of Port Angeles' Western Washington Phase II Municipal Stormwater Permit.
Minimum Technical Requirements/Design and Maintenance Standards		
See **Implement Appropriate Stormwater BMPs** for reference to the Clark County Stormwater Manual.	**13.40.060 A(1)** All activities covered by this chapter shall comply with the site planning and best management practice selection and design criteria in the City of Lynnwood Supplemental Stormwater Guidelines, herein referred to as the Supplemental Stormwater Guidelines, to implement the applicable minimum technical requirements listed in this chapter.	**13.63.190 B** For all site developments, the City adopts and requires the use of the minimum requirements, thresholds and definitions defined in Appendix 1 of the City of Port Angeles' Western Washington Phase II Municipal Stormwater Permit. **13.63.190 C** For all site developments that require a stormwater treatment, flow control, or on-

Clark County	City of Lynnwood	City of Port Angeles
		site stormwater management BMP/facility, the City adopts and requires the use of Chapters 2, 3 and 4 and Appendices 1-C, 1-D and 1-E, Volume I, Chapters 3 and 4, Volume II; the entirety of Volume III; the entirety of Volume IV, and the entirety of Volume V of the Department of Ecology's 2014 Stormwater Management Manual for Western Washington (SWMMWW [2014]), or most recent update.
Ensure Ongoing Long-Term Operations and Maintenance		
13.26A.040 A Maintenance and Inspection Required. All public and private drainage facilities shall be inspected and maintained by the owner in accordance with the Clark County Stormwater Manual. The intent is to ensure proper maintenance of pollution control and quantity control facilities to protect surface water and groundwater. The responsible official may require the owner to conduct more frequent inspection and/or maintenance when necessary to assure that facilities function as designed for pollutant control and quantity control. The Clark County Stormwater Manual shall be filed with and available at the county.	**13.40.120** B. Ownership. Stormwater facilities are either privately or publicly owned and maintained. All stormwater facilities that serve commercial and industrial sites are private. Storm drainage facilities or controls that are privately owned by a homeowner's association or similar organization also are private. B.3. If the city elects not to assume operation and maintenance responsibility, the drainage facilities shall be operated and maintained in accordance with the arrangements as approved by the public works department. The city may inspect the facilities in order to ensure continued use of the facilities for the purposes for which they were built and in accordance with these arrangements.	**13.63.260** A. Any person or persons holding title to a property for which stormwater facilities and BMPs have been required by the City of Port Angeles shall be responsible for the continual operation, maintenance and repair of the stormwater facilities and BMPs in accordance with the provisions of this chapter. B. For privately maintained stormwater facilities, the maintenance requirements specified in the Department of Ecology's SWMMWW (2014), Chapter 4, Volume V, shall be required of the owner(s) of the subject property served by the stormwater facility.

Clark County	City of Lynnwood	City of Port Angeles
Authority to Inspect BMPs on Private Property		
13.26A.050 B(1) The responsible official may enter and inspect property to observe best management practices and maintenance practices, or examine or sample surface and stormwater or groundwater as often as may be necessary to determine compliance with this chapter. Whenever an inspection of a property is made, the findings shall be recorded and a copy of the inspection findings shall be furnished to the owner or the person in charge of the property after the conclusion of the investigation and completion of the inspection findings after the conclusion of the investigation and completion of the inspection findings.	**13.40.120 C** 1. All storm drainage facilities or controls shall be regularly inspected to ensure proper operation as required in the Supplemental Stormwater Guidelines. An operation and maintenance manual consistent with the provisions in Volume V of the Stormwater Management Manual for Western Washington is required for all proposed stormwater facilities and BMPs. For private facilities, a copy of the operation and maintenance manual shall be retained on site or within reasonable access to the site, and shall be transferred with the property to the new owner. For public facilities, a copy of the manual shall be retained in the appropriate department. A log of maintenance activity that indicates what actions were taken shall be kept and be available for inspection. **13.40.120 E** City Inspection. The regular inspection of privately owned storm drainage facilities or controls is essential to enable the city to evaluate the proper operation of the city's MS4 and the environment. The city shall have access to private stormwater facilities for inspection to ensure they are properly operated and maintained.	**13.63.280** A. The City is authorized to enter at all reasonable times in or upon any property, public or private, for the purpose of operating or maintaining the storm and surface water facilities, or to inspect or investigate any condition relating to the stormwater utility; provided, that the City shall first obtain permission to enter from the owner or person responsible for such premises. If entry is refused, the City shall have recourse to every remedy provided by law to secure entry. Notwithstanding the foregoing, whenever it appears to the City that conditions exist requiring immediate action to protect the public health or safety, the City is authorized to enter at all reasonable times in or upon any property, public or private, for the purpose of inspecting, investigating or correcting such emergency condition. B. Alternatively, a private property owner can choose to hire, at the owner's expense, a qualified third party contractor to conduct stormwater system and facility inspections and submit the inspection results to the City. The contractor shall require pre-approval from the City.

Clark County	City of Lynnwood	City of Port Angeles
Establish Enforcement Procedures		
13.26A.050 A The responsible official is authorized to carry out enforcement actions pursuant to the enforcement and penalty provisions of Title 32.	**13.40.160** The director shall have the authority to enforce any and all provisions of this chapter. B. Escalating Enforcement. When a violation of this chapter has been committed, the director may use an escalating method of progressive severity to gain compliance; however, the director may take any enforcement action without regard to precedence, or any available legal recourse provided by law, to eliminate or end an emergency.	**13.63.400** The construction or installation of any structure, the connection to a public storm drainage facility, the illicit or illegal discharge to a public storm drainage facility, violations of the construction site stormwater pollution prevention plan, or the failure to operate and maintain a permitted stormwater facility which violate the provisions of this chapter shall be declared to be unlawful and a public nuisance and may be abated as such through the use of civil penalties, stop-work orders, water service shut offs, education and outreach as well as any other remedies which are set forth in this chapter, including, but not limited to, revocation of any permits. If the Director chooses to utilize Title 9 of this Code then a violation of any provision of this chapter shall constitute a Class II misdemeanor. Each violation shall constitute a separate infraction for each and every day or portion thereof during which the violation is committed, continued or permitted. The choice of enforcement action taken and the severity of any penalty shall be based on the nature of the violation, the damage or risk to the public or to public resources, and the response of the offender to less severe enforcement actions.

6.5 Case Study

6.5.1 Case Study 6.1 – Thurston County Regulatory Mechanisms

Thurston County regulates BMPs on private property using maintenance agreements, ordinances, and the County's Drainage Design and Erosion Control Manual. When new private development occurs, the final project acceptance and bond release checklist requires a stormwater facilities maintenance agreement, if applicable to the site. In Thurston County the maintenance agreement is equivalent to a covenant. It is a legally binding document recorded with the County Auditor between the County and the property owner. The maintenance agreement describes the property owner's responsibility regarding the BMP and actions the County is authorized to take if the BMP is not properly maintained. The maintenance agreement also includes a separate Operations and Maintenance Plan, as well as a Stormwater Pollution Prevention Source Control Plan. The County developed the maintenance agreement to run with the land; therefore, if property ownership changes, regardless of who signed the original agreement, the current property owner remains responsible for the maintenance of all onsite stormwater BMPs without having to update the agreement. **Appendix 5-A** through **Appendix 5-D** in **Chapter 5** provide examples of the maintenance agreements for different types of property.

The County enforces stormwater BMP requirements through the County ordinances. There are two specific sections pertaining to BMPs on private properties: Chapter 15.05 – Thurston County Stormwater Standards and Chapter 15.07 – Illicit Discharge Detection and Elimination Ordinance. Chapter 15.05 describes the adoption of the Thurston County Drainage Design and Erosion Control Manual and dictates the civil infractions and penalties that apply if property owners fail to comply with the ordinances and standards set forth in the manual. Chapter 15.07 prohibits illicit discharges to the County's MS4 and requires BMP implementation. This Chapter also provides the County the authority to conduct BMP inspections. Developing or updating ordinances in Thurston County follows the process below:

- Draft ordinances are developed, led by the Community Planning and Economic Development department. Other departments affected by the proposed code changes provide input.
- Once a draft is developed, a citizen's advisory group reviews the draft and provides feedback.
- The County holds a virtual open house to inform the public about the proposed revisions.
- The County holds a virtual public hearing to allow the public to provide feedback. Feedback is also collected via email.
- The draft ordinances undergo a legal review. This may happen at different stages of the development process based on the scope of the revisions.
- The final draft ordinances are reviewed and adopted by the County Commissioners.

The County's Drainage Design and Erosion Control Manual, referenced in Chapter 15.05 of the County ordinance, also regulates BMPs on private property. Appendix V-C in the manual provides stormwater facility-specific maintenance standards that are referenced in maintenance agreements. Revisions to the manual are drafted as ordinances and follow a similar revision process to the one described above.

6.6 Appendices

6.6.1 Appendix 6-A – Covenant Examples

Documents included:

- Declaration of Covenant for Inspections and Maintenance of Stormwater Facilities and BMPs – King County
- Single-Family Residential Stormwater Covenant Running with the Land – Clark County

RECORDING REQUESTED BY AND
WHEN RECORDED MAIL TO:

_____

_____

_____

_____

DECLARATION OF COVENANT

FOR INSPECTION AND MAINTENANCE OF STORMWATER FACILITIES AND BMPS

Grantor: _____

Grantee: King County

Legal Description: _____

_____

_____

Additional Legal(s) on: _____

Assessor's Tax Parcel ID#: _____

IN CONSIDERATION of the approved King County _____ permit for application No. _____ relating to the real property ("Property") described above, the Grantor(s), the owner(s) in fee of that Property, hereby covenants(covenant) with King County, a political subdivision of the state of Washington and its municipal successors in interest and assigns ("King County" and "the County", or "its municipal successor"), that he/she(they) will observe, consent to, and abide by the conditions and obligations set forth and described in Paragraphs 1 through

10 below with regard to the Property, and hereby grants(grant) an easement as described in Paragraphs 2 and 3. Grantor(s) hereby grants(grant), covenants(covenant), and agrees(agree) as follows:

1. The Grantor(s) or his/her(their) successors in interest and assigns ("Owners") shall at their own cost, operate, maintain, and keep in good repair, the Property's stormwater facilities and best management practices ("BMPs") identified in the plans and specifications submitted to King County for the review and approval of permit(s) #: _____ . Stormwater facilities include pipes, swales, tanks, vaults, ponds, and other engineered structures designed to manage stormwater on the Property. Stormwater BMPs include dispersion and infiltration devices, native vegetated areas, permeable pavements, vegetated roofs, rainwater harvesting systems, reduced impervious surface coverage, and other measures designed to reduce the amount of stormwater runoff on the Property.

2. King County shall have the right to ingress and egress over those portions of the Property necessary to perform inspections of the stormwater facilities and BMPs and conduct other activities specified in this Declaration of Covenant and in accordance with King County Code ("KCC") 9.04.120 or relevant municipal successor's codes as applicable. This right of ingress and egress, right to inspect, and right to perform required maintenance or repair as provided for in Section 3 below, shall not extend over those portions of the Property shown in Exhibit "A."

3. If King County determines that maintenance or repair work is required to be done to any of the stormwater facilities or BMPs, the Director of the Water and Land Resources Division or its municipal successor in interest ("WLR") shall give notice of the specific maintenance and/or repair work required pursuant to KCC 9.04.120 or relevant municipal successor's codes as applicable. The Director shall also set a reasonable time in which such work is to be completed by the Owners. If the above required maintenance or repair is not completed within the time set by the Director, the County may perform the required maintenance or repair, and hereby is given access to the Property, subject to the exclusion in Paragraph 2 above, for such purposes. Written notice will be sent to the Owners stating the

County's intention to perform such work. This work will not commence until at least seven (7) days after such notice is mailed. If, within the sole discretion of the WLR Director, there exists an imminent or present danger, the seven (7) day notice period will be waived and maintenance and/or repair work will begin immediately.

4. If at any time King County reasonably determines that a stormwater facility or BMP on the Property creates any of the hazardous conditions listed in KCC 9.04.130 or relevant municipal successor's codes as applicable and herein incorporated by reference, the WLR Director or equivalent municipal successors official may take measures specified therein.

5. The Owners shall assume all responsibility for the cost of any maintenance or repair work completed by the County as described in Paragraph 3 or any measures taken by the County to address hazardous conditions as described in Paragraph 4. Such responsibility shall include reimbursement to the County within thirty (30) days of the receipt of the invoice for any such work performed. Overdue payments will require payment of interest at the current legal rate as liquidated damages. If legal action ensues, the prevailing party is entitled to costs or fees.

6. The Owners are hereby required to obtain written approval from the King County WLR Director prior to filling, piping, cutting, or removing vegetation (except in routine landscape maintenance) in open vegetated stormwater facilities (such as swales, channels, ditches, ponds, etc.), or performing any alterations or modifications to the stormwater facilities and BMPs referenced in this Declaration of Covenant.

7. Any notice or consent required to be given or otherwise provided for by the provisions of this Agreement shall be effective upon personal delivery, or three (3) days after mailing by Certified Mail, return receipt requested.

8. With regard to the matters addressed herein, this agreement constitutes the entire agreement between the parties, and supersedes all prior discussions, negotiations, and all agreements whatsoever whether oral or written.

9. This Declaration of Covenant is intended to protect the value and desirability of the real property described above, and shall inure to the benefit of all the citizens of King County and its municipal successors and assigns. This Declaration of Covenant shall run with the land and be binding upon Grantor(s), and Grantor's(s') successors in interest, and assigns.

10. This Declaration of Covenant may be terminated by execution of a written agreement by the Owners and King County or the municipal successor that is recorded by King County in its real property records.

IN WITNESS WHEREOF, this Declaration of Covenant for the Inspection and Maintenance of Stormwater Facilities and BMPs is executed this _____ day of _____, 20_____.

_____
GRANTOR, owner of the Property

_____
GRANTOR, owner of the Property

STATE OF WASHINGTON)
COUNTY OF KING)ss.

On this day personally appeared before me:

_____, to me known to be the individual(s) described in and who executed the within and foregoing instrument and acknowledged that they signed the same as their free and voluntary act and deed, for the uses and purposes therein stated.

Given under my hand and official seal this _____ day of _____, 20_____.

_____

_____
Printed name
Notary Public in and for the State of Washington,
residing at

_____

My appointment expires _____

Single Family Residential Stormwater

COVENANT RUNNING WITH THE LAND

Grantor(owner): _____

Grantee: Clark County

Abbreviated Legal Description
(SE 1/4, S10, T4N, R1E): _____

Assessor's Property Tax Parcel/Account No.: _____

Review Case No.: _____

A **Covenant** to Clark County, State of Washington, hereinafter "County", entered into in conjunction with review #_____ of certain real property as more particularly described in exhibit A, hereinafter "Site", whereby Grantor of said real property on behalf of all heirs, assigns and successors in interest into whose ownership the Site may pass, makes this covenant to the Grantee concerning the storm water facility shown in exhibit B. Both exhibits are incorporated herein by reference

Grantor covenants to Clark County on behalf of all persons or entities currently having ownership interest in the Site and all heirs, assigns and successors in interest into whose

ownership the Site may pass, as follows, it being specifically agreed that this covenant runs with the land:

1. Grantor is the sole and exclusive owner of the Site and/or has authority to bind all persons or entities that have a known interest in the Site.
2. Grantor or any subsequent possessor of the Site will be responsible for inspection, maintenance of the full dispersion area as required by the Clark County Storm Water Manual and Chapter 13.26A. of the Clark County Code.
3. Grantor or any subsequent possessor of the Site will ensure the County is allowed, with reasonable notice, access to the facilities for routine and emergency inspections regarding compliance with the Clark County Storm Water Manual and Chapter 13.26A of the Clark County Code.
4. Grantor or any subsequent possessor of the Site will ensure the County is allowed access with or without reasonable notice to the facilities for emergency maintenance and/or repair to prevent flooding or pollution of the Site or other properties.
5. The site must be maintained in native vegetation for full dispersion into native vegetation. If the Site is not maintained in accord with BMP T5.30A in the Clark County Storm Water Manual and Chapter 13.26A and this covenant, Clark County may enter the Site to perform the required maintenance and/or repair and bill the Property Owner pursuant to CCC 32.04.060.
6. Nothing in this covenant shall be construed to provide for public use of or entry onto the Site or into the facilities, except for representatives of Clark County authorized to make reasonable entry to administer this covenant.
7. This covenant and all of its provisions shall be binding upon Grantor and all heirs, assigns and successors in interest into whose ownership the Site may pass, and any obligations made herein by Grantor shall be enforceable against all heirs, assigns and successors in interest into whose ownership the Site may pass.
8. The provisions of this covenant are enforceable in law or equity by Clark County

and its successors. In the event the Site is annexed into a City, the enforcement and modification of the covenant shall be transferred to the annexing jurisdiction upon the effective date of the annexation, after which Clark County shall not be required to review or consent to any modification or to be involved in any enforcement of the covenant.

IN WITNESS WHEREOF, the parties hereto cause this covenant to be executed the day and year indicated below.

Dated this ____ day of _____. 20__.

Approved as to form only:
Anthony F. Golik
Prosecuting Attorney

_____
Christine Cook, Senior Deputy Prosecutor
Bill Richardson, Deputy Prosecutor

_____
Property Owner

STATE OF WASHINGTON)
:SS
COUNTY OF CLARK)

I hereby certify that I know or have satisfactory evidence that _____ signed this covenant and acknowledged it to be (his/her) free and voluntary act for the uses and purposes mentioned in the covenant.

Dated this ___ day of _____, 20__.

_____
Notary Public in and for the State of WA,
My commission expires:

ACKNOWLEDGEMENT OF CORPORATION

STATE OF WASHINGTON
COUNTY OF _____

On this _____ day of _____, 20___, before me appeared _____ and _____, to me known to be the President and Secretary, respectively, of _____, the corporation that executed the foregoing instrument and acknowledged the said instrument to be the free and voluntary act of and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that _____ was authorized to execute the instrument and that the seal affixed is the corporate seal of said corporation.

Witness my hand and seal the day and year first above written.

_____
Notary Public in and for the State of WA,
My commission expires:

6.6.2 Appendix 6-B – Public Rule Examples

Seattle Public Utilities Policies and Director's Rules
https://www.seattle.gov/utilities/about/policies

DWW-260 Stormwater Facility Credit Program
https://www.seattle.gov/documents/Departments/SPU/Documents/Policies/DWW260StormwaterFacilityCreditProgram.pdf

DWW-260.2 Stormwater Facility Credit Calculator
https://www.seattle.gov/documents/Departments/SPU/Documents/Policies/DWW2602SWFCcalculatorfinal.pdf

Chapter 7
Incentive Mechanisms

Chapter Contents

7.1 Chapter Overview

This chapter describes common incentive mechanisms that are offered to property owners to encourage them to implement, maintain, and/or inspect BMPs on their private property. Successful incentive mechanisms offer a favorable cost benefit to private property owners for participating in or complying with stormwater programs (Johnson, 2014), such as managing stormwater on private property, education and outreach, and source control. Establishing incentive programs regarding private BMPs allows Permittees to involve property owners in protecting receiving waters while potentially lowering the overall stormwater program management cost (Doll, Scodari, & Lindsey, 1998), because the responsibility of maintaining BMPs in the jurisdiction is shared between the property owner and the Permittee. Two common incentive mechanisms used by Permittees include reduced stormwater utility fees, also known as stormwater credits, and rebates. This chapter provides descriptions and examples of each of these two mechanisms, as well as things to consider when developing a stormwater incentive program.

