Thurston County Stormwater Utility

Thank you for providing an opportunity to review preliminary draft language. The three attached files contain Thurston County's comments regarding the drafts.

PH_I_II_PrelimPermit_Comments_ThurstonCo.pdf contains our comments related to Education & Outreach, IDDE Tracking & Reporting, Mapping, and Monitoring.

PH_I_PrelimSSC_Comments_ThurstonCo.pdf contains our comments related to Structural Stormwater Control.

PH_II_PrelimSourceCont_Comments_ThurstonCo.pdf contains our comments related to Source Control.

Contact Larry Schaffner (schaffl@co.thurston.wa.us)should you have any questions.

Source Control Program for Existing Development (WWA Phase II)

Preliminary draft "fact sheet"

I. Introduction

The Washington Department of Ecology (Ecology) is working on reissuing the Western Washington Phase II Municipal Stormwater Permit. Ecology prepared preliminary draft permit language of specific permit sections and is accepting informal comments until 11:59 p.m. **January 19, 2018.**
Send your comments to: http://ws.ecology.commentinput.com/?id=tkx29

Or mail hard copies to:

Municipal Stormwater Comments
WA Department of Ecology
Water Quality Program
PO Box 47696
Olympia, WA 98504-7696

II. Proposal

Ecology proposes to add a "Source Control Program for Existing Development" to the Western Washington Phase II Municipal Stormwater Permit (Permit).

This program is modeled after the requirement in the Phase I permit.

III. What is a "source control program for existing development?"

The source control program for existing development (program) is a proactive, preventative, inspection-based program that is focused on addressing pollution from existing land use and activities that have the potential to release pollutants to the MS4. This program relies on local authority to inspect businesses and properties, and if necessary requires operation or structural source control BMPs in order to prevent pollution from entering the MS4.

Components of the program include:

- Authority to require the use of BMPs to address pollution from existing land use & activities
- Development of an inventory of businesses/properties
- Inspections
- Progressive compliance strategy, including authority to inspect and enforce
- Staff training
- Guide for creating the inventory (appendix)

IV. Why include this program in the Permit?

Ecology received input from a group of permittees that recommends adding this program to the Permit. At Ecology-held listening sessions on permit reissuance (in spring 2017), Ecology proposed adding this program to the Permit and the feedback was mixed. Some saw real value in adding this program as a means to be proactive in their community by:

- preventing illicit discharges.
- leveraging the IDDE field screening requirement.
- building relationships and sharing information.

Others were hesitant to endorse adding the program due to:

- lack of resources and cost effectiveness of program within small municipalities.
- concern of overlap with other inspection programs (e.g. health districts, industrial stormwater permit).
- preference for adding this program to Education and Outreach or relying on technical assistance only, rather than following a progressive compliance strategy to prevent pollution.

Preventing pollutants from coming into contact with stormwater and entering the MS4 is the best way to reduce impacts of municipal stormwater and thus protect receiving waters. This program has been effective within the Phase I permit coverage areas, as well as within Phase II communities implementing similar programs voluntarily. We expect better protection of receiving waters by expanding this program to all western Washington municipal stormwater permittees. The compliance strategy should include technical assistance and education and outreach as the first approach to gain compliance. Enforcement actions are only needed when other approaches are found to be ineffective. While each Permittee will need to have local authority to require the use of BMPs, Permittees may work together or form regional partnerships as a means to implement the inspection program locally.

V. Will there be a transition period to develop this program?

The proposed permit requirement provides a transition period to develop the program and begin inspections. This allows time to form regional partnerships to help meet this requirement. We propose:

- two years to adopt any necessary ordinances and develop the inventory of businesses.
- two and a half years to begin inspections.

Commented [TC1]: To encourage regional partnerships, the Permit should extend the compliance timeline by an additional year to allow for the additional startup time required to develop and gain approval on inter-local agreements, budgeting (with the potential for need for utility rate increases), securing approval for additional staffing, etc. that is association with the startup of a significant new regional program.

These timeframes are based on the input Ecology received at the listening sessions. The number of annual inspections is equal to 20% of the businesses or properties on the inventory list. Follow-up inspections count towards the annual inspection rate. Furthermore, Permittees may prioritize inspections based on local priorities. If a jurisdiction knows that a health district or industrial stormwater inspector will inspect a particular business/property, the Permittee may choose to prioritize other businesses/properties to inspect.

VI. What is Ecology's Local Source Control Partnership?

Ecology's Hazardous Waste program coordinates a program known as the Local Source Control Partnership. Currently, the Local Source Control (LSC) Partnership is comprised of 20 local governments (cities, counties, and health districts), including a number of permittees. Through interagency

agreements with Ecology, the local jurisdictions receive funding to conduct site visits to small businesses. During the site visits, pollution prevention specialists show businesses how to properly manage their hazardous waste and help them diagnose and fix stormwater-related issues. The site visits, along with other pollution prevention activities conducted by the local jurisdictions, are designed to reduce or eliminate hazardous waste and pollutants at the source. When unable to resolve high priority environmental issues through technical assistance, the local pollution prevention specialists refer the issues to a local or state regulatory agency.

The LSC program does not include an enforcement component, and therefore does not fully meet this permit requirement.

VII. Resources

- Source Control Resources from Ecology's Hazardous Waste Local Source Control program http://www.ecy.wa.gov/programs/hwtr/lsp/trngws.html
    - Pollution prevention: http://www.ecy.wa.gov/programs/hwtr/reducewaste.html
    - Safer Alternatives: http://www.ecy.wa.gov/programs/hwtr/p2/SaferAlts.html

1. Source Control Program for Existing Development

   a. Each Permittee shall implement a program to prevent and reduce pollutants in runoff from areas that discharge to MS4s. The program shall include:

      i. Application of operational and structural source control BMPs, and, if necessary, treatment BMPs/facilities to pollution generating sources associated with existing land uses and activities.

      ii. Inspections of pollutant generating sources at publically and privately owned commercial and industrial properties to enforce implementation of required BMPs to control pollution discharging into the Permittee's MS4.

      iii. Application and enforcement of local ordinances at sites, identified pursuant to S5.C.6.b.ii, including sites with discharges authorized by a separate NPDES permit. Permittees that are in compliance with the terms of this permit will not be held liable by Ecology for water quality standard violations or receiving water impacts caused by industries and other Permittees covered, or which should be covered under an NPDES permit issued by Ecology.

      iv. Practices to reduce polluted runoff from the application of pesticides, herbicides, and fertilizer discharging into MS4s owned or operated by the Permittee.

   b. Minimum performance measures:

      i. No later than August 1, 2021, Permittees shall adopt and begin enforcement of an ordinance(s), or other enforceable documents, requiring the application of source control BMPs for pollutant generating sources associated with existing land uses and activities (see Appendix X to identify pollutant generating sources).

         The requirements of this subsection are met by using the source control BMPs in Volume IV of the Stormwater Management Manual for Western Washington, or a functionally equivalent manual approved by Ecology.

         Operational source control BMPs must be required for all pollutant generating sources. Structural source control BMPs, or treatment BMPs/facilities, or both, shall be required for pollutant generating sources if operational source control BMPs do not prevent illicit discharges or violations of surface water, groundwater, or sediment management standards because of inadequate stormwater controls. Implementation of source control requirements may be done through education and technical assistance programs, provided that formal enforcement authority is available to the Permittee and is used as determined necessary by the Permittee, in accordance with S5.C.6.b.iv., below.

      ii. No later than August 1, 2021, the Permittees shall establish an inventory that identifies publically and privately owned commercial, and industrial properties which have the potential to generate pollutants to the Permittee's MS4. The inventory shall include:

(a) Businesses and/or properties identified based on the presence of activities that are pollutant generating (refer to Appendix X).

(b) Complaint-based response to identify other pollutant generating sources, such as: mobile or home-based businesses and multifamily properties.

iii. No later than January 1, 2022, Permittees shall implement an inspection program for sites identified pursuant to S5.C.6.b.ii. above.

~~(a) All identified sites with a business address must be provided information about activities that may generate pollutants and the source control requirements applicable to those activities. This information must be provided by mail, telephone, electronic communications, or in person. This information may be provided all at one time or spread out over the permit term to allow for tailoring and distribution of the information during site inspections.~~

~~(b)~~(a) The Permittee shall annually complete the number of inspections equal to 20% of the businesses and/or properties listed in their source control inventory to assure BMP effectiveness and compliance with source control requirements. The Permittee may count follow-up compliance inspections at the same site toward the 20% inspection rate. The Permittee may select which sites to inspect each year and is not required to inspect 100% of sites over a 5-year period. Sites may be prioritized for inspection based on their land use category, potential for pollution generation, proximity to receiving waters, or to address an identified pollution problem within a specific geographic area or sub-basin.

~~(c)~~(b) Each Permittee shall inspect 100% of sites identified through legitimate complaints which may count towards the 20% inspection rate.

iv. No later than January 1, 2022, each Permittee shall implement a progressive enforcement policy to require sites to come into compliance with stormwater requirements within a reasonable time period as specified below:

(a) If the Permittee determines, through inspections or otherwise, that a site has failed to adequately implement required BMPs, the Permittee shall take appropriate follow-up action(s) which may include: phone calls, reminder letters or follow-up inspections.

(b) When a Permittee determines that a facility has failed to adequately implement BMPs after a follow-up inspection, the Permittee shall take enforcement action as established through authority in its municipal code and ordinances, or through the judicial system.

(c) Each Permittee shall maintain records, including documentation of each site visit, inspection reports, warning letters, notices of violations, and other enforcement records, demonstrating an effort to bring facilities into compliance. Each Permittee must also maintain records of sites that are not inspected because the property owner denies entry in order to count towards the 20% inspection rate.

Commented [TC2]: King County found this aspect of the program to be ineffective and recommends it be eliminated. King County's experience in regards to this program element appears consistent with research findings concluding that awareness campaigns are insufficient in bringing about desired behavior change. Furthermore, this type of information can be more effectively delivered, in context, via the required progressive enforcement policy.

(d) A Permittee may refer non-emergency violations of local ordinances to Ecology, provided, the Permittee also makes a documented effort of progressive enforcement. At a minimum, a Permittee's enforcement effort shall include documentation of inspections and warning letters or notices of violation.

v. Permittees shall train staff who are responsible for implementing the source control program to conduct these activities. The ongoing training program shall cover the legal authority for source control, source control BMPs and their proper application, inspection protocols, lessons learned, typical cases, and enforcement procedures. Follow-up training must be provided as needed to address changes in procedures, techniques, requirements, or staff. Permittees shall document and maintain records of the training provided and the staff trained.

Public Education and Outreach (WWA Phase II)

Preliminary draft "fact sheet"

I. Introduction

The Washington Department of Ecology (Ecology) is working on reissuing the Western Washington Phase II Municipal Stormwater Permit. Ecology has prepared preliminary draft sections of permit language and is accepting informal comments on these sections until **11:59 p.m. January 19, 2018. Send your comments to:** http://ws.ecology.commentinput.com/?id=tkx29

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II. Proposal

Ecology proposes to revise the "Public Education and Outreach" (Ed &O) permit section in the Phase I (Special Condition S5.C.10) and Western Washington Phase II Municipal Stormwater Permits (Special Condition S5C.1.). While the proposed changes to both Permits are similar, this section is tailored to the proposed changes for the Phase II Permit - there is a separate preliminary draft section and overview for Phase I. The revisions focus on providing clarity to the components that make up the public education and outreach program:

1. general awareness,
2. behavior change, and
3. stewardship opportunities.

The general awareness and stewardship sections stay largely the same as in the 2013 permit, with language added to help clarify how many audiences and BMPs must be targeted, and how to create stewardship opportunities. The behavior change section is revised and clarified to set specific expectations for the process that must be followed in order to encourage changes in behavior.

III. What are the proposed permit changes?

S5.C1. Introductory paragraph: revised the formatting and added language to clarify the three-prong approach to the public education and outreach program, each component (e.g. building awareness, behavior change, and stewardship) was included in the 2013 permit. Additional language to emphasize and clarify how the program can be a regional effort as well as an individual permittee program.

S5.C.1.a: Specific language changes to clarify requirements, and that the selection of target audiences and subject areas must be based on addressing a local water quality priority.

S5.C.1.a.i: Language clarifications that this is the "general awareness" requirement, and the minimum level of effort.

S5.C.1.a.i.(a): Revisions to clarify target audiences and subject areas. Subject area-: *impacts of illicit discharges and how to report them* was removed as this topic is a requirement of the IDDE section.

Commented [TC1]: To present all the E&O requirements in the same place in the permit, we recommend considering moving the illicit-related E&O requirements to S5.C. Particularly given that there are still mention of IDDE in S5.C.1.a.ii.(2)(a).

S5.C.1.a.ii: Language clarifications that this is the "behavior change" requirement, and the minimum level of effort.

S5.C.1.a.ii.(a): Revisions to clarify target audiences and BMPs. General public, was removed as a target audience as this category is too broad to focus a behavior change program. Behavior change programs should target a more specific audience so that it is easier to discern barriers and opportunities for the desired behavior. Target audiences were combined in this section for clarity. Source control BMPs is added a BMP to promote.

S5.C.1.b: Requires a new evaluation of the on-going behavior change program to determine program effectiveness and the next steps. Using this evaluation, Permittees will design the next iteration of the program using community-based social marketing methods to develop a strategy and schedule. Three different options to proceed are offered:

i. Develop a strategy and schedule to more effectively implement the existing program, or

This option is to refine the existing, ongoing, behavior change program with the *inclusion* of community based social marketing methods. This includes, if not part of the program already, a plan to evaluate the effectiveness of the program *going forward.*

ii. . Develop a strategy and schedule to expand the existing program to a new target audience or BMPs; or

This option is to expand the existing, ongoing behavior change program to a new audience with the same BMP, or same audience but a new BMP may be a better fit or more effective at achieving the desired behavior change.

iii. Develop a strategy and schedule for a new target audience and BMP behavior change campaign.

This option is to develop a new approach for the behavior change program, focusing on a new audience and BMP than the existing program.

Solely relying on providing information is not adequate to changing the behavior of individuals. Community-based social marketing is a Best Management Practice to promoting and achieving behavior change. Community-based social marketing uses tools and findings from social psychology to discover the perceived barriers to behavior change and ways of overcoming these barriers (McKenzie-Mohr 2011). Community-based social marketing is pragmatic and generally involves:

- identifying the barriers for a specific demographic (target audience) to adopting a desired behavior
- developing and piloting a program to overcome these barriers
- implementing the program ~~across a community~~
- evaluating the effectiveness of the program

Commented [TC2]: Depending on the target audience, this may or may not be applicable across the entire community. For example, the target audience may be geographically defined.

S5.C.1.c: provides the date by which the strategy developed under S5.C.1.b must begin to be implemented. This does not necessarily mean when a new or refined program must roll out to the target audience, but may include the start of a survey or focus groups of the target audience or other early tasks that inform the behavior change program.

S5.C.1.d: Provides the due date to report on the effectiveness of the strategy and any potential changes to improve effectiveness of the behavior change program. This provision provides time for the program to develop and be implemented, with time to evaluate and report on the effectiveness of the behavior change program – or how well did the target audience ~~receive~~respond to the message and change their behavior to the desired actions?

Please consider and comment on whether the timeframe provided above in this preliminary draft is appropriate and compliance with this schedule is feasible. If not, please explain.

S5.C.1.e: Describes the stewardship element of the program. Revisions added for clarification.

IV. Why these proposed changes to Ed & O?

Ecology received input from Permittees, the regional education and outreach group- STORM, and environmental groups, which recommend changes to the education and outreach program. Significant issues raised include:

- the need to focus the program on known local water quality problems,
- refine the Phase I behavior change section – specifically because this section of the permit requires significant time and resources to create and implement behavior change campaigns for each of the target audiences and best management practices (BMPs). The requirement to address the full list was diluting the effectiveness of the program overall.

After considering the comments, existing permit language, as well as permit submittals related the to the education and outreach programs, Ecology finds it important to align the Phase I and Phase II permit requirements so that partnerships between Phase I and Phase II permittees can continue to leverage resources, as well as provide consistent programs to the regions. The preliminary permit language clarifies that the selection of the target audiences and topics be based on local water quality issues. In order to instill consistency in the process for implementing a behavior change campaign, community-based social marketing, a best management practice for establishing behavior change, is called out specifically as the process to follow.

V. Resources on CBSM

- Getting Your Feet Wet with Social Marketing
  by Jack Wilbur, Utah Department of Agriculture and Food

- Community Based Social Marketing - based on the book by Doug McKenzie-Mohr

- Tools of Change - offers specific tools, case studies, and a planning guide for helping people take actions and adopt habits that promote health and/or are more environmentally-friendly.

- Social Norms: An Underestimated and Underemployed Lever for Managing Climate Change by Vladas Griskevicius, University of Minnesota, Robert B. Cialdini, Arizona State University, and Noah J. Goldstein, University of Chicago -This paper reviews numerous field experiments to "harness the power of social norms to influence pro-environmental behavior."

- Social Marketing Strategies for Stormwater Business Outreach: Summary of Recent Research in the Puget Sound Region: Assistance for Developing and Implementing Local Programs - This report summarizes findings from six different formative research projects recently completed in the Puget Sound region focusing on business practices that can pollute stormwater runoff. The report includes a summary of recommended and not recommended outreach strategies that have been tested through surveys, interviews, and focus groups as well as some that have been piloted and evaluated.

VI. References

McKenzie-Mohr, D. 2011. Fostering Sustainable behavior: an introduction to community-based social marketing, 3rd edition. New Society Publishers, Gabriola Island, B.C.

1. Public Education and Outreach

The SWMP shall include an education and outreach program designed to:

- ☐ Build general awareness about impacts from, and methods to address and reduce stormwater runoff;
- ☐ Affect behavior change to reduce or eliminate behaviors and practices that cause or contribute to adverse stormwater impacts; and
- ☐ Create stewardship opportunities that have the potential to address and reduce stormwater runoff and which encourage community engagement in (not necessarily awareness or education about) BMPs and related civic behaviors.

~~reduce or eliminate behaviors and practices that cause or contribute to adverse stormwater impacts and encourage the public to participate in stewardship activities. The education program may be developed and implemented locally or regionally.~~Permittees may meet these requirements individually or as a member of a regional group. Regional collaboration on general awareness or behavior change programs, or both, includes Permittees developing a consistent message, determining best methods for communicating the message, and when appropriate, creating strategies to affect behavior change. Each Permittee shall implement what is developed regionally at the local jurisdiction or modified and implemented to account for variances at the local level.

The minimum performance measures are:

a. Each Permittee shall ~~provide~~ implement an education and outreach program for the area served by the MS4. ~~The program shall be designed to educate target audiences about the~~The program design must be evidence-based, drawing upon information about the local environment and audience characteristics as much as possible to identify high priority goals, target audiences, subject areas, and/or BMPs. When local information is lacking, extrapolating from regional, national, or other sources may be appropriate. Permittees should consider using the following sources of information: ~~on~~ local water quality deficiencies, ~~and~~ demographic information of target audiences, survey data, and qualitative research (e.g., interview and focus groups, observations, and research findings). ~~to identify high priority target audiences, subject areas, and/or BMPs. stormwater problem and provide specific actions they can follow to minimize the problem~~.[1]

   i. General awareness. To build general awareness, Permittees shall select ~~from the following~~ at a minimum one target audiences ~~and~~ one subject areas ~~from~~ either (a) or (b):

      (a) Target audiences: General public (including school age children), and businesses (including home-based, and mobile

Commented [TC3]: Recent findings in the field of environmental communication have called into question the efficacy of efforts to raise awareness on intended positive outcomes. Knowledge deficit is no longer considered to be the primary reason for resistance to behavior change.

In fact, unintended consequences such as "backfire" or "boomerang" effects can occur, where audiences become more polarized and resistant to change. While not much research specific to stormwater has been done, this has been frequently noted in the topic area of climate change.

Recommend not requiring general awareness campaigns by permittees, but instead focus on how best to achieve desired behavior change. Let permittees do the analysis first to decide if increasing awareness would help change behavior.

Commented [TC4]: If not this language, we suggest elaborating to the purpose of creating stewardship opportunities.

Commented [TC5]: This seems like it could have negative outcomes if the messages and approach developed regionally are not as applicable to the audiences and demographics at specific jurisdictions. Thurston County hopes there would be allowance for jurisdictions to modify regional messages, approaches, and materials to fit their own needs.

Commented [TC6]: Please consider an additional option that allows permittees to choose priorities that are proactive in preventing known high-risk stormwater-related impacts from occurring. For example, E&O-related program efforts related to supporting permit's *Source Control Program for Existing Development*.

Commented [TC7]: Designing programs based on local water quality could be better supported if the Permit's S8 allowed greater flexibility for options to support local monitoring to diagnose stormwater-related water quality issues as well as evaluate the effectiveness of local programs targeted to those stormwater-related water quality issues.

businesses). Subject areas:

- General impacts of stormwater on surface waters.
- Impacts from impervious surfaces.
- ~~Impacts of illicit discharges and how to report them.~~

[1] New Permittees shall begin implementing the requirements of S5.C.1 no later than August 1, 2015.

- Low impact development (LID) principles and LID BMPs.
- Opportunities to become involved in stewardship activities.

(b) Target audiences: Engineers, contractors, developers and land use planners. Subject areas:

- Technical standards for stormwater site and erosion control plans.
- LID principles and LID BMPs.
- Stormwater treatment and flow control BMPs/facilities.

ii. Behavior change. To effect behavior change, Permittees shall select, at a minimum, ~~from the following~~ one target audiences ~~and~~ BMP(s):

(a) Target Audiences: ~~General public~~Residents, landscapers, property managers/owners, ~~(which may include~~ school age children~~)~~, businesses (including home-based and mobile businesses). BMPs:

- Use and storage of automotive chemicals, hazardous cleaning supplies, carwash soaps and other hazardous materials.
- Equipment maintenance.
- Prevention of illicit discharges.

~~Residents, landscapers and property managers/owners~~

- Yard care techniques protective of water quality.
- Use and storage of pesticides and fertilizers and other household chemicals.
- Carpet cleaning.
- ~~and a~~Auto repair and maintenance.
- Vehicle, equipment and home/building maintenance.
- Pet waste management and disposal.
- LID principles and LID BMPs.
- Stormwater facility maintenance.
- Dumpster and trash compactor maintenance.

Commented [TC8]: *General awareness* doesn't seem like the appropriate reference given the permittees are directed to select a specific target audience and subject area. Thurston County recommends removing the requirement for awareness campaigns or at least make it optional as it could be at odds with behavior change goals.

Commented [TC9]: Two separate bullets as these are two separate business sectors. Carpet cleaning is a mobile type business and auto repair maintenance is generally not a mobile business. The potential for polluting activities varies greatly between these two sectors. Mobile vehicle detailing businesses could be more easily grouped with carpet cleaning businesses.

