

OCTOBER 2004 SURFACE WATER DESIGN MANUAL PUBLIC RULE REVISION

SUMMARY OF CHANGES TO THE 1998 DESIGN MANUAL

Chapter 1, Drainage Review and Requirements

This chapter describes the basic drainage requirements that implement King County adopted surface water runoff policies and explains how these requirements are applied to proposed projects through the drainage review process. The most significant changes to this chapter are as follows:

1. Added new terms and definitions for "land disturbing activity," "maintenance," "native vegetated surface," and "new pervious surface."
2. Reduced the drainage review threshold for new impervious surface from 5,000 square feet to 2,000 square feet.
3. Added a drainage review threshold for projects proposing 7,000 square feet or more of land disturbing activity.
4. Revised the sensitive area drainage review threshold to capture only projects that contain or are adjacent to a flood hazard area.
5. Eliminated the 2,000-square-foot drainage review threshold for projects located within a Landslide Hazard Drainage Area.
6. Eliminated the drainage review threshold for projects subject to areal clearing limits under KCC 16.82.150C.
7. Revised the drainage review threshold for large redevelopment projects from one based on the total cost of proposed improvements to one based on the assessed value of existing site improvements.
8. Changed "Small Site Drainage Review" to "Small Project Drainage Review" and revised the thresholds to include small agricultural projects as well as single family residential projects. Also revised and added new thresholds for impervious surface and new pervious surface.
9. Revised "Targeted Drainage Review" and "Full Drainage Review" thresholds consistent with the above changes to initial drainage review thresholds.
10. Changed "Large Site Drainage Review" to "Large Project Drainage Review" and revised the threshold for sole source aquifers to one based on critical aquifer recharge areas.
11. Revised the problem-specific mitigation requirements in Core Requirement #2 to address significant hydrologic impacts to wetlands when identified through a critical area report per KCC 21.24.110.
12. Added more guidance in Core Requirement #2 on how to identify and mitigate impacts to downstream drainage problems.
13. Expanded Core Requirement #3 to include the application of flow control BMPs as well as flow control facilities. Revised the main exemptions for Core Requirement #3 accordingly, mostly by moving those pertaining to flow control facilities to the section on area-specific flow control facility requirements. Some of the current exemptions from Core Requirement #3 will become "area-specific exceptions" to the area-specific flow control facility requirement. What remains of the main exemptions is revised to add a new exemption for transportation redevelopment projects, change the existing exemption for large redevelopment projects, and update the basic impervious surface exemption.
14. Added a new flow control facility exemption for sites that will be no more than 4% impervious after development.
15. Added a new term "target surfaces" for specifying which proposed surfaces (i.e., new or replaced impervious surface and new pervious surface) must be mitigated by required flow control facilities.

The target surfaces for a proposed project will depend on which flow control area it is located. Target surfaces can also be reduced in size through application of "full dispersion" flow control BMPs.

16. Changed "Level 1 Flow Control Areas" to "Basic Flow Control Areas" and significantly reduced the current extent of these areas. These areas may be expanded in the future through subbasin-specific stormwater plans or studies. The Level 1 flow control standard will continue to be applied in these areas.
17. Changed "Level 2 Flow Control Areas" to "Conservation Flow Control Areas" and significantly expanded the current extent of these areas. Almost all of unincorporated King County will be designated as Conservation Flow Control Area. The Level 2 flow control standard will continue to be applied but with a new predevelopment assumption of "historic site conditions" (e.g., forest) rather than "existing site conditions." In addition, larger redevelopment projects will be required to provide flow control facilities to mitigate replaced impervious surface as well as new impervious surface. Another key change is that impervious surface added on or after January 8, 2001 will have to be mitigated by flow control facilities if the surface has not yet been mitigated.
18. Changed existing "Level 3 Flow Control Areas" to "Flood Problem Flow Control Areas." The Level 3 flow control standard will continue to be applied but the predevelopment assumption will depend on which of the other two flow control areas is downstream of the Flood Problem Flow Control Area.
19. Added criteria for "fully dispersed surfaces," which can be used to reduce target surfaces and facility size.
20. Added flow control facility sizing credits for application of required flow control BMPs.
21. Revised the "Offsite Runoff Bypass" requirement to be more flexible. Changed the name to "Mitigation of Target Surfaces that Bypass Facility."
22. Added a provision for "mitigation trades" to allow flow control facility mitigation of a currently unmitigated developed surface in exchange for not mitigating the target surface.
23. Added a new section to Core Requirement #3, requiring the application of flow control BMPs to proposed impervious surfaces to the maximum extent practicable on all projects.
24. Added a new implementation requirement in Core Requirement #4 addressing groundwater protection for ditches/channels constructed in outwash soils.
25. Added two new categories of erosion and sediment control (ESC) measures to Core Requirement #5, one for dewatering control and one for flow control on construction sites.
26. Added new performance criteria to Core Requirement #5 based on a turbidity test rather than a sieve test.
27. Added a requirement that the designated ESC supervisor responsible for maintenance of ESC measures must be certified.
28. Clarified language in Core Requirement #6 regarding drainage facilities to be maintained by King County and those to be maintained by private parties.
29. Revised exemption language in Core Requirement #8 to change the cost exemption for redevelopment projects, add a new exemption for transportation redevelopment projects, and update the standard infiltration and soil treatment exemptions for increased groundwater protection. Also, moved what used to be the "Forested Open Space Exemption for Rural Residential Projects" to the section on area-specific water quality facility requirements, where it will be replaced by allowed reduction of target surfaces through use of "full dispersion" flow control BMPs.
30. Eliminated the provision allowing redevelopment projects to apply Basic WQ treatment regardless of which WQ treatment area they were located.

