Minneapolis Stormwater Management Program

MINNEAPOLIS, MINNESOTA

Municipal Separate Storm Sewer System (MS4) Phase I Permit

NPDES / SDS PERMIT No. MN0061018

Approved by Minneapolis City Council	September 2011
Submitted to Minnesota Pollution Control Agency	September 2011
Approved by Minnesota Pollution Control Agency	May 2013

CITY OF MINNEAPOLIS, MINNESOTA

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Prepared by:
Minneapolis Public Works Surface Water & Sewers Division

in conjunction with:
Minneapolis Park & Recreation Board
CDM

September 28, 2011

APPROVED BY MINNESOTA POLLUTION CONTROL AGENCY
MAY 2013

CDM

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EXECUTIVE SUMMARY
Minneapolis Stormwater Management Program

The Minneapolis Stormwater Management Program (SWMP) is prepared in accordance with the requirements of National Pollutant Discharge Elimination System #MN0061018, issued by the Minnesota Pollution Control Agency under the federal Clean Water Act to the City of Minneapolis (City) and the Minneapolis Park and Recreation Board (MPRB) on January 21, 2011. This is often called a Municipal Separate Storm Sewer System (MS4) Phase I Permit.

This SWMP is organized into two main sections, with an Appendix of supplementary tables. Section 1 provides background and general information about the City's stormwater program management. Section 2 provides detailed descriptions of stormwater management practices (SMP), organized according to the following stormwater management control categories:

1. Public Education and Outreach on Stormwater Impacts
2. Public Participation, Public Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Related Erosion and Sediment Control
5. Post Construction Stormwater Management for Public and Private Projects
6. Pollution Prevention and Good Housekeeping for Municipal Operations
7. Stormwater Discharge Monitoring and Analysis
8. Progress Toward Waste Load Allocation for Approved Total Maximum Daily Loads (TMDLs)
9. Coordination and Cooperation with Other Entities
10. Stormwater Management Program Annual Assessment, Modification, and Annual Reporting

The objective of the SWMP is to provide clear, comprehensive and effective structure and guidance for operation of the MS4 conveyance and treatment system in accordance with the NPDES MS4 Permit to minimize discharge of pollutants.

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OVERVIEW
Minneapolis Stormwater Management Program

Organization of SWMP

This SWMP is organized into two main sections, with an Appendix of supplementary tables. Section 1 provides background and general information about the City's stormwater program management. Section 2 provides detailed descriptions of stormwater management practices (SMP), organized according to the following stormwater management control categories:

1. Public Education and Outreach on Stormwater Impacts
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Regulatory Requirements

History

The Clean Water Act (CWA), the primary federal law governing water pollution, was enacted in 1972 and established the goals of eliminating pollutant discharges and the restoration of surface water quality necessary for beneficial uses such as aquatic habitat, water supply, and recreation. The United States Environmental Protection Agency (USEPA) manages the CWA and subsequent regulations in partnership with state environmental agencies. Major amendments were enacted in the Clean Water Act of 1977 and the Water Quality Act of 1987. The CWA requires a National Pollutant Discharge Elimination System (NPDES) permit to discharge pollutants to Waters of the United States.

NPDES Stormwater Permits in Minnesota

USEPA has authorized the Minnesota Pollution Control Agency to issue NPDES permits. There are different types of NPDES permits, for example certain industrial sites and construction activities. The permit addressed by this SWMP is a Municipal Separate Storm Sewer System Permit, commonly referred to as MS4. Additionally within the MS4 type of NPDES permit there are two categories, Phase I and Phase II. Phase I covers systems serving a population of 100,000 or more. Minneapolis holds a Phase I type of permit. The other Phase I MS4 permit in Minnesota is held by Saint Paul.

The MPCA issued the first MS4 Phase 1 NPDES Permit to the City and the MPRB as co-permittees on December 1, 2000, and re-issued the permit on January 21, 2011. MS4 NPDES permits require regulated municipalities to use Best Management Practices (BMPs) to reduce pollutants in stormwater runoff to the Maximum Extent Practicable (MEP). (Within this document the term Stormwater Management Practice [SMP] is used in place of Best Management Practice [BMP]). This Stormwater Management Program (SWMP) is a document that describes in detail activities related to the Permittees' program for management of stormwater in the Permittees' jurisdiction. It is required to be submitted to the MPCA for approval. A 70-day extension was granted in addition to the original 180 day timeline for submittal. After approval by the MPCA, the permittees will carry out the activities, and will submit annual reports with documentation and analysis of activities conducted during the previous year. The annual report will also outline the following year's changes to the SWMP, if any.

Comparison of SWMP and LSWMP

This Storm Water Management Program (SWMP) document is a federal requirement. The Local Surface Water Management Plan (LSWMP) is a parallel document that is a State requirement, prepared in response to Minnesota Statute 103B and Rules 8410, governing watershed management organizations in Minnesota. There are many similarities between these two documents. The SWMP specifically focuses on stormwater runoff. The LSWMP has a broader view of surface water management in the City and includes water resource management activities, including management of the sanitary sewer collection system and other surface water management activities. The LSWMP was adopted in 2006 and ultimately was incorporated into the City's comprehensive plan.

Description of Permitted Areas, Systems and Surface Waters

Minneapolis is a fully developed city located in Hennepin County, Minnesota. The City is served by an estimated 600 miles of main line storm drain and 17 miles of storm tunnels. The storm drainage system conveys runoff from an approximately 50 square mile catchment area. The tributary land use is approximately 58% residential, 27% commercial/industrial/institutional, 6% parks/open space, 6% streets/highways, and 3% rail. The system also includes stormwater ponds and basins, bio-(in)filtration areas, and other controls and treatment facilities. A more detailed description of the City can be found in Section 3 of the LSWMP.

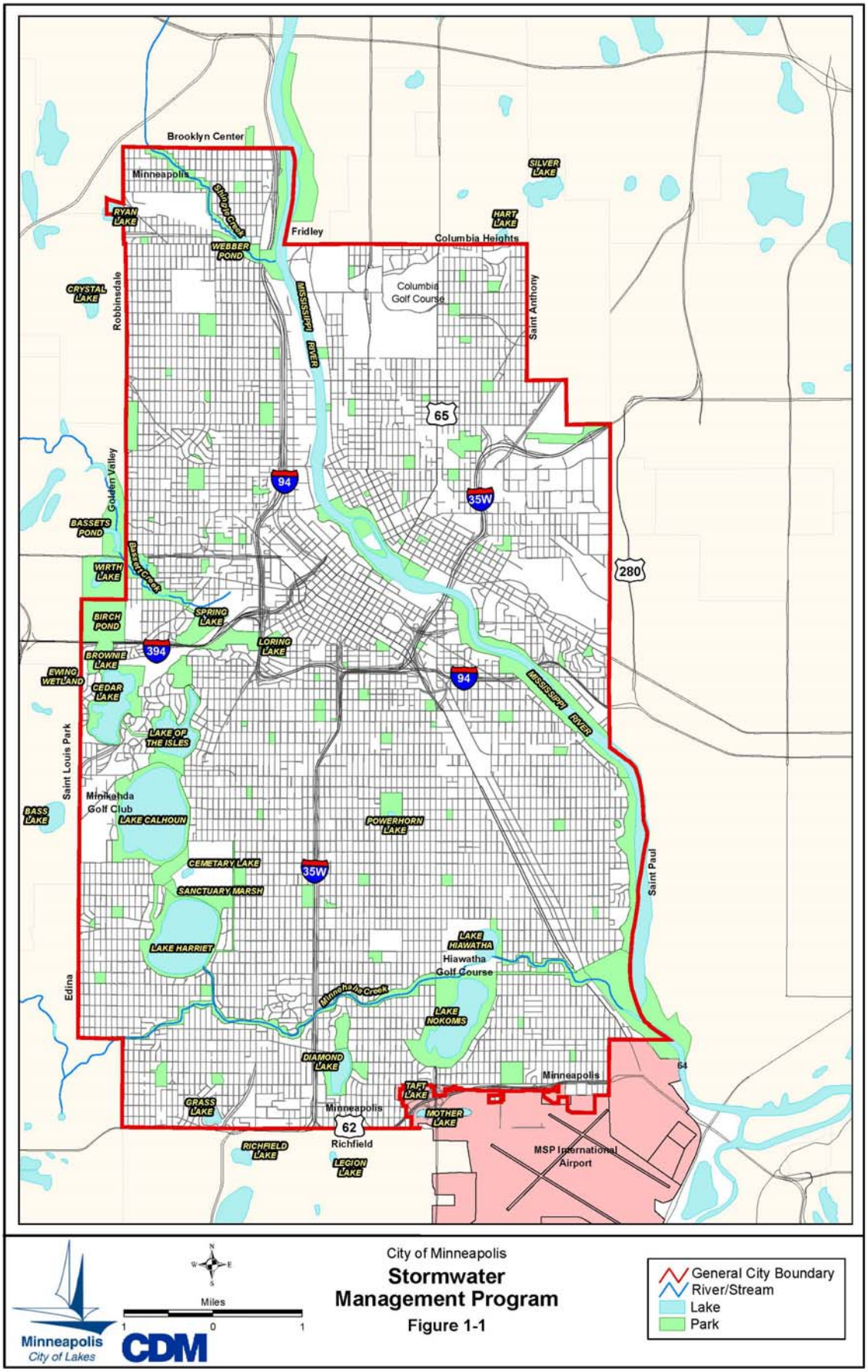
The oldest Minneapolis sewers were built in 1870, and were designed to carry both sewage and stormwater. In 1922, construction started for a separate storm drain system around Minneapolis lakes, as well as newly developing areas. Older areas continued to be served by combined sewers. In 1960, the City banned rainwater drainage to the sanitary sewer and since 1960 has been actively working to separate the stormwater from the sanitary sewers by constructing separate storm drains that discharge to lakes, streams or the Mississippi River.

Approximately 25 miles of the Mississippi River, Shingle Creek, Bassett Creek, and Minnehaha Creek wind through the City. These streams and their tributary lakes and wetlands are the primary surface waters receiving stormwater runoff from the City and MPRB stormwater drainage systems. Those lakes that exist partially or wholly within the City are integrated into the City's parks as shown in Figure 1-1. These lakes are the focus of the City's park system, providing residents and visitors with numerous opportunities for land and water based recreation. Table 1-1 provides details of the streams and lakes within the City which are listed by the MDNR as public waters. As property owner of record for much of the shoreline in the City, the MPRB is responsible for maintaining the shoreline, and has created an effective program for lake management, further detailed at Annual Water Resource Reports.

Water Quality Standards and Total Maximum Daily Loads

Water quality standards (WQS) are risk-based (also called hazard-based) requirements which set allowable general and site-specific parameters for individual water bodies, such as rivers, lakes, streams and wetlands. States set WQS by designating uses for the water body (e.g., recreation, water supply, aquatic life, agriculture) and applying water quality criteria (allowable water quality concentrations and narrative requirements) to protect the designated uses. Minnesota Rule 7050 classifies all surface waters in Minnesota according to specific uses, and defines the numerical water quality standards to protect the physical, biological and chemical integrities of each classification of surface water. The only surface water in the City that has a special Class 1 designation under Minnesota Rule 7050.0470 is the segment of the Mississippi River that is above St. Anthony Falls, which is protected for domestic consumption. All other surface waters in the City are Class 2 waters, protected for aquatic life and recreation, or wetlands. There are no Outstanding Resource Value waters designated for special protection under the non-degradation classifications, as defined in Rule 7050.0180.

The USEPA requires that the MPCA maintain a list of surface waters that do not meet the numerical standards set by the State of Minnesota for its designated use classifications, called the Impaired Waters, or 303(d), list. A Total Maximum Daily Load (TMDL) study may be conducted to determine the sources of pollutant(s) that are causing the impairment. An implementation plan may then be developed that identifies activities and capital projects to reduce the pollutant loading to meet water quality standards. The MPCA provides additional information on impaired waters and TMDL studies at the following web page: Minnesota's Impaired Waters and TMDL Status.



City of Minneapolis

Stormwater Management Program

Figure 1-1

General City Boundary
River/Stream
Lake
Park

Minneapolis City of Lakes

CDM

Table 1-1. Minneapolis Streams and Lakes

Surface Water	MDNR ID	Surface Area (acres)	Minneapolis Stormwater Runoff Pipeshed (acres)
Bassett Creek	07010206-538	--	1,793
Bassett's Pond [1]	27-0036	0.3	719
Birch Pond [1]	27-0653	4	31
Brownie Lake	27-0038	11	34
Lake Calhoun	27-0031	421	1,249
Cedar Lake	27-0039	172	224
Cemetery Lake	27-0017	11	205
Crystal Lake [1]	07-0034	5	469
Diamond Lake	27-0022	55	685
Ewing Wetland	--	2	22
Grass Lake	27-0016	26	386
Lake Harriet	27-0681	342	863
Hart Lake [1]	--	8	3
Lake Hiawatha	27-0018	55	1,008
Lake of the Isles	27-0040	111	760
Legion Lake [1]	27-0024	71	49
Loring Pond	27-0655	7	0
Minnehaha Creek	07010206-539	--	3,213
Mississippi River	07010206	--	18,177
Mother Lake wetlands [1]	27-0023	48	107
Lake Nokomis	27-0019	206	620
Powderhorn Lake	27-0014	12	286
Richfield Lake [1]	27-0021	30	715
Ryan Lake	27-0058	29	49
Sanctuary Marsh	27-0665	3	68
Shingle Creek	07010206-506	--	1,365
Silver Lake [1]	62-0083	72	28
Spring Lake	27-0654	3	45
Taft Lake [1]	27-0683	14	100
Webber Pond	27-1118	3	0
Wirth Lake [1]	27-0037	40	0

[1] Surface water receiving Minneapolis runoff located wholly or partially outside Minneapolis.

The TMDL study produces an equation of factors that add up to the maximum amount of pollutant the impaired water body can assimilate in order to resolve the impairment. Often these TMDL studies target stormwater runoff as a source of pollutants that need to be reduced in order for a surface water to meet water quality standards. In this case, one of the factors in the TMDL equation is a Waste Load Allocation (WLA) from permitted sources, including entities holding MS4 permits, industrial stormwater permits, and construction stormwater permits. For a given TMDL, an MS4 can have an individual WLA, or can be one of a group of MS4s with a shared categorical WLA. The Minneapolis MS4 Permit requires progress toward meeting the WLA through structural or non-structural stormwater management practices. Those surface waters in the City that have been listed as impaired and the status of current TMDL studies are listed in Table 1-2.

Table 1-2. Minneapolis Impaired Waters and TMDL Status

Name	Reach Description	Pollutant or Stressor	TMDL Status
Bassett Creek	Medicine Lake to Mississippi River	Fish bioassessments	No TMDL study
		Fecal Coliform[1]	Included in Upper Miss. R. Bacteria TMDL
		Chloride[1]	TMDL study underway
Brownie Lake	Lake or Reservoir	Nutrient/Eutrophication [1]	No longer impaired. MPCA to remove from 2012 Impaired Water List
		PFOS in Fish Tissue[1, 2]	No TMDL study
Lake Calhoun	Lake or Reservoir	PFOS in Fish Tissue[1, 2]	No TMDL study
Cedar Lake	Lake or Reservoir	PFOS in Fish Tissue[1, 2]	No TMDL study
Crystal Lake	Lake or Reservoir	Nutrient/Eutrophication	TMDL approved 2009. Implementation Plan approved 2009
Diamond Lake	Lake or Reservoir	Nutrient/Eutrophication	Reclassified as wetland. Lake or shallow lake standards no longer apply
Grass Lake	Lake or Reservoir	Nutrient/Eutrophication	No TMDL study
Lake Harriet	Lake or Reservoir	PFOS in Fish Tissue[1, 2]	No TMDL study
Hiawatha Lake	Lake or Reservoir	Nutrient/Eutrophication	TMDL study underway
Lake of the Isles	Lake or Reservoir	Nutrient/Eutrophication	Reclassified as shallow lake. Meets water quality standards for shallow lakes
		PFOS in Fish Tissue[1, 2]	No TMDL study
Lake Pepin	Lake or Reservoir	Nutrient/Eutrophication	TMDL study underway
Minnehaha Creek	Lake Minnetonka to Mississippi River	Fish bioassessments	TMDL study underway
		Fecal Coliform[1]	TMDL study underway
		Chloride[1]	TMDL study underway
		Oxygen, Dissolved[1]	TMDL study underway
Mississippi River	Coon Creek to Upper St Anthony Falls	Fecal Coliform	TMDL study underway
		PCB in Fish Tissue[3]	No TMDL study
Mississippi River	Upper to Lower St Anthony Falls	PCB in Fish Tissue[3]	No TMDL study
Mississippi River	Lower St Anthony Falls to L & D #1	Fecal Coliform	TMDL study underway
Mississippi River	L & D #1 to Minnesota River	PCB in Fish Tissue[3]	No TMDL study
		PFOS in Fish Tissue[1, 2]	No TMDL study
Mississippi River	Minnesota River to Metro WWTP	Fecal Coliform	TMDL study underway
		PCB in Fish Tissue[3]	No TMDL study
		PFOS in Fish Tissue[1, 2]	No TMDL study
		Turbidity	TMDL study underway
Mississippi River	Metro WWTP to Chippewa River (WI)	PCB in Fish Tissue[3]	No TMDL study
		PFOS in Fish Tissue[1, 2]	No TMDL study
		Turbidity	TMDL study underway
Mississippi River	Chippewa River (WI) to L&D 6	PCB in Fish Tissue[3]	No TMDL study
Mississippi River	L & D #6 to Root River	PCB in Fish Tissue[3]	No TMDL study
Mississippi River	Root River to MN/IA border	PCB in Fish Tissue[3]	No TMDL study
Lake Nokomis	Lake or Reservoir	PCB in Fish Tissue[3]	No TMDL study
		Nutrient/Eutrophication	TMDL approved 2011. Implementation Plan being developed
Powderhorn Lake	Lake or Reservoir	Nutrient/Eutrophication	No longer impaired. MPCA to remove from 2012 Impaired Water List

Name	Reach Description	Pollutant or Stressor	TMDL Status
Ryan Lake	Lake or Reservoir	Nutrient/Eutrophication	TMDL approved 2007. Implementation Plan approved 2007
Shingle Creek	Headwaters to Mississippi River	Chloride	TMDL approved 2007. Implementation Plan approved 2007
		Oxygen, Dissolved	TMDL study underway
		Aquatic macroinvertebrate bioassessments	TMDL study underway
Silver Lake	Lake or Reservoir	Nutrient/Eutrophication	TMDL approved 2010. Implementation Plan approved 2010
Wirth Lake	Lake or Reservoir	Nutrient/Eutrophication	TMDL approved 2010. Implementation Plan approved 2010

[1] New impairment added since 2006 adoption of the Minneapolis LSWMP
[2] Perfluorooctane Sulfonate
[3] Polychlorinated Biphenyl

The MPCA maintains a TMDL Glossary of Terms TMDL Glossary of Terms that defines the technical terminology that is used in Table 1-2 and other TMDL reports referenced in this SWMP.

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PROGRAM MANAGEMENT AND COORDINATION
Minneapolis Stormwater Management Program

Legal Authority

The City of Minneapolis, a municipal corporation in the State of Minnesota, has broad general powers to enact legislation for the health and welfare of the community. The City Charter and Code of Ordinances include provisions that protect the water resources of the City. The primary ordinances governing stormwater management can be found in the Minneapolis Code of Ordinances Title 3 (Air Pollution and Environmental Protection), and Title 19 (Waters, Sewers and Sanitary Sewage). A comprehensive list of Minneapolis ordinances related to stormwater and surface water management can be found in Appendix B of the LSWMP.

The Minneapolis Zoning Code contains provisions that regulate land usage, including development and redevelopment in the City. Appendix Table A-3 contains excerpts from the Site Plan Review and Protection of Natural Features sections of the Minneapolis Zoning Code that specifically regulate stormwater management on private property in the City.

Relationship between City Goals / Policies and SWMP

In addition to meeting the requirements of the MS4 permit, the City's stormwater management activities must also conform to various other policies, including the City Council goals, Sustainability Goals, LSWMP goals, and the policies and goals of the comprehensive plan, titled the *Minneapolis Plan for Sustainable Growth* (2009). Stormwater management programs required by the MS4 permit have been established in a manner that follows the adopted policies and goals of the City. Table A-5, in the Appendix, is a matrix that has been developed in order to identify the relationships between the MS4 permit requirements and the City adopted goals and policies. This matrix is used to ensure that the activities of this SWMP and the LSWMP are compliant with the various goals of the City. This table is based on the most current goals and policies of the City and is intended to replace Table 2-1 of the 2006 LSWMP, Conformity with Established City Goals and Policies.

2010 Goals Established by Mayor and City Council

The Minneapolis City Council has set a vision for the future of the City that is based on six goals:

- A Safe Place to Call Home
- Jobs & Economic Vitality
- Livable Communities, Healthy Lives
- Many People, One Minneapolis
- Eco-Focused
- A City That Works

Details for each of these five-year goals can be found at Minneapolis Goals and Strategic Direction.

Minneapolis Comprehensive Plan: *The Minneapolis Plan for Sustainable Growth*

The comprehensive plan for Minneapolis, adopted by the Minneapolis City Council in 2009, is titled *Minneapolis Plan for Sustainable Growth*. This plan contains numerous policies that guide stormwater management in the City. Appendix Table A-4 includes policies that directly relate to stormwater management.

Minneapolis Greenprint Sustainability Initiatives

Minneapolis has a long standing commitment to manage the City in a sustainable manner. To ensure that sustainability principles are followed, the City set up the Greenprint Sustainability Initiative. This initiative sets quantifiable sustainability goals and annually tracks the progress towards these goals. Stormwater and water quality management are included in these efforts. Details are posted on the Minneapolis web site at:

http://www.ci.minneapolis.mn.us/sustainability/MinneapolisGreenprint.asp

LSWMP Water Resource Guiding Principles

The LSWMP was prepared in accordance with the watershed planning requirements set in Minnesota Statute 103B.235 and Minnesota Rule 8410. This plan is developed to comply with the policies of each watershed organization in the City as well as the planning requirements set in the City's comprehensive plan. The LSWMP is a broad document that guides water resource management activities by the City, including stormwater management, flood control, sanitary sewer collection system management, and surface water management. The LSWMP can be found as an Appendix of the Minneapolis Plan for Sustainable Growth, and on the Minneapolis Public Works web site at:

http://www.ci.minneapolis.mn.us/stormwater/local-surface.asp

The City has worked to integrate stormwater, sanitary sewer, and surface water decision making and activities since adoption of the LSWMP in October 2006. This practice was developed to avoid the overlap and sometimes conflicting requirements of the laws, regulations, statutes, rules and other regulatory requirements that are set up to guide stormwater, sanitary collection, and surface water management systems. Minneapolis intends that the programs and activities of this SWMP conform to the LSWMP. Much of the background and supporting information that is required in this SWMP can be found in the LSWMP.

MPRB Comprehensive Plan and Strategic Initiatives

The MPRB has authority and responsibility for managing its lands within the corporate boundaries of the City of Minneapolis. Accordingly, the MPRB adopted a separate comprehensive plan that has been incorporated into the Minneapolis Comprehensive Plan. The MPRB plan contains policies that guide the planning, development and operations of their parks, including environmental operations. The full comprehensive plan is posted on the MPRB web site at: MPRB Comprehensive Plan.

Co-Permittee Coordination

The SWMP is developed and administered by the City and MPRB departments that are responsible for permit activities. Generally the City is responsible for managing the storm drain system and the MPRB is responsible for shoreline and lake management. They are jointly responsible for the completion of the required Permit submittals. The Minneapolis Public Works Division of Surface Water and Sewers provides program management and completes the SWMP and the annual reports.

Coordination with Other Jurisdictions

The City of Minneapolis and the MPRB coordinates with several other public jurisdictions for water resource management, including:

- Bassett Creek Watershed Management Commission
- Minnehaha Creek Watershed District
- Mississippi Watershed Management Organization
- Shingle Creek Watershed Management Commission
- Metropolitan Council Environmental Services
- Minnesota Pollution Control Agency
- Minnesota Department of Natural Resources
- Minnesota Board of Water and Soil Resources
- US Environmental Protection Agency
- US Army Corps of Engineers
- Federal Emergency Management Agency
- US Forest Service
- US National Park Service

Other public entities own storm drainage systems that are interconnected with the Minneapolis stormwater drainage system. These systems are not governed by the Minneapolis / MPRB MS4 permit:

- University of Minnesota (holds a Phase II MS4 Permit)
- Minnesota Department of Transportation (holds a Phase II MS4 Permit)
- Hennepin County (holds a Phase II MS4 Permit)
- Hennepin County – County Ditch 13 (Shingle Creek)
- Minnehaha Creek Watershed District (Ditch 14, Ditch 17, and Ditch 29)

Although the City does not operate these storm drainage systems, it does in some cases have the responsibility and authority to manage the land use tributary to these systems. An exception is land within a right-of-way operated by another road authority (MNDOT, Hennepin County, or the University of Minnesota [U of M]). Another exception is U of M land tributary to the U of M storm drainage system and U of M outfalls. (Where U of M land is tributary to City storm drains and/or City outfalls, City utility connection permits or extension permits are necessary.)

More details regarding these publicly owned systems are included in Section 4 of the LSWMP. A detailed description of each of these jurisdictions, responsibilities and agreements is included in Section 1 of the LSWMP.

Education Activities by Other Entities

Appendix Table A-6 summarizes water quality outreach and education activities that are carried out by other entities and are targeted, in whole or in part, to City residents and businesses. These highly effective activities are not regulated by the City / MPRB permit, however they are complementary to it. To the extent possible, an update of this table will be included in future Annual Reports.

It is the intention of the City and the MPRB to not duplicate programs carried out by others but rather, in most cases, to implement initiatives that are unique to the City or MPRB, and to identify needs that are not being met by others and tailor outreach and education efforts accordingly. Section 2 of this document contains detailed descriptions of education activities carried out by the City and the MPRB.

The City of Minneapolis has developed a stormwater management program that is based on the recognition that many City and MPRB departments have involvement in programs or activities that impact success of implementing effective water quality improvement programs. This document details how stormwater management practices are embedded into the responsibilities of many departments. The result is a combination of ordinances, inspections, education, monitoring, maintenance, and capital projects managed by various departments of the City and the MPRB.

Budgets and Funding

The 2011 adopted budget of the Stormwater Fund is approximately $50.4 million. The budget includes debt payment on storm sewer bonds, storm sewer maintenance, rehabilitation, engineering, street cleaning, capital improvement projects, and regulatory activities. The Minneapolis budget is current only for the year that it is adopted. Projected budgets are presented for planning purposes, and there is no certainty that future funding will follow the projected budgets.

Table 1-3 provides the current budget and funding for the stormwater program. The City works to keep its activities, such as repair/rehabilitation projects, capital improvement projects or regulatory activity, within the limits of available funding, and prioritization is critical.