7.2 Permit Requirements

No Phase II MS4 Permit requirements pertain to incentives for privately owned BMPs.

7.3 Incentive Approaches

Incentives help encourage a specific population to adopt a desired behavior (Johnson, 2014) that supports Permittees with managing their stormwater programs. With respect to BMPs on private property that connect to the MS4, incentive programs developed by Permittees would encourage property owners to provide the required inspection and maintenance of their BMP(s). However, no examples of using incentives to solely support compliance with inspecting and maintaining private BMPs were located during a literature review and in discussions with Permittees. BMP incentive programs identified in this chapter focus on encouraging property owners to install structural BMPs for Post-Construction Stormwater Management for New Development and Redevelopment according to the Stormwater Management Manual for Western Washington, the Stormwater Management Manual for Eastern Washington, or an Ecology-approved equivalent manual. Although inspection and maintenance were not the focus of the incentive programs reviewed for this manual, incentive eligibility typically required the property owner to provide proof of BMP maintenance. Other programs identified

through literature use incentives to support additional jurisdictional program goals such as water conservation or assisting the Permittee with meeting their Total Maximum Daily Load (TMDL) requirements. This chapter describes incentive programs addressing jurisdictional goals that are both required and not required by the Phase II MS4 Permits. In addition, **Section 7.5** provides case studies describing example incentive programs in Washington State.

When structured appropriately, incentive programs may improve the likelihood of sustained BMP performance (Johnson, 2014) because participating property owners may be more motivated to partake in maintenance responsibilities. This supports BMPs in continuing to function as designed. Incentive programs may also give the Permittee greater flexibility in protecting water quality (Doll, Scodari, & Lindsey, 1998) and meeting permit requirements by sharing the responsibility of maintaining BMPs. For many Permittees, an effective strategy for building an incentive program involves using a variety of incentive mechanisms (Johnson, 2014). As stated above, two common incentive mechanisms within stormwater management are reduced stormwater utility fees and rebates. Each approach is summarized in **Table 7-1** and described in the following sections.

Table 7-1. Summary of common incentive mechanisms

Incentive Mechanism	Description	Benefits
Stormwater Utility Fee Reduction (Stormwater Credit)	A reduction in stormwater fees for property owners who adopt BMP stormwater practices or procedures.	• Potential to reduce Permittee stormwater management effort • Increased engagement with property owners • Receiving waters may experience additional improvements
Stormwater Rebate	Typically consists of Permittees offering a payment to customers for implementing specific BMPs on their property.	

7.3.1 Stormwater Utility Fee Reduction

A stormwater utility fee reduction, also known as a stormwater credit, is an opportunity for stormwater customers to reduce their utility fees by adopting stormwater management practices and/or procedures on their property. Fee reductions are commonly earned by constructing, operating, and/or maintaining privately owned stormwater BMPs (Northampton Department of Public Works, 2016). For example, per the City of Pullman City Code, the City offers nonresidential properties a 10% credit, which is applied toward the portion of the stormwater fee arising from the impervious surface area collected by a properly constructed and maintained flow control and/or water quality treatment BMP (Interview H, 2023) (see **Case Study 7.1**). Not all Washington Permittees implement fee reductions, and for those who do, eligibility requirements and reduction amounts vary. **Table 7-2** provides a summary of some Permittee incentive programs. Stormwater utility fee reductions can be mutually beneficial for the property owner, the environment, and the Permittee. The customer can decrease their utility fee payment, potentially saving money long-term. The receiving waters may experience additional improvements, especially if the property owner provides flow control and/or water quality treatment beyond the Permittee's design standards. The Permittee may benefit from lower overall stormwater management costs by managing additional stormwater on private property particularly if the stormwater would otherwise discharge to the MS4 (Doll, Scodari, & Lindsey, 1998).

The likelihood of the property owner taking advantage of the fee reduction often depends on the amount of the reduced fee (Crisostomo, Ellis, & Rendon, 2014). Fee reductions are commonly offered for nonresidential properties, except for large multi-family developments. This is because commercial and industrial properties on large parcels with significant amounts of impervious surface will likely have the greatest incentive to offset fees. Targeting these property owners also increases the chances that Permittee resources for reviewing applications and administering the incentive program are effectively used (Wainger, Price, Hollady, & Ceballos, 2019). Stormwater utility fees for single-family residential properties are generally low. Because of this, a fee reduction is likely an insufficient incentive for implementing and maintaining stormwater BMPs due to high installation costs and technical barriers (Crisostomo, Ellis, & Rendon, 2014). Even if BMPs are implemented on single-family residential properties, the average volume of stormwater runoff managed onsite would not likely impact the Permittee's overall stormwater management costs (Doll, Scodari, & Lindsey, 1998). However, if fee reductions could encourage many residential property owners to implement BMPs where runoff would otherwise discharge untreated stormwater to a receiving water body, the combined benefit could be significant. **Section 7.4** provides more information on items to consider when developing an incentive program. **Table 7-2** includes examples of stormwater utility fee reduction programs implemented by Eastern Washington (EWA) and Western Washington (WWA) Permittees.

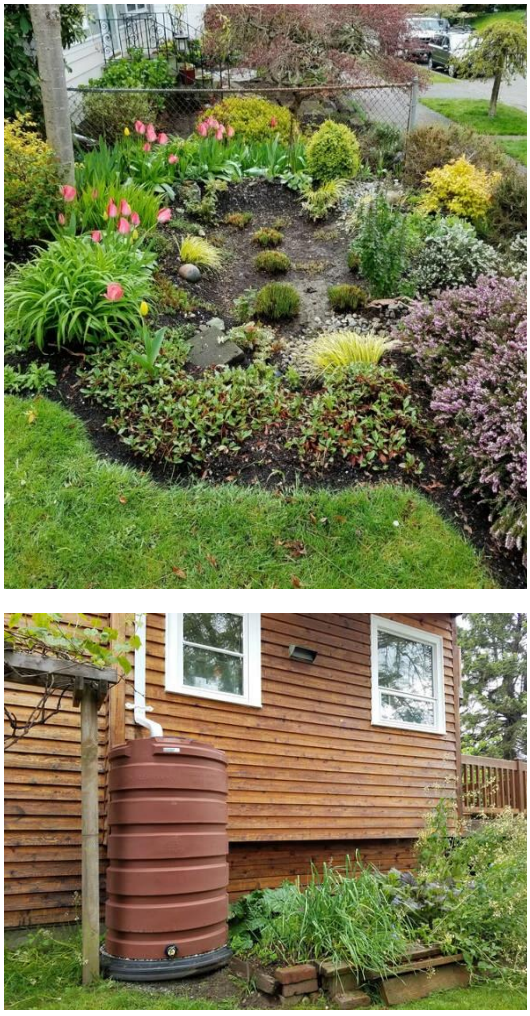


Figure 7-1. Rain garden on residential property (top) – RainWise Cistern (bottom) (source: https://www.monsoonraingardens.com/)

7.3.2 Stormwater Rebates

Stormwater rebates typically consist of Permittees offering a limited one-time payment to customers for implementing specific BMPs on their property. The payment usually covers a portion of the total BMP cost and is paid to the property owner after installation (Crisostomo, Ellis, & Rendon, 2014). Many stormwater rebate programs focus on installing green stormwater infrastructure, such as rain gardens, and have strict eligibility requirements (Johnson, 2014). For example, the City of Seattle launched RainWise, a rebate program to assist property owners with installing rain gardens and/or cisterns on private property. **Figure 7-1** shows an example of a rain garden and a cistern installed on residential property as part of RainWise projects, as well as providing the weblink for both. To be eligible for a

rebate of up to $4.00 per square foot of controlled rooftop runoff, stormwater customers must live in a combined sewer overflow basin and work with a RainWise-trained contractor (700 Million Gallons, 2023). Working with an approved contractor is a common rebate requirement because it reduces the likelihood of faulty installation and BMP failure. Other common rebate eligibility requirements include BMP monitoring, maintenance, and inspection (Johnson, 2014).

Rebate programs are popular in the United States and have been reported as relatively straightforward to understand and administer (Lieberherr & Green, 2018). This is likely because the one-time payment is easier than other incentive programs for the customers to understand and calculate exactly how much of the total cost will be covered. The full repayment also occurs shortly after the BMP has been installed, compared to a stormwater utility fee reduction, which is equivalent to property owners receiving several small payments over a longer period to recover BMP design and installation costs.

One challenging component of stormwater rebate programs is equity. The up-front cost limits the program participants to those who can afford to pay for the design and installation of the BMP. **Section 7.4** provides more information on program challenges and items to consider when developing an incentive program.

Table 7-2 includes more examples of stormwater rebate programs implemented by EWA and WWA Permittees.

7.4 Developing an Incentive Program

Reasons for developing incentive programs and the development process varies for each Permittee. When deciding whether to incorporate incentives into their programs, Permittees should consider local stormwater management goals, such as meeting permit requirements or reducing pollutant loading (Doll, Scodari, & Lindsey, 1998). For example, if a Permittee is targeting phosphorus reduction, incentives can be developed for installing water quality treatment BMPs upstream of phosphorus-sensitive water bodies (see **Case Study 7.2**). Stormwater management goals can also provide guidance for developing incentive approaches and structuring eligibility requirements. A 2014 study examined 36 local governments with credit and incentive programs (25 in Washington State, 8 in Oregon, and 3 in Canada). Of the 36 governments, 11 were chosen for interviews and detailed investigations. The study found incentive approaches varied considerably among agencies. Programs that self-identified as being successful in achieving stormwater improvements (Johnson, 2014) had the following characteristics:

- Implemented strategies aiming to influence behavior, such as promoting the adoption of green stormwater infrastructure
- Gained high-level support for the program, such as local political backing
- Took advantage of existing opportunities within the local culture, such as partnering with community associations

Clear eligibility requirements and communication are other elements of successful self-identified programs. For example, stormwater customers should understand: what incentives they qualify for; how the incentives may impact their stormwater utility fee; the importance of stormwater management; and how their efforts can make meaningful impacts. The incentives must also provide a monetary value high enough to motivate the audience to adopt the desired behavior (Johnson, 2014).

The following program elements are recommended for Permittees to consider when developing stormwater incentive programs (Crisostomo, Ellis, & Rendon, 2014).

Target the Incentive Program: Rather than trying to address entire communities, target the incentive program to specific populations and properties that will best contribute to supporting the program's goals. Research has shown that many effective programs were only successful incentivizing stormwater customers who were already inclined to participate or those requiring only slight persuasion. Efforts directed at those reluctant or skeptical of the incentive were usually unsuccessful (Crisostomo, Ellis, & Rendon, 2014).

Assess Incentive Approaches: Assess different incentive approaches and determine those most appropriate for the community and cost-effective for the Permittee. For example, if developing a rebate program, limit eligible BMPs to those likely to perform well and those worth stormwater customers' investments. Incentives must be high enough to motivate participation; however, the impact on total utility fee revenue requires assessment. Most incentive programs are funded by utility fees, and misjudged reductions or rebates could significantly reduce stormwater program revenues (Doll, Scodari, & Lindsey, 1998).

Determine Permittee Staff and Resource Needs: Developing and implementing an incentive program requires Permittee staff time and resources. For example, Thurston County developed a stormwater fee credit program for an area with a population of approximately 30,000, which required the combined staff time equivalent to approximately 1 FTE. This included research on similar programs, engaging with community members, building the program, and efforts to gain council approval. Administering and maintaining the existing program requires about 0.5 FTE each year.

At the time Thurston County developed its stormwater fee credit program, it already had a robust stormwater program. As such, additional resources, such as software to track and manage the incentive program, were not required (or part of the FTE estimate). Permittees with less-developed programs may need additional time and resources to set up the necessary processes and supporting software, if applicable. Permittees who already use software, such as an asset management program, may need to budget time for incorporating the incentive program into the existing software. Thurston County's stormwater fee credit program is further described in **Case Study 7.3**.

Develop an Application and Selection Process: Develop a process for stormwater customers to apply to the program and for program administrators to select eligible applicants. This process will vary across programs, but usually includes a pre-application screening, application submittal, and application review. A pre-application screening is beneficial for determining customer eligibility. This may also save Permittee resources by reducing the number of ineligible applications reviewed. Some rebate programs also require design plan submittal, or an initial site visit conducted by the Permittee or a qualified third party, before application approval.

Develop Maintenance and Inspection Requirements: Incorporate maintenance and inspection requirements into the incentive program. As described throughout this manual, maintaining BMPs is essential for long-term BMP performance. Inspecting and maintaining BMPs on private property is already required per the Phase II MS4 Permits; however, some incentive programs may require participating property owners to submit additional documentation. For example, submitting reports

to the program administrators detailing inspection and maintenance activities may be a requirement to continue receiving a utility fee reduction.

Evaluate and Adjust Program: After the incentive program is implemented, collect data, if applicable, and monitor program progress related to stormwater management goals. This may include routine check-ins with participating property owners and incorporating feedback into program processes. This evaluation should help determine whether the incentive program is beneficial for the jurisdiction. In addition, incentive programs may need to be adjusted as stormwater management requirements evolve.

Table 7-2 includes examples of stormwater incentive programs implemented by EWA and WWA Permittees. Municipal code sections detailing the incentive programs, if applicable, are provided in **Appendix 7-A**.

Table 7-2. Summary of stormwater incentive programs in Washington State

Permittee	Eligible Properties	Incentive Type	Incentive Description
City of Seattle[1]	Private properties	Fee Reduction/Credit	Reduced annual drainage fee for properties with fully functioning, well-maintained stormwater flow control and/or water quality treatment systems.
	Private property in an eligible combined sewer overflow basin	Rebate	The RainWise Program provides rebates (up to $4 per square foot of rooftop runoff controlled) for installing cisterns and/or rain gardens on private property.
City of Port Angeles[1,2]	New development or redevelopment projects with less than 5,000 square feet of new or replaced hard surfaces	Rebate	Property owners receive rebates for installing two or more of the following stormwater green infrastructure: • Permeable pavement ($1 per square foot, up to a maximum of $1,000) • Compost-amended soils in all disturbed areas not covered by new improvements (voucher for up to 10 yards of compost) • Rain gardens (up to $1,000 for materials to install rain gardens)
	Private properties	Rebate	The City provides rebates of up to $1,000 for building a rain garden at a home or place of business.
City of Yakima[1,2]	Commercial, industrial, and institutional properties	Fee Reduction/Credit	Eligible properties with a properly constructed and maintained stormwater facility receive a reduction of 20% from the annual drainage fee.
	Commercial and industrial	Fee Reduction/Credit	Owners of new or newly constructed commercial/industrial class buildings that utilize a properly constructed and maintained rainwater harvesting system

Permittee	Eligible Properties	Incentive Type	Incentive Description
			receive a 10% credit arising from the building upon which the system is used.
City of College Place[1]	Private properties	Fee Reduction/Credit	Businesses and residences may be candidates for a $2.79 per month credit if they have already installed engineered stormwater systems on private property.
City of Pullman[2]	Nonresidential properties	Fee Reduction/Credit	Owners of nonresidential class properties that utilize a properly constructed and maintained stormwater best management practice designed in accordance with City of Pullman Design Standards to control flow (e.g., detention pond) or to treat stormwater quality (e.g., bio-filtration) shall be eligible for a 10% credit applied toward that portion of their stormwater charge arising from the impervious surface area from which the practice receives runoff.
	Residential, commercial, industrial, and institutional	Fee Reduction/Credit	Owners of new or remodeled residential/commercial/ industrial/institutional class buildings that utilize a properly constructed and maintained permissive rainwater harvesting system shall be eligible for a 10% credit applied toward that portion of their stormwater charge arising from the building upon which the system is used.

1. For jurisdictions with websites that contain more information about the **Table 7-2** programs, those websites can be found by clicking on the jurisdictions named below:
    - City of Seattle Stormwater Facility Credit
    - City of Seattle RainWise Rebate
    - City of Port Angeles
    - City of Yakima
    - City of College Place
2. Reference **Appendix 7-A** for municipal code sections detailing the jurisdictions' incentive programs.

7.5 Case Studies

7.5.1 Case Study 7.1 – City of Pullman Stormwater Credits

The City of Pullman offers two types of stormwater credits involving stormwater BMPs on private property. Section 10.30.120 of the City's municipal code outlines the eligibility requirements and corresponding credit:

- *Credit for Rainwater Harvesting Systems* – Owners of new or remodeled residential/ commercial/industrial/institutional class buildings that utilize a properly constructed and maintained permissive rainwater harvesting system shall be eligible for a 10% credit applied toward that portion of their stormwater charge arising from the building upon which the system is used. Customers desiring this credit shall apply to the Finance Director and shall submit engineering design and operational information as deemed necessary by the Finance Director to make their evaluation and decision. The Finance Director will consider additional credit in excess of 10%, up to a maximum of 20%, based upon the amount of rainwater harvested. Rainwater harvesting and beneficial reuse of the runoff is found by the City Council to both reduce the burden imposed upon the system by the building by reducing runoff and to also have other beneficial water quality effects such as reduced consumption of potable water.
- *Credits for Stormwater Best Management Practices* – Owners of non-residential class properties that utilize a properly constructed and maintained stormwater best management practice designed in accordance with City of Pullman Design Standards to control flow (e.g., detention pond) and/or to treat stormwater quality (e.g., bio-filtration) shall be eligible for a 10% credit (up to 20% for both flow control and water quality treatment) applied toward that portion of their stormwater charge arising from the impervious surface area from which the BMP receives runoff. Customers desiring this credit shall apply to the Finance Director and shall submit engineering design and operational information as deemed necessary by the Finance Director to make an evaluation and decision. Properties that employ stormwater best management practices that control flow and improve water quality are found by the City Council to reduce the burden imposed upon the system.

The City developed these opportunities for stormwater credits when it first implemented a stormwater utility fee. The idea behind the credit program was to assist property owners most impacted by the utility fee, such as commercial and industrial sites with high amounts of impervious surfaces. Both existing and new development are eligible for the credits, and applying involves a simple one-page application. Several property owners applied for the stormwater credit when the utility fee was implemented; however, participation has decreased over the years. Overall, the program has been successful at reducing fees for those who participate and has not presented any internal challenges for the City.

