

Edit #	Section Edited	Redline Page #	Description of Change	Justification / Why Was the Change Made?
CHAPTER 1, Drainage Review and Requirements				
1	Chapter 1, Definitions	Page 1-2	Proposed Text: Bioretention Water Quality Facility- means a vegetated cell, swale, or planter with the bottom composed of one or more layers of specified media for pollutant mitigation. Stormwater is treated by percolation through the bioretention media. Treated stormwater is infiltrated to native soil or is collected and discharged via an underdrain system. Standards for bioretention water quality facility design are detailed in Chapter 6 and Reference 14-B of the King County Surface Water Design Manual Media specifications are found in Reference 11-C.	Provides definition for new bioretention water quality facility type.
CHAPTER 5, Flow Control Design				
2	Design Infiltration Rate-Bioreten tion and Permeable Pavement	Page 5-48 and Page 5-49	Modified Text: For bioretention facilities used to meet the LID Performance Standard, a corrected design infiltration rate shall be used for the standard bioretention soil mix (BSM) and the high performance bioretention soil mixes (HPBSM) cited in Reference 11-C. 12 inches per hour is the initial uncorrected rate for both standard and high performance BSMs. The corrected rate assumes a correction factor of either 2 or 4 is applied to the to the uncorrected rate. A corrected design rate of 3 inches per hour is used where the drainage area to the bioretention device exceeds any of the following: <ul style="list-style-type: none"> •10,000 sq. ft. of impervious surface •5,000 sq. ft. of pollution-generating impervious surface •3/4 acre of pervious surface A corrected design rate of 6 inches per hour is used if the contributing drainage area does not exceed any of the above-listed areas, OR for bioretention where the contributing area exceeds any of the thresholds above AND the design includes a presettling facility for solids removal. Note that bioretention water quality facilities (see Chapter 6 and Reference 14-B) used to meet Core Requirement 8 shall meet the presettling requirements detailed under "Presettling" in Section 5.2 in all cases unless determined not feasible by DLS-Permitting. Corrected design rates for the approved HPBSMs used in bioretention water quality facilities shall be 6 inches per hour where presettling per Section 5.2 is implemented and 3 inches per hour where presettling cannot be feasibly implemented..	Adds information re: design infiltration rate to be used for HPBSM Fcbmps and bioretention water quality facility designs. Clarifies requirements for presettling upstream of HPBSM designs and resultng FS to be used in determining design infiltration rates .
CHAPTER 6, Water Quality Design				
3	Section 6.1, Water Quality Menus, "Guide to Applying Water Quality Menus", #5	Page 6-3	Added text: Note: Check Reference 14-A (for proprietary) and Reference 14-B (public domain) for any applicable water quality facility options added between mandated SWDM updates.	Clarification
4	Section 6.1.1 Basic WQ Menu	Page 6-6	Added text: BASIC WQ OPTION 9 -BIORETENTION WATER QUALITY FACILITY A Bioretention Water Quality Facility (BWQF) is a vegetated cell, swale, or planter with the bottom composed of one or more layers of specified media for pollutant mitigation. Stormwater is treated by percolation through the bioretention media layer(s). Treated stormwater is infiltrated to native soil or is collected and discharged via an underdrain system. Standards for bioretention water quality facility design are found in Reference 14-B. Specifications for the allowed media are found in Reference 11-C. Currently, Type 1, 2, and 3 high performance bioretention soil media (HPBSM) designs (see Reference 14-B for details) may be used to achieve basic treatment requirements.	Adds bioretention water quality facility (Type 1, 2, and 3 HPBSM designs) to list of approved facilities on the Basic Treatment menu. Relocated Table 6.1.1.A for clarity.
5	Section 6.1.2 Enhanced Basic WQ Menu	Page 6-8	Added text: ENHANCED BASIC OPTION 4 - BIORETENTION WATER QUALITY FACILITY A Bioretention Water Quality Facility (BWQF) is a vegetated cell, swale, or planter with the bottom composed of one or more layers of specified media for pollutant mitigation. Stormwater is treated by percolation through the bioretention media layer(s). Treated stormwater is infiltrated to native soil or is collected and discharged via an underdrain system. Standards for bioretention water quality facility design are found in Reference 14-B. Specifications for the allowed media are found in Reference 11-C. Currently, Type 1, 2, and 3 high performance bioretention soil media (HPBSM) designs (see Reference 14-B for details) may be used to achieve enhanced basic treatment requirements.	Adds bioretention water quality facility (Type 1,2, and 3 HPBSM designs) to list of approved facilities on the Enhanced Basic Treatment menu.
