STORMWATER 101 GUIDE

STORMWATER OVERVIEW

Stormwater Background

Stormwater is now the primary cause of water pollution in the United States, resulting in numerous federal, state and local regulations. Quite simply, stormwater is runoff that flows into pipes, ditches, streams, and other receiving water bodies. Conversion of natural areas to urbanized or developed areas increases flows and water pollution, and threatens properties with flooding. Impervious surfaces such as roofs, roads, parking lots and sidewalks prevent water from potentially soaking into the ground or being taken up by vegetation.

Stormwater runoff poses a high risk to the health of receiving waters in the State, including Puget Sound, by causing two major problems.

- First, stormwater transports a mixture of pollutants such as petroleum products, heavy metals, animal waste and sediments from construction sites, roads, highways, parking lots, lawns and other developed lands, with the following results:
  - Stormwater pollution has harmed virtually all urban creeks, streams and rivers in Washington State.
  - Stormwater is the leading contributor to water quality pollution of urban waterways in the state.
  - Two species of salmon and bull tout are threatened with extinction under the federal Endangered Species Act. Loss of habitat due to stormwater and development is one of the causes.
  - Shellfish harvest at many beaches is restricted or prohibited due to pollution. Stormwater runoff is often one of the causes.
  - Stormwater likely contributes to the killing of high percentages of healthy coho salmon in some urban creeks within hours of the fish entering the creeks, before the fish are able to spawn.
  - English sole are more likely to develop cancerous lesions on their livers in more urban areas. Stormwater likely plays a role.
- Second, during the wet, winter months, high stormwater flows, especially long-lasting high flows, can:
  - Cause flooding.
  - Damage property.
  - Harm and render unusable fish and wildlife habitat by eroding stream banks, widening stream channels, depositing excessive sediment and altering natural streams and wetlands.

In addition, more impervious surface area means less water soaks into the ground. As a result, drinking water supplies are not replenished and streams and wetlands are not recharged. This can lead to water shortages for people and inadequate stream flows and wetland water levels for fish and other wildlife.

Stormwater Regulatory Environment

Although many regulations affect the practice of stormwater management, the primary driver is the federal Clean Water Act (CWA), first adopted in 1972, which sets the policy and regulatory framework for stormwater pollution control in the nation. The purpose of the CWA is to "…restore and maintain the chemical, physical, and biological integrity of the Nation's waters." The CWA uses the National Pollutant Discharge Eliminate System (NPDES) permit as the primary instrument to control urban stormwater.

The State of Washington was delegated authority by the U.S. Environmental Protection Agency (EPA) to implement the NPDES permit program. The Washington State Waste Discharge Act contains state regulations regarding stormwater. The State Department of Ecology combined the federal requirements of the CWA with the State requirements of the State Waste Discharge Act and initiated the first stormwater NPDES permit program in 1995 for jurisdictions having population greater than 100,000. King, Pierce, Clark, and Snohomish Counties, as well as the Cities of Tacoma and Seattle, became the first Phase I permittees along with the Washington State Department of Transportation. In 2007, Ecology issued the Phase II permits to jurisdictions that owned or operated municipal separated storm sewer systems (MS4s). Today there are more than one hundred MS4 permits issued statewide. These permits are on a five year renewal cycle. The State legislature acted in the 2011 session to set the next issuance date of MS4s in 2013.

The permits include requirements for inventorying stormwater facilities; inspecting and maintaining facilities; reducing pollutants at their sources; public education; reporting NPDES permit compliance, and applying protective design standards to new development of impervious surfaces. The protective design standards are found in the State Stormwater Manual, first adopted in 1992 and updated in 2005 for western and eastern Washington. Phase I permits contain additional requirements for water quality monitoring and retrofits.

The Stormwater NPDES permit (Sections S4 and S5) states:

- The NPDES permit "…does not authorize a violation of Washington State surface water quality standards…ground water quality standards…sediment management standards…"
- Requires that the permittee "…shall reduce the discharge of pollutants to the maximum extent practicable (MEP)."
- Requires "all known, available, and reasonable methods of prevention, control and treatment (AKART) to prevent and control pollution of waters of the State of Washington."
- Additional requirements may exist in areas that have an established Total maximum Daily Load (TMDL).