7.5.2 Case Study 7.2 – City of Bellingham Homeowner Incentive Program

Lake Whatcom is a large natural lake in Whatcom County, located in the northwest corner of Washington State. A portion of the lake is located within the City of Bellingham. This area has become a popular place to live, as well as for various recreational activities. The lake also provides drinking water to approximately 96,000 people in the Bellingham area (Washington State Department of Ecology, N.D.). Increased development over the last several decades caused rising levels of phosphorus and fecal coliform bacteria in the lake, resulting in decreased dissolved oxygen. Low levels of oxygen threaten aquatic life, such as fish and aquatic plants. Consequently, Lake Whatcom was placed on Washington State's list of polluted water bodies in 1998 (Washington State Department of Ecology, N.D.). In 2016 the Environmental Protection Agency (EPA) approved the Lake Whatcom TMDL for total phosphorus and bacteria, and the City of Bellingham and Whatcom County developed an implementation plan for the lake water to meet state water quality standards by 2066.

The City of Bellingham installed filtration facilities throughout the watershed and continues to install facilities in feasible public locations; however, this alone is not enough to meet the City's TMDL requirements. Therefore, the City had to solicit help from the community to install stormwater controls on private property. One method to involve the community was developing the Homeowner Incentive Program (HIP). This program was implemented in 2011 and provides technical assistance and financial reimbursement to property owners within the Lake Whatcom watershed for voluntarily making water protection improvements on their properties. Property owners within the Bellingham city limits can receive a reimbursement of $1.60 per square foot of property area improved for eligible projects. For example, a facility that receives and treats runoff from 3,000 square feet of nearby surfaces, such as a lawn, driveway, or roof, can receive up to $4,800 in financial reimbursement (Lake Whatcom HIP, 2023). Types of eligible projects include native landscaping and underground pollution filters. Although portions of the Lake Whatcom watershed are not part of the City's MS4, such as 22 developed acres along the shoreline, this program is a good example of providing incentives for installing and maintaining BMPs on private property.

The City puts extensive effort into implementing this incentive program. For example, assistance is available for permitting, design, construction oversight, project inspection, and developing/ implementing erosion and sediment control plans. Operation and maintenance agreements are also developed and signed by each property owner. If the property owner documents completed maintenance, the City will also assist with maintenance costs. Because each project is permitted and maintenance agreements are utilized, the City has the right to inspect each facility and require property owners to maintain and/or rebuild the facility if necessary. City effort is also spent providing education and outreach for the program. Outreach consists of mailers, post cards, social media campaigns, bus ads, and promotion at native plant sales. Most of the outreach material directs property owners to a website created for the program detailing program purpose, process, example projects, program results, and frequently asked questions. The City also developed a manual for pre-approved BMPs. Additional educational materials and technical assistance are provided during on-site visits to each interested property. It is estimated that this one-on-one outreach has reached 50% of eligible property owners inside the City of Bellingham's portion of the watershed.

HIP has been successful with assisting the City to decrease total phosphorus and bacteria in Lake Whatcom. Since inception, City staff have conducted more than 400 site visits and helped over 200 property owners make water quality protection improvements. This equates to over 1.3 million square feet of property treated by water quality projects and more than $1M in reimbursements (Lake Whatcom HIP, 2023). HIP projects reduce phosphorus by approximately 28 pounds and prevent over 14,000 pounds of algae each year (Lake Whatcom HIP, 2023). The biggest challenge reported by the City was that, because the financial assistance is a reimbursement, the upfront cost required by property owners can be a financial barrier for program participation. Overall, HIP provides a water quality benefit to Lake Whatcom while creating unique outdoor spaces for property owners, potentially raising value and curb-appeal (Lake Whatcom HIP, 2023).

7.5.3 Case Study 7.3 – Thurston County Stormwater Fee Credit Program

In 2008, Thurston County increased stormwater utility rates and expanded the utility area. The County was concerned the rate increase would be a burden on industrial and commercial properties. In response, the County Board of Commissioners and the Stormwater Advisory Board conducted research on stormwater fee credits to help develop their own program. The boards examined 37 different stormwater credit programs to establish eligibility requirements and rate reductions that best suited the County's existing stormwater utility. Under the developed program, nonresidential parcels (including, but not limited to, retail, wholesale, or service businesses, offices, public buildings, and churches) are eligible for three separate stormwater credits, up to a maximum of 50%. A brief description of the credit programs is as follows:

- *Annual Facility Maintenance and Reporting Credit (25%)* – The intent of this credit is to recognize parcel owners that take proactive steps to regularly maintain and report their stormwater management activities. To be eligible for this credit, applicants must have an approved Maintenance and Inspection Agreement filed with the County Auditor. The applicant must also develop a Spill Plan in accordance with the Thurston County Business Pollution Prevention Program.

- *Third Party Certification Credit (50%)* – The intent of this credit is to offer incentives to applicants who voluntarily seek and receive certification from recognized third-party agencies or organizations to implement stormwater best management practices on their property. To be eligible for this credit, applicants must provide documentation for at least one of the following certifications:
    - Approved Conservation Plan – Thurston County Conservation District
    - Salmon-Safe Certification – Salmon-Safe, Inc.
    - Sustainable Forestry – Forest Stewardship Council
    - Green Building Certification – Built Green Washington, Built SMART, Earth Advantage, LEED, and others

  Other agencies or products that meet the intent of the credit may be considered by County Stormwater Utility staff upon owner request. Applicants must also submit an approved Maintenance Agreement with Thurston County, committing to maintaining facilities and implementing a Pollution Source Control Program.

- *Stormwater Best Management Practices Credit (5, 10, 25%)* – The intent of this credit is to encourage existing developed commercial business parcel owners to voluntarily make improvements to protect water quality through the reduction of impervious surfaces and enhanced water quality treatment. Applicants must: have an approved Maintenance Agreement with Thurston County; commit to maintaining facilities and implementing a Pollution Source Control Program as outlined in of the current Thurston County Drainage Design and Erosion Control Manual; and implement additional BMPs on their parcel. Credits range from 5%, for implementing one or more BMPs without documentation that a stormwater benefit will be achieved, to 25%, for implementing a BMP or series of BMPs with documentation that verifies a water quality benefit will be achieved consistent with the current Drainage Design and Erosion Control Manual.

Unfortunately, participation in the program is low, with approximately 1–5% of eligible property owners participating. The County believes one challenge for potential applicants with existing development is preparing and filing the Maintenance Agreement and Spill Plan with the County Auditor. This requires the property owner's time and effort to develop the documents and then visit the County Auditor during business hours. Property owners must also pay per sheet of the document when filing, which can become costly. The County is actively looking for ways to increase participation. Stormwater Utility staff are talking to property owners and even assisting with developing maintenance plans.

Although participation has been low, the Stormwater Fee Credit Program has been beneficial for participants. For example, businesses can use the money saved from the stormwater credit to offset annual maintenance costs. The County also found that participating property owners are more aware of their BMP maintenance and inspection responsibilities. These participants are also more likely to submit the required maintenance reports to continue receiving the stormwater credit, assisting the County with Phase II MS4 Permit compliance. Overall, the Stormwater Fee Credit Program encourages recordkeeping and engagement in on-site stormwater management.

7.6 Appendix

7.6.1 Appendix 7-A – Municipal Code for Stormwater Incentives

Documents included:

- City of Pullman 10.30.120 – Adjustment to Stormwater User's Fees
- City of Yakima 7.80.120 – Adjustment to stormwater user's fees
- City of Port Angeles 13.63.100 – Rate adjustment

City of Pullman 10.30.120 Adjustments to Stormwater User's Fees.

Credits allowed under this section shall not be cumulative. Credits or waivers granted by the Finance Director will become effective the billing month or cycle following the approval of the credit or waiver. Credits or waivers are not retroactive to current or prior billings and are only in effect beginning with the next billing cycle. Credits or waivers may be in effect for multiple future billing cycles provided that ongoing qualifying criteria are met. The Finance Director will take such time as necessary to process requests for credits or waivers in an orderly fashion.

(1) *Credits for Properties Covered by Industrial or Municipal Stormwater Permits.* The City Council recognizes that some parcel owners have been required or will be required to obtain coverage under a separate NPDES stormwater permit, which authorizes stormwater discharges associated with certain industrial or municipal activities. The City Council further recognizes that such permit holders are required to develop extensive stormwater management programs, which, when properly implemented, can reduce the discharge of pollutants into the public stormwater and surface water system and aid the City in controlling the overall effects of stormwater pollution. Parcels or portions of parcels that meet one of the criteria listed below, to the Finance Director's satisfaction, shall receive a reduction of 20% from the annual fee charged under PCC 10.30.110 as currently enacted or hereafter amended for that portion of the parcels covered under an applicable NPDES stormwater permit.

(a) *Any parcel that has an active and valid NPDES Industrial Stormwater Permit.* A copy of the permit and the Stormwater Pollution Prevention Plan (SWPPP) shall be provided to the Finance Director.

(b) *Any parcel that has an active and valid NPDES Municipal Stormwater Permit.* A copy of the permit and current version of the Stormwater Management Plan (SWMP) shall be provided to the Finance Director.

The property owner is responsible for providing all documentation necessary to demonstrate compliance with the above requirements. In the event that an applicable NPDES stormwater permit addresses only a portion of the total parcel, the credit will be applied to only that affected portion. Non-residential category property owners receiving credits shall agree to allow the City to periodically inspect/review any applicable on-site stormwater facilities and/or stormwater management activities conducted by permit

holders. Failure to comply with these provisions may be cause for termination of the adjustment authorized by this section.

(2) *Credit for Rainwater Harvesting Systems.*

(a) Per RCW 35.67.020 (3), owners of new or remodeled residential/ commercial/ industrial/ institutional class buildings that utilize a properly constructed and maintained permissive rainwater harvesting system shall be eligible for a 10% credit applied toward that portion of their stormwater charge arising from the building upon which the system is used.

(b) Customers desiring this credit shall apply to the Finance Director and shall submit engineering design and operational information as deemed necessary by the Finance Director to make their evaluation and decision. The Finance Director will consider additional credit in excess of 10%, up to a maximum of 20%, based upon the amount of rainwater harvested. Rainwater harvesting and beneficial reuse of the runoff is found by the City Council to both reduce the burden imposed upon the system by the building by reducing runoff and to also have other beneficial water quality effects such as reduced consumption of potable water.

(3) *Credits for Stormwater Best Management Practices.*

(a) Owners of non-residential class properties that utilize a properly constructed and maintained stormwater best management practice designed in accordance with City of Pullman Design Standards to control flow (i.e. detention pond) shall be eligible for a 10% credit applied toward that portion of their stormwater charge arising from the impervious surface area from which the practice receives runoff.

(b) Owners of non-residential class properties that utilize a properly constructed and maintained stormwater best management practice designed in accordance with City of Pullman Design Standards to treat stormwater quality (i.e. bio-filtration) shall be eligible for a 10% credit applied toward that portion of their stormwater charge arising from the impervious surface area from which the practice receives runoff.

(c) Customers desiring this credit shall apply to the Finance Director and shall submit engineering design and operational information as deemed necessary by the Finance Director to make an evaluation and decision. Properties that employ stormwater best

management practices that control flow and improve water quality are found by the City Council to reduce the burden imposed upon the system.

(4) *Credits for Schools Participating in Stormwater and Surface Water Education.* The City Council finds that many of the concerns about stormwater quality are created by a general lack of knowledge about the relationship between human activities and the health of the environment. The City Council also finds that Public and Private schools can provide regional benefits to the City's Stormwater and Surface Water Management Program by carrying out certain types of educational and community activities related to protection and enhancement of surface water, groundwater, and stormwater quality. Kindergarten through grade 12 schools that are in compliance with all requirements for their own stormwater facilities, and that are carrying out surface water, groundwater, and stormwater quality educational and community activities in cooperation with the City may apply to the Finance Director for a credit, up to a maximum of 20%, towards their stormwater fees. The amount of an approved credit shall depend upon the nature and extent of the programs and activities being performed. Schools shall pay the full charge under PCC 10.30.110 as currently enacted or hereafter amended until such time as a credit is granted by the Finance Director.

(5) *Waiver of Utility Fees for Certain Property.* The Finance Director shall waive stormwater and surface water utility fees for a parcel falling within the following special categories of property upon a showing that the parcel meets the following applicable criteria for so long as the criteria are met:

(a) Fees shall be waived for streets, City rights-of-way, and airport runways and taxiways provided that the City transportation system continues to be an integral component of the City stormwater control facility.

(b) Fees shall be waived for municipal parks, public trails and bike paths so long as their owners cooperate with the utility in the provisions of educational services and water quality control efforts. Parks, trails and bike paths have minimal intensity of impervious development and provide opportunities for natural resource education and development of an appreciation for water quality.

(c) Fees shall be waived for all undeveloped parcels. The City Council finds that such parcels generally have no improvements built on them, generate little to no traffic, generate less runoff, and generally are in a natural state, thereby imposing no burden upon the system and receiving no benefit from the utility's services and facilities.

Information that a property categorized as undeveloped is being used otherwise may result in a loss of this waiver. (Ord. 09-13 §2, 2009).

The Pullman City Code is current through Ordinance 22-22, passed October 19, 2022.

Disclaimer: The City Clerk's Office has the official version of the Pullman City Code. Users should contact the City Clerk's Office for ordinances passed subsequent to the ordinance cited above.

City Website: www.pullman-wa.gov
Code Publishing Company

City of Yakima 7.80.120 Adjustments to stormwater user's fees.

Credits allowed under this section shall not be cumulative. Except for the first- and second-year credits that will be given to all commercial, industrial, and institutional parcels, credits or waivers must be granted by the engineer by October 15th of a given year in order for the credit or waiver to be in effect for the following billing year. Credits or waivers are not retroactive to current or prior billings and are only in effect for the next billing year. Credits or waivers may be in effect for multiple future billing years; provided, that ongoing qualifying criteria are met. The engineer will take such time as necessary to process requests for credits or waivers in an orderly fashion.

(A) Credits for Qualified Stormwater Facilities. The city council recognizes that some parcel owners have constructed or will construct private on-site stormwater quality and quantity mitigation facilities, which when properly operated and maintained will aid the city in controlling the overall effects of stormwater pollution. Parcels or portions of parcels with facilities that meet one of the criteria listed below, to the engineer's satisfaction, shall receive a reduction of twenty percent from the annual fee charged for that portion of the site draining to such facilities:

(1) Any commercial/industrial/institutional parcel with a properly constructed and maintained stormwater facility that meets or exceeds the design requirements of the 2004 Department of Ecology Stormwater Management Manual for Eastern Washington or an equivalent design manual adopted by the city. Owners of subsurface stormwater infiltration systems shall provide evidence of compliance with the Washington State Underground Injection Control Program in order to receive the credit.

(2) Any parcel that has an active and valid NPDES Industrial Stormwater Permit. A copy of the permit and the stormwater pollution prevention plan (SWPPP) shall be provided to the engineer.

The property owner is responsible for providing all documentation necessary to demonstrate compliance with the above requirements. Documentation shall be by a licensed civil engineer with the state of Washington. In the event facilities or control measures address only a portion of the total parcel, the credit will be applied to only that affected portion. The customer must maintain any water quantity and/or quality control facility in accordance with Department of Ecology maintenance guidelines and appropriate practices to ensure proper function and effectiveness of the facility. Commercial/industrial/institutional parcel owners receiving credits shall agree to allow the city to periodically inspect the subject stormwater facilities. The city may request documentation from facility owners to verify that proper maintenance has been performed. The city may notify owners in writing of maintenance needs or deficiencies. Failure to maintain the facilities within thirty days after written notice may be cause for termination of the adjustment authorized by this section.

(B) Credit for Rainwater Harvesting Systems. Upon review and approval by the engineer, owners of new or newly constructed commercial/industrial class buildings that utilize a properly constructed and maintained permissive rainwater harvesting system shall be eligible for a ten percent credit applied toward that portion of their stormwater charge arising from the building upon which the system is used. Customers desiring this credit shall apply to the engineer and shall submit engineering design and operational information as deemed necessary by the engineer to make their evaluation and decision. Rainwater harvesting and beneficial reuse of the runoff is found by the city council to both reduce the burden imposed upon the system by the building by reducing runoff and to also have other beneficial water quality effects such as reduced consumption of potable water.

(C) Waiver of Utility Fees for Certain Property. The engineer shall waive stormwater and surface water utility fees for a parcel falling within the following special categories of property upon a showing that the parcel meets the following applicable criteria for so long as the criteria are met:

(1) Fees shall be waived for city streets and street rights-of-way, since they act as stormwater conveyance facilities during large floods. The city streets fund also contributes to the proper operation, maintenance, repair, improvement, and construction of the street drainage system.

(2) Fees shall be waived for state of Washington highway rights-of-way, so long as the state of Washington cooperates with the utility in the provision of services and maintains, constructs and improves all drainage facilities contained within such rights-of-way as required by the utility in conformance with all utility standards for maintenance, construction and improvement hereafter established by the utility and so far as such maintenance, construction and improvements shall be achieved at no cost to the utility or to the city.

(3) Fees shall be waived for municipal, county, state and federal parks, fishing areas, wildlife reserves, public trails and bike paths so long as their owners cooperate with the utility in the provision of educational services and water quality control efforts. Fees shall be waived to the degree that such property owners offset the costs of the utility to manage the burdens imposed by such parcels. Parks, trails and bike paths have minimal intensity of impervious development and provide opportunities for natural resource education and development of an appreciation for water quality.

(4) Fees shall be waived for all vacant/undeveloped parcels. The city council finds that such parcels generally have no improvements built on them, generate little to no traffic, utilize no chemicals, and generally are in a natural state, thereby imposing no burden upon the system and receiving no benefit from the utility's services and facilities. Information that a property categorized as vacant or undeveloped is being used otherwise may result in a loss of this waiver. (Ord. 2008-54 § 2, 2008: Ord. 2007-55 § 2, 2007: Ord. 2004-73 § 1 (part), 2004).

City of Port Angeles 13.63.100 Rate adjustment.

A. Stormwater rebates may be issued for retrofit, new development or redevelopment projects that meet the following conditions:

   1. Overall project with less than 5,000 square feet of new or replaced hard surfaces, and implements two or more of the following:

      a. Permeable pavement;

      b. Compost amended soils per BMP T5.13 in all disturbed area not covered by new improvements;

      c. Rain gardens.

   2. LID facilities and best management practices (BMPs) listed in subsection A.1 above, must be designed and maintained in accordance with the Department of Ecology's SWMMWW (2014).

   3. Stormwater rebates as available funding allows include the following:

      a. Permeable pavement: $1.00 per square foot towards materials, up to a maximum rebate of $1,000.00 per household or business.

      b. Compost amended soils: Voucher for ten cubic yards of Garden Glory compost.

      c. Rain gardens: Rebate for materials to install a rain garden, up to a maximum rebate of $1,000.00, per household or business.

B. Stormwater rebates may be issued for retrofit, new development, or redevelopment project that meet the following conditions:

   1. Overall project is less than the minimum requirement #5 threshold (see Chapter 5 of the City of Port Angeles Urban Service Standards and Guidelines) or is a retrofit project that implements a rain garden.

