



2008 Stormwater Management Program



King County

Department of
Natural Resources and Parks

Water and Land Resources Division

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INTRODUCTION

The Stormwater Management Program (SWMP) describes King County's (County) proposed compliance with Special Condition 5 (S5) of the Washington State Department of Ecology's (Ecology) National Pollutant Discharge Elimination System (NPDES) Phase I Municipal Stormwater Permit (Permit) issued on January 16, 2007.

Ecology first issued the County a municipal stormwater Permit in 1995. The 2007 Permit requires the County to significantly increase its level of effort and funding in this area, and includes a compliance timetable that began in 2007. This SWMP primarily focuses on the County's proposed 2008 compliance actions.

The Permit impacts the County in a number of its roles.

1. As the local land use authority for the unincorporated area, the County must have appropriate codes, regulations, enforcement, and education capacity to reduce water-polluting practices and to increase or promote practices that protect water quality.
2. As a landowner and property manager, the County must ensure that its own practices meet the regulatory standards.
3. As a local government that strives to protect the environment, the County must implement a monitoring program that identifies stormwater pollutants and the effectiveness of commonly used best management practices (BMPs). It must also study program challenges to find more effective, affordable BMPs.
4. As a regional government the County must work at an unprecedented level of coordination with other municipalities, and with the various departments within county government.

Ecology's 2007 Permit contains ten required program components. The County must increase its efforts in components two through nine. For convenience, and to comply with S5.A.1, the County's SWMP is organized by these ten permit components.

1. Legal Authority. Codes and regulations must be in place giving the County the power to control discharges to its storm drain system. (This requirement is essentially identical to the comparable requirement of the 1995 Permit.)
2. Mapping. The previous Permit allowed ongoing mapping with no well-defined deadlines. Under the 2007 Permit, the County must meet specific schedules for completing various components of the separate storm sewer mapping.
3. Intra-governmental Coordination. The previous Permit required—but did not define—coordination. The County must now have a written intra-governmental coordination agreement in addition to intergovernmental coordination mechanisms.
4. Public Involvement. Under the previous permit, the SWMP covered the entire permit term and public involvement was required only during the initial development process.

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Now, each year the County's SWMP will be updated, and the public must have an opportunity for a role in SWMP's development and implementation.

5. Control of runoff from new development, redevelopment and construction sites. The County must use drainage design and source control rules equal to those in Ecology's 2005 manual and must meet newly established standards for staff training and inspections. Under the new permit all County development projects (including those located in other jurisdictions) must comply with the County's equivalent manual if it is more stringent than that of the jurisdiction in which the development is occurring.
6. Structural Stormwater Controls. The County must provide more detail about the goals of capital projects aimed at reducing the quantity and quality impacts of stormwater from past, present and future land development, and the estimated benefits of those projects must be quantified.
7. Source Control Program for Existing Development. County source control BMPs must be equivalent to those in Ecology's 2005 manual, and standards for staff training must be set. The new permit also requires a much more aggressive program for identifying and inspecting pollution-generating sites.
8. Illicit Connections and Illicit Discharges Detection and Elimination (IDDE). The County must have more stringent water quality codes, set staff training standards, and a more aggressive program (including enforcement timelines).
9. Operation and Maintenance Program. County maintenance standards must be equal to those in the 2005 Ecology manual, and standards must be developed for practices that are not covered. Rigorous maintenance schedules and cleaning standards are required, and stormwater pollution prevention plans (SWPPPs) are now required for sites that did not previously need them. Staff training standards are established.
10. Education and Outreach Program. Target audiences and topics are specified, along with a requirement to attempt to measure program effectiveness and work regionally. The previous permit required only the existence of a program.

The 2007 Permit also requires a monitoring program to identify pollutants in stormwater, and assess the effectiveness of commonly used control facilities, and provide ideas for improving stormwater management. The 2007 Permit's annual reporting requirement is much more standardized and specific than the previous Permit's requirements.

Nearly all sectors of County government are participating in the new SWMP.

- The Department of Natural Resources and Parks (DNRP), through the Water and Land Resources Division (WLRD) is charged with coordinating the SWMP and annual reporting. WLRD also manages the coordination, public involvement, manual equivalency, structural stormwater control, and public education portions of the SWMP, and has a significant role in the County's source control, IDDE, and operations and maintenance programs. WLRD will be designing and conducting much of the training that is required, including training for some of its own staff.

- Many divisions manage and develop properties and facilities that are not covered under other NPDES permits. These divisions include Wastewater Treatment, Solid Waste, Parks, Roads Maintenance, Transit, the King County International Airport, Facilities Maintenance, and the Sheriff's Office. Drainage facilities on those lands must be mapped, designed, and maintained in a manner consistent with permit requirements, and King County's source control BMPs for pollutant-generating activities must be used. Some staff training requirements also apply. SWPPPs must be prepared. The Roads Maintenance Division also leads the mapping program and will partner with WLRD on developing required training.
- The Department of Development and Environmental Services is responsible for ensuring the equivalent manual requirements are applied to new and re-development. For the County this action includes not just the Surface Water Design and Stormwater Pollution Prevention manuals but also related codes, which are applied to new and re-development within the confines of state vesting law.
- The Department of Public Health – Seattle & King County's wastewater program has oversight of onsite sewage systems throughout King County. Corrective actions are taken where there is evidence indicating failing onsite systems are introducing contaminants into stormwater systems. In addition, Public Health regulates and inspects a variety of businesses located throughout the county, and can identify potential illicit discharges or connections to the stormwater system.

Many of the necessary permit compliance activities are conducted by WLRD and financed through the County's [Surface Water Management Fee \(SWM Fee\)](http://dnr.metrokc.gov/wlr/surface-water-mgt-fee/index.htm)[<http://dnr.metrokc.gov/wlr/surface-water-mgt-fee/index.htm>]. The necessary increases in effort in 2008 for permit compliance have been budgeted and are proceeding as described.

However, future increases in required effort have not yet been budgeted and will be particularly challenging as the County's Surface Water Management (SWM) fee revenues decline as a result of planned annexations of urban areas. Although the need for the County to provide permit-required services in these areas will be eliminated as they are assumed by the annexing city, the loss in service costs is typically less than the loss in revenue collected. This is because only a portion of the service costs is for direct services to specific areas. Many costs (such as those for SWMP tracking, updating, and reporting; coordination; public involvement; updating regulations; monitoring, etc.) apply to the municipality as a whole, regardless of size.

Even after annexations occur, the County's remaining unincorporated area will continue to have some higher-density areas (more than one dwelling unit/acre) that require suburban levels of service. Consequently, the County will continue to need to fund the more traditional stormwater management services required by the Permit.

In addition, as single-lot and lower-density subdivision development continues in the rural area, there will be an overall increase in more nontraditional stormwater controls. These include forest retention and other low-impact development techniques such as flow dispersion and reduced impervious surface. These new features will require periodic inspection by the County to ensure new types of controls are maintained and so will add to the challenges of future funding for Permit compliance.

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WLRD plans to revise its business plan in 2008 to address these future challenges in funding Permit compliance and other stormwater needs.

S5. STORMWATER MANAGEMENT PROGRAM

Preface

The County has provided effective programs to manage stormwater runoff caused by land development for more than 20 years. The goal of these programs is to protect people and natural resources from damage caused by uncontrolled runoff and pollutants in stormwater. Where such damage has already occurred the County's goal is to repair that damage.

When land is cleared, compacted, or covered with hard (impervious) surfaces as it is developed, rainfall and melting snow flow across the land surface instead of seeping into the surface soils and ultimately entering the groundwater. As this surface water runoff, or stormwater, flows across the landscape, it typically picks up various pollutants, including pesticides, fertilizers, pet wastes, oils and metals from vehicles, and many other chemicals. These pollutants enter surface waters and disrupt ecosystem processes, and in some cases also threaten public health. Runoff can also cause erosion, create higher peak flows and velocities in streams and rivers in winter and, because of reduced infiltration, create lower, often slower flows in summer.

Stormwater does not recognize jurisdictional boundaries. As a result, the problems created by stormwater are larger than any one jurisdiction or agency within a jurisdiction. To this end, the County has had, and continues to have, a strong commitment to inter- and intra-governmental coordination. Stormwater was recently identified as one of the leading contributors to the decline of Puget Sound. To address this issue, the County and the other jurisdictions that share the Puget Sound basin must make an unprecedented effort to coordinate their stormwater management activities.

The SWMP that follows describes the actions the County is taking in 2008 to avoid, reduce, and repair damages caused by the quantity and quality of stormwater runoff. In addition to the actions the County takes primarily to achieve the goals of its stormwater management program, the SWMP includes descriptions of other management actions that the County implements primarily for other purposes but that also help solve stormwater problems. For example, forestry programs, protection of critical areas, clearing and grading regulations, purchase of open space, and restoration of Chinook habitat all address some aspects of stormwater damage even though the primary reason for them is related to land use and other public purposes.

The SWMP has been prepared according to sections S5.A., B., and C. of the NPDES and State Waste Discharge General Permit for Discharges from Large and Medium Municipal Separate Storm Sewer Systems, Permit Number WAR04-4501.

Section S5.C. contains the ten required program components. Each component has several required goals that are indicated with a lower-case "a" (e.g., S5.C.1.a.). Each goal's compliance performance measures are indicated with a lower-case "b", (e.g., S5.C.1.b.). For the most part, the passages describing the County's compliance program are found only in the "b," or performance measure portions. For reference and convenience, the NPDES permit language is shown in italic text, followed by the County's proposed compliance shown in regular text.

S5.A.

Each permittee listed in S1.B. shall implement a Stormwater Management Program (SWMP) during the term of this permit. For the purpose of this permit a stormwater management program is a set of actions comprising the components listed in S5.C. and additional actions and activities, where necessary, to meet the requirements of S7 Compliance with Total Maximum Daily Load Requirements.

S5.A.1.

In accordance with the requirements in S9 Reporting Requirements, each Permittee shall prepare written documentation of their SWMP and submit it to Ecology in written and electronic formats with the first year annual report. The documentation of the SWMP shall be organized according to the program components in S5.C., and shall be updated annually. The SWMP documentation shall include a description of each of the program components included in S5.C., and any additional actions necessary to meet the requirements of applicable TMDLs.

S5.B.

The SWMP shall be designed to reduce the discharge of pollutants from MS4s to the maximum extent practicable, meet state AKART requirements, and protect water quality.

Permittees are to continue implementation of existing stormwater management programs until they begin implementation of the updated stormwater management program in accordance with the terms of this permit, including implementation schedules.

S5.C.

The SWMP shall include the components listed below. The requirements of the stormwater management program shall apply to municipal separate storm sewers, and areas served by municipal separate storm sewers owned or operated by the Permittee. To the extent allowable under state and federal law, all SWMP components are mandatory.

S5.C.1. Legal Authority

S5.C.1.a.

No later than the effective date of this permit, each Permittee shall be able to demonstrate that they can operate pursuant to legal authority which authorizes or enables the Permittee to control discharges to and from municipal separate storm sewers owned or operated by the Permittee.

S5.C.1.b.

This legal authority, which may be a combination of statute, ordinance, permit, contracts, orders, interagency agreements, or similar means, shall authorize or enable the Permittee, at a minimum, to:

S5.C.1.b.i.

Control through ordinance, order, or similar means, the contribution of pollutants to municipal separate storm sewers owned or operated by the Permittee from stormwater discharges associated with industrial activity, and control the quality of stormwater discharged from sites of industrial activity;

S5.C.1.b.ii.

Prohibit through ordinance, order, or similar means, illicit discharges to the municipal separate storm sewer owned or operated by the Permittee;

S5.C.1.b.iii.

Control through ordinance, order, or similar means, the discharge of spills and the dumping or disposal of materials other than stormwater into the municipal separate storm sewers owned or operated by the Permittee;

King County Code (KCC) 9.12 has the basis for the County's water quality compliance program since 1992 and addresses S5.C.1.b.i. through iii by prohibiting the discharge of any contaminants into surface and stormwater.

http://www.kingcounty.gov/council/legislation/~media/Council/documents/Clerk/Code/12_Title_9.ashx

S5.C.1.b.iv.

Control through interagency agreements among co-applicants, the contribution of pollutants from one portion of the municipal separate storm sewer system to another portion of the municipal separate storm sewer system;

The County is a co-permittee only with the City of Seattle (City) for the Densmore Basin. The County's obligations to the City in that basin are summarized in a Memorandum of Agreement dated September 25, 1995. The County and the City are discussing an update of the agreement in light of the new Permit.

S5.C.1.b.v.

Require compliance with conditions in ordinances, permits, contracts, or orders; and,

King County Code 9.12.045-9.12.080 authorizes implementation and enforcement of Chapter 9.12. King County Code Title 23 provides supplementary authority for the implementation and enforcement of code.

http://www.kingcounty.gov/council/legislation/~media/Council/documents/Clerk/Code/12_Title_9.ashx

http://www.kingcounty.gov/council/legislation/~media/Council/documents/Clerk/Code/32_Title_23.ashx

S5.C.1.b.vi.

Within the limitations of state law, carry out all inspection, surveillance, and monitoring procedures necessary to determine compliance and non-compliance with permit conditions, including the prohibition on illicit discharges to the municipal separate storm sewer and compliance with local ordinances.

The Department of Development and Environmental Services (DDES) performs the inspections and enforcement related to County-issued Permit conditions. DNRP, through the Stormwater Services Section of the Water and Land Resources Division, performs the inspections and enforcement related to the prohibition of illicit discharges, also known as King County Code 9.12. The Solid Waste Division of DNRP inspects the sites they own or operate for BMP performance and the detection of illicit discharges. More detail on these programs is provided under S5.C.5., S5.C.7. and S5.C.8.

http://www.kingcounty.gov/council/legislation/~media/Council/documents/Clerk/Code/12_Title_9.ashx

S5.C.2. Municipal Separate Storm Sewer System Mapping and Documentation

S5.C.2.a.

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

S5.C.2.b.

Minimum performance measures. The information and its form of retention shall include:

S5.C.2.b.i.

No later than 2 years from the effective date of this permit each Permittee shall map all known municipal separate storm sewer outfalls and receiving waters, and structural stormwater treatment and flow control BMPs owned, operated, or maintained by the Permittee. Mapping of outfalls and structural BMPs shall continue on an on-going basis as additional outfalls are found, and as new BMPs are constructed or installed. No later than 2 years from the effective date of this permit each permittee shall initiate a program to map connection points between municipal separate storm sewers owned or operated by the Permittee and other municipalities or other public entities.

To comply with the first NPDES Permit, the County initiated a program to map its Municipal Separate Storm Sewer System (MS4). This mapping includes pipe outfalls and connections between the County's system and those of other public entities. Complete mapping of the existing system should be completed by 2009. In addition, the County has a program in place to add additions to the system after they receive final construction approval. The mapping is done by the King County Roads Maintenance Section (KCRMS) of the Road Services Division (RSD) of the King County Department of Transportation (KCDOT) and is being placed into a geo-database using King County's Geographic Information System (GIS) layers.

To meet the requirements of the 2007 Permit the County is transitioning the old data to a geo-database that will allow the inclusion of any drainage system information the County may need. Receiving waters have already been mapped and are available on separate GIS layers. Structural stormwater BMPs have been mapped and new facilities are added as they are accepted into the County's inventory. The facility information is contained on a GIS layer maintained by WLRD. MS4 also includes facilities controlled by other County agencies that are not presently included in the central GIS layers. By the end of the permit term the County plans to create a master MS4 map that includes all County-owned or -operated drainage facilities. A description of some of these other facilities and their separate mapping programs follows.

KCRMS has an ongoing program for field mapping the drainage system within the county road right of way (ROW). Current collection methods include Geographic Positioning System (GPS) surveys on foot, aggregation of data from as-built plans, and data collection from mobile mapping vans. Presently one or two crews are deployed for mapping throughout the year as conditions permit. Additional field staff may be required in 2009/2010. In the rural area, agricultural ditches connect to the MS4 and provide additional conveyance and storage capacity. WLRD's Agricultural Drainage Assistance Program (ADAP) assists in the restoration of function to these facilities and maps them as they are located or restored. When the ability to provide additional conveyance and storage capacity

is compromised, those functions must be restored. The functions are usually compromised because the ditches are relatively flat and tend to fill with dirt. This data is stored in the Watercourse layer of the County's GIS system

DNRP's Parks and Recreation Division (KCPR) has developed stormwater system drawings for its active recreation parks and developed parking lots. These drawings show each park's stormwater system including stormwater treatment and flow control structures and outfalls. KCPR is currently field checking these drawings and will provide information to KC DNRP Stormwater Services Section (SWS) for inclusion in the master MS4 map by April 2008.

KCPR has over 175 miles of regional trails primarily along river valleys. There are several hundred culverts that flow underneath these trails and these culverts are often the last stormwater structure before runoff enters a regulated waterbody. KCPR usually owns only the trail and its associated right-of-way (ROW) and does not own any other portion of the tributary area contributing to this stormwater runoff. Therefore, the runoff associated with trails may actually originate within the jurisdiction of incorporated municipalities or the state. The trail culverts are not stormwater treatment or flow control structures and are usually found along the edge of regional trails. KCPR plans to begin mapping these culverts during 2008. This mapping information will be provided to DNRP SWS for inclusion in the master MS4 map.

KCPR owns over 20,000 acres of natural areas/open space lands primarily used for hiking and mountain biking. KCPR maintains culverts along creeks. There are also many culverts associated with back-country hiking trails. KCPR is not planning to map the natural area or back-country culverts, but will map major culverts that are part of a stream or other waterbody.

The Transit Division of KCDOT (Transit) currently has two mapping resources providing overlapping coverage of its properties. The first of these consists of Transit's set of as-built drawings for its properties. These drawings somewhat reliably depict stormwater drainage and treatment units at the covered sites. These same drawings often also include information on water lines, sewer lines, power lines and other utilities. These as-built drawings have been scanned into the network computers for ready access by anyone with permission from the network administrator.

The second mapping resource is a set of site-verified maps produced by Transit's Environmental Compliance Office. These maps consist of stripped down CAD drawings that depict only the stormwater drainage system as it relates to certain landmarks such as bus shelters and curbing. The catch basins shown on these maps have been numbered to provide a fixed tracking basis for use in conducting drainage system inspections. Currently, these drawings have been prepared for all 50-plus Transit-managed park-and-ride lots and for the six sites covered by an Industrial Stormwater General Permit.

By September of 2008, the King County International Airport (Airport) will provide a copy of its stormwater drainage system for inclusion on the map of the overall King County system on GIS. The Airport drawings will show each of the details required in Section S5.C.2.b.i of the Permit.

The Airport's engineering staff currently maintains drawings of the Airport infrastructure including the stormwater system. The Airport will continue to keep an up-to-date drawing for compliance with S5.C.2.b.iii of the Permit.

The County's Wastewater Treatment Division (WTD) will provide WLRD with a list of all WTD facilities that have on-site stormwater management systems and will describe the type and nature of these systems. WTD will also provide a list of stormwater outfalls owned by the County.

S5.C.2.b.ii.

No later than 4 years from the effective date of this permit each Permittee shall map the attributes listed below for all storm sewer outfalls with a 24" inches nominal diameter or larger, or an equivalent cross-sectional area for non-pipe systems. For Counties, the mapping shall be done within urban/higher density rural sub-basins. For Cities, the mapping shall be done throughout the City. Attributes mapped shall include: Land use, Tributary conveyances (indicate type, material, and size where known); and associated drainage areas.

WLRD and the Road Services Division of KCDOT (RSD) will work together to create this map by 2011. Much of the data exist and additional information will be collected, including pipe size and type. The urban/higher density rural sub-basins have already been identified. To date, the effort has focused on the rural higher-density drainage basins because they have significant road maintenance activity and are not likely candidates for annexation. That general approach will continue.

S5.C.2.b.iii.