Best Management Practices (BMPs) are considered minimum requirements to meet MEP and AKART. Examples of BMPs include:

- Educating the public on the impacts of their individual behaviors on stormwater pollution;
- Preventing and eliminating illicit discharges through education, training and enforcement; and

- Implementing erosion and sediment control on construction sites.

The NPDES permits require adoption of the State Stormwater Manual, which is presumed to meet AKART. According to the Manual, these presumptive practices do not guarantee that stormwater discharges will meet receiving water quality standards. The combining of the CWA and State Waste Discharge Act requirements in a single permit provide the opportunity for third parties to sue dischargers if water quality standards are violated.

Other State laws affecting stormwater management include the Growth Management Act and its requirements for land management such as Shoreline (Shoreline Management Act) and Critical Areas requirements. At the federal level additional laws impacting stormwater management are the Comprehensive Environmental Recovery and Compliance Act (CERCLA) and the Endangered Species Act (ESA). Finally the federally recognized tribes are co-managers of the water resources in Washington State (Boldt decision, 1974).

STORMWATER FUNDING

A need for funding has accompanied the need for stormwater management. Stormwater utilities, supported by ongoing rates, are the largest local funding source for stormwater control in Washington State.

The Utility Concept

A stormwater utility is a stand-alone entity, usually set up as an enterprise fund, within the governmental structure. It is defined as being financially and organizationally self-sufficient, and can be designed to furnish a limited or comprehensive set of services related to stormwater quantity and quality management. A "city" utility operates under the purview of the city legislative authority.

The following is a summary of the utility concept:

> "A stormwater utility provides a reliable, dedicated source of revenue and an organizational structure that is dedicated to stormwater concerns. As a utility, a stormwater management program can be carried out as a "stand alone" operation, with its own budget, implementation plan, and employees dedicated solely to stormwater system operation, maintenance, administration, and education. Also, creating a utility is often more acceptable politically, as many communities tend to resist the creation of new programs using special districts. Creating a utility has the added benefit of freeing up tax dollars from the local government's general fund that would normally be used for stormwater concerns, and this "extra" money can be applied toward other needs."[1]

Legal Authorization

Revised Code of Washington (RCW) section 35.67.020 authorizes cities to “to fix, alter, regulate, and control the rates and charges for their” systems of sewerage, defined in RCW 35.67.010 to include stormwater management.

Other important RCW sections include 35.67.025, which specifies that all public property “shall be subject to rates and charges for storm water control facilities to the same extent private persons and private property are subject to such rates and charges,” and 90.03.525, which limits the imposition of stormwater rates and charges on State highways.

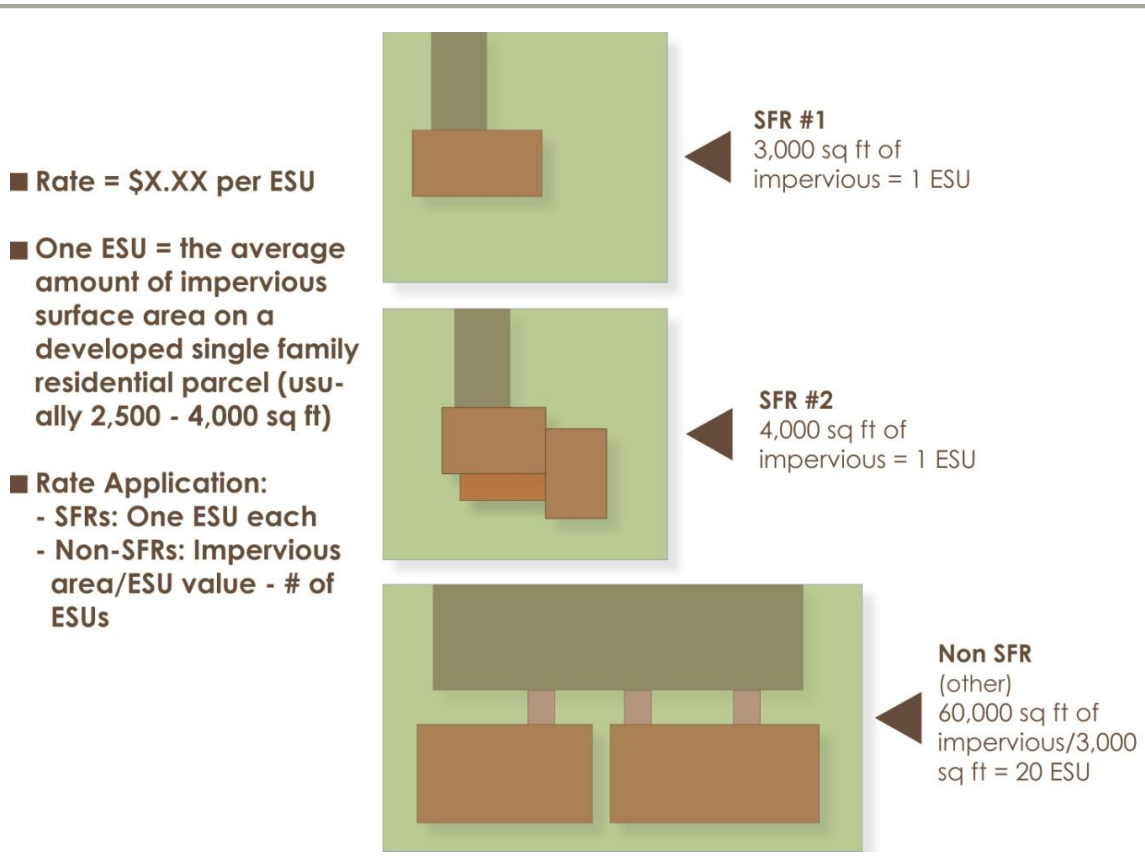
[1] Stormwater Program Guidance Manual for the Puget Sound Basin.