Funding Mechanisms

Stormwater Utility Funds: In 2005, Minneapolis implemented a stormwater utility fee. Implementation of this fee did not create new revenue, but instead changed how each property was billed for stormwater services. The stormwater utility fee is similar to other fees the City charges its residents for services provided, such as the sanitary sewer fee and trash and recycling pickup fee. The stormwater utility rate is set each year, and the monthly fees are based on numeric units calculated from actual or assumed imperviousness of a particular property. The revenues collected are dedicated to stormwater management activities.

Bonds: In certain years, the City may decide to issue bonds to raise money to pay for capital project infrastructure upgrading and replacement. The debt service on bonds sold for stormwater improvements is paid for by the stormwater utility.

***General Fund*:** Property taxes spread capital, operations, and maintenance costs of the surface water system over the entire City. General fund revenues are not a major source of funding for water resources projects or programs in Minneapolis, however, these funds may pay for a storm drainage improvement that is part of a larger capital improvement project, such as a highway reconstruction project. General funds are also used to fund some activities of the MPRB.

***Grants*:** Though subject to budgetary constraints, a number of state and other grant programs are available for surface water management programs. Grants are used to supplement locally available resources.

Table 1-3. SWMP Budget and Funding

	Budget (in millions)				
	ADOPTED	PROPOSED	PROPOSED	PROPOSED	PROPOSED
	2011	2012	2013	2014	2015
PUBLIC WORKS-SURFACE WATER & SEWERS Primary revenue source is Stormwater Utility Fee. Other sources include bond sales, General Fund, grant proceeds, maintenance agreement payments.					
SOURCES [1]	$50.4	$50.6	$64.2	$58.3	$61.3
USES Operation and maintenance of the stormwater system; including, but not limited to, operation and maintenance of infrastructure, regulatory activities, monitoring, administration, street cleaning, capital projects, debt service, and fees and services	$52.2	$51.7	$60.9	$56.8	$59.4
Change to cash on hand	-$1.8	-$1.1	$3.3	$1.5	$1.9
REGULATORY SERVICES Primary revenue source is permit fees.					
SOURCES [2]	0.31	0.30	0.30	0.30	0.30
USES Detection and enforcement activities	0.31	0.30	0.30	0.30	0.30
MINNEAPOLIS PARK & RECREATION BOARD Primary revenue source is reimbursement from City Stormwater Utility Fee.					
SOURCES [2]	0.27	0.27	0.28	0.29	0.30
USES Stormwater monitoring, public education/outreach on stormwater impacts	0.27	0.27	0.28	0.29	0.30

[1] Based on 2012 budget proposal
[2] Based on 5-year projected activities

Targeted Pollutants and Targeted Sources

The Minneapolis Stormwater Management Program targets pollutants typically present in urban stormwater runoff and as possible also targets sources of those pollutants. Table 1-4 is used by the City as an aid in cross-referencing pollutants typically present in urban stormwater runoff to likely sources of those pollutants.

Table 1-4. Sources of Pollutants in Stormwater Runoff[1]

	Coal Plants / Incinerators	Gasoline / Diesel Fuel Combustion	Metal Corrosion / Metal Protection	Road Salts	Deterioration of Brake Pads / Tires	Asphalt	Fertilizers / Pesticides / Soil Treatments	Wood Preservatives	Paints and Stains	Plastics	Soil Erosion	Sanitary Waste	Manufacturing	Animal Waste	Atmospheric Deposition	Grass Clippings, Leaves and other Plant Materials	Coal Tar Based Sealants for Parking Lots, Driveways
METALS																	
Copper [a, b]	X		X		X		X	X	X	X		X	X	X			
Lead [a]		X	X	X	X		X		X	X			X		X		
Zinc [a]			X	X	X		X		X	X			X	X			
OTHER POLLUTANTS																	
Arsenic [b]	X						X	X			X		X	X	X		
Bacteria: E. Coli [a]											X	X		X			
Cyanide		X	X	X					X	X		X					
Chloride, Total [a]	X	X		X						X		X		X			
Oil and Grease [a]		X			X	X							X				
Polycyclic Aromatic Hydrocarbons (PAH) [b]	X	X				X	X					X	X				X
Sulfate [a]	X	X				X			X	X		X		X	X		X
Volatile Organic Compounds (VOC)	X	X		X		X	X		X	X		X	X	X	X		
SEDIMENT AND OTHER SOLIDS																	
Total Dissolved Solids (TDS) [a]	X			X		X	X					X		X	X	X	
Total Suspended Solids (TSS) [a]	X		X	X	X	X	X			X	X	X	X	X	X	X	
NUTRIENTS																	
Nitrate / Nitrite [a]		X					X				X	X	X	X	X	X	
Nitrogen, Ammonia Un-Ionized [a]	X	X	X				X					X		X	X	X	
Nitrogen, Total Kjeldahl (TKN) [a]							X				X	X		X	X	X	
Phosphorus, Total [a]	X	X			X	X	X				X	X	X	X	X	X	
Phosphorus, Total Dissolved [a]	X	X					X				X	X		X	X	X	
LABORATORY ANALYSIS PARAMETERS																	
Biochemical Oxygen Demand (BOD_5) [a]							X				X	X		X	X	X	
pH [a]	X		X	X													

[a] MS4 Monitored Parameter
[b] Stormwater Pond Dredging Parameter

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[1] Sources:

Massachusetts Department of Environmental Protection, Source Water Assessment Program, DRAFT Land Use/Associated Contaminants Matrix, 1999

Mississippi Watershed Management Organization, 2006 Annual Report, Appendix C, Table 4

MPCA, Managing Dredged Materials in the State of Minnesota, Figure 2, 2009

Texas Commission on Environmental Quality (TCEQ) Source Water Assessment and Protection (SWAP) Program's List of Potential Source of Contamination Types and Subtypes Detailed Listing, Descriptions, and Applied Contaminants, 2009

Annual Report

The City and MPRB prepare annual reports that are made available for public review and comment. The annual reports provide an overall description and evaluation of the activities, accomplishments, progress towards goals, special studies, financial information and other assessments for each stormwater management practice. Reports from previous years are available on the web sites for each organization, at Minneapolis NPDES MS4 Stormwater Annual Report, and Minneapolis Park & Recreation Board - Water Resources Reports.

These web sites will also contain future year reports as they are developed.

Any proposed modifications to this SWMP will be presented in the Minneapolis NPDES MS4 Stormwater Annual Report when it has been determined that a stormwater management practice requires replacement or modification.

SECTION 2: SMP SHEETS
Minneapolis Stormwater Management Program

Stormwater Management Practice (SMP) Sheets

Section 2 of this SWMP details the activities for each of a total of ten Overview Sheets summarizing the SMPs for each category, plus 46 detailed SMP sheets. These practices are organized within the control measure category that most closely matches the specific activity, and the control measure categories address Part V.C of the permit. The following summarizes the information contained on each SMP Sheet.

An OVERVIEW sheet precedes each group of practice sheets. Each of the ten OVERVIEW sheets (one for each control measure category) includes a Description, MS4 Permit References, Measurable Goals, and Participating Departments.

Description

This section generally describes the activities of the SMP.

Workplan

The Workplan details existing and planned activities.

Targeted Pollutants and Targeted Sources

The Stormwater Management Practice (SMP) Sheets describe targeted pollutants and as possible also describe likely sources of pollutants typically present in urban stormwater runoff. These lists of pollutants and sources are not intended to be an exhaustive list, but are intended to target the most dominant pollutants and sources present in urban stormwater runoff.

MS4 Permit References

The MS4 permit references are included for users that are interested in the detailed requirements set in the permit. A cross-reference is also provided in the Appendix as Table A-8.

Assessment Process for Annual Reporting

The MS4 permit requires assessment procedures that will be documented in the Annual Report. There are both general assessment requirements and some SMP-specific assessment requirements included on the SMP Sheets.

Participating Departments, Divisions and Contacts

The specific department and City or MPRB personnel participating in each SMP is listed in this section.

Table 2-1 lists the SMP summary sheets, arranged by stormwater management category.

Table 2-1. Stormwater Management Categories and Practices

Public Education and Outreach on Stormwater Impacts

OVERVIEW of CATEGORY 1
1.1 STORMWATER PUBLIC EDUCATION ACTIVITIES

Public Participation, Public Involvement

OVERVIEW of CATEGORY 2
2.1 ENGAGE a DIVERSE PUBLIC in STORMWATER MANAGEMENT PROGRAM AWARENESS, DECISIONS and ACTIVITIES
2.2 PUBLIC EDUCATION and OUTREACH on PUBLIC PARTICIPATION, PUBLIC INVOLVEMENT CATEGORY

Illicit Discharge Detection and Elimination

OVERVIEW of CATEGORY 3
3.1 PHOSPHORUS-FREE FERTILIZER PROGRAM
3.2 PESTICIDES PROGRAM
3.3 ILLICIT DISCHARGES in STORM DRAINS INVESTIGATION PROGRAM
3.4 SPILL RESPONSE PROGRAM
3.5 FACILITIES INSPECTION PROGRAM
3.6 STORMWATER MANAGEMENT for REGULATED ACTIVITIES PROGRAM
3.7 SOURCE CONTROL EDUCATION and OUTREACH PROGRAM
3.8 EDUCATION and OUTREACH PROGRAM – CATCH BASIN STENCILING

Construction Related Erosion and Sediment Control

OVERVIEW of CATEGORY 4
4.1 DEVELOPMENT and REDEVELOPMENT PROGRAM
4.2 EROSION and SEDIMENT CONTROL for CITY and MPRB CAPTIAL PROJECTS

Post-Construction Stormwater Management for Public and Private Projects

OVERVIEW of CATEGORY 5
5.1 REVIEW and APPROVAL PROGRAM for PRIVATE DEVELOPMENT / REDEVELOPMENT PROJECTS
5.2 ONGOING COMPLIANCE PROGRAM for PRIVATE DEVELOPMENT / REDEVELOPMENT PROJECTS
5.3 REVIEW and APPROVAL for PROJECTS PROPOSING TO MODIFY MS4 SYSTEM
5.4 PROJECT MANAGEMENT for STORMWATER in CITY and MPRB CAPITAL PROJECTS
5.5 LOCALIZED FLOOD MITIGATION CAPITAL PROJECTS
5.6 RUNOFF VOLUME REDUCTION PLAN
5.7 HYDROLOGIC and HYDRAULIC MODELING
5.8 WATER QUALITY MODELING
5.9 PILOT PROJECTS

Pollution Prevention and Good Housekeeping for Municipal Operations

OVERVIEW of CATEGORY 6
6.1.0 OPERATE and MAINTAIN MS4 SYSTEM in ACCORDANCE with NPDES MS4 PERMIT to MINIMIZE DISCHARGE of POLLUTANTS
6.1.1 STORM DRAIN and DEEP STORM TUNNEL OPERATION & MAINTENANCE
6.1.2 CATCH BASIN and MANHOLE OPERATION & MAINTENANCE
6.1.3 OUTFALL OPERATION & MAINTENANCE
6.1.4 PUMP STATION OPERATION & MAINTENANCE
6.1.5 LEVEL CONTROL WEIR, BULKHEAD and OPEN DITCH/VEGETATED CHANNEL OPERATION & MAINTENANCE
6.1.6 GRIT CHAMBER OPERATION & MAINTENANCE
6.1.7 OPERATION & MAINTENANCE of STORMWATER RETENTION PONDS and DETENTION BASINS, STORMWATER WETLANDS, and BIO-(IN)FILTRATION AREAS (RAIN GARDENS)
6.1.8 STORMWATER RETENTION POND DREDGING PROCESS
6.1.9 HANDLING and DISPOSAL of STORED and STOCKPILED DREDGED or OTHER REMOVED MATERIALS
6.1.10 OPERATE and MAINTAIN MPRB STORM DRAIN CONVEYANCE SYSTEM in ACCORDANCE with NPDES MS4 PERMIT to MINIMIZE DISCHARGE of POLLUTANTS
6.1.11 ELECTRONIC INVENTORY and MAPPING
6.2 STREET SWEEPING and CLEANING PROGRAM
6.3 CITY and MPRB PARKING LOT and EQUIPMENT YARD MANAGEMENT
6.4 APPLICATION of SNOW and ICE CONTROL MATERIALS for STREETS
6.5 APPLICATION of SNOW and ICE CONTROL MATERIALS for CITY and MPRB PROPERTIES
6.6 VEGETATION MANAGEMENT for RIGHT-OF-WAY and CITY PROPERTIES

Stormwater Discharge Monitoring and Analysis

OVERVIEW of CATEGORY 7
7.1 MONITORING and ANALYSIS to ASSIST in ASSESSING STORMWATER MANAGEMENT PROGRAM EFFECTIVENESS
7.2 MAJOR OUTFALL MONITORING and ANALYSIS PROGRAM
7.3 PUBLIC EDUCATION and OUTREACH on STORMWATER DISCHARGE MONITORING and ANALYSIS

Progress Toward Waste Load Allocation for Approved Total Maximum Daily Loads

OVERVIEW of CATEGORY 8
8.1 TMDL PROGRAM
8.2 PUBLIC EDUCATION and OUTREACH on TMDL PROGRAM

Coordination and Cooperation with Other Entities

OVERVIEW of CATEGORY 9
9.1 COORDINATION and COOPERATION with OTHER ENTITIES

Stormwater Management Program Assessment, Modification, and Annual Reporting

OVERVIEW of CATEGORY 10
10.1 STORMWATER MANAGEMENT PROGRAM ASSESSMENT, MODIFICATION, and ANNUAL REPORTING

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Overview of Category 1

Description

Previous Annual Reports to the MPCA described public education and outreach activities as a stand-alone chapter. Starting with this SWMP, education and outreach are described in relation to the control measure category. The SWMP embeds public education activities into the workplan of specific stormwater control practices whenever an education opportunity is closely linked to the other activities contained in that workplan.

There is also more detail on public education and outreach pages within the following control measure categories: 2: Public Participation, 3: Illicit Discharge Detection and Elimination, 7: Stormwater Discharge Monitoring and Analysis, and 8: Progress Toward Waste Load Allocation for Approved Total Maximum Daily Loads.

Measurable Goals (MS4 Permit Reference V.B4)

Completion of education program plan for 2013-2015 with identified target audiences, educational goals for each audience, and activities to reach goals (see SMP Sheet 1.1)

Participating Departments

Minneapolis Park and Recreation Board
Public Works Department
Regulatory Services Department

Category 1 SMP Sheets:

1.1: STORMWATER PUBLIC EDUCATION ACTIVITIES

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SMP No. 1.1: STORMWATER PUBLIC EDUCATION ACTIVITIES

Description

Everyone's actions can affect the quality of our lakes, wetlands, creeks and the Mississippi River. The City and MPRB implement public education and outreach programs to reduce the pollutant load to receiving waters, and to promote, publicize, and facilitate the proper management of stormwater discharges to the storm sewer system. A multi-faceted approach is used. The desired program result is behavior change in ways that will improve water quality.

Workplan

- Define and address the service needs and expectations of the public. (ongoing)
- Promote public responsibility, accountability, creativity and innovation. (ongoing)
- Inventory ongoing public education activities to educate and engage those who live, work and play in Minneapolis about actions they can take to improve quality of surface waters. Identify target audiences, educational goals for each audience, activities to reach goals, and develop plan for 2013-2015. (2012)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic materials on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts, other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit References

V.B1-3, V.B5-6, V.C1a, V.C1c, V.C1d, V.C1e, V.C3c, V.F

Assessment Process for Annual Reporting

- Narrative of public education and outreach events and activities
- Narrative of multilingual components of documents, events, and activities
- Listing of public education documents developed, with web site links
- Narrative of staff training activities

Participating Departments, Divisions and Contacts

Public Works Surface Water & Sewers Division	Lois Eberhart, Water Services Administrator
Minneapolis Park & Recreation Board	Debra Pilger, Director Environmental Operations
Minneapolis Park & Recreation Board	MaryLynn Pulscher, Coordinator Environmental Education
Communications Divisions with the City or MPRB	

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Overview of Category 2

Description

The City's stormwater management program taps into numerous public participation and public involvement activities to solicit input on specific stormwater-related activities and decisions that affect the residents and businesses of Minneapolis. As with Category 1: Public Education and Outreach, the SWMP embeds participation and involvement activities into the workplan of specific stormwater control practices whenever opportunities area closely linked to the other activities contained in that workplan.

Measurable Goals (MS4 Permit Reference V.B4)

Completion of "how to become involved" resource on the City's stormwater web page (see SMP Sheet 2.1)

Completion of interpretive signage, web site information and self-guided tour for water quality projects. (see SMP Sheet 2.1)

Participating Departments

Minneapolis Park and Recreation Board

Public Works Department

Category 2 SMP Sheets:

2.1: ENGAGE A DIVERSE PUBLIC IN STORMWATER MANAGEMENT PROGRAM AWARENESS, DECISIONS AND ACTIVITIES

2.2: PUBLIC EDUCATION AND OUTREACH ON PUBLIC PARTICIPATION, PUBLIC INVOLVEMENT

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SMP No. 2.1: ENGAGE a DIVERSE PUBLIC in STORMWATER MANAGEMENT PROGRAM AWARENESS, DECISIONS, and ACTIVITIES

Description

Minneapolis citizens are actively engaged in many aspects of the City's governance, being involved through commissions, neighborhood associations, volunteer organizations, and electronic communications. Other public involvement techniques include workshops, web page accessibility, and outreach by elected officials. The City's stormwater management program works to tap into these existing public participation and public involvement activities to solicit input on specific activities and decisions that affect the residents and businesses of Minneapolis.

Workplan

- Conduct annual public meeting to address the SWMP and Annual Report. Publish a newspaper notice of the meeting at least 30 days prior to the meeting, and provide copies to the MPCA Commissioner, other governmental entities, and other interested parties. Include a summary of oral and written input at the public meeting and responses in the Annual Report. Consider revisions to SWMP based on public input. (ongoing)
- Formally approve and adopt SWMP and Annual Report through resolution of the City Council and Mayor. Include the resolution in Annual Report. (ongoing)
- Carry out programs that engage volunteers and nurture citizen involvement and accountability. (ongoing)
- Provide 311 access to report problems or get information. The 311 Call Center is a three-digit phone number created to make City government easier and more responsive to needs of residents, business and visitors. Examples for this category include reporting illegal dumping, or finding out the time and location for a public meeting about a capital project. 311 information is available in English, Spanish, Hmong, Lao, Oromo, Somali and Vietnamese languages, and translation services are available for additional languages. (ongoing)
- Carry out programs that involve and train youth in environmental stewardship. (ongoing)
- Prepare and publish the annual MPRB Water Resources Report, a comprehensive technical reference of water quality information about the lakes managed by the MPRB. Provide link to Report on MPRB and City web sites. Distribute copies to public libraries. (ongoing)
- Engage the public in the process of decision making. Past examples include capital improvement project meetings, Local Surface Water Management Plan solicitation of public comments, and development of the city's comprehensive plan, The Minneapolis Plan for Sustainable Growth. (ongoing)
- Maintain effective communications between staff and City / MPRB elected officials and other policy makers. Provide information and materials for informing and engaging the public about stormwater management program decisions and activities. (ongoing)
- Educate staff about how to engage a diverse public. Examples have included diversity training, translation services available over the 311 Call Center, and making translators available at major public meetings (American Sign Language, Spanish, Hmong, Lao, Oromo, Somali and Vietnamese). (ongoing)
- Communicate with leaders/members of Minneapolis' diverse communities, such as ongoing stormwater outreach with the Hmong community. Continue to develop and use relationships and tools to increase environmental knowledge and water stewardship, and to customize outreach efforts that intersect with the worldview of the multicultural organization, has context in their lives, and targets key behaviors that contribute to non-point source pollution. (ongoing)

- Lead or partner in special citizen-based watershed improvement initiatives. Past examples have included the Powderhorn Lake Neighborhood of Rain Gardens and Friends of Diamond Lake, both winners of Minnesota Environmental Initiative awards. (ongoing)
- Utilize technology to announce public participation opportunities. (ongoing)
- Request CEAC review and participation on major stormwater policy initiatives. (ongoing)
- Update websites with most current MS4 documents, including MS4 permit, SWMP, Annual Report, monitoring reports, and other special reports as required by the MS4 permit. (ongoing)
- Develop a "how to become involved" resource on the City's stormwater web page. (2012 – 2013)
- Develop program of interpretive signage, web site information and self-guided tour for water quality projects. (2013-2015)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PA

Sources

Grass clippings, leaves or other organic materials on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts, other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1a, V.C1b, V.C1c, V.C1f, V.C2a, V.C.2b, V.C.2c, V.C.2d, V.C2e, V.F, VI.D2b

Assessment Process for Annual Reporting

- Public involvement in preparing the Annual Report including SWMP updates, including oral and written input and City response
- Resolution(s) adopted
- Narrative of the year's activities for engagement of volunteers, public involvement in decision-making, multilingual and multicultural public involvement activities, training and involvement of youth, events, and participation in citizen-based watershed improvement initiatives.
- Listing of and web site links for documents prepared and available for public use, including MPRB Annual Report, and SWMP Annual Report
- Report on number of youth trained/employed in environmental stewardship as part of Mississippi River Green Team
- Narrative of staff training activities, including targeted audience stewardship training

Participating Departments, Divisions and Contacts

Public Works Surface Water & Sewers Division	Lois Eberhart, Water Resources Administrator
Minneapolis Park & Recreation Board	Debra Pilger, Director Environmental Operations
Minneapolis Park & Recreation Board	MaryLynn Pulscher, Coordinator Environmental Education
Communications Divisions within the City or MPRB	

SMP No. 2.2: PUBLIC EDUCATION and OUTREACH on PUBLIC PARTICIPATION/INVOLVEMENT CATEGORY

Description

There are numerous organizations involved in water quality education, as noted in Table A-6 of the Appendix to this SWMP. Yet the function, relationships, and memberships of these organizations is not always apparent to the residents of the City, especially to those that are interested in getting involved in water quality improvements. While some are interested in one-time activities, such as catch basin stenciling, others may be interested in serving on a citizen committee or contacting their watershed management organization. As an aid to these residents, the City proposes to create a "How to get involved in stormwater management" web page. The goal of the page will be dual – to explain the function of the different organizations operating in the City, and to provide current web page links and contact information.

Workplan

- Identify specific target audiences, educational goals for each audience, activities to reach goals, and develop plan. (2013)
- Establish a web page that communicates with the public about stormwater management activities carried out in Minneapolis by the City, the MPRB and by other organizations, how the programs are related to water quality, how actions by the public contribute to the pollutants being addressed, and behavior changes they can make. (2014).

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic materials on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts, other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit References

V.B1-3, V.B5-6, V.C1b, V.C2a

Assessment Process for Annual Reporting

- Narrative on development and maintenance of web page
- Snapshot of information contained on web page included in annual report
- Report on number of web site visits

Participating Departments, Divisions and Contacts

Public Works Surface Water & Sewers Division
Minneapolis Park and Recreation Board

Lois Eberhart, Water Resources Administrator (lead)
MaryLynn Pulscher, Coordinator Environmental Education

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Overview of Category 3

Description

The stormwater management objective of these programs is to regulate discharge of pollutants to the MS4 system, in accordance with the MS4 permit to discharge stormwater to surface waters including lakes, streams, wetlands, and the Mississippi River.

- Existing Minneapolis Code of Ordinances Chapters that relate to programs and enforcement administered in full or in part by the Regulatory Services Department include the following:

Chapter 46 (Solid and Hazardous Waste) addresses storing, handling and processing of motor oils, motor vehicle fluids and parts, and contaminated materials.
Chapter 47 (Air Pollution) addresses particulates, which when washed out of the air during rain events can flow to surface waters.
Chapter 48 (Watershed Management Authority) addresses storage of regulated substances, investigation of environmental contamination and remediation of contaminated sites.
Chapter 50 (Waste Control and Waste Discharges) addresses registration to discharge to the sewer system, industrial waste discharge registration, and direct storm drain discharge registration.
Chapter 52 addresses drainage, soil storage, and soil erosion and sedimentation.
Chapter 53 addresses disposal of oil.
Chapter 54 addresses requirements for and registration of stormwater treatment devices.
Chapter 55 General Regulations on Fertilizer Application and Sale of Fertilizers Containing Phosphorus.
Chapter 57 addresses keeping fluorescent bulbs or other products containing mercury out of the waste stream.
Chapters 215 and 216 Polluted Water Wells, and Water Well Construction.
Chapter 427 addresses leaves, grass clippings or other organic debris on street or alley.

- Existing MPRB Ordinances that relate to programs and enforcement administered in full or in part by the Regulatory Services Department include the following:

Chapter 6.5 (Enforcement) empowers MPRB park patrol agents to issue violations of state laws, City ordinances, in addition to MPRB ordinances.
Chapter 7 prohibits storage of building materials on MPRB Parkways without permit.
Chapter 11 contains the MPRB shoreland and floodplain ordinances.

Measurable Goals (MS4 Reference V.B4)

- Documentation of work practices
- Completion of the dry weather field screening program (see SMP Sheet 3.3)
- Completion of the initial inventory of stormwater hotspots (see SMP Sheet 3.6)
- Completion of the identification of target pollutants and target audiences for additional source control outreach programs (see SMP Sheet 3.7)

Participating Departments

Public Works Department
Regulatory Services Department

Category 3 SMP Sheets

3.1 PHOSPHORUS-FREE FERTILIZER PROGRAM
3.2 PETICIDES PROGRAM
3.3 ILLICIT DISCHARGES IN STORM DRAINS INVESTIGATION PROGRAM
3.4 SPILL RESPONSE PROGRAM
3.5 FACILITIES INSPECTION PROGRAM
3.6 STORMWATER MANAGEMENT FOR REGULATED ACTIVITIES PROGRAM
3.7 SOURCE CONTROL EDUCATION AND OUTREACH PROGRAM
3.8 EDUCATION AND OUTREACH PROGRAM – CATCH BASIN STENCILING

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SMP No. 3.1: Phosphorus-Free Fertilizer Program

Description

The objective of this program is to reduce the phosphorus concentrations in the City's stormwater by enforcing the prohibition of the use of fertilizers containing phosphorus on lawns. The City introduced the prohibition in 2001. In 2003, the prohibition was enacted statewide. By City ordinance, Chapter 55 Lawn Fertilizer (relating to Air Pollution and Environmental Protection), the use of fertilizer containing any amount of phosphorus or other compound containing phosphorus, such as phosphates, is prohibited on lawns in Minneapolis, except as allowed by Minnesota Statute 18C.60 Phosphorus Turf Fertilizer Use Restrictions.