•(Audience specific) Source control BMPs (refer to S5.C.X).

b. No later than April 31, 2020 [~nine mos from eff. Date], each Permittee shall conduct a new evaluation of the effectiveness of the ~~ongoing~~ behavior change program (required under S5.C.1.a.ii of the 2013-2018 Permit). Permittees shall document lessons learned and recommendations for which option to select from S5.C.1.b.i-iii. Based on this evaluation, [within 18 months from eff. date] by February 1, 2021, each Permittee shall use community-based social marketing methods [2], including the development of a program evaluation plan), or equivalent, to:

i. Develop a strategy and schedule to more effectively implement the existing program; or

ii. Develop a strategy and schedule to expand the existing program to a new target audience or BMPs; or

iii. Develop a strategy and schedule for a new target audience and BMP behavior change campaign.

c. No later than April 1, 2021, begin to implement the strategy developed in S5.C.1.b.

~~b.~~d. No later than March 31, 2024, evaluate and report on the changes in understanding and adoption of targeted behaviors resulting from the implementation of the strategy and any program changes needed~~to the program~~ in order to ~~be~~improve its ~~more~~ effectiveness; describe the strategies and process to achieve the results.

Note to reader: Please consider and comment on whether the timeframe provided above is appropriate and compliance with this schedule is feasible. If not, please explain.

~~c.~~e. Stewardship. Each Permittee shall create stewardship opportunities and/or partner with existing organizations (including non-permittees) to encourage ~~residents~~target audiences to participate in hands-on stormwater management-related activities or events planned and organized within the

[2] Community-based social marketing: A systematic way to change the behavior of communities to reduce their impact on the environment. Realizing that providing information is usually not sufficient to initiate behavior change, community-based social marketing uses tools and findings from social psychology to discover the perceived barriers to behavior change and ways of overcoming these barriers.

Commented [TC10]: Highly likely that behavior change programs might be more effective if they are not ongoing. We prefer to have the option to do time-limited campaigns or ongoing campaigns based on jurisdictional evaluation for what they believe will be best designed for effective behavior change.

Commented [TC11]: Does this mean CBSM or equivalent methods? CBSM may not be appropriate in all situations, so we think allowing for some leeway would be beneficial.

Commented [TC12]: It may be difficult for some jurisdictions to begin to implement a new strategy by April 2021 if they are on bi-annual budgets. They could certainly try to project budget costs, but until the evaluation is completed a final budget would be hard to calculate.

Conducting a robust evaluation and identifying strategies/program changes to improve effectiveness is time-consuming and expensive. Thurston County would not suggest anything less than the almost three years proposed to begin implementing and evaluating. 3 ½ years would be better as we don't want to do a sub-par evaluation effort.

Commented [TC13]: Too narrow; could also engage with businesses, visitors, and organizations.

community and local areas, such as: ~~stream teams,~~ storm drain marking, ~~volunteer~~water quality monitoring, riparian plantings, ~~and education activities~~BMP installation and/or maintenance, or civic engagement or community outreach related to stormwater issues.

Commented [TC14]: Not an activity in and of itself, but Stream Team participants may carry out some of these activities.

Commented [TC15]: i.e., volunteers who take action to engage others.

d. ~~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 February 2, 2016, Permittees shall use the resulting measurements to direct education and outreach resources most effectively, as well as to evaluate changes in adoption of the targeted behaviors.[3] Permittees may meet this requirement individually or as a member of a regional group.~~

[3] ~~By no later than August 1, 2017, new Permittees shall begin using the results of measurements to direct education~~

~~and outreach resources more effectively, as well as to evaluate changes in adopted behaviors.~~

Illicit Discharge Detection and Elimination(IDDE)

Phase I and Western Washington Phase II Municipal Stormwater Permits

*Proposed approach to update the **IDDE tracking and reporting requirements** for the 2019 permit reissuance.*

I. Introduction

The Washington Department of Ecology (Ecology) is working on reissuing the Phase I and Western Washington Phase II Municipal Stormwater Permit. Ecology prepared preliminary draft permit language or narrative descriptions of specific permit sections and is accepting informal comments until 11:59p.m., January 19, 2018. Send your comments to: http://ws.ecology.commentinput.com/?id=tkx29
Or mail hard copies to:

Municipal Stormwater Comments
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II. Proposal

This is a summary of several changes Ecology is proposing related to Permittees' IDDE permit requirements. Proposed permit language for the entire IDDE permit section will be released in spring 2018.

Proposed changes to Phase II permit requirements

1. Move mapping requirements from S5.C.3 to a new mapping section under S5.C..

Proposed changes to Phase I and WWA Phase II permits:

2. Proposed new Phase II S5.C.3.f / Phase I S5.C.8.g language in red:
   - Recordkeeping: Each Permittee shall track and maintain records of the activities conducted to meet the requirements of this section. In the annual report, each permittee shall submit data for all ~~of the potential~~confirmed illicit discharges, including spills and illicit connections, found by or reported to the Permittee during the previous calendar year. The summary shall include the information and formatting specified in WQWebIDDE. Applicable data shall be reported for all ~~potential~~confirmed incidents, regardless of whether G3 notification was required~~, whether an illicit discharge was confirmed,~~ or whether follow-up action was required by the Permittee. Each permittee may either use their own system or WQWebIDDE for recording this data. Final submittal must follow the schema described in WQWebIDDE.

Commented [TC1]: Reporting and assessing confirmed illicit discharges has value in identifying reoccurring problem areas, trends, and areas to focus preventive measures. In contrast, "potential illicit discharges" constitutes a very wide spectrum of scenarios and has little diagnostic value (the text box below states: "Ecology wants the requirement to be meaningful and useful."). Does Ecology feels there value in reporting the number of incidents that turned out to be false positives? If so, only questions 1-6 would be able to be answered for "potential illicit discharges". Thurston County responds to many reported "spills" that lead to nothing found or unable to locate.

Note to readers: An IDDE incident tracking and reporting annual report question is in the current permit. Ecology issued guidance for permittees to meet this requirement but it was used by few permittees. Ecology wants the requirement to be meaningful and useful. The Stormwater Work Group stakeholder committee involved permittees in providing helpful definition and clarity to the expected reporting requirements. Ecology's IT department is building a form in the web portal that is primarily intended for use by permittees with smaller numbers (approximately <50) of incidents. Permittees with their own data bases should have their IT departments take a look at the data schema provided with this informal draft permit language.

3. Revised annual report question Phase II Q20/ Phase I Q48:

Q20/48. Attach ~~a summary of~~ a zipped xml file with data describing the actions taken to investigate, characterize, trace and eliminate each ~~potential~~confirmed illicit discharge found by or reported to the ~~permittee. For each confirmed illicit discharge, include a description of actions according to the required timeline per S5.C.3.d.vi/S5.C.8.d.iv.~~ The submittal must include all of the applicable information and must follow the schema described in WQWebIDDE.

4. Delete/remove annual report questions (PH II/PH I: Q15b/44b, Q19/47, and Q61/87.

Commented [TC2]: The Stormwater Work Group stakeholder committee wasn't the best "informed" forum for this topic. ROADMAP would have been a far better venue to initiate the conversation as those participates implement these responsibilities. The caveat for both groups, is that participation is primarily limited to permittees in the Puget Sound area and thus would not likely capture southwest WA permittee and those in the extreme outer reaches of the Puget Sound basin where travel time to attend meeting becomes prohibitive.

Commented [TC3]: Thurston County developed its database attempting to capture the best of the approaches/best practices used by the Center of Watershed Protection; the GROSS grant funded *Illicit Connection & Illicit Discharge Field Screening & Source Tracing Guidance Manual* prepared for Ecology by King County, Washington Stormwater Center, and Herrera Environmental Consultants; and the SIDAR form.

Taking this action represents a significant proactive step in the County's ability to document, assess, and report on illicit discharges and illicit connections. Changing Thurston County's database schema to fully reflect what proposed in the preliminary draft represents a huge cost, would involve a significant investment of time, and result in a disconnect of the information the County collected to date using our existing schema. In addition, incurring such costs risks sending a message that there are potentially high costs to taking responsible proactive measures.

Adding additional fields to our existing schema would be less disruptive, but removing/replacing existing fields would break links to historical data records.

IDDE Reporting Schema

Shane Homan for Karen Dinicola

V0.2

IDDE Questions and Answers

1. Jurisdiction name (Permit Number)
2. Incident ID assigned by jurisdiction
3. Date incident reported
4. Date to begin response
5. Date to end response
6. Date of final resolution
   - Transferred to another party?
7. Discharge to MS4?
   - Yes
      a. Estimated Quantity
         - Unknown
         - Sheen
         - Less than 10 Gallons
         - 10 to 100 Gallons
         - 100 to 1,000 Gallons
         - 1,000 to 10,000 Gallons
         - Greater than 10,000 Gallons
      b. Discharge Frequency
         - Continuous or Ongoing
         - Intermittent
         - One-Time
   - No
      - ~~Discharge~~ Cleaned Up prior to entering the MS4
      - Discharge to Combined sewer
      - Discharge to Private or other sewer
      - Other
         - Explain
   - Unknown
8. G3 notification?
   - Yes
      - ERTS case number
   - No

9. Incident location
   - Address
      - Street
      - City
      - State
      - Zip
      - Nearest Intersection
   - Tax Parcel
   - Latitude/Longitude
      - Latitude
      - Longitude
10. How was the incident discovered?
   - pollution hotline
   - (includes phone and/or web and/or mobile app)
   - direct report to staff
   - staff referral
   - other agency referral
   - ERTS
   - IDDE field observation
   - inspection
      - business
      - construction
      - catch basin or manhole
      - outfall or other MS4
      - stormwater BMP
      - other
         - Explain
   - other
      - explain
11. Pollutants identified:
- none found
- unconfirmed
- not identified
- unspecified
- vehicle oil, fuel, or other lubricant
- antifreeze or other coolant
- sediment/soil
- sewage/septage
- solid waste/trash
- food waste or oil
- yard waste or other plant or wood waste
- household or industrial chemical
   - Explain
- carpet cleaning waste
- fertilizer

Commented [TC4]: As proposed, this doesn't allow for documenting spills of solids.

Commented [TC5]: This is less granularity that what Thurston County currently captures. Most spills larger than five gallons are able to be quantified based on the known volume of the substance being transported.

Commented [TC6]: There would be no discharge if cleaned up prior to entering the MS4.

Commented [TC7]: Capturing the latitude/longitude information, as is Thurston County's practice, makes recording the address and tax parcel unnecessary. Requiring them all seems unnecessarily redundant.

Commented [TC8]: Limits the granularity of Thurston County's current selection list.

- pesticide or herbicide
- bacteria
- pet waste
- soap/detergent
- fire-fighting foam
- other or unknown foam
- heating oil or kerosene
- roofing or road tar
- cement, concrete, lime, or plaster
- paint (oil based)
- paint (latex)
- PCBs
- refrigerant
- chlorinated water
- other
    - Explain

12. Source or cause:
- n/a
- ~~allowable discharge~~
    - ~~Diverted stream flow~~
    - ~~Flow from riparian habitat or wetland~~
    - ~~Uncontaminated ground water or spring water~~
    - ~~Foundation or footing drain~~
    - ~~Uncontaminated water from crawl space pump~~
    - ~~Air conditioning condensation~~
    - ~~Irrigation water from agricultural source~~
    - ~~Emergency firefighting~~
- ~~conditionally allowed discharge~~
    - ~~Potable water~~
    - ~~Water line flushing or testing~~
    - ~~Lawn watering or other irrigation~~
    - ~~Dechlorinated pool/spa water~~
    - ~~Street/sidewalk wash water~~
- not identified
- illicit connection
- dumping
- spill
- vehicle collision/accident
- construction activity
- construction BMP failure
- structural BMP failure
- runoff due to drainage or grade conditions
- stormwater or flood water
- groundwater pumping
- broken or clogged water or sewer line
- septic system
- leaking or abandoned container/dumpster
- non-emergency firefighting or training
- fueling
- auto repair
- vehicle washing
- vehicle leakage/fluids
- equipment cleaning
- pressure washing
- drive-thru
- mobile business
- retail operations
- restaurant
- logging
- livestock
- other
    - Explain

13. Source tracing:
- n/a
- visual observation
- map analysis
- further inspection or reconnaissance
- indicator testing
- dye testing
- pressure testing
- smoke testing
- video inspection
- canine detection
- optical brightener
- sand bagging
- smell/odor
- other
    - Explain

14. Indicator testing:
- n/a

Commented [TC9]: Significantly long pick lists are hard to navigate and display, especially on mobile devices. Thurston County classifies pollutants in higher level categories and then further defines the specifics in the comments if known or determined through further analysis after the cleanup. The proposed schema approach tries to be all-inclusive and should instead be grouped into higher level categories.

Commented [TC10]: By definition, these would not constitute an IDDE, so it shouldn't need documenting.

Commented [TC11]: Significantly long pick lists are hard to navigate and display, especially on mobile devices. Thurston County classifies pollutants in higher level categories and then further defines the specifics in the comments if known or determined through further analysis after the cleanup. The proposed schema approach tries to be all-inclusive and should instead be grouped into higher level categories.

Commented [TC12]: Note: Yellow highlighted text indicates that we capture this in our IDDE database.

Commented [TC13]: What is this determining?

Commented [TC14]: How many jurisdictions in WA have access to a canine detection dog?

- flow/discharge
- sheen/oil
- floatables
- detergent or surfactants
- ammonia
- color
- odor
- pH
- temperature
- turbidity
- hardness
- nitrates
- potassium
- specific conductivity
- bacteria
- chloride/chlorine
- fluoride
- carbon monoxide
- hydrogen sulfide
- other
    - Explain

15. Correction/elimination methods:

- no action needed
    - Explain
- clean-up
- education/technical assistance
- add or improve source control BMP
- focus on structural
- behavioral or BMP operation modification
- focus on operational
- enforcement:
    - verbal notice
    - written warning
    - correction notice
    - stop work order
    - legal notice
    - penalty or fine
- referred to other agency or department
- follow-up or further investigation
- problem not abated
    - Explain
- Other
    - Explain

16. Field notes, explanations, and/or other comments:

Commented [TC15]: Is this getting at adding or improving source control BMPs?

Commented [TC16]: Doesn't question 6 address this?

Commented [TC17]: Thurston County would not close this incident out if it required further follow-up or investigations.

Mapping requirements

Phase I and Western Washington Phase II Municipal Stormwater Permits
Preliminary draft "fact sheet"

I. Introduction

The Washington Department of Ecology (Ecology) is working on reissuing the Phase I and Western Washington Phase II Municipal Stormwater Permits. Ecology prepared preliminary draft permit language or narrative descriptions of specific permit sections and is accepting informal comments until 11:59 p.m., January 19, 2018. Send your comments to: http://ws.ecology.commentinput.com/?id=tkx29

Or mail hard copies to:

Municipal Stormwater Comments
WA Department of Ecology
Water Quality Program
PO Box 47696
Olympia, WA 98504-7696

II. Proposal

In early spring, Ecology announced that we are considering adding an outfall reporting standard requirement to the permits. We proposed some minimum attribute information and stated that Ecology would load the information received into the Water Quality Atlas. Based on comments received and Ecology's own internal procedures, we are proposing a more step-wise approach to addressing outfall mapping and reporting by requiring the collection of more specific information (i.e. outfall size and material).

Ecology will commit to working with permittees to voluntarily associate outfall data with NHD reach and measure and load into the Water Quality Atlas during the 2019-2024 permit cycle.

We have made some additional refinement and enhancements to the mapping requirements, described below.

III. What are the proposed permit changes?

The proposed permit edits and approach:

- **Phase I**
  - Begin mapping the tributary conveyances to outfalls (with a size of 24" or greater) in rural areas of the county not previously mapped in the previous permit cycle. Previous permit requirements only required the mapping of these features in the urban/higher density rural sub-basins. Comments on the timeframe provided are requested.
- **Phase II**
  - Create new stand-alone permit section for mapping separate from the IDDE permit section. This follows the format of the Phase I permit and creates a more consistent permit structure for western Washington.

  - Make electronic format with fully described mapping standards required (electronic format is currently preferred) with a phase-in period for compliance.
- **Phase I and II**
  - Introduce new term "permanent stormwater facilities" to correct error in 2013 permits that inadvertently narrowed the scope of mapping (and operations and maintenance).
    - **Proposed definition**: Permanent stormwater facilities are structures or devices designed or used to control stormwater flows, or remove pollutants from stormwater, or both.
    - This proposed term will be used in the Operation and Maintenance section for the Phase I permit to address inspections of municipally owned facilities, as well as facilities regulated by the Permittee. In the Phase II permit, this term will be used to clarify inspections of municipally owned or operated facilities.
  - Retain reference to an example description of standards and enhance the example with new guidance and a sample geodatabase (This will be provided with the formal draft permit in 2018).
  - As outfall records are updated or added, additional information describing the size of the outfall and the material that it is made out of must be added. This does not mean that Permittees must re-survey all known MS4 outfalls by the date included in the preliminary permit language, but that as this information becomes available to the Permittee, through inspections, maintenance, project approvals etc., this attribute information would be added to the outfall records.
- Proposed permit edits are shown below in redline.

IV. Mapping guidance

Ecology received a number of questions from interested stakeholders and Permittees asking clarifying questions to the mapping requirements. In addition to the proposed preliminary draft permit language, we have developed draft mapping guidance (attached) that is also available for review and comment. Ecology would appreciate comments on this guidance in order to make it useful and helpful.

PHASE II PERMIT - NEW SECTION - S5.C.0 (Note: Specific special condition number will be determined for the formal draft permit, it will not remain "0")

1. The SWMP shall include an ongoing program for mapping and documenting the MS4.

   The minimum performance measures are:

   a. Ongoing Mapping: Each Permittee shall maintain mapping data for the features listed below ~~of the MS4 shall continue on an ongoing basis~~.[1] ~~MS4 maps shall be periodically updated. Update maps if necessary to meet the requirements of this section no later than February 2, 2018. At a minimum, maps shall include the following information~~:

      i. Known MS4 outfalls and known MS4 discharge points.

      ii. Receiving waters, other than ground water.

      iii. Permanent ~~S~~stormwater ~~treatment and flow control BMPs~~/facilities owned or operated by the Permittee.

      iv. Geographic areas served by the Permittee's MS4 that do not discharge stormwater to surface waters.

      ~~iii.~~v. Tributary conveyances to all known outfalls and discharge points with a 24 inch nominal diameter or larger, or an equivalent cross-sectional area for non-pipe systems. The following attributes shall be mapped:

         (a) Tributary conveyance type, material, and size where known.

         (b) Associated drainage areas.

         (c) Land use.

      vi. Connections between the MS4 owned or operated by the Permittee and other municipalities or public entities.

      ~~iv.~~vii. All connections to the MS4 authorized or allowed by the Permittee after February 16, 2007.

   b. New Mapping: Each Permittee shall complete the following mapping no later than August 1, 2021.

      i. For all known MS4 outfalls, the following attributes shall be mapped: size and material, where known.

[1] New Permittees shall meet the requirements to map the MS4 according to S5.C.~~3~~.a no later than February 2, ~~2018~~2024, except where otherwise noted in this section.
[2] New Permittees shall meet the requirements of S5.C.~~3~~.a.vii, after ~~August 1, 2013~~LINK TO CODE UPDATE for all connections to the MS4 authorized after ~~August 1, 2013~~LINK TO CODE UPDATE.

~~Connections between the MS4 owned or operated by the Permittee and other municipalities or public entities.~~

~~Geographic areas served by the Permittee's MS4 that do not discharge stormwater to surface waters.~~

~~b.~~c. ~~-~~Beginning August 1, 2021, the required format for mapping is electronic with fully described mapping standards. An example description is available on Ecology's website.

~~c.~~d. To the extent consistent with national security laws and directives, each Permittee shall make available to Ecology, upon request, ~~MS4 map(s)~~available maps depicting the information required in S5.C.~~.~~X3~~.~~a.~~i~~ through ~~vii~~b, above. ~~The preferred format for mapping will be an~~is ~~electronic format with fully described mapping standards. An example description is available on Ecology's website.~~

e. Upon request, and to the extent appropriate, Permittees shall provide mapping information to federally ~~-~~recognized Indian Tribes, municipalities, and other Permittees. This permit does not preclude Permittees from recovering reasonable costs associated with fulfilling mapping information requests by federally ~~-~~recognized Indian Tribes, municipalities, and other Permittees.

PHASE I PERMIT – S5.C.2

2. Municipal Separate Storm Sewer System Mapping and Documentation

The SWMP shall include an ongoing program for mapping and documenting the MS4.

Minimum performance measures:

a. Ongoing Mapping: Each Permittee shall maintain mapping data for the features listed below.

i. Known MS4 outfalls and discharge points.

ii. Receiving waters, other than ground water.

iii. Permanent Sstormwater ~~treatment and flow control BMPs~~/facilities owned or operated by the Permittee .including all connections to tributary conveyances (mapped in accordance with this section) and all associated emergency overflows.

iv. Geographic areas served by the Permittee's MS4 that do not discharge stormwater to surface water.

v. Tributary conveyances to all known outfalls and discharge points with a 24-inch nominal diameter or larger, or an equivalent cross-sectional area for non-pipe systems. For Counties, this requirement applies to urban/higher density rural sub-basins. For Cities, this requirement applies throughout the City. The following attributes shall be mapped:

(a) Tributary conveyance type, material, and size where known.

(b) Associated drainage areas.

(c) Land uses.

vi. Connections between the MS4 owned or operated by the Permittee and other municipalities or other public entities.

vii. All connections to the MS4 authorized or allowed by the Permittee after February 16, 2007.

viii. Existing, known connections ~~over~~ greater than or equal to 8 inches in nominal diameter to tributary conveyances mapped in accordance with S5.C.2.a.v. For Counties, this requirement applies to the area of the county within urban/higher density rural sub-basins mapped under the previous permit. For Cities, this requirement applies throughout the City.

b. New Mapping: Each Permittee shall complete the following mapping. ~~no later than~~ ~~August 1, 2021.~~

~~viii.~~ i. For all known MS4 outfalls, the following attributes shall be mapped: size and material, where known, no later than August 1, 2021.

~~ix.~~ ii. No later than four years from the effective date of this permit, Counties shall map tributary conveyances, as described in S5.C.2.a.v., for areas not mapped under the previous permit cycle.

Note to reviewers: Please consider and comment on whether the timeframe provided above is appropriate and compliance with this schedule is feasible. If not, please explain.

