

SUMMARY and FISCAL NOTE

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1. BILL SUMMARY

Legislation Title: AN ORDINANCE relating to the Stormwater Code; amending Chapters 22.800, 22.801, 22.802, 22.803, 22.805, 22.807, and 22.808 of the Seattle Municipal Code and adding a new Section 22.800.100.

Summary and background of the Legislation:

The purpose of the City of Seattle's Stormwater Code (Chapters 22.800 – 22.808 SMC) is to protect life, property, public health, and the environment from the adverse impacts of urban stormwater runoff. These can include flooding, water quality pollution, landslides and erosion. The Stormwater Code was substantially updated in 2009, and there were three minor revisions in 2015. Whereas the 2009 Stormwater Code update included several major modifications with significant cost impacts to the City and developers, this 2016 Stormwater Code Update consists of relatively less significant modifications with fewer cost impacts.

The Stormwater Code and associated joint Seattle Public Utilities/Department of Planning and Development (SPU/DPD) Directors' Rules are being revised to comply with the requirements of the City's coverage under the 2013-2018 Phase I Municipal Stormwater Permit (MS4 Permit). The MS4 Permit was issued by the Washington State Department of Ecology under both the National Pollutant Discharge Elimination System (NPDES) program established by the federal Clean Water Act and the State of Washington Water Pollution Control Law. The MS4 Permit was issued on August 1, 2012, became effective on August 1, 2013, and was modified effective January 16, 2015. The MS4 Permit requires the City's Stormwater Code and associated Stormwater Manual (to be contained in the Directors' Rule) include minimum requirements, thresholds, definitions, and other requirements, limitations, and criteria, determined by Ecology to be equivalent to Appendix 1 of the MS4 Permit for new development, redevelopment, and construction. In addition, maintenance provisions must be at least as protective of facility function as, and source control provisions must be functionally equivalent to, Ecology's Stormwater Management Manual for Western Washington. A draft of the Directors' Rule is included as Exhibit C.

SPU, in close collaboration with DPD, other City departments, and external stakeholders, is updating the Stormwater Code to: 1) incorporate new Ecology requirements; 2) incorporate policy changes; and 3) improve usability. All updates to Seattle's Stormwater Code were originally intended to occur at one time with an effective date of June 30, 2015. However, Ecology was delayed in reviewing the City's draft Stormwater Code, which prevented Seattle from making all modifications on the original timeline and extended the City's regulatory

deadline by several months. Nevertheless, Seattle wanted to make three cost-saving Stormwater Code modifications effective by the originally anticipated effective date. Therefore, updates to the Stormwater Code are proceeding as two legislative processes: the now-approved “2015 Revision to Stormwater Code” (effective date 5/24/15) and the “2016 Stormwater Code Update” enacted by this proposed legislation (anticipated effective date 1/1/16).

Several modifications are being proposed in the 2016 Stormwater Code Update. Exhibit A (attached) summarizes significant proposed modifications and their rationale. The following list includes only those proposed modifications with notable financial impacts to the City of Seattle:

1. Definition of "Pollution-generating pervious surface" (Chapter 22.801 SMC).
Proposed modification required by Ecology includes adding “natural and artificial turf” as typical pollution-generating pervious surfaces requiring water quality treatment for 0.75 acres or more of new or replaced turf.
2. Minimum Requirements for Projects (Chapter 22.805 SMC). Modifications are proposed for all development projects to meet Ecology’s minimum requirements and account for Seattle’s unique development patterns. The primary proposed Stormwater Code modifications include:
 - a. “Implement GSI” Becomes “On-site Stormwater Management”. The requirement for projects to perform On-site Stormwater Management (currently “implement green stormwater infrastructure” in the current Stormwater Code) has been moved from the Minimum Requirements for All Projects and is now included as a requirement based on project type (i.e., Single-family residential (SFR), Trail/Sidewalk, Roadway, Parcel). Use of On-site BMPs, such as permeable pavement and bioretention facilities, result in volume reduction to the City’s systems thus leading to additional downstream flood protection and increased system capacity. In accordance with the MS4 Permit, the 2016 Stormwater Code Update specifies projects must either match a quantitative on-site performance standard or install on-site best management practices (BMPs) per a pre-defined list as feasible. Similarly, the requirement to amend soils is relocated from its own specific provision, to now be included based on project type (i.e., Single-family Residential, Trail/Sidewalk, Parcel-based, Roadway).
 - b. On-site Stormwater Management Threshold for SFR Projects. The threshold for applicability of On-site Stormwater Management would change from applying to all single-family residential projects with a credit for the first 1,500 square feet, to applying to single-family residential projects with no credit as follows:
 - i. For a project on a lot most recently created, adjusted, altered, or otherwise amended by a plat or other lawful document recorded with the King County Recorder on or after January 1, 2016, and where that document either created the lot or reduced the size of the lot, either the total new plus replaced hard surface is 750 square feet or more or land disturbing activity is 7,000 square feet or more; or
 - ii. For all other projects where either the total new plus replaced hard surface is 1,500 square feet or the land disturbing activity is 7,000 square feet or more.

- c. On-site Stormwater Management Threshold for Parcel-based Projects. The threshold for applicability of On-site Stormwater Management is proposed to change from applying to all Parcel-Based projects with 2,000 square feet of impervious surface, to applying to Parcel-Based projects as follows:
 - i. For a project on a lot most recently created, adjusted, altered, or otherwise amended by a plat or other lawful document recorded with the King County Recorder on or after January 1, 2016, and where that document either created the lot or reduced the size of the lot, either the total new plus replaced hard surface is 750 square feet or more or land disturbing activity is 7,000 square feet or more; or
 - ii. For all other projects where either the total new plus replaced hard surface is 1,500 square feet or the land disturbing activity is 7,000 square feet or more.
 - d. Public Roadway Right-of-Way Projects. New language is proposed to account for the unique construction limitations posed by public roadway right-of-way work within an urban environment having existing infrastructure (i.e., hydraulic conditions, existing major utilities). The new language reduces flow control and water quality treatment requirements for roadway projects under limited conditions.
3. Minimum Requirements for On-Site Stormwater Management (22.805-070 SMC). Modifications to the Stormwater Code are proposed to meet Ecology's minimum requirements. Additional project site infiltration testing and feasibility analyses are required to meet Ecology's minimum requirements and are proposed in the 2016 Stormwater Manual. The primary proposed Stormwater Code changes include:
- a. Right-of-Way: For projects draining to a creek, wetland, or small lake that trigger On-Site Stormwater Management, Ecology does not allow a prohibition to installation based on minimum facility size for permeable pavement (2,000 square feet) and bioretention (500 square feet) as is allowed in the current Seattle Stormwater Manual. This will result in additional small facilities within the right-of-way.
 - b. List vs. "Cafeteria-Style" Selection: Ecology requires a prescriptive list approach as opposed to the current cafeteria-style approach when determining which on-site stormwater BMPs must be used. In addition, cost feasibility will no longer be a consideration for most On-site Stormwater Management BMPs.

3. SUMMARY OF FINANCIAL IMPLICATIONS

☒ This legislation has direct financial implications.

☐ This legislation does not have direct financial implications.

Budget program(s) affected:				
Estimated \$ Appropriation change:	General Fund \$		Other \$	
	2015	2016	2015	2016
Estimated \$ Revenue change:	Revenue to General Fund		Revenue to Other Funds	
	2015	2016	2015	2016
Positions affected:	No. of Positions		Total FTE Change	
	2015	2016	2015	2016
Other departments affected:				

Summary Notes: This legislation does not directly appropriate funds. No additional resources or appropriations are being requested at this time. However, if additional resources and/or appropriation authority is needed to support preparation activities in advance of the 2016 implementation, the impacted department will bring forward a supplemental budget request prior to the end of this year. Any changes to 2016 endorsed positions, appropriations or revenues will be handled through the budget process by each impacted department. 2015 and 2016 anticipated direct financial implications are addressed in the notes to the Appropriations and Revenues/Reimbursements sections of this fiscal note with indirect and longer term implications noted in the Other Implications sections.

3.a. Appropriations

☐ This legislation adds, changes, or deletes appropriations.

Fund Name and number	Dept.	Budget Control Level Name/##	2015 Appropriation Change	2016 Estimated Appropriation Change
TOTAL				

**See budget book to obtain the appropriate Budget Control Level for your department.*

Appropriations Notes:

2015: Additional training for SPU, DPD, SDOT, and Parks staff will be required in 2015 to prepare for implementation of the Code in 2016. These departments are unlikely to need

additional appropriations in 2015. If additional appropriation is needed the affected department will bring forward a supplemental budget request prior to the end of 2015.

2016: DPD anticipates additional staffing requirements as a result of the code update due to a sizeable increase in the number of projects requiring on-site drainage review and the increased complexity of on-site inspections. As part of the 2016 budget process, DPD will request an additional \$569,778 in annual appropriations to fund requests for 2 additional FTE Drainage Reviewers (\$258,426 annual total or \$129,213 per reviewer) and 2 additional FTE DPD Site Inspectors and associated vehicles (\$311,352 annual total, or \$155,676 per reviewer and vehicle).

As required under the DPD-SPU MOU, SPU will reimburse DPD for the portion of the work carried out by the new staff related to side sewer permitting and authorized overhead activities. As part of the 2016 budget process, SPU will request an additional \$293,400 (N000 General Expense) in 2016 appropriations (\$293, 400 for N000 General Expense) to fund this additional work.

Indirect and long-term financial implications of the proposed legislation to SPU and other departments are specified in the Other Implications section of this fiscal note.

3.b. Revenues/Reimbursements

_____ This legislation adds, changes, or deletes revenues or reimbursements.

Anticipated Revenue/Reimbursement Resulting from this Legislation:

Fund Name and Number	Dept.	Revenue Source	2015 Revenue	2016 Estimated Revenue
TOTAL				

Revenue/Reimbursement Notes:

This legislation does not revise budgeted revenue. As a result of the Stormwater Code update, DPD anticipates increased hours spent on site inspections for side sewer permits (see Appropriations notes above). The payments by permit applicants are transferred to SPU as side sewer permitting revenues. Any projected revisions to 2016 SPU endorsed revenues due to these increased site inspection charges will be addressed through the budget process.

3.c. Positions

— This legislation adds, changes, or deletes positions.

Total Regular Positions Created, Modified, or Abrogated through this Legislation, Including FTE Impact:

Position # for Existing Positions	Position Title & Department*	Fund Name & #	Program & BCL	PT/FT	2016 Positions	2016 FTE	Does it sunset? (If yes, explain below in Position Notes)
TOTAL							

* List each position separately

Position notes: This legislation does not authorize the addition of positions. It will not result in any increase to SPU positions. DPD anticipates position requests related to the code update for 2 additional FTE Drainage Reviewers and 2 additional FTE DPD Site Inspectors as further described in the notes to the Appropriations section of this Fiscal Note. These positions will be requested during the 2016 budget process.

4. OTHER IMPLICATIONS

a) Does the legislation have indirect or long-term financial impacts to the City of Seattle that are not reflected in the above?

Yes. This legislation will have impacts on costs associated with development of various Stormwater Code implementation tools (e.g., checklists and review forms, client assistance memos/Tips, submittal templates, etc.), as well as future project capital and operations and maintenance costs. Additional details on specific cost impacts are outlined below.

General. This legislation does not appropriate funds. It will impact costs and work requirements in several departments. The following department-specific notes are provided for illustrative purposes. Any budget or staffing adjustments will be addressed through the budget process by each individual department as needed.

Note 1. (SPU):

Cost implications for SPU include increases and decreases in capital project costs and associated O&M requirements for drainage control structures, and increases in O&M requirements for drainage control structures constructed in the street right-of-way.

1. Future Capital (\$25,000)

There will be a relatively small increase in SPU capital costs for some projects due to increased requirements related to site infiltration testing that will be included in the updated 2016 Stormwater Manual. SPU estimates \$25,000 in additional cost per year (\$5,000 per infiltration test pit x 5 projects/year).

There will be a relatively small increase in SPU capital costs associated with an increase in the number of smaller On-site Stormwater Management facilities, as there will no longer be a minimum facility size for permeable pavement or bioretention in the right-of-way (modifications 3.a described in Section 1 above). At this time, there isn't sufficient information to accurately project long-term costs; however, they are anticipated to be relatively small.