Workplan

- Respond to reports of improper or illegal phosphorus fertilizer application. (ongoing)
- Utilize 311 Call Center as hotline for reporting improper or illegal phosphorus fertilizer application. (ongoing)
- Develop web site information about restrictions and how to file a complaint about improper or illegal phosphorus fertilizer application. (2012 - 2013)

Targeted Pollutants and Targeted Sources

Fertilizers containing phosphorus

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1b, V.C1c, V.C.1e, V.C.3c1, V.C3c2, V.C3c3

Assessment Process for Annual Reporting

- Number of complaints, discoveries, incidents and City response
- Number of businesses receiving printed materials, provide copy of materials distributed.

Participating Department, Division, Contact

Regulatory Services Department Environmental Management & Safety Dan Huff, Manager

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SMP 3.2: PESTICIDES PROGRAM

Description

The objective of this program is to use public outreach to minimize the discharge of pesticides including herbicides, insecticides and fungicides from misuse or overuse within the statutory authority of the City. Minnesota Statute 18.02 preempts local governments from enacting ordinances to control pesticides or herbicides.

Workplan

- Administer public education and outreach. (ongoing)
- Maintain web site information about restrictions and how to file a complaint about spills or excessive applications. (ongoing)
- Utilize 311 Call Center as hotline for reporting spills or excessive applications. (ongoing)
- Respond to reports of spills or excessive applications. (ongoing)

Targeted Pollutants and Targeted Sources

Pollutants

Arsenic

Metals

Volatile organic compounds

Sources

Pesticides (insecticides, herbicides, fungicides etc.)

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1b, V.C.1c, V.C1e, V.C3c1, V.C3c2

Assessment Process for Annual Reporting

- Number of complaints, discoveries, incidents and City response
- Staff training events and number of staff trained

Participating Department, Division, Contact

Regulatory Services Department Environmental Management & Safety

Dan Huff, Manager

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SMP No. 3.3: ILLICIT DISCHARGES in STORM DRAINS INVESTIGATION PROGRAM

Description

The objective of this program is to minimize the discharge of pollutants to the maximum extent practicable (MEP) by detecting, investigating and resolving illegal dumping and disposal of unpermitted, non-stormwater flows in the city's stormwater drainage system including pipes, gutters, swales, and other conveyance infrastructure.

Workplan

Regulatory Services – Hazardous Materials Manager and Environmental Management

- Administer program to detect and mitigate illicit discharges. (ongoing)
- On a regular basis, visually inspect, by boat, Mississippi River outfalls for plumes or other evidence of illicit discharges (ongoing when navigable)
- Maintain web site information about illicit discharges and how to report violations. (ongoing)
- Utilize 311 Call Center as hotline for reporting dumping and other activities that degrade stormwater runoff. (ongoing)
- Respond to reports of unauthorized discharges and illicit connections including reports from PW-SWS Operations personnel, plumbing inspectors, 311 calls, and Environmental Management Complaint Forms. Investigate, make efforts to determine sources, require corrective action, and document. (ongoing)
- Report to the MPCA discharge incidents from discharges subject to the MPCA's NPDES General Industrial Stormwater Permit program or from another permit program. Encourage the discharger to obtain a permit from the MPCA if one is not already held. (ongoing)
- Train staff on procedures to notify state and federal Duty Officers, PW-SWS Operations staff, and other departments in the event that a spill is discovered during dry-weather flow screening. (ongoing)
- Carry out staff training. (ongoing)

Public Works – Surface Water & Sewers Division

- If suspicious flows or unusual odors, stains or deposits are observed during routine inspection and operation of storm drain structures, storm tunnels, outfalls, grit chambers and other stormwater conveyance infrastructure, report to Regulatory Services for investigation, enforcement and documentation. (ongoing)
- Carry out staff training. (ongoing)
- Provide mapping data to support illicit discharge investigation and enforcement activities (ongoing)
- Develop a dry weather field program with chemical screening, based on the most cost-effective approach, that identifies pollutants and sources in non-stormwater dry weather flow. (2013-2015)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metal
Polycyclic aromatic hydrocarbons (PAH)
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic materials on pavement	Pesticides
Fertilizers containing phosphorus	Atmospheric deposition
Soil erosion	Gasoline and diesel fluid combustion
Road salt	Automotive fluids
Sanitary Waste	Deterioration of brake pads, tires
Pet waste, wildlife waste	Manufacturing
Automotive fluids	Driveway and parking lot coal tar sealants

MS4 Permit References

V.B1-3, V.B5-6, V.C1b, V.C1c, V.C1e, V.C3a, V.C3b, V.C3c1, V.C3c2, V.C3d, V.C3e, V.c3f, VI.A3d, VI.A3d, VI.D2b3iii

Assessment Process for Annual Reporting

- Number of days boats were used on the Mississippi River to make visual inspections of outfalls
- Number of reported or discovered suspicious discharges, number investigated, number eliminated
- Narrative summarizing dry weather flow inspections, activities, results, responses
- Training events and staff trained

Participating Department, Division, Contact

Regulatory Services Department Housing Inspection	Steve Kennedy, Hazardous Materials Manager
Regulatory Services Department Environmental Management & Safety Division	Dan Huff, Manager
Public Works Department Surface Waters & Sewers Division	Kevin Danen, Operations Engineer
Public Works Department Surface Waters & Sewers Division	Lois Eberhart, Water Resources Administrator (for mapping data)

SMP No. 3.4: SPILL RESPONSE PROGRAM

Description

The objective of this program is to minimize the discharge of pollutants to lakes, creeks, wetlands and the Mississippi River by appropriately responding to spills. The immediate goals of response are safety, containment of the spill, recovery of hazardous materials, and collection of data for use in assessment of site impacts. Motor vehicle collisions and electrical transformer overloads are examples of accidental releases, and results can include untreated waste and hazardous materials including heavy metals, toxics and solvents.

For small spills of petroleum products or other vehicle fluids, personnel are dispatched with appropriate equipment to apply sand. Once the sand has absorbed the spill, it is removed and then deposited in a leak-proof container. For large or extremely hazardous spills, a Hazardous Materials Response Team is also mobilized and augmented with staff from additional departments, outside agencies and/or contractors if warranted as the event progresses. For spills that reach the Mississippi River or Minneapolis lakes, boats are available for spill response and personnel are trained in boom deployment.

The life cycle of an event requires personnel from various departments and agencies to work as a team, utilizing available resources to protect people, the environment, and property. Training and response procedures are coordinated among the Regulatory Services, Public Works, and Fire Departments. The Regulatory Services Hazardous Materials Manager is responsible for coordinating recovery efforts. Events are followed by post-action debriefings to determine the causes of the events, to identify measures to improve the City's response, and to determine the means to limit future occurrences. As the assessment of the event progresses, other departments and/or outside agencies or contractors may become involved. Full procedures are documented in the City of Minneapolis Emergency Action Plan.

Workplan

Regulatory Services Hazardous Materials Manager

- Administer program. (ongoing)
- Coordinate activities and conduct inspection, monitoring, routine recordkeeping and emergency response readiness and training. (ongoing)
- Consider and evaluate more effective techniques and timelines. (ongoing)
- Report spills to the MPCA Public Safety Duty Officer, 911 Emergency Communications and, for qualified spills, to the National Duty Officer as required by law. (ongoing) (NOTE that some spills are reported TO the City BY the MPCA, in which case the Duty Officer has already been notified.)
- Train staff in procedures to notify state and federal Duty Officers, PW-SWS Operations staff, other City/MPRB departments and watershed organizations (including for watershed staff who may be monitoring in the affected pipe) on spill reporting. (ongoing)
- Train staff in the river deployment of booms, and maintain experience in placement of both containment and absorbent types of booms as well as extensive knowledge of the Mississippi River, lakes, landings and outfalls. (ongoing)
- Organize and facilitate spill drill training to train for field scenarios. (ongoing)
- Utilize 311 Call Center as hotline for reporting spills, dumping and other activities that degrade stormwater runoff. (ongoing)
- Maintain web site information about how the public can identify and report spills. (ongoing)

Fire Department, Regulatory Services Hazardous Materials Manager, Environmental Management & Safety

- Serve as responders. Assess the site/incident, assess for life safety, start spill abatement such as putting down sand dike to contain flow, and determine the Incident Action Plan (IAP). Secure appropriate resources to implement the IAP (City, State, Federal, private contractors). Oversee site incident remediation and recovery activities. (ongoing)

Public Works Street Maintenance

- For small spills of vehicle-related fluids, apply sand, remove and transfer to leak-proof container, convey to a spill debris pile. When an amount has accumulated, sample for laboratory analysis according to MPCA regulations and dispose of in an approved manner. (ongoing)
- If the spill has been encountered by Public Works without notification from Regulatory Services, report to Regulatory Services for notification to MPCA Public Safety Duty Officer. (ongoing)

Public Works Surface Water & Sewers

- Identify and alert PW-SWS crews working on the sewer system and evacuate if necessary. (ongoing)
- Assist Regulatory Services, Public Works, Police, Fire, and regulatory entities with the placement of booms and/or other release control media at outlet locations along area water bodies. (ongoing)
- Assist Regulatory Services and Fire Departments with identifying discharge pathway of contaminants that have entered the Minneapolis sewer system as well as upstream pathway for possible sources of the contaminants. (ongoing)
- Provide mapping data to support illicit discharge investigation and enforcement activities. (ongoing)

Targeted Pollutants and Targeted Activities

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides
Bacteria
Metals
Oil and Grease
Arsenic
Sulfates
Volatile organic compounds
Acids

Activities

Accidental releases
Chemical dumping
Illegal disposal/illegal dumping
Handling of regulated or hazardous materials
Improper storage of material

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1b, V.C1c, V.C1e, V.C3b, V.C3c1, V.C3c2, V.C3c3, V.C3d, V.C3e, VI.D2b3ii

Assessment Process for Annual Reporting

- Report on number of calls for emergency response including type (accidental spills, chemical dumping, illegal disposal, handling of regulated or hazardous materials)
- Report on training for recognition and response to hazardous materials or situations, and number of staff trained
- Report on Spill Drills, if conducted
- Report on spill response time as improvement from 2011 baseline
- Report on number of approved underground and above ground chemical storage tank installations, removals and abandonments

Participating Departments, Divisions, Contacts

Regulatory Services Department Housing Inspections	Steve Kennedy, Hazardous Materials Manager
Regulatory Services Department Environmental Management & Safety Division	Dan Huff, Manager
Fire Department Fire Inspection Services	Dave Dewall, Assistant Fire Chief
Public Works Department Transportation Maintenance & Repair Division	Steve Collin, Street Maintenance Engineer
Public Works Department Surface Water & Sewers Division	Kevin Danen, Operations Engineer
Public Works Department Surface Water & Sewers Division	Lois Eberhart, Water Resources Administrator (for mapping data)

SMP No. 3.5: FACILITIES INSPECTION PROGRAM

Description

The stormwater management objective of this program is to minimize the discharge of pollutants by conducting site visits of facilities that store large quantities of regulated and hazardous materials. Site inspections yield information about the drainage patterns to nearest storm drain inlet or waterbody, identification of the receiving waterbody and outfall location, and handling, storage and transfer procedures.

Workplan

- Administer program (ongoing)
- Complete and maintain data on non-stormwater discharges, storage of hazardous materials regulated by the Fire Code, and activities or operations that may be potential water pollution point sources and/or stormwater hotspots. (ongoing)

Targeted Pollutants and Targeted Activities

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Activities

Improper storage and maintenance of motor vehicles of motor vehicles and equipment

Improper disposal of materials

Improper storage, handling and processing of chemicals, road salts, motor vehicle fluids and parts, and contaminated materials

Use of coal tar sealants on parking lots/driveways

Leaves, grass clippings or other organic material on pavement

MS4 Permit References

V.B1-3, V.B5-6, V.C3f1, V.C3f2, V.C3f3

Assessment Process for Annual Reporting

- Narrative of annual inspections completed, including number of sites inspected, non-compliance orders issued, and actions taken by property owners or operators to comply

Participating Department, Division, Contact

Regulatory Services Department Housing Inspections

Steve Kennedy, Hazardous Materials Manager

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SMP No. 3.6: STORMWATER MANAGEMENT for REGULATED ACTIVITIES PROGRAM

Description

The stormwater management objective of these programs is to minimize the discharge of pollutants by administering and enforcing ordinances, exercising municipal authority over activities with high potential for stormwater pollution, and providing information to assist the MPCA in carrying out its industrial permitting programs.

Workplan

Regulatory Services

- Track MPCA industrial permits. The MPCA will provide a list of permitted industrial facilities to the City upon request. Develop and maintain inventory of permitted discharges to MS4 system using City permit information, and permit information furnished to the City by the MPCA. Review notices of permits issued or renewed by MPCA, work with the MPCA permitting authority to address local concerns, and assist MPCA staff in updating or revoking MPCA permits if the MPCA permits are violated or if conditions indicate that the MPCA permit should be revised. Report to the MPCA discharge incidents from discharges subject to the MPCA's industrial permits. Encourage the discharger to obtain a permit from the MPCA if one is not already held. (ongoing)
- Provide access from City web site to MPCA inventory of brownfield sites, Superfund sites and other contaminated properties. (ongoing)
- Approve and track underground and above ground chemical storage tank installations, removals and abandonments. (ongoing)
- Enforce ordinances for activities with high potential for stormwater pollution. Examples include illegally dumped materials, improper disposal of oil, improper disposal of food waste/litter at food establishments. (ongoing)
- Where non-stormwater discharges from categories listed in Permit Part V.C3g have been identified by the Permittee as a significant contributor of pollutants, develop, implement and enforce a program to reduce pollutants from the category. (ongoing)
- Administer Pollution Control Annual Billing (PCAB) program. (ongoing)
- Continue to clarify ordinance language to improve permit compliance and water quality achievement. (ongoing)
- Carry out staff training. (ongoing)

Public Works Surface Water & Sewers

- Provide mapping data to support illicit discharge investigation and enforcement activities. (ongoing)
- Develop and maintain inventory of stormwater hotspots through use of available information. The MS4 Permit defines "stormwater hotspot" as any land use or activity that may generate a higher concentration of hydrocarbons, trace metals, or toxic pollutants than are found in typical stormwater runoff. (Common example is fueling station.) (2013 – ongoing)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Oil and grease
Metals
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Improper storage and maintenance of motor vehicles of motor vehicles and equipment
Improper disposal of materials
Improper storage, handling and processing of chemicals, road salts, motor vehicle fluids and parts, and contaminated materials

Soil erosion

Use of coal tar sealants on parking lots/driveways
Leaves, grass clippings or other organic material on pavement

Atmospheric deposition
Gasoline and diesel fuel combustion

MS4 Permit Reference

V.B1-3, V.B5-6, V.C3b, V.C3c1, V.C3c2, V.C3f1, V.C3f2, V.C3f3, V.C3g, VI.A3f, VI.D2b3iv

Assessment Process for Annual Reporting

- Number of water and land pollution complaints including type (illegal dumping, improper storage of material, and chemical storage)
- Number of discharge incidents reported to MPCA industrial permit programs
- Staff training activities and number of staff trained
- Stormwater hotspots inventoried
- Narrative of Ordinances adopted or revised

Participating Departments, Divisions, Contacts

Regulatory Services Department Environmental Management & Safety Division	Dan Huff, Manager
Regulatory Services Department Housing Inspection	Steve Kennedy, Hazardous Materials Manager
Public Works Department Surface Water & Sewers Division	Lois Eberhart, Water Resources Administrator

SMP No. 3.7: SOURCE CONTROL EDUCATION and OUTREACH PROGRAM

Description

Everyone's actions can affect the quality of our lakes, wetlands, creeks and the Mississippi River. The objective of this program is to reduce pollutants at the source by focusing education efforts towards target pollutants (such as improperly stored chemicals, dumped oil, grass clippings, pet waste, poorly maintained sites), and toward identifed target audiences. The desired program result is behavior change in ways that will improve water quality. Target audiences include, but are not limited to, residents, commercial business owners/employees, industrial operators/employees, and City / MPRB staff. The development of each education activity will consider the audience, goals for each audience, and activities to achieve audience goals in each implementation plan. The Annual Report will summarize this information for each new education activity developed during the previous year.

Workplan

- Administer program. (ongoing)
- Identify target pollutants and target audiences for additional source control outreach programs. Examples may include contractors that do sawcutting and concrete work, power washing activities, demolition/construction activities, runoff from greenhouses and yard maintenance. Include identification of significant sources of sediment, and identify appropriate education and enforcement programs for control. (2012 – ongoing)
- Develop inventory of existing and potential outreach methods based on identification of pollutants and target audiences. Include a general assessment of audiences not being reached by existing education efforts. Consider multilingual program needs. Identify educational goals for each audience and activities to reach goals. Develop a plan with a rotating annual focus. (2012-2013 then ongoing)
- Carry out programs that ensure City and MPRB personnel are knowledgeable about engaging with a diverse public. (ongoing)
- In following up on complaints, use handouts and enforcement activities as opportunity to educate. (ongoing)
- Continue web site development and enhancements. (ongoing)
- Develop inventory of City and MPRB web sites related to non-point source pollutants, to periodically check for gaps and opportunities. (2013)
- Develop and issue press releases to community newspapers, and working with community newspaper columnists on water quality topics. (ongoing)
- Conduct outreach to property owners regarding voluntary improvement of properties. Examples include increasing tree canopy on commercial/industrial sites, reducing tracking onto streets from equipment/materials handling yards, and the beneficial onsite reuse of leaves and grass clippings. (ongoing)
- Continue to participate in a variety of community, classroom and sustainability forums, festivals, and other events. Distribute informational brochures, carry out presentations and conversations regarding clean water with focus on what residents can do. Although these kinds of events have been held for many years, they are probably becoming more frequent as environmental awareness increases, and also becoming more focused. City of Minneapolis staff and Minneapolis Park & Recreation Board staff reach out to targeted audiences such as neighborhood residents, business owners, youth, or ethnic groups. (ongoing)
- Coordinate with other entities such as watershed organizations, Hennepin County, neighboring cities, MPCA, Met Council, MNDOT, neighborhood groups, and non-profit organizations. Foster collaborative and cost-effective efforts, where each entity does what it does best without duplicating efforts. (ongoing)
- Utilize 311 Call Center as hotline for reporting spills, dumping and other activities that degrade stormwater runoff. (ongoing)
- Carry out staff training. (ongoing)

- Continue to use innovative and affordable means of delivering water quality messages to residents, businesses and visitors through a variety of avenues. Current or past examples include the following:
  - MetroBlooms rain garden workshops. Begun in 2006, the workshops serve to inform, coach and offer consultation to Minneapolis residents to keep rainwater on-site and prevent polluted water runoff by installing properly designed bio-infiltration areas (rain gardens), redirecting downspouts, and using native plants.
  - Utility bill inserts to publicize non-polluting yard care practices.
  - Distributing and publicizing "Winter Maintenance Training for Small Sites", a video produced by the MWMO regarding snow and ice control to minimize discharge of chlorides in stormwater, and "The Nature of Water", a video produced by the MWMO in five languages (Hmong, Lao, Viet, Khmer and English) about recognizing polluting activities and their impact on receiving water bodies.
  - Canines For Clean Water programs. More than 100,000 dogs reside in the City of Minneapolis and each day they generate an estimated 41,000 pounds of solid waste. Outreach has included dog-themed movie series at which attendees (and their dogs) sign pledges to pick up pet waste, and advertisements on busses and LRT trains.
  - Distributing a phosphorus-free fertilizer brochure produced by the City in partnership with the U of M Extension and local communities. The brochures have been provided to hardware stores, nurseries and other stores that sell lawn fertilizers, and also mailed to residents and contractors when complaints of improper application of lawn fertilizers have been received. The brochures are also useful for educating Minneapolis homeowners on local requirements.
  - Making residents aware that the city provides curbside pick-up of grass clippings and leaves and advocates Leave It On The Lawn practices.

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic materials on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts, other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1a, V.C1b, V.C1c, V.C.1d, V.C.1e, V.C3c, V.C3g, V.C4g, V.C4h, V.C6d, V.F, VI.A3a, VI.A3b, VI.D2a8, VI.D2b1

Assessment Process for Annual Reporting

- Narrative of source control public outreach and education targeted pollutants, targeted audiences, and activities
- Provide copies of education and outreach materials prepared

Participating Departments, Divisions, Contacts

Public Works Surface Water & Sewers	Lois Eberhart, Water Resources Administrator (lead)
	Paul Chellsen, Supervisor Engineering Technician II
Regulatory Services Department Environmental Management & Safety	Dan Huff, Manager
	Patrick Hanlon, Supervisor
Regulatory Services Housing Inspection	Steve Kennedy, Hazardous Materials Manager
Office of the City Coordinator Communications Div	Media Relations Managers
Minneapolis Park & Recreation Board	Debra Pilger, Director Environmental Operations
Minneapolis Park & Recreation Board	MaryLynn Pulscher, Coordinator Environmental Education

SMP No. 3.8: EDUCATION and OUTREACH PROGRAM - - CATCH BASIN STENCILING

Description

Stenciling of storm drain inlets, also called catch basins, educates people that are painting messages on the catch basins prohibiting disposal of non-stormwater materials, and also shares an environmentally friendly message for people passing by. Scout groups and neighborhood groups are two examples of those who are interested in carrying out stenciling activities. Messages are tailored to the type of waterbody receiving the stormwater runoff from the stenciled grate, including “"Please Don't Pollute - Drains to Mississippi River", “…drains to lake”, and “…drains to creek”. The City has three versions of the "Please Don't Pollute - Drains to Mississippi River" stencils: in English, Spanish and Somali languages. The "lake" and "creek" stencils are available only in English.

Workplan

- Administer program
- Provide self-contained stenciling kits to interested volunteer groups with everything needed: traffic cones, safety vests and glasses, a broom for prepping the site, gloves and trash bags, paint, facemasks, a map showing locations of catch basins on which to paint the message and showing where the catch basins drain to, a set of stencils, and door hangers to explain the stenciling to nearby residents, with a reference in several languages for translation resources.

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic materials on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts, other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1a, V.C1b2, V.C1c., V.C1e, V.C3c

Assessment Process for Annual Reporting

- Report on number of volunteers, the number of catch basins involved, and the number of door hangers distributed.

Participating Department, Division, Contact

Public Works Department Surface Water & Sewers Division

Lois Eberhart, Water Resources Administrator
Lane Christianson, Supervisor Engineering Technician I

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Overview of Category 4

Description

The stormwater management objective of this program is to prevent or minimize discharge of sediment or pollutants from construction activities, public and private, to the MS4 system, in accordance with the MS4 permit to discharge stormwater to surface waters including lakes, streams, wetlands and the Mississippi River.

Measurable Goals – (MS4 Permit Reference V.B4)

Document work practices (See SMP Sheet 4.1)
Inspect 100% of issued erosion and sediment control permit sites. (See SMP Sheet 4.1)
Train staff in construction site erosion and sediment control. (See SMP Sheet 4.1)
Maintain files containing SWPPP, inspection reports and maintenance reports for City and MPRB capital projects. (See SMP Sheet 4.2).

Participating Departments

Regulatory Services Department
Public Works Department
Minneapolis Park & Recreation Board
Office of the City Coordinator
Community Planning and Economic Development

Category 4 SMP Sheets

4.1 DEVELOPMENT AND REDEVELOPMENT PROGRAM
4.2 EROSION AND SEDIMENT CONTROL FOR CITY AND MPRB CAPITAL PROJECTS

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SMP No. 4.1: DEVELOPMENT and REDEVELOPMENT PROGRAM

Description

The objective of this program is to minimize the discharge of pollutants from construction sites by requiring erosion prevention and sediment control measures, including but not limited to inlet protection and minimizing tracking of sediment onto streets. The MCO Chapter 52 ordinance requires Erosion & Sediment Permits for activities that will disturb more than five cubic yards or 500 square feet and must be obtained before commencement of work. For activities that will disturb land greater than 5,000 square feet, Erosion & Sediment Control Plans must be submitted and approved before Minneapolis Erosion & Sediment Control Permits can be issued. Sites one or more acres in size are also required to get NPDES General Construction Permits from the Minnesota Pollution Control Agency. Under the ordinance, permits are also required for soil storage that is not associated with construction sites.

Workplan

Public Works Surface Water & Sewers

- Administer program, with Regulatory Services - EMS. (ongoing)
- Assess need to update MCO Chapter 52, with Regulatory Services – EMS. (2012)
- Review and approve Erosion & Sediment Control Plans. (ongoing)
- Require prompt removal of soil or debris that is tracked or otherwise deposited onto right-of-way and/or into storm drains resulting from the construction activity or during transit to and from the construction site. (ongoing)
- Require management of erosion and sediment control compliance for the life of the project, including inspection and repair of erosion and sediment control devices, proper disposal of wastes at the construction site (concrete truck washout, sawcutting slurry, discarded materials, construction site chemicals, litter and other), and establishment of vegetative cover. (ongoing)
- Require a temporary or permanent sedimentation basin or other sedimentation control measure if dewatering discharge water is sediment laden, so that receiving waters are not adversely affected. The discharge must not cause erosion and scour. (ongoing)
- Provide information about regulatory requirements to Departments/Divisions carrying out permitting and inspection responsibilities, with Regulatory Services - EMS. (ongoing)
- Provide information on training opportunities. (ongoing)
- Continue to develop checklists and other communication tools. (ongoing)
- Create written procedures for reviewing and approving Erosion & Sediment Control Plans. (ongoing)
- Provide training for reviewers/approvers. (ongoing)
- Review ordinance requirements to ensure control of construction wastes, stabilization of stockpiles, and proper treatment of dewatering discharges, with Regulatory Services - EMS. (2012 – 2013)

Regulatory Services - Minneapolis Development Review

- Issue Erosion & Sediment Control Permits for projects subject to Chapter 52, including demolition, construction and other land disturbances. Require before commencement of any grading, filling, excavating, storing, stockpiling or disposing of earth materials or performing other land disturbing or land filling activity. (ongoing)
- Create written procedures for issuing Erosion & Sediment Control Permits. (2012)

Regulatory Services - Environmental Management & Safety

- Administer program, with Public Works - SWS. (ongoing)
- Assess need to update MCO Chapter 52, with Public Works - SWS. (2012)
- Provide information about regulatory requirements to Departments/Divisions carrying out permitting and inspection responsibilities, with Public Works - SWS. (ongoing)

- Regulate demolition and construction projects to minimize discharge of pollutants. (ongoing)
- Track Erosion & Sediment Control Permits for demolition and construction projects subject to MCO 52, inspect sites, enforce ordinance. (ongoing)
- Distribute information to contractors and developers regarding training opportunities and regarding dangers to water resources from improper control of erosion and sediment (ongoing)
- Utilize 311 Call Center as hotline for reporting construction related activities that degrade stormwater runoff. (ongoing)
- Continue to implement written procedures for inspecting and enforcing Erosion & Sediment Control Permit sites. Identify criteria for prioritizing inspection of construction sites. (ongoing)
- Provide training for inspectors. (ongoing)
- Review ordinance requirements to ensure control of construction wastes, stabilization of stockpiles, and proper treatment of dewatering discharges, with Public Works - SWS. (2012-2013)

Regulatory Services – Problem Property Unit

- Track and enforce Erosion & Sediment Control Permits for demolition projects subject to MCO 52, and inspect sites. (ongoing)

Targeted Pollutants and Targeted Activities

Pollutants

Phosphorus and other nutrients	Oil and grease
Sediment and other solids	Bacteria
Metals	Volatile organic compounds

Activities

Soil erosion, tracking of sediment	Concrete truck washout, concrete slurry
Improper handling and disposal of construction materials and chemicals	Litter
Paints and stains	Sanitary waste

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1b, V.C1c, V.C3c, V.C4a, V.C4b, V.C4c, V.C4d, V.C4e, V.C4f, V.C4g, V.C4h

Assessment Process for Annual Reporting

- Report on number of erosion control permits issued in year
- Report on number of non-compliance incidents that were addressed
- Report on number of site inspections
- Report on number of public complaints responded to
- Report on three most common types of violations
- Report on public education and outreach related to construction-related erosion and sediment control

Participating Departments, Divisions, Contacts

Public Works Department Surface Water & Sewers Division	Lois Eberhart, Water Resources Administrator
Regulatory Services – Minneapolis Development Review Division	Janine Ryan, Manager
Regulatory Services – Environmental Management & Safety Division	Dan Huff, Manager
Regulatory Services – Problem Property Unit	Kellie Rose Jones, Problem Properties/Boarded Buildings

SMP No. 4.2: EROSION and SEDIMENT CONTROL for CITY and MPRB CAPITAL PROJECTS

Description

The stormwater management objective of this program is to minimize the discharge of pollutants through the proper construction management of capital projects carried out by the co-permittees – the City and MPRB. These projects include streets and sidewalks, bridges, trails, buildings (examples are police stations, parking ramps, park buildings) parking lots, open spaces (such as parks, plazas), and utilities (traffic lights, watermains, sanitary sewers, stormwater management facilities).