~~New Mapping: Each Permittee shall complete the following mapping no later than December 31, 2017.~~

~~x. Counties shall map tributary conveyances, as described in S5.C.2.a.v, for any urban/higher density rural sub-basins not mapped under the previous permit.~~

~~Counties shall map existing, known connections greater than 8 inches in nominal diameter to tributary conveyances mapped in accordance with S5.C.2.b.i.~~

~~Each Permittee shall map existing, known connections equal to 8 inches in nominal diameter to tributary conveyances mapped in accordance with S.5.C.2.~~

~~Each Permittee shall map connections between stormwater treatment and flow control BMPs/facilities and tributary conveyances mapped in accordance with S5.C.2. The Permittee shall map all associated emergency overflows.~~

c. The required format for mapping is electronic with fully described mapping standards. An example description is available on Ecology's website.

~~b.~~d. To the extent consistent with national security laws and directives, each Permittee shall make available to Ecology, upon request, available maps depicting the information required in S5.C.2.a and b, above. ~~The required format for mapping is electronic with fully described mapping standards. An example description is available on Ecology's website~~.

~~c.~~e. Upon request, and to the extent appropriate, Permittees shall provide mapping information to federally recognized Indian Tribes, municipalities, and other Permittees. This permit does not preclude Permittees from recovering reasonable costs associated with fulfilling mapping information requests by federally recognized Indian Tribes, municipalities, and other Permittees.

Draft Mapping Guidance for Phase I and Western Washington Phase II NPDES Municipal Stormwater Permittees

Table of Contents

Ecology is accepting written comments on this draft guidance until 11:59 p.m. January 19, 2018.

Please submit written comments to: http://ws.ecology.commentinput.com/?id=tkx29 *or mail hard copy comments to:*

Municipal Permit Comments
Washington State Department of Ecology
PO Box 47600 Olympia, WA 98504-7600

I. Purpose of this document:

This document provides general guidance to the mapping requirements found in the current Phase I and Western Washington (WWA) Phase II Municipal Stormwater Permits (Permit), as well as in the proposed 2019 draft Permits[1]. Although the specific mapping requirements between the two permits vary slightly, the terms used are the same. The following provides additional guidance on mapping terms and definitions, and example municipal separate storm sewer system (MS4) scenarios, including how features should be mapped in accordance with the permit requirements.

II. Know your MS4:

The mapping requirements found in the permit serves the purpose of supporting implementation of the permit requirements for:

- Illicit Discharge Detection and Elimination (IDDE),
  - including responding to and notification of spills,
- Operation and maintenance of the stormwater infrastructure,
- Informing programs of potential pollutant sources – e.g., Public education and outreach, source control inspections, and local monitoring programs.

To be successful, Permittees must have complete and accurate knowledge of what is regulated under this permit.

Mapping requirements apply only to the Permittee's municipal stormwater system.

Permittees must maintain an on-going mapping program to keep existing maps of their MS4 up-to-date. The 2013 Permits required Permittees to update their MS4 maps by a certain date[2] to include all the new mapping features. The proposed 2019 permit will also include a specific date for Permittees to update their MS4 mapping to meet new requirements. Permittees should establish their own protocols for maintaining and updating their MS4 mapping to best support permit implementation.

Table 1 summarizes the required features to map as described in the Permits, as well as proposed mapping for the 2019 Permits. Refer to the current permit language (and proposed preliminary draft language) for a complete description of the mapping requirements.

MS4 mapping and documentation requirements are included in the 2013 Phase I permit at:

- S5.C.2 for Clark, King, Pierce and Snohomish Counties and City of Tacoma and City of Seattle

[1] Proposed permit changes to the mapping requirements are shown as underlined red text and strikethrough text.

- S6.D.3.c for secondary permittees
- S6.E.3.c for the Ports of Seattle and Tacoma

MS4 mapping and documentation requirements are included in the 2013 Phase II permit at:

- S5.C.3 for Phase II permittees
- S6.D.4.c for secondary permittees

For the 2019 Permit, we propose moving the mapping requirements out of (S5.C.3) IDDE program to its own Special Condition (S5.C.X), to align with the Phase I permit structure.

Table 1: Summary table of municipal stormwater mapping requirements

2013-2019 & Proposed 2019-2024 Phase I and WWA Phase II mapping features	
Common elements	
• Known MS4 outfalls (discharges to surface receiving waters or waterbody) • Known discharge points (DP) (discharges to facilities/BMPs designed to infiltrate) • Receiving waters ('other than groundwater') •~~Stormwater treatment and flow control BMPs/facilities owned or operated by the Permittee~~ • Permanent stormwater facilities owned and operated by the Permittee • MS4 geographic areas that do not discharge to surface waters • Tributary Conveyances (& attributes) to outfalls & DP with >24" diameter, or an equivalent cross-sectional area for non-pipe o Attributes include: ▪ Tributary conveyance type, material, and size where known ▪ Associated drainage areas ▪ Land use • Connections: o ~~Between~~Connections from Permittee's MS4s ~~and~~to other municipalities' or public entities' stormwater sewer systems. o All connections to the MS4 authorized after 2/16/07	
Phase I Only	
• Connections: o ≥8" diameter connections to tributary conveyances o Between stormwater treatment and flow control BMPs and tributary conveyances, including emergency overflows	
Phase I required format: electronic, with fully described mapping standards	***WWA PH II required*** ~~preferred~~ format: electronic, with fully described mapping standards.

III. Permit mapping terms and definitions - with guidance

This section pertains strictly to terms and definitions used in the Permit's mapping requirements section. See Permit for any other relevant definition. The *Additional Guidance* is largely taken from past Fact sheets and Response to Comments documents associated with the Permits.

Discharge point (DP) means the location where a discharge leaves the Permittee's MS4 through the Permittee's MS4 facilities/BMPs designed to infiltrate.

Additional Guidance

- Permittees are required to map all "known" DPs, which includes those found during field reconnaissance, permitting, etc. As a Permittee discovers or permits a DP that is not in their mapping system, the Permittee should follow an established protocol to update the map to include this feature.
- This definition refers specifically to MS4 facilities/BMPs designed to infiltrate that are owned or operated by the Permittee.
- Locations that inadvertently infiltrate are not included in this definition.
- In locations where DPs overlap with other features that are required to be mapped (such as permanent stormwater facilities) both features should be mapped and distinguishable - as permit requirements, such as inspection and maintenance, relate to the features differently.

Conveyance system means that portion of the municipal separate storm sewer system designed or used for conveying stormwater.

Additional Guidance

- This definition is provided to distinguish the parts of the system that are used for the transportation of stormwater from all other parts.

Municipal separate storm sewer system means a conveyance, or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(i)) Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State Law) having jurisdiction over disposal of wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the State.

(ii) Designed or used for collecting or conveying stormwater.

(iii)Which is not a combined sewer.

(iv)Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

(v) Which is defined as "large" or "medium" or "small" or otherwise designated by Ecology pursuant to 40 CFR 122.26.

Outfall means a point source as defined by 40 CFR 122.2 at the point where a discharge leaves the Permittee's MS4 and enters a surface receiving waterbody or surface receiving waters. Outfall does not include pipes, tunnels, or other conveyances which connect segments of the same stream or other surface waters and are used to convey primarily surface waters (i.e., culverts).

Additional Guidance

- Permittees are required to map all "known" outfalls, which includes those found during field reconnaissance, permitting, etc. As a Permittee discovers or permits an outfall that is not in their mapping system, the Permittee should follow an established protocol to update the map to include this feature. Further, as outfall records are added or updated, include outfall size and material as associated information.
- Definition clearly refers to a stormwater discharge to a SURFACE receiving water and does not include discharges to ground.
- ~~Map MS4 outfalls at locations where discharges leave the MS4 and enters a private stormwater system, or other conveyance system or pathway, when it is known that discharge will enter a surface receiving water.~~
- Outfalls are not intended to connect the same stream segment or conveyance system under roads or driveways.

Permanent stormwater facilities are structures or devices designed or used to control stormwater flows, or remove pollutants from stormwater, or both.

Additional Guidance

- This definition is provided to return to language that was included in the 2007 Permits. It calls for the mapping of structural stormwater BMPs or devices owned and operated by the Permittee whether or not these facilities meet, or help to meet, the minimum requirements included in the Permits.
- This term refers to devices or structural stormwater BMPs constructed as retrofit projects, or prior to permit requirements.

Receiving waterbody or receiving waters means naturally and/or reconstructed naturally occurring surface water bodies, such as creeks, streams, rivers, lakes, wetlands, estuaries, and marine waters, or ground water, to which a MS4 discharges.

Additional Guidance

- Receiving waters is intended as a sub-set of 'waters of the state.'
- Federal regulations require the mapping of receiving waters by the permittee.

Tributary conveyance means pipes, ditches, catch basins, and inlets owned or operated by the Permittee and designed or used for collecting and conveying stormwater.

Commented [TC1]: Referring to this scenario as an *outfall* corrupts the existing permit's definition of *outfall* (a term defined through a settlement agreement during the last permit appeal) and introduces confusion as to what is considered a *connection* as described in this Guidance document.

In addition, once a discharge leaves the MS4 it often may not be possible to know its ultimate discharge destination (particularly if it travels through multiple ownerships and is an underground closed system). If an ultimate discharge destination can be determined, permittees would need to monitor as to whether a stormwater system discharged into has been modified effecting its discharge destination. In recognition of this, we feel it's appropriate to limit permittees' mapping requirements to areas where permittees own or operate they MS4.

Additional Guidance

- Tributary conveyance refers to the MS4 conveyance system and not the natural or reconstructed naturally occurring stream system.
- Permittees are required to map the tributary conveyance to an outfall or DP with ≥24" diameter
- Permittees must also collect attributes of the tributary conveyance system, which include:
    - Tributary conveyance type (e.g., ditch, pipe, catch basins), material (e.g., metal) , and size where known (e.g., 24")
    - Associated drainage areas –delineate the area of land that contributes to the tributary conveyance system
    - Land use – e.g., Industrial, commercial, residential, etc.

Commented [TC2]: Land use types as defined in the permit or the municipalities' code?

Stormwater Treatment and Flow Control BMPs/Facilities means detention facilities, treatment BMPs/facilities, bioretention, vegetated roofs, and permeable pavements that help meet Appendix 1 Minimum Requirements #6 (treatment), #7 (flow control), or both.

NOTE TO READER: the proposed mapping language now relies on the proposed term "permanent stormwater facilities" to capture Stormwater Treatment and Flow control facilities/BMPs – these types of facilities would only be required to be mapped as a permanent stormwater facility" which does not distinguish between a facility built as a retrofit (i.e., not necessarily to meet new or redevelopment standards) and a stormwater treatment and flow control BMP/facility (helps to meet MR# 6 or 7, or both). It may be helpful to make that distinction in your mapping system as the two may have different inspection and maintenance requirements.

Additional Guidance

- Stormwater treatment and flow control BMPs/facilities that help to meet Minimum Requirements #6, #7, or both are required to be mapped.
- If more than one BMP/facility is required to meet either of these minimum requirements, all must be mapped.
    - Infiltration BMPs are included within treatment BMPs/facilities in the manual.
    - Dispersion BMPs are included within detention facilities.
    - Temporary erosion and sediment control BMPs, and BMPs/facilities built exclusively to meet minimum requirement #5, are not included in this definition. Further, a County may choose to include retention of forested conditions within the term if they are used to help meet minimum requirements #6 or #7.
- Permittees are not required to map stormwater facilities regulated by the Permittee, which are not owned or operated by the Permittee. While Permittees are not required to map private stormwater facilities, they must inspect private facilities that control stormwater runoff from new development and redevelopment sites –it may be useful to map those facilities that require inspection.

Note to reader:

Underground Injection Control (UIC) Program - The terms "outfall" and "discharge point" **do not** change how UIC wells are regulated or managed. The Municipal Stormwater Permits categorically exclude discharges to ground water through UIC wells (Special Condition S2.A.1; language provided above). Wells regulated through the UIC program are not required to be mapped under the Municipal Stormwater Permit, as the UIC program rules apply. However, it may be useful to include UICs on your map.

UIC wells are manmade structures used to discharge fluids into the subsurface. Examples are drywells, infiltration trenches with perforated pipe, and any structure deeper than the widest surface dimension. The majority of UIC wells in Washington are used to manage stormwater (i.e., drywells) and sanitary waste (large on-site systems), return water to the ground, and help clean up contaminated sites. UIC wells are regulated under the UIC Program (Ch. 173-218 WAC).

UIC Requirements for municipalities with national pollutant discharge elimination system (NPDES) permits[1]
The Municipalities that are under a NPDES stormwater permit may also have stormwater discharges to UIC wells. The Stormwater Management Program required by the NPDES stormwater permit includes best management practices that also may be applied to stormwater discharges to UIC wells. To avoid duplication, municipalities that are under an NPDES stormwater permit may choose to meet UIC program requirements by applying their Stormwater Management Program to areas served by UIC wells. See Chapter 173-218-090(1) WAC.

IV. More guidance on features required to be mapped

The following features are not specifically defined, but are required to be mapped. Here is some guidance to help support the mapping effort:

- MS4 Geographic areas that do not discharge to surface waters

The requirement to map areas that do not discharge to surface waters calls for mapping geographic areas such as city blocks, parts of sub-basins, etc., that do not drain to surface waters, and instead drain to the ground. This provision does not require mapping individual drainage systems that discharge to ground.

- **Connections**

Connection refers to any discrete point where stormwater enters or leaves the MS4 - such as from ditches or pipes. This term does not include sheet flow, or roof drains.

This term is not defined in the Permits. The Response to Comments for the 2007, 2013 Permits, and 2014 Permit modification, all include the above definition.

Specific connection points to the MS4 are called out to be mapped (see above). Knowing where stormwater discharges leave or enter your MS4 system assists with notifying adjacent municipalities/entities that -a hazardous spill has occurred, or to better trace illicit discharges, or to understand where stormwater impacts may be occurring.

V. Not required, but recommended features to map

The requirements for mapping are limited to the minimum features necessary to implement the permits. However, Ecology recommends that Permittees map additional features so that knowledge of the stormwater system is relatively complete. Consider mapping the following additional features, although this universe can be easily expanded based on local needs:

- UIC facilities
- Tributary conveyance to outfalls or discharge points with a smaller diameter (or equivalent cross-section) than 24 inches
- Older or retrofit permanent stormwater BMPs, otherwise not required to be mapped
- Land use
- critical habitats and waterbodies with listed salmon species

VI. MS4 mapping scenarios

The following scenarios are provided to illustrate terms and definitions of stormwater features in the context of a typical MS4, as well as which of these features ought to be mapped by the Permittee.

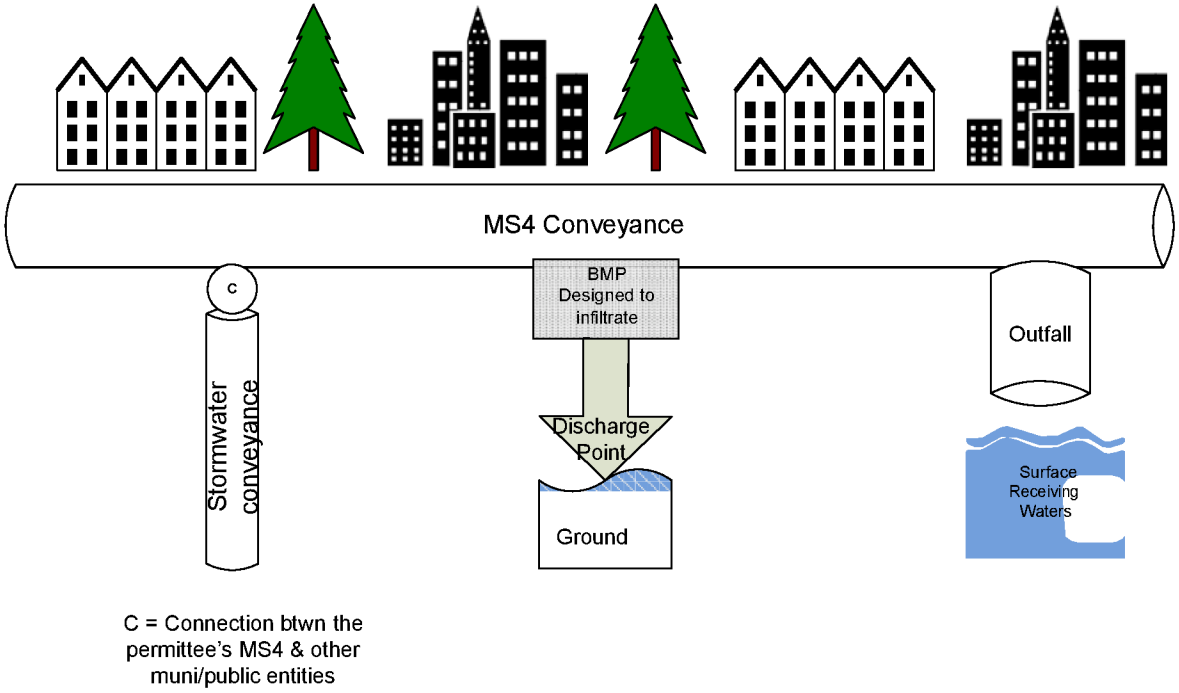


Figure 1. Simplified overview of the selected terms used to describe the Municipal Storm Sewer System (MS4) (e.g., a connection, a discharge point and an outfall). Permittees are required to map all known MS4 outfalls and discharge points, and "all connections to the MS4 authorized or allowed by the Permittee after February 16, 2007." This includes connections from private systems to the MS4 authorized or allowed after February 16, 2007.

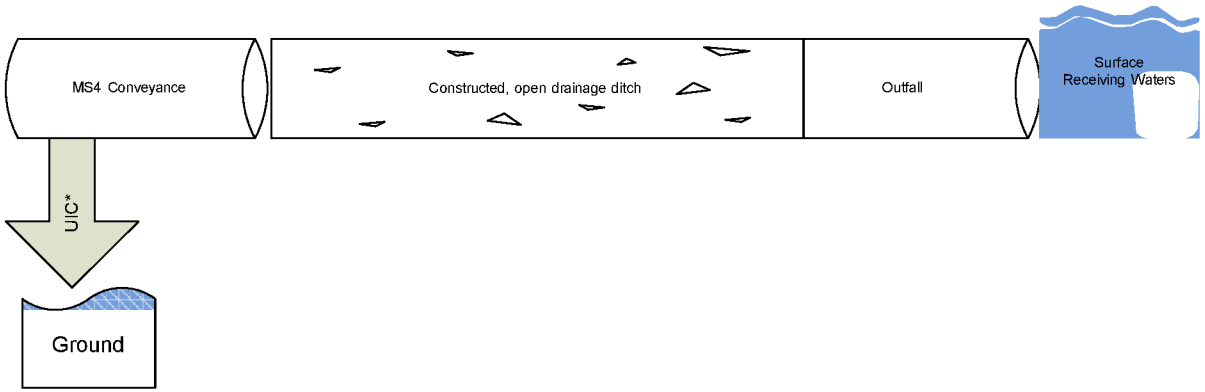


Figure 2. Single jurisdiction's MS4 discharges to a surface receiving waters. This example includes a UIC facility with an emergency overflow to the MS4.

In Figure 2, the Permittee does not need to map the open drainage ditch as a Discharge Point, although mapping the ditch as a line segment may be of use to the Permittee. The point where the runoff leaves the ditch and discharges to the surface receiving water is mapped as an outfall. The UIC well is regulated through its own program and is not required to be mapped per the Phase I or Phase II Permit requirements.

*Regulated through the Underground Injection Control (UIC) Program. UIC facilities are excluded from the Municipal Permit, see S2.A.1.

Although not required, a permittee may decide to map UIC facilities for a comprehensive understanding of municipal drainage.

UIC Program additional info:

http://www.ecy.wa.gov/programs/wq/grndwtr/uic/index.html

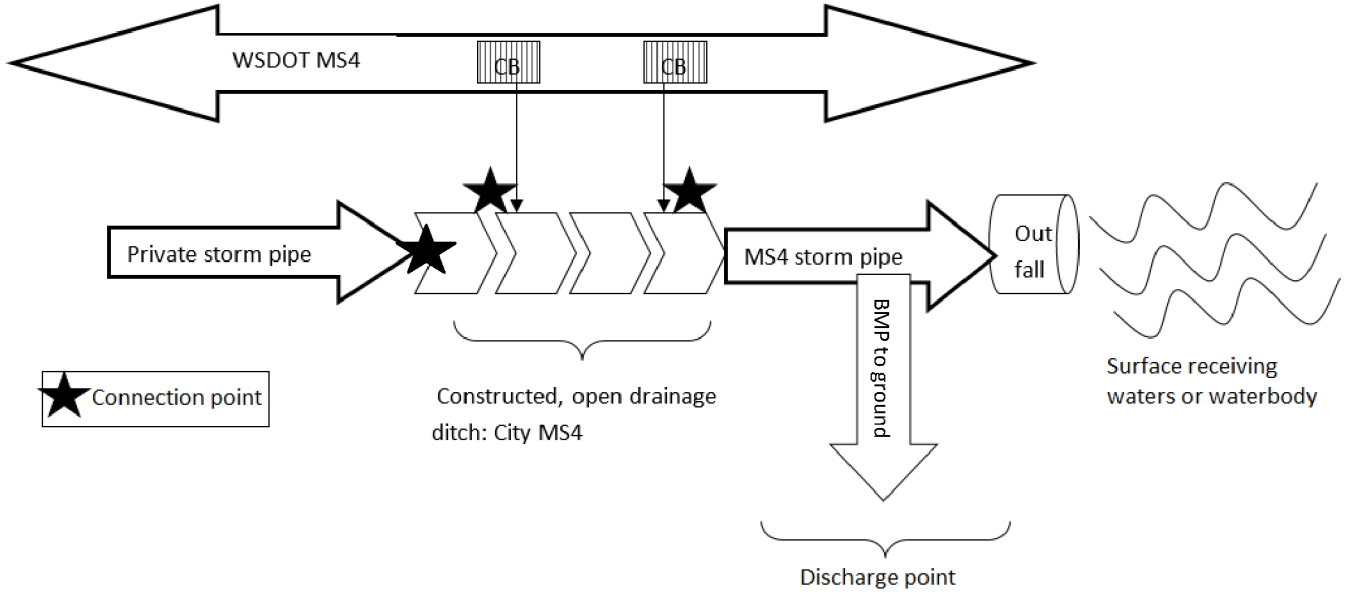


Figure 3. Example of the Department of Transportation (WSDOT) MS4 discharging to a City's MS4

In Figure 3, the City would map the three connection points where WSDOT's catch basins direct runoff to a city's MS4, and the private storm pipe connection is authorized by the Permittee after February 16, 2007 (or after August 1, 2013 for new permittees in the 2013 Permit). The city would map the BMP that was designed to infiltrate as a discharge point (and as a permanent stormwater facility, or both). The city would map the overflow pipe that discharges to a surface receiving waters as an outfall.