Each Permittee shall initiate a program to develop and maintain a map of all connections to the municipal separate storm sewer authorized or allowed by the Permittee after the effective date of this permit.

The County has a program that identifies new connections to the MS4 through building permit records. Electronic maps of newly constructed drainage systems that will be owned by the County are required as part of permit review. Private connections allowed under new permits will be manually added to the GIS map of the County's MS4. RSD is responsible for updating these maps.

S5.C.2.b.iv.

Each Permittee shall map existing, known connections over 8" to municipal separate storm sewers tributary to all storm sewer outfalls with a 24" inches nominal diameter or larger, or an equivalent cross-sectional area for non-pipe systems, according to the following schedule:

- *City of Seattle and City of Tacoma: 2 years after the effective date of this permit.*
- *Clark, King Pierce and Snohomish Counties: one half the area of the County within urban/higher density rural sub-basins 4 years after the effective date of this permit.*

Connections to the County's MS4 are being mapped under its existing program. The County plans to complete mapping of half the area within urban/higher density rural subbasins by 2011.

S5.C.2.b.v.

No later than 4 years from the effective date of this permit each Permittee shall map geographic areas served by the Permittee's MS4 that do not discharge stormwater to surface water.

The location of all of WLRD's flow control and treatment facilities has been mapped in GIS. The County will use its database to identify those retention/infiltration facilities that do not discharge to surface water. (No facilities are allowed to discharge to sanitary sewer systems.) After the facilities are identified, the tributary areas will be determined and mapped. This work will be completed by 2011.

S5.C.2.b.vi.

To the extent consistent with national security laws and directives, each Permittee shall make available to Ecology, upon request, available maps depicting the information required in S5.C.2.b.i. through v., above. The preferred format of submission will be an electronic format with fully described mapping standards. An example description is available on Ecology's website. Notification of updated GIS data layers shall be included in annual reports.

S5.C.2.b.vii.

Upon request, and to the extent appropriate, Permittees shall provide mapping information to Co-Permittees and Secondary Permittees. This permit does not preclude Permittees from recovering reasonable costs associated with fulfilling mapping information requests by Co-Permittees and Secondary Permittees.

The County is prepared to respond appropriately to the mapping requests of Ecology and any Co-Permittees and Secondary Permittees. Requests should be addressed to Luanne Coachman, King County NPDES Municipal Stormwater Permit Coordinator, 201 S. Jackson Street, Suite 600, Seattle, WA 98104-3855, or by e-mail at luanne.coachman@kingcounty.gov.

S5.C.3. Coordination

S5.C.3.a.

The SWMP shall include coordination mechanisms among departments within each jurisdiction to eliminate barriers to compliance with the terms of this permit. The SWMP shall also include coordination mechanisms among entities covered under a municipal stormwater NPDES permit to encourage coordinated stormwater-related policies, programs and projects within a watershed.

S5.C.3.b.

Minimum performance measures:

S5.C.3.b.i.

No later than 1 year after the effective date of this permit, establish, in writing, and begin implementation of, intra-governmental (internal) coordination agreement(s) or Executive Directive(s) to facilitate compliance with the terms of this permit.

An order, signed by the County Executive, establishes the mechanism by which the various entities of County government will participate in permit compliance. The order was effective November 20, 2007 and may be read at the following website:

<http://www.kingcounty.gov/operations/policies/executive/utilitiesaeo/put819aeo.aspx>

S5.C.3.b.ii.

No later than 2 years after the effective date of this permit, or within 2 years following the addition of a new Secondary Permittee, establish:

- *Coordination mechanisms clarifying roles and responsibilities for the control of pollutants between physically interconnected MS3s of the Permittee and any other Permittee covered by a municipal stormwater permit.*
- *Coordinating stormwater management activities for shared waterbodies, among Permittees and Secondary Permittees, to avoid conflicting plans, policies and regulations.*

Permittees shall document their efforts to establish the required coordination mechanisms. Failure to effectively coordinate is not a permit violation provided other entities, whose actions the Permittee has no or limited control over, refuse to cooperate.

The County is instrumental in convening, supporting, and participating in numerous regional forums with other municipalities to develop and implement collaborative stormwater management programs. These forums include STORM (for public education and outreach), ROAD MAP (an operations and maintenance forum that includes committees addressing Illicit Discharge Detection and Elimination and mapping), a permit coordinators' forum, and a colloquium of the Phase I permittees.

The County also supports and participates in the planning and conservation activities of Water Resource Inventory Area (WRIAs) 7, 8, 9, and 10, the Puget Sound Partnership, and Ecology's Collaborative Monitoring Group, as well as collaborative planning and stormwater-related improvements for the Salmon, Miller, Walker, Des Moines, and Juanita Creek

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Basins. The relationships established in these groups will form the basis for the timely coordination mechanisms and coordinated activities required above.

S5.C.4. Public Involvement and Participation

S5.C.4.a.

The SWMP shall provide ongoing opportunities for public involvement in the Permittee's stormwater management program and implementation priorities.

S5.C.4.b.

Minimum performance measures:

S5.C.4.b.i.

No later than 6 months after the effective date of this permit, develop and begin implementing a process to create opportunities for the public to participate in processes involving the development, implementation and update of the Permittee's SWMP. Each Permittee shall develop and implement a process for consideration of public comments on their SWMP.

For the 2008 SWMP, the County will offer an open house, informal survey, and public comment opportunities after the draft is published. An additional meeting with environmental stakeholders is planned for the spring during the County's budget process. An additional meeting later in the year is also under consideration. The public involvement process for the updated 2009 SWMP will be informed by our experience with, and comments on, the 2008 process.

S5.C.4.b.ii.

Each Permittee shall make their SWMP, the SWMP documentation required under S5.A.1. and all submittals required by this permit, including annual reports, available to the public, starting with the first annual report, on the Permittee's website or submitted in electronic format to Ecology for posting on Ecology's website.

The SWMP and required documentation will be available via [the King County Website](http://www.kingcounty.gov/environment/waterandland/stormwater) (<http://www.kingcounty.gov/environment/waterandland/stormwater>).

S5.C.5. Controlling Runoff from New Development, Redevelopment and Construction Sites

S5.C.5.a.

The SWMP shall include a program to prevent and control the impacts of runoff from new development, redevelopment, and construction activities. The program shall apply to private and public development, including roads.

S5.C.5.b.

Minimum performance measures:

S5.C.5.b.i.

The Minimum Requirements, thresholds, and definitions in Appendix 1, or Minimum Requirements, thresholds, and definitions determined by Ecology to be equivalent to Appendix 1, for new development, redevelopment, and construction sites shall be included in ordinances or other enforceable documents adopted by the local government. Adjustment and variance criteria equivalent to those in Appendix 1 shall be included. More stringent requirements may be used, and/or certain requirements may be tailored to local circumstances through the use of basin plans or other similar water quality and quantity planning efforts. Such local requirements and thresholds shall provide equal or similar protection of receiving waters and equal or similar levels of pollutant control as compared to Appendix 1.

The County will meet this performance requirement after minor amendments, requested by Ecology, are made in 2008 to our current adopted regulations for new development, redevelopment, and construction sites set forth in the following list:

[KCC 9.04 Surface Water Runoff Policy, KCC 9.12 Water Quality \(http://www.kingcounty.gov/council/legislation/~media/Council/documents/Clerk/Code/12_Title_9.ashx\)](http://www.kingcounty.gov/council/legislation/~media/Council/documents/Clerk/Code/12_Title_9.ashx),

[KCC 16.82 Clearing and Grading \(http://www.kingcounty.gov/council/legislation/~media/Council/documents/Clerk/Code/19_Title_16.ashx\)](http://www.kingcounty.gov/council/legislation/~media/Council/documents/Clerk/Code/19_Title_16.ashx),

[KCC 21A.24 Critical Areas \(http://www.kingcounty.gov/council/legislation/~media/Council/documents/Clerk/Code/29_Title_21A24_21A26.ashx\)](http://www.kingcounty.gov/council/legislation/~media/Council/documents/Clerk/Code/29_Title_21A24_21A26.ashx),

[the Surface Water Design Manual \(SWDM\) \(http://dnr.metrokc.gov/wlr/dss/manual.htm\)](http://dnr.metrokc.gov/wlr/dss/manual.htm),

[the Stormwater Pollution Prevention Manual \(http://dnr.metrokc.gov/wlr/dss/sppm.htm\)](http://dnr.metrokc.gov/wlr/dss/sppm.htm).

S5.C.5.b.ii.

The local requirements shall include a site planning process and BMP selection and design criteria that, when used to implement the minimum requirements in Appendix 1, will protect water quality, reduce the discharge of pollutants to the maximum extent practicable, and satisfy the state requirement under chapter 90.48 RCW to apply all known, available, and reasonable methods of prevention, control and treatment (AKART) prior to discharge. Permittees shall

document how the criteria and requirements will protect water quality, reduce the discharge of pollutants to the maximum extent practicable, and satisfy the state AKART requirements.

Permittees who choose to use the site planning process, and BMP selection and design criteria in the 2005 Stormwater Management Manual for Western Washington [SMMWW], or an equivalent manual approved by Ecology, may cite this choice as their sole documentation to meet this requirement.

The County chooses to adopt an equivalent manual approved by Ecology and hereby cites this choice as the sole documentation of compliance with this requirement. Assuming the KCSWDM achieves equivalency with the SMMWW, the Wastewater Treatment Division (WTD) will review all their design projects begun prior to June 2008 to assure that the designs are in compliance with the requirements of the KCSWDM. Additionally, WTD will review all their construction projects initiated after June 2008 to ensure that their staff is using and enforcing the KC Surface Water Pollution Prevention Manual (KCSWPPM) guidelines and provisions.

S5.C.5.b.iii.

The program must allow non-structural preventive actions and source reduction approaches such as Low Impact Development Techniques (LID), to minimize the creation of impervious surfaces, and measures to minimize the disturbance of soils and vegetation.

County codes allow, encourage and require the use of LID and measures to minimize the disturbance of soils and vegetation. The SWDM requires the use of a minimum amount of LID on most projects and allows LID to be used as the sole means of managing stormwater. The LID BMPs allowed include preserving native vegetation and limiting impervious surface. The grading code requires that where soil is disturbed, a minimum of 8 inches of soil having an organic content of 8-13% must be provided. The grading code also limits the amount of clearing that may be done on rural residential-zoned properties. The zoning code prohibits clearing in stream and wetland buffers and limits clearing on steep slopes.

The County meets this performance requirement as follows:

- KCC 9.04 and the SWDM require the application of LID techniques, called flow control BMPs, on nearly all new development and redevelopment projects that are subject to drainage review. These required flow control BMPs include both non-structural BMPs (e.g., native vegetation retention and reduced footprint, etc.) and structural BMPs (e.g., infiltration trenches, dispersion trenches, rain gardens, etc.).
- [KCC 16.82.050](#) imposes clearing restrictions on rural residential developments and requires preservation of the remaining native vegetation.
- [KCC 16.82.100](#) requires that clearing and grading activities minimize removal of the duff layer and native top soil and that disturbed soils be amended with compost or other organic matter to mitigate loss of soil moisture-holding capacity.

Additionally, [King County's Critical Areas Ordinance](#) allows modification of standard aquatic, wetland and wildlife habitat conservation area buffers and clearing limits on properties zoned Rural Area residential (RA) when landowners submit an approved Rural Stewardship Plan that includes LID strategies. WLRD's Office of Rural and Resource Programs (ORPP)

assists rural residents developing forest or agricultural lands to incorporate low-impact development alternatives. Rural Stewardship and Forest Plans promote minimal disturbance of native soils and vegetation. They decrease hydrologic changes by reducing development footprints and carefully siting developed areas, and by using on-site infiltration and dispersion techniques.

S5.C.5.b.iv.

No later than 18 months from the effective date of this permit, each Permittee shall adopt a local program that meets the requirements in S5.C.5.b.i through iii., above. Ecology review and approval of the local manual and ordinances is required. Permittees shall provide detailed, written justification of any of the requirements that differ from those contained in Appendix 1 of this permit.

The Permittee shall submit draft enforceable requirements, technical standards and manual to Ecology no later than 12 months after the effective date of this permit. Ecology will review and provide written response to the Permittee. If Ecology takes longer than 60 days to provide a written response, the required deadline for adoption will be automatically extended by the number of calendar days that Ecology exceeds a 60 day period for written response.

In the case of circumstances beyond the Permittee's control, such as litigation or administrative appeals that may result in noncompliance with the requirements of this section, the Permittee shall promptly notify Ecology and submit a written request for an extension.

The County has submitted its current enforceable requirements, technical standards, and manual to Ecology and has received initial feedback from Ecology staff about the equivalency of these regulations with the Ecology manual. Based on that feedback, the County plans to make minor amendments to its [Surface Water Design Manual](http://dnr.metrokc.gov/wlr/dss/manual.htm) (<http://dnr.metrokc.gov/wlr/dss/manual.htm>), [Stormwater Pollution Prevention Manual](http://dnr.metrokc.gov/wlr/dss/sppm.htm) (<http://dnr.metrokc.gov/wlr/dss/sppm.htm>), [KCC 9.04 Surface Water Runoff Policy](#), [KCC 9.12 Water Quality](#), and [KCC 16.82 Clearing and Grading](#). A draft of these amendments will be submitted to Ecology for review by the February 19, 2008 deadline of this performance requirement.

S5.C.5.b.v.

No later than 18 months after the effective date of this permit, the program shall establish legal authority to inspect private stormwater facilities and enforce maintenance standards for all new development and redevelopment approved under the provisions of this section.

The County currently meets this performance requirement through the following provisions:

- [KCC 9.04.120 Drainage facilities not accepted by King County for maintenance](#): A declaration of covenant granting King County authority to inspect private drainage facilities must be recorded at the time of development.
- [KCC 9.04.140 Administration](#): Authorizes the County to make inspections and take actions required to enforce the provisions of KCC 9.04 and the Surface Water Design Manual. It also provides for right of entry and ingress/egress as needed to monitor and enforce the requirements of KCC 9.04 and the Surface Water Design Manual.

- [KCC 9.04.180 Enforcement](#): Authorizes the County to enforce the provisions of KCC 9.04 and the Surface Water Design Manual.
- [KCC Title 23 Code Compliance](#): Sets forth procedures for enforcing code compliance.

S5.C.5.b.vi.

No later than 18 months after the effective date of this permit, the program shall include a process of permits, plan review, inspections, and enforcement capability to meet the following standards for both private and public projects, using qualified personnel:

- *Review all stormwater site plans submitted to the Permittee for proposed development involving land disturbing activity that meet the thresholds in S5.C.5.b.i., above.*
- *Inspect prior to clearing and construction, all permitted development sites that meet the thresholds in S5.C.5.b.i., and that have a high potential for sediment transport as determined through plan review based on definitions and requirements in Appendix 7.*
- *Inspect all permitted development sites involving land disturbing activity that meet the thresholds in S5.C.5.b.i. above, during construction to verify proper installation and maintenance of required erosion and sediment controls. Enforce as necessary based on the inspection.*
- *Inspect all development sites that meet the thresholds in S5.C.5.b.i., upon completion of construction and prior to final approval/occupancy to verify proper installation of permanent erosion controls and stormwater facilities/BMPs. Enforce as necessary based on the inspection. A maintenance plan shall be developed for permanent stormwater facilities/BMPs and responsibility for maintenance shall be assigned.*
- *Compliance with the above inspection requirements shall be determined by the presence of an established inspection program designed to inspect all sites involving land disturbing activity that meet the thresholds in S5.C.5.b.i., and achieve inspection of 95% of sites. The inspections in may be combined with other inspections provided they are performed using qualified personnel.*
- *The program shall include a procedure for keeping records of inspections and enforcement actions by staff, including inspection reports, warning letters, notices of violations, and other enforcement records. Records of maintenance inspections and maintenance activities shall be maintained.*
- *The program shall include an enforcement strategy to respond to issues of non-compliance.*

Except for Right-of-Way Construction Permits, which are administered by the Real Estate Services Section of the Department of Executive Services, the Department of Development and Environmental Services (DDES) is the permitting agency for unincorporated the County. DDES receives applications for development permits and reviews all stormwater site plans submitted. This review process includes assessing the sensitivity of a site for elements such as proximity to steep slopes,

creeks or wetlands, as well as the proposed temporary erosion and sediment control (TESC) elements of the project.

Following issuance of a permit, DDES also inspects sites. Pre-clearing and construction inspections are performed for all designated highly sensitive sites, which should capture those sites with a high potential for sediment transport. These sites are also inspected during construction for the required erosion and sediment controls outlined and reviewed in the permit application. However, because of staffing limitations, only a small fraction of nonsensitive sites receive these inspections. With respect to inspections upon completion of construction, all sites with stormwater facilities proposed for transfer to the County (usually residential subdivisions) are inspected to ensure they are properly installed. Flow charts of some typical DDES permit processes are available in Appendix 1 to demonstrate how inspections are integrated into the process.

Inspections are tracked with different methods by various DDES sections. Land Use Inspection Services (LUIS), which conducts the majority of TESC inspections at development sites, uses a time tracking/billing system to record site visits and inspections as these activities are billed to the developer. Building Inspection Services tracks their inspections through the completion of paper log sheets in the field, which are then recorded electronically via a software program called Permits Plus and through their time reporting system. They maintain records of all inspections and enforcements in a central database.

LUIS requires bonding to ensure that sites not properly constructed can be remediated; violations of erosion and sediment control requirements are enforced (see [DDES website](http://www.metrokc.gov/permits/info/industry/ErosionControl.aspx) (<http://www.metrokc.gov/permits/info/industry/ErosionControl.aspx>). Each project is required to put up a restoration bond, the first \$7,500 of which is cash. If a violation or stop work order is issued due to TESC problems, DDES can order out its own contractors to fix the TESC problem using the cash portion of the restoration bond. Because DDES frequently combines erosion and sediment control inspections with other inspections, all the inspectors and plan reviewers are required to have Certified Erosion and Sediment Control Lead (CESCL) certification. This certification class is conducted by the University of Washington and records of training completion are available on the Department of Ecology's website (<http://apps.ecy.wa.gov/wqcescl/>).

While DDES reviews all applications for development within unincorporated King County (including those submitted by the County for its own construction projects) other jurisdictions review the applications submitted by the County for construction projects outside the unincorporated area. Prior to the 2007 permit, the County frequently designed the drainage and erosion and sediment control portions of these projects to meet the specifications of those other jurisdictions. In many cases, these were not as rigorous as those of the KCSWDM. However, S1.G. of the 2007 permit appears to require that King County development in other permitted jurisdictions meet the standards of the KCSWDM, assuming it achieves equivalency with Ecology's Stormwater Design Manual for Western Washington. Accordingly, the Wastewater Treatment Division will provide to WLRD a list of projects constructed outside of KC boundaries (in cities or counties) prior to June 2008 to determine if they need any additional review to assure compliance with the KCSWDM and if any revisions to their storm system may be necessary.

S5.C.5.b.vii.

No later than the effective date of this permit, the Permittee shall make available the “Notice of Intent for Construction Activity” and/or copies of the “Notice of Intent for Industrial Activity” to representatives of proposed new development and redevelopment. Permittees will continue to enforce local ordinances controlling runoff from sites that are covered by other stormwater permits issued by Ecology.

Copies are available at the Department of Development and Environmental Services' Permit Counter.

S5.C.5.b.viii.

No later than 18 months after the effective date of this permit, each permittee shall ensure that all staff whose primary job duties are implementing the program to Control Stormwater Runoff from New Development, Redevelopment, and Construction Sites, including permitting, plan review, construction site inspections, and enforcement, are trained to conduct these activities. As determined necessary by the Permittee, follow-up training shall be provided to address changes in procedures, techniques or staffing. Permittees shall document and maintain records of the training provided and the staff trained.