Workplan

Departments/Divisions Carrying Out Capital Projects

Expectations of capital projects carried out by the city or the MPRB:

- Meet regulatory requirements. (ongoing)
- Train staff on construction site erosion and sediment control, including installation, inspection, and maintenance of erosion protection and sediment control techniques and devices. (ongoing)
- Identify a person who will oversee the installation, inspection and maintenance of practices before and during construction. (ongoing)
- Require land-disturbing activities to implement and maintain practices to prevent sediment from entering curb and gutter systems, storm sewer inlets and ultimately surface waters. If disturbing more than one acre, prepare SWPPP and apply for and comply with MPCA NPDES General Construction Permit. Maintain files containing SWPPP, inspection reports and maintenance reports. (ongoing)
- Promptly remove soil or debris that is tracked or otherwise deposited onto right-of-way and/or into storm drains resulting from the construction activity or during transit to and from the construction site. (ongoing)
- Provide management of erosion and sediment control compliance for the life of the project, including inspection and repair of erosion and sediment control devices, proper disposal of wastes at the construction site (concrete truck washout, sawcutting slurry, discarded materials, construction site chemicals, litter and other), and establishment of vegetative cover. (ongoing)
- Create a temporary or permanent sedimentation basin or other sedimentation control measure if dewatering discharge water is sediment laden, so that receiving waters are not adversely affected. The discharge must not cause erosion and scour. (ongoing)

Public Works Surface Water & Sewers Division

- Administer program. (ongoing)
- Provide information about regulatory requirements to Departments/Divisions carrying out capital projects. (ongoing)
- Provide information on training opportunities. (ongoing)
- Develop and maintain checklists and communication tools for public projects. (2012)
- Utilize 311 Call Center as hotline for reporting construction related and other activities that degrade stormwater runoff. (ongoing)

Targeted Pollutants and Targeted Activities

Pollutants

Phosphorus and other nutrients	Oil and grease
Sediment and other solids	Oil and grease
Chlorides and cyanide	Bacteria
Metals	Volatile organic compounds

Activities

Soil erosion	Concrete truck washout, concrete slurry
Improper handling and disposal of construction materials and chemicals	Litter
Paints and stains	Sanitary waste

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1b, V.C1c, V.C1e, V.C3c, V.C4b-e, V.C4g, V.C4h

Assessment Process for Annual Reporting

- Report on number of capital project staff, by Department/Division carrying out capital projects, attending erosion and sediment control training.

Participating Department, Division and Contacts for Capital Projects

Public Works Surface Water & Sewers Division (for sanitary sewers and stormwater management facilities)	Kelly Moriarity, Capital Projects Engineer Kevin Danen, Operations Engineer
Public Works Transportation Planning & Engineering Division (for streets, bridges, trails)	Bob Carlson, Streets & Rights of Way. Jenifer Hager, Transportation Planning & Programming. Paul Ogren, Environmental Engineering. Jack Yuzna, Bridges & Pathways
Public Works Transportation and Maintenance & Repair (for streets, sidewalks)	Larry Matsumoto, Paving Engineer
Public Works Water Treatment & Distribution (for water mains, pump stations)	Marie Asgian, Superintendent of Water Distribution
Public Works Traffic & Parking Services (for parking ramps, parking lots, street lighting)	Steve Mosing, Infrastructure and Street Lighting Engineer. Atif Saeed, Parking Systems Manager
Minneapolis Park & Recreation Board	Cliff Swenson, Director of Design and Project Management
Office of the City Coordinator Community Planning & Economic Development	Greg Goeke, Director of Property Services Darrell Washington, Real Estate Development Services Manager. Kristin Guild, Business Development Manager

Participating Department, Division and Contacts for Review and Regulatory Guidance

Public Works Surface Water & Sewers Division	Kelly Moriarity, Capital Projects Engineer Lois Eberhart, Water Resources Administrator

Overview of Category 5

Description

The stormwater management objective of this program is to reduce the discharge of pollutants and stormwater runoff from public and private development and redevelopment projects, as compared to conditions prior to project construction. Redevelopment of existing sites presents the opportunity to lessen the impacts of urbanization on the lakes, creeks and Mississippi River in Minneapolis, since most present land uses were created prior to regulation under the CWA.

Measurable Goals – (MS4 Permit Reference V.B4)

Document work practices (See SMP Sheet 5.6)
Complete the Runoff Volume Reduction Plan (See SMP Sheet 5.6)
Within targeted outfall drainage areas of impaired waterbodies, determine percentage of existing treatment and create plans with goals for improvement. (See SMP Sheet 5.8)
Create initial "toolbox" of options to improve management of pollutant loads. (See SMP Sheet 5.9)

Participating Departments

Community Planning and Economic Development
Minneapolis Park & Recreation Board
Office of the City Coordinator
Public Works Department
Regulatory Services Department

Category 5 SMP Sheets

5.1 REVIEW AND APPROVAL PROGRAM FOR PRIVATE DEVELOPMENT/REDEVELOPMENT PROJECTS
5.2 ONGOING COMPLIANCE PROGRAM FOR PRIVATE DEVELOPMENT/REDEVELOPMENT PROJECTS
5.3 REVIEW AND APPROVAL FOR PROJECTS PROPOSING TO MODIFY MS4 SYSTEM
5.4 PROJECT MANAGEMENT FOR STORMWATER IN CITY AND MPRB CAPITAL PROJECTS
5.5 LOCALIZED FLOOD MITIGATION CAPITAL PROJECTS
5.6 RUNOFF VOLUME REDUCTION PLAN
5.7 HYDROLOGIC & HYDRAULIC MODELING
5.8 WATER QUALITY MODELING
5.9 PILOT PROJECTS

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SMP No. 5.1: REVIEW and APPROVAL PROGRAM for PRIVATE DEVELOPMENT/REDEVELOPMENT PROJECTS

Description

The stormwater management objective of this program is to reduce the discharge of pollutants and stormwater runoff from public and private development and redevelopment projects, as compared to conditions prior to project construction. Redevelopment of existing sites presents the opportunity to mitigate the impacts of urbanization on the lakes, creeks and Mississippi River in Minneapolis, since most present land uses were created prior to regulation under the CWA.

Construction activities and development projects are reviewed through the City's site plan review process. The MDR section of the Regulatory Services Department facilitates a process where a Development Coordinator directs a preliminary, multi-disciplinary review of submitted plans. This review provides comments that are integrated into a final plan submittal that is subsequently routed to City departments for review of compliance issues. The Surface Water & Sewers Division reviews and approves for compliance with runoff and pollutant loading reduction requirements, including: 1) ongoing operation and maintenance commitments, under MCO Chapter 54 (addressed on this SMP Sheet); 2) review of project plans for compliance with Erosion & Sediment Control under MCO Chapter 52; and 3) review of project plans for storm system issues related to connections and capacity.

Workplan

Regulatory Services - MDR

- As part of the coordinated, multi-disciplinary MDR process, provide stormwater-related regulatory requirements to applicants using printed materials furnished by PW-SWS. Provide information to PW-SWS for carrying out the stormwater review and approval process. Conform to ordinance requirements in issuing building and other permits. (ongoing)

Public Works - SWS

- Administer ordinances that regulate public and private development and redevelopment projects to minimize discharge of pollutants. (ongoing)
- Review and approve land-disturbing projects for compliance with post-construction stormwater management requirements (including ongoing maintenance responsibilities and easement dedications if required), erosion and sediment control plan requirements, and storm sewer capacity and connection issues. (ongoing)
- Ensure that the hydraulic and pollutant loading capacity of downstream structural stormwater management devices are not negatively affected by increased pollutant or runoff loadings. (ongoing)
- For selected projects, evaluate available capacity remaining within the stormwater conveyance system. (ongoing)
- Maintain database of waterbody specific requirements that apply to development and redevelopment projects in the City, including TMDL and watershed organization requirements. Require project compliance. Each receiving waterbody may have its own regulatory situation and wet weather stressors that affect water quality. (ongoing)
- Review and approve stormwater management plans and activities. (ongoing)
- During construction activities, inspect projects to observe installation of stormwater management facilities for consistency with plans. (ongoing)

- After construction, inspect and certify that the stormwater management facilities have been built according to approved plans and that required documentation has been submitted. Notify Regulatory Services - Environmental Management and Safety for transfer to annual compliance program (see SMP Sheet 3.6). (ongoing)

Targeted Pollutants and Targeted Activities

Pollutants

Phosphorus	Total Suspended Solids (TSS)

Activities

Improper management of vegetated areas	Vehicle tracking, deterioration of brake pads, tires
Improper application of fertilizers or pesticides	Atmospheric deposition
Grass clippings, leaves or other organic materials on pavement	Uncovered materials
Soil erosion	Pet waste, wildlife waste
Road salts, other de-icing materials	

MS4 Permit Reference

V.B1-3, V.B5-6, V.C5b, V.C5c, V.C5d

Assessment Process for Annual Reporting

- Narrative on number of projects reviewed, number of projects approved, number of structural SMPs constructed or installed, and number of acres treated resulting from compliance with Chapter 54, Stormwater Management for Development and Redevelopment.

Participating Department, Division, Contact

Regulatory Services Department Minneapolis Development Review Division	Janine Ryan, Manager
Public Works Department Surface Water & Sewers Division	Lois Eberhart, Water Resources Administrator Paul Chellsen, Supervisor Engineering Technician II Kelly Moriarity, Capital Projects Engineer Kevin Danen, Operations Engineer
Public Works Department Transportation Planning & Engineering	Paul Miller, Project Manager

SMP No. 5.2: ONGOING COMPLIANCE PROGRAM for PRIVATE DEVELOPMENT/REDEVELOPMENT PROJECTS

Description

The objective of this stormwater management program is to sustain the reduction of pollutants discharged from completed public and private development and redevelopment projects, by requiring that the built stormwater devices continue to function as intended, as required by Minneapolis Code of Ordinances (MCO) Chapter 54 (except devices subject to the Pollution Prevention and Good Housekeeping for Municipal Operations category which are addressed on other SMP Sheets) . The compliance program addresses inspection to ensure facilities are continuing to function as designed and approved, and the carrying out maintenance or rehabilitation activities as needed.

Workplan

Public Works - Surface Water & Sewers

- Upon completion of construction, certify that stormwater devices have been built according to approved plans and that required documentation has been submitted, then transmit records to Regulatory Services for registration. (ongoing)
- Determine that responsible parties have submitted required annual documentation that maintenance of stormwater devices has been carried out according to maintenance plans on file. (ongoing)
- Conduct annual inspection program. If not functioning properly advise Regulatory Services for enforcement. (ongoing)

Regulatory Services - Environmental Management

- Administer program. (ongoing)
- Maintain database of registered stormwater devices, integrate into electronic inventory and mapping (see Sheet 6.1.11). (ongoing)
- Annually register stormwater management devices and notify responsible parties to certify that maintenance of stormwater devices has been carried out according to maintenance plans on file. (ongoing)
- For devices that are not functioning satisfactorily based on Public Works or Regulatory Services inspections, issue and administer non-compliance orders. (ongoing)

Targeted Pollutants and Targeted Activities

Pollutants

Phosphorus

Total Suspended Solids (TSS)

Activities

Improper management of vegetated areas
Improper application of fertilizers or pesticides
Grass clippings, leaves or other organic materials on pavement
Soil erosion
Road salts, other de-icing materials

Vehicle tracking ,deterioration of brake pads, tires
Atmospheric deposition
Uncovered materials

Pet waste, wildlife waste

MS4 Permit Reference

V.B1-3., V.B5-6, V.C3a, V.C5d

Assessment Process for Annual Reporting

- Number of new registrations received.
- Number of maintenance inspections conducted.
- Report on number of orders sent for violations and percent compliance with required corrections.
- Percent compliance with annual registration of maintenance documents

Participating Departments, Divisions, Contacts

Public Works Department Surface Water & Sewers Division	Lois Eberhart, Water Resources Administrator
Regulatory Services Department Environmental Management and Safety Division	Dan Huff, Manager

SMP No. 5.3: REVIEW and APPROVAL for PROJECTS PROPOSING to MODIFY MS4 SYSTEM

Description

This program pertains to adding, modifying or removing infrastructure that is part of the MS4 system - public stormwater conveyance and treatment infrastructure such as storm drains, inlets, outfalls, grit chambers, ponds, infiltration devices. (Projects that simply tie into or drain into the stormwater infrastructure are addressed elsewhere) The stormwater management objectives of this practice are to review and approve projects that will physically alter the MS4 system for the betterment of the system and to avoid adverse capacity, maintenance, and pollutant discharge impacts. The vast majority of projects that alter the MS4 system are designed by the PW-SWS Capital Projects group. This page, however, addresses projects that are carried out by others. Typical projects reviewed in this program include streets, bridges, utilities, and projects for pedestrian, bikeway or transit improvements. Some park or development projects (housing, commercial/industrial, sports facilities, trails, other) are also included if they propose to physically alter the MS4 system.)

Workplan

- Review projects being carried out by Public Works or other entities, including CPED, Property Services, MPRB, Hennepin County, MNDOT, MCES, the University of Minnesota, watershed districts / organizations, or private development initiatives. (ongoing)
- Ensure that the hydraulic and pollutant loading capacity of downstream structural stormwater management devices are not negatively affected by increased pollutant or runoff loadings. (ongoing)
- Maintain Standard Specifications and Detail Plates related to design requirements for the City's sanitary sewer and stormwater infrastructure. (ongoing)
- Submit record drawings of additions, modifications and removals to stormwater management facilities to PW-SWS for use in update of GIS database. (ongoing)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic materials on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts, other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C5b, V.C5e, V.C5f, VF

Assessment Process for Annual Reporting

Not applicable

Participating Department, Division, Contacts

Public Works Surface Water & Sewers Division	Kelly Moriarity, Capital Projects Engineer Kevin Danen, Operations Engineer Lois Eberhart, Water Resources Administrator

SMP No. 5.4: PROJECT MANAGEMENT for STORMWATER in CITY and MPRB CAPITAL PROJECTS

Description

Redevelopment of existing public sites and infrastructure provides an opportunity to lessen the impacts of urbanization on lakes, creeks and the Mississippi River. The stormwater management objective of this practice is to reduce the discharge of pollutants through the proper planning, design, and construction management of capital projects carried out by the MS4 co-permittees – the City and MPRB. These projects include streets and sidewalks, bridges, trails, buildings (examples are police stations, parking ramps, park buildings), parking lots, open spaces (such as parks, plazas), and utilities (traffic lights, watermains, sanitary sewers, stormwater management facilities). This comprehensive approach provides potential benefits to the City's infrastructure and ultimately to the water resources in the following ways: 1) reduced pollutant loading to surface waters; 2) reduced velocity of flow in local streams leading to stabilized streambanks and improved wildlife habitat; 3) increased recharge of groundwater; 4) reduced frequency, severity and duration of localized street/intersection flooding; 5) improved capacity of stormwater drainage system; and 6) updated comprehensive records of the MS4 system.

Workplan

<u>Departments/Divisions Carrying Out Capital Projects</u>

Expectations of capital projects carried out by the City or the MPRB:

- Meet regulatory requirements. (ongoing)
- Comply with regulatory requirements specific to downstream waterbody, including TMDL and watershed management requirements. Each receiving waterbody may have its own regulatory situation and wet weather stressors that affect water quality. Look for opportunities to address wet weather problems that apply to the project area: pollutant loads, rate/volume control, localized flooding, excessive inflow or infiltration, aging infrastructure. (ongoing)
- Project owner to consider life cycle costs. (ongoing)
- Seek out projects that are multi-functional or which solve multiple problems or are cooperative projects with multiple funding partners, to enhance sustainability and infrastructure life. Outside funding sources might include watershed organizations, county, regional, state and federal programs, private funding. (ongoing)
- Make land use or engineering decisions to manage stormwater near where it falls to the maximum extent practicable, to minimize the amount of pollutants in stormwater runoff. Consider volume reduction methods first when feasible, pollutant load reduction methods next, and finally rate reduction stormwater management practices. (ongoing)
- Inspect stormwater management facilities during construction and periodically after construction to determine that the stormwater managent devices are functioning properly. (ongoing)
- Submit record drawings of additions, modifications and removals to stormwater management facilities to PW-SWS for use in update of GIS database. (ongoing)
- Complete O&M manuals for new SMPs and other structural improvements made to MS4 system. (ongoing)

<u>Public Works Surface Water & Sewers Division</u>

- Provide stormwater management advice and expertise to City and MPRB departments. (ongoing)
- Review plans and specifications for impact on surface waters and on the stormwater system, and review for compliance with MCO Chapter 54 runoff and pollutant loading reduction requirements. (ongoing)
- Ensure that the hydraulic and pollutant loading capacity of downstream structural stormwater management devices are not negatively affected by increased pollutant or runoff loadings. (ongoing)
- Provide information about regulatory requirements, receiving waterbody, wet weather problems that apply to the project site, and applicable stormwater hydraulic and water quality design standards. (ongoing)

- Provide information on training opportunities, as available. (ongoing)
- Develop and maintain checklists and other communication tools for public projects regarding stormwater requirements and BMP design. (2012 – ongoing)
- Develop stormwater management orientation for new staff and refresher orientation for existing staff. (2013 – ongoing)
- Establish pollutant reduction SMP design requirements for storm sewer addition or modification projects, consistent with reliable and efficient conveyance of stormwater. (2013)

Targeted Pollutants and Targeted Activities

Pollutants

Phosphorus	Total Suspended Solids (TSS)

Activities

Improper management of vegetated areas	Vehicle tracking, deterioration of brake pads, tires
Improper application of fertilizers or pesticides	Atmospheric deposition
Grass clippings, leaves or other organic materials on pavement	Uncovered materials
Soil erosion	Pet waste, wildlife waste
Road salts, other de-icing materials	

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1b, V.C1c, V.C5b, V.C5e, V.C5f

Assessment Process for Annual Reporting

- Inventory of new Stormwater Management Practices installed with City and MPRB capital improvement projects.

Participating Department, Divisions and Contacts for Capital Projects

Public Works Surface Water & Sewers Division (for sanitary sewers and stormwater management facilities)	Kelly Moriarity, Capital Projects Engineer Kevin Danen, Operations Engineer
Public Works Transportation Planning & Engineering Division (for streets, bridges, trails)	Bob Carlson, Streets & Rights of Way, Jenifer Hager, Transportation Planning & Programming, Paul Ogren, Environmental Engineering, Jack Yuzna, Bridges & Pathways
Public Works Transportation and Maintenance & Repair (for streets, sidewalks)	Larry Matsumoto, Paving Engineer
Public Works Water Treatment & Distribution (for water mains, pump stations)	Marie Asgian, Superintendent of Water Distribution
Public Works Traffic & Parking Services (for parking ramps, parking lots, street lighting)	Steve Mosing, Infrastructure and Street Lighting Engineer, Atif Saeed, Parking Systems Manager
Minneapolis Park & Recreation Board	Cliff Swenson, Director of Design and Project Management
Office of the City Coordinator Community Planning & Economic Development	Greg Goeke, Director of Property Services Darrell Washington, Real Estate Development Services Manager, Kristin Guild, Business Development Manager

Participating Department, Division and Contacts for Review and Regulatory Guidance

Public Works Surface Water & Sewers Division	Kevin Danen, Operations Engineer Kelly Moriarity, Capital Projects Engineer Lois Eberhart, Water Resources Administrator

SMP No. 5.5: LOCALIZED FLOOD MITIGATION CAPITAL PROJECTS

Description

The objectives of this program are to prevent public health threats, protect primary structures, protect lands and surface waters from detrimental effects created by localized flooding, including soil erosion and sedimentation, inflows that contribute to combined sewer overflows, damage to aquatic and riparian habitat, and degradation of quality of urban lifestyle framed by surface waters.

Workplan

- Develop and construct projects to mitigate surface flooding. (ongoing)
- Maintain records of reports of flooded streets or parcels from residents, field crews and others, and use these records in developing flood mitigation strategies. (ongoing)
- Analyze impacts of flood mitigation alternatives on MS4 system and surface waters. (ongoing)
- Evaluate green infrastructure techniques for stormwater runoff volume control as alternatives to, or as partial remedies for, new or larger pipes in flood mitigation projects. Evaluate the reduction of flood potential through land use changes or structural measures, including volume-reducing techniques (such as bioinfiltration rain gardens, or reducing or disconnecting impervious surfaces) upstream of the flood-impacted sites. (ongoing)
- Design flood control projects in accordance with TMDL requirements. (ongoing)
- Look for opportunities to partner with other entities towards creation of multipurpose projects with shared funding responsibilities. (ongoing)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic materials on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts, other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C5f, V.C6e, V.F.

Assessment Process for Annual Reporting

- Narrative summary of flood control projects carried out, methods used to address pollutant removal to downstream surface water. Report the number, type and schedule of flood control projects planned, and their potential pollutant removal capabilities.

Participating Departments and Contacts

Public Works Surface Water & Sewers Division	Kelly Moriarity, Capital Projects Engineer

SMP No. 5.6: RUNOFF VOLUME REDUCTION PLAN

Description

The stormwater management objective of this program is to conduct a study of how stormwater volume reduction practices will best fit into Minneapolis' overall goals of water quality improvement. Volume reduction practices include infiltration, bio-infiltration, stormwater re-use, evapotranspiration, other evaporative systems, minimizing the extent of impervious surfaces, and disconnecting impervious surfaces to allow runoff to flow into and soak into planted areas.

Workplan

By January 2014, develop and submit to MPCA a plan for stormwater runoff volume reduction goals associated with post-construction stormwater management. In the plan development process:

- Consider documented instances of linkage between volume and Section 303(d) impairments. Differentiate and consider the needs and impairments of receiving waterbodies. Consider instances where volume reduction is expected to provide attainment of water quality standards.
- Consider permeability of site soils, contamination of site soils, groundwater contamination, depth of groundwater, depth of bedrock, presence of karst features, sources of pollution, presence and proximity of structures, presence, proximity and condition of underground pipes, available space for SMPs, wellhead protection areas, life cycle costs.
- Consider pollutant removal effectiveness on annual basis, capital costs, ongoing operation and maintenance costs, and volume reduction design guidelines (including MIDS).
- Consider site suitability in relation to functionality, mitigating pollutants and impairments, risk of spills, and surface water/groundwater interactions.
- Differentiate and prioritize: (1) volume that as runoff could cause pollution, as for example by channel erosion or by street/intersection flooding that mobilizes additional pollution, (2) volume that as runoff could cause damage to public safety or infrastructure, (3) volume reduction to address a TMDL requirement, (4) volume containing pollutants, and (5) volume without pollutants.
- Consider concerns and determinations regarding surface water/groundwater interactions.
- Consider long-term monitoring of infiltration rate performance for both quality and quantity.
- Consider potential use of pilot projects to test effectiveness of various volume reduction techniques in highly developed urban conditions.
- Consider a performance-based approach in lieu of a prescriptive requirement in order to provide site designers maximum flexibility in selecting control practices appropriate for the site or project.
- Consider an approach for development/redevelopment projects that identifies the site's stormwater management issue(s), identifies receiving water body impairments, and uses cost effective methods to address issues and impairments, based on analysis of site-specific conditions and judgment exercised by competent professionals.
- Consider various methods of runoff volume reduction, including infiltration, bio-infiltration, stormwater re-use, evapotranspiration, other evaporative systems, minimized impervious surfaces, and disconnection of impervious surfaces.
- Develop a stormwater volume reduction credit system for projects where it is determined that adequate stormwater volume reductions cannot be achieved on-site.
- Consider volume reduction BMP requirements for storm sewer addition or modification projects, consistent with reliable and efficient conveyance of stormwater.

Targeted Pollutants and Targeted Sources

All pollutants are targeted by runoff volume reduction

MS4 Permit Reference

V.B1-3, V.B5-6, V.C5a, V.C5e, VI.A

Assessment Process for Annual Reporting

Narrative of progress in development and implementation of plan.

Participating Departments, Divisions, Contacts

Public Works Surface Water & Sewers Division	Lois Eberhart, Water Resources Administrator (lead) Kelly Moriarity, Capital Projects Engineer Kevin Danen, Operations Engineer

SMP No. 5.7: HYDROLOGIC & HYDRAULIC MODELING

Description

Modeling is used to analyze flow volumes and patterns, and to test various alternative scenarios for design and management. Currently the City utilizes XP-SWMM for hydrologic and hydraulic modeling in engineering and design for many capital projects.