6	Section 6.1.3 Sensitive Lake Protection Menu.	Page 6-12	Added text: LAKE PROTECTION OPTION 5 - BIORETENTION WATER QUALITY FACILITY A Bioretention Water Quality Facility (BWQF) is a vegetated cell, swale, or planter with the bottom composed of one or more layers of specified media for pollutant mitigation. Stormwater is treated by percolation through the bioretention media layer(s). Treated stormwater is infiltrated to native soil or is collected and discharged via an underdrain system. Standards for bioretention water quality facility design are found in Reference 14-B. Specifications for the allowed media are found in Reference 11-C. Currently, Type 2 and Type 3 high performance bioretention soil media (HPBSM) designs (see Reference 14-B for details) may be used to achieve lake protection requirements.	Adds bioretention water quality facility (Type 2 and 3 HPBSM designs) to list of approved facilities on the Sensitive Lake Protection Treatment menu.

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	APPENDIX C, Simplified Drainage Review Requirements			
10	C.2.6.1: #16.	pg. C-78	Edit by replacing existing text with: " 16. When using either the standard bioretention design (60:40 sand/compost) or the high performance bioretention designs (Reference 14-B) with component media specifications described in Reference 11-C, pre-placement laboratory analysis for saturated hydraulic conductivity of the bioretention soil mix or layered designs is not required. Verification of the mineral aggregate gradation is required, and media mix component ratios must be certified and provided. For FCBMP bioretention using 60:40 media, the aggregate and Type 1 compost must meet Reference 11-C specifications as certified by the vendor. For HPBSM facility and HPBSM FCBMP designs, all primary layer and polishing layer materials must meet Reference 11-C test specifications, and the test results must be provided.	Clarifies specifications and testing requirements for bioretention media (standard and HPBSM).
11	C.2.6.1, #20, C.2.6.2, #19	page C-79 and C-81	Edit by inserting highlighted red text: Bioretention constructed with compost materials are not allowed within one-quarter mile of a sensitive lake if the underlying native soil does not meet the soil suitability criteria for treatment in Section 5.2.1. This disallowance does not apply to bioretention using HPBSM Type 1 without any compost layer, or Type 2 or 3.	Clarifies that HPBSM bioretention flow control BMPs are not categorically infeasible where placed within 1/4 mile of sensitive lake and lacking treatment soils.
12	C.2.6.1, #21; C.2.6.2, #20	Page C-79 and Page C-81	Edit by inserting highlighted red text: Bioretention constructed with compost materials are not allowed within 1/4 mile of those waterbodies listed as category 2, 4, or 5 for either nutrients or low DO determined to be caused by nutrients. These waterbodies are found on Ecology's combined 303(d)/305(b) Water Quality Assessment list. The exception to this prohibition is where phosphorous is the identified nutrient and the underlying native soil meets soil suitability criteria for treatment described in Section 5.2.1. This disallowance does not apply to bioretention using HPBSM Type 1 without any compost layer, or Type 2 or 3.	Clarifies that HPBSM bioretention flow control BMPs are not categorically infeasible where placed within 1/4 mile of listed waterbodies for DO or nutrients and lacking treatment soils.
13	C.2.6.1 "Minimum Design Requirements (Cells, Swales, and Planters): #9 ; C.2.6.2 Minimum Design Requirements (Roadside Bioretention Ditch): #8	Page C-78, No. 9 and C-80, No. 8	<p>OLD TEXT: An 18" thick bioretention soil mix liner extending up slopes to maximum storage depth is required in the bioretention cell, swale, or planter. The bioretention soil mix shall be per Reference 11-C. Compost shall meet Specification 1 described in Reference 11-C. NEW TEXT C-78, #9 :</p> <p>9. A bioretention liner extending up slopes to maximum storage depth is required in the bioretention cell, swale, or planter. The liner shall be composed as follows: For the standard bioretention design (60/40 sand/compost): 18" thickness of the 60/40 mix. For Type 1 HPBSM design: 18" thickness of HPBSM Primary Layer consisting of 70% sand, 20% coir, and 10% high carbon wood ash (biochar) by volume. 3" of Arborist's woodchip mulch (per Reference 11-C) shall be placed over the primary layer in the ponding area of the BMP. For Type 2 HPBSM design: 18" thickness of HPBSM Primary layer plus 12" thickness of HPBSM Polishing Layer. HPBSM Polishing layer consists of 90% sand, 7.5% activated alumina, and 2.5% iron aggregate by volume. 3" of Arborist's woodchip mulch (per Reference 11-C) shall be placed over the primary layer in the ponding area of the BMP. For Type 3 HPBSM design: HPBSM Primary Layer plus 12" thickness of HPBSM Polishing Layer plus 2" Compost Surface Layer.</p> <p>NEW TEXT C-80, #8:</p>	Provides component layer information for bioretention FCBMPs using Type 1, 2, and 3 HPBSM.
