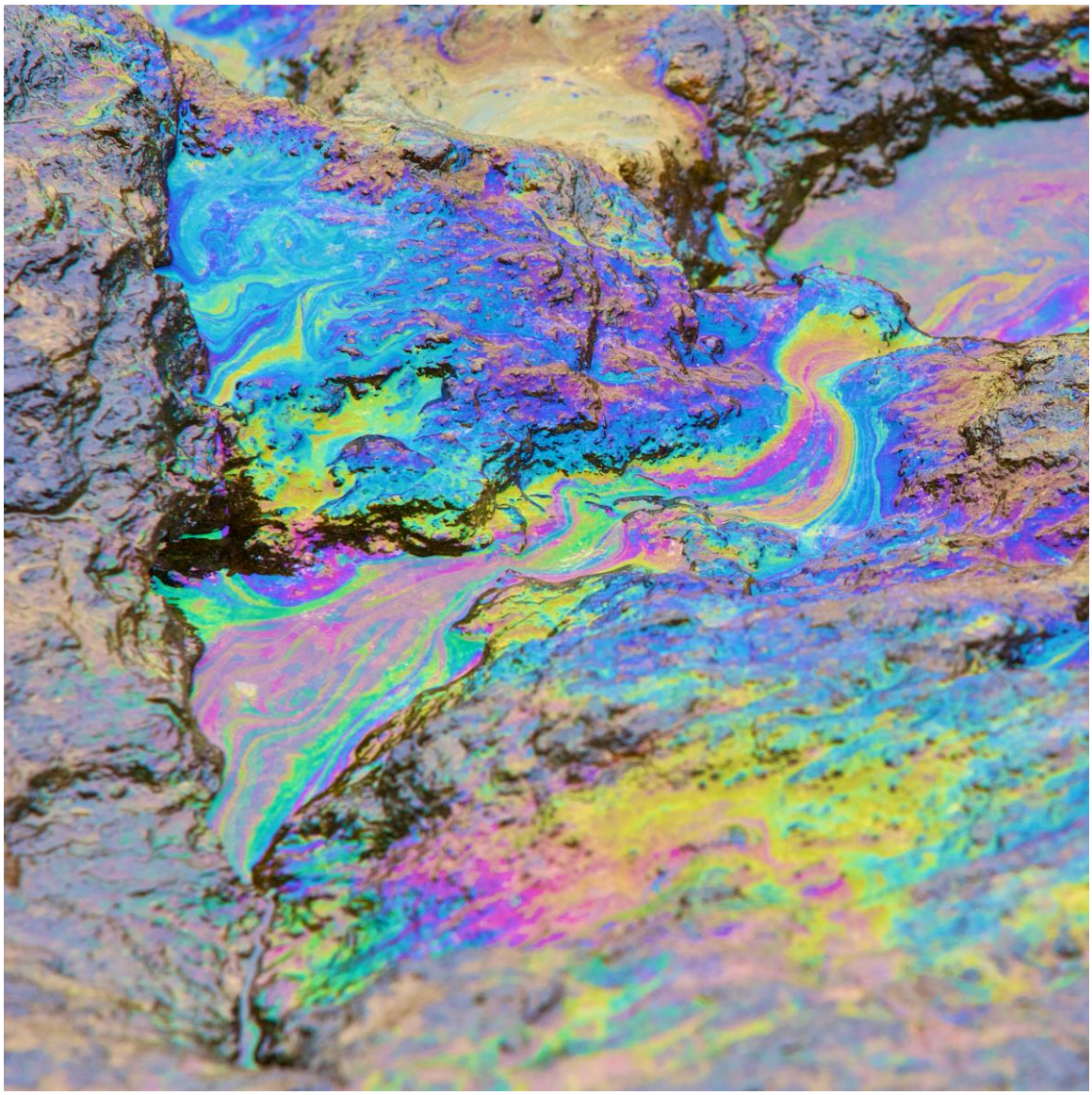

2015

# Stormwater Management Program

City of Bothell™

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## Executive Summary

In 1960, public awareness and concern heightened regarding water pollution. Pollution was so widespread and evident; it was easy to point to the major polluters. In 1972, the Federal Water Pollution Control Act commonly known as the Clean Water Act (CWA) was amended to stop these point source polluters and improve water quality for fishing, drinking, and recreational use.