Workplan

- Update mapped delineation of storm drain pipesheds (outfall drainage areas). (2013 – 2014)
- Use hydrologic and hydrulic modeling in the design of capital projects to analyze impacts of various alternatives on the existing system. (ongoing)
- As opportunities arise, collaborate on modeling with the four watershed organizations for mutual benefit (ongoing)

Targeted Pollutants and Targeted Sources

Not applicable

MS4 Permit References

V.C3a

Assessment Process for Annual Reporting

Not applicable

Participating Department and Contact

Public Works Surface Water & Sewers Division	Kelly Moriarity, Capital Projects Engineer Lois Eberhart, Water Resources Administrator (for pipeshed delinieation updates)

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SMP No. 5.8: WATER QUALITY MODELING

Description

Water quality modeling is used to assess the effectiveness of a structural stormwater management practice or to determine the pollutant loading to a water

Workplan

- Research available water quality modeling software, such as P8, and select a standard for use in the study of estimated pollutant loads in runoff according to land use, and estimated changes in loading for volumetric, TP and TSS loading rates due to existing stormwater management practices. (2013-2015)
- Use results from monitoring and analysis activities to calibrate a water quality model for use as baseline for modeling in pipesheds without available monitoring data. (2013-2015)
- Use models to study load reductions from various structural and non-structural practice scenarios. (2013 – ongoing)
- Within targeted outfall drainage areas of impaired waterbodies, determine percentage of existing treatment and create plans with goals for improvement. (2014-2016)
- As opportunities arise, collaborate on modeling with the four watershed organizations for mutual benefit (ongoing)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients

Total Suspended Solids (TSS)

Sources

Grass clippings, leaves or other organic materials on pavement

Pet waste, wildlife waste

Fertilizers containing phosphorus

Pesticides

Soil erosion

Atmospheric deposition

Road salts, other de-icing materials

MS4 Permit References

V.B1-3, V.B5-6, V.C8a, V.C8b

Assessment Process for Annual Reporting

Narrative of annual modeling progress

Participating Department, Division, Contact

Public Works Surface Water & Sewers Division

Lois Eberhart, Water Resources Administrator

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SMP No. 5.9: PILOT PROJECTS

Description

The objectives of this program are to identify opportunities to lead by example, to engage emerging technologies, and to develop and maintain a 'toolbox' of options in order to improve management of pollutant loads and provide information to others.

Workplan

- Inventory, track and assess pilot water quality projects. Past and current pilot projects include various volume reduction designs in the public right-of-way. (ongoing)
- Create a 'toolbox' to disseminate results and to use as design, construction and operational models for additional projects. (2013)
- Look for opportunities for re-use of stormwater for irrigation to reduce stormwater runoff volume and pollutant loads (ongoing)
- Look for opportunities for retrofitting existing flood mitigation facilities to improve pollutant load reductions while retaining or enhancing flood mitigation storage. An example is retrofitting dry basins with subsurface gravel wetlands. (ongoing)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients

Total Suspended Solids (TSS)

Sources

Grass clippings, leaves or other organic materials on pavement

Fertilizers containing phosphorus

Soil erosion

Road salts, other de-icing materials

Pet waste, wildlife waste

Pesticides

Atmospheric deposition

MS4 Permit References

V.B1-3, V.B5-6, V.C5d, V.C5e, V.C5f

Assessment Process for Annual Reporting

- Narrative on pilot project inventory, tracking and analysis
- Narrative on project development, construction, and results for future pilot projects

Participating Department and Contact

Public Works Surface Water & Sewers Division

Kelly Moriarity, Capital Projects Engineer (for pilot project development)
Lois Eberhart, Water Resources Administrator (for assessment of water quality improvements, dissemination of results)
Kevin Danen, Operations Engineer

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Overview of Category 6

Description

The stormwater management objective of this program is to minimize the discharge of pollutants through the proper operation and maintenance of public streets and alleys, municipal properties and parking lots, and the municipal equipment yards.

Measurable Goals (MS4 Permit Reference V.B4)

Document work practices. (See SMP Sheets 6.0, 6.2, 6.3, 6.4, 6.5, 6.6)

Inspect and evaluated targeted segments of the storm tunnel system on a 5-year schedule based on condition. (See SMP Sheet 6.1.1)

Inspect, evaluated and maintain outfalls on a 5-year schedule where 20% of the outfalls are inspected each year. (see SMP Sheet 6.1.3)

100% of grit chambers inspected and cleaned twice per year unless patterns of maintenance demonstrate otherwise (See SMP Sheet 6.1.6)

Develop system wide maintenance and manual/guidance for City-owned "Green Infrastructure". (See SMP Sheet 6.1.7).

Complete electronic inventory and map of stormwater management system. (See SMP Sheet 6.1.11)

Train staff in best management practices.

Participating Departments

Public Works Department
Community Planning & Economic Development Department
Office of the City Coordinator
Minneapolis Park and Recreation Board

Category 6 SMP Sheets:

6.1.0: OPERATE AND MAINTAIN MS4 SYSTEM IN ACCORDANCE WITH NPDES MS4 PERMIT TO MINIMIZE DISCHARGE OF POLLUTANTS
6.1.1: STORM DRAIN AND STORM TUNNEL OPERATION & MAINTENANCE
6.1.2: CATCH BASIN AND MANHOLE OPERATION & MAINTENANCE
6.1.3: OUTFALL OPERATION & MAINTENANCE
6.1.4: PUMP STATION OPERATION & MAINTENANCE
6.1.5: LEVEL CONTROL WEIR, BULKHEAD AND OPEN DITCH/VEGETATED CHANNEL OPERATION & MAINTENANCE
6.1.6: GRIT CHAMBER OPERATION AND MAINTENANCE
6.1.7: OPERATION & MAINTENANCE OF STORMWATER RETENTION PONDS AND DETENTION BASINS, STORMWATER WETLANDS, AND BIO-(IN)FILTRATION AREAS (RAIN GARDENS)
6.1.8: STORWATER RETENTION POND DREDGING PROCESS
6.1.9: HANDLING AND DISPOSAL OF STORED AND STOCKPILED DREDGED OR OTHER REMOVED MATERIALS
6.1.10: OPERATE AND MAINTAIN MPRB STORM DRAIN CONVEYANCE SYSTEM IN ACCORDANCE WITH NPDES MS4 PERMIT TO MINIMIZE DISCHARGE OF POLLUTANTS
6.1.11: ELECTRONIC INVENTORY AND MAPPING
6.2: STREET SWEEPING AND CLEANING

6.3: CITY AND MPRB PARKING LOT AND EQUIPMENT YARD MANAGEMENT
6.4: APPLICATION OF SNOW AND ICE CONTROL MATERIALS FOR STREETS
6.5: APPLICATION OF SNOW AND ICE CONTROL MATERIALS FOR CITY AND MPRB PROPERTIES
6.6 VEGETATION MANAGEMENT FOR RIGHT-OF-WAY AND CITY PROPERTIES

SMP No. 6.1.0: OPERATE and MAINTAIN MS4 SYSTEM in ACCORDANCE with NPDES MS4 PERMIT to MINIMIZE DISCHARGE of POLLUTANTS

Description

The objective of this stormwater management program is to minimize the discharge of pollutants through proper and cost effective operational management and maintenance of the MS4 storm drain conveyance and treatment system. General operations and maintenance efforts include inspections, cleaning, repairs, rehabilitation, reconstruction, and operation. City efficiency objectives include structural integrity, ability to relieve impacts to health safety, property, infrastructure and aquatic life, and regulatory compliance.

Workplan

- Inspect, maintain and enhance condition and effectiveness of existing infrastructure. (See SMP Sheets 6.1.1 thru 6.1.10 for specific infrastructure components.) (ongoing)
- Respond to emergencies. (ongoing)
- Perform minor repairs. (ongoing)
- Develop preventative maintenance that establishes cost effective protocols for maintenance of the MS4 system. (ongoing)
- Schedule and perform major repairs, rehabilitation or reconstruction considering budget, staff availability, and other work. For major rehabilitation or reconstruction projects, look for opportunities to include SMPs to improve water quality. (ongoing)
- Submit record drawings of additions, modifications and removals of stormwater management facilities to PW-SWS for use in update of GIS database. (ongoing)
- Prevent erosion and sedimentation from maintenance and repair/rehabilitation projects. (ongoing)
- Train staff on best current practices, including construction site erosion control. (ongoing)
- Utilize 311 Call Center as hotline for reporting maintenance concerns that need to be inspected and addressed by PW Operations staff. (ongoing)
- Apply for and comply with NPDES General Construction Permit for projects disturbing more than one acre. (ongoing)
- Develop and maintain standardized inspection, maintenance, and operating procedures. (2013 - ongoing)
- Establish agreements on responsibilities for those SMPs with responsibilities by more than one entity - City, MPRB, a watershed organization, Hennepin County, etc. - for surface water systems o&m where none currently exist. (2013)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic material on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts , other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1b, V.C1c, V.C5d, V.C6a, V.c6b, V.F

Assessment Process for Annual Reporting

- Report on number of major repairs completed, number of minor repairs completed
- Report on development of standardized procedures

Participating Department and Contact

Public Works Surface Water & Sewers Division
Kevin Danen, Operations Engineer

SMP No. 6.1.1: STORM DRAIN and STORM TUNNEL OPERATION & MAINTENANCE

Description

the objective of this stormwater management program is to minimize the discharge of pollutants through the proper operational management and maintenance of the MS4 system's storm drains and tunnels.

Workplan

Storm Drains

- Track and follow up on 311 or other complaints/notices regarding storm drains. (ongoing)
- When cleaning, capture and properly dispose of removed materials. (ongoing)
- Perform miscellaneous storm drain work as necessary. (ongoing)
- Limit infiltration of seepage, such as from sanitary sewer system, pipe bedding or groundwater. (ongoing)
- Perform targeted condition assessment of storm drain system using NASSCO developed PACP inspection procedures. (2012-2022)
- Based on targeted condition assessment, develop and document storm drain inspection, assessment and maintenance program. (2016 - ongoing)

Storm Tunnels

- Continue targeted inspection and assessment program. (ongoing)
- Limit infiltration of seepage, such as from sanitary sewer system, sandstone bedrock, or groundwater. (ongoing)
- Prioritize repairs and rehabilitation needs. (ongoing)
- Repair and rehabilitate storm tunnels. (ongoing)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic material on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts , other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1b, V.C1c, V.C3c5, V.C6b

Assessment Process for Annual Reporting

- Report on miles of storm drain assessed, miles of storm drain cleaned and lbs. of material removed, miles of storm tunnels inspected and assessed.

Participating Department and Contact

Public Works Surface Water & Sewers Division Kevin Danen, Operations Engineer

SMP No. 6.1.2: CATCH BASIN and MANHOLE OPERATION & MAINTENANCE

Description

The objective of this stormwater management program is to minimize the discharge of pollutants through the proper operational management and maintenance of the MS4 system's catch basins and manholes. Catch basins are structural devices located along the city's street system that provide entrance of stormwater runoff into the storm drainage system.

Workplan

Catch Basins

- Track and follow up on 311 or other complaints/notices of plugged or damaged catch basins (ongoing).
- Prioritize observed or reported plugging or damages for repair and/or cleaning. Also prioritize repair on impact to the traveling public. (ongoing)
- When cleaning, capture and properly dispose of removed materials. (ongoing).
- Inspect as needed to ensure catch basins are operational so as not to restrict flow and cause localized flood damage. (ongoing)

Manholes

- Track and follow up on 311 or other complaints/notices of damaged manholes. (ongoing)
- Inspect as needed to ensure they are operational so as not to restrict flow and cause localized flood damage. (ongoing)
- Check pipe inverts, benches, safety condition of steps, and walls, address condition of castings and rings and address structural defects as needed (examples are cracked, deteriorated and spalled areas). (ongoing)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic material on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts , other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1b, V.C1c, V.C6b

Assessment Process for Annual Reporting

- Report on number of complaints of plugged or backed up catch basins, number of complaints of cave-ins around catch basins or manholes, number of completed minor and major repairs to catch basins and manholes.

Participating Department, Division, Contact

Public Works Surface Water & Sewers Division Kevin Danen, Operations Engineer

SMP No. 6.1.3: OUTFALL OPERATION & MAINTENANCE

Description

The objective of this stormwater management program is to minimize the discharge of pollutants through the proper operational management and maintenance of outfalls from the MS4 system to the receiving water bodies.

Workplan

- Track and follow up on 311 or other complaints/notices of damaged outfall structures and/or eroded shoreline surrounding outfall structure (ongoing).
- Operate outfalls in a condition that conserves and stabilizes shorelines, streambanks and steep slopes from damaging erosion. (ongoing)
- Inspect outfalls on a 5-year schedule where 20% of the outfalls are inspected each year. Evaluate the general condition of structures, determine if any significant erosion has occurred, make minor repairs. Inspect for sediment deltas. (ongoing)
- For outfalls to the Mississippi River, invite Mississippi Watershed Management Organization staff to assist with inspections. (ongoing)
- If major structural repair or maintenance work is identified, prioritize and schedule based on impact of condition to receiving waterbody, available personnel, budget funding, and coordination with other essential operations. (ongoing)
- If suspicious flows or unusual odors, stains or deposits are observed report to Regulatory Services Department for further investigation and resolution (see SMP Sheet 3.3). (ongoing)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic material on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts , other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1b, V.C1c, V.3d, V.C6b,

Assessment Process for Annual Reporting

- Report on Outfall ID and location of outfalls inspected, route, dates, comments on repairs needed, and dates of repairs. Report % inspected, % needing maintenance, number of repairs made and work done, and outfalls still needing repairs listed in order of priority.

Participating Department and Contact

Public Works Surface Water & Sewers Division
Kevin Danen, Operations Engineer

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SMP No. 6.1.4: PUMP STATION OPERATION & MAINTENANCE

Description

The objective of this stormwater management program is to minimize the discharge of pollutants through the proper operational management and maintenance of pump stations in the MS4 system. Pump stations are structural devices that manage the flow of stormwater runoff through the storm drain system.

Workplan

- Track and follow up on 311 or other complaints/notices of malfunctioning pump stations. (ongoing)
- Inspect on a regular basis for routine operational checks and condition assessment. (ongoing)
- Perform maintenance and repairs with routine items completed as recommended by manufacturer or based on developed asset management procedures. (ongoing)
- Assess cost and benefit for repairs, upgrades and installing backup generators for existing pump stations, and identify workplan for identified repairs, upgrades or backup generators. (2015)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic material on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts , other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1b, V.C1c, V.C6b

Assessment Process for Annual Reporting

- Report on number of pump stations monitored and maintained

Participating Department and Contact

Public Works Surface Water & Sewers Division
Kevin Danen, Operations Engineer

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SMP No. 6.1.5: LEVEL CONTROL WEIR, BULKHEAD and OPEN DITCHVEGETATED CHANNEL OPERATION & MAINTENANCE

Description

The objective of this stormwater management program is to minimize the discharge of pollutants through the proper operational management and maintenance of level control weirs, bulkheads and open channels in the MS4 system. Level control weirs are structural devices that mechanically affect the flow of stormwater runoff through the storm drain system. Bulkheads provide full closure.

Workplan

Level Control Weirs

- As weir locations are identified and inventoried, inspect, repair and maintain to facilitate their proper operational working order, in coordination with MPRB where applicable. (ongoing)

Bulkheads

- As bulkhead locations are identified and inventoried, inspect, repair and maintain to facilitate their proper operational working order. (ongoing)

Open Ditches and Vegetated Channels

- As identified and inventoried, periodically inspect and maintain to control and remediate erosion. (ongoing)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic material on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts , other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C6b

Assessment Process for Annual Reporting

- Narrative report on major activities

Participating Department and Contact

Public Works Surface Water & Sewers Division
Kevin Danen, Operations Engineer

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SMP No. 6.1.6: GRIT CHAMBER OPERATION & MAINTENANCE

Description

The objective of this stormwater management program is to minimize the discharge of pollutants through the proper operational management and maintenance of grit chambers in the MS4 system. Grit chambers are generally of three types: Structural sumps (sump manholes and sump catch basins), in-line devices, and hydrodynamic devices. These devices have been installed for sediment, debris and oil collection. Grit chambers are most useful for coarse materials, and are best used as pre-treatment that is followed by other treatment types that can address fines or dissolved phosphorus.

Workplan

- Perform cleaning to provide capacity for future sedimentation and to prevent re-suspension and washout. When cleaning, capture and properly dispose of removed materials. Record date of inspection, amount of materials removed. Inspect and clean twice per year, unless patterns of maintenance have become apparent such that frequency should be adjusted, as follows: If a frequent need for sediment removal has been established (according to recorded maintenance patterns), increase inspection and cleaning to maximize pollutant removal by preventing carryover, washout or re-suspension of pollutants from the structures. If an infrequent need for maintenance or sediment removal has been established, the frequency may be reduced. Use pellets provided by the Metropolitan Mosquito Control District for grit chamber mosquito control. (ongoing)
- Review, update and expand assessment and maintenance procedures or manuals for vegetation and control structures at city's pollutant control and "green infrastructure" sites. Incorporate the following document where appropriate: Gulliver, J.S., A. J. Erickson, and P. T. Weiss (editors). 2010. "Stormwater Treatment: Assessment and Maintenance." University of Minnesota, St. Anthony Falls Laboratory. Minneapolis, MN. http://stormwaterbook.safl.umn.edu/ (2012 – ongoing).

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic material on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts , other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C6b

Assessment Process for Annual Reporting

- Report grit chamber location and identifying number, route, dates inspected, dates cleaned and lbs. of sediment removed.

Participating Department and Contact (for City)

Public Works Surface Water & Sewers Division	Kevin Danen, Operations Engineer Lois Eberhart, Water Resources Administrator (for second bullet)

SMP No. 6.1.7: OPERATION & MAINTENANCE of STORMWATER RETENTION PONDS and DETENTION BASINS, STORMWATER WETLANDS, and BIO(IN)FILTRATION AREAS (RAIN GARDENS)

Description

The objective of this stormwater management program is to minimize the discharge of pollutants through the proper operational management and maintenance of water quality structures in the MS4 system. Stormwater retention ponds (wet), detention basins (usually dry), wetlands (wet often, and distinguished by vegetation) and bio-(in)filtration areas (rain gardens or trenches that drain within 48 hours, and may infiltrate into the soil or may have underdrains) are structural devices that detain and sometimes retain stormwater runoff. General operations and maintenance efforts include assessment and maintenance of the functionality of vegetation and water quality structures.

Workplan

- Track and follow up on 311 or other complaints/notices regarding ponds, basins, wetlands, rain garden facilities. (ongoing)
- Inventory and map the facilities, including responsible parties. (2013) (Also see Sheet 6.1.8 regarding Stage 1 stormwater pond inventory)
- Establish agreements on responsibilities for those SMPs with responsibilities by more than one entity - City, MPRB, a watershed organization, Hennepin County, etc. – for stormwater or surface water system operation and maintenance where agreements do not currently exist. (2013 – ongoing)
- Review, update and expand assessment and maintenance manuals for vegetation and control structures at pollutant control and "green infrastructure" sites. Incorporate the following document where appropriate: Gulliver, J.S., A. J. Erickson, and P. T. Weiss (editors). 2010. "*Stormwater Treatment: Assessment and Maintenance.*" University of Minnesota, St. Anthony Falls Laboratory. Minneapolis, MN. http://stormwaterbook.safl.umn.edu/ (2012 – ongoing)
- Maintain facilities for volume and functionality. When volume of sediment is approaching 50% of the capacity of the pond, or there is less than 3 feet of water at the inlet half of the pond, schedule for sediment removal to ensure design capacity of system is maintained and to minimize discharge of sediment leaving the basin. (ongoing) (See Sheet 6.1.8)
- Inspect and maintain outlets for debris, litter and heavy vegetation, and protect against erosion. (ongoing)
- Inspect and maintain trash guards to prevent clogging of the downstream storm piping. (ongoing)
- Inspect inlets for erosion, install energy dissipation if needed. (ongoing)
- Inspect inlets for sediment deposits. (ongoing)
- Mow those areas designed for mowing. For ponds, a vegetated buffer strip of 20 feet or more adjacent to the normal water level is typically maintained where feasible, to provide filtration of runoff and provide wildlife habitat. (ongoing)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Sulfates
Volatile organic compounds

Metals	Polycyclic aromatic hydrocarbons (PAH)
Arsenic	

Sources

Grass clippings, leaves or other organic material on pavement	Atmospheric deposition
Fertilizers containing phosphorus	Gasoline and diesel fuel combustion
Soil erosion	Automotive fluids
Road salts , other de-icing materials	Deterioration of brake pads, tires
Pesticides	Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1b, V.C1c, V.C3a, V.C6b, V.C6e, V.F

Assessment Process for Annual Reporting

- Report on number of structures inspected, assessed and cleaned, by category. Include date of inspection, date and results of assessment, antecedent weather conditions, nature of repairs. Report those that are at or near needing dredging for sediment buildup.

Participating Department and Contact

Public Works Surface Water & Sewers Division	Kevin Danen, Operations Engineer Lois Eberhart, Water Resources Administrator (for treatment device and “green infrastructure” assessment and maintenance manuals, electronic inventory and map of the MS4 storm sewer system)
Office of the City Coordinator	Greg Goeke, Director of Property Services
Minneapolis Park & Recreation Board	Michael Schmidt, Assistant Superintendent - Operations

SMP No. 6.1.8: STORMWATER RETENTION POND DREDGING PROCESS

Description

Stormwater retention ponds are designed to settle out sediment and attached pollutants, and are designed for a specific holding capacity. Occasionally the built-up sediment needs to be dredged, to restore the pond to the design capacity. Guidelines for the dredging and disposal of dredged materials are described in the "Modified Characterization and Permit Approach for Urban Stormwater Ponds" section of *Managing Dredged Materials In the State of Minnesota*, June 2009 issued by the MPCA, and summarized below. Regardless of the volume of sediment to be removed, it is important to determine if the sediment presents a potential adverse impact to human health or the environment.

Workplan

- Submit Stage 1 inventory information to MPCA. (by January 2012) http://www.pca.state.mn.us/index.php/water/water-types-and-programs/stormwater/municipal-stormwater/restriction-on-coal-tar-based-sealants.html
- Periodically determine if sediment needs to be removed from pond. Rule of thumb is remove when sediment volume approachs 50% of the pond design volume, or there is less than 3 feet of water depth at the inlet half of pond. (ongoing)
- In advance of dredging operation:
  - Characterize sediment: Take core samples. For number of samples and for additional guidance, see "Modified Characterization and Permit Approach for Urban Stormwater Ponds", pp. 31-34, *Managing Dredged Materials in the State of Minnesota*, MPCA June 2009. http://www.pca.state.mn.us/index.php/waste/waste-and-cleanup/cleanup-programs-and-topics/topics/dredged-materials-management.html
  - Determine Dredge Management Level (1, 2 or 3): First do sieve analysis. If at least 93% of recommended number of sediment samples is retained on a #200 sieve, Management Level is assumed to be 1. If less than 93%, have samples analyzed for contaminate concentrations of copper, arsenic and PAH to determine Management Level.
  - If Management Level 3, must be disposed of in a permitted lined landfill. (It may be possible to treat the dredged material to reduce to lower Management Level.)
  - If Management Level 2, suitable for reuse on property with industrial land use. If volume exceeds 3,000 cubic yards, MPCA Dredge Reuse approval required. If dredge material placement will disturb more than one acre, MPCA Construction Stormwater Permit is required.
  - If Management Level 1, suitable for reuse on property with residential or recreational land use. If dredge material placement will disturb more than one acre, MPCA Construction Stormwater Permit is required.
- During dredging operation:
  - Dredge the sediment, using erosion and sediment control practices.
  - Avoid mixing sediment with high levels of contamination with low level contaminated material. If co-mingled prior to disposal, must be managed at the highest Management Level measured.
- Retain records for compliance with MS4 Permit. (ongoing)
- Create or modify an ordinance to ban coal tar sealants. (2013)

Targeted Pollutants and Targeted Sources

Pollutants – Baseline Parameters

Copper
Arsenic
Polycyclic aromatic hydrocarbons (PAH)

Use risk assessment process to supplement parameter list based on tributary land uses

Sources

For copper and arsenic, primarily automotive and manufacturing

For PAH, primarily driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C6b, V.C6f

Assessment Process for Annual Reporting

- By type of control device, report on dredging locations and total lbs. removed.
- Provide narrative on characterization of removed materials.
- Report on disposition of removed materials.

Participating Department and Contact

Public Works Surface Water & Sewers Division	Kevin Danen, Operations Engineer Lois Eberhart, Water Resources Administrator (for Stage 1 inventory and electronic mapping)
Office of the City Coordinator	Greg Goeke, Director of Property Services
Minneapolis Park & Recreation Board	Michael Schmidt, Assistant Superintendent – Operations
Regulatory Services Environmental Management & Safety Division	Dan Huff, Manager (coal tar sealants ordinance)

SMP No. 6.1.9: HANDLING and DISPOSAL of STORED and STOCKPILED DREDGED or OTHER REMOVED MATERIALS

Description

The objective of this stormwater management program is to minimize the discharge of pollutants through proper handling of stored and stockpiled materials such as those removed from pipes, grit chambers, catch basins and stormwater ponds

Workplan

- During MS4 system cleaning, storage and disposal operations, apply sediment control measures to prevent removed material from re-entering the storm drain system. (ongoing)
- Manage City and MPRB stockpile, storage and material handling areas to prevent pollutant discharges or the potential for pollutant discharges. (ongoing)
- Avoid mixing sediment with high levels of contamination with low level contaminated material. If co-mingled prior to disposal, must be managed at the highest Management Level measured. (ongoing)

Targeted Pollutants and Targeted Sources

Pollutants – Baseline Parameters

Copper
Arsenic
Polycyclic aromatic hydrocarbons (PAH)

Use risk assessment process to supplement parameter list based on tributary land uses

Sources

For copper and arsenic, primarily automotive and manufacturing

For PAH, primarily driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C6b, V.C6f

Assessment Process for Annual Reporting

- By device type, report annual total lbs. removed, amount, characterization and destination(s) of material removed

Participating Department and Contact

Public Works Surface Water & Sewers Division
Minneapolis Park & Recreation Board

Kevin Danen, Operations Engineer
Michael Schmidt, Assistant Superintendent - Operations

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SMP No. 6.1.10: OPERATE and MAINTAIN MPRB STORM DRAIN CONVEYANCE SYSTEM in ACCORDANCE with NPDES MS4 PERMIT to MINIMIZE DISCHARGE of POLLUTANTS

Description

The objective of this stormwater management program is to minimize the discharge of pollutants through the operational management and maintenance of the MPRB storm drain conveyance system. Included are catch basins/stormwater inlets on MPRB property, their pipes to the point of connection with the city's mains, bulkheads if present, MPRB level control weirs, and MPRB pump stations. Also included are those outfalls that discharge only runoff from MPRB property. General operations and maintenance efforts include inspections, cleaning, repairs, rehabilitation or reconstruction, and operation of pump stations and level control weirs. MPRB efficiency objectives include structural integrity, ability to relieve impacts to health safety, property, infrastructure and aquatic life, and regulatory compliance.