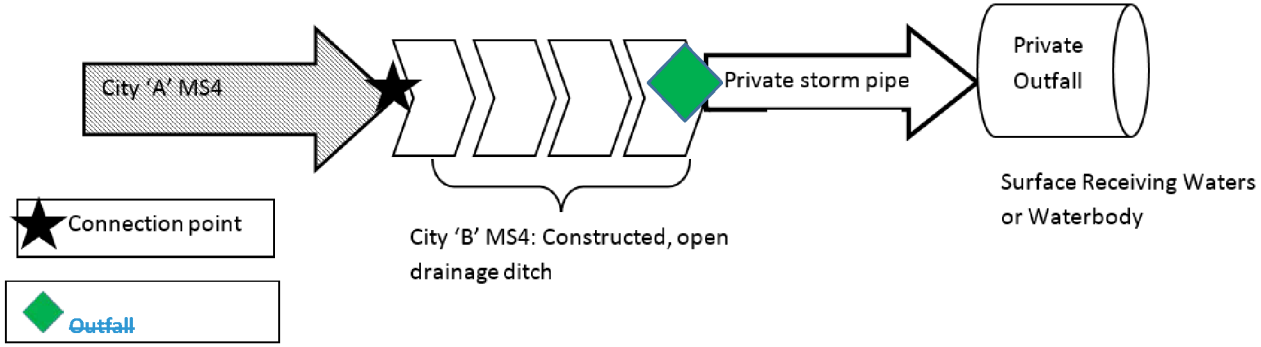


Figure 4. Example of two MS4s discharging to a private storm system with a~~n MS4~~ private outfall.

In Figure 4, City 'A' should map the Connection Point where its MS4 discharges to City 'B's open drainage ditch. City B would map the location where the drainage ditch (part of the MS4) discharges to the private storm system as a~~n outfall~~connection point too~~,~~ regardless of~~this is because~~ if City B knows that the ~~MS4~~ discharge~~s~~ ultimately flows to a surface receiving water after it leaves its system. The private infrastructure would not be required to be mapped per the Permit, although this may be helpful for a permittee's program. The UIC well must follow UIC Program rules and is not required to be mapped per the Phase I or II Permit requirements.

Commented [TC3]: Referring to the Green Square in this scenario as an *outfall* corrupts the existing permit's definition of *outfall* (a term defined through a settlement agreement during the last permit appeal) and introduces confusion as to what is considered a *connection* as described in this Guidance document. Both should be referred to as *connection points*.

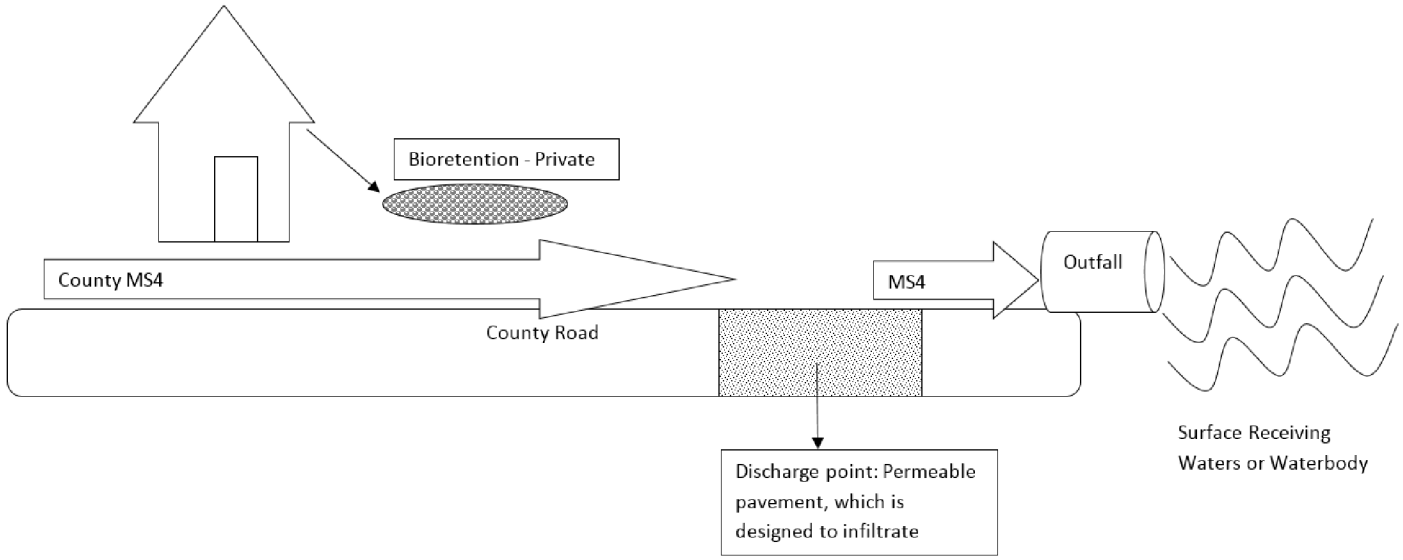


Figure 5. Examples of several types of stormwater BMPs near and within the MS4 system.

In Figure 5, the permeable pavement, which has been designed to infiltrate stormwater runoff, would be mapped as a discharge point. The bioretention facility located on private property would not be mapped as a discharge point or an outfall because it is not part of the permittee's MS4. However, if either the bioretention facility, or the permeable pavement were constructed to help meet Appendix 1 Minimum Requirements #6, #7, or both, then these facilities would be considered stormwater treatment/flow control BMPs/facilities and the public facility (i.e. permeable pavement in this case) would be mapped as a permanent stormwater facility. The point where there is a discharge from the MS4 to receiving waters would be mapped as an outfall.

Figure 7. Municipal system to private stormwater system.

In this scenario, the City maps the location where discharge leaves the MS4 and enters the private stormwater system as a~~n outfall~~connection point~~because the City has knowledge the discharge will enter a surface receiving water~~.

Commented [TC4]: As explained in a previous comment above, referring to the Green Square in this scenario as an *outfall* corrupts the existing permit's definition of *outfall* (a term defined through a settlement agreement during the last permit appeal) and introduces confusion as to what's considered a *connection* as described in this Guidance document. Both should be referred to as *connection points*.

Figure 8. In this scenario, the City maps the location where discharge leaves the MS4 as a~~n outfall~~connection point~~ because the City has knowledge the discharge will enter a surface receiving water~~.

Commented [TC5]: As explained in a previous comment above, referring to the Green Square in this scenario as an *outfall* corrupts the existing permit's definition of *outfall* (a term defined through a settlement agreement during the last permit appeal) and introduces confusion as to what's considered a *connection* as described in this Guidance document. Both should be referred to as *connection points*.

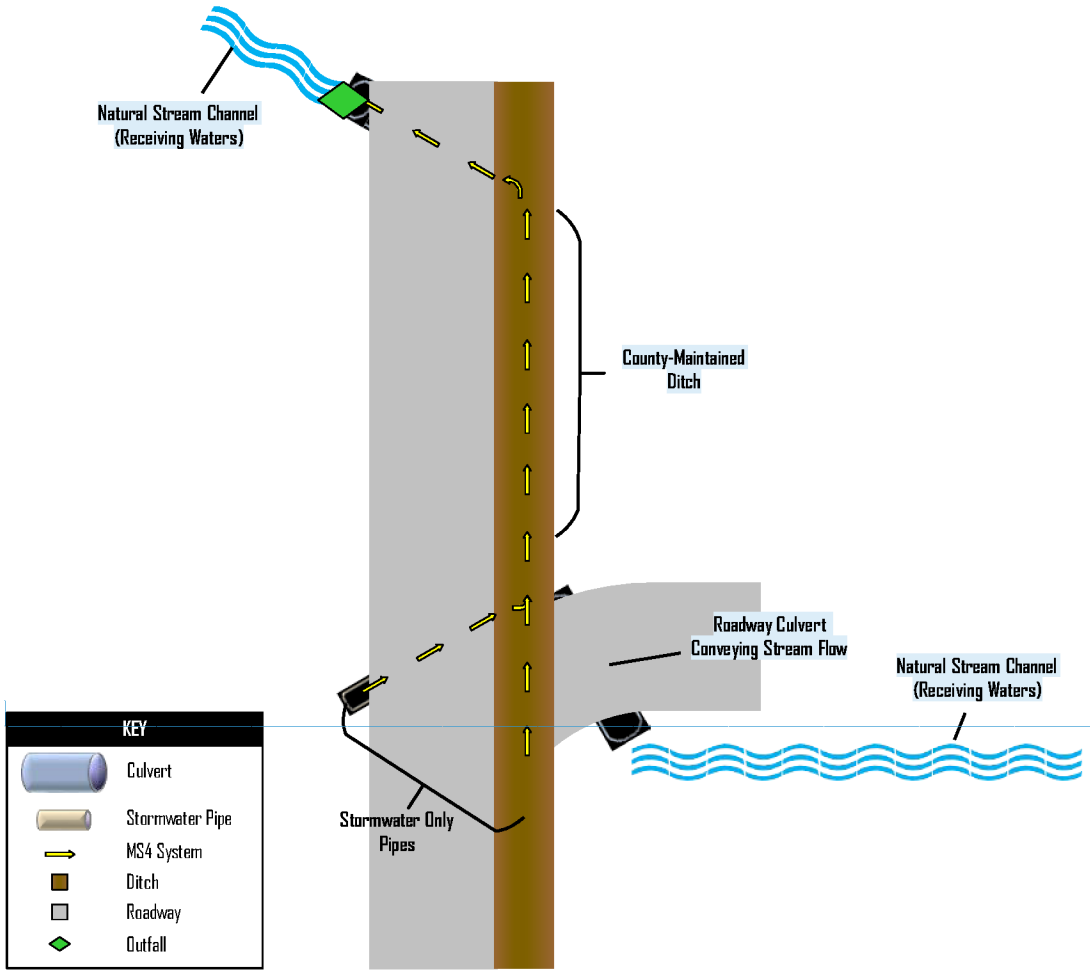


Figure 9. Mapping MS4 outfall locations

In this scenario, two MS4 stormwater pipes discharge to a County maintained ditch that conveys both stormwater and streamflow. If these stormwater pipes are instead City-owned, the two upstream stormwater pipes would be connections between the City and County MS4s.

The County-owned enclosed pipe discharges both stormwater and streamflow to a natural stream channel, where the ditch discharges to the natural stream is the outfall.

The Permittee is only required to map tributary conveyances and attributes to outfalls and discharge points that are ≥ 24 inches in normal diameter.

Commented [TC6]: Perhaps to separate figures are needed to help clarify what's being portrayed in the narrative as it's not very clear as written/depicted.

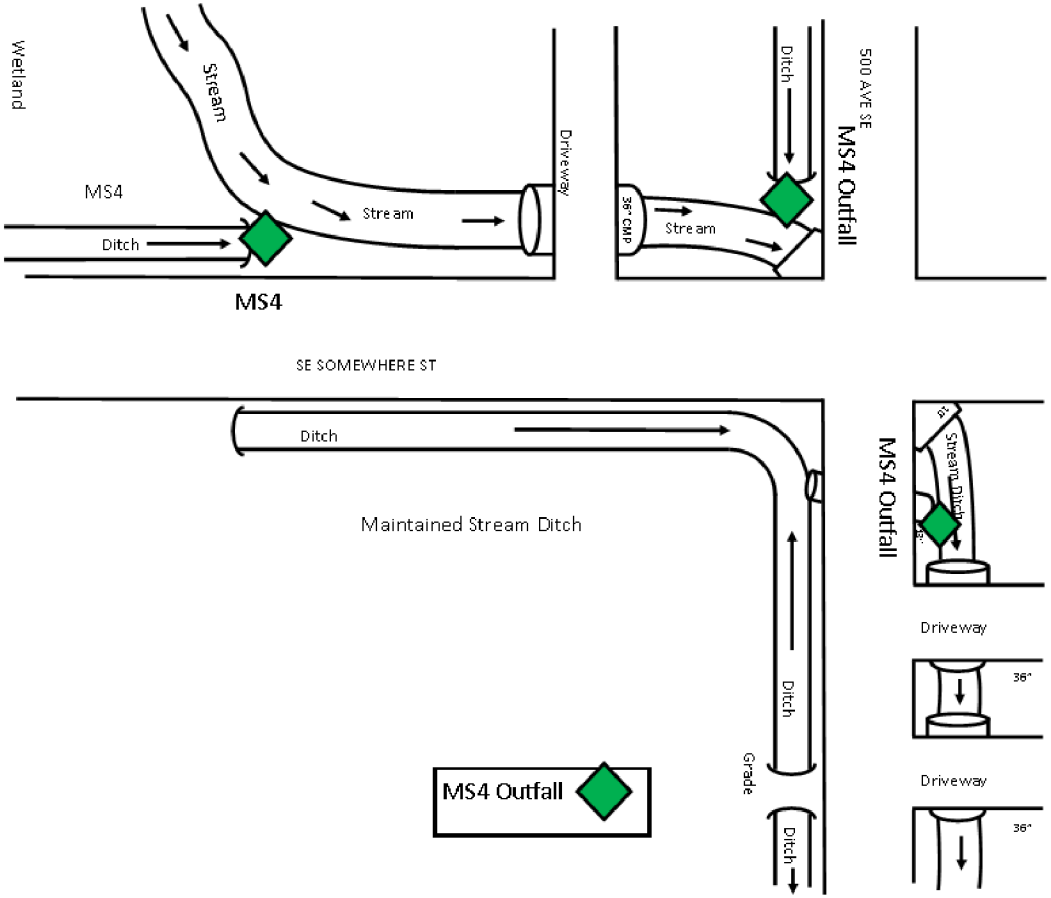


Figure 10. Mapping MS4 outfall locations

In this scenario, three MS4 outfalls are mapped within this commingled stream and MS4 ditched system.

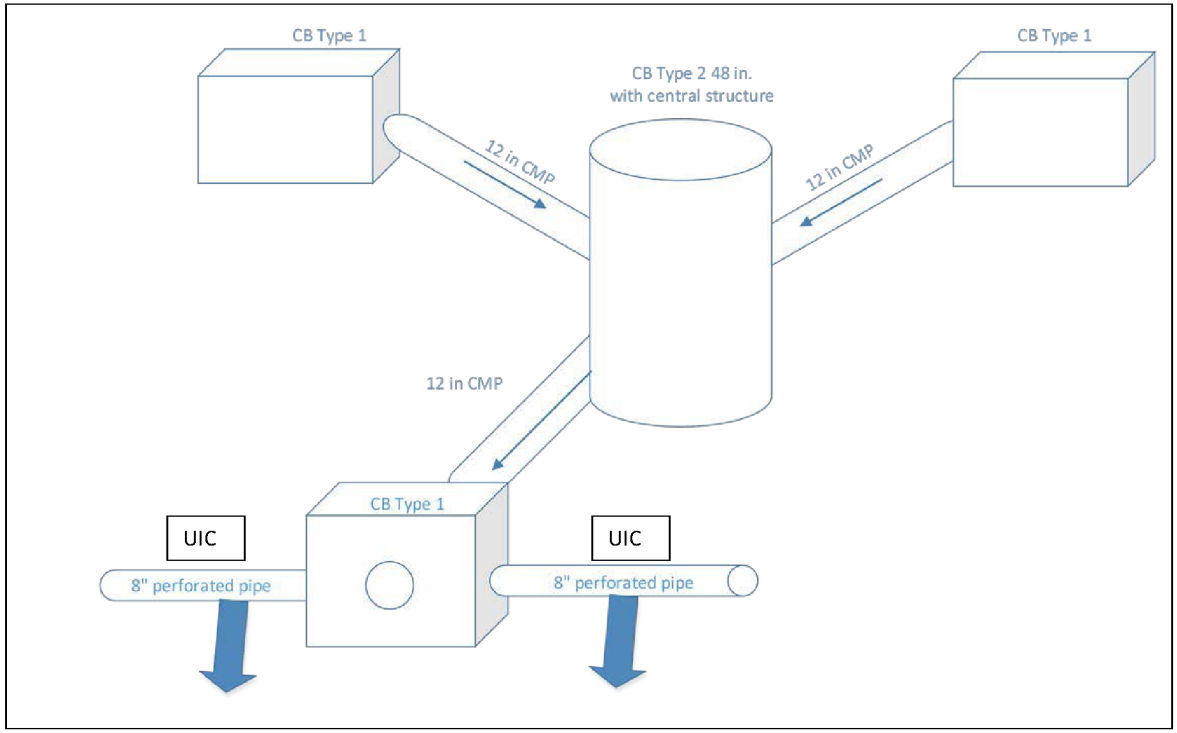


Figure 11. 'Is it a discharge point, a UIC or an outfall?' scenario.

In this scenario, the perforated pipe represents an infiltration trench, which meets the definition of a UIC. As such, the Permittee is not required to map this UIC. However, as aforementioned, the Permittee may find it useful to map this UIC from a system maintenance standpoint. Hypothetically, if this structure did not meet the definition of a UIC, but was designed to infiltrate stormwater, it should be mapped as a discharge point.

S8. MONITORING AND ASSESSMENT

A. All Permittees including Secondary Permittees shall provide, in each annual report, a summary description of the findings of any stormwater monitoring or stormwater-related studies conducted by the Permittee during the reporting period. If other stormwater monitoring or stormwater-related studies were conducted on behalf of the Permittee during the reporting period, ~~or if stormwater-related investigations conducted by other entities were reported to the Permittee during the reporting period,~~ a brief description of the type of information gathered or received and its relevance to the Permittee's SWMP shall be included in the annual report.

Permittees are not required to provide descriptions of:

1. Any monitoring, studies, or analyses conducted as part of the regional stormwater monitoring program (Stormwater Action Monitoring, or SAM).

2. Any monitoring that triggers S4.F and is reported in accordance with that section of this permit,

3. Any monitoring, studies, or analyses conducted for the behavior change program per section S5.C.1.b,

~~3.~~4. Any monitoring for IDDE activities per section S5.C.8,

~~4.~~5. Any monitoring conducted for TMDLs listed in S7 and Appendix 2, or

~~5.~~6. ~~Independent m~~Monitoring conducted by the Permittee or its agent in accordance with requirements in S8.B.2 or 3 or S8.C.3 or 4 below.

Permittees' reporting of these ~~five~~six categories of monitoring activities must follow the requirements specified in those sections. A summary of these monitoring activities does not need to be included in this annual report submittal.

Note to reviewers: Ecology reviewed the Phase I and Phase II permittees' S8.A annual report submittals for the past three years and found that many permittees are reporting on TMDL monitoring, submitting data tables, or referring to their SWMPs. Ecology wants this S8.A reporting to be meaningful, and therefore proposes to target the summary requested in this submittal to unexpected or other findings reported to the permittees. Do stakeholders agree with this narrowed focus? Do you propose another approach?

B. Regional status and trends monitoring.

1. Each Permittee that chose S8.B Status and Trends Monitoring Option #1 in the Phase I Municipal Stormwater Permit August 1, 2013 – July 31, 2018 (extended to July 31, 2019) shall pay into the collective fund to implement regional small streams and marine nearshore status and trends monitoring in Puget Sound. The

Commented [TC1]: We feel it's inappropriate to require permittees to report on investigations that weren't sponsored by the permittee given that the permittee may likely have no bearing on the study's design, standard operating procedures, quality assurance, and quality controls, etc.

Commented [TC2]: Until there is a deliberate and organized effort to sift through the learnings gleaned annual report submittals and make them available in a readily consumable way, this reporting requirement will fall short in being *meaningful* to many.

Furthermore, defining what's *meaningful* often lies in the eyes of the beholder. Does *meaningful* require that certain standard operating practices and protocols were followed for credibility? How is the stormwater relevancy nexus determined? It's just as meaningful to communicated findings that were *unexpected* as those that were *expected*.

Commented [TC3]: A significant limitation of the RSMP's probabilistic status & trends approach is that it only informs whether trends are getting better or worse (and where). It falls short of providing insight into "the why" those trends are emerging. The "why" is critical to help inform the adaptive management feedback loop permittees need to help inform the evolution of our stormwater management programs (and ratepayer who want to understand the value of their stormwater fee investments).

A stronger "equity case" could be made to continue MS4 Permittee funding support by bringing in other players to support funding of the probabilistic status & trends element of the RSMP. At a minimum, this would involve pulling in funding from various other types of water quality permittees (see https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-quality-permits/Water-Quality-general-permits). One could also make the case to require participation from air quality permittees would also be appropriate given the atmospheric deposition contributions to pollutants in stormwater runoff.

Another path to consider is to have the RSMP effort evaluate the large long term data sets that have already been collected over the years by Ecology's Environmental Assessment Program and municipalizes to evaluate status and trends.

Proposed 2019-2024 Phase I MS4 permit language for S8. Monitoring and Assessment payments are due on or before December 1, 2019 and the amounts are listed in *(new)* Appendix XX.

Note to reviewers: The annual payments in the prior permit were established to cover 1/4 of the five-year budget for receiving water monitoring. Ecology proposes that the annual payments beginning in 2019 be established to cover 1/5 of the proposed budget. The allocated annual per capita cost for S8.B monitoring would therefore be reduced from $0.2442 to $0.1954. OFM data for 2017 will be used for the calculations in the formal draft permit (the amounts provided for S8.B-C annual payments in the draft new Appendix XX use 2016 data). Continuing annual contributions rather than skipping a year will provide continuity for monitoring projects. The same approach is proposed for Western WA Phase II permittees. Do stakeholders agree with this approach, and will it work for permittees?

2. No later than December 1, 2019, King, Pierce, and Snohomish Counties, the Cities of Seattle and Tacoma, and the Ports of Seattle and Tacoma shall notify Ecology in writing which of the following two options for status and trends monitoring the Permittee chooses to carry out during this permit cycle. Either option will fully satisfy the Permittee's obligations under this section (S8.B.2). Each Permittee shall select a single option for the duration of this permit.

   a. Puget Sound regional status and trends monitoring: Each Permittee that chooses this option shall pay into a collective fund to implement regional small streams and marine nearshore status and trends monitoring in Puget Sound. The payments into the collective fund are due to Ecology annually beginning August 15, 2020 and the amounts are listed in *(new)* Appendix XX.

Or

Note to reviewers: The option provided in the 2013-2018 permit for permittees to conduct individual receiving water monitoring did not produce the data Ecology hoped would meaningfully contribute to the regional program, and threatened its integrity. Ecology has considered not including any opt-out option at all in the 2019-2024 permit.

The Stormwater Work Group (SWG, the stakeholder committee that selects all SAM projects) recommended in June 2016:

> "It is important to maintain the integrity of the regional status and trends monitoring program. This program needs to be fully funded to ensure that we can detect regional trends" … and …
> "The permit needs to provide a strong, but not exclusive, incentive for permittees to participate in the pay-in approach as the primary means of funding the permit-driven regional status and trends monitoring program in Puget Sound receiving waters."