Existing DDES staff are required to maintain Certified Erosion Control Lead credentials. Ecology tracks these licenses on its [website](#).

The Wastewater Treatment Division will work with WLRD to schedule training for WTD staff on the components of the KCSWDM applicable to their job function.

S5.C.6. Structural Stormwater Controls

S5.C.6.a.

The SWMP shall include a program to construct structural stormwater controls to prevent or reduce impacts to waters of the state caused by discharges from the MS4. Impacts that shall be addressed include disturbances to watershed hydrology and stormwater pollutant discharges. The program shall consider impacts caused by stormwater discharges from areas of existing development, including runoff from highways, streets and roads owned or operated by the Permittee, and areas of new development, where impacts are anticipated as development proceeds. The program shall address impacts that are not adequately controlled by the other required actions of the SWMP, and shall provide proposed projects and an implementation schedule.

The program shall consider the construction of projects such as: regional flow control facilities; water quality treatment facilities; facilities to trap and collect contaminated particulates; retrofitting of existing stormwater facilities; and rights-of-way, or other property acquisition to provide additional water quality and flow control benefits. Permittees should also consider other means to address impacts, such as reduction or prevention of hydrologic changes through the use of on-site (infiltration and dispersion) stormwater management BMPs and site design techniques, riparian habitat acquisition, or restoration of forest cover and riparian buffers, for compliance with this requirement. Permittees may not use in-stream culvert replacement or channel restoration projects for compliance with this requirement.

S5.C.6.b.

Minimum Performance Measures:

S5.C.6.b.i.

No later than 1 year after the effective date of this permit, each Permittee shall develop a Structural Stormwater Control program designed to control stormwater impacts that are not adequately controlled by other required actions of the SWMP. Implementation of the program shall begin no later than 18 months after the effective date of this permit. Permittees shall provide a list of planned individual projects that are scheduled for implementation during the term of this permit. Updates and revisions to the list will be provided in the annual report.

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

The County's structural stormwater control program is a two-tiered program of capital projects. The first tier consists of projects whose primary purpose is controlling stormwater runoff and/or mitigating the stormwater impacts caused by past, present, and future land development. The second tier consists of projects whose primary purpose is not directly related to stormwater, but that produce auxiliary benefits that do prevent or reduce stormwater impacts.

Tier One Structural Control Projects

These projects typically involve the construction, modification, and/or retrofitting of more traditional stormwater controls (e.g., ponds, vaults, pipes, catch basins, ditches, channels, or swales) to: solve flooding, erosion, or sedimentation problems; improve flow regime and

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water quality; fix maintenance problems; or restore lost facility function. These more traditional projects are further divided into the following four types of projects, all currently implemented by WLRD:

1. Larger individual projects, typically \$300,000 or more per project;
2. Neighborhood Drainage Assistance Program (NDAP) projects, typically ranging from \$5,000 to \$50,000 per project;
3. Stormwater facility retrofit projects, typically \$15,000 per project; or
4. Agricultural Drainage Assistance Program (ADAP) projects, typically ranging from \$50,000 to \$100,000 per project.

The larger stormwater control projects mentioned above typically include, but are not limited to, major conveyance system upgrades, construction of pipe lines down steep slopes, regional detention pond improvements, regional treatment facility improvements, channel stabilization, emergency repairs of severely damaged drainage systems, and the construction of emergency structures/systems to protect public safety and prevent severe property damage during major storm events. With the exception of emergency and opportunity projects, WLRD's larger stormwater control projects are annually prioritized. Nearly all of these projects are three- to four-year efforts from initial feasibility and design through permitting and acquiring easements to final construction, and in some cases, post construction monitoring. Some of the projects are identified through basin plans but most are currently identified through citizen complaints and engineering or feasibility studies of known localized problems. In 2008, WLRD plans to spend about \$1.22 million on these larger traditional structural control projects as shown in the table below. More details about these projects are available in Appendix 2.

Large Stormwater Control Projects Underway in 2008	2008 Spending
May Valley Flood Reduction	\$130,000
Mill Creek Trib 045 Drainage Tightline	\$272,000
Hamm Creek Water Quality Improvement	\$240,000
Lake Hicks Pump Intake	\$202,000
Johnson Pond Hazard Mitigation	\$80,000
Deer Creek Relocation	\$135,000
Emergency/Opportunity Reserve	\$175,000
Feasibility Reserve	\$56,000

None of the smaller Tier One stormwater control projects (i.e., those in the NDAP, stormwater facility retrofit, or ADAP programs) are planned in advance. They are implemented strictly on a year-by-year demand-driven basis.

The NDAP program is a rate payer customer service program that implements small projects to improve the conveyance capacity of off-road private drainage systems in response to flooding on private property and erosion problems caused by land development.

These projects are typically identified through complaints and are selected using criteria that evaluate the impacts of the problem and the cost-effectiveness of the solution. In 2008, WLRD plans to implement up to \$20,000 worth of NDAP projects depending on the severity of problems that are identified through complaints.

The stormwater facility retrofit program addresses problems with the function, maintenance, and/or safety of existing County-owned flow control and treatment facilities. These problems are typically identified through complaints and maintenance inspections. There is currently a backlog of 103 facilities, 96 of which have problems with facility function. These projects are considered a form of maintenance that requires capital construction costing less than \$25,000, and thus will be subject to the two-year maintenance turnaround time required by Permit Condition S5.C9.b.i.(2) beginning in 2009. To meet this required two-year turnaround time, all retrofit projects in the backlog as of the beginning of 2009 must be implemented by the end of 2010. This will require a capital investment of about \$500,000 per year for the next three years. In 2008, WLRD plans to implement about \$500,000 worth of retrofit projects.

The ADAP program assists farmers with cleaning out drainage ditches on farmland, many of which carry stream flow. The mitigation of associated habitat damage is also part of the program, with the requirement that riparian vegetation and/or other habitat features be added to the ditch. The result is habitat functions that are typically better post clean-out than what they were prior. Because of these vegetation requirements and the post construction monitoring required to ensure the vegetation survives, these projects are typically four-year efforts. In 2008, WLRD plans to spend about \$590,000 on implementation and monitoring of ADAP projects.

Tier Two Stormwater Control Projects

Tier Two projects include those that can result in significant mitigation of stormwater impacts even though that is not their primary purpose. They include the following:

1. Ecosystem protection projects that can significantly offset the hydrologic and water quality impacts of stormwater runoff from development by restoring lost habitat functions such as stream channel complexity (pools and riffles), spawning gravel, side channel connections, and riparian vegetation. The restoration of riparian vegetation in particular can significantly offset the water quality impacts of increased water temperature caused by stormwater runoff from development. It can also help filter out pollutants from developed lands adjacent to stream corridors.
2. Land acquisition and forest restoration projects that can significantly offset the hydrologic impacts of stormwater by maintaining or improving the hydrologic function of significant acreage in headwater areas or along streams. Forest cover absorbs and slowly releases rainwater to streams and aquifers, removes water from soil through evapotranspiration, and filters runoff. In doing so, they help to prevent flooding and erosion, and support beneficial aquatic uses.

WLRD's 2008 ecosystem protection program is shown below. More details are available in Appendix 2.

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Ecosystem Protection Projects Underway in 2008	2008 Spending
WRIA 7	
Lower Tolt River Restoration	\$2,175,000
Gilead/MacDonald Floodplain Reconnection	\$360,000
Chinook Bend Levee Removal	\$750,000
WRIA 8	
Bear & Issaquah & Cedar Riparian Restoration	\$50,500
Cedar Side Channel Inventory & Evaluation	\$35,000
WRIA 9	
Site 1/North Winds Weir Restoration	\$2,523,000
Fenster-Pautzke Phase II Levee Removal	\$1,250,000
Big Springs Creek Channel Restoration	\$370,000
Newaukum Creek Restoration (RM 0-14)	\$67,000
WRIA 10	
Boise Creek Mouth Restoration	\$85,000

WLRD's 2008 program for acquisition and improvement of forestland is shown below. More detail about the projects may be found in Appendix 2.

Open Space Acquisitions Underway in 2008	2008 Spending
Big Spring/Newaukum Creek Confluence	\$200,000
Cottage Lake Creek	\$500,000
Grand Ridge Additions	\$500,000
Mount Peak Addition	\$800,000
Paradise Valley - Judd Creek (Vashon)	\$725,000
Taylor Creek Restoration	\$75,000
White River PSE Corridor	\$445,000
Cottage/Cold Creek Acquisition	\$305,000
Paradise Valley Acquisition II	\$425,000
Heyer Point Drift Cell Preservation	\$315,000

S5.C.6.b.ii.

Each Permittee shall include a description of the Structural Stormwater Control Program in the written documentation of their SWMP. The description of the Structural Stormwater Control Program shall include the following:

- *The goals that the Structural Stormwater Control Program are intended to achieve.*
- *The planning process used to develop the Structural Stormwater Control Program, including: the geographic scale of the planning process, the issues and regulations*

addressed, the steps in the planning process, the types of characterization information considered, the amount budgeted for implementation, and the public involvement process.

Goals of the Structural Stormwater Control Program

The overall goal of the County's structural stormwater control program is the implementation of projects that prevent, mitigate, correct, adapt to, or offset the stormwater impacts of past, present, and future land development that are not otherwise addressed through regulations and other programmatic actions. Such impacts include, but are not limited to: increased runoff peaks, durations, and volumes; loss of groundwater recharge; increased pollutants in discharges; increased erosion and sedimentation; physical, chemical, and biological damage to aquatic habitat and biota; increased flooding and property damage; increased risks to human health and safety; etc. The overall goal is achieved through a number of different types of projects as described in the preceding section.

Planning Process for the Structural Stormwater Controls Program

Currently, several planning processes are used to identify structural stormwater control projects. These include, but are not limited to: basin plans; basin reconnaissance reports; stormwater compliance plans; salmon conservation plans; lake management plans; TMDL implementation plans; basin retrofit analyses; land use analyses; geographic information system analyses; engineering studies; feasibility studies; and six-year CIP plans. These planning processes are one way that large traditional stormwater projects, habitat improvement projects, and acquisition projects are identified and prioritized. The other way, which is more common because of funding constraints, is through opportunities and urgent situations that arise. Opportunities may include the availability of external funding for a specific project or project type (e.g., federal or state grant funding), or the availability of a specific piece of land for acquisition. Urgent situations, often posed by flooding or erosion, typically involve a significant risk of property damage or threat to public safety, or may involve a legal obligation.

As described in the preceding section, other types of structural stormwater control projects are not planned but instead are identified and implemented on a year-by-year demand-driven basis.

The County has and will continue to participate in basin and subbasin scale planning to identify stormwater control projects to mitigate the stormwater impacts of past, present, and future development. The County is currently involved in several basin planning efforts, including the Des Moines Creek Basin Plan (implementation phase), the Miller and Walker Creek Basin Plan, the Salmon Creek Basin Plan, and new this year, the Juanita Creek Basin Retrofit Analysis Project.

S5.C.6.b.iii.

For planned individual projects, and programs of small projects, provide the following information:

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- *The estimated pollutant load reduction that will result from each project designed to provide stormwater treatment.*
- *The expected outcome of each project designed to provide flow control.*
- *Any other expected environmental benefits.*
- *If planned, monitoring or evaluation of the project and monitoring/evaluation results.*

The list of individual projects and expected outcomes will be provided in the annual report.

S5.C.6.b.iv.

Information about the Structural Stormwater Control Program shall be updated with each annual report.

S5.C.7. Source Control Program for Existing Development

S5.C.7.a.

The SWMP shall include a program to reduce pollutants in runoff from areas that discharge to municipal separate storm sewers owned or operated by the Permittee. The program shall include the following:

S5.C.7.a.i.

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

S5.C.7.a.ii.

Inspections of pollutant generating sources at commercial, industrial and multifamily properties to enforce implementation of required BMPs to control pollution discharging into municipal separate storm sewers owned or operated by the Permittee.

S5.C.7.a.iii.

Application and enforcement of local ordinances at applicable sites, including sites that are covered by other stormwater permits issued by Ecology. Permittees that are in compliance with the terms of this permit will not be held liable by Ecology for water quality standard violations or receiving water impacts caused by industries and other Permittees covered, or which should be covered under an NPDES permit issued by Ecology.

S5.C.7.a.iv.

Reduction of pollutants associated with the application of pesticides, herbicides, and fertilizer discharging into municipal separate storm sewers owned or operated by the Permittee.

S5.C.7.b.

Minimum Performance Measures for Source Control Program:

S5.C.7.b.i.

No later than 18 months after the effective date of this permit, adopt and begin enforcement of an ordinance, or other enforceable documents, requiring the application of source control BMPs for pollutant generating sources associated with existing land uses and activities (See Appendix 8 to identify pollutant generating sources).

The requirements of this subsection are met by using the source control BMPs in Volume IV of the 2005 Stormwater Management Manual for Western Washington, or a functionally equivalent manual approved by Ecology.

Ecology review and approval of the ordinance, or other enforceable documents, and source control program is required. Each Permittee shall submit the proposed source control program and all necessary documentation to Ecology for review, no later than 12 months after the effective date of this permit. If Ecology does not request changes within 60 days, the proposed source control BMPs are considered approved.

Operational source control BMPs shall be required for all pollutant generating sources. Structural source control BMPs shall be required for pollutant generating sources if operational source control BMPs do not prevent illicit discharges or violations of surface water, ground

water, or sediment management standards because of inadequate stormwater controls. Implementation of source control requirements may be done through education and technical assistance programs, provided that formal enforcement authority is available to the Permittee and is used as determined necessary by the Permittee, in accordance with S5.C.7.b.iv., below.

The County adopted its Stormwater Pollution Prevention Manual (SPPM) in 1995 and updated it in 2005. The SPPM identifies potentially polluting activities at commercial sites and the operational, structural, and or treatment BMPs required to prevent pollutants from entering surface, storm, and groundwater. The County has submitted the SPPM to Ecology and received its from equivalency feedback. Based on that feedback, the County plans to amend the SPPM and submit a draft to Ecology for review by February 16, 2008. KCC 9.12 and Title 23 provide enforcement capability, though the County's usual policy is to visit commercial sites, and provide follow-up correction letters identifying both any source control requirements adequately met and any additional BMPs that are needed. Additionally, commercial sites are denied a discount on the annual Surface Water Management Fee if source-control BMPs are not implemented and if the onsite stormwater system is not maintained.

S5.C.7.b.ii.

No later than 18 months after the effective date of this permit, establish a program to identify sites which are potentially pollution generating. The program shall include:

- *Inventory or listing of the land uses/businesses using the categories of land uses and businesses in Appendix 8. The Permittee shall periodically update the inventory as new businesses are identified and business ownership/management and responsibilities change.*

SWS will compile an inventory or listing of businesses by August 2008. A combination of databases will be used to create the inventory. These databases are both internal to the County and external from other agencies. The databases include the following:

1. The existing database of business/commercial sites that have approved flow control and/or water quality treatment facilities (1,458 as of 2/1/08), which is maintained SWS;
2. The existing database of business/commercial sites with simple drainage conveyance systems (418 as of 2/1/08), which is maintained by SWS;
3. The existing database of all business/commercial designated parcels in unincorporated King County (1,556), which is maintained by the King County Department of Assessments (no R/D);
4. The existing database of all properties owned/operated by King County (2,500), which is maintained by King County Real Estate Services and the Department of Executive Services Facility Management section; and
5. The existing Business License database for unincorporated King County (25,000 licenses), which is maintained by the Washington State Department of Revenue.

Each of these existing databases is inadequate by itself for compiling the required inventory. Accordingly, the County will implement a small pilot project in April 2008 to determine which combination of databases would be effective for compiling or updating the business/site inventory.

The inventory will be updated as new sites are developed and approved through the Department of Development and Environmental Services (DDES) and forwarded to SWS. Updates will also occur during the annual maintenance inspection process or bi-annual self-certification process. If new business ownership or type of businesses is noted or reported, the inventory will be updated to reflect the change.

Properties owned by the County that have the potential to produce pollutants will be added to this existing inventory. These will include: sites in the KCPR system with over 180 parks (many being more intensely developed and managed for active recreation such as baseball, soccer, etc.); many neighborhood parks; two indoor pools; two outdoor pools; approximately 175 miles of regional trails (either asphalt or gravel surface); nine maintenance facilities; and over 20,000 acres of natural areas. To further aid this process, by August 1, 2008 the Airport will provide a list of the activities or businesses at the Airport and the potential pollution generation associated with each. The Airport will also provide the applicable operational and structural BMPs planned or implemented for both Airport and tenant activities.

- *Complaint-based response to identify other pollutant generating sources, such as mobile or home-based businesses.*

SWS inspection staff currently respond to all water quality complaints from citizens, which are received from all County agencies or referred to SWS by outside agencies. If the complaint involves a mobile or home-based business that works in unincorporated King County, the business will be added to our Water Quality Compliance Tracker database. As part of the complaint resolution, a water quality audit discussing appropriate source control BMPs will take place and a follow up letter will be prepared to facilitate compliance.

S5.C.7.b.iii

Starting no later than 24 months after the effective date of this permit, implement an audit/inspection program for sites identified pursuant to S5.C.7.b.ii. above.

- *All identified sites with a business address shall be provided, by mail, telephone, or in person, information about activities that may generate pollutants and the source control requirements applicable to those activities. This information may be provided all at one time or spread out over the last three years of the permit term to allow for some tailoring and distribution of the information during site inspections. Businesses may self-certify compliance with the source control requirements at the discretion of the Permittee. The Permittee shall inspect 20% of these sites annually to assure BMP effectiveness and compliance with source control requirements. The Permittee may select which sites to inspect each year and is not required to inspect 100% of sites over a 5-year period. Sites may be prioritized for inspection based on their land use category, potential for pollution generation, proximity to receiving waters, or to address an identified pollution problem within a specific geographic area or sub-basin.*

SWS's source control program has been in place since 1995. The program generally has been a complaint-based program. By August 2008 a well-defined inventory of potentially pollutant-generating businesses/sites will be completed (see S5.C.7.b.ii). By that time the County will define what constitutes 20% of the inventory. We expect that additional staff resources will be needed to reach the required 20% site inspection rate starting in 2009. Sites will be prioritized by business type and the potential for business activities to generate and discharge hazardous, dangerous and toxic substances to surface and stormwater.

Because of the annexations in the urban area that are planned over the next few years and the uncertainty that this creates about the number of businesses that will remain in unincorporated King County, the number of sites will be in flux, which means that the 20% inspection goal will be updated each year in the SWMP.

- *Each Permittee shall inspect 100% of sites identified through legitimate complaints*

We currently investigate all water quality complaints received in SWS. Once investigated, these complaints are either closed with no problem identified, referred to another agency, or undergo a Water Quality Review for further research and investigation or a Water Quality Audit for an on-site source control visit.

S5.C.7.b.iv.

No later than 24 months after the effective date of this permit, each Permittee shall implement a progressive enforcement policy to require sites to come into compliance with stormwater requirements within a reasonable time period as specified below:

- *If the Permittee determines, through inspections or otherwise, that a site has failed to adequately implement required BMPs, the Permittee shall take appropriate follow-up action(s) which may include: phone calls, reminder letters or follow-up inspections.*
- *When a Permittee determines that a facility has failed to adequately implement BMPs after a follow-up inspection, the Permittee shall take further enforcement action as established through authority in its municipal code and ordinances, or through the judicial system.*
- *Each Permittee shall maintain records, including documentation of each site visit, inspection reports, warning letters, notices of violations, and other enforcement records, demonstrating an effort to bring facilities into compliance. Each Permittee shall also maintain records of sites that are not inspected because the property owner denies entry.*
- *A Permittee shall contact Ecology immediately upon discovering a source control violation that presents a severe threat to human health or the environment. A Permittee may refer non-emergency violations of local ordinances to Ecology, provided, the Permittee also makes a documented effort of progressive enforcement. At a minimum, a Permittee's enforcement effort shall include documentation of inspections and warning letters or notices of violation.*

SWS has had an enforcement program in place since 1995. We use both [KCC 9.12 – Water Quality](#)

http://www.kingcounty.gov/council/legislation/~media/Council/documents/Clerk/Cod e/12_Title_9.ashx) and [KC Code 23 – Enforcement \(http://www.kingcounty.gov/council/legislation/~media/Council/documents/Clerk/Cod e/32_Title_23.ashx\)](http://www.kingcounty.gov/council/legislation/~media/Council/documents/Clerk/Cod e/32_Title_23.ashx), which have legally defined processes and procedures as adopted by the King County Council. All actions are documented in the Water Quality Compliance database. The Airport will begin a program of site inspections in 2008 and by February 1, 2009 provide site inspection reports for each tenant that identify applicable source control requirements and the implementation status of source control BMPs.