   2. Rain gardens must be designed and maintained in accordance with the Department of Ecology's SWMMWW (2014).

   3. Stormwater rebates as available funding allows include a rebate for materials to install a rain garden, up to a maximum rebate of $1,000.00, per household or business.

C. A property owner may request a rate adjustment to the annual charge set forth in PAMC 13.63.100, only if the property contains no hard surfaces or if the property owner disagrees with the City's calculations of the rate, or the amount of hard surface area used by the City in calculating the rate, under PAMC 13.63.100.C. A request for an adjustment shall be submitted in writing to the Director of Public Works and Utilities. If the property contains no hard surfaces, the rate shall be adjusted to zero. If the City's calculations or amount of hard surfaces under PAMC 13.63.100.C is incorrect, the rate shall be adjusted accordingly. Approved adjustments will be applied prospectively except that reimbursement for overcharges paid by the property owner will be made by the City for the year during which the adjustment is requested and for the prior year.

D. Any person aggrieved by a decision of the Director of Public Works and Utilities relating to a request for a rate adjustment authorized by PAMC 13.63.110 may appeal the Director's decision to the City Manager within 30 days of the date of the Director's decision. The City Manager's decision shall be final.

(Ord. 3694 § 2, 7/5/2022; Ord. 3568 § 1, 12/20/2016; Ord. 3367 § 2, 8/15/2009)

Chapter 8
Enforcement Mechanisms

Chapter Contents

8.1 Chapter Overview

This chapter describes different enforcement mechanisms Permittees can employ when BMP owners fail to comply with inspection and maintenance requirements. Enforcing BMP maintenance is necessary to ensure property owners maintain their BMPs so the facilities function as designed by continuing to mimic natural hydrology and/or remove stormwater pollutants (Blecken, Hunt III, Al-Rubaei, Viklander, & Lord, 2017). Successful enforcement procedures also allow Permittees to recover costs resulting from Permittee-assumed maintenance and/or repair of unmaintained BMPs. The Eastern Washington (EWA) and Western Washington (WWA) Phase II MS4 Permits require Permittees to implement progressive enforcement strategies and encourage Permittees to provide informal noncompliance actions, such as education and technical assistance, before issuing penalties (Washington State Department of Ecology, 2019a; Washington State Department of Ecology, 2019b). This chapter provides an overview of progressive enforcement, outlines different enforcement mechanisms, and gives examples of enforcement actions for both EWA and WWA Permittees.

8.2 Permit Requirements

Sections S5.A.5 and S5.B.5 of the EWA Phase II MS4 Permit and Sections S5.A.3, S5.C.6 and S5.C.7 of the WWA Phase II MS4 Permit provide requirements concerning enforcement mechanisms for installing, maintaining, and inspecting BMPs on private property. **Table 8-1** presents a summary of the requirements in the EWA and WWA Phase II MS4 Permits pertaining to this chapter.

Table 8-1. Summary of enforcement mechanism requirements in the EWA and WWA Phase II MS4 Permits

EWA Phase II	WWA Phase II
Tracking Enforcement Actions	
S5.A.5.a.i Each Permittee shall track the number of inspections performed, follow-up actions as a result of inspections, official enforcement actions taken, and types of public education activities implemented as required for each SWMP	**S5.A.3.b** Each Permittee shall track the number of inspections, follow-up actions as a result of inspections, official enforcement actions and types of public education activities as required by the respective program component. This information shall be included in the Annual Report.

EWA Phase II	WWA Phase II
component. This information shall be included in the Annual Report.	
Enforcement Ordinances	
S5.B.5.b.iv The Permittee shall develop an ordinance or other regulatory mechanism that includes appropriate, escalating enforcement procedures and actions.	**S5.C.7.b.i.a** The Permittee shall implement an ordinance or other enforceable mechanism that: • Clearly identifies the party responsible for maintenance in accordance with maintenance standards established under S5.C.7.a. • Requires inspection of facilities in accordance with the requirements in (b), below. • Establishes enforcement procedures.
Enforcement Strategy	
S5.B.5.b.v The Permittee shall implement an enforcement strategy and the enforcement provisions of the ordinance or other regulatory mechanism.	**S5.C.6.c.v.iii** An enforcement strategy shall be implemented to respond to issues of non-compliance.

8.3 Progressive Enforcement

As described in the previous sections, the EWA and WWA Phase II MS4 Permits require Permittees to implement a progressive enforcement strategy. In the context of this chapter, progressive enforcement actions would increase in severity as property owners are not responsive or based on the degree of threat to public safety and environmental harm (Herrera Environmental Consultants, Inc., 2022). While the Phase II MS4 Permits require this strategy, they do not outline the specific enforcement steps Permittees must follow. Ultimately, it is up to the Permittee to develop a progressive strategy best suited for their jurisdiction. Although specific progressive enforcement procedures may vary across jurisdictions, education and technical assistance is emphasized before escalating enforcement actions. However, if the violation warrants immediate action (e.g., threat to public safety or environmental harm), Permittees often have the right, by jurisdictional code or policy, to skip preliminary enforcement actions to a suitable penalty (King County, 2018). Permittees typically include a variety of steps in their enforcement procedures, and the procedures may diverge based on the type and severity of the violation (Herrera Environmental Consultants, Inc., 2022). The following are examples of common steps used in progressive enforcement.

Education and Technical Assistance: The Permittee provides education and technical assistance to support the property owner in correcting the identified issue. The goal is to educate the property owner and to prevent future noncompliance. This may include training the property owner during a site visit and providing technical resources. Based on informal discussions with EWA and WWA Phase II MS4 Permittees, most noted they resolve nearly all noncompliance issues with education and technical assistance. Escalating to other enforcement actions is rarely necessary.

Notice of Correction: The Permittee issues a notice of correction to the responsible party when the Permittee becomes aware of conditions that are noncompliant during any site inspection that is not focused on providing education and technical assistance. The notice may include a description of the condition that is noncompliant, a statement of what is required to achieve compliance, the date by which compliance must be achieved, and contacts for technical assistance or resources (RCW 43.05.060). Some Permittees give property owners the opportunity to enter into a voluntary compliance agreement during this enforcement step. A voluntary compliance agreement is a written, signed commitment by the party responsible for the violation, agreeing to correct the violation (City of Spokane Valley Municipal Code 17.100.110). Notices of correction generally do not include civil or criminal penalties.

Notice of Violation/Notice and Order: The Permittee issues a notice of violation/notice and order to the responsible party when the Permittee identifies a violation of the applicable stormwater code and/or the terms of a voluntary compliance agreement have not been met (City of Spokane Valley Municipal Code 17.100.130). Some Permittees may decide to administer a civil penalty with the notice of violation (City of Vancouver Municipal Code 22.02.020).

Stop Work Order/Cease and Desist Order: The Permittee issues a stop work order/cease and desist order to the responsible party when the Permittee identifies a violation or continued violation of the applicable stormwater code. This notice orders the responsible party to halt operation and take appropriate remedial action (City of Yakima Municipal Code 7.85.130). Stop work orders may also be issued when the violation causes risk to the public or harm to the environment. Violations of stop work orders may result in civil or criminal penalties (Thurston County Code 26.05.060).

Civil/Administrative Penalties: A civil/administrative penalty is a noncriminal remedy for violating the law, generally in the form of fines or other financial payments (Cornell Law School, 2023). The Phase II MS4 Permits abide by the Code of Federal Regulation 40 CFR 122.41(a)(3), which sets maximum fines for violating permit conditions (Herrera Environmental Consultants, Inc., 2022) (see **Table 8-2**). **Section 8.4** describes different ways Permittees structure and administer civil penalties.

Criminal Penalties: A criminal penalty is a punishment imposed on a person who violates the law. Examples of criminal penalties include fines or other financial payments, losing or surrendering property, and imprisonment (Cornell Law School, 2023). 40 CFR 122.41(a)(2) sets maximum penalties for those negligently violating Phase II MS4 Permit conditions, knowingly violating Phase II MS4 Permit conditions, and knowingly putting another person in imminent danger of death or serious bodily injury (see **Table 8-3**).

Cost Recovery: In addition to other remedies, Permittees may decide to charge the responsible party for the costs of pursuing code compliance and abatement incurred to correct a code violation upon issuing a notice and order or stop work order (City of Spokane Valley Municipal Code 17.100.300). This may include placing a lien against a property to ensure the jurisdiction recovers costs for penalties as well as repairs, maintenance, and/or attorney fees (City of Bellingham Municipal Code 15.42.070).

Table 8-2. Maximum fines for civil penalties

Violation	Maximum Fine
Class I	Not to exceed $10,000 per violation. Maximum amount of any Class I penalty not to exceed $25,000.
Class II	Not to exceed $10,000 per day for each day during which the violation continues. Maximum amount of any Class II penalty not to exceed $125,000.

Table 8-3. Maximum penalties for criminal violations

Violation	Maximum Fine
Negligent Violation	
First Violation	$2,500 to $25,000 per day of violation, or imprisonment of not more than 1 year, or both.
Second or Subsequent Conviction	Not more than $50,000 per day of violation, or by imprisonment of not more than 2 years, or both.
Knowing Violation	
First Violation	$5,000 to $50,000 per day of violation, or imprisonment of not more than 3 years, or both.
Second or Subsequent Conviction	Not more than $100,000 per day of violation, or by imprisonment of not more than 6 years, or both.
Imminent Danger Violation	
First Violation	Not more than $250,000 per day of violation, or by imprisonment of not more than 15 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the Clean Water Act (CWA), shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000.
Second or Subsequent Conviction	Not more than $500,000 per day of violation, or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $2,000,000 for second or subsequent violations.

8.4 Civil Penalty Structures

Permittees across Washington State utilize different civil penalty structures. Like enforcement procedures, the Phase II MS4 Permits do not dictate a specific schedule of fines. It is up to the Permittee to develop a penalty structure best suited for their jurisdiction that abides by 40 CFR 122.41. This section presents common penalty structures and example penalties from EWA and WWA municipal codes. Permittees should consult with their legal counsel while developing enforcement procedures and penalty structures to ensure the strategy is legal and enforceable (Herrera Environmental Consultants, Inc., 2022).

Max/Min Penalty per Day and/or Violation: Permittees administer a minimum and/or maximum fine either per day or per day per violation (see **Table 8-4**).

Escalating Penalty: The fine administered by Permittees increases in value per day or per violation (see **Table 8-5**).

Penalty Matrix: Permittees assess the violations and determine fines using a point system. Point systems generally have multiple categories, such as environmental or resource damage; actions taken to remedy a problem after violation; whether or not it was a willful or knowing violation; and compliance history (King County, 2018). Each category has a rating system with points increasing based on severity and knowledge or intent of the violation (Herrera Environmental Consultants, Inc., 2022). The fine is then determined by summing the points from each category. **Appendix 8-A** provides examples of enforcement procedures utilizing penalty matrices in King County and the City of Seattle (Phase I Permittees).

Table 8-4. Examples of max/min per day and/or violation penalties

Jurisdiction (Code Section)	Civil Penalty
City of Yakima (7.83.280)	The amount of such civil penalty shall be up to $1,000 per violation, plus actual damages, costs and expenses incurred by the city.
City of Pullman (10.32.170)	A cumulative civil penalty in an amount up to $1,000 per day for each violation from the date set for compliance until the date of compliance.
City of Port Angeles (13.63.450)	The penalty shall not be less than $100 or exceed $1,000 for each violation.
City of Bainbridge Island (15.20.080)	A cumulative civil penalty in the amount of $1,000 per day for each violation from the date set for compliance until the date of compliance.
City of Bellingham (15.42.070)	A violation shall be considered an infraction, punishable by a stop work order and/or a fine of up to $500.00. Each day of a continued violation or repeated violation shall constitute a separate violation.

Table 8-5. Examples of escalating fines

Violation	Civil Penalty
City of Spokane Valley (17.100.250)	
First Violation	$500
Second separate violation within three-year period (may be same type of nuisance as initial violation)	$1,000
Each subsequent separate violation within three-year period (may be same type of nuisance as previous violation(s))	$2,000
Violation which is likely to result in an economic benefit to the person responsible for the violation	$10,000
Chronic nuisance violation pursuant to SVMC 7.05.045	$2,500

Violation	Civil Penalty
City of Clarkston (14.21.190)	
First Violation	Up to $1,000 per day may be imposed until the violation is abated.
Second and subsequent violations within 12 months	Second and subsequent violations within 12 months constitute a misdemeanor pursuant to RCW 9A.20.010(2). The penalty for second violations will increase. The first day of a violation, the fine will be up to $100.00; the second day the violation continues, the fine will be up to $200.00; the third day and every subsequent day the violation continues the fine will be $300.00 up to $1,000 and 30 days in the county jail.
City of Vancouver (22.02.070)	
First Violation	$250
Second Violation	$500
Subsequent Violations	$1,000

8.5 Developing Enforcement Procedures

Successfully designed enforcement procedures encourage BMP owners to respond in a timely manner when a Permittee identifies noncompliance. Detailed and comprehensive documentation is a critical component of developing effective enforcement. This helps prevent confusion, promote a consistent response to violations, and potentially protect the Permittee during disputes with violators over stormwater pollution prevention. When necessary, enforcement actions should occur quickly and follow the jurisdiction's established procedures (City of Alexandria, 2018). The following elements are recommended for Permittees to consider when developing enforcement procedures. **Table 8-6** provides examples of enforcement actions for EWA and WWA Permittees, and **Appendix 8-B** provides a violation flow chart for the City of Wenatchee.

Evaluate Existing Enforcement Procedures: Many Phase II MS4 Permittees across Washington State already have established enforcement procedures for other stormwater programs, such as construction site inspections and illicit discharge detection and elimination (IDDE). Prior to developing new procedures, Permittees should assess whether existing enforcement procedures are appropriate for imposing maintenance and inspection of privately owned BMPs. Permittees should also consider who will be responsible for enforcement. Training regarding privately owned BMPs may be needed if existing code enforcement officers belong to other departments. If the Permittee does not have existing code enforcement officers, or if additional capacity is not available, the Permittee can consider granting enforcement authority to a staff member within the stormwater program (Herrera Environmental Consultants, Inc., 2022).

Develop Enforcement Procedures and Actions: If new enforcement procedures are necessary, evaluate different enforcement actions and determine the types of actions (see **Section 8.3**) and the sequence best suited for the jurisdiction. The Permittee should also establish the structure, criteria, and process for assessing fines if imposing civil penalties (see **Section 8.4**). Consulting with legal counsel early and

often during this process is important to ensure the strategy is legal and enforceable (Herrera Environmental Consultants, Inc., 2022). As previously mentioned, documenting procedures and processes is also critical. Documenting enforcement actions and civil and criminal penalties through ordinances provides Permittees with the best enforcement authority. However, documenting supporting processes, such as penalty matrix implementation (see **Appendix 8-A**), may be better suited for a Public Rule or policy that provides flexibility for program growth and adaptation (Herrera Environmental Consultants, Inc., 2022). Refer to **Chapter 6** for more information regarding regulatory mechanisms.

Establish Documentation and Tracking: The Phase II MS4 Permits require Permittees to track enforcement actions taken each year and submit the information as part of the annual report (Washington State Department of Ecology, 2019a; Washington State Department of Ecology, 2019b). Documenting information such as inspection reports, notices of correction, notices of violation, and other enforcement records is recommended to demonstrate the Permittee's effort to bring the BMP owner into compliance. **Chapter 4** provides more information regarding documentation and recordkeeping methods. Providing written documentation to the property owner for each step in a progressive enforcement strategy is also advised to communicate needed action and potential penalties (Herrera Environmental Consultants, Inc., 2022).

Table 8-6. Examples of enforcement actions for EWA and WWA Permittees

Enforcement Action	Description
City of Spokane Valley (17.100)	
Voluntary Compliance Agreement	Whenever the City determines that a code violation has occurred or is occurring, the City shall make reasonable effort to secure voluntary compliance from the person responsible for the code violation.
Notice and Order	When the City has reason to believe, based on investigation of documents and/or physical evidence, that a code violation exists or has occurred, or that the terms of a voluntary compliance agreement have not been met, the City is authorized to issue a notice and order to any person responsible for a code violation. The City shall make a determination whether or not to issue a notice and order within a reasonable period after determining that a violation exists, after issuing a warning if one is given, or within 10 days of the end of a voluntary compliance agreement time period which has not been met.
Stop Work Order	The City is authorized to issue a stop work order to a person responsible for a code violation. Issuance of a notice and order is not a condition precedent to the issuance of the stop work order. A stop work order represents a determination that a code violation has occurred or is occurring, and that any work or activity that caused, is causing or contributing to the violation on the property where the violation has occurred, or is occurring, must cease. A stop work order may be enforced by the City police.