Stormwater Utility Rates

The overwhelming majority of stormwater utility rates are based on impervious surface area. Impervious surface area is widely accepted as an appropriate measure of a property's contribution of runoff, providing a clear relationship, or "rational nexus," to service received from a stormwater program.

To minimize administrative and data collection costs, stormwater utilities typically develop a uniform rate for single family residential customers based on an estimated average amount of impervious surface area per developed residential parcel. The charge basis for all other customer types is generally actual measured impervious surface area by parcel. The charge itself is most commonly calculated as a dollar amount per unit of impervious surface area, or an equivalent unit of service. For example, one equivalent service unit (ESU) may equal 3,000 square feet of impervious surface area.

As illustrated below, under such a structure, single family residences are charged for one ESU, and other developed property is charged for its measured impervious surface area – expressed as the number of ESUs.



Stormwater rates, in combination with other funding sources, pay for capital construction of stormwater systems and controls to prevent flooding and improve quality; maintenance and operations; and implementation of NPDES permit programs.

Alternative approaches to stormwater rates include density of development, usually distinguished by rates for different percentages of impervious coverage applied to the lot size. Both King County and the City of Bellevue utilize forms of the density of development approach.

Charging for Streets

Many cities in the State charge their own streets for stormwater service. The streets, while providing stormwater conveyance, are often large contributors of stormwater runoff. At the State level, the Washington State Department of Transportation seeks state appropriations to pay for the management of stormwater runoff generated by its 40,000 acres of paved surfaces.

The State of Washington authorizes (in RCW 90.03.525) the charging of state highways for their impacts on local systems. Rates charged are limited to "thirty percent of the rate for comparable real property", with some exceptions. Revenues from the State for highway impacts "must be used solely for storm water control facilities that directly reduce state highway runoff impacts or implementation of best management practices that will reduce the need for such facilities." Local jurisdictions must submit both a "plan for the expenditure of the charges for that calendar year" as well as a progress report "on the use of charges assessed for the prior year" in order for the State to pay the charges.

It is important to note that the most recent agreement between the Washington State Department of Transportation (WSDOT) and State municipalities clarified responsibility for state highways in local jurisdictions to those jurisdictions – retaining WSDOT responsibility only for limited access state highways. The effect of that agreement, currently being re-visited by WSDOT and the association of Washington Cities, has further limited cost recovery by local jurisdictions to the impact of limited access state highways. Local jurisdictions and WSDOT share the responsibility of managing stormwater runoff from some State facilities.

Other Funding Sources for Stormwater Management

The vast majority of stormwater programs subject to NPDES permitting requirements recover their costs through stormwater utility rates. There are other, secondary, funding sources available, with varying degrees of applicability, for stormwater management.