S5.C.7.b.v.

No later than 24 months after the effective date of this permit, each Permittee shall ensure that all staff whose primary job duties are implementing the source control program are trained to conduct these activities. The training shall cover the legal authority for source control (adopted codes, ordinances, rules, etc.), source control BMPs and their proper application, inspection protocols, and enforcement procedures. Follow-up training shall be provided as needed to address changes in procedures, techniques or staffing. Permittees shall document and maintain records of the training provided and the staff trained.

SWS has an existing training program for all new employees that are hired to conduct source control inspections. New staff spend a minimum of three days with existing staff completing site inspections. In addition, coaching and guidance are provided through biweekly meetings with Water Quality Compliance staff. The County is currently updating its Water Quality Compliance Manual, which outlines step by step procedures for inspection and enforcement, and plans to provide training, or training guidance to ensure that all County employees primarily doing source control are adequately trained. We will track training in the existing training database within the SWS section.

S5.C.8. Illicit Connections and Illicit Discharges Detection and Elimination

S5.C.8.a.

The SWMP shall include an ongoing program to detect, remove and prevent illicit connections and illicit discharges, including spills, into the municipal separate storm sewers owned or operated by the Permittee.

S5.C.8.b.

Minimum Performance Measures:

S5.C.8.b.i.

No later than the effective date of this permit, each Permittee shall continue implementing an on-going program to prevent, identify and respond to illicit connections and illicit discharges. The program shall include procedures for reporting and correcting or removing illicit connections, spills and other illicit discharges when they are suspected or identified. No later than 24 months after the effective date of this permit, each permittee shall develop procedures for addressing pollutants entering the MS4 from an interconnected, adjoining MS4.

Illicit connections and illicit discharges shall be identified through field screening, inspections, complaints/reports, construction inspections, maintenance inspections, source control inspections, and/or monitoring information, as appropriate.

Illicit connections and discharges are currently handled independently by several County agencies.

KCPR responds to reports of illegally dumped materials or spilled materials on its properties. Reports are received in a number of ways, including citizen action requests obtained through the KCRMS 24-hour hotline (206-296-8100) or discoveries by KCPR staff. KCPR will investigate to determine the appropriate response. Depending upon the situation (e.g., methamphetamine laboratory waste clean up), KCPR may contact a spill response contractor, Washington State Department of Ecology NWRO Spill Response Unit, or other appropriate parties. KCPR may perform cleanup of dumped materials. When KCPR receives reports outside of its jurisdiction, the appropriate agency is notified of the situation.

During all investigations and inspections, when any illicit connections or discharges are observed, an investigation request is completed and relevant information entered into the SWS Complaint Tracker database. The investigation request is assigned to a Water Quality Engineer, who traces the source to ensure that the connection is removed or plugged or BMPs implemented to eliminate the discharge.

King County Roads Maintenance Section (KCRMS) responds to reports of illegally dumped or spilled materials within the unincorporated King County road right-of-way (ROW) to prevent illicit discharges. After being notified of an illegal dump or spill, KCRMS investigates to determine the appropriate response. Depending on the circumstances, KCRMS crews may be dispatched to retrieve or clean up the dumped or spilled materials. In some cases, such as large-scale spills, unidentifiable dumped materials, or potentially dangerous conditions (e.g., methamphetamine laboratory waste clean up), KCRMS triggers a response from a spill response contractor, the Washington State Department of Ecology Northwest Regional Office (NWRO) Spill Response Unit, or other appropriate parties. When KCRMS

receives reports of dumped or spilled materials outside of its jurisdiction, the appropriate agency is notified of the situation.

Reports are received in a number of ways, including citizen action requests obtained through the KCRMS 24-hour hotline (206-296-8100 or 800-KCROADS), electronic notifications generated by the Illegal Dumping Task Force (IDTF) hotline (206-296-7483 or 866-431-7483) or website (<http://www.metrokc.gov/dnrp/swd/cleanup/report-dumping.asp>), and discoveries by municipal staff.

Public Health of Seattle and King County (PHSKC) inspects a variety of business and commercial properties and residential properties served by onsite sewage systems. Staff will be trained to recognize existing or potential illicit connections or illicit discharges. When the discharge is under the direct regulatory oversight of PHSKC, staff will take appropriate measures to assure the correction of the connection or discharge. When the connection or discharge is not under the direct regulatory oversight of PHSKC, the connection or discharge will be reported to the appropriate authority.

Transit inspects all of its sites on an annual basis for illicit connections. For those sites covered by the Industrial Stormwater General Permit, these inspections take place during the summer months as per the guidelines laid out in the permit. At Transit's remaining sites the process is less formal, relying upon visual observations of flow during an annual site inspection. Based on historic knowledge of the site, previously documented flows are not tested, but new flows are checked for the presence of fluoride, which would indicate the presence of Seattle Public Utilities-provided water.

In addition to these scheduled inspections, Transit also relies upon its field staff to report spills. Employees are trained and required to call in significant spills to Transit's 24/7 Control Center. The Control Center then takes responsibility for coordinating a suitable response including calling in spill response supplies and reporting to outside agencies.

Beginning in 2008 and by July 15th of each subsequent year, the Airport will begin implementing and report all Airport activities conducted over the preceding 12 months to detect, remove, and prevent illicit connections, and illicit discharges.

S5.C.8.b.ii.

No later than 18 months after the effective date of this permit, each Permittee shall evaluate, and if necessary update, existing ordinances or other regulatory mechanisms to effectively prohibit non-stormwater, illegal discharges, and/or dumping into the Permittee's municipal separate storm sewer system.

1. *The ordinance or other regulatory mechanism, does not need to prohibit the following categories of non-stormwater discharges:*
 - *Diverted stream flows;*
 - *Rising ground waters;*
 - *Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20));*
 - *Uncontaminated pumped ground water;*

- *Foundation drains;*
 - *Air conditioning condensation;*
 - *Irrigation water from agricultural sources that is commingled with urban stormwater;*
 - *Springs;*
 - *Water from crawl space pumps;*
 - *Footing drains; and*
 - *Flows from riparian habitats and wetlands.*
2. *The ordinance or other regulatory mechanism, shall prohibit the following categories of non-stormwater discharges unless the stated conditions are met:*
- *Discharges from potable water sources, including water line flushing, hyperchlorinated water line flushing, fire hydrant system flushing, and pipeline hydrostatic test water. Planned discharges shall be de-chlorinated to a concentration of 0.1 ppm or less, pH-adjusted if necessary, and volumetrically and velocity controlled to prevent resuspension of sediments in the MS4.*
 - *Discharges from lawn watering and other irrigation runoff. These discharges shall be minimized through, at a minimum, public education activities (see S5.C.10) and water conservation efforts.*
 - *Dechlorinated swimming pool discharges. The discharges shall be dechlorinated to a concentration of 0.1 ppm or less, pH-adjusted and reoxygenated if necessary, and volumetrically and velocity controlled to prevent resuspension of sediments in the MS4. Swimming pool cleaning wastewater and filter backwash shall not be discharged to the MS4.*
 - *Street and sidewalk wash water, water used to control dust, and routine external building washdown that does not use detergents. The Permittee shall reduce these discharges through, at a minimum, public education activities (see S5.C.10.) and/or water conservation efforts. To avoid washing pollutants into the MS4, Permittees shall minimize the amount of street wash and dust control water used. At active construction sites, street sweeping shall be performed prior to washing the street.*
 - *Other non-stormwater discharges. Other non-stormwater discharges shall be in compliance with the requirements of a stormwater pollution prevention plan reviewed by the Permittee which addresses such discharges.*
3. *The Permittee's SWMP shall, at a minimum, address each category in (2) above in accordance with the conditions stated therein.*
4. *The SWMP shall further address any category of discharges in (1) or (2) above if the discharges are identified as significant sources of pollutants to waters of the State.*

5. *Non-stormwater discharges covered by another NPDES permit and discharges from emergency fire fighting activities are allowed in the MS4 in accordance with S2 Authorized Discharges.*

Existing King County Code 9.12 (Water Quality) prohibits nonstormwater discharges including hyperchlorinated line flushing unless dechlorinated, swimming pool discharges, and street and sidewalk wash water. Discharges from irrigation or lawn watering are addressed as part of the Natural Yard Care educational program. The allowable discharges list in KCC 9.12.025 must be amended to clarify that BMPs in the SPPM must be applied to discharges from potable water sources and residential boat and car washing. A draft of the necessary amendments will be submitted to Ecology by February 19, 2008.

PHSKC regulates Group B water systems and public swimming pools. PHSKC will assure that discharges from potable water sources and regulated swimming pools (and other water recreation facilities) comply with adopted storm water standards for de-chlorination, pH adjusting and velocity controls.

S5.C.8.b.iii.

No later than 18 months after the effective date of this permit, each Permittee shall ensure that all municipal field staff who are responsible for identification, investigation, termination, cleanup, and reporting of illicit discharges, including spills, improper disposal and illicit connections, are trained to conduct these activities. Follow-up training shall be provided as needed to address changes in procedures, techniques or staffing. Permittees shall document and maintain records of the training provided and the staff trained.

All SWS employees who are responsible for identifying illicit discharges and illicit connections are trained upon employment. KCRMS has created an annual hazardous waste training for KCRMS staff responding to illegally dumped or spilled materials in the ROW. The training includes topics such as identifying, containing, handling, transporting, and disposing of hazardous waste materials dumped or spilled within the ROW. Over 300 staff has completed the training program since 2003. Starting in 2009 an additional training unit on identification of and response to illicit discharges and illicit connections will be added to the program. Starting in 2008, annual training will also be provided to KCPR field staff whose jobs could have an impact on stormwater quality. This training will include a section on detecting illicit connections and recognizing illicit discharges. Any suspected illicit connections discovered are reported to a KCPR Staff Engineer, who within 14 days will initiate an investigation to ascertain the source and nature of the connection and the responsible party of the connection. KCPR may contact KC DNRP SWS if additional assistance or possible enforcement action may be needed. As part of the annual training, KCPR staff will be instructed that if an illicit discharge presents a severe threat to the human health or the environment, the Ecology shall be contacted immediately.

Transit currently provides annual training to all of its field-based maintenance employees. This training focuses on spill response procedures, but the specific curriculum changes from year to year with some classes focusing much more on stormwater pollution prevention than others. For example, the 2005 program involved a lengthy discussion on site-specific stormwater drainage and treatment systems and what was located downstream of these specific sites. In 2007, the program focused on the effects of spilled chemicals in the downstream environment. This training is documented in one of two training databases,

dependent on whether or not the employee is in the Power & Facilities or Vehicle Maintenance workgroup.

S5.C.8.b.iv.

No later than 24 months after the effective date of this permit, develop and implement an ongoing training program for all municipal field staff, which, as part of their normal job responsibilities might come into contact with or otherwise observe an illicit discharge or illicit connection to the storm sewer system, shall be trained on the identification of an illicit discharge or connection and on the proper procedures for reporting and responding to the illicit discharge or connection. Follow-up training shall be provided as needed to address changes in procedures, techniques or staffing. Permittees shall document and maintain records of the training provided and the staff trained.

A program is under development and will be implemented in 2009.

S5.C.8.b.v.

Each Permittee shall provide a publicly-listed, water quality citizen complaints/reports telephone number. Except for Clark County, which shall meet this requirement no later than 6 months from the effective date of this permit, this citizen complaint/reports telephone number shall be in place no later than the effective date of this permit. Complaints shall be responded to in accordance with S5.C.8.b.vii. and viii., below.

The County has had a citizen complaint line (206-296-1900) for drainage and water quality problems for over 20 years.

S5.C.8.b.vi.

*Each Permittee shall conduct on-going screening to detect illicit connections. The program shall include field screening and source tracing; and may also include source control inspections and complaint response. To comply with the requirement the Permittee may use the methods identified in *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*, Center for Watershed Protection, October 2004; or field screening methods approved by Ecology in a Stormwater Management Program under a prior Phase I municipal stormwater NPDES permit, provided the approved methods include field screening and source tracing.*

SWS section staff report illicit connections found during investigations, annual inspections of drainage systems, and other fieldwork to the complaint program. During source control site inspections, if illicit connections are discovered or presumed, a violation may be issued directing the responsible party to remove the illicit connection. The current program screens and determines sources, but not following the Center for Watershed Protection method. In 2008, we will begin a pilot IDDE project in the Salmon Creek Basin to develop an effective field screening and source tracing process that will be applied County-wide in future years.

Each County covered under this permit shall prioritize outfalls and conveyances in urban/higher density rural sub-basins for screening and shall complete field screening for at least half of the conveyance systems in these areas no later than 4 years from the effective date of this permit. In addition, Counties shall complete field screening in at least 1 rural sub-basin no later than 4 years from the effective date of this permit.

The program is currently under development. As mentioned above, a pilot project will take place in the second half of 2008 that will then be applied throughout the county.

A map has been developed that identifies urban/higher density rural sub-basins to be used for screening. It is available in Appendix 5.

S5.C.8.b.vii.

Response to Illicit Connections

- *Investigation: Upon discovery or upon receiving a report of a suspected illicit connection, Permittees shall initiate an investigation within 21 days, to determine the source and nature of the connection, and the responsible party for the connection.*
- *Termination: Upon confirmation of the illicit nature of a storm drain connection, Permittees shall use their enforcement authority in a documented effort to eliminate the illicit connection within 6 months. All illicit connections to the MS4 shall be eliminated.*
- *Permittees shall contact Ecology immediately upon discovering an illicit connection that presents a severe threat to human health or the environment. Permittees may refer illicit connection violations to Ecology provided that the Permittee also makes a good faith effort of progressive enforcement. At a minimum, a Permittee's enforcement effort shall include documentation of inspections and warning letters and/or notices of violation.*

[KCC 9.12](#) requires that once an illicit connection is discovered and confirmed, SWS staff notify the responsible party of the requirement to eliminate the connection. If the connection is not removed, a formal notice and order, with penalties, is issued. If there is still no resolution, the County can remove the illicit connection and charge the property owner.

SWS section inspection staff have been trained for and perform include illicit connection detection in their complaint investigation, facility inspection, and water quality programs. Suspected illicit connections are initially investigated within seven days, per SWS complaint investigation protocols. Once confirmed SWS Water Quality Compliance Program administers enforcement for removal of the illicit connection. Illicit connections will be prioritized in our Water Quality Compliance Manual (currently under development and to be completed by mid 2008) as a first-tier priority. This should ensure that an illicit connection will be eliminated within six months of discovery.

PHSKC may be called upon to investigate reported or suspected illicit connections or discharges from facilities that it permits or inspects. Within the resources available, staff will investigate within 21 days and if confirmed, take appropriate enforcement actions to eliminate the connection or discharge.

S5.C.8.b.viii.

No later than 6 months after the effective date of this permit, each Permittee shall either participate in a regional emergency response program, or develop and implement procedures to investigate and respond to spills and improper disposal into municipal separate storm sewers owned or operated by the Permittee. Permittees shall have a program to prioritize and investigate complaints/reports or monitoring information that indicates potential illicit discharges,

including a spill or illegal dumping. Permittees shall immediately respond to problems/violations judged by the Permittee to be urgent, severe, or an emergency. Spills of oil or hazardous materials shall be reported to appropriate authorities.

KCRMS has had a spill response program in place for six years. The County works closely with Ecology's Emergency Spill Response team (based in the Northwest Regional Office) and with other local jurisdictions in reporting and responding to spills. KCRMS conducts cleanup and disposal of most spills that occur in the ROW and have an on-call contractor for more complex spills. This program includes training in identification, reporting, containment, cleanup and disposal of spills. Investigators respond to ongoing and emergency complaints. SWS has a written Emergency Response Policy (included as Appendix 3).

S5.C.8.b.ix.

Each Permittee shall track and maintain records of the illicit discharge detection and elimination program, including documentation of inspections, complaint/spill response and other enforcement records.

SWS tracking programs include complaint tracker and water quality compliance tracker which tracks response, documents findings, and tracks enforcement actions.

KCRMS tracks and maintains records related to illegally dumped or spilled materials within the ROW in several ways. Some records are maintained electronically, while others are in paper format. KCRMS is developing a spill response database, and spills are reported to Ecology's Environmental Response Tracking System (ERTS) database.

Requests, notifications, and responses/actions are tracked through the Illegal Dumping Task Force system, our Citizen Action Request system, and various other internal tracking forms maintained by the Emergency Response Unit within KCRMS. As appropriate, select instances are also tracked through ERTS.

Staff time and resources spent implementing this program are tracked electronically through our Account Resource Management System. Training records documenting the date and time of training, instructor, attendees, and topics covered are maintained by KCRMS staff. A program is currently being developed to track a greater portion of training records electronically.

S5.C.9. Operation and Maintenance Program

S5.C.9.a.

The SWMP shall include a program to regulate maintenance activities and to conduct maintenance activities by the Permittee that prevent or reduce stormwater impacts. The program shall include:

S5.C.9.a.i.

Maintenance standards and programs for proper and timely maintenance of public and private stormwater facilities.

S5.C.9.a.ii.

Practices for operating and maintaining Permittee's streets, roads, and highways to reduce stormwater impacts.

S5.C.9.a.iii.

Policies and procedures to reduce pollutants associated with the application of pesticides, herbicides, and fertilizer by the Permittee's agencies or departments.

S5.C.9.a.iv.

Practices for reducing stormwater impacts from heavy equipment maintenance or storage yards, and from material storage facilities owned or operated by the Permittee.

S5.C.9.a.v.

A training component.

S5.C.9.b.

Minimum Performance Measures:

S5.C.9.b.i.

Maintenance Standards. No later than 18 months after the effective date of this permit, each Permittee shall establish maintenance standards that are as protective or more protective of facility function than those specified in Chapter 4 of Volume V of the 2005 Stormwater Management Manual for Western Washington. For existing facilities which do not have maintenance standards, the Permittee shall develop a maintenance standard.

WLRD has established and codified drainage maintenance standards in the SWDM per King County Code 9.04. These standards were developed in the 1980s, and are revised and updated in the SWDM as new drainage features are developed, or standards change. The County is currently seeking an equivalency rating with the Stormwater Management Manual for Western Washington to comply with this permit requirement. In rural areas, where nontraditional LID style flow and water quality control facilities are used, forest, agriculture, and critical areas plans are developed by individual property owners, with support from WLRD or the King Conservation District, to establish, among other things, the customized maintenance standards for those facilities. Examples of the LID facilities used in the rural area include, but are not limited to, forest retention, fencing livestock out of streams, stream buffers, manure lagoons, and native plantings in stream buffers to restore shading over streams.

KCPR and KCDOT are planning to maintain their stormwater treatment and flow control facilities per the SWDM. For maintaining the parking lots and roads on their properties, KCPR and KCDOT also use the Regional Road Maintenance Endangered Species Act (ESA) Program Guidelines — Regional Guidelines, the 2005 Stormwater Management Manual of Western Washington. Many of the required BMPs, such as street sweeping, control of vegetation, and ditch maintenance along trails, have already been implemented. KCPR will develop new BMPs for maintaining its regional trails, access roads, and parking lots by July 2008. KCRMS is currently reviewing its facility inventory to determine if any facilities lack maintenance standards and will develop standards for those facilities without standards.

