



Addendum to the King County Surface Water Design Manual

**Effective date
February 15, 2010**

Addendum to the KCSWDM
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Acknowledgements

The City of SeaTac gratefully acknowledges the contributions the City of Federal Way has made in the development of this document.

Introduction

This addendum to the 2009 King County Surface Water Design Manual (KCSWDM) applies to development and redevelopment proposals within the City of SeaTac (City). The KCSWDM has been adopted to meet the requirements of the Clean Water Act, the Endangered Species Act and State Growth Management Act. This addendum includes minor revisions to the KCSWDM to address the differences between King County's and the city's organization and processes, as well as to address equivalency requirements. No major substantive changes have been made to the KCSWDM in order to maintain equivalency in review requirements and level of protection provided by the manual.

[Note: Clarifications and interpretations to the KCSWDM or this addendum will be documented and made available through policy statements within the City's Development Standards.]

Addendum Organization

The information presented in this addendum is organized as follows:

- **Terminology:** At times King County and City of SeaTac use different terminology to describe or refer to equivalent subject matter. This section identifies these terms and the City of SeaTac's equivalent terminology.
- **Key Revisions:** This section specifically identifies the minor revisions the City has made to the KCSWDM. These revisions are necessary to maintain equivalency to the stormwater standards identified in the NPDES Phase II Permit, as well as to address deficiencies within the KCSWDM.
- **Supplemental Manuals:** This section identifies technical guidance manuals which shall be used to supplement the KCSWDM. These manuals are necessary to maintain equivalency to the stormwater standards identified in the NPDES Phase II Permit, as well as to address deficiencies within the KCSWDM.
- **Code Reference Tables:** King County code is referenced in many places throughout the KCSWDM. This section identifies these code references and equivalent city code where applicable.
- **Reference Materials:** This section identifies which reference materials provided in the KCSWDM are applicable and which are not. It also identifies if equivalent City of SeaTac reference materials are available. This section also includes supporting documentation.
- **Mapping:** City of SeaTac equivalents to the Flow Control Applications Map and the Water Quality Applications Map are included in this section.

Terminology

At times King County and City of SeaTac use different terminology to describe or to refer to equivalent subject matter. This section identifies these terms and the City of SeaTac's equivalent terminology.

Department of Development and Environmental Services (DDES) = City of SeaTac Public Works and Planning & Community Development Departments.

Department of Natural Resources and Parks (DNRP) = City of SeaTac Department of Planning and Community Development Services.

Director = City of SeaTac Public Works Director.

Drainage facilities restoration and site stabilization guarantee and drainage defect and maintenance guarantee = SeaTac Performance/Maintenance Bond.

King County = City of SeaTac.

King County Code (KCC) = SeaTac Municipal Code (SMC). Check code reference table for equivalent code sections.

King County Designated/Identified Water Quality Problem - This determination is made on a case-by-case basis.

King County Road Standards = City of SeaTac Development Standards.

Master Drainage Planning - Not applicable, no SMC equivalent.

Sensitive Area Folio = In addition to the King County Sensitive Area Folio, Stream, Wetland and Steep Slope maps are also available on the Planning and Community Development Department web page at www.ci.seatac.wa.us/departments/planninghome under Planning maps.

Urban Planned Development = Not applicable, no SMC equivalent.

Water and Land Resources (WLR) Division = City of SeaTac Stormwater Compliance and Engineering Divisions.

Zoning Classifications: Where the KCSWDM references Agricultural (A) Zoning, Forest (F) Zoning, or Rural (R) Zoning - These zoning classifications are intended for areas outside of the Urban Growth Boundary, therefore the City of SeaTac contains no equivalent zoning. Refer to City zoning maps to determine which zoning classifications apply to your project.

Key Revisions

This section specifically identifies the minor revisions the City has made to the KCSWDM. These revisions are necessary to maintain equivalency to the stormwater standards identified in the NPDES Phase II Permit, as well as to address deficiencies within the KCSWDM.

Mitigation of Impacts from Construction Site Runoff – Property owners and construction site managers are responsible for mitigating off-site impacts from construction regardless of the size of the project or whether a construction permit was required by the City of SeaTac.