There will be a relatively small reduction in SPU capital costs associated with a decrease in flow control and water quality facilities resulting from new language to address unique construction limitations posed by public roadway work. At this time, there is not sufficient information to accurately project long-term cost decreases. However, they are anticipated to be relatively small.

2. *Future Operation and Maintenance (\$40,000 increase annually)*

SPU typically takes ownership and assumes operation and maintenance responsibility for subsurface drainage structures installed in the public right-of-way, including flow control and water quality facilities. SPU is therefore responsible for maintaining bioretention facilities installed in the right-of-way. Estimated cost impacts of this code update are provided below and include labor as well as costs associated with equipment, repair, replacement, disposal, and other life-cycle costs related to maintaining these facilities. For reference, it is anticipated that the greatest increase in SPU O&M costs related to stormwater management will result from increased redevelopment, not from updated requirements.

There will be an increase in SPU O&M costs due to an increase in the number of smaller on-site stormwater management facilities as there will no longer be a minimum facility size for permeable pavement in the right-of-way. SPU estimates it will cost an additional \$40,000 annually (\$5,000/year/small facility * 8 additional facilities).

There will be a slight decrease in SPU O&M costs due to a decrease in flow control and water quality facility installations, resulting from new language to address unique construction limitations posed by public roadway right-of-way work. At this time, there isn't sufficient information to accurately project long-term cost savings; however, they are anticipated to be relatively small.

Note 2. (SDOT):

1. *Future Capital (\$65,000 per year)*

SDOT capital project costs in creek basins will increase as a result of this legislation due to an increase in the number of smaller permeable pavement facilities as there will no longer be a minimum facility size for permeable pavement in the right-of-way. SDOT estimates an increase in the number of new permeable pavement

installations on capital projects of approximately 25,000 square feet each year. SDOT compared installation costs of permeable pavement versus standard pavement and found permeable pavements to be approximately 28 percent more expensive to install. Based on the number of capital projects constructed in 2013 and 2014 that would be required to apply On-Site Stormwater Management and could have installed permeable pavement, the fiscal impacts are estimated to be \$65,000 each year and increase each year consistent with construction inflation.

The relative durability of permeable pavement installations versus traditional sidewalks is unknown, though SDOT Pavement Engineering believes it to be less than the estimated 100-year life of traditional sidewalks. The \$65,000 represents only the incremental cost to construct permeable pavement versus a traditional sidewalk. It does not take into account full life cycle costs should the permeable pavement installation not achieve a 100-year useful life, requiring full reconstruction at year 50, for example. At this time there isn't sufficient information to accurately project long-term cost increases.

There will be a relatively small decrease in SDOT capital costs associated with a decrease in flow control and water quality facilities resulting from new language to address unique construction limitation posed by public roadway right-of-way work (modification 2.d described in Section 1). At this time, there isn't sufficient information to accurately project long-term cost decreases; however, they are anticipated to be relatively small.

2. *Future Maintenance (\$40,000+ increase annually)*

There is expected to be a significant increase in permeable sidewalk maintenance needs as a result of an increase in the number of SDOT and privately constructed street improvement projects as there will no longer be a minimum size requirement for permeable pavement facilities (modification 3.a described in Section 1 above) and because permeable pavement is in the top tier of On-site Stormwater Management options of the prescriptive list and must be considered for feasibility before other types of stormwater controls (modification 3.b described in Section 1 above).

The 2010 SDOT-SPU MOA Number GSI-1 assigned SDOT the responsibility for inspection and maintenance of permeable sidewalks. This existing agreement assumed SDOT would accept maintenance units of entire block faces of sidewalk. Because these stormwater code changes result in an increased number of smaller, geographically dispersed permeable pavement projects, the MOA will be re-negotiated, including roles and responsibilities, and may have fiscal impacts between departments.

Preventative maintenance for permeable pavement includes annual maintenance with a sidewalk size street sweeper. SDOT has an MOA with Parks for sweeping of permeable pavement sidewalks; Parks is currently performing this work at no cost to SDOT. Parks intends to re-negotiate that MOA which would result in the existing and future maintenance costs falling on SDOT under the existing 2010 SDOT-SPU MOA Number GSI-1 absent any renegotiation between SDOT and SPU.

There is not sufficient history to accurately project long-term costs associated with this preventative maintenance. When preventative maintenance is not adequate, corrective maintenance will be required, which is anticipated to be done with pressure washing. SDOT estimates the cost of mobilizing a crew and pressure washing a non-permeable sidewalk is \$1.62/square foot. To account for moss growth that occurs on permeable cement and the difficulty of removing the moss, the cost estimate for cleaning installations of permeable sidewalk is increased to \$3.20/square foot.

SDOT estimates, based on previous capital projects (2013 – 2014), a 25,000 square foot increase in permeable pavement sidewalk installations each year. Using that estimate, and conservatively assuming maintenance to occur with pressure washing, maintenance costs will increase from \$40,000 (the cost of cleaning non-permeable pavement) to \$80,000 each year (the cost of cleaning permeable pavement). This cost will increase annually as the estimated 25,000 square feet of new permeable pavement is installed each year.

SDOT has not collected enough data on past private project exemptions from installing permeable sidewalks (i.e., projects under 2,000 square feet of impervious surface under the current Stormwater Code) to accurately estimate future permeable pavement installations. However, based on a total of 221 Street Improvement Projects permitted by SDOT Street Use in 2014 and 2015 to date, approximately 5 percent install permeable pavement. Under this legislation the rate of permeable pavement installation is expected to increase from 5 percent up to 30 percent within affected creek basins. There is not sufficient history to accurately estimate long-term pavement maintenance requirements associated with these projected private project increases (including estimating replacement due to failure rates). However, the O&M costs are expected to escalate under the 2016 Stormwater Code.

Permeable roadways will only be required on low volume roadways including maintenance access roads, alleys and private roadways. There isn't sufficient history to accurately project long-term costs associated with maintenance of the public permeable pavement alleys.

3. *Database enhancements for asset tracking (\$20,000)*

The database SDOT uses to track assets and assign work orders will require modification to allow for tracking of permeable pavement sidewalks on a per-square foot basis. The enhancement to link a GIS field is needed in order to allow for GIS mapping of permeable pavement locations within that system. These enhancements are expected have a one-time cost of \$20,000 and ongoing incremental cost increases for data entry and maintenance tracking

Note 3. (Parks):

Cost implications for Parks include:

1. *Future Capital (\$2.2 million over 6 years)*

The Seattle Parks 2016-2020 Six Year Capital Plan and the Metropolitan Park District Major Maintenance Project list for 2016-2020 include a number of projects that will be affected by the 2016 Stormwater Code update. The project types are primarily athletic fields (including grass turf conversions to synthetic fields) and other Parks

projects such as comfort station renovations and play area renovations. The costs related to each project type are summarized below. Over the six year period, Parks estimates an increase of \$2.2 million in capital costs to comply with the new Stormwater Code.

- a. Athletic Fields – In accordance with Ecology requirements, the 2016 Stormwater Code will add “natural and artificial turf” as a pollution-generating pervious surface that will require stormwater facilities when thresholds are met (modification 1 described in Section 1).
 - i. Parks estimates compliance required stormwater facilities would add 10 percent on a total of \$9.8 million from 2016-2021 for athletic field conversions from grass to synthetic turf (\$1 million). The 2016 CIP does not include any conversion projects and Parks will work with CBO in 2017 to address funding shortfalls on conversions planned in 2017 and beyond.
 - ii. Replacements: For the remaining synthetic turf surfacing replacement projects, Parks estimates half of the total project costs for the surfacing replacement projects would increase due to the 2016 Stormwater Code Update. Fifty percent of the total estimated costs of \$12 million from 2016-2021 are expected to increase by an additional \$600,000 over the six year planning cycle. The 2016 CIP does not include any ball field replacement projects. Parks will work with CBO in 2017 to address funding shortfalls in 2017 and beyond.
- b. Remaining Parks projects:
 - i. Based on the MS4 Permit requirements, the 2016 Stormwater Code Update does not allow use of trees to mitigate 25 percent of the impervious area above using other Best Management Practices (BMPs). Additionally, cost can no longer be a reason for not using other BMPs. Because of these changes, Parks anticipates bioretention and permeable pavement will be used more often than is currently the case. For the remaining Parks projects, these increased costs would add and estimated \$550,000 between 2016-2021. For these projects, Parks will evaluate project scope as a first strategy to address the cost increases and will work with CBO on funding shortfalls that cannot be addressed by this approach.

2. *Future Operation and Maintenance. (TBD as part of 2017-2018 new facility maintenance cost estimates)*

Parks will incur additional costs for maintaining new water quality treatment facilities for ball fields and other BMPs described above. Parks will estimate these new facility maintenance costs as projects are completed and will submit a funding request in the 2017-2018 budget, which will include maintenance staff and possibly equipment.

b) Is there financial cost or other impacts of not implementing the legislation?

Yes. If adequate legislation is not adopted, the City risks non-compliance with its MS4 Permit, which is based on the federal Clean Water Act. Anyone who negligently violates the Clean Water Act is subject to criminal penalties of \$2,500 to \$25,000 per day or imprisonment of up to one year, or both. These penalties increase with second and subsequent violations of the Clean Water Act. Anyone who knowingly violates the Clean Water Act is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for up to three years, or both. Additionally, violating the City's MS4 Permit presents a risk of a third-party lawsuit to enforce the Clean Water Act.

c) Does this legislation affect any departments besides the originating department?

Yes. See Section 3 above. In addition, it is notable that this legislation applies city-wide, and includes minor revisions to minimum requirements related to source control, construction site stormwater pollution prevention, and development projects. The effect of this legislation on other departments will vary to the degree that each department engages in ongoing activities to which source control measures apply, or to the degree that each department is involved in capital projects.

d) Is a public hearing required for this legislation?

Yes. In preparing this legislation, SPU and other City staff held meetings and made presentations to a wide range of stakeholders. A summary listing is below.

Public Presentations on Overall Stormwater Code Update Process

Date	Group
January 24, 2013	Thornton Creek Alliance
March 18, 2013	External User Stakeholders
May 8, 2013	Master Builders Association of King and Snohomish Counties
May 9, 2013	Fauntleroy Watershed Council
June 27, 2013	Seattle Builders Council Master Builders Association
November 7, 2013	Public Open House
November 19, 2013	Thornton Creek Alliance
November 26, 2013	North Seattle Industrial Association
December 17, 2013	King County
June 3, 2014	Public Meeting
June 5, 2014	Seattle Builders Council Master Builders Association
June 11, 2014	American Council of Engineering Companies (ACEC)
July 15, 2014	Washington Society of Landscape Architects (WASLA)
July 16, 2014	Master Builders Association (MBA)
July 17, 2014	American Society of Civil Engineers (ASCE)
July 18, 2014	American Public Works Association (APWA)
August 13, 2014	Urban Forestry Commission
January 26, 2015	Puget Soundkeeper Alliance (PSA)
February 24, 2015	North Seattle Industrial Association
March 19, 2015	SPU Developer Services Advisory Committee
June 3, 2015	Urban Forestry Commission
June 10, 2015	Public Meeting

e) Is publication of notice with *The Daily Journal of Commerce* and/or *The Seattle Times* required for this legislation?

Yes. Publication of notice of the Council public hearing must be made in *The Daily Journal of Commerce* and in the City's Land Use Information Bulletin (LUIB). Additionally, environmental review under the State Environmental Policy Act is required, and publication of notice of the environmental determination was made in *The Daily Journal of Commerce*, *The Seattle Times*, and in the City's Land Use Information Bulletin on March, 9, 2015, when amendments to the Stormwater Code legislation were first proposed. An addendum to the environmental review covering the current proposed legislation has been issued and publication of notice of the addendum was made in *The Daily Journal of Commerce* and *The Seattle Times* on June 25, 2015.

f) Does this legislation affect a piece of property?

No. The proposal is a non-project legislative action with no specific site. As Stormwater Code requirements are city-wide, specific projects affected by the proposal may occur anywhere within Seattle's city limits.

g) Please describe any perceived implication for the principles of the Race and Social Justice Initiative. Does this legislation impact vulnerable or historically disadvantaged communities?