WTD will review their maintenance practices for conformity with the SWDM and SWPPM and will provide a description of their maintenance and inspection programs for the 2009 SWMP. The Facilities Maintenance Division will inventory drainage facilities on their properties and use the SWDM and SWPPM to identify appropriate BMPs that will be documented in the 2009 SWMP.

1. *The purpose of the maintenance standard is to determine if maintenance is required. The maintenance standard is not a measure of the facility's required condition at all times between inspections. Exceeding the maintenance standard between inspections and/or maintenance is not a permit violation.*
2. *Unless there are circumstances beyond the Permittee's control, when an inspection identifies an exceedance of the maintenance standard, maintenance shall be performed:*
 - *Within 1 year for wet pool facilities and retention/detention ponds.*
 - *Within 6 months for typical maintenance.*
 - *Within 9 months for maintenance requiring re-vegetation, and*
 - *Within 2 years for maintenance that requires capital construction of less than \$25,000.*

Circumstances beyond the Permittee's control include denial or delay of access by property owners, denial or delay of necessary permit approvals, and unexpected reallocations of maintenance staff to perform emergency work. For each exceedance of the required timeframe, the Permittee shall document the circumstances and how they were beyond the Permittee's control.

SWS works in conjunction with the County DOT's Special Operations Unit to complete identified facility maintenance within established timeframes. Work authorizations are initially classified as "emergency," "high priority," "complaint," or "normal" maintenance to help set priorities and meet completion deadlines. Bi-monthly crew coordination meetings are held to discuss current workload status and revise priorities as necessary to facilitate timely completion of outstanding work authorizations. Both Divisions attend annual program start-up meetings to establish work priorities, and set standards for work completion. Work programs and staffing adjustments will be made to meet established permit requirements for completing work. To meet the required two-year turnaround time for maintenance that requires

less than \$25,000 of capital construction, all retrofit projects in the backlog as of the beginning of 2009 must be implemented by the end of 2010. This will require a capital investment of about \$500,000 per year for the next three years. In 2008, WLRD plans to implement about \$500,000 worth of retrofit projects.

By August 1, 2008, the Airport will identify the inspection and maintenance activities for its stormwater facilities to prevent or reduce impacts from stormwater discharges.

S5.C.9.b.ii.

Maintenance of stormwater facilities regulated by the Permittee

1. *No later than 18 months after the effective date of this permit, each Permittee shall evaluate and, if necessary, update existing ordinances or other enforceable documents requiring maintenance of all permanent stormwater treatment and flow control facilities regulated by the Permittee (including catch basins), in accordance with maintenance standards established under S5.C.9.b.i., above.*

[KCC 9.04 and 9.12](#) adequately address this requirement for maintenance and inspection access.

2. *No later than 18 months after the effective date of this permit, each Permittee shall develop and implement an initial inspection schedule for all known, permanent stormwater treatment and flow control facilities (other than catch basins) regulated by the Permittee to inspect each facility at least once during the term of this permit to enforce compliance with adopted maintenance standards as needed based on the inspection. The inspection program is limited to facilities to which the Permittee can legally gain access, provided the Permittee shall seek access to the types of stormwater treatment and flow control facilities listed in the 2005 Stormwater Management Manual for Western Washington.*

[KCC 9.04](#) provides the County with the authority to inspect and require maintenance of privately owned and maintained flow control and water quality facilities. The SWDM also establishes minimum maintenance standards, including the private facility inspection program implemented in the 1980s. Under this program, as a requirement for development, an applicant must record easements and covenants providing the County with right of entry and inspection of private drainage systems. Currently the County alternates County with self-certified inspections on a two-year cycle. The County performs random spot checks to verify self-certified maintenance.

In rural areas, the County increasingly relies on LID style flow control and treatment BMPs including, but not limited to: forest retention; wide riparian buffers; manure lagoons; fencing livestock out of streams; and flow dispersion. In 2008, the County will develop a program for inspecting these facilities.

3. *No later than 4 years after the effective date of this permit, each Permittee shall develop an on-going inspection schedule to annually inspect all stormwater treatment and flow control facilities (other than catch basins) regulated by the Permittee. The annual inspection requirement may be reduced based on maintenance records.*

Reducing the inspection frequency to less frequently than annually shall be based on maintenance records of double the length of time of the proposed inspection frequency. In the absence of maintenance records, the Permittee may substitute written statements to document a specific less frequent inspection schedule. Written statements shall be based on actual inspection and maintenance experience and shall be certified in accordance with G19 Certification and Signature.

SWS has already developed and implemented a combination of County inspection and self-certified inspection to ensure facilities are monitored annually. Additionally, the County can use historical maintenance data dating back to 1980 to adjust inspection scheduling. The County inspects these facilities every other year and requires self-certified inspection by the owner during alternate years.

4. *No later than 2 years after the effective date of this permit each Permittee shall manage maintenance activities to inspect all new permanent stormwater treatment and flow control facilities, including catch basins, in new residential developments every 6 months during the period of heaviest construction to identify maintenance needs and enforce compliance with maintenance standards as needed.*

The County's design standards require the use of temporary erosion and sedimentation controls during construction to prevent impacts to permanent facilities. These are inspected by DDES. In 1992, SWS implemented a maintenance/defect (M/D) inspection program to ensure that developers maintain public improvements during a two-year post-construction period historically found to require continued high maintenance so that the facilities are in good working order when their ownership transfers to the County. KCDOT administers a similar program to not only ensure developer maintenance during the two-year period but to also ensure performance and workmanship of public improvements covered by the M/D bond. During the two-year M/D period the drainage improvements are inspected quarterly while road improvements are inspected annually. Both Departments perform a final inspection prior to bond release and maintenance acceptance.

5. *Compliance with the inspection requirements of S5.C.9.b.ii.(2), (3), and (4), above, shall be determined by the presence of an established inspection program designed to inspect all sites, and achieving inspection of 95% of all sites.*

The programs described above currently meet this requirement.

6. *The Permittee shall require cleaning of catch basins regulated by the Permittee if they are found to be out of compliance with established maintenance standards in the course of inspections conducted at facilities under the requirements of S5.C.7. (Source Control Program), and S5.C.8. (Illicit Connections and Illicit Discharges Detection and Elimination), or if the catch basins are part of the treatment or flow control systems inspected under the requirements of S5.C.9.*

SWS requires catch basin cleaning as part of its private facility inspection and water quality compliance programs.

S5.C.9.b.iii.

Maintenance of stormwater facilities owned or operated by the Permittee

1. *No later than 24 months after the effective date of this permit each Permittee shall begin implementing a program to annually inspect all permanent stormwater treatment and flow control facilities (other than catch basins) owned or operated by the Permittee, and implement appropriate maintenance action in accordance with adopted maintenance standards. The annual inspection requirement may be reduced based on inspection records.*

Changing the inspection frequency to less frequently than annually shall be based on maintenance records of double the length of time of the proposed inspection frequency. In the absence of maintenance records, the Permittee may substitute written statements to document a specific less frequent inspection schedule. Written statements shall be based on actual inspection and maintenance experience and shall be certified in accordance with G19 Certification and Signature.

In the 1980s the County implemented inspection and maintenance programs for publicly owned and maintained flow control and water quality facilities. The SWS Section currently manages the inspection program for flow control and water quality facilities throughout unincorporated King County. SWS also inspects facilities owned and operated by KCDOT and other County agencies. The County currently uses a “phased” inspection program with a maximum inspection frequency of three years.

Phased inspections were developed in the mid 1990s to maximize the frequency between inspections using historical data to determine when facilities need inspections. Phasing was implemented in response to the need to reduce costs so that other services could be funded. Since developing our original public facility inspection program in the early 1980s, the County has kept records of the maintenance needs and tendencies of over 1,000 flow control and water quality facilities in our inventory.

Data analysis showed that some facilities rarely needed maintenance while others required it more frequently. The data showed that for a facility that was not maintenance prone, the time between inspections could be lengthened to a maximum of three years with no loss of function.

The County also looked at what types of maintenance the facilities required to see if less frequent inspections were appropriate. It determined that non-function-critical work (such as ladder repairs, sign replacement, grout work, etc.) did not warrant annual inspections because the likelihood of a reoccurrence was minimal and would not affect the performance of the facility. However, if a facility was found to have sediment deposition, erosion, blockages, or other function-critical failure, the facility would be inspected again the following year (after maintenance or repair had occurred) to see if the condition was reoccurring. Likewise, once the County responds to an emergency callout to a facility and corrects the problem, the facility should be inspected the next year to see if the condition reappeared.

2. *No later than 24 months after the effective date of this program each Permittee shall begin implementing a program to conduct spot checks of potentially damaged permanent treatment and flow control facilities (other than catch basins) after major storm events (24 hour storm event with a 10 year recurrence interval). If spot checks indicate widespread damage/maintenance needs, inspect all stormwater treatment and flow control facilities that may be affected. Conduct repairs or take appropriate*

maintenance action in accordance with maintenance standards established under S5.C.9.b.i., above, based on the results of the inspections.

SWS inspects and maintains facilities serving residential subdivisions, certain regional facilities, and all other stormwater control and treatment facilities owned or operated by the County. SWS has a program that spot checks 40 - 60 facilities after major storm events. Local storms tend to vary in intensity around the county. The samples are typically weighted to areas that have been more heavily affected by storms based on rain gage data, and consider historic data for areas or facilities that have experienced problems in the past. SWS reviews past storm events and identifies areas of consolidated complaints or facilities with emergency call-outs to better ensure that it is checking facilities that need closer attention.

KCPR will initiate a program to conduct spot checks of potentially damaged stormwater treatment and flow control facilities after major storm events (24-hour storm event with a 10-year recurrence interval) by the end of 2008.

- 3. Compliance with the inspection requirements of S5.C.9.b.iii.(1), and (2) above, shall be determined by the presence of an established inspection program designed to inspect all sites, and achieving inspection of 95% of all sites.*

The SWS program currently meets this requirement.

S5.C.9.b.iv.

Maintenance of Catch Basins Owned or Operated by the Permittee

- 1. No later than 24 months after the effective date of this permit each Permittee shall begin implementing a program to annually inspect catch basins and inlets owned or operated by the Permittee.*
 - Inspections may be conducted on a “circuit basis” whereby a sampling of catch basins and inlets within each circuit is inspected to identify maintenance needs. Include in the sampling an inspection of the catch basin immediately upstream of any system outfall. Clean all catch basins within a given circuit at one time if the inspection sampling indicates cleaning is needed to comply with maintenance standards established under S5.C.9.b.i., above.*
 - As an alternative to inspecting catch basins on a “circuit basis,” the Permittee may inspect all catch basins, and clean only catch basins where cleaning is needed to comply with maintenance standards.*

KCRMS inspects and maintains catch basins and inlets in the road right-of-way. KCRMS is updating its current inspection and maintenance program by conducting a catch basin and inlet inspection program on a circuit basis. This process is based on the current knowledge of the maintenance crews, the needs of the system, and the permit. The program will include an inspection checklist, a field data collection system, and a software program to generate work orders that dispatch KCRMS crews to perform the needed repairs or cleaning. A tracking system is also being developed to document inspections and subsequent repairs or cleaning.

Transit currently relies on a mix of in-house and external inspections of its stormwater drainage and treatment infrastructure. The in-house program conducts site inspections of all 50+ park-and-rides that Transit oversees including Transit-, city- and state-owned properties. At each of these sites the sediment depth in all catch basins and treatment units is measured and then documented in a spreadsheet that indicates catch basins need to be cleaned. Maintenance is performed in-house by Transit's own fleet of two vactor trucks.

Transit's in-house program also extends to those sites covered by an Industrial Stormwater General Permit (currently numbering six sites). Due to the size of these sites, not all catch basins are individually inspected, but instead a random sample is checked annually to determine accumulated sediment depth. However, all treatment units are checked annually.

External inspections are performed by the various jurisdictions that contain the various Transit properties. The jurisdictions inspect check catch basin sediment accumulation. Then they send a letter to the County requesting that it clean those catch basins not meeting the jurisdiction's requirements.

KCPR will implement a program to annually inspect all its known catch basins starting in 2008. KCPR will use the SWDM developed by SWS. Records of inspections and repair activities will be maintained. The catch basins will be inspected annually. Records of inspections and repair activities will be maintained. KCPR will perform many of the repairs. KC Roads Services or KC Solid Waste may be contracted for vactoring, asphalt, and other repairs. Disposal of decant water will be in accordance with the requirement in Appendix 6 – Street Waste Disposal.

2. *The annual catch basin inspection schedule may be changed as appropriate to meet the maintenance standards based on maintenance records of double the length of time of the proposed inspection frequency. In the absence of maintenance records for catch basins, the Permittee may substitute written statements to document a specific, less frequent inspection schedule. Written statements shall be based on actual inspection and maintenance experience and shall be certified in accordance with G19 Certification and Signature.*
3. *The disposal of decant water shall be in accordance with the requirements in Appendix 6 – Street Waste Disposal.*

KCRMS operates five decant stations located throughout the County for temporary collection of liquid and solid waste generated from cleaning storm drainage systems. Two of the stations are open to both private companies and government agencies. At these stations, the decant water is collected in a series of concrete ponds that allow settling of solids, oil and grease separation, and debris containment. The decant water then goes through a baffled settling vault or manhole and another oil/water separator before it is discharged to the Metro sanitary sewer system. Both stations have discharge permits from Metro authorizing the discharge of decant water to sanitary sewer. The solids are transferred to the County's soil remediation program, where the solid waste fraction is screened out and disposed and the soil fraction is tested and reused.

Three of the stations are for municipal use only and collect decant water in lined ponds. The water is pumped into a tanker and transported to one of the stations connected to sanitary sewer for disposal. The solids are transferred to the county's soil remediation program.

Transit operates one decant facility for use by its in-house fleet of vector trucks. Wastewater generated by this process is treated and disposed of to sewer as required by industrial wastewater regulations. Collected solid material is dried prior to disposal at a local cement company.

S5.C.9.b.v.

Records of inspections and maintenance or repair activities conducted by the Permittee shall be maintained. Records of maintenance or repair requiring capital construction of \$25,000 or more shall be maintained and provided in the annual report.

The County implemented its inspection and maintenance programs in the 1980s, at which time an in-house custom inspection database was developed. The updated version of this program maintains records of inspections, work authorizations, and completion dates. Reports using this database can be developed for unlimited applications. Additionally inspection files for all facilities contain hard copy records of all pertinent work information.

KCRMS is responsible for the maintenance and repair of much of King County's stormwater collection, conveyance and treatment system in addition to the preservation of the County's ROW. KCRMS uses several systems to track these activities and maintains both electronic and hardcopy records regarding these maintenance and repair activities.

Electronic record keeping is done using the County's Maintenance Management and Account Resource Management systems. These are updated as maintenance and repair activities are conducted. Hard copy tracking systems include KCRMS Maintenance Reports and Citizen Action Request forms. Information tracked by these systems includes, but is not limited to, the type of maintenance or repair activity, date and location of the work, labor hours, and equipment. This program is currently under review.

Maintenance and repairs costs are tracked throughout the year using the record keeping systems described above. Repair or maintenance projects requiring \$25,000 or more will be identified and records will be provided in the County's annual report to Ecology.

KCPR will maintain record of inspections and maintenance or repair activities. Repair or maintenance requiring capital construction of \$25,000 or more will be provided in the County's annual report to Ecology.

S5.C.9.b.vi.

Within 12 months of the effective date of this permit, establish practices to reduce stormwater impacts associated with runoff from parking lots, streets, roads, and highways owned or operated by the Permittee; and road maintenance activities conducted by the Permittee.

Implementation of practices shall begin no later than 18 months after the effective date of this permit, and continue on an ongoing basis throughout the term of the permit. The following activities shall be addressed:

2008 Stormwater Management Program

1. *Pipe cleaning*
2. *Cleaning of culverts that convey stormwater in ditch systems*
3. *Ditch maintenance*
4. *Street cleaning*
5. *Road repair and resurfacing, including pavement grinding*
6. *Snow and ice control*
7. *Utility installation*
8. *Maintaining roadside areas, including vegetation management.*
9. *Dust control*
10. *Pavement striping maintenance*

The current SPPM manual and the Regional Roads Maintenance Endangered Species Act (ESA) Program Guidelines Manual has BMPs for all 10 activities listed in this permit section.

KCRMS has established road maintenance standards that incorporate practices to reduce stormwater impacts associated with runoff from parking lots, streets and roads. Each road maintenance activity includes a description of when maintenance is needed and the proper BMPs to follow while performing the activity. Criteria from the King County Surface Water Design Manual, the Regional Road Maintenance Endangered Species Act (ESA) Program Guidelines Manual, and/or the 2005 Stormwater Management Manual of Western Washington are used to determine maintenance triggers and the BMPs to be used during maintenance activities.

The road maintenance standards are reviewed and approved by the County's Director of Transportation. KCRMS superintendents and supervisors implement the standards using training programs for the maintenance crews. The maintenance standards provide the crews the work method and outline the resources required to carry out the maintenance and repair activities. The program is reviewed on a regular basis to ensure that new activities and structures have appropriate maintenance standards. The County is also working with ROAD MAP to produce common maintenance standards that can be used by the region's permit holders.

KCPR has few asphalt roads used by vehicular traffic. The largest single section of asphalt road is NE Marymoor Way, which is approximately $\frac{3}{4}$ mile long. KCPR has over 185 miles of regional trails, most paved with asphalt and the remainder with gravel surface. There is no motorized vehicle use of the regional trails except for limited use by KCPR maintenance vehicles, so the potential for stormwater pollutants from vehicular use is greatly reduced. The regional trails that are gravel surface and gravel parking lots within the KCPR system are graded and compacted regularly.

KCPR uses the Roads Regional Maintenance Endangered Species Act (ESA) Program Guidelines Manual, 2005 Stormwater Management Manual of Western Washington, and the King County Surface Water Design manual for maintenance of parking lots, streets, and roads within KCPR properties. Some of the required BMPs have already been implemented such as street sweeping, control of vegetation, ditch maintenance, and cleaning of culvert inlets and outlets. Dust control is typically not a problem on paved surfaces unless they are part of a construction project, in which case construction site stormwater BMPs are used.

KC Roads is contracted to perform any road repair and resurfacing, such as pavement grinding or resurfacing of asphalt.

Snow and ice control is performed by KCPR. It is typically only performed on walkways within parks or on bridges or other known hazard sites along regional trails. This is a very limited area.

S5.C.9.b.vii.

No later than 18 months after the effective date of this permit, each Permittee shall establish and implement policies and procedures to reduce pollutants in discharges from lands owned or maintained by the Permittee subject to this permit. Lands owned or maintained by the Permittee include but are not limited to: parks, open space, road right-of-ways, maintenance yards, and stormwater treatment and flow control facilities.

The policies and procedures shall address, but are not limited to:

1. *Application of fertilizer, pesticides, and herbicides, including the development of Nutrient management and Integrated Pest Management Plans;*
2. *Sediment and erosion control;*
3. *Landscape maintenance and vegetation disposal;*
4. *Trash management; and*
5. *Building exterior cleaning and maintenance.*

The County owns or maintains numerous properties including: road ROW; active and inactive sand and gravel mining pits; maintenance facilities; stormwater facilities; office buildings; park and rides; solid waste transfer stations; equipment storage facilities; parks; trails; animal shelters; and various other classes of developed and undeveloped properties.

The SWDM and the SPPM developed by SWS details numerous BMPs to be used for property maintenance, and the Executive has issued an [Integrated Pest Management Order](http://www.kingcounty.gov/operations/policies/executive/utilitiesaeo/put817aeo.aspx) (<http://www.kingcounty.gov/operations/policies/executive/utilitiesaeo/put817aeo.aspx>) that is to be followed by all King County agencies.