After several years of these government Acts in existence, water appeared to be cleaner, but testing determined that the chemical, physical, and biological health remained compromised. Many unseen pollutants were still entering rivers, lakes, and streams through non-point sources. Further testing showed that individuals were contributing small amounts of pollution that was being carried to local streams through storm drains. The United States Environmental Protection Agency (EPA) then expanded the CWA to include all municipal, industrial, and commercial facilities that discharge wastewater or stormwater through pipes, ditches, or channels into our natural waterbodies. These regulations require any and all of these groups to obtain a permit in order to continue discharging.

The City's permit, the Western Washington Phase II Municipal Stormwater Permit, commonly referred to as the National Pollutant Discharge Elimination System (NPDES) permit, requires the City to establish a stormwater program with a set of activities and actions to protect and restore local rivers, lakes, and streams. The City of Bothell has included these required elements in the 2016 Stormwater Management Program (SWMP). The six elements of the SWMP are as follows:

- Public Education and Outreach
- Public Involvement and Participation
- Illicit Discharge Detection and Elimination
- Development Runoff Controls
- Pollution Prevention and Municipal Operations and Maintenance
- Monitoring

### Public Education and Outreach

Many stormwater issues are caused by everyday actions of people that live in, visit, or drive through this area. Because these issues are caused by our individual actions, preventing pollution by changing our habits is a more effective solution to the problem than trying to clean up pollutants after they have entered our land, water, and air. Our educational programs provide specific outreach activities that are

designed to provide acceptable alternatives to individual daily habits that pollute stormwater.

**Public Involvement and Participation**

The City provides many opportunities for the public to participate in the decision making process involving the development, implementation, and update of this plan. Opportunities come in the form of direct requests (utility mailers, articles, events, etc.), City Council sessions, and public hearings.

**Illicit Discharge Detection and Elimination**

The City has established an effective program for responding to spills and illegal discharges that includes education, assistance, and enforcement. Spills come in many forms from both business and residential sources, so efforts are placed on reaching out to citizens to ensure they know how to prevent spills and how to report them if/when they occur.

**Runoff Controls**

The City has adopted new ordinances, improved construction standards, and provided training to improve site conditions for new and redevelopment. Within the next two years (2016 and 2017), design standards will be increased to provide improved controls and treatment to prevent pollution.

**Pollution Prevention and Municipal Operations and Maintenance**

The City is responsible for the performance of many aspects of local roads and waterways. Services occur year round and at times under adverse conditions. The City conducts maintenance and operations in a manner to reduce and eliminate sources of polluted runoff from City actions.

**Monitoring**

Monitoring is set up to answer the question "*Is what we are doing making a difference to the streams*"? The answer is not easily quantified, counted, or measured. Using a broad set of measures that provide signals along the continuum of stream health, we expect to answer accurately.

The different elements of the SWMP are described in further detail in the report. The SWMP is revisited annually to provide current status and future plans. The desired outcome of these efforts is improved water quality throughout the City for the benefit of all citizens.

**Here are several ways to provide comment:**

On our website:

http://www.bothellwa.gov/CityServices/PublicWorks/SurfaceWaterManagement.ashx?p=1292

Email Janet Geer, Surface Water Program Coordinator:

janet.geer@bothellwa.gov

Mail comments to:

City of Bothell – Public Works
Attn: Janet Geer
18415 101st Ave NE
Bothell, WA 98011

Would you like to review past reports and comments from Bothell residents? See them on our website:

http://www.bothellwa.gov/CityServices/PublicWorks/SurfaceWaterManagement/NPDESdocumentation.ashx?p=1652

## Introduction

The National Pollutant Discharge Elimination System (NPDES) permit program is a requirement of the Federal Clean Water Act (CWA), which is intended to protect and restore our Nation's waters (see Executive Summary). The United States Environmental Protection Agency (EPA) has given their permitting authority to state environmental agencies, which in Washington is the Washington State Department of Ecology (Ecology). The City of Bothell must comply with the Western Washington Phase II Municipal Stormwater Permit requirements issued by Ecology.