Workplan

- Maintain and enhance condition and effectiveness of existing infrastructure. (ongoing)
- Prioritize observed or reported catch basin/inlet plugging or damages for repair and/or cleaning. Also prioritize repair on impact to the public. When cleaning, capture and properly dispose of removed materials. (ongoing).
- Operate outfalls in a condition that conserves and stabilizes shorelines, streambanks and steep slopes from damaging erosion. Inspect on a 5-year schedule where 20% of the outfalls are inspected each year. If suspicious flows or unusual odors, stains or deposits are observed report to Regulatory Services Department for further investigation and resolution (see SMP Sheet 3-3). Evaluate the general condition of structures, determine if any significant erosion has occurred, make minor repairs. Inspect for sediment deltas. (ongoing)
- Inspect, repair and maintain level control weirs as needed to facilitate their proper operational working order. (ongoing)
- Inspect, repair and maintain bulkheads as needed to facilitate their proper operational working order. (ongoing)
- Periodically inspect and maintain open ditches and vegetated channels to control and remediate erosion. (ongoing)
- Prioritize and schedule major structural repair or maintenance work based on impact of condition to receiving waterbody, available personnel, budget funding, and coordination with other essential operations. (ongoing)
- Respond to emergencies. (ongoing)
- Schedule and perform major repairs, rehabilitation or reconstruction considering budget, staff availability, and other work. For rehabilitation or reconstruction projects, look for opportunities to include SMPs to improve water quality. (ongoing)
- Prevent erosion and sedimentation from maintenance and repair/rehabilitation projects. (ongoing)
- Train staff on best current practices including construction site erosion control. (ongoing)
- Apply for and comply with NPDES General Construction Permit for projects disturbing more than one acre. (ongoing)

- Inventory and map MPRB inlets, storm drains, pipes, outfalls, pump stations, level control weirs and bulkheads and provide data to Public Works for incorporating into electronic inventory and map of the MS4 storm sewer system. (2013 – ongoing)
- Develop and maintain written operating procedures for practices specific to pollutant reduction. (2013 – ongoing)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic material on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts , other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C3a, V.C5d, V.C6b

Assessment Process for Annual Reporting

- Report on number of major repairs completed
- Report on outfalls inspected including Outfall ID, Location, Date, Repairs Needed, Date of Repairs

Participating Department and Contact

Minneapolis Park & Recreation Board	Michael Schmidt, Assistant Superintendent - Operations
Public Works Surface Water & Sewers Division	Lois Eberhart, Water Resources Administrator (for electronic inventory and map of the MS4 storm sewer system)

SMP No. 6.1.11: ELECTRONIC INVENTORY and MAPPING

Description

The stormwater management objective of this program is to minimize pollutants in stormwater through the effective use of electronic tools for data storage, retrieval, display and analysis. A GIS geodatabase is under development to support numerous stormwater management system responsibilities and activities, including operation and maintenance, design, hydrologic and hydraulic modeling, Gopher State One Call locates, capacity, condition and water quality studies, illicit discharge detection and management of spills.

Workplan

- Incorporate the following into the GIS geodatabase: (by January 2014)
  - Ponds, streams, lakes and wetlands that are part of the MS4 system
  - MS4 tunnels, pipes, and catch basin leads
  - MS4 outfalls to receiving waterbodies
    - outfall identification number
    - size of outfall pipe
    - size of tributary drainage area
    - land use types and distributions
    - percent of area made up of impervious surfaces
  - Structural pollution control devices (including catch basins with sumps) that are part of the system
    - size of tributary drainage area
    - land use types and distributions
    - design capacity of device where available, estimated capacity if design capacity is not available,
    - or size of the structure
- Identify significant, known swales or ditches
- Identify outflows to other MS4s
- Identify storm drains connecting to other MS4s. Identify storm drains connecting from MS4s
- Identify significant, known stormwater runoff infiltration sites/discharges to groundwater
- Identify connections from private properties
- Identify flood control detention facilities that are primarily intended for volume control
- Identify the process to update the electronic inventory based on new construction and field inspections/maintenance
- Identify conveyance and treatment systems in stormwater drainage areas to impaired water bodies with EPA-approved MS4 WLAs

Targeted Pollutants and Targeted Sources

Not applicable

MS4 Permit Reference

V.B1-3, V.B5-6, V.C3a, V.C6e2, V.C8a, V.F

Assessment Process for Annual Reporting

Report on status of electronic inventory and mapping completion

Participating Department and Contact

Minneapolis Park & Recreation Board	Debra Pilger, Director Environmental Operations
Public Works Surface Water & Sewers Division	Lois Eberhart, Water Resources Administrator

SMP No. 6.2 STREET SWEEPING and CLEANING PROGRAM

Description

The stormwater management objective of this program is to minimize the discharge of pollutants to the storm drain system and receiving waterbodies by removing leaf litter, sediment and debris from streets and gutters before the materials and the pollutants attached to them can be washed into storm drain inlets. The other objectives of the street sweeping program are to protect public health and safety, and to improve cleanliness and livability. The program is divided into several categories, that vary in frequency and work practices, to systematically address the approximately 1,100 miles of streets in the city (including streets under MPRB, County or State jurisdiction) and the city's approximately 400 miles of alleys. They can be described by two general programs: Spring and Fall Citywide comprehensive sweeping programs, and general sweeping activities outside of those two major activities.

Workplan

- Operate and maintain public rights of way to minimize discharge of pollutants. (ongoing)
- Maintain roadways in a manner that works to prevent wash-off of pollutants during rainfall and snowmelt. (ongoing)
- Inspect and clean basin grates on street sweeping routes. (ongoing)
- Develop and maintain written operating procedures for practices specific to pollutant control and reduction. (2013 – ongoing)
- Carry out sweeping programs. (ongoing)
- Spring Program: Sweep streets and alleys curb-to-curb.
- Fall Program: Sweep streets curb-to-curb.
- General Sweeping Activities
  - Parkways Program
  - Downtown Entertainment District Program
  - High-Traffic Commercial and Downtown Program
  - Other Commercial and Downtown Program
  - Chain of Lakes Program
  - Standard Program – streets other than parkway, commercial or downtown
  - Parkways Program
  - Downtown Entertainment District Program
  - High-Traffic Commercial and Downtown Program
  - Other Commercial and Downtown Program
  - Chain of Lakes Program
  - Standard Program – streets other than parkway, commercial or downtown
- Furnish street sweepers and related vehicles and drivers. (ongoing)
- Use sampling and literature values to estimate the amount of TSS and TP per mass of debris being removed. (ongoing)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic material on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts , other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C6a, V.c6c, VI.A

Assessment Process for Annual Reporting

- Number of miles swept in programs, approximate volume of material removed in each program category

Participating Departments and Contacts

Public Works Transportation Maintenance & Repair	Steven Collin, Street Maintenance Engineer
Public Works Fleet Services	John Scharffbillig, Director
Public Works Surface Water & Sewers Division	Lois Eberhart, Water Resources Administrator

SMP No. 6.3: CITY and MPRB PARKING LOT and EQUIPMENT YARD MANAGEMENT

Description

The stormwater management objective of these activities is to prevent or reduce the discharge of pollutants by utilizing proper fleet and building maintenance practices, and proper operation and maintenance of parking lots and equipment and storage yards.

Workplan

- Operate and maintain municipal and MPRB property to minimize discharge of pollutants. (ongoing)
- Develop a program to improve sweeping city and MPRB parking lots, prioritizing based on land use, trash and stormwater pollutant levels generated. (2014 and ongoing)
- Train staff on proper operation and maintenance activities to minimize discharge of pollutants and non-stormwater discharges from City and MPRB storage facilities. (ongoing)
- For exposed stockpile, storage material handling and equipment washing areas, incorporate controls such as inlet protection and perimeter controls, or runoff collection systems, to prevent material from entering the MS4 system. (ongoing)
- Preferred method of washing trucks or equipment is inside buildings where sediment is caught in traps and then disposes of properly. When this is not possible, use runoff collection systems or other methods to trap sediment. Dispose of properly. (ongoing)
- Develop and maintain written operating procedures. (2014 and ongoing)

Program categories:

a) Minneapolis Park & Recreation Board - MPRB parks, several office buildings

b) Public Works – Transportation Maintenance & Repair – existing facilities

c) City Coordinator's Office - Property Services – city-owned properties such as office buildings, police stations, fire stations

d) Community Planning & Economic Development – city-owned economic development properties

e) Public Works - Surface Water & Sewers – equipment and materials storage

f) Public Works – Traffic & Parking Services – city-owned public parking ramps and public parking lots

g) Public Works – Traffic & Parking Services – equipment and materials storage

h) Public Works - Water Treatment & Distribution – equipment and materials storage

i) Public Works – Fleet Services – vehicle and equipment maintenance

j) Convention Center / Target Center – city owned parking lots

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic material on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts , other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition

Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C3c, V.C6c

Assessment Process for Annual Reporting

- Narrative of training activities

Participating Departments and Contacts

Minneapolis Park & Recreation Board	Debra Pilger, Director Environmental Operations
Public Works – Transportation Maintenance & Repair	Steven Collin, Street Maintenance Engineer
City Coordinator's Office - Property Services	Greg Goeke, Director of Property Services
Community Planning & Economic Development	Darrell Washington, Manager of Real Estate Development Services
Public Works - Surface Water & Sewers	Kevin Danen, Operations Engineer
Public Works – Traffic & Parking Services	Atif Saeed, Parking Systems Manager
Public Works – Traffic & Parking Services	Steve Mosing, Infrastructure and Street Lighting Engineer
Public Works - Water Treatment & Distribution	Marie Asgian, Superintendent of Water Distribution
Public Works – Fleet Services	John Scharffbillig, Fleet Services Director
Convention Center / Target Center	Chris Larson, Director of Facility Services

SMP No. 6.4: APPLICATION of SNOW and ICE CONTROL MATERIALS for STREETS

Description

The stormwater management objective of these activities is to monitor and report on the application of chemicals for snow and ice control on streets and alleys, where operations are performed to address public safety while balancing those needs with environmental and cost considerations. The most commonly used deicing and anti-icing chemical is salt and salt brine. Public Works also performs snow and ice control on some public sidewalks such as on bridges, as well as on various plazas, pedestrian bridges, stairways and miscellaneous areas. (NOTE – this sheet addresses only streets. Other municipal properties are addressed on Sheet 6.5.)

Workplan

- Administer program. (ongoing)
- Operate and maintain public rights of way to minimize discharge of pollutants while addressing public safety. (ongoing)
- Perform snow and ice operations to address public safety while balancing environmental impacts and cost. (ongoing)
- Use weather forecasting information including pavement temperatures to make appropriate deicing material application decisions. (ongoing)
- Use appropriate deicing materials and application rates for weather conditions, vehicle and pedestrian usage, and land use (type/configuration of street, sidewalk, trail, etc.). (ongoing)
- Use smart spreading concepts and procedures as available and appropriate for conditions. (ongoing)
- Keep salt and sand stockpiles covered and maintain good housekeeping at loading sites. (ongoing)
- Perform comprehensive spring street and alley sweeping program (see SMP Sheet Number __) to remove winter sand and other materials to prevent them from washing into storm drain system and ultimately to waterbodies. (ongoing)
- Conduct training for operators, foremen and supervisors. (ongoing)
- Utilize runoff collection systems or other best practices around de-icing material stockpiles and truck washout areas. (ongoing)
- Continue to seek practices and programmatic changes that will reduce salt loads to surface waters without compromising safety. Perform pilot projects to test results. (ongoing)
- Calibrate spreaders. (ongoing)
- Address leaking water services in winter when they are icing up the street. (ongoing)
- Perform sidewalk enforcement activities to address public safety while balancing environmental impacts. (ongoing)
- Study cost and benefit of retrofitting trucks with temperature sensing or other equipment. (ongoing)
- Develop manual of practices for various conditions, applications, and handling of deicing materials. (2012 – ongoing)

Program categories:

a) Public Works – Transportation Maintenance & Repair - public streets, alleys, bridges, plazas, city-maintained trails, storage of anti-icing cehmicals, enforcement of the City's sidewalk shoveling ordinance.

b) Public Works - Water Treatment & Distribution – enforcement of leaking water service line ordinance

Targeted Pollutants and Targeted Sources

Pollutants

Sediment and other solids
Chlorides and cyanide
Metals
Sulfates

Sources

Road salts , other de-icing materials

MS4 Permit Reference

V.B1-3, V.B5-6, V.C6c

Assessment Process for Annual Reporting

- Report on quantity of deicing materials, chemicals, and sand applied
- Report location and description of deicing materials storage facilities
- Report # of foremen, supervisors and operators attending training on use of salt
- Report salt and sand relative to total snowfall (tons per inch), and report on season's conditions.

Participating Departments and Contacts

Public Works Transportation Maintenance & Repair	Steven Collin, Street Maintenance Engineer
Public Works Water Treatment & Distribution	Marie Asgian, Superintendent of Water Distribution

SMP No. 6.5: APPLICATION of SNOW and ICE CONTROL MATERIALS for CITY and MPRB PROPERTIES

Description

The stormwater management objective of these activities is to monitor the application of chemicals for snow and ice control on the City's and MPRB's parking lots, trails, sidewalks, ramps, equipment yards, other surfaces owned and operated by the City and the MPRB. Operations are performed to address public safety while balancing those needs with environmental and cost considerations. The most commonly used deicer is sodium chloride. (NOTE – streets are addressed separately, on Sheet 6.4.)

Workplan

- Administer program. (ongoing)
- Operate and maintain municipal property to minimize discharge of pollutants while addressing public safety. (ongoing)
- Perform snow and ice operations to address public safety and safety of workers while balancing environmental impacts and cost. (ongoing)
- Use weather forecasting information including pavement temperatures to make appropriate application decisions. (ongoing)
- Use appropriate materials and application rates for weather conditions, vehicle and pedestrian usage, and land use (for example, type/configuration of parking lot). (ongoing)
- Use smart spreading concepts and procedures as available and appropriate for conditions. (ongoing)
- Keep salt and sand stockpiles covered and maintain good housekeeping at loading sites. (ongoing)
- Conduct annual training for operators, foremen and supervisors. (ongoing)
- Utilize runoff collection systems or other best practices around de-icing material stockpiles and truck washout areas. (ongoing)
- Continue to seek practices and programmatic changes that will reduce salt loads to surface waters without compromising safety. Perform pilot projects to test results. (ongoing)
- Develop manual of practices for various conditions, applications, and handling of deicing materials. (ongoing)

Program categories:

a) Public Works – Transportation Maintenance & Repair - some Public Works shops and yards

b) Public Works – Traffic & Parking Services – city-owned public parking ramps and public parking lots

c) Coordinator's Office - Property Services – city-owned buildings/parking lots

d) Minneapolis Park & Recreation Board (MPRB) - MPRB buildings/parking lots, MPRB trails

e) Public Works - Surface Water & Sewers - trails at stormwater ponds and pump stations

f) Public Works - Water Treatment & Distribution - Water Division equipment yard/parking lot

g) Community Planning & Economic Development – city-owned vacant and economic development properties

h) Convention Center and Target Center – city-owned buildings/parking lots

i) Public Works – Solid Waste & Recycling – equipment yard and transfer stations

Targeted Pollutants and Targeted Sources

Pollutants

Sediment and other solids
Chlorides and cyanide
Metals
Sulfates

Sources

Road salts , other de-icing materials

MS4 Permit Reference

V.B1-3, V.B5-6, V.C6c

Assessment Process for Annual Reporting

- For each program category, report on quantity of deicing materials, chemicals, and sand applied.
- Report location and description of deicing materials storage facilities.
- Report # of foremen, supervisors and operators attending training on use of salt.

Participating Departments and Contacts

Public Works Transportation Maintenance & Repair	Steven Collin, Street Maintenance Engineer
Public Works Traffic & Parking Services	Atif Saeed, Parking Systems Manager
Coordinator's Office Property Services	Greg Goeke, Director of Property Services
Minneapolis Park & Recreation Board	Lisa Beck, Director of Operations
Minneapolis Park & Recreation Board	Debra Pilger, Director Environmental Operations
Public Works Surface Water & Sewers	Kevin Danen, Operations Engineer
Public Works Water Treatment & Distribution	Marie Asgian, Superintendent of Water Distribution
Community Planning & Economic Development	Darrell Washington, Manager of Real Estate Development Services
Convention Center and Target Center	Chris Larson, Director of Facility Services
Public Works Solid Waste and Recycling	Jeff Jenks, Interim Director

SMP No. 6.6: VEGETATION MANAGEMENT for RIGHT-OF-WAY and CITY PROPERTIES

Description

The stormwater management objectives of these activities are to protect and enhance the health of trees and other vegetation to maximize their availability for interception, evapotranspiration, volume, rate and cleansing of stormwater, and to minimize the discharge of pollutants by controlling the application of fertilizers containing phosphorus and pesticides.

Workplan

- Operate and maintain public rights of way and municipal property to minimize discharge of pollutants.
- Comply with state and City regulations about phosphorus-free fertilizers. (ongoing)
- Train staff on lawn care, vegetation management and non-stormwater discharges. (ongoing)
- Work to increase tree canopy. (ongoing)
- Train and certify staff on proper herbicide and pesticide application. (ongoing)
- Control application of any pesticides and fertilizers to minimize discharge of pollutants and non-stormwater discharges. (ongoing)
- Document use of any pesticides and fertilizers for properties managed. (ongoing)
- Provide the annual sidewalk improvement plan to the MPRB Forestry Division prior to commencement of construction of sidewalk improvements. (ongoing)
- Protect tree root zones from soil compaction and damage during street, sidewalk or utility work. Additional instructions are found in Access Minneapolis Street and Sidewalk Design Guidelines, Chapter 9, Street Trees and Boulevards. (ongoing)
- For public participation and involvement and where safety considerations allow, consider vegetation management programs that engage volunteers, nurture citizen involvement, and/or that involve and train youth in environmental stewardship. Examples include planting events, identification and removal of invasive plants. (ongoing)
- Develop and maintain written operating procedures for practices specific to pollutant control and reduction. (2013-ongoing)

Program categories:

a) Minneapolis Park & Recreation Board –street trees/boulevard trees
b) Public Works – Transportation Maintenance & Repair – existing Right-of-Way areas such as medians and traffic islands/cul-de-sacs/roundabouts (not boulevards, which are maintained by abutting property owners)
c) Public Works – Transportation Maintenance & Repair – City construction projects involving Right-of-Way areas such as sidewalk and boulevard construction, medians and the like
d) City Coordinator's Office - Property Services – City-owned properties such as office buildings, police stations, fire stations
e) Community Planning & Economic Development – City-owned vacant and economic development properties
f) Public Works - Surface Water & Sewers - stormwater pond properties
g) Public Works – Traffic & Parking Services – City-owned public parking ramps and public parking lots
h) Public Works - Water Treatment & Distribution - Water Division equipment yard/parking lot, pump station properties
i) Convention Center, Target Center – City-owned buildings and parking lots

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Bacteria
Metals
Arsenic
Sulfates

Sources

Grass clippings, leaves or other organic material on pavement
Fertilizers containing phosphorus
Soil erosion
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1b, V.C1c, V.C2, V.C3c2, V.C6a, V.C6b

Assessment Process for Annual Reporting

- Narrative of training and activities to minimize discharge of pollutants in stormwater runoff
- Number of staff with pesticide applicator licenses
- List exceptions to phosphorus-free fertilizer usage, with explanation
- Narrative of participation by the public

Participating Departments and Contacts

Minneapolis Park & Recreation Board	Ralph Sievert, Forester
Public Works – Transportation Maintenance & Repair	Steven Collin, Street Maintenance Engineer
Public Works – Transportation Maintenance & Repair	Larry Matsumoto, Paving Engineer
City Coordinator's Office	Greg Goeke, Director of Property Services
Community Planning & Economic Development	Darrell Washington, Manager of Real Estate Development Services
Public Works - Surface Water & Sewers	Kevin Danen, Operations Engineer
Public Works – Traffic & Parking Services	Atif Saeed, Parking Systems Manager
Public Works - Water Treatment & Distribution	Marie Asgian, Superintendent of Water Distribution
Convention Center, Target Center	Chris Larson, Director of Facility Services

Overview of Category 7

Description

The purposes of monitoring and analysis under the MS4 permit are to understand and improve stormwater management program effectiveness. Sampling is performed throughout the year at various types of sites, described in detail on Sheets 7.1 and 7.2. Specifically the purposes of analysis are to: (1) characterize pollutant event mean concentrations, (2) estimate total annual pollutant load to water bodies, (3) estimate total annual volume to water bodies, (4) estimate effectiveness of devices and practices, and (5) calibrate and verify stormwater models.

Measurable Goals (MS4 Permit Reference V.B4)

Documentation of work practices.
Completion of each annual program.

Participating Departments

Minneapolis Park and Recreation Board

Public Works Department

Regulatory Services Department

Category 7 SMP Sheets:

7.1: MONITORING AND ANALYSIS TO ASSIST IN ASSESSING STORMWATER MANAGEMENT PROGRAM EFFECTIVENESS

7.2: MAJOR OUTFALL MONITORING AND ANALYSIS PROGRAM

7.3: PUBLIC EDUCATION AND OUTREACH ON STORMWATER DISCHARGE MONITORIGN AND ANALYSIS

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SMP No. 7.1: MONITORING and ANALYSIS to ASSIST in ASSESSING STORMWATER MANAGEMENT PROGRAM EFFECTIVENESS

Description

The purposes of monitoring and analysis are to understand and improve stormwater management program effectiveness, as described on the Overview of Category 7. The four types of sites for sampling, with priority levels established in the MS4 permit, are:

Type 1. To determine and improve system/BMP effectiveness through adaptive management (highest priority).
Type 2. The largest outfall(s) to the Mississippi River (second priority).
Type 3. Representative management sites selected by co-permittees (third priority).
Type 4. To determine contributions from upstream jurisdictions (lowest priority).

Workplan

- Carry out sampling, data collection, and analysis as detailed in table on page 2 of this SMP Sheet. (Ongoing for some activities. 2012-2013 for technical transition period to determine MWMO and MPRB software compatability data formats and transfer protocols, etc.)
  Minneapolis Park & Recreation Board: Type 1, 3 and 4 monitoring activities and analysis
  Mississippi Watershed Management Organization*: Type 2 monitoring activities and analysis
  - Quality assurance project plan for lab and field methods and procedures:
    - *EPA Guidance for Quality Assurance Project Plans*, EPA QA/G-5 (EPA/600/R98/018) (or approved variation)
    - *EPA Requirements for Quality Assurance Project Plans*, EPA QA/R-5 (EPA/240/B-01/003) (or approved variation)
    - MDH-certified laboratory(s)
    - Gulliver, J.S., A. J. Erickson, and P.T. Weiss (editors). 2010. *Stormwater Treatment: Assessment and Maintenance*. U of M St. Anthony Falls Laboratory (or Permittee –selected variation)

** Type 2 activities will be carried out by the MWMO at its expense. The MWMO is not a co-permittee. An agreement with the MWMO detailing responsibilities will be sent to the MPCA with each Annual Report. Type 2 activities and data sampling events are subject rainfall, site conditions, backwatering or other complications, and successful equipment performance.*

Targeted Pollutants and Targeted Sources

For targeted pollutants, see table on page 2 of this SMP Sheet. For targeted sources see Table 1-4 in Section 1.

MS4 Permit Reference

V.B1-3, V.B5-6, V.C7, V.C8a, V.C8b, VI.A2

Assessment Process for Annual Reporting

- For monitor sites, report location, land use, outfall ID, area, pipe size, total vol. of sampled events, % sampled by season, sample type, dates, list of monitored chemical parameters, analysis method, sampled event data, event mean concentration statistics, flow-weighted mean concentrations, and statistical summary of concentrations by season. Submit electronic copies of spreadsheets.
- For municipal outfalls, identify discharge location, its drainage area within the municipality, land area by use, estimated impervious cover, available information of any upstream contributing areas that extend beyond the municipal boundaries, estimate of annual and seasonal loads for parameters listed in Table 1, annual estimate of runoff volume, flow-weighted mean concentration, description of calculation methods, identification of software used, description of model calibration, and analysis of uncertainty associated with loading estimates for unmonitored portions of the MS4. For those outfalls that discharge

to the Mississippi River, organize information from upstream to downstream and east bank or west bank. Submit electronic copies of modeling and spreadsheets.

- Provide narrative of available water quality trend data for Minneapolis lakes and for Bassett, Shingle and Minnehaha Creeks that may provide information about stormwater system performance.

Participating Departments and Contacts

Public Works Surface Water & Sewers	Lois Eberhart, Water Resources Administrator (lead)
Minneapolis Park & Recreation Board	Debra Pilger, Director Environmental Operations
(Types 1, 3, and 4 activities)	
Mississippi Watershed Management Organization (MWMO)* (Type 2 activities)	

MONITORING AND ANALYSIS Analytical data for samples			Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9	Site 10
			Sites 1 thru 6 **Monitored by MPRB** Types 1,3,4						Sites 7 thru-10 **Monitored by MWMO** Types 2 or 4			
Parameter	**Sample Type**	**Frequency**	Each year, sites will be selected for the following year. Sites may be changed, or rotated, for cost-effective resource use, however reasonable effort will be made to monitor for at least two consecutive years at a site. In choice and location of stations and monitoring activities, consider safety, backwatering effects and access.									
Chloride, Total	Flow-paced composite samples over non-ice time period (approx. March thru Nov.) Grab samples at least two times during typical winter thaw (approx. December to March)	15 samples*/year, select from events 0.10 inch or greater over range of seasons and events * *taking into consideration weather and safety*	x	x	x	x	x	x	x	x	x	x
Copper			x	x	x	x	x	x	x	x	x	x
Lead, Total (as Pb)			x	x	x	x	x	x	x	x	x	x
Zinc, Total (as Zn)			x	x	x	x	x	x	x	x	x	x
Hardness, Carbonate (as CaCo3)			x	x	x	x	x	x	x	x	x	x
Nitrate+Nitrite, Total (as N)			x	x	x	x	x	x	x	x	x	x
Nitrogen, Kjeldahl, Total			x	x	x	x	x	x	x	x	x	x
Phosphorus, Total (as P)			x	x	x	x	x	x	x	x	x	x
Solids, Total Suspended (TSS)			x	x	x	x	x	x	x	x	x	x
Solids, Volatile Suspended (VSS)			x	x	x	x	x	x	x	x	x	x
Solids, Inorganic Suspended by difference (TSS-VSS=ISS)			x	x	x	x	x	x	x	x	x	x
BOD, Carbonaceous 5-Day (20 Deg C)	Flow-paced composite samples	Quarterly	x	x	x	x	x	x	x	x	x	x
Nitrogen, Ammonia, Un-ionized (as N)			x	x	x	x	x	x	x	x	x	x
Phosphorus, Total Dissolved or Ortho			x	x	x	x	x	x	x	x	x	x
Solids, Total Dissolved (TDS)			x	x	x	x	x	x	x	x	x	x
Sulfate			x	x	x	x	x	x	x	x	x	x
pH	Grab, measured by multi-parameter probe	Quarterly	x	x	x	x	x	x	x	x	x	x
E. coli	Grab		x	x	x	x	x	x	x	x	x	x
Flow	Measurement		x	x	x	x	x	x	x	x	x	x
Precipitation	Measurement, at 3800 Bryant Av S location	Daily	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Include in Annual Report												
Receiving water location description			x	x	x	x	x	x	x	x	x	x
Brief narrative of results			x	x	x	x	x	x	x	x	x	x
Sample analytical data, identified as storm composite or grab, with corresponding flows and storm event periods			x	x	x	x	x	x	x	x	x	x
Spreadsheets with data tabulations, statistics, summary table(s), drainage area, est. annual total discharge vol., storm event discharge vol., runoff yield (in./yr.), dates and durations of sampled events			x	x	x	x	x	x	x	x	x	x
Analysis of flow weighted mean concentrations, analysis of annual mean concentrations			x	x	x	x	x	x	x	x	x	x
Graphics			x	x	x	x	x	x	x	x	x	x
Map of sampling sites			x	x	x	x	x	x	x	x	x	x
Estimate of sampled storm event rainfall, and approximate duration between sampled storm event and end of previous storm event >0.10 inch			x	x	x	x	x	x	x	x	x	x

** Types of sites for stormwater monitoring (sites 1-5 can be Type 1, 2, 3, or 4. Sites 6-10 can be Type 2 or 3

Type 1. To determine and improve system/BMP effectiveness through adaptive management (highest priority)

Type 2. The largest outfall(s) to the Mississippi River (second priority).