There is no perceived implication for the principles of the Race and Social Justice Initiative.

h) If this legislation includes a new initiative or a major programmatic expansion: What are the long-term and measurable goals of the program? Please describe how this legislation would help achieve the program's desired goals.

This legislation does not include a new initiative or a major programmatic expansion.

i) Other Issues:

List attachments below:

Exhibit A – Directors' Report

Exhibit B – April 2014 Draft Stormwater Manual (Draft Directors' Rule)

Exhibit C – Ecology comments on the Draft Stormwater Code and Draft Stormwater Manual (Draft Directors' Rule)

Exhibit A

Directors' Report and Recommendation July 17, 2015

Introduction

The purpose of the City of Seattle's Stormwater Code (Chapters 22.800 – 22.808 SMC) is to protect life, property, public health, and the environment from the adverse impacts of urban stormwater runoff. Adverse impacts can include flooding, water quality pollution, landslides, and erosion. The Stormwater Code was substantially updated in 2009, and there were three minor revisions in 2015. Whereas the 2009 Stormwater Code update included several major modifications with significant cost impacts to the City and developers, this 2016 Stormwater Code Update consists of relatively less significant modifications with less cost impacts.

The Stormwater Code and associated joint Seattle Public Utilities/Department of Planning and Development (SPU/DPD) Directors' Rules are being revised in order to comply with the requirements of the City's coverage under the 2013-2018 Phase I Municipal Stormwater Permit (Ecology 2012) (as modified effective 2015, this is the MS4 Permit). The Permit was issued by the Washington State Department of Ecology (Ecology) under both the National Pollutant Discharge Elimination System (NPDES) program established by the federal Clean Water Act and the State of Washington Water Pollution Control Law. The Permit was issued on August 1, 2012, became effective on August 2, 2013, and was modified effective January 16, 2015. The MS4 Permit requires that the City's Stormwater Code and associated Stormwater Manual (to be contained in the Directors' Rule) include minimum requirements, thresholds, definitions, and other specified requirements, limitations and criteria, determined by Ecology to be equivalent to Appendix 1 of the MS4 Permit for new development, redevelopment and construction. In addition, maintenance provisions must be at least as protective of facility function as, and source control provisions must be functionally equivalent to, Ecology's Stormwater Management Manual for Western Washington (SWMMWW, Ecology 2014a).

SPU – in close collaboration with DPD, other City departments, and external stakeholders – is in the process of updating the Stormwater Code to 1) incorporate new Ecology requirements, 2) incorporate policy changes, and 3) improve usability. All updates to the Stormwater Code were originally intended to occur at one time with an effective date of June 30, 2015. However, Ecology was delayed in reviewing the City's draft Stormwater Code, which prevented Seattle from being able to make all modifications on the original timeline and extended the City's deadline to adopt all modifications by several months. Nevertheless, Seattle wished to make three cost-saving Stormwater Code modifications effective by the originally anticipated effective date. Therefore, updates to the Stormwater Code are proceeding as two legislative processes: the now-complete "2015 Revision to Stormwater Code" (effective date 5/24/15) and the "2016 Stormwater Code Update" (addressed by this Directors' Report, anticipated effective date 1/1/16).

This Directors' Report, for the "2016 Stormwater Code Update," is submitted jointly by the Directors of SPU and DPD. It answers frequently asked questions about Seattle's Stormwater Code, provides regulatory context, summarizes significant proposed modifications and rationale, and provides recommendations regarding the proposed legislation.

Exhibit A

Frequently Asked Questions

Why do we have a Stormwater Code? Rain water running off of urban land surfaces can cause flooding, landslides, erosion, and other hazards. It can also carry pollutants into creeks, lakes, bays and other receiving waters. Stormwater regulations are needed to protect people, property, and the environment from damage that can be caused by stormwater runoff. Seattle's stormwater regulations are also written to satisfy the City's obligation to comply with the 2013-2018 Phase I Municipal Stormwater Permit, as modified (the MS4 Permit), under which coverage is issued to the City by Ecology.

What is in Seattle's Stormwater Code? Seattle's Stormwater Code includes:

- A description of the purpose, scope, applicability, exemptions, adjustments, exceptions, authorities, and compliance requirements
- Definitions of key terms
- Prohibitions of certain discharges and conditions for permissible discharges
- Minimum requirements for all discharges and all real property, designed to reduce the introduction of pollutants into stormwater runoff as close to the source as possible
- Minimum requirements for all projects regarding stormwater pollution prevention during construction and grading activities
- Minimum requirements for all projects regarding on-site stormwater management, flow control, and water quality treatment facilities
- Drainage control review and application requirements
- Procedures for enforcing the Stormwater Code.

Why are we updating the Stormwater Code? The Stormwater Code is being updated to comply with the City's obligations under the MS4 Permit, to incorporate policy changes, and to improve usability.

Who is responsible for updating the Stormwater Code? It is an SPU-led project being conducted in close collaboration with DPD, the Seattle Department of Transportation (SDOT), other City departments, and internal and external stakeholders.

Why is updating the Stormwater Code being done as a two part legislative process? All updates to Seattle's Stormwater Code were originally intended to occur at one time with an effective date of June 30, 2015. However, Ecology was delayed in reviewing the City's draft Stormwater Code which prevented Seattle from being able to make all modifications on the original timeline and extended the City's regulatory deadline to adopt all modifications by several months. Nevertheless, Seattle wished to make three cost-saving Stormwater Code modifications effective by the originally anticipated effective date. Therefore, updates to the Stormwater Code are proceeding as two legislative processes: the now-complete "2015 Revision to Stormwater Code" (effective date 5/25/15) and the "2016 Stormwater Code Update" addressed by this proposed legislation (anticipated effective date 1/1/16). The legislative documentation for the 2015 revisions to the Stormwater Code, Ordinance 124758, provides additional explanation of the two-part process.

Exhibit A

What are the major changes in the revised Stormwater Code? The “Significant Modifications” section of this Exhibit provides details on the primary proposed modifications to the Stormwater Code. Of the proposed modifications outlined in that section, the four most significant involve: 1) proposed revisions regarding the effective date of the Stormwater Code relative to project application dates and construction dates (#2 in Significant Modifications section); 2) additions, revisions, and deleting of various terminology (#3); 3) proposed changes with regard to permissible discharges, and new and revised conditions that apply to permissible discharges (#5); and 4) proposed changes to the minimum requirements that apply to all development projects to meet the City’s MS4 Permit obligations and account for Seattle’s unique development patterns (#10 - #21).

What has been the extent of public participation? Beginning in January 2013, a series of meetings has been conducted to inform interested stakeholders about proposed updates to the Stormwater Code. These meetings covered modifications proposed both as part of the “2015 Revision to Stormwater Code” and the “2016 Stormwater Code Update.” These meetings included representatives from the business community, development interests, environmental advocacy groups, engineering and consulting firms, community groups, and other local and state regulators. The meeting dates and the name of each target group are shown below.

Public Presentations on Stormwater Code Update Process

Date	Group
January 24, 2013	Thornton Creek Alliance
March 18, 2013	External User Stakeholders
May 8, 2013	Master Builders Association of King and Snohomish Counties
May 9, 2013	Fauntleroy Watershed Council
June 27, 2013	Seattle Builders Council Master Builders Association
November 7, 2013	Public Open House
November 19, 2013	Thornton Creek Alliance
November 26, 2013	North Seattle Industrial Association
December 17, 2013	King County
June 3, 2014	Public Meeting
June 5, 2014	Seattle Builders Council Master Builders Association
June 11, 2014	American Council of Engineering Companies (ACEC)
July 15, 2014	Washington Society of Landscape Architects (WASLA)
July 16, 2014	Master Builders Association (MBA)
July 17, 2014	American Society of Civil Engineers (ASCE)
July 18, 2014	American Public Works Association (APWA)
August 13, 2014	Urban Forestry Commission
January 26, 2015	Puget Soundkeeper Alliance (PSA)
February 24, 2015	North Seattle Industrial Association
March 19, 2015	SPU Developer Services Advisory Committee
June 3, 2015	Urban Forestry Commission
June 10, 2015	Public Meeting

Exhibit A

Regulatory Context

NPDES Municipal Stormwater Permit (MS4 Permit). Seattle's Stormwater Code and associated Stormwater Manual (to be contained in the Directors' Rule) are now being revised in order to comply with the MS4 Permit, as well as to incorporate policy changes and improve usability. After the updated Stormwater Code and Stormwater Manual are adopted, it is anticipated that Ecology will modify the current MS4 Permit to include Ecology's determination that Seattle's updated Stormwater Code and Stormwater Manual meet relevant MS4 Permit requirements and achieves equivalency. The MS4 Permit authorizes the City to discharge municipal stormwater to waters of the State of Washington from municipal separate storm sewers that it owns or operates. Discharges covered under the MS4 Permit, as required by paragraph 402(p)(3) of the Clean Water Act, must effectively prohibit non-stormwater discharges into storm sewers that discharge to surface waters. Per the Clean Water Act, permittees must apply controls to reduce the discharge of pollutants to the maximum extent practicable. Ecology also took action through the issuance of the MS4 Permit, as authorized by Revised Code of Washington (RCW) Chapter 90.48, particularly RCW 90.48.162, to control impacts of stormwater discharges to waters of Washington State, including ground waters, unless the discharges are authorized by another regulatory program. (Ecology 2014b)

The MS4 Permit requires that the City's Stormwater Code and associated Stormwater Manual include minimum requirements, thresholds, definitions, and other specified requirements, limitations and criteria, determined by Ecology to be equivalent to Appendix 1 of the MS4 Permit for new development, redevelopment and construction. Ecology has reviewed the City's proposed revisions to the Stormwater Code that require Ecology approval, and Ecology has found that the revisions meet the regulatory requirements of the MS4 Permit. Any changes to the Stormwater Code made through the City's legislative process that could affect this equivalency determination will be reviewed by Ecology.

Seattle's Stormwater Manual is on a slightly later schedule than the Stormwater Code. Ecology reviewed the draft Manual (Exhibit C to the Bill Summary and Fiscal Note for this legislation) and provided few comments (Exhibit D to the Bill Summary and Fiscal Note for this legislation). The City is in the final stages of making the very limited changes necessary to secure Ecology's final approval, which is expected in summer or fall 2015. The approved Stormwater Manual provisions will be adopted in 2015 by a joint SPU/DPD Directors' Rule.

The Code and Manual also include maintenance provisions at least as protective of facility function as Ecology's SWMMWW (no revisions were needed) and source control provisions that are functionally equivalent to Ecology's SWMMWW. Ecology does not review or approve these provisions.

Seattle Stormwater Code and Stormwater Manual. The City of Seattle's Stormwater Code (Chapters 22.800-22.808 SMC) contains requirements designed to protect life, property, public health, and the environment from the adverse impacts of urban stormwater runoff. Adverse impacts can include flooding, pollution, landslides, erosion, and other potential hazards. The Stormwater Code applies to:

Exhibit A

- All grading and drainage and erosion control, whether or not a permit is required
- All land disturbing activities, whether or not a permit is required
- All discharges directly or indirectly to a public drainage system or (proposed) a public combined sewer
- All discharges directly or indirectly into receiving waters within or contiguous to Seattle city limits
- All new and existing land uses
- All real property.

To support the implementation of the Stormwater Code, the Director of SPU and the Director of DPD issue joint Directors' Rules (Seattle's Stormwater Manual), which clarify or interpret the Stormwater Code by specifying methods, details, and general guidelines as authorized by the Code. The existing Directors' Rules are being revised and will be incorporated into one Directors' Rule, the Seattle Stormwater Manual, that directly relate to the Stormwater Code. The 2016 Seattle Stormwater Manual will consist of the following sections:

- Volume 1 – Project Minimum Requirements (pursuant to the Stormwater Code Minimum Requirements)
- Volume 2 – Construction Stormwater Control
- Volume 3 – Project Stormwater Control
- Volume 4 – Source Control
- Volume 5 – Enforcement
- Appendices.

Best Available Science – When the City updated its Environmentally Critical Areas (ECA) ordinance, it presented a detailed review of the best available science regarding wetlands, fish and wildlife conservation areas, geologic hazard areas, flood-prone areas, abandoned landfills, and critical aquifer recharge areas in its report Environmental Critical Areas: Best Available Science Review (Seattle 2005). As part of the 2009 Stormwater Code Update, the City prepared a document describing the best available science specific to urban stormwater runoff management (Seattle 2009). That document has been updated for this proposed legislation and is included as part of the Bill Summary and Fiscal Note for this legislation, as Exhibit B.