This Permit allows the City to send stormwater runoff from municipal drainage systems (storm drains, pipes, ditches, etc.) into the State's water bodies (e.g., streams, rivers, lakes, and wetlands) as long as the City implements programs to reduce and eliminate pollution from non-point sources (see glossary). The actions and activities specified in the Permit are collectively referred to as the Stormwater Management Plan and grouped under the following components, as summarized in the Executive Summary:

- Public Education and Outreach
- Public Involvement
- Illicit Discharge Detection and Elimination
- Development Runoff Controls
- Pollution Prevention and Municipal Operations and Maintenance
- Monitoring

The City is required to report annually (March 31st of each year) on progress in permit implementation for the prior year, and submit a Stormwater Management Plan (SWMP) report that describes proposed program activities for the coming year. The implementation of various Permit conditions is phased throughout the five-year Permit term, 2013 through 2018.

Additional Permit information is located on Ecology's website:

http://www.ecy.wa.gov/programs/wq/stormwater/index.html

The following sections summarize the City's program plans. This is the eighth year of such reports with each consecutive year built upon the previous one.

## Education and Outreach

**Youth Watershed Festival-students learning about stormwater impacts in their community*

Many stormwater issues are caused by the everyday actions of people that live in, visit, or drive through our area. Because these issues are caused by the individual actions of each of us, preventing pollution by changing peoples' habits is a more effective solution to the problem than trying to clean up the pollutants after they've entered our land, water, and air.

The stormwater permit lists many different groups of people and their habits that should be changed to protect and improve our local streams. Our goal is to reduce or eliminate these habits or practices and replace them with better, safer, healthier alternatives.

We know that providing information, while helpful, doesn't motivate people to change their current habits. For this reason, we create programs that help people understand what habits are polluting, provide them with alternative habits that are less polluting, and sometimes provide them with assistance to help them make better choices. Because this pollution is caused by each of us every day, everyone can make a real difference and often save money by making small changes in their daily habits.

Below are some behaviors that we will be focusing on through 2018.

## Residents

- Septic systems
- Pet waste
- Hazardous chemical use, storage, and disposal
- Home maintenance (carpet cleaning, pressure washing, yard care, construction, etc.)
- Vehicle maintenance (car washing, auto repair and maintenance)
- *Low impact development principles and techniques

## Businesses

- Impacts from impervious surfaces
- How to prevent and report spills to minimize their damage
- Impacts from pollution on local rivers, lakes, and streams
- Opportunities to volunteer, participate, and help
- Dumpster and equipment maintenance
- Proper landscaping maintenance practices
- *Low impact development principles and techniques
- How to properly inspect and maintain their stormwater facilities

## General Public

- Youth education on stormwater and resulting pollution
- Impacts of stormwater on surfaces waters
- Impacts from impervious surfaces
- Hazardous chemical/material use, handling, and storage
- Stewardship opportunities
- Impacts from spills outdoors and how to report them
- *Low impact development principles and techniques
- Our plans to improve local water conditions

**Low impact development helps to mimic a natural forest by capturing water, slowing it down, allowing it to enter our soil, and cleaning and cooling water before it reaches our streams.*

For 2016, we are focusing most of our resident efforts on low impact development principles and techniques, hazardous chemical use and storage, and action items developed within the Storm and Surface Water Master Plan. For our business target audience, we will be focusing on proper dumpster maintenance, private facility maintenance, and hiring of mobile businesses. For our general public audience, we will be focusing on youth education, stewardship opportunities, and reporting spills.

Our education programs are displayed every year in our *Education and Outreach Summary Report* available on our City website: www.bothellwa.gov under City Services, Surface Water Management, NPDES Documents page.

## Public Participation

City of Bothell residents, businesses, and the general public are encouraged to participate in the development, revisions, updates, implementation, and funding rates for our Surface Water Management programs and services. This is best accomplished through our website comment form, annual public hearings, City Council sessions, or direct comment requests (utility mailers, articles, events, etc.).

In 2016, the City plans to post the 2016 SWMP and Annual Report to the City website next to the comment form, request direct comment through outreach efforts, speak during a Council session to allow for public review and comment, and send electronic communications to seek public input.

We encourage you to comment at any time throughout the year in written form.