Soil Amendment Requirements – In the absence of City of SeaTac standards for the preservation of duff soil layers and specific soil amendment requirements, the City will rely on King County standards established in King County Clearing and Grading Code sections KCC 16.82.100(F) & (G) included in Reference Section.

Des Moines Creek Basin Flow Control – New and redevelopment projects may use the Basic Flow Control standard as identified in the KCSWDM, and the 1994 land use condition as the pre-development conditions for sizing flow control facilities. This adjustment is established based on the Des Moines Creek Basin Plan, the Des Moines Creek Regional Capital Improvement Project and the Hydrologic Analysis of the Des Moines Creek Regional Detention Facility as specified in a letter from the Department of Ecology, dated July 23, 2003 signed by Kevin Fitzpatrick (included in Reference Section).

Impervious Surface Percentage Exemption - This exemption, which is listed in 1.2.3 of the KCSWDM, is not allowed within the City of SeaTac in order to maintain equivalency with the 2005 Stormwater Management Manual for Western Washington (DOE Manual).

Flow Control Modeling for LID BMPs – Neither the KCSWDM, nor the 2005 Low Impact Development (LID) Technical Guidance Manual fully address how infiltration rates shall be included in flow control modeling for all low impact development BMPs. In an effort to encourage the use of LID techniques SeaTac will allow the Western Washington Hydrology Model to be used to determine flow control requirements for projects containing LID BMPs, until the KCSWDM had been updated to adequately address infiltration rates.

Supplemental Manuals

This section identifies technical guidance manuals which shall be used to supplement the KCSWDM. These manuals are necessary to maintain equivalency to the stormwater standards identified in the NPDES Phase II Permit, as well as to address deficiencies within the KCSWDM.

King County Stormwater Pollution Prevention Manual – The most recent edition of the King County Stormwater Pollution Prevention Manual (KCSWPPM) shall be used as technical guidance for water quality best management practices (BMPs). This BMP manual shall also be used as the technical guidance for identifying and implementing source control measures for private residents, businesses, and industries when applying SMC 12.12 (Surface and Stormwater – Illicit Discharge Detection and Elimination Code).

Low Impact Development Technical Guidance Manual – The 2005 Low Impact Development Technical Guidance Manual created by the Puget Sound Action Team, or as hereafter amended, shall be used as the supplemental technical guidance for the KCSWDM for the use of LID techniques. See the City of SeaTac Development Standards for clarification on the limitations of use for the different LID techniques within the City.

Stormwater System Maintenance Standards – The Maintenance Standards for both public and private stormwater systems are identified in Chapter 6 and Appendix A of the KCSWDM.

Operations and Maintenance Standards for Public Right of Way – The most recent edition of the Regional Road Maintenance - Endangered Species Act Program Guidelines currently found at <http://www.kingcounty.gov/transportation/kcdot/Roads/environment/RegionalRoadMaintenanceESAGuidelines/ESAProgramGuidelines.aspx> , or as hereafter amended, shall be used to supplement the above mentioned stormwater system maintenance standards for work done in the public right of way, as well as public stormwater systems.

- **Supplemental Snow and Ice Policy** – The City of SeaTac shall use snow melt materials (i.e. salt brine) on public roads during snow and ice events in an effort to maintain public safety and commerce. Snow melt materials shall be applied as often as necessary, to the minimum extent necessary in an effort to minimize potential water quality impacts.

Vegetation and Land Management Standards - The most recent edition City of SeaTac Integrated Pest and Vegetation Management Plan shall be used as guidance for pest, vegetation and land management activities for all properties or facilities owned or operated by the City of SeaTac.

Code Reference Tables

King County Code is referenced in many places throughout the KCSWDM. The following tables identify these code references and equivalent city code where applicable.