31. Eliminated existing "Resource Stream WQ Treatment Areas" (to become additional Basic WQ Treatment Areas) and changed the "Resource Stream Protection menu" to the "Enhanced Basic WQ menu." The Enhanced Basic WQ menu will now be applied based on land use rather than geographic area. It will apply to land uses that generate the highest concentrations of metals in stormwater runoff within either Basic or Sensitive Lake WQ Treatment Areas.
32. Revised the water quality facility and implementation requirements to incorporate the concept of target surfaces. Another key change is that target surfaces will include impervious surface added on or after January 8, 2001 that has not yet been mitigated.
33. Added salmon conservation plans, stormwater compliance plans, and flood hazard reduction plans to the list of other adopted area-specific requirements in Special Requirement #1.
34. Clarified the language in Special Requirement #2 related to delineation of floodplains/floodways.
35. Clarified the language for applying source controls in Special Requirement #4.
36. Clarified the language for applying oil control to high use sites in Special Requirement #5.
37. Revised the language for appealing adjustment decisions consistent with KCC 20.20.

Chapter 2, Drainage Plan Submittal

This chapter describes the requirements and specifications for submittal of design plans for drainage review, including report and plan formats, and scopes. The most significant changes to this chapter are as follows:

1. Added a requirement for submittal of a construction stormwater pollution prevention plan (CSWPP) with the engineering plans required for drainage review. The CSWPP will include the currently required ESC plan plus a new stormwater pollution prevention and spill (SWPPS) plan.
2. Updated the TIR contents to reflect the new SWPPS plan and the Declaration of Covenant required for flow control BMPs.
3. Revised the specifications for ESC plans to address new ESC measures.
4. Added specifications for the new SWPPS plan.

Chapter 3, Hydrologic Analysis and Design

This chapter presents the acceptable methods of hydrologic analysis used to estimate runoff and design flow control, conveyance, and water quality facilities. The most significant changes to this chapter are as follows:

1. Revised language to reflect changes made in Chapter 1 related to application of flow control standards and BMPs, including the new predevelopment assumption of "historic site conditions."
2. Clarified the acceptable uses of runoff computation methods and the selection of runoff time series record types.
3. Clarified post development land cover assumptions for modeling runoff from pastures and playfields.

Chapter 4, Conveyance System Analysis and Design

This chapter presents the acceptable methods, details, and criteria for analysis and design of conveyance systems. The most significant changes to this chapter are as follows:

1. Updated allowable pipe materials.
2. Added language clarifying the use of drop manholes and structures.
3. Eliminated previously recommended fish habitat improvement at new outfalls.

4. Revised conveyance requirements for bridges and deferred to the King County Road Standards for clearance requirements.
5. Updated the floodway determination methodology and submittal information.

Chapter 5, Flow Control Design

This chapter presents the acceptable methods, details, and criteria for analysis and design of flow control facilities. The most significant changes to this chapter are as follows:

1. Eliminated the roof downspout control requirements for subdivisions. These have been combined with the new flow control BMP requirements.
2. Added a new section on site design that discusses the use of low impact development techniques.
3. Revised the section on flow control BMPs to include new project-specific requirements for application of BMPs based on site size and impervious surface coverage.
4. Added implementation requirements for flow control BMPs, including provisions for future implementation on subdivision lots, identification of maintenance responsibility, and recording of covenants to provide notice to future property owners and allow access for County inspection.
5. Eliminated language pertaining to use of wetlands for detention.
6. Added a new simple detention pond design for cleared areas.
7. Updated procedures for measuring and determining infiltration rates.
8. Added language pertaining to performance testing of infiltration facilities.
9. Revised language for protecting infiltration facilities from sediment during construction.
10. Revised groundwater protection language to correspond to "critical aquifer recharge areas" rather than "sole source aquifers."