Here are ways to provide comment:

- Visit our website http://www.bothellwa.gov/CityServices/PublicWorks/SurfaceWaterManagement.ashx?p=1292
- Email Janet Geer at janet.geer@bothellwa.gov
- Write to City of Bothell Public Works, Attn: Janet Geer, 18415 101st Ave NE, Bothell, WA 98011

Would you like to review past comments from Bothell residents? See them in our Participation Report Summary on our website:
http://www.bothellwa.gov/CityServices/PublicWorks/SurfaceWaterManagement/NPDESdocumentation.ashx?p=1652

## Illicit Discharge Detection and Elimination

The City has established a program for responding to spills and illegal discharges that includes education, assistance, and enforcement. As spills come in many forms from both business and residential sources, efforts are placed on reaching out before they happen to ensure everyone knows what they should do to prevent spills and how to report them if/when they occur.

The main focus of the spill program through 2018 will be collecting spill statistics and trends. This data will be submitted to Ecology, who will look at the regional trends and ways to reduce spills across the region.

One of the primary tools used in investigations is a complete map of storm drainage and surface water systems. This tool can mean the difference between an effective investigation and a dead end. The City's GIS mapping of the City storm and surface water system is continuously being updated with the addition of new infrastructure, and improving the recording of existing infrastructure.

In addition to spill response activities, staff proactively screen the storm drainage system for pollutants, and conduct ongoing training to ensure all staff is knowledgeable about what is and what is not allowed into storm drains.

## Development Runoff Controls

The City adopted new ordinances, improved construction standards, and provided training to improve site conditions for new and redevelopment. The focus through 2018 will include a review of City codes, as well as the adoption of new storm design standards in order to provide improved controls and treatment for pollution prevention.

Part of the emerging stormwater technology being encouraged and/or required in the forthcoming design standards, are LID techniques. These techniques can commonly conflict with standard City codes, such as fire department requirements for roadway width, parking standards, minimum lot sizes, etc. One exercise the City will conduct is a review of all City codes to identify what areas may limit or prevent the use of LID techniques. Once these areas of code are identified, the City will review and determine which ones are able to be changed, and propose modifications to Bothell City Council.

To ensure proper maintenance and care of privately-owned stormwater runoff control facilities, the City annually inspects them and notifies owners of needed maintenance. The program began in 2008 and was staffed with one Surface Water

Inspector. The City increased staffing of the program in 2014 with an additional full-time inspector. Inspection reports are typically submitted to the owner with listed actions needed to keep the site within the City's adopted maintenance standards.

There are a total of 574 private and public stormwater facilities. Of the current 574 facilities, the City owns and maintains approximately 148 facilities with the remaining 426 being privately-owned and maintained.

## Pollution Prevention and Municipal Operations and Maintenance

The City has a role to prevent and eliminate polluted stormwater runoff from City day-to-day activities. The City is constantly looking at all aspects of maintenance and operations practices. These include how to keep City buildings and parking lots clean (inside and outside), and how best to maintain City roads and parks. The intent is to identify places or actions that could be contributing to polluted stormwater runoff and find ways to remedy the problem. In 2009, the City investigated its maintenance shop and equipment and storage areas. These initial reviews led to the creation of the Stormwater Pollution Prevention Plan.

When the new Public Works Operations Center was completed in 2011, it was included in the review. The facility property is shared with the Northshore School District, and they have joined our efforts. At the end of each year, an audit is conducted of the past year's achievements, and recommendations are made to continually improve the performance of the facility.

For other City business, such as our Capital Improvement Program or Park lands, a policy document was created in 2009. In this document, actions were laid out to improve the City's stewardship of clean water. This has resulted in increased awareness of staff about the important role they play in keeping polluted stormwater from being created and discharged to waterways. The guidance document is periodically reviewed and improved on an as-needed basis.

As a means to keep the document current, staff routinely attend training in various aspects of water pollution prevention, such as the latest Low Impact Development techniques and how best to control soil erosion at active construction sites.

For maintenance of City-owned and operated stormwater ponds, pipes, and storm drains, the City adopted the most recent maintenance standards available in 2010. To help track work performed, the Maintenance and Operations Division and SWM program anticipate acquiring a software program to ensure that needed work is performed in a timely manner and easily tracked.

The City has an ongoing annual inspection program of all City-owned stormwater control facilities.

The City's Maintenance and Operations staff routinely perform spot checks of potentially damaged stormwater control facilities after major storm events. Staff conduct repairs or may take appropriate maintenance actions based on the results of these inspections. There are 17 facilities that are routinely checked for safe operations before and after major storm events.