What do stakeholders think of the approach proposed ~~proposed~~ below? Do you have a recommendation for another approach?

Commented [TC4]: With the region's population growth, the total funds generated over that 5-year cycle will increase over the current permit. However, experiences from the current permit suggest that increases in funding aren't needed and perhaps should even be reduced. This is the case for the effective studies where it was difficult to identify enough quality studies. Source identification represents another area where difficulties in identifying meaningful ways to invest funds emerged. It has also been suggested that cost-reduction strategies for status and trends can be realized by adjusting to the sampling frequencies without compromising the objectives. Resulting savings and efficiencies could reduce MS4 permittee funding obligation or be utilized to support local monitoring and data evaluation efforts. The permit could specify criteria that local efforts need to meet in order to be eligible to participate in a local option (even possibly creating a point-weighted approach to determine the level of credit eligibility).

Commented [TC5]: The S8 investments have failed to provide a feedback loop to gage the effectiveness of our stormwater management programs, codes, policies, and capital facilities investments. Our local regional efforts meet these needs, functioning at a scale and resolution that benefits from the of integrating status & trends, source i.d., and program effectiveness evaluations.
(see: http://waecy.maps.arcgis.com/apps/Cascade/index.html?appid=5c5ce19bb2e74b25b12a447f9945655b and https://fortress.wa.gov/ecy/publications/SummaryPages/1703001.html)

The *Thurston County's long-term monitoring program,* referenced via the web links above, refers to a formal partnership between us and the cities of Lacey, Olympia, and Tumwater in place since the early 90s with the mission to: *Assess the health of regional water resources to inform the development of programs, policies, and capital facility plans to protect those water resources for beneficial uses in perpetuity.*

Unfortunately, tough choices had to be made by our Partnership as insufficient funding existed to fully fund these efforts and meet S8 obligations. Funding for the local monitoring was slashed by 44 percent. Our Partnership's ability to use locally collect data to inform local programs, policies, and capital facility plans has been compromised. The success story of this partnership as well the threats to its integrity was shared at MuniCon2017 (see http://www.wastormwatercenter.org/files/library/93pmlschaffnermunicon2017-final.pdf)

We would like the S8 permit language to provide a pathway to support continued funding of these valued local monitoring regional programs.

b. Stormwater discharge monitoring: Each Permittee that chooses not to participate in the regional status and trends monitoring shall conduct stormwater discharge monitoring in accordance with Appendix 9 and an Ecology-approved QAPP as follows:

i. Cities and counties shall monitor five independent discharge locations; ports shall monitor two independent discharge locations. Permittees are encouraged to continue this monitoring at locations monitored under S8.D of the Phase I Municipal Stormwater Permit February 16, 2007 – February 15, 2012.

ii. No later than February 1, 2020 each Permittee shall submit to Ecology a draft stormwater discharge monitoring QAPP for review and approval. The QAPP shall be prepared in accordance with Ecology publication 10-10-75 "Quality Assurance Project Plan Guidance: Special Condition S8.D: Phase I Municipal Stormwater Permit." If Ecology does not request changes within 90 days, the draft QAPP is considered approved. The final QAPP shall be submitted to Ecology as soon as possible following finalization, and before August 15, 2020.

iii. Flow monitoring at new discharge monitoring locations shall begin no later than October 1, 2020. Stormwater discharge monitoring shall be fully implemented no later than October 1, 2020 at existing discharge monitoring locations and October 1, 2021 at new discharge monitoring locations.

Note to reviewers: Ecology is proposing to update Appendix 9 with changes including:
- Reduce antecedent dry period from 24 to 8 hours
- Update laboratory methods as appropriate
- More clearly define sediment sampling as in-system solids sampling via sediment trap
- Add total PCBs to the runoff characterization list (using 1668C)
- Add guidance for interpreting non-detects
- Add particle size distribution
- Add or remove other parameters as more information comes in from SAM receiving water studies

Are these and other changes needed and/or appropriate for this appendix?

iv. Data and analyses shall be reported annually in accordance with the Ecology-approved QAPPs.

3. Clark County shall:

a. Conduct regional small urban streams monitoring in the Lower Columbia River Basin.

Note to reviewers: During the 2013-2018 permit, Clark County, seven Phase II permittees, and other stakeholders worked on a study design and implementation plan for this monitoring. The Lower Columbia Habitat Status and Trends Monitoring (LC HSTM) QAPP Template is the outcome of that effort. Clark County will conduct the monitoring and the Phase II permittees will contribute to this monitoring in the same manner as Puget Sound permittees contribute to SAM (payments to Ecology kept in an account –separate from the Puget Sound fund– and Ecology then enters into a contract with Clark County). Do stakeholders agree with this approach, and will it work for the LC permittees?

i. Submit a completed "Lower Columbia Habitat Status and Trends Monitoring (LC HSTM) Urban Streams QAPP Template" to Ecology before November 1, 2019. If Ecology does not request changes within 90 days, the QAPP is considered approved. The final QAPP shall be submitted to Ecology as soon as possible following finalization, and before February 28, 2020. The completed QAPP shall include all of the specifications and deadlines in the "LC HSTM Urban Streams QAPP Template."

Note to reviewers: The final draft "LC HSTM Urban Streams QAPP Template" is expected to be available for review in early 2018. The study design includes a base set of non-negotiable parameters and an extended list of additional parameters yet to be prioritized. Ecology envisions that Clark County and the Phase II permittees will set these priorities as part of completing the QAPP template or as an early reporting requirement in implementing the final QAPP. Do stakeholders agree with this approach, and will it work for the LC permittees?

ii. Report data and analyses annually in accordance with the approved QAPP.

C. Stormwater management program effectiveness and source identification studies.

Note to reviewers: During the 2013-2018 permit, the intent and purpose of S8.D Source Identification and Diagnostic Monitoring evolved from a Source Identification Information Repository to a focus on analyzing information from and supporting permittees' IDDE and source control programs. The SWG recommended that a small portion of the S8.D funds continue to support analysis of IDDE incident tracking data and that the remaining funds be rolled into the effectiveness study component. Ecology is proposing to eliminate the third account and to continue to fund both effectiveness and source identification studies from the same account. SWG will continue to select the studies. Do stakeholders agree with this approach, and will it work for permittees?

Commented [TC6]: We support eliminating the S8.D account, but with a twist to what is proposed.

Locally, Thurston County and its partners identified a need to secure more funding to support development and deployment of a pollution identification and correction program (PIC). Rather than rolling the remaining S8.D funds into the effectiveness studies account (which already appears to be excessively resourced relative to the capacity to utilize those funds effectively), we recommend that permittees have the option to redirect these contributions to allow permittees to support their local pollution identification and correction efforts.

Similarly, we recommend that permittees also have the option to redirect at least a portion of their effectiveness contributions to support data collection and analyses to support the development and effectiveness evaluation of their local stormwater management-related programs.

The option to redirect at least a portion of a permittee's contribution can help support the new proposed 2019 permit obligations which calls on permittees to use local data to: 1) identifying priority target audiences for their E&O programs, 2) identify high risk businesses to target Source Control Program efforts, and 3) inform the direction of Long term MS4 planning.

The permit could include the criteria that permittee's local efforts need to meet in order to be eligible to participate in such a local option (even possibly creating a point-weighted approach to determine the level of reward/credit eligibility).

1. Each permittee shall submit records of SWMP activities tracked and/or maintained in accordance with S5 and/or S9 in response to requests for information associated with effectiveness and source identification studies under active SAM contracts.

Note to reviewers: A small number of SAM studies are designed to answer questions with data directly provided by permittees. During the 2013-2018 there were two SAM effectiveness studies that required permittees' records. The projects ended up working with very limited data sets due to lack of permittee-provided data. SAM's future requests for information will be rare and targeted. The value of the study findings will only be as good as the data provided. Ecology wants the SAM studies to be as robust as possible. This does not require permittees to provide data to SAM project proponents; it is only for SWG-approved studies under contract with Ecology. Do stakeholders agree with this approach, and will it help permittees provide the necessary data?

Commented [TC7]: The observed participation rates may have been a function of the low value/utility (i.e., meaningfulness) that many permittees place on those particular studies. This in turn may be an indicator of the engagement challenges involved in the regional prioritization and selection process to identified high value studies, particularly for smaller jurisdictions with less staff resources available to participate is the processes as they were carried out (essentially creating environmental justice inequities).

The expectation that all regional effectiveness studies will be meaningful/relevant to all (or even the majority) of permittees is likely unrealistic given the vast differences among permittees (e.g., city/county, primarily closed vs. open MS4 systems, highly urbanize vs. suburban, till vs. outwash, etc.). Redesigning the study selection process that doesn't put these real world differences in competition with one another would help make participation in the regional effort more relevant to more permittees.

2. Each Permittee that chose S8.C Effectiveness Studies Option #1 or Option #3 in in the Phase I Municipal Stormwater Permit August 1, 2013 – July 31, 2018 (extended to July 31, 2019) shall pay into the collective fund to implement effectiveness studies. The payments are due before December 1, 2019 and the amounts are listed in *(new)* Appendix XX.

Note to reviewers: See the note on S8.B.1 above and the new Appendix provided for review. These amounts are all the less than the S8.C amounts in the prior permit.

3. No later than December 1, 2019, Clark, King, Pierce, and Snohomish Counties, the Cities of Seattle and Tacoma, and the Ports of Seattle and Tacoma shall notify Ecology in writing which of the following three options for effectiveness studies the Permittee chooses to carry out during this permit cycle. Any one of the three options will fully satisfy the Permittee's obligations under this section (S8.C). Each Permittee shall select a single option for the duration of this permit term.

   a. Effectiveness Studies Option #1: Each Permittee that chooses this option shall pay into a collective fund to implement SAM effectiveness studies. The payments into the collective fund are due to Ecology annually beginning August 15, 2020 and the amounts are listed in *(new)* Appendix XX.

Note to reviewers: See the notes above for S8.B.1 and S8.C. The allocated annual per capita cost for S8.C studies is thereby reduced from $0.4068 to $0.3556. OFM data for 2017 will be used for the calculations in the formal draft permit (the amounts in the new Appendix XX use 2016 data). Do stakeholders agree with this approach, and will it work for permittees?

Commented [TC8]: Refer to our comments regarding per capita costs.

Or

b. Effectiveness Studies Option #2: Each Permittee that chooses not to participate in the effectiveness studies component of the regional monitoring program/SAM shall conduct stormwater discharge monitoring in accordance with Appendix 9 and the following:

Note to reviewers: See the note on S8.B.2.b above regarding proposed changes to Appendix 9.

i. Each city and county Permittee shall conduct stormwater discharge monitoring at five locations. Permittees are encouraged to continue stormwater monitoring at locations monitored under S8.D of the Phase I Municipal Stormwater Permit February 16, 2007 – February 15, 2012. Permittees who choose this option and also choose Stormwater discharge monitoring per S8.B.2.b shall conduct this monitoring at a total of ten locations.

ii. Each port Permittee shall conduct stormwater discharge monitoring at two locations representing different pollution-generating activities or land uses. Permittees are encouraged to continue stormwater monitoring at locations monitored under S8.D of the Phase I Municipal Stormwater Permit February 16, 2007 – February 15, 2012. Permittees who choose this option and also choose stormwater discharge monitoring per S8.B.2.b shall conduct this monitoring at a total of four locations.

iii. No later than February 2, 2020 each Permittee shall submit to Ecology a draft updated stormwater discharge monitoring QAPP for review and approval. The QAPP shall be prepared in accordance with Ecology publication 10-10-75 "Quality Assurance Project Plan Guidance: Special Condition S8.D: Phase I Municipal Stormwater Permit." If Ecology does not request changes within 90 days, the draft QAPP is considered approved. Final QAPPs shall be submitted to Ecology as soon as possible but no later than July 31, 2020.

iv. Flow monitoring at new discharge monitoring locations shall begin no later than October 1, 2020. Stormwater discharge monitoring shall be fully implemented no later than October 1, 2020 at existing discharge monitoring locations and October 1, 2021 at new discharge monitoring locations. All monitoring shall be conducted in accordance with an Ecology-approved QAPP.

Or

c. Effectiveness Studies Option #3: Each Permittee that chooses this option shall both pay into a collective fund to implement regional effectiveness and source identification studies **AND** independently conduct an effectiveness study that

Commented [TC9]: While the Option #2 pathway maybe be of value to a limited number of permittees (e.g., Superfund remediation receiving waters), it is too narrowly constrained as to constitute a relevant effectiveness investment option for most permittees (Particularly in light of the outfall effectiveness monitoring the required under the 2007 Phase I Permit as well as the runoff land use characterization research that has already been completed nationwide.).

is not expected to be undertaken as part of the regional monitoring program/SAM.

i. Payments into the collective fund are due to Ecology annually beginning August 15, 2020. The payment amounts are:

Permittee	Payment amount
Clark County	$ 38,894
King County	$ 43,725
Pierce County	$ 69,744
Snohomish County	$ 60,274
Port of Seattle	$ 3,233
Port of Tacoma	$ 3,233
City of Seattle	$122,113
City of Tacoma	$ 36,645

ii. Conduct the independent effectiveness study in accordance with the requirements below:

(1) No later than February 2, 2020 submit to Ecology, for review and approval, a detailed proposal describing: the purpose, objectives, design, and methods of the independent effectiveness study; anticipated outcomes; expected modifications to the Permittee's stormwater management program; and relevance to other Permittees.

(2) Submit a draft QAPP to Ecology within 120 days of Ecology's approval of the detailed proposal. The QAPP shall be prepared in accordance with [*QAPP templates under development, see note below*]. The QAPP shall include reporting details including timely uploading of all relevant data to Ecology's EIM database and/or the International Stormwater BMP Database as appropriate, and sharing the findings with other Permittees. If Ecology does not request changes within 120 days of submittal, the QAPP is considered approved.

Note to readers: Three QAPP templates for structural, operational, and education/outreach BMP effectiveness studies were developed for Eastern WA during the 2014-2019 permit; they are being adapted for W WA.

(3) Begin full implementation of the study no later than six months following Ecology's approval of the QAPP.

(4) Describe interim results and status of the study implementation in annual reports throughout the duration of the study.

Commented [TC10]: How would a permittee know studies expected to be undertaken by SAM?

Commented [TC11]: Refer to our comments regarding per capita costs.

Commented [TC12]: Depending on the QAPP approval date, beginning full implementation later than six months may be appropriate for study's that are temporal or seasonal in nature.

(5) Report final results, including recommended future actions, to Ecology and on the Permittee's webpage no later than six months after completion of the study.

(6) According to the schedule in the approved QAPP, produce a two page fact sheet for distribution among municipal stormwater permittees.

Note to reviewers: S8.D is removed from this informal draft permit. See notes on S8.C above. See proposed draft language for IDDE incident tracking and annual reporting, S5.C.8.g.

Proposed new Appendix XX. Proposed annual permittee contribution amounts for S8.B.2.a and S8.C.1

Please read the "notes to reviewers" at the end of this document

Permittees are grouped by County and listed alphabetically	Population	Annual amount for S8.B.2.a	Annual amount for S8.C.1	S8.D
Municipality				
Clallam				
Port Angeles	19,270	$ 3,765	$ 6,852	$ -
Clark				
Unincorporated	218,750	N/A	$ 77,788	$ -
Battle Ground	19,640	$ 4,796	$ 6,984	$ -
Camas	21,810	$ 5,326	$ 7,756	$ -
Vancouver	173,500	$ 42,369	$ 61,697	$ -
Washougal	15,560	$ 3,800	$ 5,533	$ -
Cowlitz				
Unincorporated	16,480	$ 4,024	$ 5,860	$ -
Kelso	11,970	$ 2,923	$ 4,257	$ -
Longview	37,230	$ 9,092	$ 13,239	$ -
Grays Harbor				
Aberdeen	16,780	N/A	$ 5,967	$ -
Island				
Oak Harbor	22,410	$ 4,378	$ 7,969	$ -
King				
Unincorporated	245,920	$ 48,043	$ 87,449	$ -
Algona	3,175	$ 620	$ 1,129	$ -
Auburn	77,060	$ 15,054	$ 27,403	$ -
Bellevue	139,400	$ 27,233	$ 49,571	$ -
Black Diamond	4,305	$ 841	$ 1,531	$ -
Bothell	43,980	$ 8,592	$ 15,639	$ -
Burien	50,000	$ 9,768	$ 17,780	$ -
Clyde Hill	3,060	$ 598	$ 1,088	$ -
Covington	18,750	$ 3,663	$ 6,668	$ -
Des Moines	30,570	$ 5,972	$ 10,871	$ -
Duvall	7,425	$ 1,451	$ 2,640	$ -
Enumclaw	11,410	$ 2,229	$ 4,057	$ -
Federal Way	93,670	$ 18,299	$ 33,309	$ -
Issaquah	34,590	$ 6,758	$ 12,300	$ -
Kenmore	21,370	$ 4,175	$ 7,599	$ -
Kent	124,500	$ 24,322	$ 44,272	$ -
Kirkland	84,680	$ 16,543	$ 30,112	$ -
Lake Forest Park	12,940	$ 2,528	$ 4,601	$ -
Maple Valley	24,790	$ 4,843	$ 8,815	$ -
Medina	3,165	$ 618	$ 1,125	$ -
Mercer Island	23,660	$ 4,622	$ 8,413	$ -
Newcastle	11,090	$ 2,167	$ 3,944	$ -
Normandy Park	6,540	$ 1,278	$ 2,326	$ -
Pacific	6,915	$ 1,351	$ 2,459	$ -

Commented [TC13]: With the reissuance of the permit, we feel that it's appropriate that all Secondary Municipal Permittees contribute to the S8 regional monitoring efforts on par with the other western WA municipal stormwater permittees.

Proposed new Appendix XX. Proposed annual permittee contribution amounts for S8.B.2.a and S8.C.1

Port of Seattle	18,183	$	3,552	$	6,466	$	-
Redmond	60,560	$	11,831	$	21,535	$	-
Renton	101,300	$	19,790	$	36,022	$	-
Sammamish	61,250	$	11,966	$	21,781	$	-
SeaTac	27,810	$	5,433	$	9,889	$	-
Seattle	686,800	$	134,173	$	244,226	$	-
Shoreline	54,990	$	10,743	$	19,554	$	-
Snoqualmie	13,110	$	2,561	$	4,662	$	-
Tukwila	19,540	$	3,817	$	6,948	$	-
Woodinville	11,570	$	2,260	$	4,114	$	-
Kitsap							
Unincorporated	42,876	$	8,376	$	15,247	$	-
Bainbridge Island	23,760	$	4,642	$	8,449	$	-
Bremerton	40,500	$	7,912	$	14,402	$	-
Port Orchard	13,810	$	2,698	$	4,911	$	-
Poulsbo	10,210	$	1,995	$	3,631	$	-
Lewis							
Centralia	16,820		N/A	$	5,981	$	-
Pierce							
Unincorporated	392,260	$	76,632	$	139,488	$	-
Bonney Lake	20,000	$	3,907	$	7,112	$	-
Buckley	4,550	$	889	$	1,618	$	-
DuPont	9,330	$	1,823	$	3,318	$	-
Edgewood	9,735	$	1,902	$	3,462	$	-
Fife	9,910	$	1,936	$	3,524	$	-
Fircrest	6,625	$	1,294	$	2,356	$	-
Gig Harbor	9,065	$	1,771	$	3,224	$	-
Lakewood	58,800	$	11,487	$	20,909	$	-
Milton	7,695	$	1,503	$	2,736	$	-
Orting	7,535	$	1,472	$	2,679	$	-
Port of Tacoma	18,183	$	3,552	$	6,466	$	-
Puyallup	39,850	$	7,785	$	14,171	$	-
Steilacoom	6,170	$	1,205	$	2,194	$	-
Sumner	9,705	$	1,896	$	3,451	$	-
Tacoma	206,100	$	40,264	$	73,289	$	-
University Place	32,230	$	6,296	$	11,461	$	-
Skagit							
Unincorporated	5,235	$	1,023	$	1,862	$	-
Burlington	8,675	$	1,695	$	3,085	$	-
Anacortes	16,580	$	3,239	$	5,896	$	-
Mount Vernon	33,730	$	6,589	$	11,994	$	-
Sedro-Woolley	11,030	$	2,155	$	3,922	$	-
Snohomish							
Unincorporated	338,995	$	66,226	$	120,547	$	-
Arlington	18,620	$	3,638	$	6,621	$	-
Brier	6,555	$	1,281	$	2,331	$	-
Edmonds	40,900	$	7,990	$	14,544	$	-
Everett	108,300	$	21,157	$	38,511	$	-
Granite Falls	3,395	$	663	$	1,207	$	-
Lake Stevens	30,900	$	6,037	$	10,988	$	-

Proposed new Appendix XX. Proposed annual permittee contribution amounts for S8.B.2.a and S8.C.1

Lynnwood	36,560	$	7,142	$	13,001	$	-
Marysville	64,940	$	12,687	$	23,093	$	-
Mill Creek	19,900	$	3,888	$	7,076	$	-
Monroe	18,120	$	3,540	$	6,443	$	-
Mountlake Terrace	21,090	$	4,120	$	7,500	$	-
Mukilteo	21,070	$	4,116	$	7,492	$	-
Snohomish	9,625	$	1,880	$	3,423	$	-
Thurston							
Unincorporated	51,555	$	10,072	$	18,333	$	-
Lacey	47,540	$	9,287	$	16,905	$	-
Olympia	51,600	$	10,081	$	18,349	$	-
Tumwater	23,040	$	4,501	$	8,193	$	-
Whatcom							
Birch Bay UGA	7,914	$	1,546	$	2,814	$	-
Unincorporated	10,702	$	2,091	$	3,806	$	-
Bellingham	84,850	$	16,576	$	30,173	$	-
Ferndale	13,250	$	2,589	$	4,712	$	-
Lynden	13,380	$	2,614	$	4,758	$	-
Totals	4,836,236	$	907,827	$	1,715,858	$	-

Notes to reviewers:

This is a proposed new appendix with all Phase I and W WA Phase II permittees' annual SAM contributions listed. The appendix would be the same in both the Phase I and W WA Phase II permits.