King County Code to SeaTac Municipal Code (SMC) Reference Table			
King County Code Reference	Subject of Reference	SMC Equivalent	Comment
KCC 2.98	Adoption Procedures	1.01	
KCC 2.98	Critical Drainage Areas (CDAs), adoption procedures	12.10.080	
Title 9	Surface Water Management	12.10 & 12.30	
KCC 9.04	Surface Water Run-off Policy: Variances	No Equivalent	The City relies on the adjustment process identified in the KCSWDM
KCC 9.04.030	Definitions: Targeted Drainage Review/abbreviated evaluation	No Equivalent	In the absence of equivalent SMC, the City will use King County's definition
KCC 9.04.030	Drainage review	No Equivalent	In the absence of equivalent SMC, the City will use King County's definition
KCC 9.04.030	Large Project Drainage Review	No Equivalent	The SMC does not list additional drainage review requirements and relies on the KCSWDM
KCC 9.04.050	Drainage review - requirements	No Equivalent	The SMC does not list additional drainage review requirements and relies on the KCSWDM
KCC 9.04.070	Engineering plans for the purposes of drainage review	Not Applicable	County Code refers to internal DDES procedures and is referenced only in definition of DDES
KCC 9.04.090	Construction timing and final approval	12.10.100	
9.04.100	Liability Requirements	12.10.110 - 12.10.150	

King County Code Reference	Subject of Reference	SMC Equivalent	Comment
KCC 9.04.115	Drainage facilities accepted by King County	No Equivalent	SeaTac generally does not accept stormwater facilities unless they are constructed in the public ROW
KCC 9.04.120	Drainage facilities accepted by King County	No Equivalent	SeaTac generally does not accept stormwater facilities unless they are constructed in the public ROW
K.C.C. 9.05.050	Drainage review - requirements	Not Applicable	King County Code section does not exist. Presumed typo. See KCC 9.04.050
KCC 9.12	Prohibited discharges in the Water Quality Section	12.12	
KCC 9.12	Water Quality	12.12	
KCC 9.12	Water Quality: Stormwater Pollution Prevention Manual Adoption	No Equivalent	Adopted via SeaTac Addendum to KCSWDM
KCC 16.62	Erosion and Sediment Control	Not Applicable	King County Code section does not exist. Presumed typo. See KCC 16.82 below.
KCC 16.82	Clearing and Grading Code: Bridge Design	No Equivalent	In the absence of City standards for bridge design, the City will rely on King County standards
KCC 16.82	Clearing and Grading Code: Clearing Limit	13.190.150	
KCC 16.82.095(A)	Erosion and sediment control standards-seasonal limitation period	No Equivalent	In the absence of City standards for seasonal construction limitations, the City will rely on King County standards
KCC 16.82.100(F)	Grading Standards: Preservation of Duff Layer	No Equivalent	In the absence of City standards for preservation of the duff layer, the City will rely on King County standards
KCC 16.82.100(G)	Grading Standards: Soil Amendments	No Equivalent	In the absence of City standards for soil amendments, the City will rely on King County standards

King County Code Reference	Subject of Reference	SMC Equivalent	Comment
KCC 16.82.150	Clearing standards for individual lots in the rural zone	Not Applicable	SMC does not contain rural zoning classification
KCC 16.82.150 (C)	Clearing standards for individual lots in the rural zone	Not Applicable	SMC does not contain rural zoning classification
KCC 20.20	Land Use Review Procedures	16A	
KCC 21A	Critical Areas Requirements	15.30	
KCC 21A	Definitions: Critical Aquifer Recharge Area	15.30.370	
KCC 21A	Definitions: Erosion Hazard Area	15.10.245	
KCC 21A	Definitions: Flood Hazard Area	15.10.267	
KCC 21A	Definitions: Landslide Hazard Area	No Equivalent	SMC does not contain an equivalent definition
KCC 21A	Definitions: Steep Slope Hazard Area	15.10.613	
KCC 21A	Definition: Structure	15.10.631	
KCC 21A.06	Critical Aquifer Recharge Area	15.30.370	
KCC 21A.06	Definitions: Flood, Erosion, Steep Slope Hazard Areas	15.10	
KCC 21A.06	Definitions: Flood Hazard Area	15.10.267	