## Citywide Storm Drains Maintenance Program

About 8,280 storm drains, sometimes referred to as catch basins, can be found throughout the City. They are often along the curbside and capture runoff from roads and other hard surfaces (driveways, sidewalks, roofs, etc.). They also capture pollutants, silt, and vehicle wastes. To prevent the polluted material from entering local streams, the City has adopted a cleaning schedule to ensure that once every two years, all City-maintained catch basins are inspected and cleaned if necessary.

### Reduction of Stormwater Impacts by Public Works Department

On February 15, 2010, the City established and implemented practices to reduce stormwater impacts associated with maintenance activities due to runoff from streets, parking lots, roads, highways, and park lands owned or maintained by the City. The policy and guidance documents are posted on the City's website. Public Works will continue to update and review its operations procedures to keep practices up to date with the best available knowledge and technology.

# Monitoring

## Total Maximum Daily Load (TMDL) Requirements

A Total Maximum Daily Loads (TMDLs) study is used to address chronic water quality issues that have been identified through monitoring. They involve extensive review of stream water samples over a period of years. The assessment study outcome is a set of recommendations to address the pollutant throughout the stream drainage area. There are two TMDLs in the City, both addressing the same pollutant, Fecal Bacteria. North Creek and Swamp Creek have

Fecal Bacteria levels that, at times, pose a health risk to people who come in contact with the water.

The TMDL study required the City and others to take certain prescribed actions. One action was to conduct yearly monitoring of fecal bacteria levels in the streams. Bothell began monitoring in October 2007 and will continue to do so into the foreseeable future. In 2015, the City provided Ecology with an updated Quality Assurance Project Plan to cover the next five years of TMDL monitoring.

A Bacteria Pollution Control Plan was prepared in 2010 and is updated each year. This plan within the TMDL Plan sharpens the focus and specific actions that the City and its community should do. A good example of this is the City's work to reduce pet waste from alongside waterways. Bothell partnered on regional and local advertising to get the message out to "Scoop the Poop", offered pet waste bags at parks, and adopted a regulation prohibiting failure to clean up dog waste. These efforts satisfy the NPDES permit requirements aimed at reducing fecal bacteria in streams.

The TMDL Annual Reports and the Bacteria Pollution Control Plan are on the City's website:
http://www.ci.bothell.wa.us/CityServices/PublicWorks/SurfaceWaterManagement/NPDESdocumentation.ashx?p=1652

The revised 2013 NPDES permit directed the City to conduct Targeted Source Identification and Elimination surveys beginning August 1, 2014. The City selected two basins, one in Swamp Creek and one in North Creek. The results of the first year of survey work will be reported during the next reporting cycle, which will be in 2016. The surveys have targeted specific known potential sources of fecal bacteria. If positively identified, the sources will be targeted for removal and application of BMPs.

## Monitoring and Assessment

To determine the effectiveness of regulations, surface water management programs, and other related NPDES permit provisions which aim to protect and improve stream health, Bothell embarked on a multi-year stream health monitoring program. In 2010, the City began collecting monthly readings of basic water quality measures at 17 sites, referred to as Ambient Monitoring. In 2010 and 2013, bioassessment surveys were performed at seven stream sites. These surveys are planned to be conducted again in 2016. The bioassessment survey looks at the physical and biological health of our streams as expressed by, among other things, type of stream substrate, amount of shade, in-stream insects (macroinvertebrates), and fish populations.

The results over the past four years predominantly indicate a flat line of poor, unhealthy, stream conditions. The conclusion is that over this study period, City programs and actions have not improved stream health. It is possible and seems reasonable that stream health may have progressively worsened over the study period if not for the programs and actions of the City. Detailed descriptions of the monitoring results are posted on the City's website, Stream Health Assessment for City Streams: [www.ci.bothell.wa.us/CityServices/PublicWorks/SurfaceWaterManagement/NPDESdocumentation.ashx?p=1652](www.ci.bothell.wa.us/CityServices/PublicWorks/SurfaceWaterManagement/NPDESdocumentation.ashx?p=1652)