Exhibit A

Significant Modifications

The proposed modifications to the Stormwater Code will affect administration, source control, development, construction site stormwater pollution prevention control, and enforcement requirements. The major modifications being proposed to the Stormwater Code are summarized below by Chapter.

Chapter 22.800 - Title, Scope, and Authority

1. Revised exemptions associated with pavement practices (22.800.040.A.2.b): The proposed modification includes revised terminology associated with exemptions for pavement maintenance practices to match Ecology's revised language in the MS4 Permit. The current Stormwater Code exempts "road maintenance practices" from various Stormwater Code minimum requirements. The proposed 2016 Seattle Stormwater Code update changes "Road maintenance practices" to "Pavement maintenance practices," consistent with the MS4 Permit. This will result in a broader range of projects qualifying for the exemption and will be consistent with the updated MS4 Permit.
2. Added new section for transition to Revised Stormwater Code (22.800.100): In association with its target effective date of January 1, 2016, the 2016 Stormwater Code Update includes new language regarding the applicability of Stormwater Code revisions in relation to specified project permit application and construction dates. The 2016 Stormwater Code Update will apply to permit applications submitted on or after January 1, 2016. In addition, for projects considered under the current Stormwater Code before amendment, if construction has not started by June 30, 2020, the permit expires and the 2016 Stormwater Code will apply. This revision was to achieve equivalency with MS4 Permit requirements (which apply to areas that discharge to the City's municipal stormwater system) and affects both building and master use permits (including subdivisions). A separate, but parallel, Stormwater Code applicability ordinance with associated legislative documentation is being prepared to incorporate these changes into applicable sections of the Building, Residential, Land Use, and Grading Codes.

Chapter 22.801 – Definitions

3. Added, revised, and deleted terms: In the proposed 2016 Stormwater Code Update, new terms have been added to this Chapter, the definitions for other terms have been materially modified, and the definitions for terms have been deleted. Table 1 lists key terms that are proposed to be added (indicated as underlined text), materially modified (indicated by *italicized* text), or deleted (indicated by ~~striketrough~~ text). These proposed definition changes are necessary to clarify certain Stormwater Code provisions, to implement revised minimum requirements, and to meet the provisions of the MS4 Permit. All proposed definition changes are shown in the draft Stormwater Code (Attachment C).

Exhibit A

Table 1: Key New, Materially Modified, or Deleted Definitions

<u>Agency with jurisdiction</u>	<i>Impervious surface</i>	<u>Project Site</u>
<u>Aquatic life use</u>	<u>Industrial activities</u>	<i>Receiving water</i>
<u>Arterial</u>	Joint project	<u>Replaced hard surface</u>
Basin plan	<i>Land disturbing activity</i>	<i>Replace impervious surface</i>
<i>Capacity-constrained system</i>	<i>Large project</i>	<i>Roadway project</i>
Cause or contribute to a violation	<i>Nutrient-critical receiving water</i>	<i>Sidewalk project</i>
<u>Combined sewer basin</u>	<u>On-site BMP</u>	<i>Single-family residential project</i>
<u>Drainage basin plan</u>	<i>Parcel-based project</i>	<i>Site</i>
<i>Drainage system</i>	<u>Pollution-generating hard surface</u>	<u>Small lakes</u>
<u>Erodible or leachable materials</u>	<i>Pollution-generating impervious surface</i>	<i>Stormwater</i>
Flow critical receiving water	<i>Pollution-generating pervious surface</i>	<i>Trail project</i>
<i>Geotechnical engineer</i>	<u>Private drainage system</u>	<i>Watercourse</i>
<i>Green stormwater infrastructure</i>		
<u>Groundwater</u>		
<u>Hard surface</u>		
<u>Illicit Connection</u>		

New: underlined

Materially Modified: *Italicized*

Deleted: ~~Strikethrough~~

Chapter 22.802 – Prohibited and Permissible Discharges

4. Added new subsection to Discharges to Public Combined Sewers (22.802.020.D): A proposed new subsection stating that prohibited discharges to the combined sewer are stated in Chapter 21.16 SMC (Side Sewer Code). This is added to provide a useful cross-reference.
5. Revised Permissible Discharges (22.802.030): The proposed list of permissible discharges includes proposed modifications and conditions, nearly all of which are included for equivalency with the MS4 Permit. Table 2 summarizes the sections where text is proposed for modification. (Underlined text indicates proposed additions relative to the current Stormwater Code). Table 2 does not include all proposed changes, but summarizes the main topic areas and key language. All proposed changes are shown in the draft Stormwater Code (Attachment C).

Exhibit A

Table 2: Substantive Changes to Permissible Discharges (22.802.030)

<p>A. <u>Conditionally</u> Permissible Discharges to Drainage systems and Receiving Waters. Discharges from the sources listed below are permissible discharges <u>only if the stated conditions are met and</u> unless the Director of SPU determines that the type of discharge, directly or indirectly to a public drainage system, private drainage system, or a receiving water within or contiguous to Seattle city limits, whether singly or in combination with others, is causing or contributing to a violation of the City's NPDES stormwater permit or is causing or contributing to a water quality problem:</p> <ol style="list-style-type: none"> 1. Discharges from potable water sources, including, <u>but not limited to,</u> flushing of potable water lines, hyperchlorinated water line flushing, fire hydrant system flushing, and pipeline hydrostatic test water, <u>and washing of potable water storage reservoirs.</u> Planned discharges shall be de-chlorinated to a <u>total residual chlorine</u> concentration of 0.1 ppm or less, pH-adjusted if necessary, and volumetrically and velocity controlled to prevent resuspension of sediments in the drainage system. <u>No chemicals may be added, and settleable solids must be removed prior to discharge;</u> 2. <u>Discharges from swimming pools, spas, hot tubs, fountains, or similar aquatic recreation facilities and constructed water features, provided the discharges have been dechlorinated to a total residual chlorine concentration of 0.1 ppm or less, pH-adjusted and reoxygenated if necessary, volumetrically and velocity controlled to prevent resuspension of sediments in the drainage system, and thermally controlled to prevent an increase of temperature in the receiving water. Swimming pool cleaning wastewater and filter backwash shall not be discharged;</u> 3. <u>Discharges of street and sidewalk washwater when the surfaces are swept prior to washing, detergents are not used, and water use is minimized;</u> 4. <u>Discharges of water from routine external building washdown when detergents are not used and water use is minimized;</u> 5. <u>Discharges of water used to control dust when water use is minimized; and</u> 6. <u>Other non-stormwater discharges, provided that these discharges are in compliance with the requirements of a stormwater pollution prevention plan that addresses control of such discharges and is approved by the Director.</u> <p style="text-align: center;">***</p>	<p>B. <u>Permissible discharges: Discharges from the sources listed below are permissible discharges unless the Director of SPU determines that the type of discharge, directly or indirectly to a public drainage system, private drainage system, or a receiving water within or contiguous to Seattle city limits, whether singly or in combination with others, is causing or contributing to a violation of the City's NPDES Municipal Stormwater Permit or is causing or contributing to a water quality problem: [partial excerpt below; most changes to this subsection "B" relate to deletions of text that has been folded into subsection "A" above]</u></p> <p style="text-align: center;">***</p> <ol style="list-style-type: none"> 13. <u>Discharges of tracing dye used to establish or verify a drainage or sewer connection.</u>
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New: underlined

Exhibit A

6. Added notification requirements related to testing for prohibited discharges (22.802.040.A): The proposed revisions require that any person conducting dye testing to establish or verify a drainage connection shall notify SPU prior to conducting the test. This will improve SPU processes and efficiencies by allowing SPU Water Quality Hotline staff to learn that dye can be expected in the drainage system.

Chapter 22.803 – Minimum Requirements for All Discharges and All Real Property

7. Added requirement to map property drainage, side sewer and plumbing infrastructure (22.803.020.A): The proposed revisions include language to make it explicit that, when requested to aid in applying the Stormwater Code, the owner must map “all drainage, side sewer and plumbing infrastructure on the property.” This will improve the clarity and authority of the Stormwater Code.
8. Added site maintenance to the Minimum Requirements for Source Controls for All Real Property (22.803.030.G): The proposed revisions include a brief subsection requiring that businesses and public entities perform basic site maintenance activities (e.g., site sweeping, and inspecting loading and unloading areas). This will add clarity and authority to further prevent transport of pollutants off site via stormwater runoff.
9. Revised Minimum Requirements for Source Control for specific discharge locations (22.803.040): The proposed revisions clarify that these source control requirements apply to all discharges except those that drain only to the public combined sewer. This is already indicated in the current Source Control Technical Requirements Manual but is proposed to be added to the 2016 Stormwater Code for further clarity.

Chapter 22.805 – Minimum Requirements for Projects

10. Revised applicability of thresholds for Minimum Requirements for Projects to be based on “hard-surfaces” (22.805.030 – .060, 22.801): In accordance with the MS4 Permit, the proposed revisions change the applicability of thresholds from “impervious surface” to “hard surfaces,” a new term required by Ecology. “Hard surfaces” include impervious surfaces, permeable pavements, and vegetated roofs.
11. Added requirements to protect stormwater BMPs during construction (22.805.020.D.19): In accordance with the MS4 Permit, the proposed revisions require protection of stormwater BMPs from sedimentation (through installation and maintenance of erosion and sediment control BMPs) and compaction during the construction phase of a project. The intent is greater protection of permanent stormwater BMPs, particularly for infiltration-based BMPs (which are particularly subject to damage from sedimentation) and vegetation-based BMPs that are prone to damage during construction.
12. Moved requirements for On-site Stormwater Management and soil amendment (22.805.020, etc.): In the proposed revisions, the requirement for projects to perform On-site Stormwater Management (currently “Implement Green Stormwater Infrastructure” in Seattle’s Stormwater Code) has been moved out of the Minimum Requirements for All Projects (22.803.020) and is now included as a requirement in other Stormwater Code sections based on project type (i.e., Single-family Residential (SFR), Trail/Sidewalk, Parcel-based,

Exhibit A

Roadway). Similarly, the requirement to amend soils is relocated from its own specific provision to now be included based on project type (i.e., SFR, Trail/Sidewalk, Parcel-based, Roadway). This modification is for consistency with the MS4 Permit and to clarify that On-site Stormwater Management only applies to certain project types and does not apply to utility work or routine maintenance work.

13. Revised Threshold and applicability changes for Minimum Requirements for Single-Family Residential Projects (22.805.030): On-site Stormwater Management (currently “Implement Green Stormwater Infrastructure” in Seattle’s Stormwater Code) is proposed to change from applying to all SFR projects, to applying to SFR projects as follows:

- a. On a lot most recently created, adjusted, altered, or otherwise amended by a plat or other lawful document recorded with the King County Recorder on or after January 1, 2016, and where that document either created the lot or reduced the size of the lot, either the total new plus replaced hard surface is 750 square feet or more or land disturbing activity is 7,000 square feet or more; or
- b. For any other project, either the total new plus replaced hard surface is 1,500 square feet or the land disturbing activity is 7,000 square feet or more.

Given the above threshold changes and in response to the MS4 Permit, the City also proposes to remove the current 1,500 square foot impervious surface credit for SFRs. Note that the MS4 Permit threshold is set at 2,000 square feet of new plus replaced hard surface, but the City proposes the above thresholds – expected to result in more on-site stormwater management – to better address the types and sizes of development projects typical for Seattle and to make on-site, low impact development best management practices the preferred and commonly-used approach to site development, consistent with S5.C.5.b of the MS4 Permit.

14. Revised Minimum Requirements for Parcel-based Projects (22.805.050):

- a. Revised thresholds. In accordance with the MS4 Permit, On-site Stormwater Management (currently “Implement Green Stormwater Infrastructure” in the Seattle’s Stormwater Code) is proposed to change from applying to 2,000 square feet new plus replaced impervious surface, to applying to parcel-based projects as follows:
 - i. On a lot most recently created, adjusted, altered, or otherwise amended by a plat or other lawful document recorded with the King County Recorder on or after January 1, 2016, and where that document either created the lot or reduced the size of the lot, either the total new plus replaced hard surface is 750 square feet or more or land disturbing activity is 7,000 square feet or more; or
 - ii. For any other project, either the total new plus replaced hard surface is 1,500 square feet or the land disturbing activity is 7,000 square feet or more.