King County Code Reference	Subject of Reference	SMC Equivalent	Comment
KCC 21A.06	Definitions: (Nonconversion) Forest Practices	Not Applicable	City of SeaTac only reviews Type IV - Conversion, forest practice permits
K.C.C. 21A.06.1340	Urban planned development land use designation	Not Applicable	SMC contains no equivalent comprehensive plan land use designation
KCC 21A.08	Definitions: Land Zoned for Agriculture (A zoned lands)	Not Applicable	SMC does not contain agricultural zoning classification
KCC 21.A12	Definitions: Urban Residential Development	Not Applicable	SMC contains no equivalent comprehensive plan land use designation
KCC 21A.12.030	Impervious Surface Coverage	15.13.111	
KCC 21A.12.030	Impervious Surface Coverage for Residential Subdivisions	15.15.180	
KCC 21A.14.180	Onsite recreational space	15.19.500, 15.23.350, 15.35.400, 15.38.500, 15.39.400 & 14.21.010(E)	
KCC 21A.14.180.D	21A.14.180 On-site recreation - space required.	15.19.500, 15.23.350, 15.35.400, 15.38.500, 15.39.400 & 14.21.010(E)	
KCC 21A.24	Critical Areas Code: 100-Year Floodplain	15.30.210	
KCC 21A.24	Critical Areas Code: Bridge Design	No Equivalent	In the absence of City standards for bridge design, the City will rely on King County standards
KCC 21A.24	Critical Areas Code: Bridge pier and abutment locations	No Equivalent	In the absence of City standards for bridge and pier location, the City will rely on King County standards

King County Code Reference	Subject of Reference	SMC Equivalent	Comment
KCC 21A.24	Critical Areas Code: Building Setbacks	15.30.190	
KCC 21A.24	Critical Areas Code: Channel Migration Zone	No Equivalent	In the absence of City standards for channel migration zones, the City will rely on King County standards
KCC 21A.24	Critical Areas Code: Definition Streams	15.10.620	
KCC 21A.24	Critical Areas Code: Definition Wetlands/Wetland Soils	15.10.675	
KCC 21A.24	Critical Areas Code: Fish Passage Requirements	15.30.350	
KCC 21A.24	Critical Areas Code: Flood Hazard Area regulations	15.30.200 - 15.30.250	
KCC 21A.24	Critical Areas Code: Floodplain/Floodway Delineation	15.30.200 - 15.30.250	
KCC 21A.24	Critical Areas Code: Floodplain Data	15.30.200 - 15.30.250	
KCC 21A.24	Critical Areas Code: Flood Protection facility	No Equivalent	In the absence of City standards for flood protection facilities, the City will rely on King County standards
KCC 21A.24	Critical Areas Code: Notice on Title	15.30.170	
KCC 21A.24	Critical Areas Code: Regulation of Wetlands	15.30.290 - 15.30.330	
KCC 21A.24	Critical Areas Code: zero-rise and compensatory storage provisions	No Equivalent	In the absence of City standards for zero-rise and compensatory storage, the City will rely on King County standards

King County Code Reference	Subject of Reference	SMC Equivalent	Comment
KCC 21A.24	Definitions: Critical Area Ordinance (CAO)	15.30	See - Environmentally Sensitive Areas Code
KCC 21A.24	Farm Management Plans	Not Applicable	The City does not have Farm Management Plan code.
KCC 21A.24	Floodplain Development Standards: Bridges	No Equivalent	In the absence of City standards for bridge design, the City will rely on King County standards
KCC 21A.24	Notice on Title: Erosion Hazard Areas	15.30.170	
KCC 21A.24	Rural Stewardship Plan or Farm Management Plan	Not Applicable	The City does not have Rural Stewardship Plan code.
KCC 21A.24	Sensitive Area	15.10.564	
KCC 21A.24	Sensitive Area Tract	15.30.180	
KCC 21A.24.100	Critical Area Review	15.30.100	
KCC 21A.24.110	Critical Area Reports	15.30.110 - 15.30.120	
KCC 21A.24.170	Notice on Title	15.30.170	
KCC 21A.24.230	Floodplain and Flood Hazard Areas	15.30.210 - 15.30.250	
KCC 21A.24.270	Notice on Title	15.30.170	
KCC 21A.24.275	channel migration zone development standards	No Equivalent	In the absence of City standards for development in the channel migration zone, the City will rely on King County standards
K.C.C. 21A.38	Property-specific development standards or special district overlays	15.28	