Chapter 6, Water Quality Design

This chapter presents the acceptable methods, details, and criteria for analysis and design of water quality facilities. The most significant changes to this chapter are as follows:

1. Added a reference to work sheets for use in designing WQ facilities.
2. Revised the language for application of WQ treatment menus to be consistent with the changes to Core Requirement #8 in Chapter 1.
3. Changed "leaf compost filter" to the proprietary name "Stormfilter."
4. Revised the requirement for and the thickness of treatment liners.
5. Updated geotextile requirements throughout Chapter 6.
6. Clarified the need to retain the retention time when adjusting the biofiltration swale fit the site.
7. Clarified access requirements for biofiltration swales.
8. Revised the design criteria for wetponds and wetvaults to require an approved adjustment if internal berms or walls are used to lengthen flowpath in order to meet minimum length to width ratios.
9. Added a presettling treatment goal for media filtration facilities.
10. Clarified design method for basic and large sand filters.
11. Updated ventilation requirements for vaults.

Definitions Section

This section provides a formal list of the words, terms, and abbreviations accompanied by their meaning as applied in this manual. New definitions are added and existing ones are revised to reflect the changes made to other portions of the Manual.

Appendix A, Maintenance Standards for Privately Maintained Drainage Facilities

This appendix contains the frequency, thresholds, and standards for maintenance of all privately maintained drainage facilities. The most significant changes to this Appendix are as follows:

1. Revised the title of Appendix A to "Maintenance Standards for Standard Drainage Facilities."
2. Updated maintenance standards for various facilities.
3. Added maintenance standards for wet biofiltration swales.

Appendix B, Master Drainage Plan Objective, Criteria Components and Review Process

This appendix describes in a general outline, the objectives, criteria, components, and review process for Master Drainage Plans prepared for Urban Planned Developments and very large projects. No significant changes are made to this appendix.

Appendix C (detached), Small Site Drainage Requirements

This appendix describes, in a separate booklet available from DNRP or DDES, the simplified drainage requirements for certain smaller projects. The appendix has been re-titled and totally rewritten to include the "small project drainage requirements" for single family residential projects and agricultural projects that are subject to Small Project Drainage Review as described in the changes to Chapter 1 above. This appendix will also be referenced by other portions of the Manual for the design specifications of flow control BMPs to be used on all projects. The new appendix includes a large number of new flow control BMPs compared to what is currently in the 1998 Manual.

Appendix D (detached), Erosion and Sedimentation Control (ESC) Standards

This appendix describes, in a separate booklet available from DNRP and DDES, the required measures to be implemented during construction to prevent the transport of sediment from construction and disturbing activities on the project site. The most significant changes to this appendix are as follows:

1. Revised throughout to reflect changes made to Core Requirement #5 in Chapter 1, including two new categories of ESC measures for dewatering control and flow control.
2. Revised cover measures to include use of "surface roughing," "polyacrylamide (PAM)," "compost blankets," and "bonded fiber matrix."
3. Revised perimeter protection measures to include use of "triangular silt dikes" and "compost socks" and to update the specifications for "compost berms."
4. Revised traffic area stabilization measures to include use of "wheel wash systems."
5. Revised sediment retention measures to include use of "block and gravel filters," "gravel and wire mesh filters," "curb inlet protection with wooden weir," "curb and gutter sediment barriers," and "excavated drop inlet sediment traps."
6. Revised surface water collection measures to include use of "subsurface drains" and to update the conditions of use for "pipe slope drains."
7. Added a new section for ESC performance and compliance provisions consistent with and expanding upon those in Core Requirement #5 in Chapter 1.

8. Updated the specifications for ESC plans consistent with the changes made in Chapter 2.

Flow Control Applications Map

This map delineates the three designated "flow control areas" in unincorporated King County referred to by Core Requirement #3 of Chapter 1 for determining which set of area-specific flow control facility requirements apply to a proposed project. The map is revised to reflect the new flow control area names and geographic coverage as described in the changes to Chapter 1 above.

Water Quality Applications Map

This map delineates the designated "water quality treatment areas" in unincorporated King County referred to by Core Requirement #8 of Chapter 1 for determining which set of area-specific water quality facility requirements apply to a proposed project. The map is revised to reflect the elimination of "Resource Stream WQ Treat Areas" and the new geographic coverage of "Basic WQ Treatment Areas" as described in the changes to Chapter 1 above.

Landslide Hazard Drainage Areas Map

This map delineates the areas with unincorporated King County where the County has determined that overland flows from new projects will pose a significant threat to health and safety because of their close proximity to CAO-defined landslide hazard areas that are slopes greater than 15%. Other than updates to the unincorporated area of the County, no significant changes are made to this map.