1. The table shows updated annual costs using the same per-capita cost allocation from the prior permit but spread over five years instead of four. Do stakeholders agree with this approach? Do you propose another approach?
    a. With some exceptions listed below, the source for the population data is https://data.wa.gov/Demographics/2012-2014-Population/782x-jqab accessed on 9/20/16. Ecology plans to update these populations using the most current data for the formal draft permit.
    b. Phase II County unincorporated area UGA populations for 2016 are from http://www.ofm.wa.gov/pop/smallarea/default.asp updated 9/21/16 and accessed on 10/5/16. Ecology plans to update these populations using the most current data for the formal draft permit.
    c. Cowlitz County is not a Growth Management Act planning county - their 2016 permit coverage area population was determined by subtracting populations of Longview and Kelso from OFM's "county parts of urban areas" estimate released on 9/21/16.
    d. WSDOT's contributions to S8.B.2.a SAM and LC HSTM programs would be included in the table so that all permittees can get a sense of their relative contributions. Using the current population data, WSDOT would be expected to contribute $24,322 to SAM receiving water monitoring and $9,092 to LC HSTM urban streams monitoring.
2. Permittees/permitted areas that were new in the 2013-2018 permit (Snoqualmie, Lynden, and Birch Bay UGA) would not contribute to SAM until the second year of the 2019-2014 permit. Do stakeholders agree with this approach? Do you propose another approach?
3. Population estimates for the Ports of Tacoma and Seattle were made by increasing the figure used in the 2013-2018 permit and increasing it by 1.078 percent – the cumulative population increase for all western Washington permittees. Do stakeholders agree with this approach? Do you propose another approach?
4. For S8.B, the total 5-year per capita SAM and LC HSTM allocations are the same but Phase II permittees' LC HSTM allocations would begin in the second year of the 2019-2024 permit and are spread over four years. Do stakeholders agree with this approach? Do you propose another approach?

Phase I Municipal Stormwater Permit Guidance for Structural Stormwater Control Program

Draft Fact Sheet Language and Guidance for Special Condition S5.C.6 and Appendix 11 as proposed for preliminary review and comment October 3, 2017 (Revised October 24, 2017).

Purpose

Phase I Permittees are required to implement a program for structural stormwater controls (SSC) as part of their Stormwater Management Program (SWMP). Ecology aims this program toward retrofitting existing developed areas; and promotes planning and prioritization of these projects to reduce impacts to watershed hydrology and pollutant discharges from MS4s. Qualifying projects reduce or prevent negative water quality impacts from MS4s. Ecology does not intend SSC projects to mitigate or compensate for previous impacts from MS4s. This program also addresses regional stormwater facilities and stormwater impacts inadequately controlled by other permit requirements.

> Note to the reviewer: For the first time, Ecology proposes a defined level of effort for the SSC Program. The level of effort is counted in "retrofit incentive points," which is an accounting system created to standardize quantification of project benefits for a wide range of qualifying project types that are implemented to varying degrees of effectiveness across a multitude of landscapes, land uses and scales. Ecology's proposed calculation of a project's retrofit incentive is intended to reflect MS4 retrofit priorities as well as receiving water conditions and project effectiveness. This permit cycle's minimum point requirement is intended to allow for a "ramp up" adjustment to reflect program planning, and therefore includes a level of effort for design-stage incentive points as well as complete/maintenance-stage incentive points. Details are provided in this Draft Guidance document and reviewers are encouraged to read this document in its entirety.

Ecology requires permittees to include an updated list of planned individual projects scheduled for implementation during the term of the permit with their annual reports. Appendix 11 provides a standardized reporting format that allows for transparent benefit and incentive point calculations and limited project details, such as costs and funding sources.

Ecology intends the SSC Program's defined level of effort as reflected in Retrofit Incentive Points (and as reported in Appendix 11 and calculated per this guidance) to achieve the following goals:

- Allow for comparisons of runoff treatment and hydrological benefits. Benefits from LID BMPs are quantified for hydrological benefit separately from flow control facilities.
- Allow for comparisons of project types across jurisdictional landscapes. This acknowledges that Washington's Phase I Permittees consist of cities and unincorporated counties.

Commented [TC1]: Please clarify as it isn't clear what this means considering earlier in the paragraph it states: "Ecology aims this program toward retrofitting existing developed areas; . . . ."

Commented [TC2]: Suggest Ecology coordinate this requirement with what is required for capital facilities planning by the WA State Department of Commerce for GMA.

- Provide a standardized means to quantify the benefits each project and each jurisdiction achieves.
- Count the following types of projects within the structural controls requirement:
    - Regional facilities that provide hydrologic or treatment benefit for existing MS4 discharges that is not otherwise required. Regional facilities that do not have a system to credit new development and redevelopment projects will fully qualify. Regional facilities that provide for use of fee-in-lieu, minimum technical requirement transfer, or other new/redevelopment-benefitting program, only partially qualify under the SSC Program; the portion of the regional facility that is preserved to address existing MS4 service area (such as roadways) may be counted in the SSC program.
    - The retrofit of existing MS4 runoff by providing additional hydrologic or treatment capacity in a stormwater facility being constructed as part of a new or redevelopment project (i.e., those required under a development project approval but also providing additional new treatment or flow control). The portion of the project serving the existing area, not otherwise required to be addressed, will qualify for the SSC Program.

Note to reviewers: Ecology proposes the clarifications described in the 2 bullets above regarding how these projects qualify under the SSC Program. Information about how to perform the necessary calculations for these projects under the SSC Program is provided in How to Calculate Equivalent Area, below.

    - Projects not directly related to stormwater (i.e., not driven by stormwater capital planning) but providing stormwater benefits. This includes forest protection (i.e., acquisition), forest conservation easements, forest cover restoration and riparian buffer restoration.
    - Operations and maintenance projects with large capital construction costs and projects that go beyond Permit O&M requirements (ex. whole system cleaning, intensive facility maintenance/upgrades).
    - Source control work that goes beyond source control permit requirements

Commented [TC3]: Why are the types of projects below not driven by stormwater capital planning? Thurston County is exploring riparian buffer restoration as part of our capital program.

Commented [TC4]: Good

Commented [TC5]: Suggest including the permit section reference.

Ecology expects Permittees to establish criteria for selecting SSC projects, including small projects not planned in advance, per the requirement in S5.C.6.b.ii(7). In order for any project or action to be counted under the SSC Program, Ecology expects it to have a quantifiable and verifiable hydrologic or pollutant removal (or runoff treatment) benefit. The Permittee is responsible for documenting hydrologic and pollutant removal benefits, and variables used in retrofit incentive calculations.

Ecology provides this guidance for the SSC Program to clarify and explain qualifying project types and retrofit incentive point structure, and address variability in project characteristics that relate to reporting consistency and compliance-related calculations. This guidance is organized as follows:

- Qualifying Project Types
- Defined Level of Effort: Retrofit Incentive Points
- How to Calculate Equivalent Area
- Instructions for Appendix 11 Reporting

Qualifying Project Types

Special Condition S5.C.6.a lists the types of projects that qualify under the SSC Program. Qualifying projects and activities reduce or prevent negative water quality impacts (includes contaminants and hydrology) from MS4s. All qualifying projects or actions must be associated with the MS4 or MS4 discharges. The project types are divided into two categories: S5.C.6.a.i contains project types that are required for inclusion; S5.C.6.a.ii lists project types that are allowable (but not required) for inclusion.

Commented [TC6]: Thurston County recommends allowing project to be quantified if helps mitigate MS4 discharges to the water body regardless of whether the project falls within the Permit's geographic scope.

For example, if a permittee builds a structural retrofit or does some riparian restoration upstream of a MS4 discharge (including beyond the Permit boundary), it's eligible as a qualifying project if it helps mitigate the downstream MS4 discharge by improving overall water quality and quantity downstream.

Table 1: Qualifying Project Types

1. New flow control facility
2. New runoff treatment facility (or treatment and flow control facility)
3. New LID BMPs
4. Retrofit of existing treatment and/or flow control facility
5. Property acquisition
6. Maintenance with capital construction costs ≥ $25,000
7. Restoration of riparian buffer or wetland
8. Restoration of forest cover
9. Floodplain reconnection projects
10. Other actions to address stormwater runoff into or from the MS4 not otherwise required in S5.C

The following information provides background and clarifying information for each qualifying SSC project type:

(1) New flow control facilities (S5.C.6.a.i(1))—Flow control facilities need not be regional. These facilities do not have to meet the "standard flow control requirement" (refer to Permit Appendix 1 Section 4.7) but they shall be new facilities designed to control stormwater flow from existing development. Projects that don't follow design criteria from the SWMMWW, or equivalent, should be prepared to provide additional project details at Ecology's request to support calculations for equivalent area, ~~water quality~~flow attenuation benefits, and retrofit incentive points.

(2) New runoff treatment facilities (S5.C.6.a.i(2))—Runoff treatment facilities include facilities that provide oil control, phosphorus treatment, enhanced (dissolved metals) treatment, and basic treatment. Facilities in this category do not have to meet runoff treatment requirements but they shall be new facilities that provide a treatment benefit for existing development. Projects that don't follow design criteria from the SWMMWW, or equivalent, should be prepared to provide additional project details at Ecology's request to support calculations for equivalent area, water quality benefits, and retrofit incentive points. Maintenance activities are not classified under this project type.

(3) New LID BMPs (S5.C.6.a.i(3))—These facilities are consistent with the lists of On-Site Stormwater Management BMPs of Minimum Requirement 5 and reduce the volume of runoff by infiltrating runoff from the small, more frequent storms. Qualifying new LID BMP projects result in the reduction or prevention of hydrologic changes through use of on-site (e.g., infiltration, dispersion, evapotranspiration, rainwater harvesting) stormwater management BMPs. LID principles reflected in site design techniques do not qualify because projects that apply LID principles in a retrofit setting should be accommodated in other qualifying project

types (such as property acquisition and restoration of forest cover). Qualifying projects in this category will be compared against the LID Performance Standard for retrofit incentive point calculations.

Commented [TC7]: Please elaborate as it's not clear what is meant by this sentence.

Note to reviewers: Ecology once again proposes the LID BMP project type as separate from the flow control facility (after having combined them as a result of public comments on the 2013-2018 Permit). This enables LID BMPs to receive independent credit for achieving the LID Performance Standard. Doing so changes the Project Type Numbers that were used during the 2013-2018 permit cycle.

(4) Retrofitting of existing stormwater facilities (S5.C.6.a.i(4))—Retrofitting is expected to occur on previously constructed stormwater facilities that, if modified, would provide additional hydrologic or runoff treatment benefits. For example, Ecology considers the retrofit of a stormwater pond to provide a settling area and more storage a retrofit to a stormwater facility. Maintenance activities are not classified under this project type.

Commented [TC8]: Good. Thurston County has several projects of this nature in our capital facilities plan.

(5) Property acquisition to provide additional runoff treatment and/or flow control benefits (S5.C.6.a.i(5))— This category excludes the purchase of property for the siting of a stormwater facility. Instead, purchase of a likely development site to permanently prevent it from being developed would qualify under this category. This category includes forest protection and conservation easements. Riparian habitat acquisition qualifies under this project type. Property used for dispersion does not qualify under this project type; it is considered a new LID BMP (Project Type 3).

Commented [TC9]: We feel that this credit allowance needs to be nuanced given that new development needs to meet current stormwater standards diminishing the benefit of the land set aside. Furthermore, since Permit-regulated areas generally fall within highly urban areas subject to the Growth Management (GMA) Act, crediting land taken out of development seem to work cross purposes with GMA-targeted development areas. However, providing credit for acquiring certain types of lands such as riparian buffers, sensitive areas, critically located forest lands (e.g., downslope from developed area) seems appropriate for credit consideration.

Note to reviewers: Ecology proposes to include the purchase of riparian habitat in this Project Type #5 group instead of addressing it as its own Project Type (formerly #6). Doing so changes the Project Type Numbers that were used during the 2013-2018 permit cycle.

(6) Maintenance with capital construction costs ≥ $25,000 (S5.C.6.a.i(6)) — This project type applies to repair projects that improve the hydrologic or treatment performance of stormwater facilities. This project type is directly related to Operations and Maintenance Program requirements at S5.C.9.a.ii which reflects that maintenance projects, including repairs, which require capital construction ≥ $25,000 are not subject to the required 2-year window for completing the maintenance. These projects typically compete with the other types of retrofit projects for limited capital construction funding. Ecology intends that these projects be reflected in the SSC program in order to provide a comprehensive view of MS4 maintenance activities and requirements. Permittees may develop criteria for identifying maintenance projects that reach the capital construction cost threshold on an area-wide or system-wide basis per the requirement in S5.C.6.b.ii (7).

Commented [TC10]: Please clarify whether performance improvements imply to its original design or exceeding the facility's original design.

(7) Restoration of riparian buffers (S5.C.6.a.ii(1)) — Retained from the 2007 permit, this project type is not directly related to stormwater (i.e., not driven by stormwater capital planning) but provides stormwater benefits.

Commented [TC11]: How is this related to the MS4 as noted above?

Note to reviewers: Ecology is considering assigning a greater retrofit incentive point multiplier for projects that restore riparian buffers than those that restore forest cover due to direct benefits to receiving water quality (i.e., shade).

Commented [TC12]: Thurston County supports this.

(8) Restoration of forest cover (S5.C.6.a.ii(2)) — Retained from the 2007 permit, this project type is not directly related to stormwater (i.e., not driven by stormwater capital planning) but provides stormwater benefits.

(9) Floodplain reconnection projects on water bodies that are not flow control exempt per Appendix 1 (S5.C.6.a.ii(3)) – Qualifying floodplain reconnection projects will have an MS4 nexus and provide flow reduction and runoff treatment benefits. Ecology added this project type in response to comments on the 2013-2018 Permit.

Commented [TC13]: Good

(10) Other actions to address stormwater runoff into or from the MS4 not otherwise required in S5.C (S5.C.6.a.ii(4)) —Ecology included this project type in the SSC Program to allow permittees to count the runoff treatment (pollutant removal) and/or hydrologic benefits of maintenance actions that address existing stormwater runoff into or from the MS4 not otherwise required in the Stormwater Management Program requirements of S5.C. Ecology intends this category to encompass "enhanced maintenance" projects, such as high efficiency street sweeping and line cleaning not otherwise used to comply with S5C9 (i.e., catch basin inspection alternatives). In order for any action to receive credit under the SSC Program, it must have a quantifiable hydrologic or runoff treatment/pollutant removal benefit and sufficient recordkeeping to verify implementation and benefits. While this project type will generally consist of "activities," Ecology considers them "projects" due to the data collection and analysis that are necessary to support assignment of retrofit incentive points.

Note to reviewers: Ecology understands that there are numerous details, such as segregating mixed wastes, measuring moisture content and calculating lane widths, that can be associated with providing a comparable calculation of maintenance actions across permittees. Ecology proposes to eliminate the requirement to calculate pounds of total solids removed per year due, in part, to such detailed distinctions. We propose to focus on right-of-way miles and frequency of event for the calculation of the applicable retrofit incentive points. We therefore will no longer require reporting of total solids removed.

Limitations and details of specific applications of this project type are provided below.

Street Sweeping Programs – Ecology intends street sweeping projects to qualify under the SSC program, and be counted toward the SSC minimum level of effort, only if they are designed, executed and documented to have the following characteristics:

- Only street sweeping routes from applicable MS4 service areas can be used to support runoff treatment benefit calculations.
- The retrofit incentive points for a qualifying street sweeping program is based on ~~lane~~ curb miles swept (as documented through broom use) and frequency of sweeping. Ecology added sweeping frequency because qualifying sweeping projects service the same surfaces (e.g., repeat routes swept) more than once per year. Each year where this

activity qualifies under the SSC Program is reported in Appendix 11 as an individual line item (not summed over the reporting period). Implementing the action over a documented route counts as one event. A street sweeping event that occurs only once per year, or less frequently, does not qualify under the SSC Program.

Based on the street sweeping program variations between Seattle and Tacoma, and the importance of establishing an appropriate retrofit incentive point assignment for these projects, Ecology proposes the following formula be used to calculate street sweeping program points:

~~lane~~ curb miles swept X (frequency of sweeping in events/year – 1 event)

Line Cleaning Programs – Line cleaning of the same section of stormwater conveyance pipe within a 5-year permit cycle does not qualify under the SSC Program. Therefore, the retrofit incentive is based solely on line miles cleaned during the specified time period. Portions of lines that were inaccessible during line cleaning cannot be included in the calculation. If line cleaning is used to comply with S5C9.d catch basin inspection alternative #3, it cannot be counted toward the SSC program.

The allowance of a program designed to implement small scale projects that are not planned in advance (S5C6.a.iv) is not considered a project type in itself. Instead, those projects are expected to be reflected in the other project type categories as applicable.

Non-Qualifying Projects

The following projects and project characteristics DO NOT qualify:

- Projects that do not have a nexus with the current MS4 or do not prevent future MS4 impacts.
- Projects that mitigate or compensate from previous impacts to the receiving water body from MS4 discharges. For example, problems caused by excessive stormwater runoff peak flow and geomorphologically significant flows. These types of projects generally occur within the receiving water. Consistent with previous permit cycles, the following types of projects do not qualify:
    - In-channel habitat and stream restoration.
    - Fish barrier removal.
    - Stabilization of down cutting.
    - In-stream culvert replacement.
    - Mitigation projects otherwise required.

Wetland restoration projects may qualify if existing degraded wetlands are designed to become treatment wetlands in accordance with the SMMWW. Such a project would be a "new treatment facility" project type.

Commented [TC14]: We disagree with requiring restored wetlands to be designed per SWMMW. While we agree that those types should get credit, we feel that there should also be credit given for wetland restoration not specifically designed as a stormwater facility. This would recognize that restored natural wetlands, while not designed using the SWMWW, also provide water quality benefits.

Note to reviewers: Should Ecology include a qualifying project type for the permanent protection of working farmland (i.e., easements and transfer of development rights)? Ecology is considering specifying that this qualifies under the SSC Program consistent with the intent to prevent its likely development (i.e., creation of impervious and pollution-generating surfaces). Would a retrofit incentive point multiplier of 0.25 be appropriate?

Note to reviewers: Should Ecology include a qualifying project type for the permanent removal of hard surfaces and conversion to vegetation? Would a retrofit incentive point multiplier of 0.25 be appropriate?

Commented [TC15]: Yes, Ecology should include this type of project, but the retrofit benefit should be tied to the impact of the farm on the local waterbody. For instance, if the farm is adjacent to a stream or river and farmed right down to the shoreline then it should get less credit than one where there is a riparian buffer. If a riparian buffer restoration is proposed, then it should count as one project and the remainder of the farmland could get some credit. A multiplier of 0.25 seems appropriate, but if it was a tree farm then a higher factor might be warranted. Perhaps a credit range should be established tied to land cover. Farms that till the soil would be on the lowest end of the range because of the annual ground disturbing activity, pastures that are primarily hay productions would be higher, and tree farms would be higher still.

Commented [TC16]: Depends on the restoration type. If you're going back to full forested or native vegetation then this should be 100% because you're removing the impervious and restoring it to pre-development conditions (How is that different from installing a pond that provides flow control to meet the flow duration standard? Are you going to discount that too?). In any event, 25% doesn't seem like much of an incentive. Perhaps this should be a sliding scale as well depending on the restoration type.

Defined Level of Effort: Retrofit Incentive Points

Note to reviewers: This entire section describes Ecology's preliminary draft proposal for an SSC Program Defined Level of Effort, and is based on prior Appendix 11 submittals (see Attachment A).

Ecology created an accounting system, counted in "retrofit incentive points" to reflect the SSC Program's defined level of effort. Retrofit Incentive Point calculations are intended to standardize quantification of qualifying projects that permittees implement over a wide range of conditions and in response to a multitude of colliding environmental, technical, regulatory, and social drivers.

Points are assigned differently to each qualifying project type. The scaling basis of point assignments is relative only and is used solely for calculating compliance with the retrofit incentive point requirements of the SSC Program. Many point assignments are based on an "equivalent area" calculation. Ecology bases the equivalent area calculation on a scale that compares the amount of runoff treatment or hydrologic control achieved through the proposed project to the amount achieved if you designed the project to meet the new and redevelopment criteria for the area draining to the new BMP(s).

Equivalent area is then used for flow control, LID, or runoff treatment benefit standardization reflected as a ratio. Because hydrologic and treatment benefits from stormwater facilities vary, Ecology has divided each into different levels of project achievement. Each level is given a retrofit incentive point multiplier that reflects a point system that is used to define the required SSC Program level of effort.

When creating the point system, Ecology placed particular emphasis on:

- Reducing negative water quality impacts from existing MS4 discharges
- Project effectiveness (as compared to minimum technical requirements for new/redevelopment projects)
- Addressing receiving water quality impairments (i.e., 303(d) listings)
- Preventing future negative water quality impacts from the creation of MS4s (i.e., permanent protection from development) and MS4-related discharges.

The point system is intended to accommodate:

- Diverse qualifying project types – For example, projects that involve habitat protection or reforestation are difficult to quantify in terms of a hydrologic and/or runoff treatment benefit. Thus, Ecology based the retrofit incentive points on the land area protected or restored.
- Different MS4 service area scales, landscapes, and land uses – Cities and counties have distinctly different landscapes in their MS4 service areas, and thus present different opportunities for project types.

In general, the proposed Retrofit Incentive Point structure is intended to result in:

- More incentive points for projects that improve water quality discharges to a water body with known water quality problems (such as 303(d) listing or contaminated sediment cleanup site).
- More incentive points for projects that treat greater volumes of stormwater runoff (using a metric based on the 91% volume required for new and redevelopment projects) than projects with runoff treatment facilities that treat lesser volumes of water.
- More incentive points for projects that provide greater "large storm" hydrologic benefit as compared to the standard flow control requirement
- More incentive points for projects that provide greater "small storm" hydrologic benefit as compared to the LID Performance Standard.
- More incentive points for runoff treatment projects that quantifiably address targeted pollutants, such as dissolved metals, phosphorus, or other chemicals of concern.
- Modest incentive points for property acquisition or other permanent protection of forest cover and riparian habitat.
- Lesser incentive points for expensive capital maintenance projects and for enhanced maintenance activities that provide variable or conditional outcomes.
- Lesser incentive points for projects that restore riparian buffer because this project type can be construed to, at least in part, mitigate for prior negative impacts from MS4 discharges or land disturbing activities. Due to its likely direct improvement to surface water quality via shade and vegetative cover, riparian restoration is assigned slightly more points than forest restoration.
- Least incentive points for projects that restore forest cover and reconnect floodplains because these project types can be construed to, at least in part, mitigate for prior negative impacts from land disturbing activities.

Commented [TC17]: Why do this? Is it a good investment to add facilities for storms larger than the 50-year? We think this now moves into the realm of flood control and not stream bank erosion protection or water quality.

Commented [TC18]: What are the criteria for establishing "targeted pollutants"? Is this established by the local jurisdiction or by others?

Commented [TC19]: For rural streams, such as those in rural areas of counties, riparian habitat may be the best and highest performing restoration/retrofit project. Why limit its incentive points? Recommend basing incentive points on location and/or existence of temperature or bacteria impacts to the effected stream.

Commented [TC20]: By definition, isn't every retrofit a mitigation for prior negative impacts?