Enforcement Action	Description
Civil Penalties	In addition to any other judicial or administrative remedy, the City may assess civil penalties for the violation of any stop work order according to the civil penalty schedule established in SVMC 17.100.250. (See **Table 8-5**)
Cost Recovery	In addition to the other remedies pursuant to Chapter 17.100 SVMC, upon issuance of a notice and order or stop work order the City shall charge the costs of pursuing code compliance and abatement incurred to correct a code violation to the person responsible for a code violation.
Abatement	The City may seek a judicial abatement order from Spokane County superior court to abate a condition deemed a chronic nuisance pursuant to SVMC 7.05.045 where other methods of remedial action have failed to produce compliance.
Judicial Enforcement	In addition to any other judicial or administrative remedy, the City may seek enforcement of the City's order in Spokane County superior court.
	City of Wenatchee (Title 16)
Voluntary Compliance	The administrator shall pursue a reasonable attempt to secure voluntary correction of violations subject to WCC 16.06.010(2). Attempts to secure voluntary compliance may include but are not limited to personal correspondence, correction notices, and providing educational materials such as door hangers, mailers, and brochures.
Code Violations	When the administrator determines that a violation has occurred or is occurring, and is unable to secure voluntary correction pursuant to Chapter 16.04 WCC, the administrator may issue a notice of code violation to any and all person(s) responsible for the violation.
Civil Infractions	The administrator shall hereby have the authority to issue a civil infraction on behalf of the city for violations of the Wenatchee City Code that shall be punishable pursuant to this title.
Repeat Violation	A repeat violation shall be processed and punished according to the schedule provided in Chapter 16.10.
Revocation of Permit or License	In addition to other remedies provided for elsewhere, the administrator has the authority to issue an order for the revocation of any permit or license if he or she finds the permittee or licensee has not complied with any or all conditions or limitations set forth in the permit or license or is in violation of any Wenatchee City Code or ordinance section.
Abatement	Whenever any violation of a Wenatchee City Code or ordinance section causes a condition, the continued existence of which constitutes an immediate and emergent threat to the public health, safety or welfare or to the environment, the city may summarily and without prior notice abate the condition. As soon as reasonably possible after the abatement, written notice of

Enforcement Action	Description
	such abatement, including the reason for it, shall be served upon the person responsible for the violation.
City of Vancouver (20.02.020)	
Correction Notice	The city official may issue a correction notice to the person responsible for a violation. The correction notice shall conform to the requirements in VMC 22.02.030. The correction notice shall not impose civil or criminal penalties, and the correction notice is not subject to appeal.
Notice of Civil Violation and Order	The city official may issue a notice of civil violation and order to the person responsible for a violation. The notice of civil violation and order may require corrective action or actions and impose monetary penalties according to VMC 22.02.070(D).
Order to Revoke Permit	The city official may issue an order to revoke a permit. An order to revoke a permit may be appropriate if the permittee is not complying with the terms of the permit or approved plans; or if the permit is issued in error; or if a permit is issued based upon incorrect information; or if the work is, in the city official's judgment, adversely affecting or about to adversely affect adjacent property or rights-of-way, a drainageway, watercourse, critical area or stormwater facility, or city water system; or if the issuance of the permit is a hazard to the public health, safety, or welfare; or if a permit is contrary to law.
Summary Abatement	Whenever any violation of the VMC poses an imminent threat to the health, safety, or welfare of persons or property, or to the environment, the city official may immediately order that the violation be abated in conformance with the requirements contained in VMC 22.02.080.
Criminal Prosecution	The city official may refer a violation to the city prosecutor for criminal prosecution.
City of Bellingham (15.42.070)	
Orders	The director shall have the authority to issue to an owner or person an order to install, maintain or repair a component of a stormwater facility or BMP to bring it in compliance with this chapter, the Ecology Manual (current edition), and/or city regulations.
Civil Penalty	In addition to any other remedy or sanction available, a person who fails to comply with a final order issued by the director or city council pursuant to this chapter, or who fails to conform to the terms of an approval issued, shall be subject to a civil penalty and/or a stop work order. (See **Table 8-4.**)
City Action	In addition to any other remedies the city may have under this chapter or at law or in equity, nothing in this chapter or elsewhere within this code shall prevent the city from effecting repairs or maintenance to stormwater facilities if the director of public works (or designee) determines that imminent danger to public safety, health or welfare, or public or private property, or

Enforcement Action	Description
	critical areas or habitat is likely as a result of the actions or inaction of the property owner(s). If the city affects repairs or maintenance, the cost will be charged to the property owner(s) together with any penalties incurred under this chapter and any costs of collection (including attorneys' fees), all of which shall be considered a lien against the subject property and also collectable as a personal debt against the property owner(s).
Infraction – Penalty	A violation of any provision of this chapter, other than as set forth in BMC 15.42.110, shall be considered an infraction, punishable by a stop work order and/or a fine of up to $500.00. Each day of continued violation or repeated violation shall constitute a separate violation. This penalty shall be in addition to any other remedy or sanction provided in this chapter or by other law or in equity.
Misdemeanors – Penalty	Any violation of this chapter which results in damage to public or private property, other than the property of the violator, in an amount greater than $250.00, or which results in any physical injury to a person, shall be a misdemeanor. For purposes of this section, "damage" shall include cost to restore as well as loss of value. Each second or subsequent violation of this chapter by any person within a period of three years may be a misdemeanor. Any violation of this chapter committed intentionally by any person may be a misdemeanor. Each misdemeanor shall be punishable by a fine not to exceed $1,000. This penalty shall be in addition to any other remedy or sanction provided in this chapter or by other law or in equity.

8.6 Appendices

8.6.1 Appendix 8-A – Enforcement Procedures Utilizing a Penalty Matrix

Documents included:

- PUT-8-23 (PR) Stormwater Enforcement – King County
- City of Seattle Stormwater Manual July 2021, Volume 5: Enforcement – City of Seattle

Document Code No.: *PUT-8-23 (PR)*
Title: *Stormwater Enforcement*
Effective Date:
Authorities: *King County Code Chapter 9*
Keywords: *stormwater drainage enforcement*
Sponsoring Agency: *Department of Natural Resources and Parks*

Signature: _____

Date signed: 1/19/18

King County

I. Purpose

To establish procedures and criteria for the Water and Land Resources Division in determining penalties for the enforcement of King County Code 9.12, which regulates water quality for surface water, stormwater, and groundwater.

Applicability and Audience
This rule applies to:

The public, including businesses, organizations, public agencies, property managers, residents, and property users and property owners within unincorporated King County; and

Department of Natural Resources and Parks (DNRP), and its Water and Land Resources Division (WLRD), or their successor agencies.

II. References

King County Code (K.C.C.) Chapter 9.12, Water Quality Ordinances 18481 and 10636
Stormwater Pollution Prevention Manual (SPPM)
Surface Water Design Manual (SWDM)
King County Code Title 23
King County Code Chapter 2.98
King County's National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permit

III. Definitions

"Best Management Practices" shall mean the best available and reasonable physical, structural, managerial, or behavioral activities, that when used independently or in combination, eliminate or reduce the contamination of both surface and ground waters.

"**Businesses, residents or other organizations**" shall mean businesses, organizations, public agencies, and all property owners within unincorporated King County.

"Cease Discharge Order" means a written order to immediately cease the activity or activities causing or contributing to the discharge of a prohibited substance to stormwater, surface water, groundwater or the conveyance system, or to any combination thereof. A cease discharge order is a form of a stop work order under K.C.C. chapter 23.28.

"Corrective Action Letter" A letter sent to the responsible party after an inspection by WLRD, that identifies the items out of compliance with the SPPM and/or K.C.C. Chapter 9.12 and what steps that need to be taken by when in order to come into compliance.

"Director" means the director of the department of natural resources and parks, or the authorized representatives of the director, including compliance officers and inspectors whose responsibility includes the detection and reporting of code violations.

"Drainage facility" means a constructed or engineered feature that collects, conveys, stores, treats or otherwise manages stormwater runoff or surface water. "Drainage facility" includes, but is not limited to, a constructed or engineered stream, lake, wetland or closed depression, or a pipe, channel, ditch, gutter, flow control facility, flow control BMP, water quality facility, erosion and sediment control facility and any other structure and appurtenance that provides for drainage.

"**Illicit Connection**" means any human-made connection to the storm drain system, surface water or groundwater that the director determines based on an investigation or other evidence is not composed entirely of stormwater. For the purposes of this subsection, "human-made connections" include, but are not limited to, sanitary sewer connections, floor drains, channels, pipelines, conduits, inlets, hoses, above-ground piping or outlets, that discharge directly to the storm drain system, surface water or groundwater.

"Maintenance Correction Letter" is a letter sent to a drainage facility owner listing any maintenance or operational deficiencies observed during a drainage facility inspection by WLRD. The letter specifies what needs to be corrected by what date in order to bring the facility into compliance based on the standards in the King County Surface Water Design Manual.

"Prohibited Discharge" also known as an "Illicit Discharge", means any direct or indirect action of discharging anything other than stormwater to the conveyance system, stormwater, surface water or groundwater, except as expressly allowed by K.C.C. 9.12.

"Responsible party" means the owner, operator or occupant of property; or any person causing or contributing to an action prohibited by K.C.C. Chapter 9.12, including but not limited to contractors, tenants, lessees or other person entitled to use or occupy a property.

"Significant Prohibited Discharge" shall mean a one-time discharge of a prohibited substance, either past or ongoing, that due the nature or amount of the substance has damaged infrastructure; water quality, sediment, or groundwater quality; requires additional infrastructure maintenance; disrupted natural processes, or caused a significant risk to public health or the environment.

"**WLRD**" shall mean the Water and Land Resources Division, or its successor agency.

IV. POLICIES:

A. Progressive Enforcement Action

A progressive approach is used to assist businesses and other entities, persons and residents in achieving and maintaining compliance with Surface Water, Stormwater, and Groundwater Management Regulations. This approach emphasizes outreach, education, and technical assistance before taking further enforcement actions or assessing penalties. However, such preliminary steps are not a bar to the Director's bringing enforcement actions or penalties, in the event that the Director determines that flagrant, serious or purposeful violations have occurred.

B. Enforcement Steps

1. Technical Assistance Visits and Inspections
2. Corrective Action and Maintenance Correction Letters
3. Notice and Order
4. Voluntary Compliance Agreement
5. Penalty Waiver: The process for penalty waivers is found in K.C.C. 23.32.050
6. Appeals: The process for appeals is found in K.C.C. 23.36

C. Types of Violations

1. Failure to implement Best Management Practices (BMPs). Source control BMPs shall be implemented to prevent contamination of surface water, groundwater and stormwater. These BMPs are described in the Stormwater Pollution Prevention Manual, which was revised and adopted in 2016 by Public Rule PUT-8-8-3.
2. Discharge of prohibited substances. The discharge of any contaminants into surface water, stormwater or groundwater. The list of prohibited (and permitted substances) is found in King County Code 9.12.025.
3. Illicit Connections.
4. Failure to properly operate and/or maintain drainage facility. A required drainage facility shall be operated and maintained as designed.

D. Delegation of Authority

K.C.C. 9.12.050 establishes the DNRP Director, or his or her delegated agent, as the responsible party for taking enforcement action. Documentation of enforcement actions are authorized to be signed by personnel from WLRD as follows:

1. Corrective Action and Compliance Letters: Stormwater Inspector
2. Maintenance Correction Letters: Asset Unit Manager
3. Cease Discharge Notices: Source Control Program Manager
4. Voluntary Compliance Agreements: Source Control Program Manager
5. Notice of Violation and Penalties: Stormwater Services Section Manager
6. Notice of Violation and Penalties with fines and cost assessments in excess of $100,000: Stormwater Services Section Manager with the approval the DNRP Director

E. Voluntary Compliance Agreement

The director may suspend the imposition of additional civil penalties if the person responsible for code compliance has entered into a voluntary compliance agreement, in accordance with the procedures and terms of K.C.C. 23.02.090..

F. Penalty Assessment

1. Penalties are to be determined through assigning a point rating to each of the following factors, the total of which shall be used to calculate the penalty assessment including:

   a. Environmental or resource damage;

   b. Actions was taken to remedy a problem after a discharge violation occurred;

   c. Whether or not it was a willful or knowing violation;

   d. Violation was a result of improper operation, inadequate maintenance or inadequate implementation of required BMPs or of a required plan that addresses stormwater management source control BMPs including: Stormwater Pollution Prevention Manual (SPPM) BMPs, Erosion Sediment Control Plan (ESCP), Stormwater Pollution Prevention Plan (SWPPP), Spill Response, and Operations & Maintenance";

   e. Compliance History;

   f. Infrastructure damage or additional maintenance required;

   g. Presence of an illicit connection; and

   h. Economic gains of non-compliance

2. Penalty Matrix

1. Environmental or resource damage?	
0	If there is no evidence of detrimental impact or potential threat to water or sediment quality, human health, or the environment.
1	If there is evidence of a minor detrimental impact or potential threat to water or sediment quality, human health, or the environment.
2	If there is evidence of a moderate detrimental impact or potential threat to water or sediment quality, human health, or the environment.
3	If there is evidence of a major detrimental impact or potential threat to water or sediment quality, human health, or the environment.
2. Action taken to remedy a problem after a violation occurred?	
0	If the violation was corrected immediately upon discovery.
1	If the violation was corrected after corrective action letter.
2	If the violation was corrected but required more than one follow-up contact.
3	If the responsible party attempted to correct the violation but did not correct it.
4	If the responsible party made no attempt to correct the violation.
5	If the responsible party made an attempt to hide or disguise the violation.
3. Willful or knowing violation?	
0	If the violator did not know and had no reason to know that the action or inaction constituted a violation.
2	If the violator appears not to have known but should have known.
3	If it is clear from the circumstances that the violator knew.
4. Violation was a result of improper operation, inadequate maintenance or inadequate implementation of required BMPs or of a required plan that addresses stormwater management source control best management practices (BMPs)?	

0	If the violation was not the result of inadequate or lack of source control BMPs.
1	If the property lacks or has inadequate source control BMPs, employee training, supplies, or maintenance, resulting in the potential for a prohibited discharge.
2	If the property lacks or has inadequate source control BMPs, employee training, supplies, or maintenance, resulting in the probability of a prohibited discharge.
3	If the property lacks or has inadequate source control BMPs, employee training, supplies, or maintenance, resulting in a prohibited discharge.
5. History of compliance problems on the property or with the potentially responsible party?	
0	If there is no previous history of compliance problems.
1	If only one correction letter has been issued to the property and/or party for a prior violation.
2	If two or more correction letters have been issued to the property and/or party for prior violations.
3	If a Notice of Violation and/or a Notice and Order have been previously issued to this property and/or party for a prior violation.
6. Infrastructure damage or additional maintenance required of conveyance system, drainage facilities, or right-of-way due to violation?	
0	If the violation provides no basis for concluding that there is damage to infrastructure or requires additional maintenance.
1	If there is a basis, for concluding that there is minor infrastructure damage or additional maintenance required based on knowledge of the effects of the violation.
2	If there is basis for concluding that there is moderate infrastructure damage or additional maintenance required based on knowledge of the effects of the violation
3	If there is evidence linking significant infrastructure damage or significant additional maintenance required with the violation.
7. Is there an illicit connection?	
0	If there is no illicit connection.
2	If there is an illicit connection, but was not recognized as such by owner/operator.
3	If there is a known illicit connection, but was not self-created by owner/operator.
4	If there is known illicit connection self-created by owner/operator.
8. Economic benefit from non-compliance?	
0	If it is clear that no one gained an economic benefit.
1	If it is likely that someone gained a minor economic benefit.
2	If it is likely someone gained a moderate economic benefit.
3	If it is demonstrable that someone gained a significant economic benefit.

3. Penalty Assessment

Points	**≤9**	**10-15**	**16-21**	**22-24**	**>24**
Penalty	$500	$1,000	$2,500	$5,000	$10,000

4. Guidance

The Water Quality Penalty Matrix Guidance, which constitutes Appendix A to this public rule, shall act as a general guide to applying the Penalty Matrix.

G. Additional Costs Assessment

In addition to any monetary penalties, the County may collects investigation and correction costs, which may include, but are not limited to:

5. Costs incurred by King County as a result of a violation including infrastructure repair, clean-up and remediation
6. Billed cost, including labor, administration, overhead, overtime, profit, taxes, and other related costs, for a hired contractor to investigate and/or perform the abatement work;
7. Labor, administration, overhead, overtime, and other related costs for the County staff and crews to investigate and/or perform the abatement work;
8. Administrative costs to set up contracts and coordinate work;
9. Time spent communicating with the responsible party, any other enforcing agencies, and the affected community;
10. Inspections for compliance with this rule, documentation of costs, and invoicing the responsible party;
11. Cost of equipment, materials, and supplies, including all related expenses for purchasing, renting, and leasing;
12. Laboratory sampling and analytical costs;
13. Recording fees; and
14. Cost of mobilization, disposal of materials, and cleanup.

H. Collection of Penalties and Costs

1. The Director may issue an invoice and demand for payment of civil penalties and costs when the responsible party has failed to pay a penalty by the deadline in a Notice and Order and has failed to file an appeal within the required time periods established in K.C.C 23.36. The invoice shall include:
    a. Name of the responsible party
    b. Either a legal description of the property corresponding as nearly as possible to that used for the property on the rolls of the King County Assessor or, where available, the property's street address where the violation(s) has taken place;
    c. A description of the violation(s);
    d. The amount of the penalty;
    e. Notice that if the amount due is not paid within 30 days, the Director may collect the unpaid amount in any lawful manner, including, but not limited to, referral of the matter to a collection agency; and
    f. Notice that interest shall accrue on the unpaid balance at the statutory rate if not paid within 30 days after the invoice date.
2. If the Hearing Examiner has issued an order or judgment imposing penalties, costs, damages, or expenses for a violation of this subtitle, and the Hearing Examiner's order or judgment is not appealed within 30 days, the Director may:

a. Refer the matter to the County Prosecutor to initiate any appropriate legal action in an appropriate forum;

b. Send an invoice and demand for payment as described above; or

c. Add a Special Assessment to the responsible party's property.

V. Implementation Plan

This rule becomes effective for the Department of Natural Resources and Parks on [insert date]. The Department of Natural Resources and Parks and its Water and Land Resources Division, are responsible for implementation of this rule.

VI. Maintenance

This rule will be maintained by the Department of Natural Resources and Parks, Water and Land Resources Division, Stormwater Services Section, or its successor agency.

Appendix A
Penalty Matrix Guidance
Stormwater Enforcement Public Rule PUT-8-23 (PR)

The water quality inspection process is designed to approach the goal of compliance with County stormwater, groundwater, and surface water regulations in a progressive manner, from education to formal enforcement, and emphasizes outreach, education, and technical assistance as the primary tools to attain compliance. When it is necessary to assess a penalty against a responsible party, the inspection program uses guidelines to assist the inspector in making clear, consistent, and appropriate decisions about the nature of each individual violation. Inspectors are discouraged from engaging in speculation, and are encouraged to assign fewer points when there is a lack of clarity regarding specific of a violation.

1. Environmental or resource damage?	
0	If there is no evidence of detrimental impact or potential threat to water or sediment quality, human health, or the environment.
1	If there is evidence of a minor detrimental impact or potential threat to water or sediment quality, human health, or the environment.
2	If there is evidence of a moderate detrimental impact or potential threat to water or sediment quality, human health, or the environment.
3	If there is evidence of a major detrimental impact or potential threat to water or sediment quality, human health, or the environment.

To assess the environmental or resource damage, the inspector should:

- ✓ Inspect the surrounding area to determine if pollution has affected nearby water or land resources. This may require acquiring familiarity with the storm system and points of discharge to surface waters.
- ✓ Determine the amount, concentration, and characteristics of the pollutant(s) with available equipment. Photo document results.
- ✓ Use best professional judgement to assess the scale of cleanup as a possible way to distinguish between moderate and major detrimental impact.
- ✓ Photo document specific evidence in support of a decision.
- ✓ Use Table 1 below as a starting point to determine the potential severity of impact. The table is divided up according to the severity of harm the material may pose to the environment and/or public health. However, the total volume and location of discharge must also be taken into account. The actual impact or threat of a discharge may result in selecting a higher or lower category.
- ✓ Make a reasonable determination about whether a pollutant is a threat to receiving waters. Evidence, either physical or circumstantial, must be present.

Table 1 Environmental and Public Health Impacts

Minor	Moderate	Major
Aquarium or hatchery wastewater	Antifreeze or other automotive products	Acidic or alkaline materials
Domestic animal wastes e.g. pet waste	Batteries	Animal carcasses
Floor wash water	Degreasers or solvents	Any hazardous material or dangerous waste
Heated water	Dyes or other chemicals	Chlorine, bromine or other disinfectants
Trash or debris	Food wastes	Drain cleaners, root killers
Untreated pool or spa water	Livestock waste or wash water	Flammable or explosive materials
Yard waste	Paints, stains, resins, lacquers or varnishes	Metals in either particulate or dissolved form
	Petroleum products	Pesticides, herbicides or fertilizers
	Silt, sediment or gravel	Radioactive material
	Soaps, detergents, ammonia, or soapy wastewater	Recreational vehicle or portable toilet waste
	Steam or carpet cleaning wastes	Sewage
	Swimming pool backwash	
	Vehicle or equipment wash water	

The inspector should not:

- Mark a point that is not justified. If in doubt, the inspector should default to the lower score.