Note that the MS4 Permit threshold is set at 2,000 square feet of new plus replaced hard surface, but the City proposes the above thresholds – expected to result in more on-site stormwater management -- to better address the types and

Exhibit A

sizes of development projects typical for Seattle and to make on-site, low impact development best management practices the preferred and commonly-used approach to site development, consistent with S5.C.5.b of the MS4 Permit.

- b. Added requirements for Discharges from Groundwater. The proposed revision includes new language for applicability of flow control when a project permanently discharges groundwater to some locations. This change incorporates provisions drawn from a current City Directors' Rule directly into the Stormwater Code.
- c. Added requirements for water quality treatment. In accordance with MS4 Permit, the proposed revision will require treatment of both pollution-generating hard surfaces and pervious surfaces if water quality treatment is triggered for a project.

15. Revised Minimum Requirements for Roadway Projects (22.805.060):

- a. Added infeasibility criteria to the Minimum Requirements for Roadway Projects (22.805.060.E). New language is proposed to account for the unique construction limitations posed by public roadway right-of-way work within an urban environment having existing infrastructure. The new language allows the reduction of on-site stormwater management, flow control, and water quality treatment requirements for roadway projects under certain conditions. Specifically, roadway projects will have reduced requirements for on-site stormwater management, flow control, and water quality treatment when it can be demonstrated that full compliance with those requirements is not feasible because “(a) complete installation would require that an existing major publicly or privately-owned infrastructure or utility element be relocated, or (b) the drainage control facility cannot be built and operated to discharge stormwater from the site under gravity flow conditions while meeting the applicable engineering standards.” The proposed language includes additional details describing what constitutes “existing major infrastructure or utility elements” and requires that the project meet the applicable standards to the degree that the project can avoid the infeasibility described in this subsection 22.805.060.E. These Ecology-approved revisions address the same physical site limitation concerns addressed by the 2014 Washington Department of Transportation Highway Runoff Manual (WSDOT 2014).
- b. Added requirements for Discharges from Groundwater. The proposed revision includes new language for applicability of flow control when a project permanently discharges groundwater to some locations. This change incorporates the provisions drawn from a current City Stormwater rule directly into the Stormwater Code.
- c. Added requirements for water quality treatment. In accordance with the MS4 Permit, the proposed revision includes new language requiring treatment of both pollution-generating hard surfaces and pervious surfaces if water quality treatment is triggered for a project.

Exhibit A

16. Added a new section specific to On-site Stormwater Management (22.805.070): In relation to item #12 above, the current Stormwater Code requirements to “Implement Green Stormwater Infrastructure” are proposed to be revised to be consistent with the MS4 Permit and are moved to a new section titled On-site Stormwater Management. On-site Stormwater Management includes requirements to comply with either:

- a. On-site Performance Standard, or
- b. On-site List by project type

This change is proposed for consistency with the MS4 Permit but also complements Seattle’s unique urban environment.

In addition, the current minimum size requirements for projects that trigger On-Site Stormwater Management in the right-of-way (i.e., Roadway Projects, Trail/Sidewalk Projects) are proposed to be removed for creek, wetland, and small lake basins. In these basins, Ecology does not allow a prohibition to installation based on minimum facility size for permeable pavement (2,000 square feet) and bioretention (500 square feet) as is allowed in the current Seattle Stormwater Manual. This will result in additional facilities within the right-of-way in these basins.

17. Added a new On-site Performance Standard (22.805.070.C): In accordance with the MS4 Permit (and per items #12 and #16 above), the proposed revisions include a new quantitative performance standard to meet the On-site Stormwater Management Requirements of 22.805.070. The proposed standard is similar to that specified in the MS4 Permit but is consistent with Seattle’s existing flow control standards by targeting the pre-developed condition of “forested” or “pasture,” depending upon existing hard surface coverage.
18. Added a new On-site List (22.805.070.D) stating specific BMP options and requirements for meeting the new On-site Stormwater Management Requirements of 22.805.070: The MS4 Permit allows two options for projects to achieve the On-site Stormwater Management Requirements (22.805.070): using a specified list of approved BMPs, or meeting a “Low Impact Development Performance Standard.” Ecology’s BMP list is presented in a mandatory evaluation order, and the project applicant is required to achieve 100 percent management of applicable hard surfaces, unless the applicant can demonstrate BMP infeasibility (with no cost feasibility consideration). The proposed revisions to the Stormwater Code include a Seattle-specific On-site List of BMPs (Seattle List) that is modified relative to Ecology’s and meets MS4 Permit equivalency obligations. The Seattle List also better matches Seattle’s local conditions, results in a similar volume of stormwater managed as the current Seattle GSI Directors’ Rule, and provides additional flexibility compared to the Ecology list. Except where a difference is required for compliance with the MS4 Permit, the proposed Seattle List includes a range of BMPs similar to that found in Seattle’s current GSI Directors’ Rule. The proposed language and approach has been developed specific to conditions in the City of Seattle. For further information, a more detailed assessment of the City’s options and preferences has been documented in a 2014 policy paper (Seattle 2014). Consistent with the MS4 Permit, Seattle’s List can be superseded or reduced if the installation is in conflict with specific federal or state laws,

Exhibit A

rules, and standards; special zoning district design criteria; public health and safety standards; transportation regulations; or tree and vegetation regulations.

19. Updated Wetland Protection Standard (22.805.080.B.1): In accordance with the MS4 Permit, the proposed revisions include updates to the Wetland Protection Standard. Since Ecology substantially changed its requirements for this standard, Seattle proposes to incorporate the new Ecology requirements and to add references to Ecology's "guidance sheets."
20. Slightly revised the Pre-developed Forested Standard (22.805.080.B.2) and Pre-developed Pasture Standard (22.805.080.B.3): The standards are proposed to be slightly revised to better complement the new On-site Performance Standard language proposed in 22.805.070.C. The technical requirements of the new On-site Performance Standard language require specific hydrologic modeling approaches that were not consistent with the 2009 "Forest" and "Pasture" standards. Therefore, minor revisions are proposed for improved efficiency for developers and city staff plan reviewers.
21. Updated the Enhanced Treatment requirements (22.805.090.B.5): In accordance with the MS4 Permit, the proposed revisions include updates to the Enhanced Treatment requirements. Specifically, the proposed revisions remove the previous broader references to "fish-bearing" waters and instead reference designations for "aquatic life use."

Chapter 22.807 – Drainage Control Review and Application Requirements

22. Revised application requirements language in Chapter 22.807.020.B.1.b: For projects with an offsite discharge point, the drainage control plan shall be prepared by a licensed civil engineer even if the project has less than 5,000 square feet of new or replaced hard surface.

Chapter 22.808 – Stormwater Code Enforcement

23. Slightly revised Stormwater Code Enforcement language in Chapter 22.808: Based on feedback from SPU and DPD inspectors, there are slight, mainly administrative, changes proposed for this Chapter. The proposed revisions will make enforcement less problematic and more consistent to implement for the City.

Conclusion & Recommendation

All the proposed 2016 modifications to the Stormwater Code are either equivalent or unrelated to Ecology requirements in the MS4 Permit and have been developed in consideration of the best available science.

The Director of SPU and the Director of DPD recommend that the "2016 Revision to Stormwater Code" modifications be adopted.

References

Ecology, Washington State Department of, 2012. Phase I Municipal Stormwater Permit: National Pollutant Discharge Elimination System and State Waste Discharge General Permit for discharges from Large and Medium Municipal Separate Storm Sewer Systems.

Exhibit A

Permit issued on 1, 2012, effective on August 1, 2013, and modified effective January 16, 2015.

Ecology, Washington State Department of, 2014a. Stormwater Management Manual for Western Washington. December 2014.

Ecology, Washington State Department of, 2014b. Fact Sheet: Phase I Municipal Stormwater Permit: National Pollutant Discharge Elimination System and State Waste Discharge General Permit for discharges from Large and Medium Municipal Separate Storm Sewer Systems. Fact Sheet dated April 16, 2014.

Seattle, 2005. Environmentally Critical Areas Code Update: Best Available Science Review. Department of Planning and Development. August 2005.

Seattle, 2009. Environmentally Critical Areas: Best Available Science Review (Supplemental Report): Stormwater Code & Grading Code Revisions. Seattle Public Utilities. June 2009. (This is Attachment 1 to Seattle City Clerk File 310134.)

Seattle, 2014. City of Seattle Stormwater Code and Manual Revisions: Director's Briefing, Issue Resolution Item: On-site Stormwater Management Requirements. February 14, 2014.

WSDOT, 2014. Washington Department of Transportation (WSDOT) Highway Runoff Manual. April, 2014.

Exhibit B

April 2014 Draft Stormwater Manual (Draft Directors' Rule)
July 17, 2015

The documents associated with Seattle's draft Stormwater Manual that were submitted to Washington State Department of Ecology on April 23, 2014 can be found at the links below:

- [Volume 1 – Project Minimum Requirements](#)
- [Volume 2 – Construction Stormwater Control](#)
- [Volume 3 – Project Stormwater Control](#)
- [Volume 4 – Source Control](#)
- [Volume 5 – Enforcement](#)
- [Appendix A – Definitions](#)
- [Appendix B – Chemical Treatment](#)
- [Appendix C – Onsite Stormwater Management BMP Infeasibility Criteria](#)
- [Appendix D – Subsurface Characterization and Infiltration Testing for Infiltration Facilities](#)
- [Appendix E – Additional Design Requirements](#)
- [Appendix F – Hydrologic Analysis and Design](#)
- [Appendix G – Stormwater Control Operations and Maintenance Requirements](#)
- [Appendix H – Integrated Pest Management](#)



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

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February 6, 2015

EXHIBIT C

Nancy Ahern, Director
Utility System Management Branch
Seattle Public Utilities
PO Box 34018
Seattle, WA 98124-4018

RE: Phase I Municipal Stormwater Permit (WAR04-4503)
Ecology Comments on Draft (4/23/14) Ordinance and Technical Standards for Runoff
Controls for New and Redevelopment

Dear Ms. Ahern:

The Department of Ecology (Ecology) has completed its review of the City of Seattle's draft Ordinance and Technical Standards, dated April 23, 2014, under the Phase I Municipal Stormwater Permit (Permit). Detailed comments are attached to this letter and constitute Ecology's "written response" per the Permit's Special Condition S5.C.5.a.iii, paragraph 3.

Also in accordance with Special Condition S5.C.5.a.iii, Ecology has calculated Seattle's deadline for adoption of the programs required under S5.C.5.a and S5.C.5.b to be January 15, 2016. This date adds 199 calendar days to the permit-specified deadline for adoption to accommodate the fact that Ecology's written response was provided 289 calendar days following April 23, 2014 (the date Ecology received your submittal).

We look forward to discussing the comments and questions regarding your submittal in order to resolve issues and arrive at an approvable ordinance and director's rule package. Please contact me at (425) 649-7223 or by email at rmcc461@ecy.wa.gov if you have questions.

Sincerely,

Rachel McCrea
Municipal Stormwater Specialist & Lead Water Quality Planner for the Lower Duwamish

cc: Kate Rhoads, Municipal Stormwater Specialist, Seattle Public Utilities (electronic)
Sherell Ehlers, Stormwater Policy Advisory, Seattle Public Utilities (electronic)
Doug Howie, Stormwater Engineer, Ecology HQ
Permit file

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SEATTLE MUNICIPAL CODE CHAPTER 22.800

GENERAL COMMENTS

APPLICABILITY TO GRADING/LAND DISTURBING ACTIVITIES

Changes at 22.800.030.A; also page 69, lines 38-39; minor edits throughout regarding grading – Confirm applicability of stormwater code to land disturbing activities (i.e., grading). SMC 22.170 contains grading permit thresholds; please provide for verification.

DISTINGUISHING BETWEEN THE MS4 AND RECEIVING WATERS

Drainage system vs. stormwater system (edit at 22.800.040.A.6.c, pg 5, line 16 and throughout definitions). Ecology is concerned how numerous terms are used when you need to distinguish between the MS4, a private stormwater system and the receiving waters. See below.