King County Code Reference	Subject of Reference	SMC Equivalent	Comment
K.C.C. 23.20	Code Compliance: Citations	1.15.065	
K.C.C. 23.24	Code Compliance: Notice and Orders	1.15.120 - 1.15.140	
K.C.C. 23.28	Code Compliance: Stop Work Orders	1.15.120 - 1.15.140	
KCC 23.40	Code Compliance: Liens references on declaration of covenants form	1.15.200	
KCC 25	Shoreline Management: Bridge Design	No Equivalent	In the absence of City standards for bridge design, the City will rely on King County standards

Reference Materials

This section identifies which reference materials provided in the 2009 KCSWDM are applicable and which are not. It also identifies if equivalent City of SeaTac reference materials are available.

Notes:

- 1) *Reference materials that have been struck through (i.e. ~~struck through~~) are not applicable to projects in the City of SeaTac.*
- 2) *Reference materials that have been struck through and highlighted (i.e. ~~struck through and highlighted~~) are not applicable, however equivalent City of SeaTac documents are available through the Public Works Department, Development Services Section.*

~~1. KCC 9.04 Surface Water Runoff Policy~~

~~2. Adopted Critical Drainage Areas~~

~~3. Other Adopted Area Specific Drainage Requirements~~

~~A. RA Zone Clearing Restrictions~~

4. Other Drainage Related Regulations and Guidelines

- A. Grading Code Soil Amendment Standard
- B. Clearing & Grading Seasonal Limitations
- C. Landscape Management Plan Guidelines
- D. Shared Facility Maintenance Guidance

5. Wetland Hydrology Protection Guidelines

6. Hydrologic/Hydraulic Design Methods

- A. EPA Infiltration Rate Test
- B. Pond Geometry Equations

7. Engineering Plan Support

- A. King County Standard Map Symbols
- B. Standard Plan Notes and Example Construction Sequence
- C. Stormfilter Access and Cartridge Configuration

8. Forms and Worksheets

- A. Technical Information Report (TIR) Worksheet
- B. Offsite Analysis Drainage System Table
- C. Water Quality Facility Sizing Worksheets
- D. Flow Control and Water Quality Facility Summary Sheet and Sketch
- E. CSWPPP Worksheet Forms
- F. Adjustment Application and Process Guidelines
- ~~G. Dedication and Indemnification Clause- Final Recording~~
- ~~H. Bond Quantities Worksheet~~
- ~~I. Maintenance and Defect Agreement~~
- ~~J. Drainage Facility Covenant~~
- ~~K. Drainage Release Covenant~~
- ~~L. Drainage Easement~~
- ~~M. Flow Control BMP Covenant~~
- ~~N. Impervious Surface Limit Covenant~~
- ~~O. Clearing Limit Covenant~~
- ~~P. River Protection Easement~~
- Q. Leachable Metals Covenant

~~9. Interim Changes to Requirements~~

10. King County Identified Water Quality Problem

Additional Reference Materials



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Northwest Regional Office • 3190 160th Avenue SE • Bellevue, Washington 98008-5452 • (425) 649-7000

July 23, 2003

Mr. David Masters, Project Coordinator
Des Moines Creek Regional Detention Facility Planning Committee
P.O. Box 4008
Seattle, WA 98194

Dear Mr. Masters;

Re: Hydrologic Analysis of the Des Moines Creek Regional Detention Facility

We have reviewed the following reports submitted by you on behalf of the members of the Des Moines Creek Planning Committee:

- *Hydrologic Analysis of the Des Moines Creek Regional Detention Facility Using HSPF*
- *Des Moines Creek Regional Capital Improvement Project, Preliminary Design Report (including the Alternatives Analysis, Alternative Analyses Addendum, and Appendices A, B, D, and E).*
- *Des Moines Creek Basin Plan*

We find that these documents are responsive to the Department of Ecology's *Stormwater Management Manual for Western Washington, Appendix A, Guidance for Altering the Minimum Requirements Through Basin Planning*. The information submitted provides sufficient technical data to justify an alternative to the department's recommended minimum requirement for flow control within the Des Moines Creek Watershed. The alternative receiving the department's concurrence requires the implementation of three recommendations from the subject reports:

- A Des Moines regional detention facility in the Tyee Golf Course at the southern end of Sea-Tac airport, north of South 200th St., including two new stormwater detention ponds referred to as the Northwest Pond and the Approach Light Road Pond, as further described in the documents.
- Two bypass pipelines; a 48-inch diameter line to carry flow from the existing Tyee Regional Stormwater Pond to the Northwest Pond, and a 30-inch diameter line from the Tyee Pond to an abandoned sanitary sewer line that will be refurbished to carry stormwater to Puget Sound.