2. Action taken to remedy a problem after a violation occurred?	
0	If the violation was corrected immediately upon discovery.
1	If the violation was corrected after corrective action letter.
2	If the violation was corrected but required more than one follow-up contact.
3	If the responsible party attempted to correct the violation but did not correct it.
4	If the responsible party made no attempt to correct the violation.
5	If the responsible party made an attempt to hide or disguise the severity of the violation.

To assess whether action was taken to remedy a problem after a violation occurred, the inspector should:

- ✓ If existing, have a history of correspondence on hand to remind the responsible party of the timeline identified in the corrective action letter.
- ✓ Use best professional judgement to determine whether the responsible party is making a good faith effort to correct the violation.
- ✓ Document the technical assistance provided during each visit to make sure there is a record of attempts to educate the responsible party.
- ✓ Document the attempt(s) made to correct the violation, even if determined by the inspector to be inadequate.

3. Willful or knowing violation?	
0	If the responsible party did not know and had no reason to know that the action or inaction constituted a violation.
2	If the responsible party appears not to have known but should have known.
3	If it is clear from the circumstances that the responsible party knew.

To assess whether there was a willful or knowing violation the inspector should:

- ✓ Speak with the individual or individuals directly involved in the violation.
- ✓ Speak with the co-workers or associates of the person(s) responsible for the violation.
- ✓ Speak with the supervisor of the persons involved in the violation.
- ✓ Obtain names and contact information for anyone making statements or providing information.
- ✓ If applicable, check lease agreements, permits, training documents, and maintenance manuals for language about responsible operation and maintenance.
- ✓ Determine whether there are standard practices such as a stormwater pollution prevention plan, erosion control plan, or spill plan in place whose purpose is to prevent the violation from happening.
- ✓ Check the facility for posted documentation regarding proper material management and handling practices.

The inspector should not:

- Automatically assume the operator/violator knew the action was a violation.
- Select a score of 3 without confirming that the violator must have known that the action or omission constituted a violation.

4. Violation was a result of improper operation, inadequate maintenance, or inadequate implementation of required best management practices (BMPs) or of a required plan that addresses stormwater management source control BMPs?	
0	If the violation was not the result of inadequate or lack of source control BMPs.
1	If the property lacks or has inadequate source control BMPs, employee training, supplies, or maintenance, resulting in the potential for a prohibited discharge.
2	If the property lacks or has inadequate source control BMPs, employee training, supplies, or maintenance, resulting in the probability of a prohibited discharge.
3	If the property lacks or has inadequate source control BMPs, employee training, supplies, or maintenance, resulting in a prohibited discharge.

To assess whether there was a failure to properly implement source control BMPs, the inspector should:

- ✓ Identify the BMPs required of the specific activity.
- ✓ Consider the maintenance schedule of the BMPs when determining whether the violation could have been avoided.
- ✓ Ask about training records or programs to teach staff how to maintain BMPs.
- ✓ Assess the probability of whether a violation could happen due to inadequate BMPs. Is it more or less likely than not? Consider workplace processes and the likelihood of accidents happening.
- ✓ Is there evidence of a past violation such as staining, erosion, or used cleanup materials?
- ✓ Determine whether the violation would have been prevented if there were appropriate BMPs in place.
- ✓ Assign a score of "0" if the discharge was not the result of inadequate source control BMPs.

5. History of compliance problems on the property or with the potentially responsible party?	
0	If there is no previous history of compliance problems.
1	If only one correction letter has been issued to the property and/or party for a prior violation.
2	If two or more correction letters have been issued to the property and/or party for prior violations.
3	If a Notice of Violation and/or a Notice and Order have been previously issued to this property and/or party for a prior violation.

To assess whether there is a history of compliance problems on the property or with the potentially responsible party the inspector should:

- ✓ Consider "History" to mean the previous 6 years in order to include results of the previous water quality inspection(s) and drainage facility inspections, which generally occur on a 5 and 3 year cycle.
- ✓ Pull and review previous files prior to the site inspection.
- ✓ Make an attempt to ask the responsible party if they are aware of any existing history.
- ✓ Use documented records of violations to asses this score appropriately.

The inspector should not:

- Rely on memory or anecdotal evidence to justify a score greater than "0".
- Count as a previous violation, any Cease Discharge Order or Notice and Order that was appealed and subsequently reversed.

6. Infrastructure damage or additional maintenance required of conveyance system, drainage facilities, or right-of-way due to violation?	
0	If the violation provides no basis for concluding that there is damage to infrastructure or requires additional maintenance.
1	If there is a basis for concluding that there is minor infrastructure damage or minor additional maintenance required based on knowledge of the effects of the violation.
2	If there is basis for concluding that there is moderate infrastructure damage or moderate additional maintenance required based on knowledge of the effects of the violation
3	If there is evidence linking significant infrastructure damage or significant additional maintenance required with the violation.

To assess whether the violation resulted in damage to infrastructure or whether it required additional maintenance of the conveyance system, drainage facilities, or right-of-way the inspector should:

- ✓ Take photographs for possible review by engineers or other appropriate staff.
- ✓ Use professional judgement to determine whether the need for maintenance or repairs has been caused by the violation.
- ✓ Consider the extent of the violation and weather when assessing the potential need for system maintenance. For instance, if it was raining hard during the violation how much of the pollutant remains in the system, or was it flushed through?
- ✓ Review existing work orders to determine whether the damage to infrastructure had already been identified by another inspection program.

The inspector should not:

- Automatically assume damages are caused by the violation without some concrete evidence.

7. Illicit connection?	
0	If there is no illicit connection.
2	If there is an illicit connection, but was not recognized as such by owner/operator.
3	If there is a known illicit connection, but was not self-created by owner/operator.
4	If there is known illicit connection that was self-created by owner/operator.

To assess whether there is an illicit connection the inspector should:

- ✓ Review plan sets and records.
- ✓ Conduct dye testing if necessary.
- ✓ Talk with the property manager to determine how the connection was made, and whether it was intentional.
- ✓ Determine whether the connection is allowed under another National Pollutant Discharge Elimination System (NPDES) permit.

The inspector should not:

- Automatically assume a given connection is illicit.

8. Economic benefit from non-compliance?	
0	If it is clear that no one gained an economic benefit.
1	If it is likely that someone may have gained a minor economic benefit.
2	If it is likely that someone gained a moderate economic benefit.
3	If it is demonstrable that someone gained a significant economic benefit.

To assess whether there was an economic benefit to non-compliance the inspector should:

- ✓ Consider who may have gained an economic benefit for non-compliance.
- ✓ Determine whether the responsible party actively pursued an alternative method for managing pollution-generating materials that led to the violation but chose not to use them.
- ✓ Assess whether the details are available to allow for an accurate estimate of the total benefit gained (cost of proper disposal, cost of BMPs that could have prevented the violation, operational costs saved by not responding appropriately, etc.).

The inspector should not

- Attempt to quantify the economic benefit onsite and without consulting the source control program manager or designee.
- Assume that the economic benefit was the reason for the violation. Often violations can be related to accidental discharges for which economic benefit is not a factor.

Penalty Charges

Use the table below to determine penalty amounts, adding up points from the violation factors listed above.

Penalty Points Score with Penalty Amount					
Score	≤9 points	10-15	16-21	22-24	>24
Penalty	$500	$1000	$2500	$5000	$10,000
Penalty amounts are issued on a per-day basis for ongoing violations.					

All penalty matrix decisions are to be reviewed and approved by source control program staff to ensure consistency of application.

Volume 5: Enforcement

City of Seattle
Stormwater Manual
July 2021

City of Seattle

Note:

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

Table of Contents

Tables

CHAPTER 1 – INTRODUCTION

The City of Seattle Department of Construction and Inspection (SDCI) and Seattle Public Utilities (SPU) produced this document as a joint Directors' Rule (DR) to interpret the enforcement provisions that are described in the Seattle Municipal Code (SMC) 22.800 through 22.808 (Stormwater Code). This volume is designed to help clarify the application of enforcement in Seattle.

If the Director finds a violation of the Stormwater Code has occurred or is occurring, a Notice of Violation (NOV) or an Order is given to the responsible party of that violation. The civil penalty attached with the NOV or Order is determined using the enforcement penalty matrix described below.

CHAPTER 2 – PENALTY ASSESSMENT MATRIX

2.1. Enforcement Penalty Matrix

The enforcement penalty matrix (Table 1) is composed of a set of criteria formulated as questions for the Director to evaluate and answer. The Director uses the guidelines of *Section 1.3* to determine the total points to be assessed according to the violation. Once the total amount of penalty points is determined, a rating and a corresponding penalty amount is established (Table 2).

Table 1. Enforcement Penalty Matrix.

Enforcement Evaluation Criterion	No (0 points)	Possibly (1 point)	Probably (2 points)	Definitely (3 points)
Public Health Risk?				
Environmental Damage or Adverse Impacts to Infrastructure?				
Willful or Knowing Violation?				
Unresponsive in Correcting Action?				
Improper or Inadequate Operation or Maintenance?				
Failure to Obtain and Comply with Necessary Permits, Certifications, and Approvals?				
Economic Benefit to Non-Compliance?				
Repeat Violation?				

Table 2. Penalty Points Rating and Corresponding Penalty Amount.

Rating	1–2	3–4	5–8	9–11	12–14	15
Penalty	$250	$500	$1,000	$1,500	$2,000	$2,500
Rating	**16**	**17**	**18**	**19**	**20+**	
Penalty	$3,000	$3,500	$4,000	$4,500	$5,000	

2.2. Application of Penalty Criteria

The framework below provides guidance on how to rate each criterion of the enforcement penalty matrix. The civil penalty is determined by the total score of the matrix.

1. Did the violation pose a public health risk[1]?
    a. Answer “no” if there is no evidence to support a claim of public health risk or adverse health effects.
    b. Answer “possibly” if evidence supports a claim of public health risk and there is a plausible connection between this violation and health effect.
    c. Answer “probably” if evidence supports a claim of public health risk and there is a likely connection between this violation and health effect.
    d. Answer “definitely” if there is direct evidence linking public health risk or adverse effects with the violation.
2. Did the violation result in environmental damage or adverse impacts to infrastructure[2]?
    a. Answer “no” if there is no evidence to support a claim of environmental or infrastructure damage.
    b. Answer “possibly” if environmental or infrastructure damage can be inferred from evidence or knowledge of the effects of the violation.
    c. Answer “probably” if there is evidence to support a claim of environmental or infrastructure damage and there is a likely connection between the violation and the damage/impairment.
    d. Answer “definitely” if there is direct evidence linking environmental or infrastructure damage with the violation.
3. Was the action a willful and knowing violation?
    a. Answer “no” if the violator obviously did not know that the action or inaction constituted a violation.
    b. Answer “possibly” if the violator should have known.
    c. Answer “probably” if it is likely the violator knew.
    d. Answer “definitely” if the violator clearly knew or was previously informed by inspectors.

[1] Risk involving the physical or social well-being of a community or environment.

[2] Results in damage to publicly owned infrastructure that contributes to its impairment.

4. Was the responsible party[3] unresponsive in correcting the violation?
    a. Answer "no" if the violation was corrected as soon as the responsible party learned of it.
    b. Answer "possibly" if the violation was corrected in a less timely and cooperative fashion.
    c. Answer "probably" if the responsible person made some attempt to correct the problem, but did not correct it.
    d. Answer "definitely" if the responsible party made no attempt to correct the violation.
5. Was the violation a result of improper operation, inadequate maintenance, or inadequate implementation of a required plan that addresses stormwater management (e.g., O&M[4] manual, DCP[5], SWPPP[6], or TESC[7] plan)?
    a. Answer "no" if the violation was not the result of improper operation or inadequate maintenance.
    b. Answer "possibly" if the facility has an O&M manual, DCP, SWPPP, or TESC plan, but it is out of date or inadequate.
    c. Answer "probably" if there is no O&M manual, DCP, SWPPP, or TESC plan and the violation would have been less severe if the plan were developed and followed.
    d. Answer "definitely" if the facility has no O&M manual, DCP, SWPPP, or TESC plan or did not follow its plan AND the violation was clearly the result of improper operation or maintenance.
6. Did the responsible party fail to obtain and comply with relevant permits, certifications, and approvals that require or would have required the responsible party to manage stormwater in a manner that could have prevented or mitigated the Code violation?
    a. Answer "no" if the paperwork was complete and appropriate for the job or task that caused the violation.
    b. Answer "possibly" if the responsible party obtained and received approval for some but not all of the required permit(s).

[3] Owners, operators, and occupants of property, and any person causing or contributing to a violation of the City Code are considered a "responsible party" for purposes of a Code violation (SMC, Section 22.801.190).

[4] Operations and maintenance

[5] Drainage Control Plan

[6] Stormwater Pollution Prevention Plan

[7] Temporary Erosion and Sediment Control

c. Answer “probably” if the responsible party obtained some but not all of the required permit(s) and did not receive approvals for the job or task that caused the violation.

d. Answer “definitely” if the responsible party either did not obtain the necessary permits or did obtain permits but did not comply with their conditions.

7. Did anyone benefit economically[8] from non-compliance?

   a. Answer “no” if it is clear that no one gained an economic benefit.

   b. Answer “possibly” if someone might have benefited.

   c. Answer “probably” if anyone benefited, but the benefit is not quantifiable.

   d. Answer “definitely” if the economic benefit is quantifiable.

8. Is this violation a repeat violation[9]?

   a. Answer “no” to indicate that there have been no prior violations.

   b. Answer “possibly” to indicate that there has been one prior violation.

   c. Answer “probably” to indicate that there have been two prior violations.

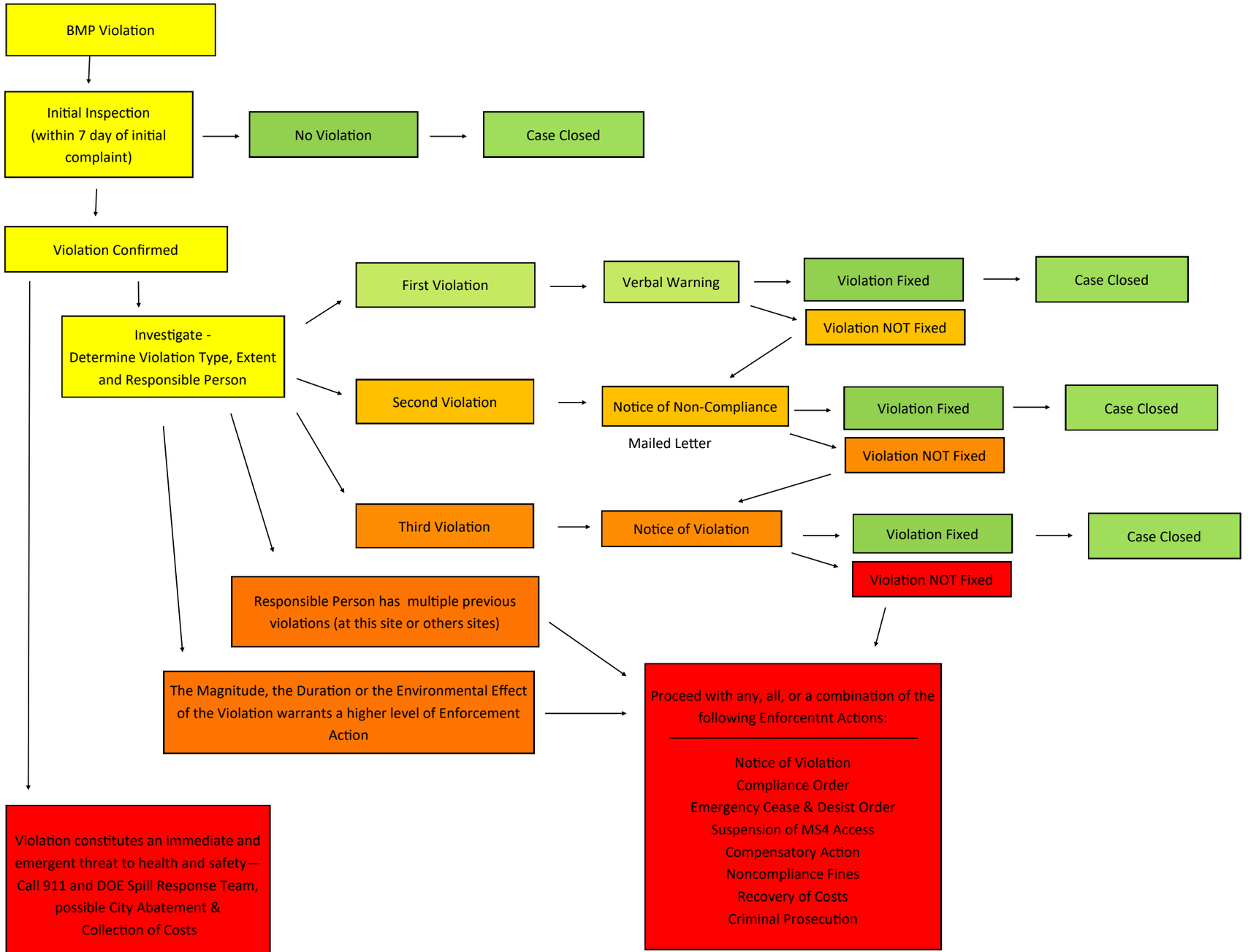
   d. Answer “definitely” to indicate that there have been three or more prior violations.

[8] Gain and/or no loss in resources.

[9] From Stormwater Code (SMC, Section 22.801.190): “Repeat violation” means a prior violation of this subtitle within the preceding 5 years that became a final order or decision of the Director or a court. The violation does not need to be the same nor occur on one site to be considered repeat.

8.6.2 Appendix 8-B – City of Wenatchee Violation Flow Chart

Privately Owned BMP Enforcement Flow Chart



Chapter 9
Education and Outreach

Chapter Contents

9.1 Chapter Overview

This chapter provides an overview of common education and outreach (E&O) strategies Permittees can use to inform the property owner and/or responsible party about proper maintenance and inspection of BMPs on private property. Researchers have reported three common reasons why BMP owners may provide inadequate maintenance or neglect their BMP: insufficient communication, unclear responsibilities, and lack of knowledge (Blecken, Hunt III, Al-Rubaei, Viklander, & Lord, 2017). E&O programs developed specifically for private property owners could play a key role in helping to overcome these barriers. E&O is required by the Eastern Washington (EWA) and Western Washington (WWA) Phase II MS4 Permits, and it is essential for providing basic understanding of stormwater pollution, its sources, and how property owners can help prevent it (Neiswender & Shepard, 2016). E&O programs developed specifically for private property owners with BMPs could also increase their understanding of a BMP's purpose and subsequently the property owner's compliance with BMP inspection and maintenance. This understanding is essential to encourage the BMP owner to conduct the required maintenance, which supports the BMP's long-term performance (Blecken, Hunt III, Al-Rubaei, Viklander, & Lord, 2017). In addition, the need for E&O efforts will likely increase as environmental concerns and regulatory measures advance (Neiswender & Shepard, 2016). Prioritizing quality E&O strategy development now will help jurisdictions not only meet current Phase II MS4 Permit requirements, but also be prepared for future requirements. This chapter provides a description and examples of common E&O strategies as well as things to consider when developing an E&O plan. **Table 9-1** provides an overview of the E&O strategies covered in this chapter along with potential advantages and disadvantages of these strategies. **Appendix 9-A** includes a list of weblinks to E&O resources developed by Permittees.