KCRMS has implemented several practices on a programmatic basis to reduce pollutants in discharges from properties owned or maintained by KCDOT. One such

program is the Regional Road Maintenance Endangered Species Act Program, developed in 2001 by 24 agencies in Washington State. This program established guidelines in response to the 1999 federal listing of Puget Sound Chinook salmon and bull trout as threatened under the Endangered Species Act. The guidelines describe physical, structural, and managerial BMPs designed so that when they are used, singularly or in combination, the impacts of road maintenance activities on water and habitat are reduced.

KCRMS operates in accordance with the [1999 Tri-County Integrated Pest and Vegetation Management Guidelines](http://www.govlink.org/hazwaste/publications/IPMTriCountyGuidelines.pdf) (<http://www.govlink.org/hazwaste/publications/IPMTriCountyGuidelines.pdf>) at all of the properties it owns or maintains. Other practices listed in S5.C.9.b.vii are addressed in the programs described above.

KCPR already has implemented many BMPs to reduce pollutant discharges from its properties. KCPR has an internal department BMP manual that addresses many of the maintenance tasks performed. A separate manual addressing specific stormwater related BMPs associated with these tasks will be prepared by July 2008. KCPR as part of the 1999 KC Executive Order requiring certain County Departments, Offices, and Agencies to conduct pest and vegetation management activities in accordance with the Tri-County Integrated Pest Management (IPM) Model Policy has been for several years employing IPM practices to reduce pollutants and the use of harmful chemicals in its operations. KCPR will outline these practices in a document being developed specifically for stormwater BMPs.

S5.C.9.b.viii.

No later than 24 months after the effective date of this permit, develop and implement an ongoing training program for employees of the Permittee who have primary construction, operations or maintenance job functions that could impact stormwater quality. Follow-up training shall be provided as needed to address changes in procedures, techniques or staffing. Permittees shall document and maintain records of the training provided and the staff trained.

Starting in 2008, SWS and KCRMS are coordinating the development and implementation of annual training to be provided to all County field staff whose jobs could have an impact on stormwater quality. The program will include a tracking system.

KCRMS has already developed and is implementing on-going training programs for its employees who have primary construction operations or maintenance job functions that may impact stormwater quality. KCRMS field crews and support staff receives training required under the Endangered Species Act (ESA) Program Guidelines. The Regional Road Maintenance ESA (Track 1, 2 & 3) training focuses on BMP practices and uses, maintenance guidelines, design criteria, habitat requirements, and how to use BMPs to meet ESA requirements.

S5.C.9.b.ix.

Develop and implement a Stormwater Pollution Prevention Plan (SWPPP) for all heavy equipment maintenance or storage yards, and material storage facilities owned or operated by the Permittee in areas subject to this permit, that are not covered under by another Ecology issued stormwater discharge permit. The Permittee shall identify facilities subject to this requirement. The SWPPPs shall be developed within 24 months of the effective date of this

permit. Implementation of non-structural BMPs shall begin immediately after the pollution prevention plan is developed. A schedule for implementation of structural BMPs shall be included in the SWPPP. Generic SWPPPs that can be applied at multiple sites may be used to comply with this requirement. The SWPPP shall include periodic visual observation of discharges from the facility to evaluate the effectiveness of BMPs.

A list of all County-owned properties has been developed. During 2008, this list will be reviewed to determine which sites meet this permit condition.

In support of its maintenance operations, KCRMS owns 20 properties that are classified as active or inactive sand and gravel mining pits and are regulated under the General NPDES Sand & Gravel permit. An additional five support sites are subject to the Phase I Municipal NPDES permit. These sites are primarily maintenance facilities that are used for a variety of purposes, including material storage, mining and filling operations, vehicle maintenance, and office space. Some maintenance facilities serve several purposes, while others may be used for a single purpose. KCRMS prepared site-specific SWPPPs and Spill Prevention, Control & Countermeasure Plans (SPCCs) for each of the 25 facilities described above. All the sites are inspected twice a year; once during the wet season (typically in January) and once during the dry season (typically in July). Inspectors document any necessary or recommended changes and work with KCRMS staff to improve pollution prevention and good housekeeping practices.

King County Parks has nine maintenance shops and is planning to develop Stormwater Pollution Prevention plans for eight by July 2008. There is already an existing Stormwater Pollution Prevention Plan for the Renton Shop as part of the KC Roads Services Sand and Gravel NPDES Stormwater Permit. These plans will identify operational and source control BMPs for these facilities.

S5.C.10. Education and Outreach Program

S5.C.10.a.

The SWMP shall include an education program aimed at residents, businesses, industries, elected officials, policy makers, planning staff and other employees of the Permittee. The goal of the education program is to reduce or eliminate behaviors and practices that cause or contribute to adverse stormwater impacts. An education program may be developed locally or regionally.

The County's diverse educational and outreach programs are almost all regional in nature, and many have existed and proven their value over the past ten years.

The County has led the region in the use of social marketing, defined as "the application of commercial marketing technologies to the analysis, planning, execution, and evaluation of programs designed to influence voluntary behavior of target audiences in order to improve their personal welfare and that of their society" (Andreasen, 1995). Social marketing is distinguished from other management approaches by six basic principles: (1) the marketing conceptual framework is used to design behavior change interventions; (2) there is recognition of competition; (3) there is a consumer orientation; (4) formative research is used to understand consumers' desires and needs; (5) there is a segmentation of populations and careful selection of target audiences; and (6) continuous monitoring and revision of program tactics help to achieve desired outcomes. Although not appropriate to all outreach efforts, it is the key strategy of many.

S5.C.10.b.

Minimum Performance Measures:

S5.C.10.b.i.

No later than 12 months after the effective date of this permit, each Permittee shall implement or participate in an education and outreach program that uses a variety of methods to target the audiences and topics listed below. The outreach program shall be designed to achieve measurable improvements in each target audience's understanding of the problem and what they can do to solve it.

Outreach Strategy and Areas of Emphasis:

To be successful, all education with behavior change goals must follow a four-step strategy:

1. Build broad awareness and perception of select social norms of high value;
2. Provide education, information and motivation to targeted audiences;
3. Move to action through perceived benefits, opportunities to facilitate change, and the removal of barriers; and
4. Measure for effectiveness.

A fifth is also operative and essential for sustained and universal BMP implementation: change through ordinance. However, past efforts have proven that regulation without education is a less effective mechanism to effect change. With

education, regulation is more likely to be successful as in the King County Local Hazardous Waste Mercury Amalgam Program 1999—2000 and SWS Best Management trainings and audits)

King County, through program work in several departments and divisions, and through partnerships with Local Hazardous Waste Management, local Water Resource Inventory Areas (WRIAs), the King Conservation District (KCD), and Washington State University Extension (WSU), implements numerous public outreach and education programs, many of which are targeted to more than one of the audiences specified below and address many of the specified topics. Some of these programs are primarily focused on topics that while not directly related to stormwater, are ancillary to it, e.g. stewardship, soils, wastewater, habitat, etc. Other programs provide significant relevance to stormwater impacts and behavior changes that alter those impacts (yard care, animal waste, car washing, LID practices, etc). Because of the wide diversity of our programs, we have listed them, and the permit topics they address, in matrix form in Appendix 4. These programs reflect 2008 offerings. In subsequent years, the number and types of programs will change in keeping with changes in the service area, financial resources, and evaluation of the program's effectiveness.

In those programs most directly related to stormwater, there are ten distinct and sometimes overlapping areas of emphasis and/or delivery mechanisms. The emphasis areas are not designed as conventional education programs with the goal of conveying information and awareness, but rather as behavior change programs with the goal of motivating target audiences to implement specific BMPs. The 10 areas of emphasis/delivery mechanisms are as follows:

- General impacts (through multiple medias and programs). Note: General impacts are inherent in all the areas of emphasis.
- Environmental Stewardship (through incentives, appropriation, trainings, events, print and web publications and technical assistance).
- Yard Care (through publications, trainings, messages, pledges). This topic often includes most other stormwater permit topics in the scope of trainings.
- Landscaping (yard care trainings, Envirostars service marketing, display gardens).
- Buffers (training, salvages, installations, WRIA events).
- Forest Retention (print and web publications, trainings, events, incentives, technical assistance and ordinance).
- LID Design/Pervious Pavement (Yard Talk and Yard Care programs).
- Animal Waste (yard care trainings, web-based online solutions, ordinance, business outreach).
- Chemical and Hazardous Materials Storage and Disposal (business outreach, regulation).

- Vehicle Maintenance and Repair (ordinance, Web based online solutions, public events, business outreach).

Other, more narrowly targeted programs are listed in the appropriate section.

Education and Outreach Tools

Effective behavior change campaigns rely on multiple and repeated use of several education, outreach and media tools. All of these tools will be applied where appropriate. These include:

- Mass media (TV, Radio, etc);
- Collateral (print, Web);
- Education and intensive training (by targeted topic);
- Events (volunteer and social);
- Ordinance support (carwash, stormdrain); and
- Buzz (societal opinion and reach around new norms).

Regional Municipal Outreach and Coordination

As a direct response to Ecology's 2007 municipal permits, King County facilitated the formation of a regional outreach consortium: STORM (Stormwater Outreach for Regional Municipalities), which focuses entirely on meeting permit requirements. With the public education and outreach requirements virtually identical in both the Phase I and Phase II permits, municipalities quickly saw the advantage of combining their resources to create a strategy and campaign for outreach that would transcend jurisdictional boundaries. King County provides a Sharepoint site for SOTRM's use and serves on the Steering, Campaign, and Measurement Committees. STORM will coordinate its efforts with the Salmon Conservation Plan implementation occurring at the WRIA level and with the Puget Sound Partnership.

STORM was a successful applicant for one of Ecology's competitive stormwater grants and, beginning in 2008 will be using the grant money to create and implement a four year regional outreach and messaging campaign to enhance, integrate, measure and draw attention to diverse targeted regional outreach programs existing or to be developed within participating jurisdictions. King County staff will manage the grant on behalf of the forum. The grant program will use 5 main strategies:

- Creating an overall integrated implementation plan;
- Codifying a menu matrix that will feature all existing program models as templates for use by any and all partners;
- Applying social marketing approaches to several key topic areas to enhance and build capability of existing or new programs;

- Creating and implementing an electronic media campaign to inculcate key messages across a regional target area; and
- Developing and implementing a broad and integrated measurement strategy including an efficient system for all participating municipalities to report results.

Target Audiences and Relevant Topics

1. *General Public*

- *General impacts of stormwater flows into surface waters.*
- *Impacts from impervious surfaces.*
- *Source control BMPs and environmental stewardship, actions and opportunities in the areas of pet waste, vehicle maintenance, landscaping and buffers.*

The matrix in Appendix 4 details all existing programs targeting general public audiences and topic relevance.

2. *General public and businesses, including home based and mobile businesses*

- *BMPs for use and storage of automotive chemicals, hazardous cleaning supplies, carwash soaps and other hazardous materials.*
- *Impacts of illicit discharges and how to report them.*

The Water Quality Program of Stormwater Services regularly audits businesses and, as part of the audit, provides technical assistance and information about relevant BMPs required in the SWPPM to owners or managers.

The Airport will provide annual training to the Airport's tenants on the Airport's policies related to spill response and the requirements of the stormwater permits.

The matrix in Appendix 4 details all educational programs targeting general public and select business audiences and their topic relevance.

3. *Homeowners, landscapers and property managers*

- *Yard care techniques protective of water quality.*
- *BMPs for use and storage of pesticides and fertilizers.*
- *BMPs for carpet cleaning and auto repair and maintenance.*
- *Low Impact Development techniques, including site design, pervious paving, retention of forests and mature trees.*
- *Stormwater treatment and flow control BMPs.*

A wide array of programs that address homeowner and general public awareness and behaviors, related to all or many permit topics, is described in Appendix 4.

4. *Engineers, contractors, developers, review staff and land use planners*

- *Technical standards for stormwater site and erosion control plans.*
- *Low Impact Development techniques, including site design, pervious paving, retention of forests and mature trees.*
- *Stormwater treatment and flow control BMPs.*

SWS offers classes on the SWDM for development professionals. These include LID and flow control BMPs, water quality facility design, and hydraulic and hydrologic modeling. SWS staff also provides presentations for interested groups on these and related topics.

S5.C.10.b.ii.

*Each Permittee shall implement or participate in an effort to measure understanding and adoption of the targeted behaviors by the targeted audiences. The resulting measurements shall be used to direct education and outreach resources most effectively as well as to evaluate changes in adoption of the targeted behaviors.*S5.C.10.b.iii.

All stormwater-related outreach efforts already have or will have a measurement strategy for targeted audiences. Some of these strategies will be developed by STORM (Stormwater Outreach for Regional Municipalities) under the Ecology grant, or by DNRP program coordinators. The grant team and consultants will study ways of measuring diverse outreach programs during the second and third quarters of 2008 for application in the quarters thereafter through 2011. The exception is Natural Yard Care Neighborhoods which has already developed its measurement approach.

Measurement will include both implementation monitoring and effectiveness monitoring. Implementation monitoring is typical of conventional education programs and includes counts of participants, materials, etc. Though more challenging to accomplish, effectiveness monitoring is based on outcome measures, ie. behavior changes, and will constitute the core of our program evaluation strategy.

Use will be made of the existing Regional Environmental Behavior Index, instituted by King County in 2005 to measure key environmental behaviors of the general public in our region. These surveys will continue through the permit period, will be supplemented by the grant, and will be a source of feedback to relevant programs.

S5.C.10.b.iii.

Each Permittee shall track and maintain records of public education activities.

A tracking system will be developed and implemented both internally and as part of the STORM measurement strategy together with an efficient system for all participating municipalities to report results.

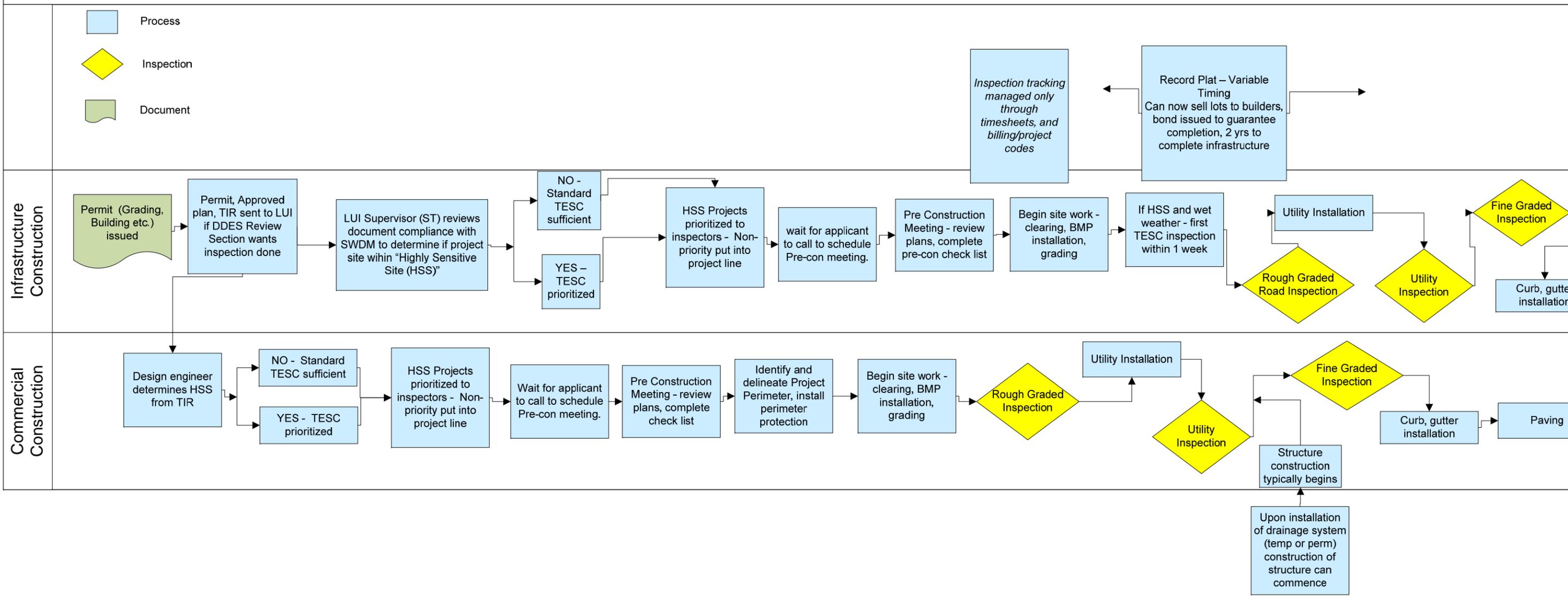
DICTIONARY OF ACRONYMS

ADAP - Agricultural Drainage Assistance Program (KC, DNRP, WLRD, ORRP)
AKART - All known, available, and reasonable methods of prevention, control and treatment
BMP - Best Management Practice
CAD - Computer Aided Design
CFR - Code of Federal Regulations
DDES - Department of Development and Environmental Services (King County)
DES - Department of Executive Services (King County)
DNRP - Department of Natural Resources and Parks (King County)
DOE - WA Department of Ecology
DOT - Department of Transportation (King County)
ERTS - Environmental Response Tracking System
GIS - Geographic Information System
GPS - Geographic Positioning System
IC & IDDE - Illicit Connections and Illicit Discharges Detection and Elimination
IDTF - Illegal Dumping Task Force
IPM - Integrated Pest Management
ISGP - Industrial Stormwater General Permits
KC - King County
KCC - King County Code
KCIA - King County International Airport
KCPR - King County Parks and Recreation (DNRP, WLRD)
LID - Low Impact Development
LUIS - Land Use Inspection Services Division of DDES
M/D - Maintenance/defect
MS4 - Municipal Separate Storm Sewer System
MS3 - Municipal Separate Storm Sewer
NPDES - National Pollution Discharge Elimination System
NWRO - Northwest Regional Office, DOE
ORRP - Office of Rural and Resource Programs (KC, DNRP, WLRD)
OSCO - Online Solutions for Community Outreach (KC, DNRP, WLRD, ORRP)
PHSKC - Public Health – Seattle & King County
RMS - Roads Maintenance Services (KC, DOT, RSD)
ROADMAP – Regional Operations and Maintenance Program, a regional forum for consistent O &M, mapping, and other standards
ROW - Right of Way
RSD - Roads Services Division (KC, DOT)
SMMWW – Ecology’s Stormwater Management Manual for Western Washington
SPCC - Spill Prevention, Control & Countermeasure Plans
SPPM - Stormwater Pollution Prevention Manual
STORM – Stormwater Outreach for Regional Municipalities, a regional public outreach forum
SWDM – King County’s Surface Water Design Manual
SWMP - Stormwater Management Program
SWPPP - Stormwater Pollution Prevention Plan
SWS - Stormwater Services (KC, DNRP, WLRD)
TMDL - Total Maximum Daily Load
TWQIT - Transit Water Quality Improvement Team
WLRD - Water and Land Resources Division (King County)
WRIA - Water Resource Inventory Area
WSU – Washington State University Extension