- “Drainage system” includes MS4 and receiving waters.
- “Drainage water” is what is allowed in a stormwater system (stormwater and allowed discharges)
- “public drainage system” is the drainage system owned or used by Seattle (but includes receiving waters)
- “informal drainage system” is undefined (presumably includes receiving waters)
- “private drainage system” is undefined (presumably includes receiving waters)
- “Public storm drain” is wholly or partially piped, owned or operated by city, designed to carry only drainage water. Unclear if this includes receiving waters.
- Use in 22.802.020 B&C (IDDE) suggests receiving waters and drainage system are distinct. However the definitions do not clearly separate the two.
- “Watercourse” is the route surface waters flow not including “designated receiving waters.” Surface waters are not defined. Do they include drainage water as well as receiving water, as the definition implies (i.e., ditches)?

CONSIDERATIONS FOR DUWAMISH SOURCE CONTROL

22.800.040.A.4 & 5 present opportunities for LDW source control. Consider how they factor into the Seattle source control strategy.

22.800.050 Potentially Hazardous Locations – Consider whether B would include sites/buildings where TSCA level PCBs are present.

CHANGES TO FINAL PROJECT DURING CONSTRUCTION

22.800.040.B.3 – Ensure a documented process is in place for filing such changes with the Director and incorporating into GIS? Refer to a related EPA Audit finding.

ROADWAY PROJECT EXCEPTION FOR “SEVERE CONSTRUCTION FEASIBILITY HARDSHIP”

22.800.040.C.1.d (pages 6 & 7) introduce a proposal for a jurisdiction-wide exception associated with roadway project construction conditions. Ecology does not approve this jurisdiction-wide exception.

However we acknowledge that you are trying to solve specific problems that may be better solved in other provisions. Detailed concerns, questions, and clarifications are provided below.

- “severe construction feasibility hardship” is not defined. The City has verbally explained that this is intended for technical feasibility issues, not economics.
- It is not clear how one would “weigh” a severe construction feasibility hardship against the “requirement’s benefits.”
- The proposed exceptions would be subject to public notice and review at C.6.
- The City has explained verbally that “infrastructure limitations” refers to situations where facilities would interfere with or be located in proximity to existing major utility lines; and that “hydraulic limitations” refers to a lack of hydraulic head for discharges from underground vaults (and thus the installation of a pump in the roadway).
- The cited WSDOT HRM Appendix 2-A describes a process to be followed. It is written in a guidance “consider” format and refers to processes that are only established in the WSDOT program. Such guidance is not relevant or appropriate for a city or county MS4 permittee.
- The City verbally explained that other existing flexibilities (for Integrated Drainage Plan, fee-in-lieu, and off-site mitigation (22.800.080.E, F and G.)) would be pursued first, prior to use of the proposed exception.
- Regarding the location in proximity to existing major utility lines in rights-of-way: Ecology has approved an approach in the Highway Runoff Manual to allow for the mitigation/management of this surface area and type in an alternative location as close to the project location as possible. This is similar to Seattle’s off-site mitigation provision (22.800.080.G).

APPLICABILITY OF REQUIREMENTS TO OLDER PROJECTS

22.800.070.A.2 – Explain why this section waives the new MR5 only when the funded public project complies with the old GSI requirement.

22.800.100.C – Confirm definition of “permit application” is consistent with the Phase I Permit’s S5.C.5a.iii, footnote 1.

DEFINITIONS: 22.801

Aquatic life use – This is being introduced due to the enhanced treatment requirement language associated with fresh water discharges. It is a much more limited definition than that in WAC 173-201A, which defines fresh and marine waters, and surface waters of the state. Because Seattle’s definition is not consistent with WAC 173-201A, and to avoid future confusion, suggest including a caveat clause, such as “for the purposes of this section” in this definition.

Arterial – Definition references Section 11.18.010. Please provide this reference.

Capacity constrained system – Confirm this definition works properly. What is the “informal drainage system” (term not defined)?

Compaction – is out of alphabetical order.

Discharge point – This definition makes sense in this code. Use of the modified Phase I Permit definition is not required.

Green Stormwater Infrastructure = While this term and definition parallel “LID BMPs”, infiltration trenches, dry wells, and perforated stub-out connections are not LID BMPs.

Illicit connection – Uses the term “public drainage system” in lieu of MS4. This is an example of the potential problem with Seattle’s definition for “drainage system”.

Impervious surface, pervious surface, and pollution generating pervious and impervious surfaces – Seattle has proposed to not use Ecology’s “hard surface” term for project threshold evaluation requirements. However, Seattle’s proposal is internally inconsistent and confusing. Ecology recommends following the “hard surface” approach per Appendix 1 of the Permit.

- Seattle’s “Impervious surface” definition adds some pervious surfaces: permeable paving, vegetated roofs and areas with underdrains (i.e., playfields).
- However, it is the definition of “pollution generating pervious surfaces” that include permeable pavement subject to vehicle use and sports fields (natural and artificial turf).
- Related note re: “areas with underdrains (i.e., playfields)” – consider clarification that this is not the same as infiltrating bioretention with underdrains.

Large Project – Confirm how this term is used. Per 2008/2009 code work, this term is used to support regulation of piecemealing, and dewatering controls for capacity in downgradient system. Confirm this term is not used for stormwater code thresholds. Same for **small project**.

Maximum extent feasible – Is this term now used in very specific ways that are retained from the previous “GSI to the MEF” approach? It would seem the phrase should be unused now that we have explicit infeasibility criteria.

Nutrient-critical receiving water – Explain what “as prescribed in rules promulgated by the director of SPU” means. Ecology suggests referring to CWA 305(b) list. The previously approved definition was acceptable. What problem is this change trying to solve?

Receiving water – Consider a partial update of this definition per the modified Phase I Permit (excluding “to which an MS4 discharges.”)

Sidewalk project - The word “cannot” in the sidewalk project definition should be “can.”

Missing definitions: rainwater harvesting, detention cisterns, infiltrating bioretention, permeable pavement surfaces, permeable pavement facilities

Clarifying receiving water types: Ecology is concerned that the City’s approach to categorizing receiving waters is not clear and is further confused by the City’s “drainage system”-related terms (see General Comment). Suggest reducing the complexity and/or the sheer number of different terms where possible.

- Designated receiving water (not subject to flow control)
- Flow critical receiving water (not a designated receiving water)
- Listed Creek Basins (defined page 24, lines 8-13) – Are these also flow critical receiving waters?
- Non listed creek basins (undefined creeks otherwise not listed) – Are these also flow critical receiving waters?
- Perhaps the definitions of Listed and NonListed creek basins should explain the purpose of calling them out (i.e., identifies the flow control target to be met in these flow critical receiving waters)?
- Non-flow control basin (used in MR5 list; not included in definitions) discharges to a designated receiving water.
- Projects discharging to a wetland, creek, public combined sewer, small lake or capacity constrained system basins (used in MR5 list).

22.802.030 PERMISSIBLE DISCHARGES

Page 34, line 28 adds “washing or rinsing of potable water storage reservoirs.” BMPs are necessary to ensure nothing but water is used and you remove settled solids and chlorine prior to discharge to the MS4.

Page 34, lines 34-42: Add prohibition for swimming pool cleaning wastewater and filter backwash.

Page 35, line 11 – Refers to a “stormwater pollution prevention plan” but the permit does not use the word “stormwater” here in order to accommodate that some potentially allowable discharges are not stormwater.

Page 35, lines 36 & 37: As a reminder, discharges from lawn watering and other irrigation runoff must be minimized through public education activities and water conservation efforts.

MINIMUM REQUIREMENT THRESHOLDS

22.805.020 – MRs FOR ALL PROJECTS

Page 42, line 24 – Odd comma after “and all trees, and drainage courses...” Delete comma?

Page 45, line 6 – Refer to the Permit Appendix 1 for a clarification that the on-site treatment system must prevent a discharge to surface water (such as a closed loop recirc system or upland application). As written, SMC appears to allow discharge of treated wheel wash water. Not approvable.

Page 46, lines 38-43 – Install Permanent Flow Control and Water Quality Facilities. What is the purpose of this section? Should it also include the new citation to MR5 onsite requirements? How does one know if they are required to comply? Note that E (soil quality and depth BMP) and F (GSI to the MEF) were deleted (page 47). Both referred to old MR5 requirements. Neither were replaced in this section. Soil quality and depth requirement now located in 22.805.070.B2.

22.805.030 THRESHOLD SUMMARY FOR SINGLE FAMILY RESIDENTIAL PROJECTS

Applies MR5 to SFR projects; SFR projects defined to not trigger MRs 6 & 7. OK.

22.805.040 THRESHOLD SUMMARY FOR TRAIL & SIDEWALK PROJECTS

Applies MR5 to trail and sidewalk projects. Seattle proposes that a trail/sidewalk project would not have to do MR 6, 7 or 8. Ecology considers this a jurisdiction-wide exception under Section 6 of Appendix 1 of the Permit. This is generally approvable, pending resolution of related comments. Rationale considered by Ecology includes:

- Trail and sidewalk projects are linear and Ecology expects they would have multiple threshold discharge areas (TDA) over the length of the project. Seattle does not use the TDA concept in threshold evaluations for constructing drainage facilities.
- Trails are not classified as streets, and a trail project does not contain PGIS.
- Sidewalk Projects are defined to result in less than 5,000 sf of new + replaced impervious surface in the roadway. Sidewalks themselves are not “in the roadway” but associated structures such as ADA ramps do require some roadway replacement.
- Sidewalks are not pollution generating.
- The definition of Roadway includes the parking strip (PGIS) and gutter where there is a curb, but not the shoulder where there is no curb.
- Increasing nonmotorized transportation in this dense urban environment by improving or providing trail and sidewalk infrastructure should have a net environmental benefit, reducing stormwater pollutants as vehicle trips and car habitat are reduced.

22.805.050 THRESHOLD SUMMARY FOR PARCEL PROJECTS:

- A. Applies MR5 to parcel based projects. Confirm the application of BMP T5.13 to all projects.
- B.1 Applies MR8 (wetlands) thresholds. Error at 22.805.050.B.1.c: Ecology does not delete the word “native” from the 2.5 acre conversion threshold.
- B.2 Applies MR7 in Listed Creek Basins (forested flow control standard)
 - B.2.a New Development (forested flow control standard):
 - *Effective* impervious surface threshold of 10,000 sf not used; City uses 10,000 new plus replaced impervious surface threshold. Unclear whether “effective” is intentionally left out. See below.
 - Error at 22.805.050.B.2.a.3: Ecology does not delete the word “native” from the 2.5 acre conversion threshold.
 - Update 22.805.050.B.2.a.4 per Appendix 1 of the Permit (or explain why different requirement is needed). Include 15 minute timestep details and other specificity provided in Appendix 1 of the Permit. It is also inconsistent to see use of *effective* impervious surface here but not elsewhere. Clarify City’s intent regarding use of “effective” surfaces.
 - B.2.b Redevelopment (pasture flow control standard) at 2,000 sf new + replaced (no additional thresholds). Ecology has previously approved this provision based on the following rationale:
 - Seattle is requiring a flow control standard based on pasture conditions, rather than existing conditions, for all areas that would, under the Permit’s requirements, only have to meet a standard based on existing conditions.

Additionally, Seattle's MS4 area is predominantly in non-listed creek basins, or those areas that were at least 40% impervious in 1985. Therefore, flow controls in total are expected to be equivalent.

- B.3 Applies MR7 in NonListed Creek Basins (pasture flow control standard).
 - B.3.a if the existing land cover is forest, use forested flow control standard:
 - *Effective* impervious surface threshold of 10,000 sf not used; City uses 10,000 new plus replaced impervious surface threshold. Unclear whether "effective" is intentionally left out. See below.
 - Ecology does not delete the word "native" from the 2.5 acre conversion threshold.
 - Update 22.805.050.B.3.a.4 per Appendix 1 of the Permit (or explain why different requirement is needed). Include 15 minute timestep details and other specificity provided in Appendix 1 of the Permit. It is also inconsistent to see use of *effective* impervious surface here but not elsewhere. Clarify City's intent regarding use of "effective" surfaces.
 - B.3.b use pasture flow control standard at 2,000 sf new + replaced (no additional thresholds). Note that use of a pasture-based standard in this requirement is a necessary component of Seattle's program equivalency.