Type 3. Representative management sites selected by co-permittees (third priority).

Type 4. To determine contributions from upstream jurisdictions (fourth priority)

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SMP No. 7.2: MAJOR OUTFALL MONITORING and ANALYSIS PROGRAM

Description

The intent of this program is to assist the MWMO in establishing a baseline of chemical, physical and biological parameters in stormwater draining to the Mississippi River at selected large outfalls, and to detect illegal discharges. The MWMO water monitoring program identifies baseline chemical, physical and biological parameters discharging from a watershed-wide storm drainage network (primarily through outfall monitoring). It also is designed to detect illicit discharges entering water bodies in the City. The sample results will track the water quality changes at the outfalls, identifying potential illegal discharges or sewer cross connections for further investigation, and an assessment of outfalls and their drainage areas for non-point source pollutants.

Workplan

Regulatory Services Department Fire Inspection Services

- Provide support activities to the Mississippi Watershed Management Organization. Assist with maintaining and servicing samplers on select stormwater outfalls on the Mississippi River shoreline.
- If suspicious flows or unusual odors, stains or deposits are observed, follow up according to the Illicit Discharges in Storm Drains Investigation Program described on Sheet 3.3.

Mississippi Watershed Management Organization (MWMO)

The Major Outfall Monitoring and Analysis program is carried out by the MWMO at its expense. The MWMO is not a co-permittee. An agreement with the MWMO detailing responsibilities will be sent to the MPCA with each Annual Report.

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients	Sulfates
Sediment and other solids	Bacteria
Chlorides	Metals

Sources

Grass clippings, leaves or other organic material on pavement	Pesticides
Fertilizers containing phosphorus	Atmospheric deposition
Soil erosion	Gasoline and diesel fuel combustion
Road salts, other de-icing materials	Automotive fluids
Pet waste, wildlife waste	Deterioration of brake pads, tires
Sanitary waste	Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C7a, V.C7c, V.C7d, V.C7f, V.F

Assessment Process for Annual Reporting

- Report number of of outfall sampling days on the Mississippi River

Participating Departments, Divisions, Contacts

Regulatory Services Department Housing Inspections	Steve Kennedy, Hazardous Materials Manager

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SMP No. 7.3: PUBLIC EDUCATION and OUTREACH on STORMWATER DISCHARGE MONITORING and ANALYSIS

Description

The stormwater management objective of this program is to provide interpretation to the general public about monitoring and analysis results and trends. Detailed monitoring and analysis results are published in the Annual Report. Links will be provided in the Annual Report and on-line to materials that will educate about how to read and interpret the monitoring results.

Workplan

- Publish monitoring and analysis results in NPDES MS4 Annual Report. (ongoing)
- Publish monitoring and analysis results in MPRB Annual Water Resources Report, along with explanation for the general public of the results, trends and significance for Minneapolis water bodies. (ongoing)
- Link to educational resources for laypersons interested in how to read and interpret the monitoring results. (2012-ongoing)
- Communicate with other agencies performing water quality monitoring in Minneapolis. Compile and maintain a table identifying agency, monitoring locations, parameters and frequencies. Provide the database online. (2013-ongoing) *(Note that only the MPRB and the MWMO monitor stormwater. The other sampling activities in Minneapolis are performed in wetlands, lakes, creeks and the Mississippi River.)*

MCES	MCWD
MWMO	Hennepin County Environmental Services
SCWMC	Metropoltian Mosquito Control District
BCWMC	

Targeted Pollutants and Targeted Sources

For bullets 1-3, see SMP Sheets 7.1 and 7.2. For bullet 4, not applicable

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1b6, V.C7a

Assessment Process for Annual Reporting

Listing of public education documents developed, with web site links

Web site link to table of water quality monitoring in Minneapolis by other parties

Participating Departments, Divisions, Contacts

Public Works Surface Water & Sewers Division	Lois Eberhart, Water Resources Administrator
Minneapolis Park & Recreation Board	Debra Pilger, Director Environmental Operations

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Overview of Category 8

Description

TMDLs are one of the many tools Congress authorized in the Clean Water Act (CWA) to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." A TMDL study determines the level of pollution the impaired waterbody could assimilate if it were meeting state water quality standards, models the mass of pollutants associated with various pollutant sources including stormwater runoff, and develops an equation with allocations for regulated sources (waste load allocations or WLAs), unregulated sources, future growth if applicable, and a margin of safety to account for uncertainty. The MS4 WLA is a numerical maximum pollutant discharge goal for pollutants in stormwater runoff from each MS4 (individual WLA) or all the MS4s in the study (categorical WLA). A successful TMDL study includes significant stakeholder involvement, characterizes the watershed to identify the waterbody, watershed and impairment conditions, requires sound data, emphasizes the importance of locally led decisions on where and how to spend local money to address water quality issues, and provides [equitable] allocations for known sources.

Measurable Goals (MS4 Permit Reference V.B4)

Develop format for annual reporting.

Participating Departments

Minneapolis Park and Recreation Board

Public Works Surface Water & Sewers Division

Category 8 SMP Sheets:

8.1: TMDL PROGRAM

8.2: PUBLIC EDUCATION AND OUTREACH ON TMDL PROGRAM

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SMP No. 8.1: TMDL Program

Description

Stormwater runoff from Minneapolis and MPRB lands is discharged to 31 surface waterbodies. Nineteen of these have been listed on the MPCA Section 303(d) Impaired Waters List for having the presence of concentrations of certain pollutants identified in the water column or fish tissue at levels higher than Minnesota standards, as defined in Minnesota Rule 7050. TMDL studies have either been completed or are in process for eight of the surface waters that are listed as impaired. These TMDL studies compute the mass of pollutants associated with stormwater runoff. The TMDL studies also develop a numerical maximum pollutant discharge goal, or Waste Load Allocation (WLA), for pollutants in stormwater runoff from each MS4 (individual WLA) or all the MS4s in the study (categorical WLA) in order to improve the water quality in the impaired surface water body.

Workplan

During TMDL Study process:

- Provide early and significant involvement in the TMDL process. Provide information, data and expertise unique to Minneapolis. Participate in pollutant source identification, modeling assumptions and TMDL equation development. Work to ensure that the study is considering all cost-effective options for achieving water quality, and that the study is emphasizing the importance of locally led decisions on where and how to spend local money to address water quality issues. Work to ensure that MS4 WLAs are equitable and adequately address reasonable assurance provisions. Work to ensure that implementation plans are done concurrently with TMDL studies, are feasible, constructible, and cost-effective. Work to ensure that TMDL based projects can be implemented in a manner that is consistent with City and MPRB goals and objectives. (ongoing)

After EPA TMDL approval of WLA:

- Develop a general timeline and strategy for general activities to be conducted within each permit cycle, such as mapping the existing conveyance system, developing the means to calculate pollutant loads, identifying existing structural and non-structural SMPs, developing the means to evaluate their effectiveness, calculating effectiveness and comparing to the WLA, assessing and comparing the cost and benefit of new or modified SMPs, addressing level of funding in light of identified needs, developing modifications to the SWMP if needed, and implementing new or modified SMPs if needed.
- For an individual WLA, track City and MPRB practices and calculate their effectiveness for progress in reducing loads to meet WLAs assigned to the Minneapolis MS4. Review the adequacy of the SWMP. If the SWMP will need to be modified to make reasonable progress in meeting the approved individual WLA, use knowledge gained through adaptive management over time to develop additional or modified practices or programs.
- For a categorical WLA, participate with other stakeholder MS4s (typically as members of a watershed organization) to track practices of the stakeholder MS4s and calculate their effectiveness for progress in reducing loads to meet categorical WLAs. As a group, review the adequacy of existing practices and programs. If the Minneapolis SWMP will need to be modified to make reasonable progress in meeting the approved categorical WLA, use knowledge gained through adaptive management over time to develop additional or modified practices or programs.

In annual report, for WLAs approved by the EPA prior to June 30 of the previous calendar year:

- Identify outfalls and their stormwater drainage areas that discharge to the impaired waterbody.
- Annually report on progress made.
  - Identify the general strategy for meeting the WLA.
  - Identify existing SMPs, report on effectiveness calculations.

- Provide comparison of calculated SMP pollutant load reductions to the assigned WLA. Provide description of calculation method(s) used.
- If not meeting and not making reasonable progress toward meeting the WLA, identify any SWMP modifications being submitted for MPCA approval that are specific to approved WLAs. Identify estimated timeframe, and identify actions scheduled for future permit cycles if all SMPs or control measures cannot feasibly be implemented in the current permit cycle.

Targeted Pollutants and Targeted Sources

Stormwater pollutants or stressors for TMDLs either approved or underway* are bacteria, chloride, phosphorus, dissolved oxygen, turbidity, fish bioassessments, and aquatic macroinvertebrate bioassessments.

* For list of TMDLs either approved or underway, see Table 1-2 in the SWMP Introduction (Section 1).

MS4 Permit Reference

V.B1-3, V.B5-6, V.C8

Assessment Process for Annual Reporting

- For each impaired waterbody with an EPA-approved TMDL, report on progress toward addressing Waste Load Allocations.
- Report on new and existing SMP activity in TMDL areas

Participating Departments and Contacts

Public Works Surface Water & Sewers	Lois Eberhart, Water Resources Administrator (lead) Kelly Moriarity, Capital Projects Engineer
Minneapolis Park & Recreation Board	Debra Pilger, Director Environmental Operations

SMP No. 8.2: PUBLIC EDUCATION and OUTREACH on TMDL PROGRAM

Description

In recent years the negative effects of excessive use of deicers, including salts, are being more fully understood and numerous education programs have emerged. The City has contributed to MWMO and MPCA development of education materials for maintenance of small sites. The MPCA, MNDOT, MWMO, MCWD, the Freshwater Foundation and many others use these materials to educate the larger users of salts – primarily street department and parking lot operation and maintenance staff. The focus of this TMDL public education and outreach is to bring these small site education materials to the small commercial and industrial site managers working in the City, including independent operators and building management associations. As a result, the coffee shop employee should know that shoveling the snow is more effective than throwing handfuls of salt onto the sidewalk during a snow storm, and the independent plowers will learn the most efficient salt and deicer application rates. Techniques may include web links, workshops, attending association events, and site visits.

Workplan

- Identify target audiences, educational goals for each audience, activities to reach goals, and develop plan. (2012)
- Carry out initiatives to communicate with property managers and maintaince staff on the negative effects of overusage of salt and other deicing materials, how actions by the public contribute to the pollutants being addressed, and behavior changes they can make. (2013)

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Volatile organic compounds

Sources

Road salts, other de-icing materials

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1b, V.C6C

Assessment Process for Annual Reporting

- Narrative on small site salt and deicing material education program development and implementation

Participating Departments, Divisions, Contacts

Public Works Surface Water & Sewers Division — Lois Eberhart, Water Resources Administrator
Minneapolis Park & Recreation Board — Debra Pilger, Director Environmental Operations

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Overview of Category 9

Description

The City and MPRB interact with numerous agencies that have involvement in surface water systems or stormwater management. Included at the federal level are the USEPA, the USACE and FEMA; at the state level are MPCA, BWSR, MNDOT, MDNR, and MDH; at the regional level the Metropolitan Council, and at the local level Hennepin County, neighboring cities, the University of Minnesota, and the following four watershed organizations: MWMO, MCWD, BCWMC, and SCWMC.

Measurable Goals (MS4 Permit Reference V.B4)

Not applicable

Participating Departments

Minneapolis Park and Recreation Board

Public Works Department

Regulatory Services Department

Community Planning and Economic Development

Category 9 SMP Sheets:

9.1: COORDINATION AND COOPERATION WITH OTHER ENTITIES

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SMP No. 9.1: COORDINATION and COOPERATION with OTHER ENTITIES

Description

The City and MPRB interact with numerous agencies that have involvement in surface water systems or stormwater management. Included at the federal level are the USEPA, USACE and FEMA; at the state level MPCA, BWSR, MNDOT, MDNR, and MDH; at the regional level the Metropolitan Council, and at the local level Hennepin County, neighboring cities, the University of Minnesota, and the following four watershed organizations: MWMO, MCWD, BCWMC, and SCWMC.

Workplan

- Foster collaborative efforts, capitalizing on expertise and resource strengths while minimizing duplication of efforts. The City and the MPRB will continue to coordinate and cooperate with other governmental entities. (ongoing)

  Past or present examples include:

  - Partnering with other entities to provide education and outreach. (See Table A-6 in Appendix)
  - Partnering with the MWMO to reach out to members of Minneapolis' diverse communities, and to increase environmental knowledge and water stewardship using multi-lingual approaches.
  - Coordinating with the other MS4s operating in Minneapolis: Hennepin County, University of Minnesota, MNDOT.
  - Cooperating and coordinating with neighboring MS4 cities when managing common drainage areas, monitoring water quality for common receiving waters, and working together to fund and complete water quality projects.
  - Collaborating on Upper Mississippi River Source Water Protection Project with St. Cloud, St. Paul, MDH, and the Metropolitan Council.
  - Participating with watershed organizations in studies, water quality projects, education, investigation/enforcement activities, participation on TMDL studies and development of implementation plans.
  - Participating with the watershed organizations in evaluating, constructing and funding water quality controls and shoreline stabilization projects.
  - Collaborating with MWMO on stormwater monitoring.

Targeted Pollutants and Targeted Sources

Pollutants

Phosphorus and other nutrients
Sediment and other solids
Chlorides and cyanide
Bacteria
Metals
Oil and grease
Arsenic
Sulfates
Volatile organic compounds
Polycyclic aromatic hydrocarbons (PAH)

Sources

Grass clippings, leaves or other organic material on pavement
Fertilizers containing phosphorus
Soil erosion
Road salts, other de-icing materials
Pet waste, wildlife waste
Pesticides
Atmospheric deposition
Gasoline and diesel fuel combustion
Automotive fluids
Deterioration of brake pads, tires
Driveway and parking lot coal tar sealants

MS4 Permit Reference

V.B1-3, V.B5-6, V.C1a, V.C1b, V.C1c, V.C3a, V.7d, V.8, V.F

Assessment Process for Annual Reporting

- Narrative of ongoing coordinated activities and status of cooperative efforts

Participating Departments, Divisions, Contacts

Public Works Surface Water & Sewers Division	Lois Eberhart, Water Resources Administrator
Regulatory Services Environmental Management and Safety	Dan Huff, Manager
Regulatory Services Housing Inspections	Steve Kennedy, Hazardous Materials Manager
Minneapolis Park & Recreation Board	Debra Pilger, Director Environmental Operations
Community Planning and Economic Development	

Overview of Category 10

Description

The primary goal of the MS4 permit "is to restore and maintain the chemical, physical, and biological integrity of waters of the state through management and treatment of urban stormwater runoff[1] , to be accomplished through a Stormwater Management Program. City and the MPRB as co-permittees have annual and ongoing responsibilities for SWMP assessment, SWMP modifications, recordkeeping, and annual reporting to the MPCA.

Measurable Goals (MS4 Permit Reference V.B4)

Submission of Annual Report (see SMP Sheet 10.1)

Participating Departments

Public Works Department

Minneapolis Park and Recreation Board

Category 10 SMP Sheets:

10.1: STORMWATER MANAGEMENT PROGRAM ASSESSMENT, MODIFICATION, AND ANNUAL REPORTING

[1] Minneapolis MS4 Permit Part I

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SMP No. 10.1: Stormwater Management Program Assessment, Modification, and Annual Reporting

Description

The objective of this program is to provide coordination and oversight of SWMP assessment, modifications, and reporting requirements.

Workplan

- Track assessment of progress being made for SMPs, prepare or coordinate revisions to SMPs or other portions of the SWMP, and prepare Annual Report for submission to MPCA by June 30. (2012-2017)

  Include the following:
  - Previous year's activities and accomplishments. Include inspection and enforcement activities, and operation and maintenance activities, performance and effectiveness
  - Assessment of progress being made according to SMP descriptions contained in the SWMP
  - Status of compliance with the Permit
  - New or modified measurable goals
  - New or modified SMPs
  - Summary of public education activities, with copies of materials or links
  - Summary of oral and written public input
- Involve in programming and annual reporting all departments and agencies that impact success. (ongoing)
- Document protocols for monitoring, recordkeeping and reporting. (2012-2013)
- Coordinate recordkeeping of required records for at least three years beyond term of permit. (2013)

Targeted Pollutants and Targeted Sources

Not applicable

MS4 Permit Reference

V.B1-3, V.B5-6, V.D, V.E, VI.A, VI.B, VI.C, VI.D, VI.E

Assessment Process for Annual Reporting

- See individual SMP Sheets

Participating Departments, Divisions, Contacts

Public Works Surface Water & Sewers Division	Lois Eberhart, Water Resources Administrator
Minneapolis Park & Recreation Board	Debra Pilger, Director Environmental Operations

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Table A-1. Acronyms

BCWMC	Bassett Creek Water Management Commission
BMP	Best Management Practice (also termed SMP)
BOD	Biological Oxygen Demand
BWSR	Board of Soil and Water Resources
CEAC	Citizen Environmental Advisory Committee
City	City of Minneapolis
CPED	Community Planning and Economic Development
CWA	Clean Water Act
EMS	Environmental Management and Safety
FEMA	Federal Emergency Management Agency
GIS	Geographic Information System
H&H	Hydrologic and Hydraulic
IDDE	Illicit Discharge Detection and Elimination
LSWMP	Local Surface Water Management Plan
MACP	Manhole Assessment and Certification Program
MCO	Minneapolis Code of Ordinances
MCWD	Minnehaha Creek Watershed District
MDH	Minnesota Department of Health
MDNR	Minnesota Department of Natural Resources
MDR	Minneapolis Development Review
MEP	Maximum Extent Practicable
MIDS	Minimal Impact Design Standards
MMCD	Metropolitan Mosquito Control District
MNDOT	Minnesota Department of Transportation
MPCA	Minnesota Pollution Control Agency
MPRB	Minneapolis Park and Recreation Board
MS4	Municipal Separate Storm Sewer System
MWMO	Mississippi Watershed Management Organization
NASSCO	National Association of Sewer Service Companies
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
PACP	Pipe Assessment and Certification Program
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PFOS	Perfluorooctane Sulfonate

PSA	Public Service Announcement
PW	Public Works
SCWMC	Shingle Creek Watershed Management Commission
SDS	State Disposal System
SMP	Stormwater Management Practice (terminology for BMP as used in this document)
SWMP	Stormwater Management Program
SWS	Surface Water and Sewers Division
TDP	Total Dissolved Phosphorus
TMDL	Total Maximum Daily Load
TP-40	Technical Paper #40, Rainfall Frequency Atlas of the United States
TP	Total Phosphorus
TSS	Total Suspended Solids
USACE	US Army Corps of Engineers
USEPA	US Environmental Protection Agency
WLA	Waste Load Allocation
WQS	Water Quality Standards

Text	Address
Clean Water Act	http://www.epa.gov/lawsregs/laws/cwa.html
Coal Tar Based Sealants	http://www.pca.state.mn.us/index.php/water/water-types-and-programs/stormwater/municipal-stormwater/restriction-on-coal-tar-based-sealants.html
LSWMP	http://www.ci.minneapolis.mn.us/stormwater/local-surface.asp
Managing Dredged Materials in Minnesota	http://www.pca.state.mn.us/index.php/waste/waste-and-cleanup/cleanup-programs-and-topics/topics/dredged-materials-management.html
Minneapolis Code of Ordinances	http://library.municode.com/index.aspx?clientId=11490&stateId=23&stateName=minnesota
Minneapolis Goals and Strategic Direction	http://www.ci.minneapolis.mn.us/results-oriented-minneapolis/goals.asp
Minneapolis Greenprint Sustainability Initiatives	http://www.ci.minneapolis.mn.us/sustainability/MinneapolisGreenprint.asp
Minneapolis NPDES Stormwater Annual Report	http://www.ci.minneapolis.mn.us/stormwater/NPDESAnnualReportDocuments.asp
Minneapolis Plan for Sustainable Growth	http://www.ci.minneapolis.mn.us/cped/comp_plan_update_draft_plan.asp
Minnesota's Impaired Waters and TMDL Status	http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/minnesotas-impaired-waters-and-total-maximum-daily-loads-tmdls.html
Minnesota Rule 7050.0180	https://www.revisor.mn.gov/rules/?id=7050.0180
Minnesota Rule 7050.0470	https://www.revisor.mn.gov/rules/?id=7050.0470
Minnesota Rule 8410	https://www.revisor.mn.gov/rules/?id=8410
Minnesota Statute 103B.235	https://www.revisor.mn.gov/statutes/?id=103B.235&year=2010
MPRB Comprehensive Plan	http://www.minneapolisparks.org/documents/about/compplan/comp_plan_final.pdf
Annual Water Resource Reports	http://www.minneapolisparks.org/default.asp?PageID=791
Technical Paper #40, Rainfall Frequency Atlas of the United States	http://www.nws.noaa.gov/oh/hdsc/PF_documents/TechnicalPaper_No40.pdf
TMDL Glossary of Terms	http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/tmdl-references/tmdl-glossary-of-terms.html

Minneapolis Zoning Code Chapter 530
SITE PLAN REVIEW

530.150 Reduction of impervious surface.

To the extent possible, site plans shall minimize the use of impervious surfaces. The use of interlocking pavers capable of carrying a wheel load of four thousand (4,000) pounds is encouraged for areas that serve low impact parking needs such as remote parking lots, parking facilities for periodic uses and parking in natural amenity areas.

530.160 (a) Required landscaping.

Overall composition and location of landscaped areas shall complement the scale of the development and its surroundings. In general, larger, well-placed contiguous planting areas shall be preferred to smaller, disconnected areas. Not less than twenty (20) percent of the site not occupied by buildings including all required landscaped yards shall be landscaped as follows (for purposes of this provision, a canopy or service area canopy shall not be considered a building):

(1) Not less than one (1) canopy tree for each five hundred (500) square feet, or fraction thereof.

(2) Not less than one (1) shrub for each one hundred (100) square feet, or fraction thereof.

(3) The remainder of the landscaped area shall be covered with turf grass, native grasses or other perennial flowering plants, vines, shrubs or trees.

530.170(d) Interior landscaping of parking lots.

The corners of parking lots where rows of parking spaces leave areas unavailable for parking or vehicular circulation shall be landscaped as specified for a required landscaped yard. Such spaces may include architectural features such as benches, kiosks or bicycle parking.

530.170(e) Distance to trees.

In parking lots of ten (10) spaces or more, no parking space shall be located more than fifty (50) feet from the center of an on-site deciduous tree. Tree islands located within the interior of a parking lot shall have a minimum width of seven (7) feet in any direction.

530.180 Landscaping of other areas.

All other areas not governed by sections 530.160 and 530.170 and not occupied by buildings, parking and loading facilities or driveways, shall be covered with turf grass, native grasses or other perennial flowering plants, vines, mulch, shrubs or trees

530.190 Ecological function.

In its review of landscaped areas the city planning commission shall include consideration of the following:

(1) Interception and filtration of precipitation and stormwater through maximizing multiple-layered vegetative cover.

(2) Reduction of reflectance and urban heat island effects through increasing canopy cover.

(3) Conservation of energy through strategic shading and the use of windbreaks.

(4) Selection and placement of plant materials to limit required maintenance of landscaped areas.

(5) Preservation or restoration of natural amenities.

530.230 Concrete curbs and wheel stops.

All parking lots and driveways shall be designed with wheel stops or discontinuous curbing to provide on-site retention and filtration of stormwater. Where on-site retention and filtration is not practical, the parking lot shall be defined by six (6) inch by six (6) inch continuous concrete curb.

Minneapolis Zoning Code Chapter 535
PROTECTION OF NATURAL FEATURES

535.290 Purpose.

Standards relating to natural features are established to provide for the protection and conservation of natural features and to mitigate the effects of development on the natural environment.

535.300 Protection of natural features.

(a) In general. All development shall be located so as to preserve the natural features of the site, to avoid areas of environmental sensitivity, to minimize the creation of impervious surface area, to contribute to ecological function, and to minimize negative impacts on and the alteration of the natural environment. The following areas shall be preserved as undeveloped open space, to the extent consistent with the reasonable utilization of land, and in accordance with applicable federal, state or local regulations:

(1) Lands within fifty (50) feet of a protected water, as governed by the SH Shoreland and MR Mississippi River Critical Area Overlay Districts.

(2) Wetlands. It is in the public interest to achieve no net loss in the quantity, quality and biological diversity of existing wetlands, and to increase the quantity, quality and biological diversity of wetlands by restoring or enhancing diminished or drained wetlands. No development, grading, alteration of the natural character of the land or construction of structures, roadways or other impervious surfaces, shall occur within fifty (50) feet of any vegetated wetland, including wetlands as defined in section 404, Federal Water Pollution Control Act Amendments of 1987 or the Minnesota Wetland Conservation Act of 1991, and as governed by the SH Shoreland Overlay District.

(3) Significant trees or plant communities including remnant stands of native trees or remnant prairie grasses, trees or plant communities that are rare to the area or of particular horticultural or landscape value, or trees with a diameter at breast height of twelve (12) inches or larger.