Commented [TC21]: How is that different from retrofitting impervious areas? Aren't those negative impacts from land disturbing activities?

Table 2: Proposed Retrofit Incentive Point Structure

Relevant[a] Project Type #s	Project Achievement Description	Incentive Factors & Retrofit Incentive Points[b]
#1 & #4	Flow Control Benefit ratio less than 0.5	1.0 times Flow Control Equivalent ~~New/Redevelopment~~ area
#1 & #4	Flow Control Benefit ratio less than 0.80 and greater than 0.5	1.25 times Flow Control Equivalent New/Redevelopment area

Relevant[a] Project Type #s	Project Achievement Description	Incentive Factors & Retrofit Incentive Points[b]
#1 & #4	Flow Control Benefit ratio greater than 0.8	1.5 times Flow Control Equivalent ~~New/Redevelopment~~ area
#1 & #4	Flow Control Benefit ratio less than 0.80 and greater than 0.5 in a known flow control problem area.	1.5 times Flow Control Equivalent New/Redevelopment area
#2 & #4	Runoff Treatment Benefit ratio less than 0.75	1.0 times Runoff Treatment Equivalent ~~New/Redevelopment~~ area
#2 & #4	Runoff Treatment Benefit ratio less than 0.75 in a known water quality problem area	1.5 times Runoff Treatment Equivalent New/Redevelopment area
#2 & #4	Achieves Basic Treatment with Runoff Treatment Benefit ratio greater than 0.75	1.5 times Runoff Treatment Equivalent New/Redevelopment area
#2 & #4	Achieves Enhanced or Phosphorus Treatment with Runoff Treatment Benefit ratio greater than 0.75	1.75 times Runoff Treatment Equivalent New/Redevelopment area
#2 & #4	Meets WQ standards for target pollutant with Runoff Treatment Benefit ratio equal to 1.0	2.0 times Runoff Treatment Equivalent New/Redevelopment area
#3	Meets LID Performance Standard (LID Equivalent Area Ratio = 1.0)	2.0 times LID Equivalent New/Redevelopment area
#5	Property Acquisition	0.50 times acres acquired
#6 & #10	Maintenance with capital construction costs ≥ $25,000 or other maintenance actions per S5.C.6.a.ii.(5).	0.25 times the area served by the maintenance activity, or 0.25 times (curb miles swept x # events/year), or 0.25 times the linear feet lines cleaned.
#7	Restoration of Riparian Buffer	0.35 times acres restored
#8	Restoration of Forest Cover	0.25 times acres restored
#9	Floodplain Reconnection	0.10 times acres reconnected, with a maximum of 200 points[c]

Commented [TC22]: Too high. Should not be any higher than restoration of a riparian buffer.

Commented [TC23]: This will need to be defined.

a: Project Type #10 may involve projects that are not maintenance activities addressed in this document. For such projects, Ecology expects that the retrofit incentive points can be calculated based on the project's quantified water quality benefit as assigned to project types 1 – 3.

b: Add 0.10 to the applicable multiplier for capital projects related to the MS4 which implement an Ecology-approved basin plan (refer to Permit Appendix 1, Section 7) or watershed-scale stormwater plan from the 2013-2018 Permit's Special Condition S5.C.5.c, or a TMDL (refer to Appendix 2) or an Ecology-approved adaptive management plan (refer to Permit's Special Condition S4F and Appendix 13).

c: Ecology proposes a small retrofit incentive point multiplier and a maximum point allowance because we expect such projects to be large in scope, and their MS4 nexus weak. As proposed, the maximum points allowed for a qualifying floodplain reconnection equates to 2,000 acres reconnected.

Note to reviewers: Ecology proposes to include modest additional credit for qualifying projects related to the MS4 which implement an Ecology-approved basin plan (refer to Permit Appendix 1, Section 7) or watershed-scale stormwater plan from the 2013-2018 Permit's Special Condition S5.C.5.c, or a TMDL (refer to Appendix 2) or an Ecology-approved adaptive management plan (refer to Permit's Special Condition S4F and Appendix 13). The 2013-2018 Permit included, as a

distinct qualifying project type, "capital projects related to the MS4 which implement an Ecology-approved basin or watershed plan." Ecology proposes to remove this as an independent qualifying project type because qualifying projects are included in other Project Type categories. Instead, such projects are given additional retrofit incentive points. Ecology proposes the addition of 0.10 to the applicable multiplier. Ecology proposes to limit this addition to capital projects and explicitly exclude maintenance actions under Project Type #10.

Proposed Retrofit Incentive Point Achievement Requirement

Including a minimum point requirement in the Phase I Permit means there needs to be a deadline for conducting the compliance tally, clarity on project status that qualifies for tallying, and a target number of retrofit incentive points to achieve over the course of the tallying period.

- There has to be a date by which the points must be achieved. Ecology proposes December 31, 2022 as the cut-off date for calculating points toward the required minimum. This allows for reporting by March 31, 2023 in advance of the permit expiration date. This equates to a tallying period of 3.5 years.
- The projects that qualify for tallying must be at defined project stage(s) or frequencies. This permit cycle's minimum point requirement is intended to allow for a "ramp up" adjustment to reflect program planning, and therefore includes a level of effort for design-stage incentive points as well as complete/maintenance-stage incentive points. Construction-stage and complete/maintenance-stage incentive points may substitute for design-stage incentive points. Qualifying maintenance projects which sum annual activities are to be reported and tallied individually per year (e.g., separate line items in Appendix 11 reporting).
- Points to be achieved must be both goal-oriented and reasonable. Based on data provided in the 2013-2018 Permit Appendix 11 reports and an associated projection analysis (see Attachment A), Ecology proposes the following defined level of effort for the 2019-2024 permit cycle:

  1000 design-stage retrofit incentive points, and

  300 complete/maintenance-stage incentive points.

  Ecology generated these values by using information from Appendix 11 submittals and stormwater grant projects to project potential retrofit incentive point totals for a three year period (see Attachment A).

Note to reviewers: Permittees would still submit annual Appendix 11 reports after the December 31, 2022 deadline for achieving retrofit incentive points. Should Ecology specify that projects completed during 2023 and beyond would qualify towards future compliance with a retrofit incentive point requirement?

Commented [TC24]: If Ecology doesn't consider the projects completed during 2023 towards future compliance, when would they be counted? And, if they aren't counted then, why would permittees consider doing any projects in 2023?

An approach to consider would involve taking a 3, 4 or 5 year rolling total. This would allow permittees more flexibility in scheduling and designing projects and fitting them into the overall capital program. In other words, some years might be heavy design years and some might be more construction, but in the long run it would balance out.

How to Calculate Benefit Ratios and Equivalent Area

Ecology bases the benefit ratios and equivalent area calculations (flow control, runoff treatment and LID) on a scale that compares the amount of runoff treatment or hydrologic control achieved through the proposed project to the amount you could achieve if you

designed the project to meet the new and redevelopment criteria for the area draining to the new BMP(s). At the completion of a retrofit facility design, the designer back-calculates the basin area that produces a treatment flow rate or volume that matches the flow rate or volume of the BMP design. This calculated area is the "equivalent area" for the project and Ecology uses this area to establish the level of treatment obtained through the project and for eventually calculating retrofit incentive points.

Commented [TC25]: Are the ground cover conditions of the basin specified? Or is it based on 100% impervious or some other standard?

For example, if the retrofit project is a biofiltration swale followed by a detention pond, the project could provide both runoff treatment and flow control. If a jurisdiction designs the biofiltration swale for a flow rate of 1 cfs (based on available area) and the design runoff treatment flow rate is 2 cfs from an area of 5 acres, the equivalent area is less than 5 acres. The designer must identify the area that generates a runoff treatment flow rate of 1 cfs. This area is the equivalent area. The process is similar for flow control and LID benefits.

The "equivalent area" concept is used by the Stormwater Financial Assistance Program (SFAP) grants to inform the State Legislature of the success of the stormwater grant program using a metric other than the number of grants. The calculation compares the anticipated water quality (runoff treatment and flow control) benefit of the constructed project with anticipated water quality benefit if the project met new/redevelopment design and sizing criteria (i.e., treat 91% annual average volume, flow duration curve). For each project, calculate the area of a basin that flows to the new BMP that would meet new/redevelopment criteria. That value is reported as the "equivalent area."

LID Performance Standard (MR#5) Benefit Ratio and Equivalent Area Process

1. Determine the total area (in acres) draining to the project. This is called the "full basin" in these steps.
2. Run the Western Washington Hydrology Model (WWHM 2012) to determine if the BMPs ~~s~~ meets the LID Performance Standard for the full basin area.

~~1.~~

- If the project meets the LID Performance Standard, the LID ~~Equivalent Area~~Benefit Ratio = 1.0.
  ~~Use WWHM 2012 and calculate the amount of retention/detention storage that would be required to meet the LID Performance Standard (e.g., match developed discharge durations to applicable pre-developed durations for the range of pre-developed discharge rates from 8% of the 2-year peak flow up to 50% of the 2-year peak flow).~~
- If the project uses Full Dispersion functionally equivalent to BMP T 5.30 in Chapter 5 of Volume V of the Stormwater Management Manual for Western Washington, the LID ~~Equivalent Area~~Benefit Ratio = 1.0.
- If the project does not meet the LID Performance Standard for the full basin, the LID Benefit Ratio = 0.0.

~~2.If the project does not meet the LID Performance Standard, run WWHM 2012 with a reduced drainage basin area (with similar ratio of permeable and impermeable surfaces) until you do meet the LID Performance Standard.~~

~~3.Equivalent Area Ratio = Reduced Area (2)/Original Area (1).~~

~~4.~~3. Multiply the ~~equivalent area~~LID Benefit ratio (~~3~~2) by the full basin area from (1) to obtain the LID Equivalent Area. The equivalent area cannot be greater than the full basin area.

~~The equivalent area cannot be greater than the full basin area.~~

~~4.~~ Using the LID Benefit ratio (2) identify the appropriate Incentive Factor from Table 2.

~~5.~~ Multiply the LID Equivalent area (3) by the appropriate Incentive Factor (4) to calculate the LID Retrofit Incentive Points for the project.

Runoff Treatment (MR#6) Benefit Ratio and Equivalent Area Process

1. Determine the total area (in acres) draining to the project. This is called the "full basin" in these steps.

~~1.~~2. Determine the required New/Redevelopment Runoff Treatment flow (cfs) or Volume (ac-ft) for the full basin using WWHM 2012.

~~2.~~3. Determine the flow rate or volume ~~used in the design of the~~provided by the project. This is the "actual" runoff treatment flow rate or volume of a new BMP project, or the "actual" flow rate or volume added through a project that retrofits an existing BMP.

~~3.Determine the basin area that delivers the design flow rate or volume to the BMP by iteratively running WWHM 2012 using smaller basins (with the same proportion of pervious and impervious surface as in the full basin analysis) until you obtain the flow rate or volume that matches the actual BMP design.~~

~~4.~~ Divide the ~~design basin area~~actual flow rate or volume (3) by the ~~required area~~full basin required flow rate or volume (~~1~~2) to get the ~~equivalent area~~Runoff Treatment Benefit ratio.

~~5.~~ Multiply the Runoff Treatment Benefit ~~equivalent area~~ ratio (4) by the full basin area ~~from~~ (1) to get the MR #6 ~~equivalent~~ Runoff Treatment Equivalent area. The equivalent area cannot be greater than the full basin area.

~~6.The equivalent area cannot be greater than the full basin area.~~Using the Runoff Treatment Benefit ratio (4), identify the appropriate Incentive Factor from Table 2.

~~6.~~7. Multiply the Runoff Treatment Equivalent area (5) by the appropriate Incentive Factor (6) to calculate the Runoff Treatment Retrofit Incentive Points for the project.

Flow Control (MR#7) Benefit Ratio and Equivalent Area Process

1. Determine the total area (in acres) draining to the project. This is called the "full basin" in these steps.

~~1.~~2. Determine the required New/Redevelopment Retention/Detention Volume (ac- ft) for full basin.

Use the Western Washington Hydrology Model (WWHM 2012) and calculate the amount of retention/detention storage that would be required to meet the Standard Flow Control Requirement (refer to Permit Appendix 1, Section 4.7) (e.g., match developed discharge durations to applicable pre-developed durations for the range of pre-developed discharge rates from 50% of the 2-year peak flow up to the full 50-year peak flow).

~~2.~~3. Identify the volume of retention/detention at the overflow installed for the project (ac-ft). This is the "actual" retention/detention volume of a new BMP project, or the "actual" volume added through a project that retrofits an existing BMP.

~~3.~~4. Divide the actual retention/detention volume (~~2~~3) by the full basin required New/Redevelopment retention/detention volume (~~1~~2) to get the ~~equivalent volume~~Flow Control Benefit ratio. If the ratio is greater than 1.0, use 1.0 as your Flow Control Benefit ~~equivalent volume~~ ratio.

~~4.~~5. Multiply the Flow Control Benefit ~~equivalent volume~~ ratio (~~3~~4) by the full basin area (~~ac~~1) ~~used in the first calculation~~ to get the ~~MR #7~~Flow Control ~~equivalent~~ Equivalent area. The equivalent area cannot be greater than the full basin area.

6. ~~The equivalent area cannot be greater than the full basin area.~~ Using the Flow Control Benefit ratio (4), identify the appropriate Incentive Factor from Table 2.

7. Multiply the Flow Control Equivalent area (5) by the appropriate Incentive Factor (6) to calculate the Flow Control Retrofit Incentive Points for the project.

Instructions for Appendix 11 Reporting

Each year Phase I city and county permittees must submit an updated list to Ecology with their Annual Reports. Appendix 11 provides a format for this reporting. This section provides additional guidance for completing the Appendix 11 table.

Even though the defined level of effort is due to be tallied at the end of 2022, annual reporting of SSC Program projects provides the opportunity to track and report progress. Fill in all values as completely as possible each year. In subsequent years, permittees should update the values for each project and add projects to new rows, as needed. You can remove projects that are cancelled or otherwise will not be used toward achieving the defined level of effort (as expressed in retrofit incentive points). Projects that were completed prior to January 1, 2019 may not be included.

Project List & Project Name

Permittees should assign each SSC project its own row. Project names may change over time. If a project name changes, include a note or parenthetical that ties the new name to the old name. Maintenance actions with a recurring event frequency over multiple years must be named uniquely for each year (e.g., Sweeping for WQ 2020).

Type

Ecology assigned each project type a number as described in Appendix 11 and this document. The project type numbers reflect the order in which they are listed in S5.C.6.a.

Status

Ecology proposes the 2019-2024 Permit's defined level of effort be reflected in retrofit incentive points calculated for up to two project stages: design and completion. Projects at or beyond the 60% design stage may be counted toward the defined level of effort allowed for design-stage projects. The complete/maintenance-stage is appropriate for completed facility construction projects, fully executed property purchases, completed restoration projects, and implemented maintenance actions that are associated with Project Types #6 and #10. For tracking purposes, update the status of projects (as of December 31) for each yearly submittal.

Cost Estimate

Commented [TC26]: What's the purpose for needing to include cost estimates, particularly since the incentive point structure isn't based on cost?

Estimate total costs during the design-stage and provide actual costs for the complete/maintenance stage. Update costs over the course of the project where known.

Where known, include local/state/federal funding sources by percentage in the Comments field. Once a project is complete, the Comments should reflect the accurate funding source distribution. For projects still underway, you may want to include an explanatory note to distinguish between funding sources that are secured and funding sources that you estimate.

Basin Area

Enter the total area served by the structural stormwater control project (e.g., the full basin area). For stormwater facilities, this is the catchment area contributing runoff to the facility. For other project types, this is the area purchased or otherwise conserved or restored. For line cleaning projects, this is the line miles cleaned. For street sweeping projects, enter the formula variables for ~~lane~~ curb miles swept x # events/year – 1 event [e.g., 20 x (12-1)].

LID Equivalent Area and Incentive Factor

For each structural stormwater control project that you expect to result in a hydrologic benefit for small storms, use the LID Performance Standard Benefit Ratio and ~~equivalent~~ Equivalent ~~area~~ Area process described above. Enter the calculated LID Equivalent Area in the relevant Appendix 11 column. Then use Table 2 to identify the appropriate LID Incentive Factor and populate the relevant Appendix 11 column with the multiplier value. Remember to add 0.10 if the project implements an Ecology-approved basin plan (refer to Permit Appendix 1, Section 7) or watershed-scale stormwater plan from the 2013-2018 Permit's Special Condition S5.C.5.c, or a TMDL (refer to Appendix 2) or an Ecology-approved adaptive management plan (refer to Permit's Special Condition S4F and Appendix 13).

If the project also provides benefits for standard flow control and/or runoff treatment, calculate equivalent areas and retrofit incentives for each benefit. There can be a different retrofit incentive for each of the three equivalent areas. Ecology proposes that retrofit incentive points for LID, runoff treatment, and flow control can be summed.

Commented [TC27]: Thurston County agrees with the proposal in yellow highlighted text.

Runoff Treatment (RT) Equivalent Area and Incentive Factor

For each structural stormwater control project that you expect to result in a runoff treatment benefit (e.g., TSS, dissolved Copper, dissolved Zinc, ~~or~~ Total Phosphorus, or oil control), calculate Runoff Treatment Benefit Ratio and Equivalent Area as described above. Enter the calculated RT Equivalent Area in the relevant Appendix 11 column. Then use Table 2 to identify the appropriate RT Incentive Factor and populate the relevant Appendix 11 column with the multiplier value. Remember to add 0.10 if the project implements an Ecology-approved basin plan (refer to Permit Appendix 1, Section 7) or watershed-scale stormwater plan from the 2013-2018 Permit's Special Condition S5.C.5.c, or a TMDL (refer to Appendix 2) or an Ecology-approved adaptive management plan (refer to Permit's Special Condition S4F and Appendix 13).

Commented [TC28]: Thurston County feels that the type of treatment should factor into the incentive calculation too. If an area would require enhanced treatment and a permittee only does TSS, then it doesn't seem like they should get the same credit as a project that does basic and enhanced treatment. Same thing for phosphorous or oil control.

If the project also provides benefits for LID and/or standard flow control, calculate equivalent areas and retrofit incentives for each benefit. There can be a different retrofit incentive for each of the three equivalent areas. Ecology proposes that retrofit incentive points for LID, runoff treatment and flow control can be summed.

Flow Control (FC) Equivalent Area and Incentive Factor

For each structural stormwater control project that you expect to result in a hydrologic benefit for larger storms, use the Flow Control Benefit Ratio and Equivalent Area process described above. Enter the calculated FC Equivalent Area in the relevant Appendix 11 column. Then use Table 2 to identify the appropriate FC Incentive Factor and populate the relevant Appendix 11 column with the multiplier value. Remember to add 0.10 if the project implements an Ecology-approved basin plan (refer to Permit Appendix 1, Section 7) or watershed-scale stormwater plan from the 2013-2018 Permit's Special Condition S5.C.5.c, or a TMDL (refer to Appendix 2) or an Ecology-approved adaptive management plan (refer to Permit's Special Condition S4F and Appendix 13).

If the project also provides benefits for LID and/or runoff treatment, calculate equivalent areas and retrofit incentives for each benefit. There can be a different retrofit incentive for each of the three equivalent areas. Ecology proposes that retrofit incentive points for LID, runoff treatment and flow control can be summed.

Other Incentive Factor

For each structural stormwater control project that is not Project Type 1, 2, 3 or 4, use Table 2 to identify the appropriate Incentive Factor and populate the "Other Incentive Factor" column with the multiplier value. Remember to add 0.10 if the project implements an Ecology-approved basin plan (refer to Permit Appendix 1, Section 7) or watershed-scale stormwater plan from the 2013-2018 Permit's Special Condition S5.C.5.c, or a TMDL (refer to Appendix 2) or an Ecology-approved adaptive management plan (refer to Permit's Special Condition S4F and Appendix 13).

Total Retrofit Incentive Points

Refer to Table 2 and associated project details to determine the Retrofit Incentive Points for each SSC project. Insert the calculated value in the Appendix 11 total retrofit incentive points column.

For project types 1, 2, 3 and 4 that provide benefits for LID, runoff treatment and flow control, calculate retrofit incentive points for each benefit based on the appropriate Equivalent Areas and Incentive Factors. Then add the results of the ~~two or~~ three calculations together to obtain the total retrofit incentive points. Enter this value in the Appendix 11 total retrofit incentive points column.

Latitude/Longitude and Receiving Water Body Name

If your project has multiple locations, include a lat/long for each location and describe the reason why in an explanatory note. Maintenance actions that cover a geographic area should provide zip codes for the area addressed and attach a map at the time the retrofit incentive points are calculated for a compliance measure. If a receiving water body is unnamed, also include the name of the water body that the unnamed creek/lake is a tributary.

6. **Structural Stormwater Controls**
Each Permittee shall implement a structural stormwater controls program to prevent or reduce impacts to waters of the state caused by discharges from the MS4. Impacts that shall be addressed include disturbances to watershed hydrology and stormwater pollutant discharges.

The program shall consider impacts caused by stormwater discharges from areas of existing development, including runoff from highways, streets, and roads owned or operated by the Permittee, and areas of new development, where impacts are anticipated as development occurs.

Commented [TC29]: Wouldn't this require controls as a condition of development anyway?

Minimum performance measures:

a. The program shall address impacts that are not adequately controlled by the other required actions of the SWMP.

i. The program shall consider the following projects:

(1) New flow control facilities~~, including LID BMPs~~.

(2)New treatment (or treatment and flow control) facilities~~, including LID BMPs~~.

~~(2)~~(3) New LID BMPs

~~(3)~~(4) Retrofit of existing treatment and/or flow control facilities.

~~(4)~~(5) Property acquisition for water quality and/or flow control benefits (not associated with future facilities), including riparian habitat acquisition.

~~(5)~~(6) Maintenance with capital construction costs ≥ $25,000.

ii. Permittees should consider other projects to address impacts, such as:

(1) ~~Riparian habitat acquisition~~Restoration of riparian buffers.

(2) Restoration of forest cover ~~and/ or riparian buffers~~.

(3) Floodplain reconnection projects on water bodies that are not flow control exempt per Appendix 1.

(4)~~Capital projects related to the MS4 which implement an Ecology-approved basin or watershed plan.~~

~~(5)~~(4) Other actions to address stormwater runoff into or from the MS4 not otherwise required in S5.C.

iii. Permittees may not use in-stream culvert replacement or channel restoration projects for compliance with this requirement.

iv. The Structural Stormwater Control program may also include a program designed to implement small scale projects that are not planned in advance.

b. Each Permittee's SWMP Plan shall describe the Structural Stormwater Control Program including the following:

i. The Structural Stormwater Control Program goals.

ii. The planning process used to develop the Structural Stormwater Control Program, including:

(1) The geographic scale of the planning process.

(2) Issues and regulations addressed.