14	C.2.6.1, #10 and C.2.6.2, #9	Page C-78 and C-80	Modified text: . The bioretention soil media shall be per Reference 11-C. If the design includes compost, the compost shall meet Specification 1 described in Reference 11-C.	
15	C.2.6.2, #16	Page C-81	Edit by inserting highlighted red text: If using the default bioretention soil mix or High Performance bioretention soil mix as described in Reference 11-C, pre-placement laboratory analysis for saturated hydraulic conductivity of the bioretention soil mix is not required. Verification of the mineral aggregate gradation, compliance with the compost specifications, and the mix ratio must be provided. NEW TEXT: 15. When using either the standard bioretention design (60/40 sand/compost) or the high performance bioretention designs (Reference 14-B) with component media specifications described in Reference 11-C, pre-placement laboratory analysis for saturated hydraulic conductivity of the bioretention soil mix or layered designs is not required. Verification of the mineral aggregate gradation is required, and media mix component ratios must be certified and provided. For FCBMP bioretention using 60:40 media, the aggregate and Type 1 compost must meet Reference 11-C specifications as certified by the vendor. For HPBSM facility and HPBSM FCBMP designs, all primary layer and polishing layer materials must meet Reference 11-C test specifications, and the test results must be provided.	Clarifies specifications and testing requirements for bioretention media (standard and HPBSM).
16	C.2.6.2 Minimum Requirements (Roadside Bioretention Ditch), #7	Page C-80	Edited to say: 7. Vegetation in the roadside bioretention ditch shall be as approved by the King County Road Engineer when in King County right of way.	Clarification
17	C.2.6.3 Maintenance Instruction for Bioretention	Page C-83	Replace "Reference 11-C.3" with "Reference 11-C"	Clarification/accuracy.
18	C.2.6.3 Maintenance Instruction for Bioretention	Page C-83	Replace "Reference 11-C.2.B" with "Reference 11-C"	Clarification/accuracy.
19	C.2.6.3 Maintenance Instruction for Bioretention	Page C-83	Edited to say: " Mulch must comply with Reference 11-C. Compost must comply with Reference 11-C specification 1 Compost." In reference to mulch and compost to be used in maintaining bioretention FCBMP.	Clarification.
	DEFINITIONS			

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23	Add a definition for Bioretention WQ Facility.	Page 3	Proposed new text: Bioretention Water Quality Facility- means a vegetated cell, swale, or planter with the bottom composed of one or more layers of specified media for pollutant mitigation. Stormwater is treated by percolation through the bioretention media. Treated stormwater is infiltrated to native soil or is collected and discharged via an underdrain system. Standards for bioretention water quality facility design are detailed in Chapter 6 and Reference 14-B of the King County Surface Water Design Manual. Media specifications are found in Reference 11-C.	Provides definition for new bioretention water quality facility type.
Reference 8-M/Maintenance Instructions for a Bioretention Cell				
24	Reference 8-M/Maintenance Instructions for a Bioretention Cell		Replace "Reference 11-C.2.B" with "Reference 11-C". Also Change text to read: "Mulch must comply with Reference 11-C. Compost must comply with Reference 11-C Type 1 Compost. "	Clarification
25	Reference 8-M/Maintenance Instructions for a Bioretention Cell		Replace "Reference 11-C.3" with "Reference 11-C".Also Change text to read: "Mulch must comply with Reference 11-C. Compost must comply with Reference 11-C Type 1 Compost. "	Clarification
26	Reference 8-M/Maintenance Instructions for a Rain garden		Change text to read: "Mulch must comply with Reference 11-C. Compost must comply with Reference 11-C Type 1 Compost. "	Clarification
Reference 11-C Bioretention Soil Media Standard Specifications				
27	HPBSM Type 1, 2, and 3 Designs component (layer) specifications.		Multiple edits for format and adds HPBSM component layer specifications. See revised REF 11-C.	Adds HPBSM component layer specifications.
Reference 14-B Approved Public Domain Facilities				
28	Added bioretention water quality facility (BWQF).		New section. See Ref 14-B. Highlights: cell, swale, planter configurations. Type 1, 2, and 3 High performance media layer designs for meeting Chapter 6 WQ menus. Design perc rate of 3 or 6 inch/hour based on whether presettling is provided. Max 1 foot live storage depth above filter media. Revised plant template (referenced).	Adds bioretention wq facilities to REF 14-B including design criteria, modeling method, planting list, etc.