22.805.060 THRESHOLD SUMMARY FOR ROADWAY PROJECTS:

- A. Applies MR5 to roadway projects. Confirm the application of BMP T5.13 to all projects.
- B.1 Applies MR8 (wetlands) thresholds. Error at 22.805.060.B.1.c: Ecology does not delete the word "native" from the 2.5 acre conversion threshold.
- B.2 Applies MR7 in Listed Creek Basins (forested flow control standard)
 - B.2.a New Development (forested flow control standard):
 - *Effective* impervious surface threshold of 10,000 sf not used; City uses 10,000 new plus replaced impervious surface threshold. Unclear why desire to be different here.
 - Ecology does not delete the word "native" from the 2.5 acre conversion threshold.
 - Update 22.805.060.B.2.a.4 per Appendix 1 of the Permit (or explain why different requirement is needed). Include 15 minute timestep details and other specificity provided in Appendix 1 of the Permit. It is also inconsistent to see use of *effective* impervious surface here but not elsewhere. Clarify City's intent regarding use of "effective" surfaces.
 - B.2.b Redevelopment (pasture flow control standard) at 10,000 sf new + replaced impervious surfaces (not using effective impervious surfaces).
 - Seattle is requiring a flow control standard based on pasture conditions, rather than existing conditions, for all areas that would, under the Permit's requirements, only have to meet a standard based on existing conditions. Additionally, Seattle's MS4 area is predominantly in non-listed creek basins, or

those areas that were at least 40% impervious in 1985. Therefore, flow controls in total are expected to be equivalent.

- B.3 Applies MR7 in NonListed Creek Basins (pasture flow control standard)
 - B.3.a if the existing land cover is forest, use forested flow control standard:
 - *Effective* impervious surface threshold of 10,000 sf not used; City uses 10,000 new plus replaced impervious surface threshold. Unclear why desire to be different here.
 - Ecology does not delete the word “native” from the 2.5 acre conversion threshold.
 - Update 22.805.060.B.3.a.4 per Appendix 1 of the Permit (or explain why different requirement is needed). Include 15 minute timestep details and other specificity provided in Appendix 1 of the Permit. It is also inconsistent to see use of *effective* impervious surface here but not elsewhere. Clarify City’s intent regarding use of “effective” surfaces.
 - B.3.b use pasture flow control standard at 10,000 sf new + replaced (no additional thresholds). Note that use of a pasture-based standard in this requirement is a necessary component of Seattle’s program equivalency. This results in flow control to a higher standard based on a simple threshold evaluation (with no additional 0.1 cfs calculation or initial roadway project cost and size threshold considerations).
- C Applies MR6 as follows:
 - C.1 New Development at 5,000 sf new + replaced PGIS, or
 - C.2 new PGIS at 5,000 and result is 50% or more expansion within project site, or
 - C.3 new + replaced PGPS at ¾ acre or more
 - Note that the HRM contains language about project credits for existing surfaces that receive treatment to standards because runoff is commingled with the new and/or replaced surfaces in the project site that are required to be treated.

22.805.070 ON-SITE STORMWATER MANAGEMENT REQUIREMENTS

- B. A statement is included (“...installed...to receive flows from that portion of the site being developed...”) that implies facility sizing only looks at the new/replaced project area, not any existing surfaces that may run onto the new/replaced project area. Like for treatment, an on-site BMP must be sized to accommodate all surface area draining to the BMP (including existing if it cannot be separated from the flows from the new or replaced surfaces.)
- B.1 requires tree retention (4” diameter) to the MEF. The 2014 SWMMWW indicates a 6” minimum diameter in order to receive modeling credit.
- B.2 requires soil quality and depth BMP.
- C provides for use of the LID Performance standard in lieu of the on-site lists as an option for projects. Because all of Seattle is within a UGA, the Permit does not require use of the LID Performance Standard; it is acceptable as an option.
 - C.1.a New development in Listed Creek Basins (forested flow control standard).

- C.2.a For all other projects, the LID Performance Standard is expressed as a pasture-based standard, consistent with the approvable application of flow control standards under MR#7. This (“pre-developed pasture condition for the range of pre-developed discharge rates between the 1 percent and 10 percent exceedance values”) is a technically appropriate standard to express as the LID performance standard for basins where it is allowable to match existing conditions.

D.1.a includes a phrase: “A BMP is considered infeasible...if the minimum design criteria for the BMP cannot be met for the project in the space remaining on the project site.” This is generally not acceptable. The only explicit allowance in the SWMM for “insufficient space” is for bioretention on redevelopment sites (see infeasibility criteria for BMP T7.30). There is also some relevance for dispersion. This proposed “space remaining” criterion, as well as the Director’s Rule allowance for as much as 50% reduction in size of pre-sized bioretention facilities if area isn’t available (page 5-87), is allowable only for redevelopment projects.

D.1.b refers to competing needs. Subsection 2 includes a reference to the Permit’s response to comments document. Rather than this reference, specify how Seattle will implement this reference with references instead to Seattle-specific special zoning district criteria. At Subsection 5, clarify the SMP reference.

ONSITE BMP LISTS

Ecology is reviewing Seattle’s proposed on-site list structure under the jurisdiction-wide exception provision in the Permit’s Appendix 1, Section 6. Pending resolution of all related comments, Ecology is considering the following lines of evidence and/or conditions in our review:

- Whether or not modeling using Seattle’s design criteria and project types shows equivalent performance within each on-site list category. For BMPs in Category 2, Seattle needs to show equivalent performance, which can be done by showing how each GSI BMP meets the LID Performance Standard.
 - For parcel and road projects, conduct permeable pavement 2-5% slope modeling according to SWMMWW guidance. The standard detail needs a check dam, or other underground flow impediment, to slow flows on a slope. Using 50% impervious/50% lawn is not the current modeling approach.
- All BMPs required for evaluation in any given category must be evaluated (and selected where feasible) before moving on to the next category. This must be clearly described. The single sentence in D.1 (“Consider all GSI BMPs in a category for feasibility before moving on to each successive category as necessary.”) should be emphasized in the Director’s Rule and list footnotes.
- Sizing criteria, including the pre-sized BMPs, should take into account both impervious and pervious surfaces which drain to it. This is not directly addressed in Seattle’s proposal.
- Broad conditional note: Application of Seattle’s modified on-site lists are generally for redevelopment projects only, such as is typical of Seattle lot sizes and density; not new development projects.

GSI BMPs Category 1

- Infiltration trenches and dry wells – The SWMMWW allows infiltration trenches for roof runoff and not other surfaces. To qualify for Category 1, their evaluation is required for R (roof runoff) only. Change the right hand column to R only and remove the S.

GSI BMPs Category 2

- Rainwater Harvesting – Ecology evaluated SPU's claims that the design criteria for rainwater harvesting ensures that this BMP can meet the LID performance standard. Ecology does not believe that it is representative to use 10-years of rainfall as if there is no overflow from the cistern during this time. Uses for the water in the cistern are "irrigation, outdoor cleaning, and indoor plumbing". The amounts for irrigation and outdoor washing are not limited in any way. In order to retain this GSI BMP in Category 2, wet season (Oct to May) uses must be limited to indoor plumbing, and dry-season irrigation, should water be available, should be rate limited by gallons per acre per day.
- Rain Gardens – Ecology does not approve Seattle's proposal to restrict the use of rain gardens at .6 minimum infiltration rate. Rain gardens, if between .3 and .6 infiltration rate, could be designed similar to the standard section for infiltrating bioretention with an underdrain, but without the engineered soil.
- Infiltrating bioretention – Ecology does not generally agree that bioretention and permeable pavement perform equally well, thus Appendix 1 of the Phase I Permit lists permeable pavement before bioretention in On-site List #2. Permeable pavement surfaces should perform better than bioretention. Even 15% better is sufficient to warrant priority consideration. Provide updated modeling for evaluation. Specify minimum sizing criteria for bioretention facilities so that the facility (if used for the list approach) meets the LID performance criteria.
- Permeable Pavement Facilities – The SWMMWW allows for a 2:1 ratio of drainage area to permeable pavement surface. Seattle's proposal accepts up to 5:1 for NPGIS and 3:1 for PGIS. Provide updated modeling for evaluation showing how the increased drainage area will still meet the LID performance standard.

GSI BMPs Category 3

- Noninfiltrating Bioretention and Vegetated Roofs – Ecology would prefer these in category 4, but will approve them in category 3 as they are generally similar to dispersion.
- Single Family Residential Cisterns – Given limited hydrologic performance, single family residential cisterns should be in category 4.

Table 805.1 SFR list

- Application is the same in all basins. This results in greater application of on-site BMPs since flow control exempt projects (discharging to designated receiving water) are not excluded. This is a necessary component of Seattle's program equivalency.
- Footnote 'a' re: 5,000 sf infiltrating on site is acceptable for SFR project rain gardens.

Table 805.2 Trail list

- List distinguishes between projects that discharge to flow control exempt/designated receiving water bodies, which is allowed under the Permit's Appendix 1.
- Footnote 'c' sets a minimum permeable pavement size in the ROW at 2,000 sf contiguous. Ecology is concerned that this limits the application of permeable pavement for sidewalks.
- Footnote 'b' restricts the use of bioretention if the contributing area is smaller than what would result in a 500 sf cell top area. Ecology does not approve this limitation on the use of bioretention. Instead, Ecology suggests setting a minimum size for a bioretention facility, resulting in the installation of BMPs that are potentially oversized for the area draining to it. Additionally, since Seattle is using pre-sized BMPs based solely on impervious surfaces, Ecology believes it is appropriate to potentially oversize a facility in part to accommodate the runoff from pervious surfaces as well.

Table 805.3 Parcel list

- Footnotes a and b do not appear to be used in the table.
- The term "non-flow control basin" is not in the definitions. Suggest fixing the terms and definitions in that section, not footnotes in a table. Also looks like should be relevant to table 805.2. Isn't a "non-flow control basin" the same as a basin discharging to a designated receiving water?

Table 805.4 Roadway list

- Footnote a should refer to infiltrating on the "project site."
- Footnote 'b' restricts the use of bioretention if the contributing area is smaller than what would result in a 500 sf cell top area. Ecology does not approve this limitation on the use of bioretention. Instead, Ecology suggests setting a minimum size for a bioretention facility, resulting in the installation of BMPs that are potentially oversized for the area draining to it. Additionally, since Seattle is using pre-sized BMPs based solely on impervious surfaces, Ecology believes it is appropriate to potentially oversize a facility in part to accommodate the runoff from pervious surfaces as well.

Historic Preservation and Archaeology laws – This list may be better located in the Director's Rule. The "g" and "h" appear to be incomplete citations.

22.805.080 FLOW CONTROL

B. includes the old GSI to the MEF language. The last sentence may also no longer be appropriate, as GSI is used to meet MR5, not MR7. GSI BMPs may be designed to provide credit to flow control facility sizing, but it is no longer acceptable to rely solely on GSI BMPs to meet flow control requirements.

B.2 & B.3 – The forested and pasture standards written description has changed. Is it appropriate to still refer to the "recurrence interval flow" instead of "peak flow" (now that it uses "discharge durations")

instead of “peak flow rates and flow durations”)? Ecology text is “2-year peak flow up to the full 50 year peak flow.”

22.805.090 TREATMENT

B. Is it still appropriate to require all projects to use GSI to the MEF to meet treatment requirements? There are no additional thresholds in this section, as there were in 080.B.

B.1.b.2 – Is “2-year recurrence interval” the same as “full 2-year release rate”?

B.5 (lines 27-28) This “or” clause has an odd sentence structure. Should it say “for projects...which use infiltration...”? Also line 30 “or have” is odd; perhaps should be “or with”?

22.807 DRAINAGE REVIEW AND APPLICATION REQUIREMENTS

- Page 70, Line 39; page 72, line 33 – retain “native” here for consistency with Appendix 1 and previous comments. Note too that use of $\frac{3}{4}$ acre conversion threshold here (line 31) is inconsistent with the definition of Large Project.