Table 9-1. Overview of common E&O strategies

E&O Strategy	Advantages	Disadvantages
One-on-One Instruction: Permittee or third party meets individually with the property owner or party responsible for BMP maintenance.	• Helps build personal relationships, increasing trust • Opportunity to directly address responsible party's questions and concerns	• Time consuming, especially for jurisdictions with many BMPs on private property • Involves accommodating the responsible party's schedule, possibly delaying the inspection timeline or requiring work outside

E&O Strategy	Advantages	Disadvantages
	• Collaborative effort between inspector and responsible party • Promotes a sense of ownership • Keeps the responsible party informed even if BMP ownership changes	of normal business hours, such as evenings and/or weekends
Workshops & Public Events: Training for a specific audience (more than one person) to gain information on more complex and specific topics.	• Training for a larger audience than one-on-one instruction • Opportunity for demonstration and discussion • Opportunity to directly address attendees' questions and concerns • Attendees are generally motivated and engaged • Can bring in technical experts to assist with training	• Workshop attendance capacity may be limited, unless held virtually • Workshop may have poor attendance • Cannot guarantee all property owners attend training • Workshop development requires Permittee time and resources
Organized Media: Newspapers, direct mail, posters, billboards, radio, television, and other forms of mass communication.	• Organized media can reach a wide audience • Raises awareness • Can tailor dissemination method to selected audience • Can collaborate with neighboring jurisdictions to create materials, saving Permittee time and resources	• Developing and shipping organized media requires Permittee time and can be costly • The organized media material may not reach the desired audience • Organized media does not allow for audience engagement or hands-on training
Social Media: Websites and applications focusing on communication, community-based input, interaction, content sharing, and collaboration.	• Social media can reach a wide audience • Raises awareness • Can gain insight about audience through analytic and reporting features • Can collaborate with neighboring jurisdictions to create materials, saving Permittee time and resources • Allows Permittees to engage with audience	• Social media does not allow for hands-on training • Developing content and engaging with audience through comments and direct messaging is time-consuming • Social media platforms are very public – Permittee's reputation is vulnerable • Some users only use social media to engage with family and friends • Comment section may require the use of a moderator to remove inappropriate comments

9.2 Permit Requirements

There are no Phase II MS4 Permit requirements for E&O specific to maintaining and inspecting BMPs on private property; however, Sections S5.A.5 and S5.B.1 of the EWA Phase II MS4 Permit and Sections S5.A.3 and S5.C.2 of the WWA Phase II MS4 Permit describe permit requirements Permittees can meet by developing E&O programs for privately owned BMPs. **Table 9-2** presents a summary of the E&O requirements in the EWA and WWA Phase II MS4 Permits pertaining to this chapter.

Table 9-2. Summary of E&O requirements in the EWA and WWA Phase II MS4 Permits

EWA Phase II	WWA Phase II
Tracking E&O Activities	
S5.A.5.a.i Appendix 1. Each Permittee shall track the number of inspections performed, follow-up actions as a result of inspections, official enforcement actions taken, and types of public education activities implemented as required for each SWMP component. This information shall be included in the Annual Report.	**S5.A.3.b** Each Permittee shall track the number of inspections, follow-up actions as a result of inspections, official enforcement actions and types of public education activities as required by the respective program component. This information shall be included in the Annual Report.
Public Education and Outreach Programs	
S5.B.1.a.i All Permittees shall continue to implement a public education and outreach program designed to reach target audiences identified in i-iii below, and achieve improvements in the target audiences' understanding of the problem and what they can do to solve it. The program shall, at a minimum address the following, based on the land uses and priority target audiences found within the community. Permittees shall provide subject area information to the target audience on an ongoing or strategic schedule. i. *Target audiences:* General public, including home owners, teachers, school-age children, or overburdened communities. Provide information about the following subject areas: (a) The importance of improving water quality and protecting beneficial uses of waters of the State. (b) The potential impacts from stormwater discharges. (c) Methods for avoiding, minimizing, reducing, and/or eliminating the adverse impacts of stormwater discharges.	**S5.C.2.a.i (a)** Each Permittee shall implement an education and outreach program for the area served by the MS4. The program design shall be based on local water quality information and target audience characteristics to identify high priority target audiences, subject areas, and/or BMPs. Based on the target audience's demographic, the Permittee shall consider delivering its selected messages in language(s) other than English, as appropriate to the target audience. i. *General awareness*. To build general awareness, Permittees shall annually select at a minimum one target audience and one subject area from either (a) or (b): (a) Target audiences: General public (including overburdened communities, or school age children) or businesses (including home-based, or mobile businesses). Subject areas: • General impacts of stormwater on surface waters, including impacts from impervious surfaces. • Low impact development (LID) principles and LID BMPs.

EWA Phase II	WWA Phase II
(d) Actions individuals can take to improve water quality, including encouraging participation in local environmental stewardship activities and programs.	
Behavior Change	
S5.B.1.b Each Permittee shall measure the understanding and adoption of the targeted behaviors for at least one target audience in at least one subject area. No later than December 31, 2021, Permittees shall use the resulting measurements to direct ongoing education and outreach resources most effectively, as well as to evaluate changes in adoption of the targeted behaviors.	**S5.C.2.a.ii** To affect behavior change, Permittees shall select, at a minimum, one target audience and one BMP. (a) Target Audiences: Residents, landscapers, property managers/owners, developers, school age children, or businesses (including home based or mobile businesses). *BMPs:* • Stormwater facility maintenance, including LID facilities.

9.3 Education and Outreach

The goal of E&O programs is to increase an audience's support for a stormwater initiative. This can lead to increased compliance (EPA, 2005), particularly when a resulting behavior change reduces pollutants in stormwater and improves the health of receiving waters (Taylor & Wong, 2002). In the context of this manual, *the audience is the party responsible for the BMP, such as homeowners, property owners or managers, and homeowners associations (HOAs)*. The Phase II MS4 Permits do not specify what E&O methods must be used. Rather, it is up to each Permittee to implement E&O strategies best suited for their jurisdiction.

Developing an effective E&O program varies based on jurisdictional goals and the specific audience. A literature search was conducted to help determine the most effective E&O strategies for BMPs on private property. No research was located focusing on the effectiveness of E&O strategies or behavior change campaigns related specifically to this topic. Instead, research related more generally to stormwater E&O programs and behavior change campaigns was reviewed and is described in this chapter. Existing research and literature suggest *media campaigns* (organized and/or social) are most effective in increasing awareness among a broader audience and are likely to result in long-term results. *Training*, such as one-on-one instruction and workshops, is more effective at changing behavior among a smaller community or a specific audience. This strategy is also likely to produce more immediate results. Incorporating both E&O strategies is recommended for a jurisdiction-wide campaign (Taylor & Wong, 2002). The following sections describe the different E&O strategies and the advantages and disadvantages of each.

9.3.1 One-on-One Instruction

One-on-one instruction and technical assistance involve the Permittee or a third party (e.g., contractor, vendor, hired inspector, partnering nonprofit) meeting individually with the party responsible for the

BMP (Crisostomo, Ellis, & Rendon, 2014). One-on-one training may be brief, such as providing property owners with educational materials and reviewing the materials with them, or more detailed, such as training during BMP inspections. For example, some Permittees may require the responsible party to attend the inspection (Rafter, 2015). The inspector can walk through the inspection checklist, highlighting how the BMP functions, the required maintenance, and why maintenance is important. If maintenance or repair is necessary, the Permittee and responsible party can collaboratively determine a solution, encouraging a sense of ownership in the responsible party (Rafter, 2015). This also provides an opportunity for the inspector to directly address the responsible party's specific questions and concerns.

The benefits of one-on-one instruction include building relationships; increasing trust; improving awareness of possible BMP issues and potential solutions; and increasing the likelihood of property owners performing ongoing maintenance (Crisostomo, Ellis, & Rendon, 2014). Another advantage of this strategy is that it keeps the responsible party informed even if BMP ownership changes. Changes in the property owner can result in the new owners being unaware of their responsibilities, which has been documented as a primary reason why BMP maintenance is not conducted (Yakima County, et al., 2021). By consistently meeting with someone during the inspection, the Permittee can confirm the responsible party is aware of their obligations. One disadvantage of this approach is the time required by the inspector. Understaffed or underfunded programs may not have the capacity for their staff or inspectors to spend extra time and effort with the responsible party (Crisostomo, Ellis, & Rendon, 2014). Additionally, this strategy involves accommodating the responsible party's schedule, possibly delaying the inspection timeline or requiring the Permittee to work outside of business hours.

9.3.2 Workshops & Public Events

Another E&O strategy that involves in-person training includes workshops. Permittees can use workshops to provide the responsible party detailed information on proper BMP maintenance. Workshops are beneficial for conducting targeted E&O efforts with a specific audience. For example, Permittees may choose to hold different workshops for the various types of BMP owners (e.g., residential property owners, business owners, homeowners associations). Workshops can include maintenance demonstrations for common BMPs within the jurisdiction, hands-on practice for the responsible party, and time to answer specific attendee questions.

Research indicates that education involving discussion and participation (like a workshop) is more effective at changing behavior than organized media, such as flyers and billboards (Taylor & Wong, 2002). Like one-on-one instruction, this strategy promotes a sense of ownership and increases the likelihood that the responsible party will perform long-term BMP maintenance (Crisostomo, Ellis, & Rendon, 2014). Workshops may be scheduled as stand-alone events or included in public events, such as fairs and home and garden shows. This allows Permittees to distribute information to a larger audience than one-on-one instruction; however, if conducted in person, the number of attendees will be limited by the workshop location capacity. As virtual platforms have gained popularity, workshops are also held online, which eliminates attendee capacity limits. While virtual workshops do not allow for hands-on participation like in-person training, a workshop can be recorded and posted on the jurisdiction's website for future on-demand viewing.

One advantage of holding workshops is that participants can choose whether or not to attend. Research indicates that participants who choose to attend, as opposed to being required to attend, are generally more motivated and engaged (Baysinger, 1998). The downside to optional workshops is that Permittees cannot guarantee all property owners receive training like they can with one-on-one instruction. When deciding where to hold the workshop, Permittees should verify the location can be accessed through multiple modes of transportation (e.g., car, bus, bike, walking), which will increase the overall accessibility of the training. While workshops can educate multiple property owners at once, developing a quality workshop will require Permittee time and resources. Collaborating with neighboring jurisdictions to create lesson plans and workshop materials is one method for reducing effort and cost. Permittees can also bring in technical experts, such as vendors or contractors, to assist with training (Baysinger, 1998).

9.3.3 Media

Media campaigns are another outreach strategy Permittees utilize to promote behavior change. Two common types of media used for E&O are organized media and social media. The following sections describe each form of media and then provide information to help select which type of media to use based on characteristics of the audience.

9.3.3.1 Organized Media

Traditionally, media campaigns consisted of disseminating information to the public through organized media, including newspapers, direct mail, posters, billboards, radio, television, websites, and other forms of mass communication. Organized media is best used to promote awareness to a large audience and communicate messages about desirable and undesirable behavior (Taylor & Wong, 2002). It can also be used to inform the public about upcoming policy changes or events such as workshops. For example, Permittees have included informational brochures in stormwater utility bills to inform customers of stormwater utility fee rate increases.

Permittees can use organized media to inform property owners of their responsibilities, provide maintenance and inspection reminders, and point property owners to assistance and technical resources. For example, Permittees can use door hangers or mailers to remind property owners to inspect and maintain their BMPs (i.e., remove debris and leaf litter, inspect for sedimentation, confirm inlets and outlets are clear) before seasons with heavy precipitation, so BMPs are prepared to collect higher volumes of stormwater runoff. Another common form of media developed by Permittees is guidance manuals describing how to properly inspect and maintain each type of BMP. Guidance manuals provide visual and numerical indicators that the responsible party can use to assess the condition of a BMP, as well as a list of maintenance procedures the responsible party can reference to restore the BMP to functioning order (Richardson D. C., 2019). Permittees may provide a hard copy of the guidance manual to each property owner or include the guidance manual on the Permittee's website for the responsible party to download, reducing the costs of production and distribution. Permittee websites are a popular location to promote E&O messages. As property owners are exposed to messages regarding BMPs on private property, heightened awareness of the importance of BMPs and BMP maintenance will likely produce long-term benefits, such as increased support, communication regarding BMPs, and participation in jurisdictional programs (Taylor & Wong, 2002).

Like workshops, developing organized media requires Permittee time and can be costly to develop and distribute. Collaborating with neighboring jurisdictions to create materials is one method for reducing effort and cost. Unlike workshops and one-on-one instruction, organized media does not provide the opportunity for engagement and hands-on instruction. This may result in less direct behavior change; however, organized media still plays an important role in raising awareness and supporting E&O training strategies (Taylor & Wong, 2002).

9.3.3.2 Social Media

Social media is defined as websites and applications focusing on communication, community-based input, interaction, content-sharing, and collaboration (Lutkevich, 2021). Examples of popular social media platforms include Facebook, Twitter, and LinkedIn, which is popular among business professionals. These platforms are relatively easy and inexpensive to use for developing E&O strategies that can be scaled to reach a broad audience (Barton, et al., 2017). Social media platforms are a popular method for disseminating information, especially with younger audiences, as described in **Section 9.3.3.3**.

Social media offers Permittees an accessible method to share information and facilitate individual learning, especially when people do not have access to or the desire to read detailed documents (Barton, et al., 2017). For example, Permittees can share side-by-side images of a well-maintained BMP and a neglected BMP, with a short description of why maintaining privately owned BMPs is important. An eye-catching graphic and facts that are simple and to the point make the information more engaging to the reader (Barton, et al., 2017). Similar to organized media, social media platforms are best used when the goal is raising awareness, as opposed to workshops or one-on-one instruction, which provide training (Taylor & Wong, 2002). A benefit of social media platforms over organized media is that social media allows Permittees to engage with their audience using the comment feature, which encourages conversation with the users. This can help Permittees build relationships with the public and establish two-way communication, which may lead to greater participation in Permittee programs (Barton, et al., 2017).

Utilizing social media platforms for E&O efforts has many advantages. For example, Permittees can reach a wide audience. Permittees can also gain insight about their audience through analytic and reporting features offered by most social media platforms. This allows Permittees to discover who their audience is, learn what their audience is interested in, and understand how the audience prefers to engage with the Permittee's social media account (Lutkevich, 2021). Using social media also has disadvantages. Developing content is time consuming, and Permittees must spend time and resources engaging with their audience though comments and direct messaging to foster successful communication and engagement. Also, a jurisdiction's reputation is vulnerable when using social media because anything the Permittee says or does will be seen and potentially reacted to. Because of this, it is recommended that personnel with digital and social media marketing experience lead the development of a social media E&O strategy (Lutkevich, 2021). Lastly, some social media users only utilize the platforms for engaging with family and friends, rather than organizations, which could limit how many people see the post, as well as responses to the E&O content (Barton, et al., 2017).

The following are recommended when developing social media E&O strategies:

- Jurisdictions should consider establishing social media policies and set standards for appropriate behavior for both staff posting content and for monitoring content and comments generated by the public. Review all content to confirm the social media post does not expose the jurisdiction to legal issues or public embarrassment (Lutkevich, 2021).
- Utilize platforms used by your audience (Barton, et al., 2017).
- Create engaging content using pictures and video to make it more compelling and appealing (Lutkevich, 2021). For example, Permittees may create videos showing how different types of BMPs function and how to maintain each type of BMP.
- Keep content short to capture the audience's attention in a media-saturated environment (Barton, et al., 2017). For example, use lists, audio, and video snippets instead of paragraphs (Lutkevich, 2021).
- Engage with the audience through comments and direct messages. For example, ask the audience to post images of their own BMPs as a response to Permittee-posted content regarding BMPs on private property (Barton, et al., 2017).
- Embrace positive comments about the E&O program and repost that content (Lutkevich, 2021).
- Use analytic and reporting features to measure audience engagement (Lutkevich, 2021). Modify content based on audience preferences.

9.3.3.3 Considerations for Reaching the Selected Audience

Thoughtful consideration regarding which type of media to use to reach a specific audience is important for increasing the likelihood that the materials will reach the desired audience. This section describes news source patterns according to a Pew Research Center survey conducted August 31–September 7, 2020 (Shearer, 2021), and how Permittees can use this information to select an effective media source. According to the survey, a majority of U.S. adults have transitioned from receiving news through print, television, and radio, to a digital source. For example, approximately 86% of U.S. adults reported they often or sometimes get news from a smartphone, computer, or tablet. Approximately 68% of adults get news from television, which is higher than radio (50%) and print sources (32%). While using a smart phone, computer, or tablet, the most common source of digital news reported was news websites or apps, with 68% of U.S. adults often or sometimes using these sources. Other popular sources included search engines (65%), such as Google, and social media (53%) (Shearer, 2021). **Figure 9-1** and **Figure 9-2** show the breakdown of different news sources utilized by U.S. adults.

News patterns also vary by age. For adults ages 18–49, digital devices are the most common choice for receiving news; however, for adults 50 and older, receiving news through television is more popular. The percent of adults ages 30–49 receiving news through television (54%) is similar to those receiving news from digital devices (52%) (Shearer, 2021). **Figure 9-3** shows the percent of U.S. adults who receive news from each listed source (participants were allowed to select more than one source). Of the different digital platforms for news, U.S. adults 30 and older most commonly use news websites or apps; however, for adults younger than 30, the most popular digital platform for receiving news is social media. **Figure 9-4** shows the percent of U.S. adults who receive news from each type of digital platform. Using this information can be helpful for Permittees when determining which platform to use to disseminate media based on the audience's age. For example, millennials, born between 1981 and 1996, are considered a digitally native generation, utilizing digital engagement technologies for individual learning. Comprising more than one quarter of the total population of the United States, millennials represent a large pool of potential audience members (Barton, et al., 2017). The figures below also show

that as the audience age decreases, the more likely it is that social media is used, which is a trend expected to continue with future generations. It is recommended that Permittees consider disseminating information digitally when developing E&O strategies targeting millennials or those younger than millennials. However, if Permittees are targeting property owners in a community for residents over the age of 50, disseminating E&O material using television may be a more effective option.