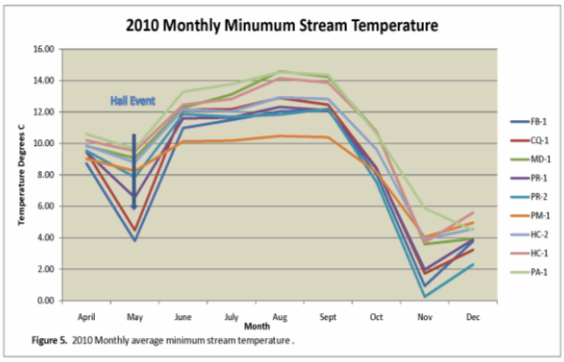


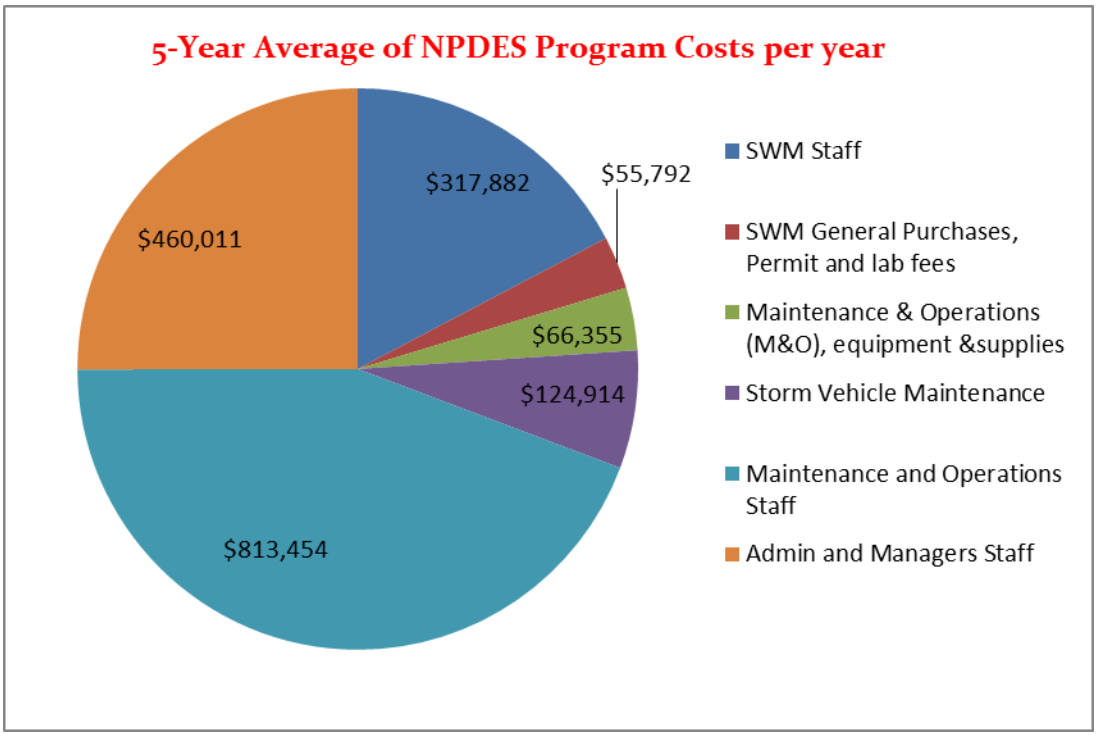
Figure 5. 2010 Monthly average minimum stream temperature .

Ambient monitoring is ongoing with annual reports also available on the City's website. Citizens are encouraged to review and provide feedback.

Beginning in 2014, the City began to pay into a regionally run monitoring program that has been organized by all permittees, cities and counties, to assess the region wide effectiveness of the NPDES permit. This program will look at three aspects: status and trends, specific stormwater best management practices, and creation of a library to gather the best ideas on how to prevent and eliminate polluted discharges from entering our waterways.

## Financial Costs to Implement NPDES Permit

In 2008, the City began establishing account codes to track staff time, equipment purchases, contracts, and related expenditures by NPDES surface water program component. The pie chart below details how those costs were distributed from 2008 to 2013.




Over the five-year period, the City spent about $9.2 million with contribution of state funds at $ 333,239.00. On average, Bothell has spent approximately $1.8 million each year. We anticipated this level spending to remain relatively unchanged during the current permit cycle, 2014 through 2018.

## External and Internal Permit Coordination

SWM staff routinely attend outside forums to share and coordinate stormwater related policies, programs, and projects with other neighboring permit entities. The forum meetings include but not limited to: stormwater inspections, NPDES Permit coordinators, participation on Stormwater Outreach for Regional Municipalities (STORM-Group), American Public Works Association (APWA), and ESA Regional Road Map. Recently a series of watershed management meetings were held to discuss joint management of shared watersheds. They were attended by City of Woodinville, Snohomish County, King County, and Washington State Department of Transportation (WSDOT). These opportunities improve communications, clarify roles and responsibilities to manage shared surface and storm water systems.