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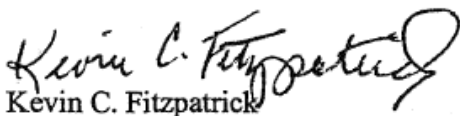
- Application of the King County Runoff Time Series (KCRS) flow model or other DOE approved models, the King County Level 1 flow control standard, and the 1994 land use condition as the pre-developed condition for sizing flow control facilities for new development and redevelopment once the regional facilities and bypass lines are constructed and operational.

This concurrence should not be construed as the issuance of the necessary permits for construction of the above projects.

Because the planning documents do not provide alternative recommendations to the water quality treatment guidance provided in the 2001 Stormwater Management Manual for Western Washington, the Department of Ecology encourages the local governments to use the manual recommendations for new development and redevelopment. In addition, the Department encourages the Basin Committee to continue planning to address the existing water quality problems of the creek. The chemical parameters identified in the planning documents that exceed applicable water quality standards include: fecal coliform bacteria, temperature, dissolved copper and zinc. In addition, because of the relatively urbanized nature of the watershed, it is likely that concentrations of various polycyclic aromatic hydrocarbons and pesticides are periodically problematic.

We congratulate the local governments on their foresight, determination, and commitment to identify and implement a strategy that should give Des Moines Creek and its biologic resources a much improved chance at not only surviving, but thriving.

Sincerely,



Kevin C. Fitzpatrick
Water Quality Manager
Northwest regional Office

KCF:ha:jc

Cc: Donald Althaus, P.E., King County
Ed O'Brien, P.E., DOE, Water Quality, HQ
Ed Abbasi, Water Quality, NWRO

Soil Amendment Requirements
[King County Clearing and Grading Code 16.82.100 (F) & (G)]

F. The duff layer and native topsoil shall be retained in an undisturbed state to the maximum extent practicable. Any duff layer or topsoil removed during grading shall be stockpiled on-site in a designated, controlled area not adjacent to public resources and critical areas. The material shall be reapplied to other portions of the site where feasible.

G.1. Except as otherwise provided in subsection G.2. of this section, areas that have been cleared and graded shall have the soil moisture holding capacity restored to that of the original undisturbed soil native to the site to the maximum extent practicable. The soil in any area that has been compacted or that has had some or all of the duff layer or underlying topsoil removed shall be amended to mitigate for lost moisture-holding capacity. The amendment shall take place between May 1 and October 1. The topsoil layer shall be a minimum of eight inches thick, unless the applicant demonstrates that a different thickness will provide conditions equivalent to the soil moisture-holding capacity native to the site. The topsoil layer shall have an organic matter content of between five to ten percent dry weight and a pH suitable for the proposed landscape plants. When feasible, subsoils below the topsoil layer should be scarified at least four inches with some incorporation of the upper material to avoid stratified layers. Compost used to achieve the required soil organic matter content must meet the definition of "composted materials" in WAC 173-350-220.

G2. This subsection does not apply to areas that:

- a. Are subject to a state surface mine reclamation permit; or
- b. At project completion are covered by an impervious surface, incorporated into a drainage facility or engineered as structural fill or slope. (King County Ord. 16267 § 5, 2008: Ord. 15053 § 10, 2004: Ord. 13190 § 4, 1998: Ord. 3108 § 8, 1977: Ord. 1488 § 11, 1973).

Mapping

City of SeaTac equivalents to the Flow Control Applications Map and the Water Quality Applications Map are attached. In lieu of a SeaTac equivalent to the County Landslide Hazard Drainage Areas Map, the City will rely on King County's map.