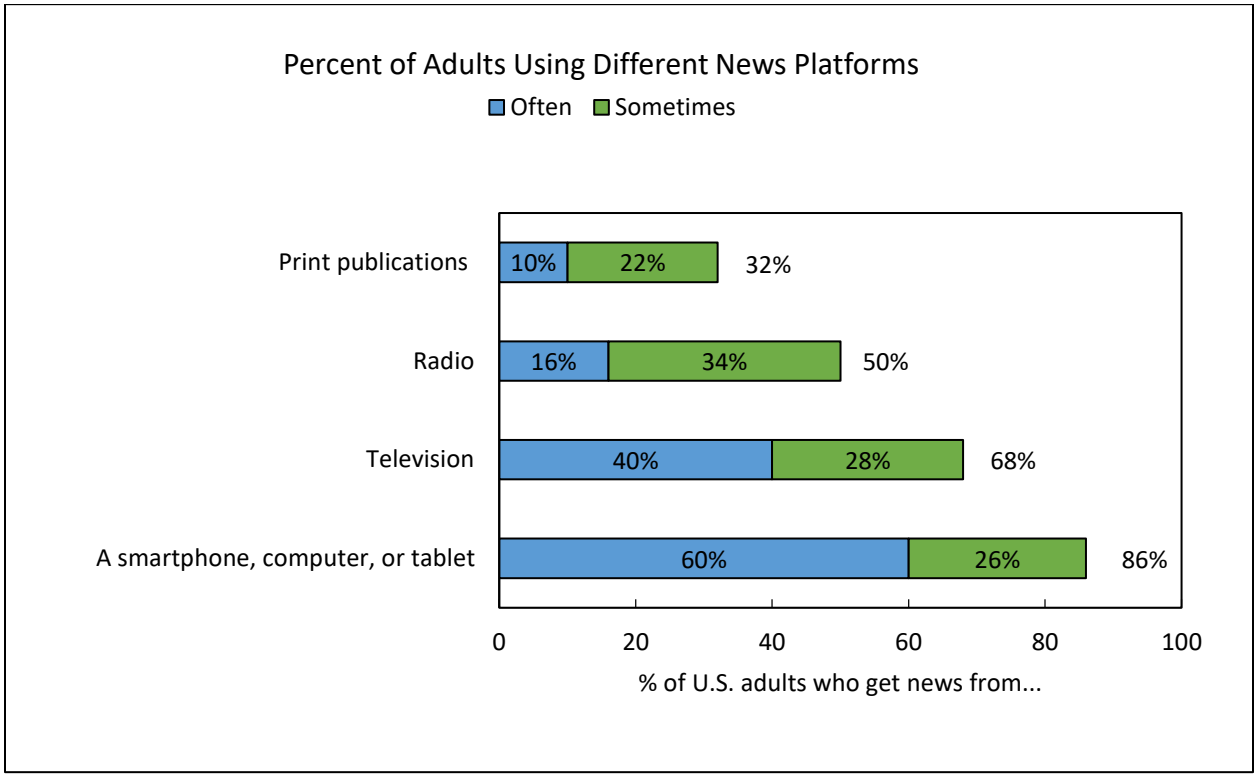


Figure 9-1. Percent of U.S. adults using different news platforms

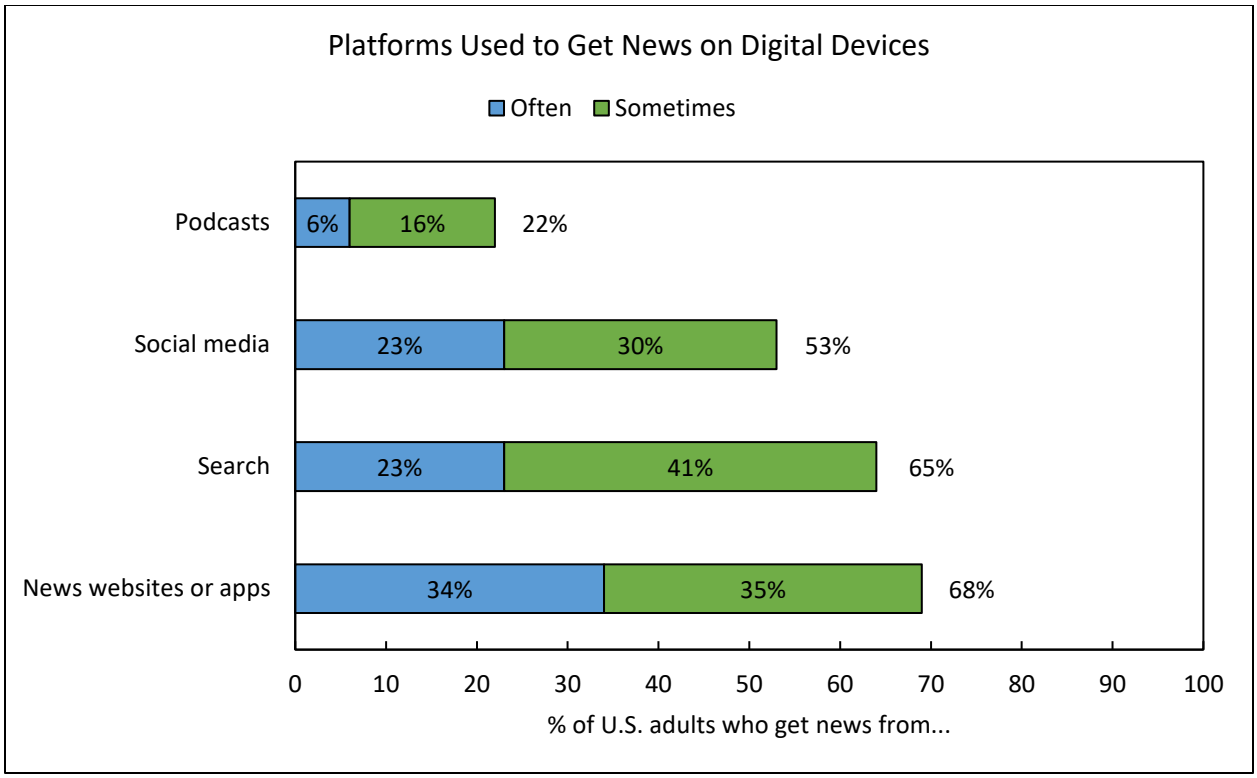


Figure 9-2. Platforms used to get news on digital devices

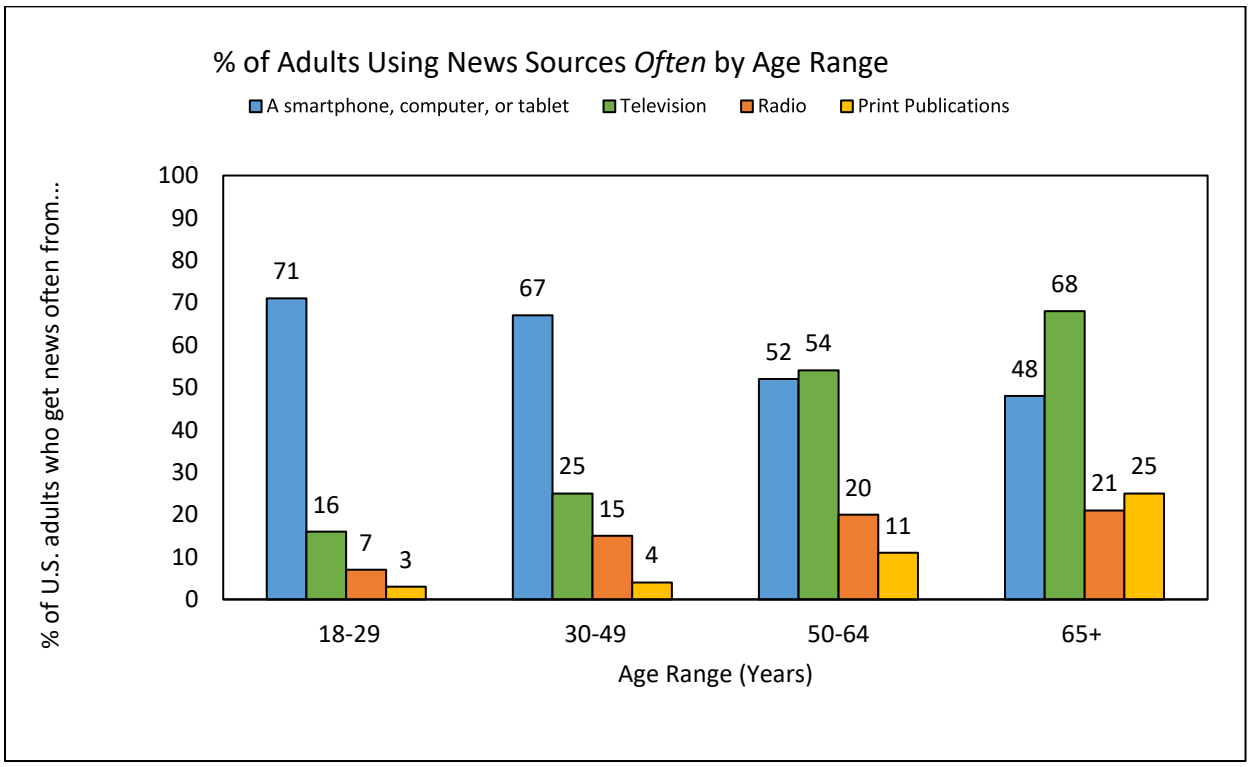


Figure 9-3. Percent of adults using news sources often – Adults were asked which news sources they use often and the results in this figure were reported by age

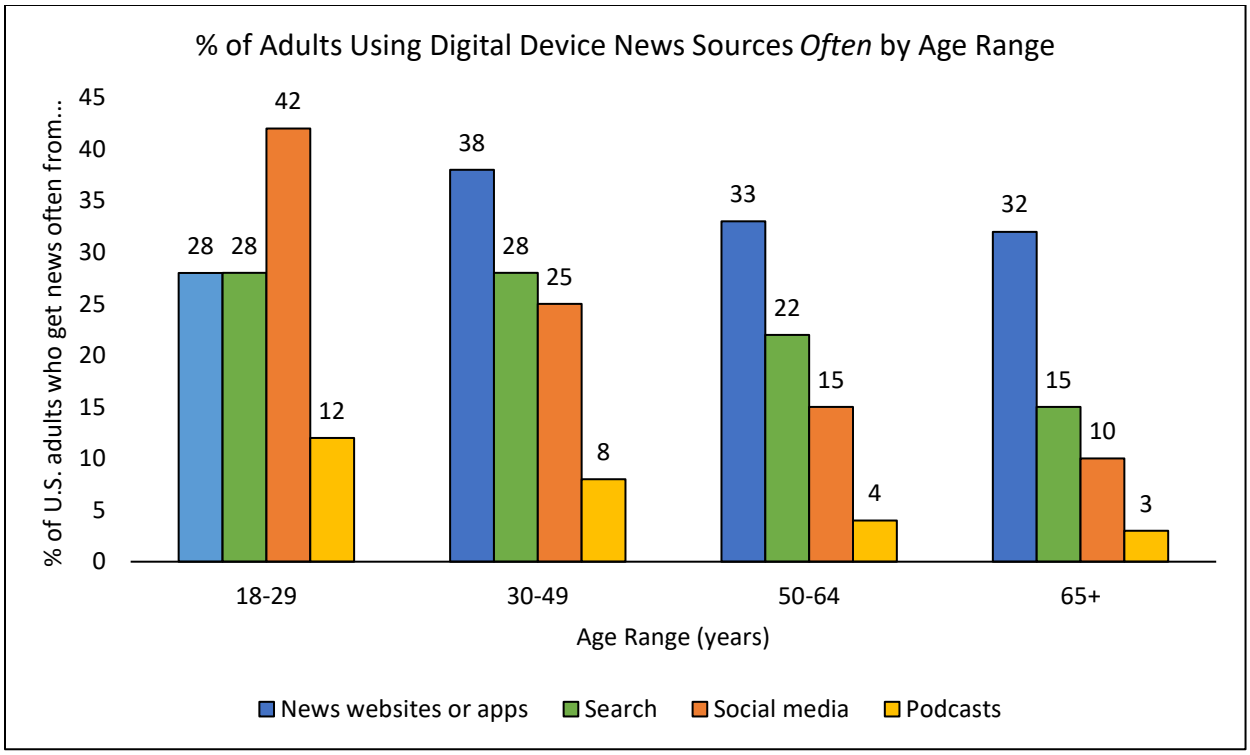


Figure 9-4. Percent of adults using digital device news sources often – Adults were asked which digital news sources they use often and the results in this figure were reported by age

9.4 Developing an Education and Outreach Plan

Developing and implementing an E&O plan is a critical element of stormwater management programs. Strong E&O plans should complement other means of encouraging the public to understand and participate in stormwater programs, such as incentives and enforcement policies (Neiswender & Shepard, 2016). Historically, E&O programs have been underfunded or eliminated when stormwater management program funding is cut. However, as E&O requirements increase and expand in the Phase II MS4 Permits, an increasing number of Permittees are including funding for E&O plans in their stormwater utility rates. It is important for E&O plans to be effective and justify the resources and time required for implementation to adequately allocate funding for E&O programs (Neiswender & Shepard, 2016). The following elements are recommended for Permittees to consider when developing E&O plans.

Use Social Marketing or Community-Based Social Marketing (CBSM): Social marketing or CBSM are required methods for developing behavior change campaigns in the WWA Phase II MS4 Permit: *"…each Permittee shall follow social marketing practices and methods, similar to community-based social marketing, and develop a campaign that is tailored to the community, including development of a program evaluation plan"* (Washington State Department of Ecology, 2019b). These methods include developing local programs with a specific audience and focusing on desired behavior change outcomes. Permittees incorporate research and knowledge to better understand the audience and for driving decisions when developing the E&O plan (Neiswender & Shepard, 2016). Please reference work published by Nancy Lee, Doug McKenzie-Mohr, PhD, Jack Wilbur, or another social marketing or CBSM expert to learn more. The following suggestions are elements of social marketing and CBSM.

Select an Audience: Focus the E&O plan on a specific group of people who would most likely be inclined to change their behavior as a result of the E&O efforts. Regarding BMPs on private properties, the audience would be private property owners. The Permittee may decide to narrow the audience to a specific type of private property owner, such as multi-family property or business owners. Selecting an audience will also help Permittees determine the most effective way to disseminate the E&O information (see **Section 9.3.3**).

Develop Effective Messaging: Craft effective messaging tailored to the selected audience. Research shows behavior change is more dependent on self-interest than other motivators, such as environmental stewardship (Taylor & Wong, 2002). Messages should relate to the audience's values and include a personal connection between their actions and maintaining BMPs on private property (Water Words That Work, LLC, 2016). Other recommendations for developing effective messaging include (Water Words That Work, LLC, 2016):

- Use a positive tone and focus on outcomes.
- Identify specific actions property owners can take and show examples of people making a positive difference.
- Connect behavior to the direct impacts on local rivers, streams, and aquifers. Mention specific names of rivers, streams, and aquifers as much as possible.
- Do not start messages by mentioning cost or comparing the cost of alternatives. Cost is a key motivator for some people but is often not the primary cause of behavior change.
- Keep messages simple, even when discussing a complex issue. Avoid jargon, and frame messages in terms property owners will understand.
- Include photos and illustrations.
- Provide materials in languages besides English, as appropriate to the audience.

Eliminate Barriers Where Possible: Property owners are more likely to change their behavior when barriers are removed (Water Words That Work, LLC, 2016). For example, if Permittees require property owners to hire a third party for BMP inspection, providing a list of approved third parties reduces the time and effort for the property owner to find a qualified inspector. An example of this is the City of Spokane, which developed a webpage for annual certifications of private stormwater utilities. The webpage provides information on the importance of BMP maintenance; the certification process, including required documentation; and a list of certified inspection service providers in the Spokane area (Certification of Private Stormwater Facilities - City of Spokane, Washington (spokanecity.org)).

Partner with Local Organizations: Partner with local organizations, neighborhood groups, or nonprofits to assist with outreach. This will help reduce Permittee time and resources needed for E&O plan implementation. For example, Seattle partnered with a local nonprofit, Stewardship Partners, which helped the City go door to door and promote its RainWise program (Crisostomo, Ellis, & Rendon, 2014) (see **Chapter 7**). Permittees can also partner with neighboring jurisdictions to save time and resources when developing and distributing E&O materials or hosting workshops.

Evaluate the Plan: Evaluate the E&O plan to confirm goals are being met and Permittee time and resources are well spent. It is important to verify that the plan is on track by conducting evaluations for short-, medium-, and long-term desired outcomes (Neiswender & Shepard, 2016). Common methods for evaluating E&O progress are to either administer surveys or collect observational data before and

after conducting E&O efforts to determine whether the desired outcome was achieved. A recent Stormwater Action Monitoring (SAM) study developed evaluation guidance for behavior change campaigns and E&O programs. The study is included as Appendix 7.9 of the Final Whitepaper and can be found at the following weblink: Evaluating the Effectiveness of Stormwater Education and Outreach: Permittee Guidance for Addressing Challenges through Behavior Change.

9.5 Appendix

9.5.1 Appendix 9-A – Education and Outreach Resources

The following resources may be used when developing ideas for education and outreach campaigns.

- City of Spokane has produced two brochures that were created as outreach materials to educate the general public, specifically residential property owners, about stormwater impacts and BMPs. These materials are typically distributed to the public at neighborhood council meetings.
    - Managing Stormwater – A Residential Guide https://static.spokanecity.org/documents/publicworks/stormwater/managing-stormwater-brochure.pdf
    - Stormwater Pollution Guide https://static.spokanecity.org/documents/publicworks/stormwater/stormwater-pollution-guide.pdf

- Thurston County has developed a brief guidebook for property owners and managers who do their own maintenance. The County also hosts online workshops that provide property owners with information about BMP inspections and maintenance. This training targets a broad audience, including residential, HOAs, businesses, stormwater contractors, landscapers, and property managers.
    - Maintaining Your Neighborhood Stormwater Facility https://s3.us-west-2.amazonaws.com/thurstoncountywa.gov.if-us-west-2/s3fs-public/2023-01/cped-storm-docs-rs-mnt-diy-booklet-how-to-ID-and-maintain.pdf
    - Workshop https://www.thurstoncountywa.gov/departments/community-planning-and-economic-development-cped/community-planning/storm-workshop

- Yakima County uses Construction and Post construction inspections and brochures.
    - Stormwater Construction Project.pub (yakimacounty.us)
    - Training | Yakima County, WA

- Lake County Stormwater Management Commission, Illinois, has developed a guidebook for homeowners associations and property owners that provides information about the different types of BMPs; signs of degradation; maintenance responsibilities and costs; inspections; and developing a maintenance plan.
    - Citizens Guide to Maintaining Stormwater BMPs https://www.lakecountyil.gov/DocumentCenter/View/2961/A-Citizens-Guide-to-Maintaining-Stormwater-Best-Management-Practices-PDF?bidId=

- At the time this manual was published, the Washington Stormwater Center was in the process of developing a website with examples of E&O materials that Permittees have developed. Below is weblink to the site.
    - https://www.wastormwatercenter.org/permit-assistance/municipal/education-outreach/

Chapter 10
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