Internal coordination among different divisions and departments is documented in part in City's Goals, Policies, and Procedures for City Operations. The document outlines coordination efforts between and within departments and divisions along with results of annual feedback. Internal coordination also occurs on an as needed basis.

## Reporting Requirements

Bothell keeps records related to this Permit and the SWMP for at least five years. The records are available upon request. Copies are available for the public to view free of charge by filling out a Request for Public Records available on the City's website. Requestors may also purchase hard copies for a fee, per our 2015 fee schedule (Resolution 1325).

## Glossary

**BMPs – Best Management Practices:** The schedules of activities, prohibitions of practices, maintenance procedures, and structural and/or managerial practices approved by the Department of Ecology that, when used singly or in combination, prevent or reduce the release of pollutants and other adverse impacts to waters of Washington State. For example, a structural BMP is the use of catch basin cloth inserts to capture sediment from turbid water prior to the water being discharged into the stormwater system.

**CWA – Clean Water Act**: Formerly referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972, Pub. L. 92-500, as amended Pub. L. 95-217, Pub L. 95-576, Pub L. 6-483 and Pub. L. 97-117, 33 U.S.C. 1251 et seq.

**Illicit Connection:** Any man-made conveyance that is connected to a municipal separate storm sewer without a permit, excluding roof drains and other similar type connections. Examples include sanitary sewer connections, floor drains, channels, pipelines, conduits, inlets, or outlets that are connected directly to the municipal separate storm sewer system.

**Illicit Discharge**: Any discharge to a municipal separate storm sewer that is not composed entirely of stormwater except discharges pursuant to an NPDES permit (other than the NPDES permit for discharges from the municipal separate storm sewer) and discharges resulting from firefighting activities.

**LID – Low Impact Development:** A stormwater management and land development strategy applied at the parcel and subdivision scale that emphasizes conservation and use of onsite natural features integrated with engineered, small-scale hydrologic controls to more closely mimic predevelopment hydrologic functions.

**MEP – Maximum Extent Practicable:** Currently, MEP is a concept, as the full meaning has yet to be determined.

**MS4 – Municipal Separate Storm Sewer System:** A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains):

(i) Owned or operated by a state, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State Law) having jurisdiction over disposal of wastes, stormwater, or other wastes, including special districts under State Law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe of an authorized Indian tribal organization, or a designated and approved management agency under Section 208 of the CWA that discharges to water of the United States;

(ii) Designed or used for collecting or conveying stormwater;

(iii) Which is not a combined sewer; and

(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

**NPS – Non Point Sources:** NPS pollution is caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and ground waters.

**NPDES – National Pollution Discharge Elimination System:** The national program for issuing, modifying, revoking, and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318, and 405 of the Federal Clean Water Act, for the discharge of pollutants to surface waters of the state from point sources. These permits are referred to as NPDES permits and, in Washington State, are administered by the Washington State Department of Ecology.

**Point Source Pollution:** Any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural stormwater discharges and return flows from irrigated agriculture.

**Stormwater:** Runoff during and following precipitation and snowmelt events, including surface runoff and drainage.

**Surface Water:** Includes lakes, rivers, ponds, streams, inland waters, salt waters, wetlands, other surface waters, and water courses as well as shallow groundwater.

**SWMP – Stormwater Management Plan:** A set of actions and activities designed to reduce the discharge of pollutants from the regulated small MS4 to the maximum extent practicable and to protect water quality, and comprising the components listed in S5 and S6 of the NPDES permit and any additional actions necessary to meet the requirements of the NPDES permit.

**TMDL – Total Maximum Daily Load:** A water cleanup plan. A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources. A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. The calculation must include a margin of safety to ensure that the water body can be used for the purposes the state has designated. The calculation must also account for seasonable variation in water quality. Water quality standards are set by states, territories, and tribes. They identify the uses for each water body (i.e. drinking water supply, contact recreation such as swimming, and aquatic life support such as fishing), and the scientific criteria to support that use. The Clean Water Act, Section 303, establishes the water quality standards and TMDL programs.