(3) Steps in the planning process.

(4) Types of characterization information considered.

(5) Amount budgeted for implementation.

(6) The public involvement process.

(7) A description of the prioritization process, procedures, and criteria used to select the Structural Stormwater Control projects.

c. ~~No later than March 31, 2014~~ With each annual report, each Permittee shall provide a list of planned, individual projects scheduled for implementation during this permit term. This list must include at a minimum the information and formatting specified in Appendix 11. Each Permittee's annual report shall provide an update of this list.

d. No later than December 31, 2022, each Permittee shall achieve the following retrofit incentive points, as calculated per Appendix 11:

1000 design-stage retrofit incentive points, and

300 complete/maintenance-stage incentive points.

Construction-stage and complete/maintenance-stage incentive points may substitute for design-stage incentive points.

Commented [TC30]: What's the purpose for needing to include the amount budgeted, particularly since the incentive point structure isn't based on cost?

Commented [TC31]: For clarity we suggest rewording to:

". . . each Permittee shall achieve a minimum of 1,300 incentive points, as calculated per Appendix 11, with a minimum of 300 complete/maintenance incentive points."

Should socioeconomic factors come into play in setting the incentive points requirement for permittees? While socioeconomic differences among Phase I permittees may be insignificant, should this requirement migrate into the Phase II permit, there is quite the range of economic fortune among Phase II permittees.

APPENDIX 11 – Structural Stormwater Controls Project List

The annual reporting requirement described in S5.C.6.c must follow the format and instructions provided in this appendix and the associated *Phase I Municipal Stormwater Permit Guidance for Structural Stormwater Control Program (dated September 30, 2017)*.

Project #	Project Type[a]	Status[b]	Cost Est.	Basin Area (ac)	LID Equiv.	LID Incentive Factor[c]	RT Equiv.	RT Incentive Factor[c]	FC Equiv.	FC Incentive	Other Incentive	Total Retrofit Incentive	Other Benefit	Lat / Long	Receiving waterbody name	Comments

a . Project Type numbers are as follows:

Project Type Numbers

1. New flow control facility
2. New runoff treatment facility (or treatment and flow control facility)
3. New LID BMPs
4. Retrofit of existing treatment and/or flow control facility
5. Property acquisition
6. Maintenance with capital construction costs ≥ $25,000
7. Restoration of riparian buffer
8. Restoration of forest cover
9. Floodplain reconnection projects
10. Other actions to address stormwater runoff into or from the MS4 not otherwise required in S5.C

b . Enter project Status as follows:

- Design = 60% or more complete with design phase project planning

- Complete = construction complete or property purchase complete/
- Maintenance = indicates successful implementation of qualifying action under Project Type 10.

c . Incentive Factors are the multipliers described in the following table:

Relevant[1] Project Type #s	Project Achievement Description	Incentive Factors & Retrofit Incentive Points[2]
#1 & #4	Flow Control Benefit ratio less than 0.5	1.0 times Flow Control Equivalent ~~New/Redevelopment~~ area
#1 & #4	Flow Control Benefit ratio less than 0.80 and greater than 0.5	1.25 times Flow Control Equivalent ~~New/Redevelopment~~ area
#1 & #4	Flow Control Benefit ratio greater than 0.8	1.5 times Flow Control Equivalent ~~New/Redevelopment~~ area
#1 & #4	Flow Control Benefit ratio less than 0.80 and greater than 0.5 in a known flow control problem area.	1.5 times Flow Control Equivalent ~~New/Redevelopment~~ area
#2 & #4	Runoff Treatment Benefit ratio less than 0.75	1.0 times Runoff Treatment Equivalent ~~New/Redevelopment~~ area
#2 & #4	Runoff Treatment Benefit ratio less than 0.75 in a known water quality problem area	1.5 times Runoff Treatment Equivalent New/Redevelopment area
#2 & #4	Achieves Basic Treatment with Runoff Treatment Benefit ratio greater than 0.75	1.5 times Runoff Treatment Equivalent New/Redevelopment area
#2 & #4	Achieves Enhanced or Phosphorus Treatment with Runoff Treatment Benefit ratio greater than 0.75	1.75 times Runoff Treatment Equivalent New/Redevelopment area
#2 & #4	Meets WQ standards for target pollutant with Runoff Treatment Benefit ratio equal to 1.0	2.0 times Runoff Treatment Equivalent New/Redevelopment area
#3	Meets LID Performance Standard	2.0 times LID Equivalent ~~New/Redevelopment~~ area
#5	Property Acquisition	0.50 times acres acquired
#6 & #10	Maintenance with capital construction costs ≥ $25,000 or other maintenance actions per S5.C.6.a.ii.(5).	0.25 times the area served by the maintenance activity, or 0.25 times (curb miles swept x # events/year), or 0.25 times the linear feet lines cleaned.
#7	Restoration of Riparian Buffer	0.35 times acres restored
#8	Restoration of Forest Cover	0.25 times acres restored
#9	Floodplain Reconnection	0.10 times acres reconnected, with a maximum of 200 points

Notes:

Commented [TC32]: Too high. Should not be any higher than restoration of a riparian buffer.

1: Project Type #10 may involve projects that are not maintenance activities addressed in this document. For such projects, Ecology expects that the retrofit incentive points can be calculated based on the project's quantified water quality benefit as assigned to project types 1 – 3.
2: Add 0.10 to the applicable multiplier for capital projects related to the MS4 which implement an Ecology-approved basin plan (refer to Permit Appendix 1, Section 7) or watershed-scale stormwater plan from the 2013-2018 Permit's Special Condition S5.C.5.c, or a TMDL (refer to Appendix 2) or an Ecology-approved adaptive management plan (refer to Permit's Special Condition S4F and Appendix 13).

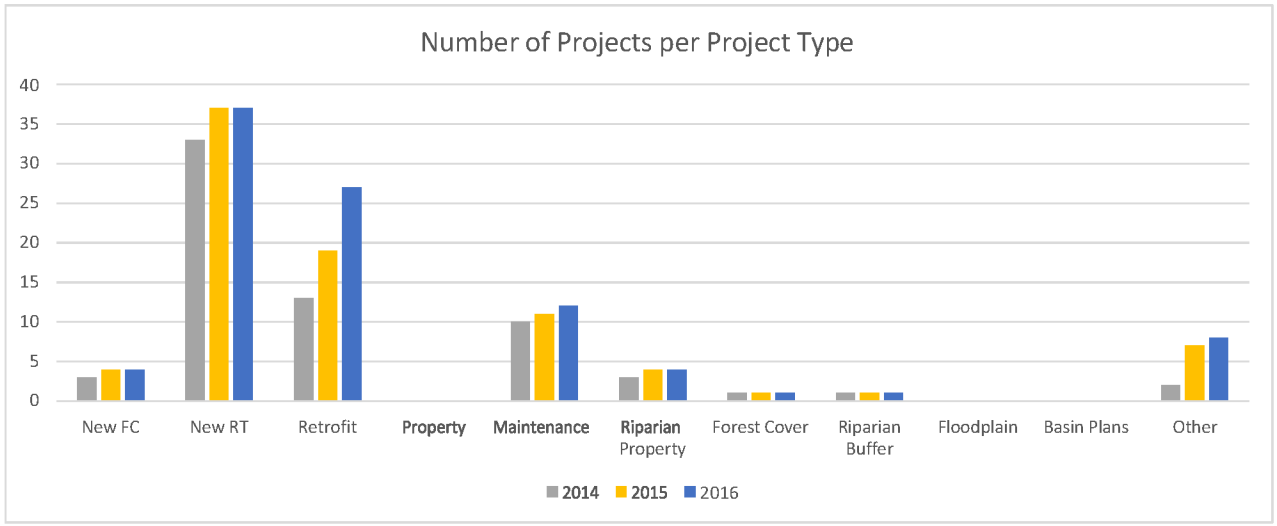
Attachment A

What We Learned from the 2014-2016 Annual Report Appendix 11 Submittals

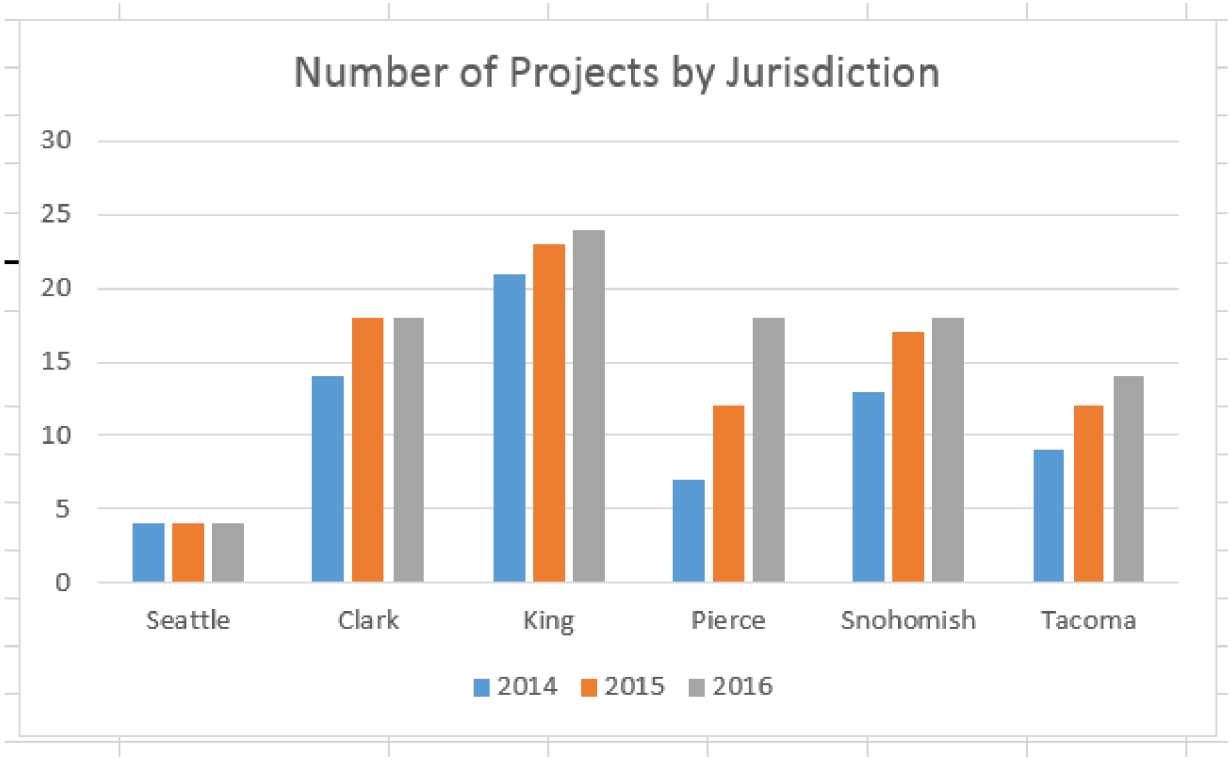
Ecology compiled and assessed the Appendix 11 Annual Report data from calendar years 2014, 2015 and 2016. This included: project types, cost estimates, water quality benefits (in TSS or TSS lbs/yr), hydrologic benefits, and retrofit incentive points. In some cases, Permittees provided additional information to explain calculations and project details that were unclear or unanticipated. Ecology's preliminary proposed requirements and associated guidance document are based in part on the results of this assessment.

Summary statistics are provided in the following figures.

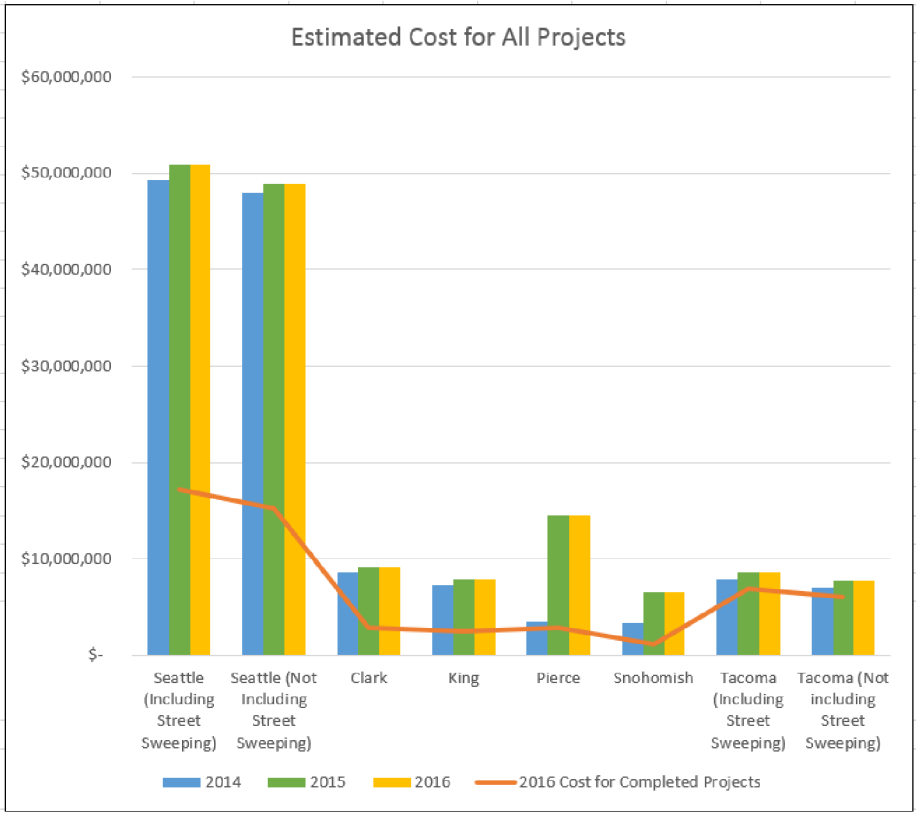
Not all of the eleven project types were equally used. Three project types (Property Acquisition for water quality and/or flow control benefits, Floodplain reconnection, and Capital project related to the MS4 which implement an Ecology-approved basin or watershed plan) were not used. Two other project types (restoration of forest cover and restoration of riparian buffer) only had one project. The majority of the reported projects (70-percent) were in new runoff treatment or retrofit treatment and flow control projects. Annual sweeping programs fit into the Project Type "Other actions to address stormwater runoff" (S5.C.6.a.ii(4)).



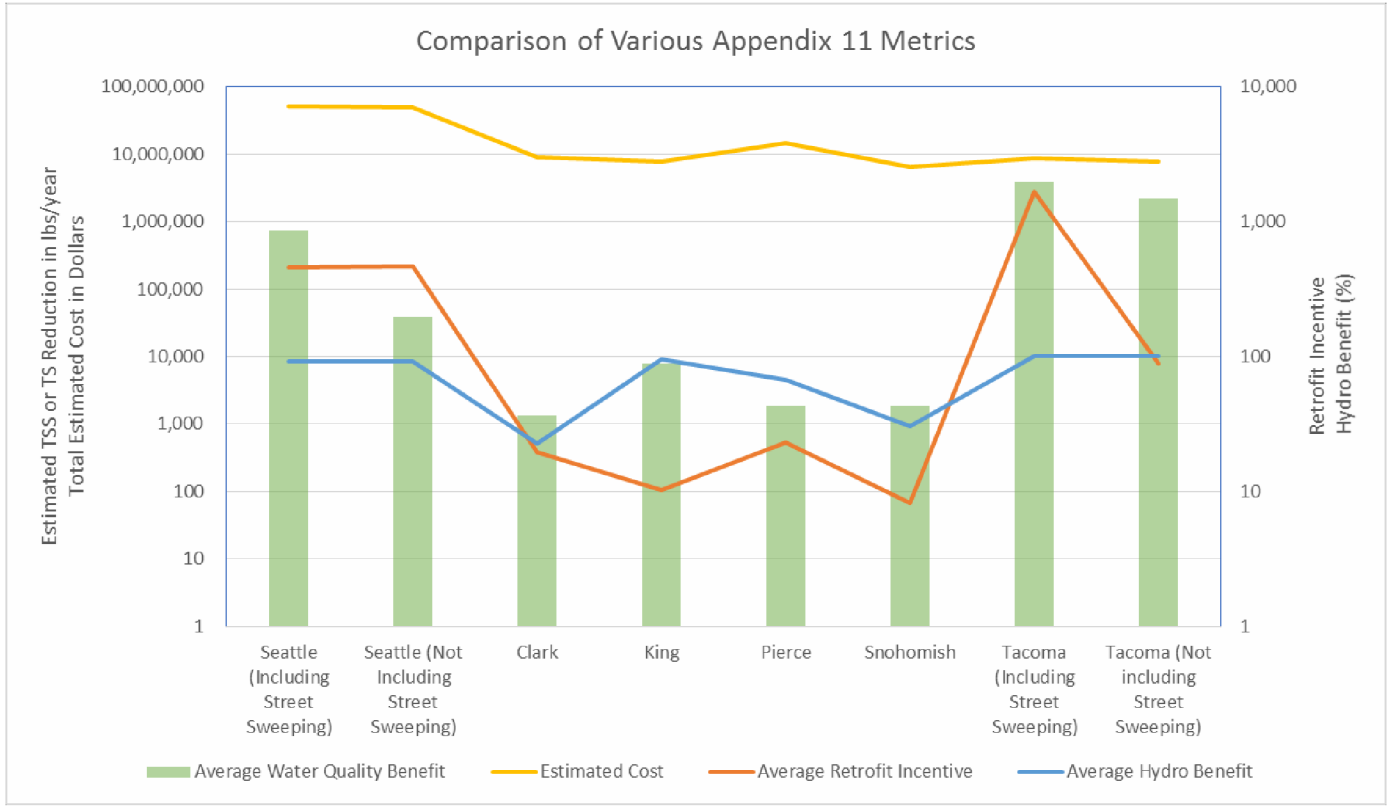
The number of projects reported by the jurisdictions differed greatly. In the 2016 reports, the number of projects ranged from 4 to 24, with three jurisdictions reporting a total of 18 projects.



The amount of money planned or actually spent on the project also varied dramatically between jurisdictions. Using total reported costs, without including sweeping activities, the 2016 costs range from $6.5M to $48.9M. The average cost for the six jurisdictions is $15.8M.



The summary chart below attempts to show water quality benefit (in TSS reduction in pounds/year) alongside estimated costs, retrofit incentive points, and hydro benefits.



Ecology's findings are summarized below.

- The number of projects is not associated with costs or retrofit incentive points.
- Costs are not comparable between jurisdictions and higher cost does not necessarily result in a higher water quality benefit.
- Irregularities and inconsistencies associated with street sweeping project calculations suggest that improved guidance and changes to the retrofit 2013-2018 Permit incentive factor are necessary.
- Not all projects that could be included on the Appendix 11 form are included in the submittals. Reasons for leaving out specific projects are different between jurisdictions.
- Not all project types are represented in the submittals.
- Types of projects differ by jurisdiction with more sweeping done in the cities and more retrofit construction in the counties.
- The calculation of water treatment benefit for runoff treatment BMPs using pounds Total Suspended Solids (TSS) per year is subject to a large number of assumptions and variables for each specific application and is difficult to apply equitably over the six jurisdictions. These assumptions and variables include: the amount of rainfall, the volume of runoff, the TSS concentration in the runoff, and the ability of the BMP to remove TSS.

How we calculated the Proposed Retrofit Incentive Point-based Defined Level of Effort

Ecology used information from the 2016 Annual Report submittals to calculate possible retrofit incentive points using the following actions and set of assumptions:

- This analysis considers a subset of Project Types only. These are the types of projects that were reported by the six jurisdictions with the exception of Project Type: Other actions to address stormwater runoff (typically sweeping).
    - New flow control facility including LID BMPs (4 projects)
    - New runoff treatment facility (or treatment and flow control facility), including LID BMPs (37 projects)
    - Retrofit of existing runoff treatment and/or flow control facility (27 projects)
    - Maintenance with capital construction costs >= $25,000 (12 projects)
    - Restoration of forest cover (1 project)
    - Restoration of riparian buffer (1 project)
- Since there is no information submitted on the basin area controlled or the level of treatment and flow control provided by projects listed in the jurisdiction's tables, we assumed random values so we could calculate points.
- Ecology used information gathered from closed Stormwater Financial Assistance Program (SFAP) projects (from FY2009 through FY2016) where basin area and equivalent area for runoff treatment and flow control are stored. There are approximately 153 grant projects in the database as of September 1, 2017.
- Information from the grant database used in the analysis are:

    - Average basin area = 59.84 acres
    - Average Runoff Treatment (MR #6) equivalent area = 43.08 acres (equivalent area ratio of 0.72)
    - Average Flow Control (MR #7) equivalent area = 32.91 acres (equivalent area ratio of 0.55)
    - Average LID (MR #5) equivalent area = 32.91 acres (equivalent area ratio of 0.55)
- We assumed the average LID equivalent area equal to the average flow control ratio since we didn't have specific information in the grant database to distinguish between LID and Flow Control projects.
- Ecology ran 50 simulations of the data using the projects from the 2016 Appendix 11 report and randomly generating basin area, and the three equivalent area ratios.
- So we would see a minimum value of total retrofit incentive points, the retrofit incentive ratio was set at the lowest incentive point value available for the project. The calculation used the following values:
    - 1.0 for project types: New flow control facility including LID BMPs; New runoff treatment facility (or treatment and flow control facility), including LID BMPs; and Retrofit of existing runoff treatment and/or flow control facility;
    - 0.5 for project type: Maintenance with capital construction costs >= $25,000;
    - 0.35 for project type: Restoration of forest cover; and
    - 0.25 for project type: Restoration of riparian buffer.
- The random number generator provided numbers ranging from zero to twice the average values. This way, the average value over the 50 simulations should be close to the average values in the grant database.
    - Project areas averaged 58.95 acres (goal of 59.84 acres)
    - Runoff Treatment equivalent areas averaged 38.90 acres (goal of 43.07 acres)
    - Flow control equivalent areas averaged 32.42 acres (goal of 32.91 acres)
    - LID equivalent areas averaged 32.42 acres (goal of 32.91 acres)
- The retrofit incentive value averaged 1,214 per Phase I jurisdiction (total points of 7,286)
- The retrofit incentive points per jurisdiction ranged from a low of 311 to 2,409 points
- The results of the simulations are shown in the table below.

Summary of Retrofit Incentive Point Monte Carlo Evaluation

		Equivalent Areas (ac)			
		Runoff Treatment	Flow Control		
Jurisdiction	Basin Area (ac)	MR #6	MR #5	MR #7	Sum of Retrofit Incentive Points
Clark County	299	201	164	151	516
King County	1,449	936	790	793	2,409
Pierce County	1,082	693	600	595	1,839
Seattle	171	112	104	95	311
Snohomish County	939	621	503	519	1,573
Tacoma	399	266	223	214	637
Grand Total	4,339	2,829	2,384	2,367	7,285