VOLUME 1: PROJECT MINIMUM REQUIREMENTS

1. Ensure all final language from code is updated accurately in Volume 1.
2. Page 1-1: Update your references section to the modified 2014 SWMMWW.
3. Page 2-4: Project types 6 (utility) and 7 (road maintenance) are exempt Per SMC 22.800.030. What is the purpose of including these in Vol 1, Chapter 2? None of the Chapter 2 “steps” clearly kick out exempt project types. It is not clear how this Chapter works together with Chapter 4 when the project is exempt.
4. Chapter 3 contains “other minimum requirements” and Chapter 4 contains “project minimum requirements.” This language is potentially confusing and may result in a project that fails to consider Chapter 3 requirements. Flow charts in Chapter 4 do not include the Chapter 3 requirements. Suggest improved phrasing/clarity to explain that both Chapters are relevant.
5. The Soil Quality and Depth BMP requirement should be included in Chapter 3 and/or Chapter 4. This is required of all projects over the initial threshold size of 2,000 sf new + replaced or 7,000 sf LDA.
6. Page 4-2, Table in Section 4.3: The table does not distinguish when you can use “Pre-developed Pasture” for a listed basin and/or a non-listed creek basin. Since this is not an optional selection, we suggest the table provide a more thorough explanation.
7. Chapter 4 uses shorthand “FC#1,” “FC#2 or Forest,” etc. Where are these shorthand abbreviations defined?

8. Chapter 4 updated flow charts will need detailed review and discussion with Ecology to ensure they clearly and accurately reflect the necessary and required thresholds. These draft versions are not entirely accurate. For example:
 - Page 4-3, Figure 4.1B: This diagram does not appear to be consistent with roadway project thresholds. Clarify the 10,000 sf thresholds relative to the Permit's Appendix 1 Figure 3.3 flow chart. For example, you have an "and" in the question so if you have a project with >5,000 sq ft and <10,000 of new plus replaced, the answer is no and it should be yes for >5,000 sq ft. You also have a question about >10,000 new plus replaced later.
9. Page 4-18, Section 4.8: Is it a "close~~d~~-contour" basin, not "close-contour" basin?
10. Page 5-9, Second bullet above Section 5.2.1: Is there a maximum storm that an engineer should evaluate for discharge from the site? Discharge from the site could occur during a very large storm.
11. Page 8-3: Do you have any Cultural Resources approvals? If you do, you should note it here.

VOLUME 2: CONSTRUCTION STORMWATER CONTROL

1. Page 1: Page 3-2, Table 1a:
 - For Element 1 you need to add Fencing (Ecology BMP C103).
 - We prefer "Ecology" over "DOE"
2. Page 3-4, Table 1a, Element 9: the second BMP E3.25 should be BMP E3.70 (also on Table 1b).
3. Page 3-8, Table 1b, Element 5:
 - BMP C231 is called "Brush Barrier"
 - Why did you not include BMP C251 Construction Stormwater Filtration?
4. Page 4-13: Section 4.1.5, bullets: Consider adding Ecology BMP T5.13 Soil Quality and Depth here
5. Page 4-32, Section 4.2.3.6: In the second bullet, you reference Upland land application of wheel wash water. Note that Ecology plans to remove this from the SWMMWW due to lack of specification and applicability. Consider providing additional guidance.
6. Page 4-44, Section 4.2.10.5: In the fourth bullet add "and/or treatment" between "detention" and "may".
7. Page 4-45, Fourth bullet: If you direct intercepted subsurface water to receiving water, you need to consider it in the flow regime off-site and may limit the runoff flow rate off the site.
8. Page 4-49, Tables 6 and 7: Aren't swale side slopes typically described as H:V and not percent slope?
9. Page 4-50: There should be a maximum Turbidity limit to pass before removing the turbidity curtain in addition to the 6 to 12 hour time.

10. Page 4-64: Table 9 lists “Maximum Average Downslope” as high as 33-percent while the text limits slope to 14-percent. Which is correct?
11. Page 4-76: Use of a Chitosan Enhanced Stormwater Filter system requires approval from Ecology (<https://fortress.wa.gov/ecy/publications/summarypages/ecy070258.html>).
12. Page 5-3, Section 5.1.1.3: You state, “If the rating is high” in this sentence. What is a “high” rating?
13. Page 5-5: In step 2, you use “ECA”. Where do you define “ECA”?
14. Page 5-29: Note at the top of page. We are working on revised text here with the construction permit. We need to confirm this before the final approval of the manual.
15. Page 5-36, Last paragraph before Section 5.1.12.4: I think the word “instantaneous” is more appropriate than “simultaneous”.

VOLUME 3: PROJECT STORMWATER CONTROL

1. Page 2-8: TAPE also has systems with GULDs for Preliminary Treatment (50% removal of TSS). Would you consider those as part of a treatment train? You identify Proprietary and Emerging Tech. in Figure 3.1.
2. Page 3-7, Step 4: You should reference Step 4b not 4a.
3. Page 3-9, Section 3.3.1, Step 2: You should reference figure 3.1, there is no Figure 3.2 in our copy of the text.
4. Page 3-10: Figure 3.1:
 - You have a box for pre-treatment, but don’t discuss this in the text in Section 2.
 - It would be helpful if you put in “Yes” or “No” with the arrows to show what direction you move with an answer.
5. Page 3-11, Section 3.3.1, Step 5: You should reference figure 3.1, there is no Figure 3.2 in our copy of the text.
6. Page 3-13: You list the Media Filter Drain in the text, but you don’t show it as approved in Figure 3.1.
7. Page 3-14:
 - You don’t list “Infiltrating Bioretention” in the text, but you identify it in Figure 3.1.
 - The note on Bioretention seems out of place.
8. Page 4-1: Ecology has reviewed the SPU calculations behind the pre-sized approach for BMPs and has the following concerns:

- The pre-sized on-site tables use the impervious area times the factor to get the size of the BMP. This ignores runoff from pervious surfaces. Ecology believes that pervious surfaces should be included in this calculation in order to properly size the BMP. There may be different ways to accomplish this. The SPU factors are used to calculate the bottom area of a bioretention facility and/or permeable pavement. Ecology's 5% requirement is for the top surface area (area at top of Ponding). This makes it difficult to determine how to deal with the pervious area draining to the BMP. One possibility is to designate a certain percentage of the drainage area as pervious and still use the impervious total to size the BMP, until the pervious surfaces exceed the given percentage, at which time the BMP must be sized specifically for its impervious and pervious drainage areas.
 - There are a number of empty cells remaining in the tables in the SPU Director's Rule.
9. Page 4-2, Section 4.1.2.2: Do the BMP sizing factors work for MR #5 as well as #6 and #7? Alternatively, does a designer need to follow the List approach or LID Performance standard in addition?
 10. Page 4-3, second full paragraph: We don't understand the text where you use pre-sizing calculations to size a BMP and then you say that you can have an area twice the size of the area used for pre-sizing flow to the facility.
 11. Page 4-5, Section 4.2.1: In the on-line BMP text, you should also add text saying velocities must not be high enough to resuspend sediments in the BMP.
 12. Page 4-5, Section 4.2.1: Ecology requirement for water quality treatment flow rate for BMPs downstream of detention is the full 2-year release rate. How does this compare with your criteria?
 13. Page 5-12, Section 5.2.5.1: Retained trees must have a minimum diameter of 6-inches to receive credit (SWMMWW Vol. V, BMP T5.16, Tree Retention Design Criteria).
 14. Page 5-12, Section 5.2.5.2: Ecology does not give credit for trees planted in planter boxes (SWMMWW Vol. V, BMP T5.16, Newly Planted Tree Flow Control Credit).
 15. Page 5-42: You have excluded "Permeable Pavement Surfaces" from infiltration facilities and don't require testing for existing soils. Please describe your thinking on this and why Ecology we should accept your decision. Ecology assumes all permeable pavement is an infiltration BMP in some manner. See Table 5.23 as well.
 16. Page 5-45, Table 5.7: Change the number to 0.3 in/hr in the table and discuss the ability to use the elevated underdrain system for the 0.3 to 0.6 in/hr condition in the design criteria for bioretention used to meet the list option.
 17. Page 15-49, Vertical Setbacks: You are using the vertical separation criteria that Ecology set for Bioretention facilities for all infiltration facilities. Ecology has vertical separation requirements that are larger than these for other infiltration facilities. (See SWMMWW SSC-5 in Vol. III, Section 3.3.7).

18. Page 5-55, last paragraph: You need to include the requirements of (See SWMMWW SSC-7 from Vol. III, Section 3.3.7).
19. Page 5-56, Section 5.4.1.7: We believe the correction factor is not a minimum but a maximum. Correction factors are multiplied times the field infiltration rate and could be lower than 0.5.
20. Page 5-61, Section 5.4.2.3: In the footnote to the table, you use 0.5 in/hr as a threshold for infiltration rate. This is greater than the Ecology number and less than your number listed earlier.
21. Page 5-64, Table 5.12: You appear to base this table on a 0.5 in/hr infiltration rate. Additionally, what is the minimum width of the ditch?
22. Page 5-71, Table 5.15: There is a gap between 5 in/hr and 8 in/hr in this table.
23. Page 5-79, bottom two bullets: You are referencing the wrong Tables, should be 5.17 and 5.18.
24. Page 5-84, Plant Material: Do you have any requirements for plant height and bushiness in R-O-Ws?
25. Page 5-86, Table 5-19: You need to complete the table. There are several other incomplete tables in this volume.
26. Page 5-87: If a designer uses the pre-sized approach, does (s)he also meet MR #5 requirements?
27. Page 5-89, Table 5.21: You use a 6-in/hr infiltration rate for bioretention soil. Ecology uses 6 in/hr or 3 in/hr depending on the size of the area draining to the facility. Ecology has evaluated this and changed the criteria in the SWMMWW. Ecology accepts Seattle's proposal as it is effectively an initial infiltration rate of 12-in/hr and a safety factor of 2.
28. Page 5-93, Figure 5.12 is missing (along with several others in this portion of Volume 3).
29. Page 5-101, Table 5.23: What is the difference between "High" and "Low" slopes?
30. Page 5-101 second paragraph after the table: You mention an "aggregate treatment course" in this place and on page 5-102, you mention a "water quality treatment course". Are these referring to two different things or is there an edit required?
31. Page 5-105:
 - Ecology recommends that you limit the run-on area to no greater than the permeable pavement area i.e. 2:1 ratio of drainage area to permeable pavement area. On page 5-106, you use a 5:1 ratio for NPGIS and 3:1 for PGIS.
 - Complete Figure 5.14 and submit it to Ecology for review.
32. Page 5-110, Water Quality Treatment Course: Do you want to reference Ecology BMP T8-10?

33. Page 5-111, Pre-Sized Approach: Storage volume is greater when the pavement is nearly flat, than when it is sloped. Do you need an adjustment factor for the reduction in storage capacity for a sloped permeable pavement facility?
34. Page 5-112: Your modeling approach does not include use of the permeable pavement element in WWHM 2014.
35. Page 5-119: You reference BMP T7.10. This BMP is in Vol. V and there are no design criteria in this section. The text immediately directs readers to Section 3.3 in Vol. III.
36. Page 5-130: Ecology needs to see how you developed your sizing equation in Table 5.27.
37. Page 5-139: Ecology needs to see references for Table 5.28.
38. Page 5-141, Section 5.6.2: We don't fully understand the reasoning behind Permeable Pavement Surfaces and how you will apply them. You will infiltrate through the material, but they are not infiltration facilities. You describe them as not allowing any run-on, yet you allow 10% run-on. You give credits, but if they don't infiltrate, where does the water go?
39. Page 5-159, Table 5.35: You need to create a special stage-storage curve for detention pipe. You do not mention this in the table.

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1. Page 1-6, Table 1: It is hard to answer the questions in Section 2.1 with a yes or no. Since these are always required, does an applicant need to answer these questions?
2. Page 2-6, Section 2.1.5.2: You should reference the Source Control BMP for berming around potential liquid spill areas.
3. Page 3-11, Section 3.2.1.3: You should indent the last two bullets on the page since they apply to the bullet above them and are not stand-alone.
4. Page 3-47, Section 3.4.3.1: Ecology no longer uses the web reference of "biblio" for our documents. You need to review the references to Ecology document and insert the correct URL. For this document, reference <https://fortress.wa.gov/ecy/publications/summarypages/94146.html>.
5. Page 3-62, Section 3.6.2: FYI Ecology is revising the document identified in this section (Publication 04-10-031).