- **The street fund**. In the absence of stormwater utilities, city street funds and county road funds have historically provided sources of funding for stormwater management. The use of these funds for stormwater purposes has been justified on the basis that portions of many drainage systems have been built by street and road departments and maintenance in the right of way may be provided by the department, as well.
- **The general fund**. Property tax revenues have been the primary source of general fund resources in Washington cities and counties. Use of general fund money is usually unrestricted, and thus has been used historically to fund stormwater management, usually in the absence of a stormwater utility. General fund resources are subject to many competing demands, and cannot usually be considered a reliable source for ongoing funding.
- **Special assessments / local improvement districts**. Most commonly structured as local improvement districts (LIDs), these funding mechanisms assess individual properties benefited or served by a specific capital improvement for a share of the cost of that facility. Special benefit must be demonstrated by an increase in assessed valuation due to the improvement, often a difficult linkage to demonstrate for stormwater improvements.

- **Special fees**. Direct charges / fees may be used to recover the direct costs for services performed for a customer or class of customers not generally related to the overall service charge – such as development inspections.
- **Capital facilities charges**. Capital, or general, facilities charges are authorized for cities under RCW 35.92.025. Authorization is less straightforward for county stormwater utilities authorized under either RCW 36.89 or 36.94. Capital facilities charges are one-time charges imposed as a condition of development, and are designed to recover from growth an equitable share of the cost of capital investment incurred by the Utility. Revenues from such charges are dependent on growth and are available for capital purposes only.
- **Conventional debt instruments**. The most commonly used long-term debt instruments are revenue and general obligation bonds. Bond anticipation notes are available for short-term "interim" capital financing. These sources are available for capital funding only, not operations.
  - Revenue bonds are the most common source of funds for construction of major utility improvements. There are no statutory limitations on the amount of revenue bonds a utility can issue; however, utilities are required to meet yearly net operating income coverage requirements, commonly 1.25 times the annual debt service. In fact, to issue new debt, it may be necessary to demonstrate coverage in excess of this level based on a market-driven target, possibly in the range of 1.5 to 2.0.

    Revenue bond debt service is paid out of rate revenues. The terms on revenue bonds are not as favorable as general obligation bonds, but carry the advantage of leaving the city's debt capacity undisturbed. Interest rates vary depending on market conditions.
  - General obligation bonds are secured by the taxing power of the city, are typically paid through property tax revenues, and may be subject to a public vote. Cities and counties often choose to repay the debt from other (rate) revenues, and increase property taxes only if the rates fail to meet debt obligation.

    The financing costs of general obligation bonds are lower than revenue bonds due to (1) lower interest rates available, (2) no coverage requirements, and (3) no reserve requirements.
  - Short-term "interim" financing mechanisms are also available for capital costs. Bond anticipation notes can provide interim financing during construction, while allowing flexibility in the choice of long-term financing instruments. Typically, bond anticipation notes have lower interest rates than bonds, but add to issuance costs.
- **Special grants and loans**. Some state and federally administered grant and loan opportunities are available for capital funding only.
  - Department of Ecology Grants and Loans - The Washington Department of Ecology (Ecology) administers an integrated funding program for three state and federal financial assistance programs to improve and protect water quality. Each funding cycle begins in the fall when Ecology accepts project applications. Ecology rates and ranks applications based on the highest-priority needs: Projects include stormwater control and treatment, nonpoint pollution abatement and stream restoration activities, and water quality education and outreach. The amount of available grant and loan funding varies from year to year based on the state's biennial budget appropriation process and the annual congressional federal budget. The three sources of funding for water quality projects are
    - Centennial Clean Water Fund Grant Program,
    - Federal Clean Water Act Section 319 Nonpoint-Source Grant Program, and
    - Washington State Water Pollution Control Revolving Fund Loan Program.

- Public Works Trust Fund – Cities, towns, counties and special purpose districts are eligible to receive loans. Water, sewer, storm, roads, bridges and solid waste/recycling are eligible and funds may be used for repair, replacement, rehabilitation, reconstruction and improvements including reasonable growth (generally the 20-year growth projection in the comprehensive plan).

  PWTF loans are available at interest rates of 0.5%, 1% and 2% with the lower interest rates given to applicants who pay a larger share of the total project costs. The loan applicant must provide a minimum local match of funds of 5% towards the project cost to qualify for a 2% loan, 10% for a 1% loan, and 15% for a 0.5% loan. The useful life of the project determines the loan term up to a maximum of 20 years.