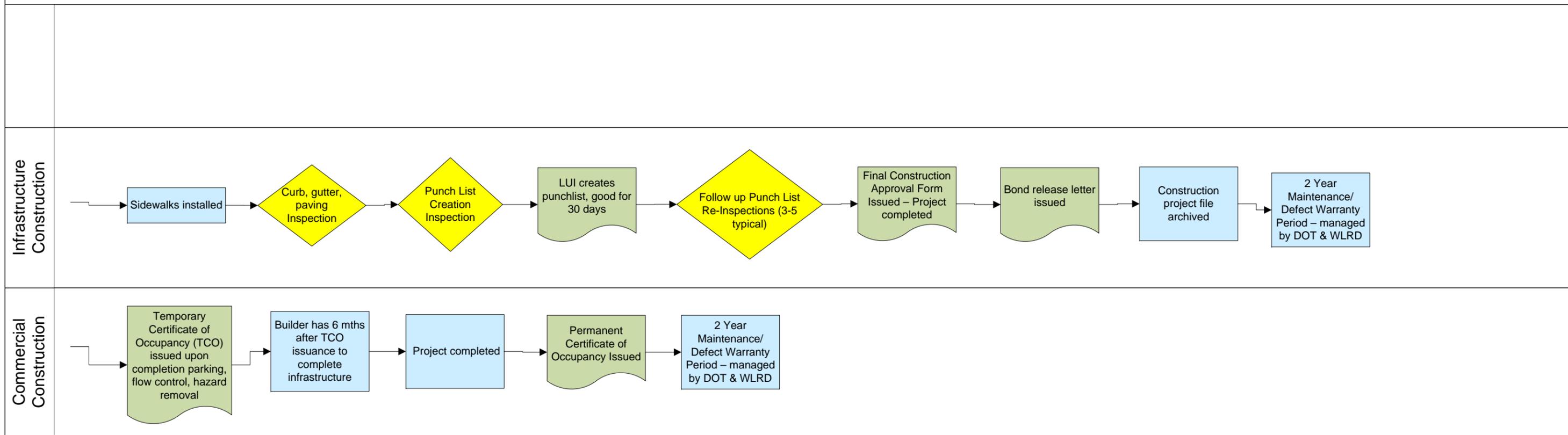
APPENDICES

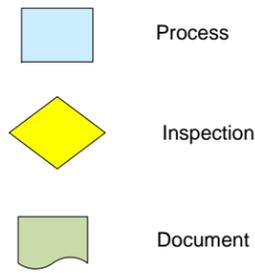
Appendix 1—DDES Flowcharts

Land Use Inspections

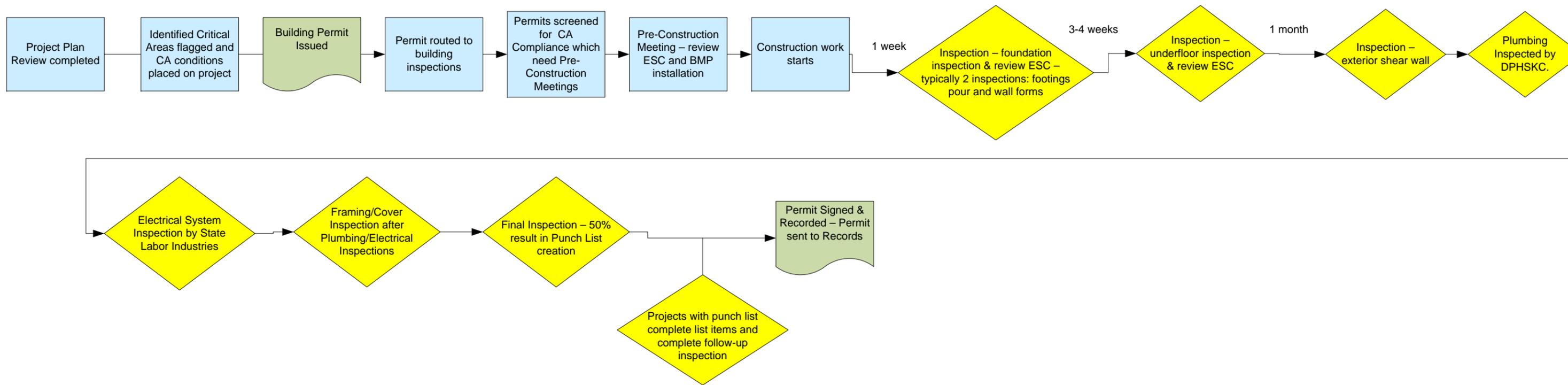


Land Use Inspections – Continued Page 2

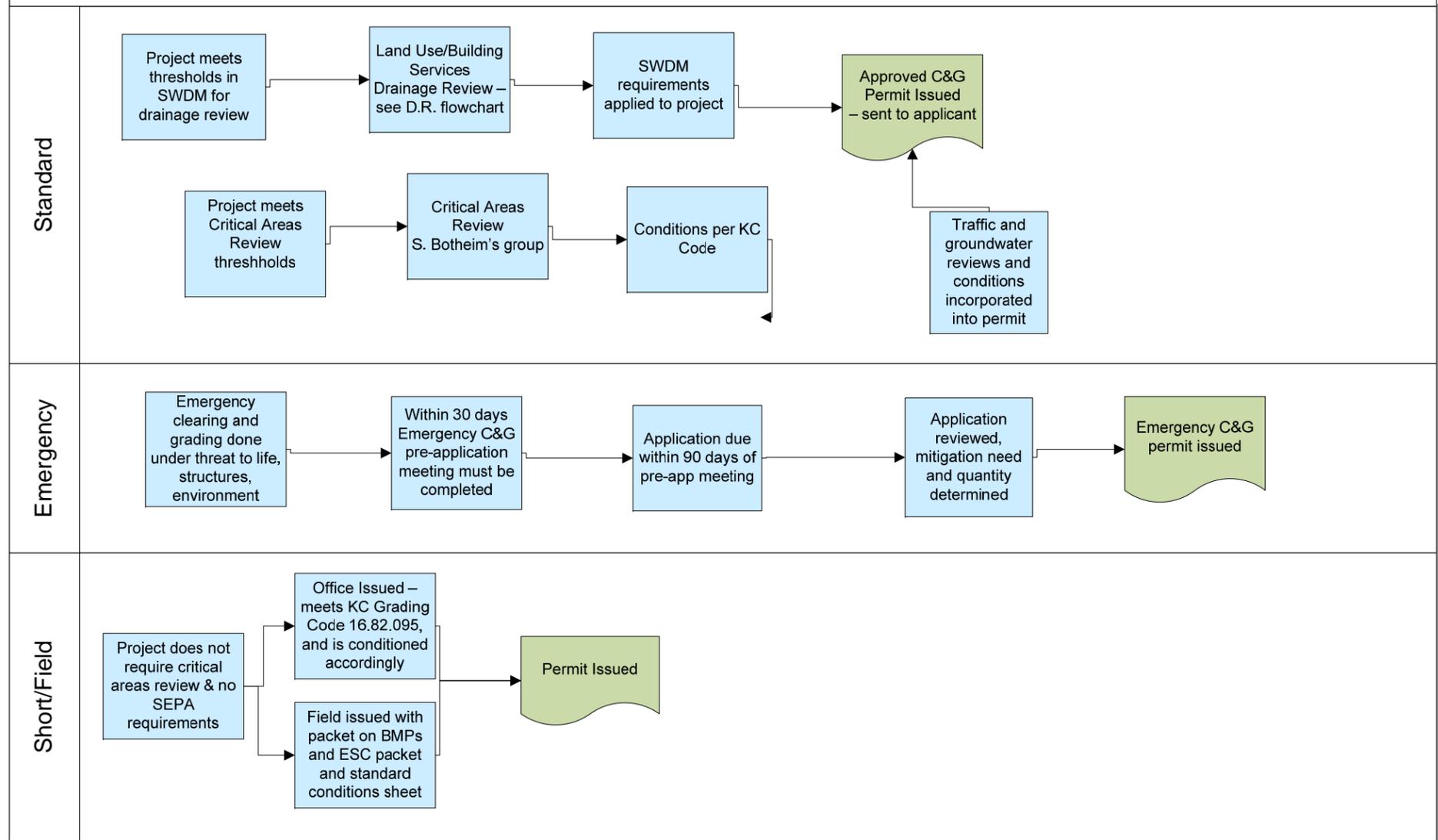




Residential Inspection Process Flowchart



Clearing and Grading Permit Process (KC Code 16.82)

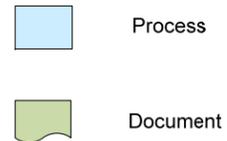


CLEARING AND GRADING PERMIT FLOW CHART (KC Code 16.82)

Clearing and Grading (C and G) permits have three distinct tracks for issuance. The standard C and G permit often is part of a larger permit application such as a plat, short plat, or commercial development. Most of these permits meet the threshold requirements outlined in the King County Surface Water Design Manual (KCSWDM). These permits require that they go through the drainage review track. Therefore, most of these permits are conditioned through Land Use Services Division (LUSD) and are not conditioned through the C and G work group. Conditions for these permits are based on the KCSWDM, and all Erosion and Sediment Control (ESC) requirements outlined in Appendix D of the KCSWDM are required. Standard permits may also meet requirements for critical area ordinance review requirements. These permits are reviewed and conditioned by S. Bothiem and other staff within the critical areas section.

For Emergency Clearing and Grading permits the following requirements must be met. An emergency permit is described as (those situations that are a threat to life, environment and structures) and can be resource dependent. Permits are issued after the fact, and determination is made if "mitigation" is needed.

For Short Form/Field Issued Clearing and Grading permits, conditions are set by Site Development Specialists within the C and G section of DDES. Short Form permits must comply with requirements of KC Grading Code 16.82.095 which require that any land disturbance activity must implement ESC. A handout that explains ESC requirements and a list of standard permit conditions is provided to those individuals that fall within this category.



Appendix 2—Structural Control Program Descriptions

Large Stormwater Control Projects

	Project Name	Description
1	Deer Creek Channel Relocation	Relocate creek away from a farm road and two farm buildings.
1	Emergency/Opportunity Reserve	The principal purpose of the Emergency/Opportunity CIP Program is to fund the design and construction of urgent projects. Typical examples are drainage system failures, washouts, and landslides or erosion threatening public health and safety. These funds can also be applied to opportunity CIPs where rapid response is necessary to participate in drainage or habitat CIPs with major financial contributions from partners such as other agencies, departments, municipalities, and the public. These funds enable flexible response without the time required for a full budget cycle or supplemental budget request.
1	Feasibility Reserve	Identification, scoping, feasibility analysis, and coordination of capital projects. Ineligible for 1% for art contribution as projects are not publicly accessible or visible.
1	Hamm Creek Water Quality Pond	The original Cloverleaf water quality pond was replaced with a more efficient water quality pond on the Holnam property located approximately 200 feet upstream from the original site. The property owner has removed and controlled kiln dust from the pond site and granted an easement to King County for the pond for \$80,000. The project scope has changed to accommodate a partnership with adjacent commercial properties to restore damaged wetland areas, increase flood flow conveyance capacity, and accommodate fish enhancement mitigation. This partnership has improved ultimate project performance, but has slowed design process due to negotiations and complex stakeholder interests. Disappropriation delays project design to 2007, making funds available for other projects.
1	Johnson Pond (FEMA Grant)	Remove old dam from stream to prevent flooding from dam collapsing.
1	Lake Hicks Pump Intake	install improved pump intake and controls
1	May Valley Flood Reduction	This project provides technical assistance for a variety of locally based flood reduction projects, including floodproofing of homes, on-site drainage improvements and construction of off-channel flood storage ponds. Includes a component to assist property owners in restoring the stream buffers on their property through a series of small cooperative projects that would be coordinated with the flood reduction projects where feasible. Ineligible for 1% for art contribution as projects are not publicly accessible or visible.
1	Mill Creek Trib 045 Tightline	Surface flows from urbanized areas are causing excessive erosion of stream channel and deposited sediments at valley floor cause flooding of agricultural lands in the Farm preservation program at Mullen Slough adjacent to Green River. Project proposes stabilization of the stream channel and bypass of excess surface flows around the erosion prone reach of stream.

Ecosystem Protection Projects

	Project Name	Description
2	Bear & Issaquah & Cedar Riparian Restoration	"Provides annual funding in the Bear, Cedar, and Issaquah basins to construct small-scale habitat restoration projects in stream corridors. Projects include stabilizing eroding stream banks, restoring fish access to upstream habitat, installing livestock fences, controlling invasive weeds, planting native vegetation and providing technical assistance to landowners. Depending on resource availability, these projects may be implemented through the SHRP program (see below)."
2	Big Springs Creek	Relocate cr. section from ditched system to meandered channel
2	Cedar Side Channel Inventory & Evaluation	Evaluate fish use and available habitat types at natural and restored side-channels on the Cedar River to inform restoration design on future Cedar River projects such as levee setbacks and removals. Results would be applicable to other river systems as well.
2	Chinook Bend Levee Removal	Remove left bank levee along the length of the Chinook Bend Natural Area
2	Fenster-Pautzke - Phase 2 – KC	"Phase 2 (KC): Remove levee, lower terrace, reveg, LWD (RM 32)"
2	Gilead/MacDonald Floodplain Reconnection	Snoq. Left Bank Off Channel Habitat Reconnect @ RM 23.3
2	Lower Tolt Restoration	This is a joint project with Seattle Public Utilities, Seattle City Light, KC DNRP Parks Division, and KC WLRD. Project will restore natural river processes in the lower 0.5 mile of the Tolt River near Carnation. Some or all of the existing right-bank levee will be removed and replaced with a set-back levee to maintain flood protection. Other habitat enhancements may include placement of LWD, invasive weed control and reestablishment of native riparian vegetation. The majority of project funding is from grants and from the County's partner for the project, the City of Seattle.
2	Newaukum Cr - Feasibility	Feasibility Study: Assess sub-basin to direct future projects (RM 0–14)
2	Site 1 (North Winds Weir Restoration)	Create 2 acres of off-channel habitat in transition zone; reveg (RM 6.3)
2	Taylor Creek Restoration	This project consists of the acquisition of land on Taylor Creek, a major tributary to the Cedar River and located on Maxwell Road SE and Southeast 208th Street in unincorporated King County near Maple Valley. The property contains former headwater wetlands for Taylor Creek, and it will be restored to high quality wetland and riparian habitat.

Open Space Acquisitions

	Project Name	Description
3	Bear: Cottage/Cold Creek Acquisition	Protect 35 acres (Nichols farm property) on Cottage Lk Creek to protect hydrologic processes and water quality in Cottage Lake Creek and Bear Creek.
3	Big Spring/Newaukum Creek Confluence	This is a multiple parcel acquisition project to preserve riparian habitat on Big Spring Creek and Newaukum Creek north of Enumclaw. The first priority acquisition is a ten-acre riparian woodland parcel located at 244th Avenue SE and SE 416th Street, which contains source springs for Big Spring Creek.
3	Cottage Lake Creek	This is a fee title or conservation easement habitat acquisition project on approximately 1/2 mile of Cottage Lake Creek, near Avondale Road.
3	Grand Ridge Additions	This project consists of the acquisition of forest land on Grand Ridge and Mitchell Hill in the I-90 corridor east of Issaquah. The first priority parcels contain high quality mature second growth forest.
3	Mount Peak Addition	This project consists of the acquisition of multiple parcels of land, on the largely unprotected southern side of Mount Peak, adjacent to Mount Peak Park, near SE Mud Mountain Road, southeast of Enumclaw.
3	Paradise Valley - Judd Creek (Vashon)	This project consists of the acquisition of riparian and meadow land on Judd Creek, located on 11th Avenue SE, on Vashon Island. This proposed acquisition is part of a larger multi-year, multiple parcel effort to preserve the Paradise Valley reach on Judd Creek.
3	Paradise Valley Acq II	This acquisition project adds 30 contiguous acres (3 parcels) to the Paradise Valley Natural Area in the Judd Creek watershed on Vashon Island. This acquisition is part of an ongoing effort to preserve the Paradise Valley reach of Judd Creek, which encompasses nearly 165 consecutive acres of undeveloped forested land and riparian habitat and includes over 2 miles of the stream's mainstem.
3	Heyer Pt Drift Cell Preservation	Acquire parcels to protect Vashon nearshore salmon habitat.

***Appendix 3—King County Storm Water Services Emergency
Response Staff Protocols***

**Water and Land Resources Division
Stormwater Services Section
Drainage Emergency Response Protocols
June, 2006**



**DRAINAGE EMERGENCY RESPONSE STAFF PROTOCOLS
Procedures and Responsibilities**

DRAINAGE EMERGENCY RESPONSE STAFF PROTOCOLS Procedures and Responsibilities

WLR's Stormwater Services Section (SWSS) and the Capital Projects Section (CPS) responds to drainage emergencies such as flooding and erosion to protect public property from damage and ensures county owned and contract city residential and regional flow control (FC) and water quality (WQ) facilities function effectively and are not contributing to drainage problems. In some circumstances, emergency response can help protect private property. SWSS and CPS also responds to water quality problems and potential violations by documenting pollutant discharges to drainage systems and water bodies.

This document describes the roles and responsibilities of SWSS and CPS staff during drainage and water quality emergencies. Its purpose is to help senior staff allocate support staff and other resources to correct drainage and water quality problems in the field, and identify which situations should be referred to other agencies, and, if so, which agencies should be notified. These protocols are to be used after normal business hours or whenever managerial direction is not available. These protocols apply during normal business hours but will usually be managed by regular staff.

Assignments and Schedules

During normal business hour, the Drainage Investigation and Facility Maintenance Unit (DIFM) manager coordinates the SWSS's drainage emergency response activities. The Water Quality Compliance Program manager will coordinate water quality response activities. As of 10/31/05, the DIFM manager is Ken Krank (6-8172) and the Water Quality Compliance Program manager is Sue Clarke (6-8311). CPS emergency response during normal business hours is coordinated by the CPS Managing Engineer. As of 6/5/06, the CPS Managing Engineer is Don Althausen (6-8371).

After hours, a SWSS or a CPS senior staff engineer handles responsibility for activities during drainage and water quality emergencies.

The DIFM manager will prepare a monthly staffing schedule (*WLRD Drainage After Hours Emergency Contact*) from a list of volunteers assigning a SWSS or CPS senior staff engineer as the **Lead**. Each month a different senior staff engineer (**Lead**) will be the first point of contact for after hours emergency drainage response. If that person is unavailable, the next person on the list of volunteer senior staff engineers will be called until an available person is reached. That engineer will then be the **Lead**.

The DIFM manager will also submit the *WLRD Drainage After Hours Emergency Contact* list to the Roads Services Division so they will always know who to contact in a drainage emergency.

The DIFM manager will also prepare a monthly assignment (*WLRD Drainage Emergency Response Volunteer Callout List*) of other SWSS and CPS staff who have volunteered to:

Staff the information/complaint line (296-1900);

Respond to Urban Flooding (Engineering Complaint Response);

Respond to Facility Complaints; and

Respond Water Quality Emergencies.

Duration of Shift

Typically, drainage emergency response occur in one of two scenarios:

- 1) A single event causing a flooding or potential flooding problem or a water quality emergency. This could be a plugged pipe causing flooding during a typical rainy day or an unidentified substance in a ditch.
- 2) An extreme weather event causing wide spread flooding.

In a single event, the **Lead** will be on duty for the duration of the problem since it will normally last only a few hours.(Comment by DA "Speculates lead will be first responder")

During an extreme event, which can last for several days, the shift hours are flexible and will be adjusted to meet the SWSS and personal needs.(Comment by DA: change personal to personnel; k2 meant personal when it was written) Typically, a shift will last no longer than 12 hours. The **Lead** will arrange for relief personnel (usually the following months **Lead**) but may delegate the arranging of relief so he/she can continue to respond to emergencies. During the week, the day shift personnel will take over at their normal start time. Staff may be asked to stay on if there is a need for extra personnel but staff should be released after 12 hours whenever possible. On weekends, alternates will be called in to relieve staff. The **Lead** will normally be relieved by the following months assigned **Lead**. Typically, these two will rotate the **Lead** responsibility for the particular event but other staff may be called in to cover if one is unavailable. Other staff can be contacted and asked to either relive or support the ongoing emergency.

Lead Responsibilities

Each **Lead's** responsibility as the first point of contact for an assigned month begins on the Monday of the first full week of that month. Staff are not on-call but the first person listed on the staffing schedule should be aware that if a storm event is anticipated they will be the first called. If that person knows they will not be available, they should notify the DIFM manager, Roads (296-8100) and the next person on the list.

The **Lead** will be responsible for the following during their assigned month:

- act as primary contact during urban drainage and water quality emergencies after normal business hours;
- Review incoming emergency reports and complaints and assign staff to respond;
- coordinate emergency response with Roads, SWSS and CPS staff, the flood warning center, the King County Office of Emergency Management and any other agency involved in the event;
- respond to questions from staff conducting emergency response activities; and

- make decisions on how to address problems encountered by SWSS and CPS staff conducting emergency response activities in the field.

Drainage Emergencies

The **Lead** should expect to be called during a single event scenario that occurs after business hours. The **Lead** can either directly respond to the problem or call out appropriate emergency response staff volunteers. Very often, Roads Maintenance staff will have already been called out and will contact the **Lead** if they determine support is needed from WLRD. The **Lead** may call in support from the WLRD Drainage Emergency Response Volunteer Callout List if needed. If SWSS or CPS staff are the first to respond, Roads Maintenance staff are available to be called out if needed to implement solutions.

If an event begins during normal working hours, the **Lead** will take over emergency response supervision when it has been determined that a long duration, large event is occurring. If a large storm occurs on a weekend, the **Lead** should check the complaint line (206 296-1900, see attached *Complaint Line Message Retrieval Instructions*) and contact Roads Maintenance (206 296-8100) to determine if a significant number of drainage and flooding complaints are being received. If it appears the complaint line should be staffed and field staff are needed to investigate problems, the **Lead** will contact staff on the SWSS and CPS volunteer list and notify them to report.

Flowcharts of response to each scenario, single event or an extreme weather event, are attached and should be used to determine agency responsibility for a given situation occurring in each scenario. While all potential problems or emergency situation cannot be anticipated, the flowcharts help to provide direction in how to respond. The **Lead** is expected to use his/her best judgement in how to respond to each specific situation as it occurs.

Other Staff Responsibilities

Information Line Staff

SWSS and CPS staff volunteers will answer the drainage complaint line during urban drainage emergencies. They will receive information from the public and other agencies, refer problems to the urban flooding response staff, the FC and WQ facility response staff or other agencies, and respond to inquiries. They assist with complaint log-in, research, and data entry. Staff volunteers will be given as much notification as possible when an event is expected. The information line staff will be in the SWSS office when on duty.

Flooding Response Staff

Flooding problems will include off road right-of-way flooding problems, road flooding caused by off road right-of-way problems, landslides, slope instabilities, erosion, and other storm related problems. The Drainage Emergency Response staff will investigate these situations in the field during their shift. They will report their findings to the **Lead** and help make decisions on how to respond to the problems. For major emergency response CPS Rapid Response Opportunity

and Emergency (RROE) program staff will be requested to implement response plan and action. Roads Maintenance staff will often be called to implement solutions. The Drainage Flooding Response staff will typically be in the field when on duty.

Major emergency actions are deemed as responses requiring significant financial investments in excess of \$15k when actions are taken outside King county properties.

Facility Complaint Response Staff

During an emergency, requests for on-site review of FC and WQ problems will be sent to facility response staff in the field. Staff will visit the facility and determine what can be done to address the problem. The staff will likely work directly with Roads Maintenance staff to correct or mitigate the problem. Often temporary solutions will have to be applied. The facility emergency response staff will contact the **Lead** and keep him/her updated on problems being dealt with. The **Lead** will provide advice and approval for corrective actions when needed. Staff assigned to this activity may be on-site alone or with Roads Maintenance support staff.

Water Quality Problems

Problems with WQ ponds shall be analyzed on a case by case basis. Whenever possible, response to Water Quality problems should be coordinated with the Water Quality Compliance Program manager.

During normal business hours, the Water Quality Compliance Program manager or other program staff will coordinate water quality response activities. Emergency response staff will investigate and report findings to the Water Quality Compliance Program manager. The Water Quality Compliance Program manager will make decisions on the appropriate level of response.

After hours, the **Lead** handles responsibility of water quality emergency response. If a significant spill of a pollutant such as petroleum based products occurs, the Washington Department of Ecology spill response team should be contacted at 425-649-7000. If the problem is any other type of pollutant such as paint, sediment, or soap, the **Lead** will either directly respond to the problem and attempt to determine the source or call out other emergency response staff. If the pollutant is a hazardous material, call 911. Decisions will be made with the response staff and the **Lead** as to the extent of containment needs. Identifying the source, and stopping the discharge, may be all that is needed. All methods available should be employed including installation of booms, pads or other spill clean up methods. If a source of the pollutant discharge is found, documentation, such as photographs, names and addresses of the responsible party(s) is required for possible enforcement follow up and cost recovery. If cleanup is required, KC Roads may be able to assist. If the pollutant is sediment and is from a construction site, document the discharge and follow up with DDES.

If sampling is needed, field staff will take samples following all protocols for preserving samples (such as icing) and deliver them to the KC Environmental lab for analysis within 24 hours. Ben Budka, Trouble Call Coordinator can also be contacted for assistance at 206-684-2328 or 206-993-1353 (pager).

Dam Break

SWSS is responsible for the maintenance and operation of eight dams meeting Department of Ecology's dam safety requirements. Three of these dams have emergency action plans with evacuation measures for at risk homes downstream. In an extreme weather event, these three dams must be monitored to ascertain their condition and implement dam break procedures if necessary. The Regional Storm Program Engineer (Rick Lowthian, 296-8238) and the SWSS Program Analyst II (Rebecca Marcy, 296-8006) keep copies of the emergency action plans.

Note: 8 dams represent the inventory as of 10/31/05. This number will change as new facilities come on-line and old facilities are annexed to other cities. The DIFM manager maintains the current inventory.

800 MHz Radios

An 800 MHz radio is available to assist with communications. It is located in Ken Krank's office. There is a charger for the radio also in the office.

Sandbag Requests

Sandbags are available from Roads Maintenance at their Renton and division facilities. Requests for sandbags should be referred to roads Maintenance at 206 296-8100. Requests for assistance with sandbags are to be referred to the Office of Emergency Management, Emergency Coordination Center at 206 296-3830.

What if Roads Maintenance Can't Perform our Work.

SWSS has on-call maintenance contracts with several construction contractors. These contractors may be used if Roads is unable to or declines to do the work. A list of the current contractors is attached to this document.

Attachments:

Complaint Line Message Retrieval Instructions

Stormwater Services Section Emergency Response Single Event Flowchart

Stormwater Services Section Emergency Response Extreme Weather Event Flowchart

Emergency Agency Numbers

List of DOE Dams

List of on-call contractors

Appendix 4—Public Outreach and Education Matrix

		10. Education and Outreach Program	Topics/Reference														Measurements		
		Note: Programs designated with an "A" indicate topics already addressed within the training. Programs Designated with an "M" means the program will be modified to include the topic or measurement/report in future efforts.	General Impacts	Environmental Stewardship	Impervious Surface Impacts	Yard Care	Landscaping/Landscaper Outreach	Buffers	Forest Retention, Trees	LID Design, Pervious Pavement	Animal Waste	Chem/Pest/Fert. & Hazard. Use/Storage	Vehicle Maint, Repair	Business BMP's	Carpet Cleaning BMP's	Stmwr Treatment & Flow Controls	Technical Standards	Measure behavior change and adapt accordingly	Track program measures and report
Program Name	Program Lead/contact		Program Overview (short)	b.i.1	b.i.1	b.i.1	b.i.3	b.i.1	b.i.1	b.i.3	b.i.3	b.i.1	b.i.2	b.i.2	b.i.2	b.i.3	b.i.4	b.i.4	b.ii
Natural Yard Care	Doug Rice	Regional/partnership program with up to 10 cities, provides social marketing devised trainings in lawn care, pesticide use, alternatives and storage, LID solutions, habitat and buffer opportunities, pet waste impacts, car washing, water conservation and retention, soil building and value, irrigation, environmental stewardship. Over 500 participants annually.	A	A	A	A	A	A	A	A	A	A	A					A	M
Yard Talk and other KCTV opportunities	Doug Rice/Greg Rabourn	How to program that shows easy techniques to natural yard care, general impacts, stewardship, LID, stormwater impacts, buffers, forest retention, animal waste, use and storage of pesticides, naturescaping.	A	A		A		A	A	A	A	A						M	M
Naturescaping, Plant Salvage	Greg Rabourn	Volunteer events which salvage native plants from demolition sites for use on planned restoration, buffer sites. Fosters forest retention, restoration, buffers.	A	A				A	A									M	M
Native Plant Guide	Greg Rabourn	Online resource to offer plans, guidance, resources for the preservation, retention, restoration, lawn reduction, and to promote salvages.		A		A		A	A									M	M
Grant Exchange	Ken Pritchard	Rural Community Partnership Grants, modified through incentive points, RFPs, Sound Ideas	M	A			M	A	A	M								M	M
Online Solutions for Community Outreach (OSCO) including Rainbarrel Web Site	Eric Maia, Saffa Bardaro	Uses online approaches to education, linkage to appropriate resources, survey and measurement, reporting and BMP resources.	A	A	M	A		M	M	M	M	M	M					M	M

2008 Stormwater Management Program

		10. Education and Outreach Program	Topics/Reference														Measurements		
		Note: Programs designated with an "A" indicate topics already addressed within the training. Programs Designated with an "M" means the program will be modified to include the topic or measurement/report in future efforts.	General Impacts	Environmental Stewardship	Impervious Surface Impacts	Yard Care	Landscaping/Landscaper Outreach	Buffers	Forest Retention, Trees	LID Design, Pervious Pavement	Animal Waste	Chem/Pest/Fert. & Hazard. Use/Storage	Vehicle Maint., Repair	Business BMP's	Carpet Cleaning BMP's	Stormwater Treatment & Flow Controls	Technical Standards	Measure behavior change and adapt accordingly	Track program measures and report
Program Name	Program Lead/contact	Program Overview (short)	b.i.1	b.i.1	b.i.1	b.i.3	b.i.1	b.i.1	b.i.3	b.i.3	b.i.1	b.i.2	b.i.2	b.i.2	b.i.3	b.i.4	b.i.4	b.ii	b.iii
Master Gardener Training	Elaine Anderson/ Todd Murray	Twelve-week training of community volunteers comprised of best gardening practices to enhance water quality. 100 new volunteers are trained per year.	A	A		A	A					A						M	M
Master Gardener Clinics and Demonstration Gardens	Elaine Anderson/ Todd Murray	Dissemination and demonstration of environmentally sound gardening practices at over 40 locations. Recommendations always begin with least toxic solutions. Over 750 active volunteers help disseminate environmentally sound gardening advice reaching 330,000 king county residents	A	A		A	A					A						M	M
Extension Watershed Steward Training	Tara Zimmerman	Nine-week training of community volunteers on resource stewardship topics ranging from water quality protection to low impact development to habitat restoration. Over 20 new volunteers are trained per year.	A	A				A	A	A								M	M
Extension Watershed Steward Volunteer Activities	Tara Zimmerman	Volunteers participate in a wide range of service activities providing education and technical advice on a variety of topics include impervious surface reduction, natural yard care, riparian restoration and homeowner landuse. Topics addressed vary greatly based on volunteer interest and involvement.	A	A				A	A	A								M	M
Tools For Resourceful Living	Darcy Batura	4 class series designed to reduce impact on the environment through simple changes in home and garden. Each class features a specific stewardship theme.	M	M	M	M	M	M	M	M	M	M						M	M

2008 Stormwater Management Program

		10. Education and Outreach Program	Topics/Reference														Measurements		
		Note: Programs designated with an "A" indicate topics already addressed within the training. Programs Designated with an "M" means the program will be modified to include the topic or measurement/report in future efforts.	General Impacts	Environmental Stewardship	Impervious Surface Impacts	Yard Care	Landscaping/Landscaper Outreach	Buffers	Forest Retention, Trees	LID Design, Pervious Pavement	Animal Waste	Chem/Pest/Fert. & Hazard. Use/Storage	Vehicle Maint, Repair	Business BMP's	Carpet Cleaning BMP's	Stormwater Treatment & Flow Controls	Technical Standards	Measure behavior change and adapt accordingly	Track program measures and report
Program Name	Program Lead/contact	Program Overview (short)	b.i.1	b.i.1	b.i.1	b.i.3	b.i.1	b.i.1	b.i.3	b.i.3	b.i.1	b.i.2	b.i.2	b.i.2	b.i.3	b.i.4	b.i.4	b.ii	b.iii
Household Hazardous Waste	Darcy Batura	Classroom lessons on household hazardous waste for students. Topics may consist of label reading, safer alternatives, routes to the environment, or other topics contained in the Hazards on the Homefront teacher guide, including "Exposed! My Life with Chemicals" and "The Advertising of Household Hazardous Products."	A		A	A						A	A		A	A		M	M
Forest Stewardship Classes	Amy Grotta	36-hour course emphasizes practical stewardship of forest resources. With guidance and one-on-one assistance, to develop forest management plan based on owner's goals and property.	A	A	A			A	A							A		M	M
Forest Stewardship Workshops	Amy Grotta	topic based workshops	A	A					A									M	M
Small Farm Expo	Brad Gaolach	Expo for small farmers, rural landowners and family foresters to get latest information on livestock, crops, energy, woodlands, and land management	A	A		A	A	A	A							A		M	M
Agriculture Program	Todd Murray	Agricultural program developed through science-based educational outreach and research to improve the economic, environmental and social long-term viability of agriculture by promoting sustainable practices and emphasizing water quality and mitigation.	A	A				A				A	A					M	M

2008 Stormwater Management Program

		10. Education and Outreach Program	Topics/Reference														Measurements		
		Note: Programs designated with an "A" indicate topics already addressed within the training. Programs Designated with an "M" means the program will be modified to include the topic or measurement/report in future efforts.	General Impacts	Environmental Stewardship	Impervious Surface Impacts	Yard Care	Landscaping/Landscaper Outreach	Buffers	Forest Retention, Trees	LID Design, Pervious Pavement	Animal Waste	Chem/Pest/Fert. & Hazard. Use/Storage	Vehicle Maint., Repair	Business BMP's	Carpet Cleaning BMP's	Stormwater Treatment & Flow Controls	Technical Standards	Measure behavior change and adapt accordingly	Track program measures and report
Program Name	Program Lead/contact	Program Overview (short)	b.i.1	b.i.1	b.i.1	b.i.3	b.i.1	b.i.1	b.i.3	b.i.3	b.i.1	b.i.2	b.i.2	b.i.2	b.i.3	b.i.4	b.i.4	b.ii	b.iii
Pesticide Reduction	Larry Holyoke / Lisa Niehause	1) Natural Landscaping and Integrated Pest Management (IPM); policy development, BMP, training, technical assistance in / for: - Public & Private Schools in King County - Landscaping companies, property developers, etc. - Property owners and management organizations - Governmental agencies, utility districts and housing authorities. 2) Review of USGS stream data and produce a dependable and replicable system for pesticide monitoring - allowing for ongoing measurement of high risk pesticides found in local streams and sediments. 3) Work with Manufacturers, policy analyst, local & state legislators to stop the sales of high risk pesticides to consumers.	A	A		A	A				A			A				M	M
ESL (English as a Second Language) Outreach and Workshops	Emmanuel Rivera / Larry Holyoke	Outreach and workshops to the ESL community on the following topics: 1) Landscaping - Hazardous Waste BMP and IPM training and technical assistance 2) Janitorial - Hazardous Waste BMP and alternative / less toxic cleaning products	A	A		A	A				A			A				M	M

2008 Stormwater Management Program

		10. Education and Outreach Program	Topics/Reference														Measurements		
		Note: Programs designated with an "A" indicate topics already addressed within the training. Programs Designated with an "M" means the program will be modified to include the topic or measurement/report in future efforts.	General Impacts	Environmental Stewardship	Impervious Surface Impacts	Yard Care	Landscaping/Landscaper Outreach	Buffers	Forest Retention, Trees	LID Design, Pervious Pavement	Animal Waste	Chem/Pest/Fert. & Hazard. Use/Storage	Vehicle Maint., Repair	Business BMP's	Carpet Cleaning BMP's	Stormwater Treatment & Flow Controls	Technical Standards	Measure behavior change and adapt accordingly	Track program measures and report
Program Name	Program Lead/contact	Program Overview (short)	b.i.1	b.i.1	b.i.1	b.i.3	b.i.1	b.i.1	b.i.3	b.i.3	b.i.1	b.i.2	b.i.2	b.i.2	b.i.3	b.i.4	b.i.4	b.ii	b.iii
Low Income Housing	Dave Hickok / Larry Holyoke	Identify three local governmental housing authorities in King County. Provide staff, service providers and residents training and technical assistance to promote purchase of safer alternatives and identifying recycling and disposal opportunities for unwanted chemical, products, and hazardous wastes, including mercury products. Once an assessment is completed, staff can develop a workplan to implement IPM Guidelines.	A	A		A	A					A		A				M	M
EnviroStars Landscape Industry Program	Laurel Tomchick	Certification program to reduce pesticide use and exposure within landscape-related businesses, and on properties where they work. Technical assistance, trainings, presentations on request. Includes in-field consultation, 25 pg worksheet to assist in documenting compliance, BMPs, additional stewardship activities, and to ID goals to increase enviro-sustainable actions. Renewal system creates on-going verification of practices and reinforcement of messaging.	A	A		A	A					A	A	A				M	M
King County Livestock Program	Rick Reinlasoder	Provides technical assistance to landowners to minimize the adverse environmental impacts of livestock, with particular focus on manure management and impacts on water quality. Implements the Livestock Management Ordinance (21A.30.030-21A.30.070).	A	A				A								A		M	M
Public Benefit Rating System and Timberland current use taxation programs	Ted Sullivan	Encourages landowners to exceed code requirements for retaining open space and managing it for environmental benefit. Program also provides a significant avenue for attracting new participants to Rural Stewardship and Farm or Forest Management planning.	A	A	A		A	A	A									M	M

2008 Stormwater Management Program

		10. Education and Outreach Program	Topics/Reference														Measurements		
		Note: Programs designated with an "A" indicate topics already addressed within the training. Programs Designated with an "M" means the program will be modified to include the topic or measurement/report in future efforts.	General Impacts	Environmental Stewardship	Impervious Surface Impacts	Yard Care	Landscaping/Landscaper Outreach	Buffers	Forest Retention, Trees	LID Design, Pervious Pavement	Animal Waste	Chem/Pest/Fert. & Hazard. Use/Storage	Vehicle Maint., Repair	Business BMP's	Carpet Cleaning BMP's	Stormwater Treatment & Flow Controls	Technical Standards	Measure behavior change and adapt accordingly	Track program measures and report
Program Name	Program Lead/contact	Program Overview (short)	b.i.1	b.i.1	b.i.1	b.i.3	b.i.1	b.i.1	b.i.3	b.i.3	b.i.1	b.i.2	b.i.2	b.i.2	b.i.3	b.i.4	b.i.4	b.ii	b.iii
Lake Stewardship Program	Sally Abella	Educates the public and landowners about actions to prevent contamination of lake waters and engages volunteers in water quality monitoring and the revegetation of lake shoreline buffers. In 2008 will focus on Cottage Lake.	A	A			A	A										M	M
Forestry Program	Kathy Creahan	Outreach and on-site technical assistance prepares owners of forested properties to address degeneration of forest health and wildfire risk. Promotes new Forest Stewardship planning among landowners to implement plans that have already been completed.	A	A			A	A	A	A								M	M
Forestry Program Grants	Linda Vane	Natural Resource Stewardship Network grants for tree planting, forest retention and education related to forests and trees in landscapes.		A			A	A	A									M	M

Appendix 5—King County Urban and Higher-Density Rural Subbasins