(4) Steep slope areas. The applicable provisions of Chapter 551, Overlay Districts, shall apply to lands within the SH Shoreland and MR Mississippi River Critical Area Overlay District. Development outside the SH Shoreland and MR Mississippi River Critical Area Overlay District shall avoid placement of structures, parking lots or other impervious surfaces on slopes of eighteen (18) percent or greater, and the necessity to alter such slopes for purposes of construction. Where development does occur on such steep slope areas greater than ten (10) feet in height, such development shall be subject to the following conditions:

a. The foundation and underlying material shall be adequate for the slope condition and soil type.

b. The development shall present no danger of falling rock, mud, uprooted trees or other materials.

c. The development shall include adequate provision for stormwater runoff and temporary and permanent erosion and sedimentation control.

d. The developed slope shall be visually consistent with surrounding architectural and natural features.

(5) Habitats of threatened or endangered wildlife, as identified on federal or state lists, including the Federal Endangered Species Act, and the Minnesota County Biological Survey.

(b) Mitigation. Where preservation is not consistent with the reasonable utilization of land, the city may require mitigation through replacement of the resource or similar resource on the site, restoration of former natural amenities to the site, or other reasonable measures to mitigate the effects of the development and protect or enhance the natural features of the land.

535.310 Stormwater Management

All development shall comply with all applicable regulations governing stormwater management, and shall employ best management practices to minimize off-site stormwater runoff, maximize overland flow and flow distances over surfaces covered with vegetation, increase on-site filtration, replicate predevelopment hydrologic conditions as nearly as possible, minimize off-site discharge of pollutants to ground and surface water, and encourage natural filtration function.

Minneapolis Plan for Sustainable Growth

Chapter 6 – Environment

6.0 Promote sustainable design practices in the preservation, development, and maintenance of its natural and built environments, provide equal access to all of the city's resources and natural amenities, and support the local and regional economy without compromising the needs of future generations.

- Revise and ensure compliance with ordinances and policies.
- Research and implement best practices.
- Provide incentives to the market to encourage environmentally-beneficial practices.
- Provide information and outreach to residents, businesses, developers and other organizations.
- Implement sustainable operation and maintenance practices.
- Integrate environmental, social and economic objectives for sustainable growth and development into city policies.
- Encourage partnerships with other organizations within the city to make public buildings, operations and maintenance sustainable.
- Advocate at various government levels on sustainability issues.
- Lead by example.
- Demonstrate and showcase applications of new technologies, such as green roofs, rain gardens, porous-pavement surfaces, and the use of environmentally friendly cleaning products.

6.1 Integrate environmental social and economic goals into decision making processes at all levels.

6.3 Encourage sustainable design practices in the planning, construction and operations of new developments, large additions and building renovations.

6.3.2 Ensure that developments use stormwater BMPs (Best Management Practices).

6.3.9 Develop regulations to further reduce the heat island effect in the city by increasing green urban spaces for parks and open spaces, including shading of parking lots, sidewalks and other impervious surfaces, promoting installation and maintenance of green roofs and utilization of highly reflective roofing and paving materials.

6.5.4 Educate citizens about the environmental, economic, and equity implications of land use and transportation decisions, and enlist the partnership of citizen and advocacy organizations in moving toward more sustainable patterns of development.

6.6 Advocate for federal, state, metropolitan and county policies and programs that support sustainable development.

6.7 Preserve and protect land from pollution and encourage the remediation of contaminated sites.

6.7.2 Support implementation controls that prevent and minimize toxic releases and waste disposal.

6.9 Be a steward of clean water by protecting and enhancing its surface and groundwater systems.

6.9.2 Continue to implement the city's Floodplain and Shoreland Ordinances, and the Mississippi River Critical Area plan.

6.9.3 Accomplish the guiding principles of the city's Local Surface Water Management Plan, which are to protect people, property and the environment; maintain and enhance infrastructure; provide cost-effective services in a sustainable manner; meet or surpass regulatory requirements; educate and engage the public and stakeholders, and enhance livability and safety.

6.9.5 Support pollution prevention programs as an important first step in maintaining a healthy physical environment.

6.9.6 Manage pollutants at the source in order to prevent degradation of water bodies.

6.9.7 Preserve and enhance the strategic placement of pervious surfaces within the city to decrease the rate and volume of stormwater runoff.

6.14 Preserve and enhance the quality of the urban environment to promote sustainable lifestyles for its citizens.

6.14.1 Promote environmental stewardship and awareness through education and outreach.

Minneapolis Plan for Sustainable Growth

Chapter 7 – Open Space and Parks

Preserve and enhance the quality of the urban environment to promote sustainable lifestyles for its citizens.

7.4 Work to restore and preserve ecosystem functions in green open space areas.

7.4.3 Identify ecological impacts on open spaces and parks caused by urban uses, for example stormwater runoff, and work to mitigate these impacts in order to advance environmental and human health.

7.4.5 Increase the use of green infrastructure to decrease the city's impact on the natural environment.

Chapter 10 – Urban Design

10.10.3 Enhance pedestrian and transit-oriented commercial districts with street furniture, street planting, plazas, water features, public art and improved transit and pedestrian and bicycle amenities.

10.16.4 Employ pedestrian-friendly features along streets, including street trees and landscaped boulevards that add interest and beauty while also managing stormwater, appropriate lane widths, raised intersections, and high-visibility crosswalks.

10.19 Landscaping is encouraged in order to complement the scale of the site and its surroundings, enhance the built environment, create and define public and private spaces, buffer and screen, incorporate crime prevention principles, and provide shade, aesthetic appeal, and environmental benefits.

10.19.3 Landscaped areas should include plant and tree types that address ecological function, including the interception and filtration of stormwater, reduction of the urban heat island effect, and preservation and restoration of natural amenities.

10.19.5 Landscaping plans should be designed to facilitate future maintenance including the consideration of irrigation systems, drought and salt-resistant species, ongoing performance of stormwater treatment practices, snow storage, access to sun, proximity to buildings, paved surfaces and overhead utilities.

Table A-5 Stormwater Management Categories that Fulfill City Goals

	Stormwater Management Category									
	Public Education and Outreach on Stormwater Impacts	Public Participation, Public Involvement	Illicit Discharge Detection and Elimination	Construction Related Erosion and Sediment Control	Post-Construction Stormwater Management for Public and Private Projects	Pollution Prevention and Good Housekeeping for Municipal Operations	Stormwater Discharge Monitoring and Analysis	Progress toward Waste Load Allocations for Approved Total Maximum Daily Loads	Coordination and Cooperation with Other Entities	Stormwater Management Program Assessment, Modification, and Annual Reporting
2010 Goals Established by Mayor and City Council										
A Safe Place to Call Home		X	X	X	X	X		X		
Jobs & Economic Vitality				X	X					
Livable Communities, Healthy Lives		X	X	X	X	X	X	X		
Many People, One Minneapolis	X	X							X	
Eco-Focused	X	X	X	X	X	X	X	X	X	X
A City That Works		X	X	X	X	X			X	X
Minneapolis Plan for Sustainable Growth Policies										
Enhance the safety, appearance, and effectiveness of the city's infrastructure.		X	X	X	X	X			X	
Make city government more responsive to the needs of people who use its services.	X	X		X	X				X	X
Integrate environmental, social and economic goals into decision making processes at all levels.	X	X		X	X	X			X	X
Protect and enhance air quality and reduce greenhouse gas emissions.			X	X		X				
Encourage sustainable design practices in the planning, construction and operations of new developments, large additions and building renovations.	X	X	X	X	X					
Support the efficient use of land and development that reduces the reliance on fossil fuels.				X	X	X				

	Stormwater Management Category									
	Public Education and Outreach on Stormwater Impacts	Public Participation, Public Involvement	Illicit Discharge Detection and Elimination	Construction Related Erosion and Sediment Control	Post-Construction Stormwater Management for Public and Private Projects	Pollution Prevention and Good Housekeeping for Municipal Operations	Stormwater Discharge Monitoring and Analysis	Progress toward Waste Load Allocations for Approved Total Maximum Daily Loads	Coordination and Cooperation with Other Entities	Stormwater Management Program Assessment, Modification, and Annual Reporting
Advocate for federal, state, metropolitan and county policies and programs that support sustainable development.		X		X	X				X	
Preserve and protect land from pollution and encourage the remediation of contaminated sites.			X	X	X	X			X	
Encourage a healthy thriving urban tree canopy and other desirable forms of vegetation.	X	X			X	X				
Be a steward of clean water by protecting and enhancing its surface and groundwater systems.	X	X	X	X	X	X	X	X	X	X
Preserve and enhance the quality of the urban environment to promote sustainable lifestyles for its citizens.	X	X	X	X	X	X			X	
Provide residents and visitors information about recreational locations, events, programs and education opportunities.	X								X	
Work to restore and preserve ecosystem functions in green open spaces.	X	X			X			X		
Design streets and sidewalks to ensure safety, pedestrian comfort and aesthetic appeal.		X			X			X		
Landscaping … to complement the scale of the site and its surroundings, enhance the built environment… and environmental benefits.		X			X			X		
Minneapolis Greenprint Sustainability Initiatives										
Reduce Carbon Dioxide Emissions				X	X	X				
Increase the Use of Renewable Energy					X	X				
Improve Air Quality Levels			X	X	X	X				
Prevent, Reduce, Reuse and Recycle						X				
Reduce Airport Noise and the Environmental Impacts of the Airport									X	

	Stormwater Management Category									
	Public Education and Outreach on Stormwater Impacts	Public Participation, Public Involvement	Illicit Discharge Detection and Elimination	Construction Related Erosion and Sediment Control	Post-Construction Stormwater Management for Public and Private Projects	Pollution Prevention and Good Housekeeping for Municipal Operations	Stormwater Discharge Monitoring and Analysis	Progress toward Waste Load Allocations for Approved Total Maximum Daily Loads	Coordination and Cooperation with Other Entities	Stormwater Management Program Assessment, Modification, and Annual Reporting
Expand the City's Tree Canopy	X	X			X	X		X		
Reduce Stormwater Pollution Entering Lakes, Creeks and Mississippi R.	X	X	X	X	X	X	X	X	X	X
Improve the Water Quality of Minneapolis Lakes	X	X	X	X	X	X	X	X	X	X
Grow a Green Economy	X	X		X	X	X				
Water Resource Guiding Principles										
Maintain and Enhance Infrastructure		X		X	X	X		X	X	X
Provide Cost-effective Services	X	X	X	X	X	X				
Meet or Surpass Regulatory Requirements	X	X	X	X	X	X	X	X	X	X
Protect People, Property and the Environment	X	X	X	X	X	X	X	X	X	X
Educate and Engage the Public and Stakeholders	X	X							X	X
Enhance Livability and Safety	X	X	X	X	X	X	X	X	X	X
MPRB Comprehensive Plan Goals										
Sound management techniques provide healthy, diverse, and sustainable natural resources.		X	X	X	X	X				
Healthy boulevard trees connect all city residents to their park system.	X	X			X	X				

	Stormwater Management Category									
	Public Education and Outreach on Stormwater Impacts	Public Participation, Public Involvement	Illicit Discharge Detection and Elimination	Construction Related Erosion and Sediment Control	Post-Construction Stormwater Management for Public and Private Projects	Pollution Prevention and Good Housekeeping for Municipal Operations	Stormwater Discharge Monitoring and Analysis	Progress toward Waste Load Allocations for Approved Total Maximum Daily Loads	Coordination and Cooperation with Other Entities	Stormwater Management Program Assessment, Modification, and Annual Reporting
Knowledgeable stewards and partners generously support the system's natural resources.	X	X							X	
Park facility renewal and development respects history and focuses on sustainability, accessibility, flexibility, and beauty.	X	X		X	X	X				
Focused land management supports current and future generations.	X	X			X	X		X		
Easily accessible information supports enjoyment and use of the park and recreation system.	X	X							X	
MPRB Strategic Direction										
Address issues of aging infrastructure				X	X	X				
Focus on partnerships									X	
Become a national leader in issues of sustainability				X	X	X		X		
Focus on new strategies of community engagement	X	X								X

Public Education Activity	Description	Audience	Alternate Languages	Metrics
Mississippi Watershed Management Organization (MWMO) Jenny Winkelman mwmo.org *The Mississippi Watershed Management Organization's boundaries include the Mississippi River as it runs through Minneapolis, as well as the land that drains to the river. The MWMO jurisdiction is primarily in Minneapolis, and also portions of the cities of Lauderdale, St. Anthony, and St. Paul. The final member of the MWMO is the Minneapolis Park and Recreation Board.*				
Nature of Water Dej Tus Kab Ke DVD	The Nature of Water DVD, developed in conjunction with Minneapolis Public Works, was created to increase environmental knowledge and water stewardship in Southeast Asian communities in Minneapolis. The video includes a 12-minute main feature about water and pollution prevention and several bonus features about rain gardens, household hazardous waste, watersheds, and more. This has also been played on Minneapolis and St. Paul cable TV.	Southeast Asian communities in Minneapolis as well as English speaking general public	Hmong, Vietnamese, Lao, Khmer, English	Over 1500 distributed
The Drift Newsletter	The Drift Newsletter provides water stewardship and pollution prevention information to a wide audience. Names are collected at tabling events and added to the e-distribution list. The newsletter is also available online.	General public	No	over 2500 mailed, emailed, and distributed at locations throughout the watershed
Mississippi River Green Team	Carried out in partnership with the MPRB, this is a group of youth age 14-17 from diverse ethnic backgrounds in north and northeast Minneapolis that work on environmental stewardship projects. By reaching these youth, environmental awareness is spreading through the various ethnic communities.	Ethnic communities	Various	Pre- and post-tests, activity evaluations, qualitative interviews with team members and families
Greening Teen Teamworks	Work with MPRB's Teen Teamworks Program to increase environmental awareness of the teen residents.	200 teen residents participate each year	No	Pre and post tests
Cable TV Programs	Programs on local cable TV stations focused on BMPs such as Winter Maintenance with Reduced Environmental Impacts.	General public	No	No
Tabling at Community Events	Provide table displays of information related to water environmental stewardship at various community events such as the Children's Water Festival and the Hmong Resource Fair.	Residents, families, members of congregations and service groups, students	No	Formative evaluations; if nontoxic cleaners are made, #s of bottles made
Metro Area Children's Water Festival	All day field day held at the state fairgrounds. Each class visits 5 learning stations and a presentation about water by the Science Museum of Minnesota.	5th grade students (classes selected by lottery)	No	Teacher evaluations

Public Education Activity	Description	Audience	Alternate Languages	Metrics
A View from the Big River: workshop on land use and water quality	Workshop on land use and water quality.	Elected and appointed officials, community leaders	No	Evaluations
Training Workshops	Summer Turfgrass & Winter Maintenance with Reduced Environmental Impacts.	Landowners, property managers; municipal, county, state operations staff, private landscapers, Master Gardeners	No	Attendance, pass test and become certified by MPCA
Training Video	Winter Maintenance for Small Spaces (created by MWMO, University of MN, and MPCA).	Landowners, property managers; municipal, county, state operations staff, private landscapers, business owners, members of congregations, residents	No	Viewable on MPCA and UMN web sites. Due to demand, duplicated a second set of 500 CDs
Neighborhood Workshops	Summer Lawn Care with Reduced Environmental Impacts pilot workshops.	Residents	No	Formative and summative evaluations
Watershed Education Rafting	Hmong leaders and youth rafting trip on the local creeks to increase environmental awareness.	Hmong citizens	Hmong	30 participants per year
Project WET	Environmental workshops held several times per year to inform teachers, leaders and instructors of youth (K-12).	Educators and youth leaders	No	1-3 workshops per year
Classroom visits	Visits to schools to share water quality environmental education with the students.	Students (K-12)	No	1-5 school visits per year (up to 150 students)
Citizens Advisory Committee	Citizen advisors review the MWMO's annual budget, Stewardship Fund Planning and Action grant proposals, and major planning processes of the MWMO. New members receive education about their role and the MWMO's resource, programs, and governance, and are invited to participate in MWMO events.	Community members	No	No

Public Education Activity	Description	Audience	Alternate Languages	Metrics
Minnehaha Creek Watershed District (MCWD) Leslie Yetka minnehahacreek.org *The District covers approximately 181 square miles that ultimately drain into the Minnehaha Creek (which then enters the Mississippi River). The watershed includes natural treasures such as Minnehaha Creek, Lake Minnetonka, the Minneapolis Chain of Lakes and Minnehaha Falls. There are eight major creeks, 129 lakes and thousands of wetlands within the MCWD.*				
Publications and Materials	The MCWD develops and distributes educational materials related to BMP maintenance, Blue Thumb programming, aquatic invasive species, low maintenance lawn care, pollution prevention, road salt management, Lake Minnetonka historical maps, and Minnehaha Creek canoe maps. Additional materials include the Putt-Putt for Clean Water, Water Quality Interactive Kiosk, Enviroscape, and the MCWD 40th Anniversary Traveling Display. Curriculum and education CD's include the Digital Watershed Atlas and Waters to the Sea. Publications and materials are frequently distributed at local events within Minneapolis, including the MPRB Earth Day watershed cleanup, the MCWD's creek cleanup, neighborhood group/lake association events, and are on display at public buildings.	Private landowners, members of lake associations and community groups, local businesses, municipal officials, technical staff, consultants, other stakeholders, and students	No	Demand for materials/ resources
Workshops	Numerous workshops are held throughout the district on topics including rainwater gardens, shoreline restoration, community cleanups, zebra mussels/aquatic invasive species, and lake management planning. Workshops are occasionally held within Minneapolis.	Private homeowners, local businesses, developers, and contractors	No	Number of attendees/ audience reached
Events	The MCWD hosts a yearly Minnehaha Creek cleanup event to encourage citizen engagement in cleaning up the Minnehaha Creek corridor. The district also co-hosts the Clean Water Summit, an annual conference designed to provide the latest research and development in Green Infrastructure. The events are attended by 600+ and 300+ attendees, respectively. The Minnehaha Creek cleanup is held near Lake Hiawatha.	General public	No	Number of attendees/ audience reached
NEMO/Stormwater U Training	NEMO (Nonpoint Education for Municipal Officials) is an educational program for local land use decision makers focusing on the relationship between land use and natural resource quality. The program emphasizes land use planning that allows economic growth while conserving a community's highest quality natural resources. NEMO programming is implemented within district communities, as well as at events that target regional audiences. Additional Stormwater U training workshops are provided for municipal staff as well as local contractors and businesses pertaining to BMP design, selection, maintenance and inspection, and salt management. Minneapolis public officials and staff are invited to attend NEMO and Stormwater U training workshops and events.	Local land use decision makers, municipal staff, local contractors and businesses	No	Number of attendees/ audience reached

Public Education Activity	Description	Audience	Alternate Languages	Metrics
Interpretive Signage	Interpretive signage has been installed at many demonstration sites within the district, including LID sites, habitat restoration areas, and creek corridor restoration projects. Signage along Minnehaha Creek, Minnehaha Falls and Minnehaha Glen restoration area will be installed in the future.	General public	No	No
Citizen Advisory Committee	MCWD provides citizens the opportunity to be directly involved in protecting and preserving Minnehaha Creek, Lake Minnetonka, the Minneapolis Chain of Lakes, and other valued resources within the MCWD.	Citizens	No	Participation
Cynthia Krieg Watershed Stewardship Fund	This fund encourages and supports community service initiatives to protect water quality and promote public awareness of nonpoint source pollution abatement. The MCWD partners with local community groups, schools, and government agencies to engage citizens in protecting and providing clean water resources. Previously funded projects in Minneapolis include community cleanups, habitat restoration, stormwater runoff treatment, and non-point source pollution education.	Community residents	No	Participation
Splash e-Newsletter	MCWD's e-newsletter. Periodic messages (2-6 per month) with news and events from the District.	General public	No	Distribution
Watershed Association Initiative	The MCWD provides monetary support and technical expertise to citizen-led management groups with the goal of protecting and preserving our local water resources. Minneapolis neighborhoods have received direct assistance with funding and technical guidance through the Watershed Association Initiative.	Representatives from citizen-led management groups and local neighborhoods	No	Participation
MCWD web site	The MCWD web site provides up-to-date educational information pertaining to stormwater management, pollution prevention, best management practices, funding opportunities, lake/stream water quality data, and local and regional events.	Web site users	No	Web site hits
K-12 Education	The MCWD provides support and assistance for the Children's Water Festival, and gives presentations and demonstrations to local classes on water quality, non-point source pollution, and natural resource protection.	K-12 students	No	Participation
Passive Events	The MCWD staff attends numerous local community events, ranging from eco fairs, Earth Day events, native landscaping fairs, community cleanups, Blue Thumb and Watershed Partners State Fair booths, and other environmental education events.	Community residents	No	Participation

Public Education Activity	Description	Audience	Alternate Languages	Metrics
West Metro Water Alliance (WMWA) Shingle Creek - Diane Spector Bassett Creek - Geoff Nash http://hennepin.us/portal/site/HennepinUS/menuitem.b1ab75471750e40fa01dfb47ccf06498/?vgnextoid=75744aa97b89c210VgnVCM2000000a124689RCRD *Representatives from the Bassett Creek, Elm Creek, Pioneer-Sarah Creek, Shingle Creek and West Mississippi River watershed management commissions, Hennepin County, and cities with a common interest in water quality and stormwater management have been meeting as a working group referred to as the West Metro Water Alliance (WMWA). The group's goal is to develop standardized messages for Hennepin County residents and elected officials regarding water resources issues and best management practices. This group is collaborating on various projects related to education and outreach on water quality issues, including development of printed materials, workshops and campaigns.*				
Educate Policymakers	WMWA is hosting a three-part series of educational forums for policymakers. The series provides information and management tools to help shape critical decisions that impact water quality, property values and the effective use of public dollars.	Policymakers	No	Participation
Water Quality Newsletter Articles	Water quality-related articles developed by WMWA are provided for use by their partners in community newsletters, newspapers and web sites. The articles include: - Adopt a Storm Drain: Tips on protecting nearby bodies of water by keeping storm drains clear. - Earth Friendly Lawn-care Tips: Tips on maintaining a healthy lawn while minimizing your impact on the environment. - Five Easy Things: Five easy steps you can take to improve the water quality of lakes, rivers and streams. - Rain Gardens: Information about how rain gardens reduce runoff and resources that offer more information about installing rain gardens.	Citizens	No	Distribution
Workshop Series - Shingle Creek	Workshops aimed at educating City Councils, Planning Commissions, Parks and other Commissions, and city staff about water quality issues. Workshops are focused on runoff volume management, water quality, and TMDLs and management planning.	Citizens	No	Participation
Brochures - Shingle Creek	Brochures or other publications for residents, small businesses and associations targeting topics such as the proper use of salt for snow and ice control. Water Quality Brochure - Ten steps you can take in caring for your house and lawn that will help protect water quality.	Residents, business owners, associations	No	No
Patrick Henry High School Summer Program - Shingle Creek	Provide programming for the school's three-week summer program in water quality. These programs provide a hands-on learning experience for high school students about the effects of urbanization on water quality and biotic integrity in Shingle Creek, including monitoring activities on the creek.	30 high school students/year	No	More informed communities due to the students spreading the word after completing the program

Public Education Activity	Description	Audience	Alternate Languages	Metrics
Commission electronic newsletter - Shingle Creek	Electronic newsletter containing environmental educational information is sent out at least twice/year.	Residents	No	No
The Great Shingle Creek Watershed Cleanup - Shingle Creek	Annual volunteer event targeting creek cleanup.	Residents	No	Participation
Web site information for developers and contractors regarding construction site runoff control - Shingle Creek	Increase developer and construction contractor awareness of the Commission's BMPs and the Minnesota Stormwater Manual.	Developers & contractors	No	Web site hits
Public event presentations and educational displays - Shingle Creek	Presentations and educational displays at events targeted for residential and commercial property owners, lakeshore property owners, students, developers, and contractors.	Property owners, students, developers, and contractors	No	Attendance/ Participation
Volunteer Stream Monitoring Program - Shingle Creek	Assist Hennepin County Environmental Services with identifying volunteers for at least four stream monitoring locations per year.	Citizens	No	Participation
Metro Blooms - Bassett Creek	Received a MN Conservation Corp grant to install 10-15 rain gardens in Bryn Mawr neighborhood of Minneapolis.	Residents	No	Participation
Web site - Bassett Creek	Information on water quality and other environmental stewardship information available on BCWMC website.	General public	No	Web site hits
Citizens Assisted Lake Monitoring Program (CAMP) - Bassett Creek	Volunteer citizens participate in monitoring of metro area lakes, in participation with Metropolitan Council Environmental Services (MCES).	Citizens	No	Participation
River Watch Program - Bassett Creek	Uses volunteers to conduct biological monitoring as a means of monitoring water quality.	Citizens	No	Participation
Classroom Programs - Bassett Creek	Water quality improvement communication and education programs presented to raise awareness of everyone's role/responsibility in improving and maintaining water quality in the watershed.	Educators and students	No	Participation
Hennepin County Mary Karius				
Environmental Literature	Environmental literature focused on water quality/stormwater distributed at community events and provided to organizations free-of-charge.	Residents	No	No
Environmental Education Toolkit and Programs	Environmental education toolkits, funding, project supplies and training provided to organizations in specific networks such as Early Childhood Family Education and community groups.	ECFE groups, neighborhoods, and community groups	No	Participation
Web site Information	Water quality information on web site.	General public	No	No
Wetland Health Evaluation Program	Partner with MPRB to use citizen volunteers to monitor wetlands throughout Minneapolis for invertebrate and vegetation communities and to evaluate each wetland's health. Each year an annual report is distributed county-wide providing site descriptions and assessments.	Citizens	No	Participation

Public Education Activity	Description	Audience	Alternate Languages	Metrics
River Watch	Local high school students sample a local stream such as Minnehaha Creek or Shingle Creek to gather information on macroinvertebrates and habitat. The data they collect is shared with the county and watersheds.	Students of Mpls high schools	No	Participation
Metro Blooms	Hennepin County Environmental Services provided grant funds to Metro Blooms for cost-share funds for residents who are implementing rain gardens on their property.	Neighborhood groups	No	Participation
Minneapolis Citizens Environmental Advisory Committee (CEAC) Ross Abbey rossabbey@gmail.com *Provides a forum for discussion, comment and taking action on environmental issues/projects of concern to the City. Members represent a broad cross section of the community: Environmental Advocacy, Environmental Expertise, Citizen representatives, and Business representatives.*				
Metro Blooms Becky Rice becky@metroblooms.org *Metro Blooms is a private nonprofit volunteer-based educational organization which seeks to partner with other organizations, businesses, professional associations, local governments and watershed districts to promote environmentally sound gardening and landscaping practices to improve the health of our land and water resources.*				
Friends of Mississippi River Trevor Russell/Irene Jones www.frm.org *Friends of the Mississippi River engages citizens to protect, restore and enhance the Mississippi River and its watershed in the Twin Cities region. The Watershed Protection Program works to activate and engage individual citizens through education, monitoring and volunteer stewardship programs, helps shape the priorities of local governments, and helps impact public policy related to local and state water quality.*				
Documentary films	Partner with various other agencies to provide documentary films such as Troubled Waters and Big River to educate residents on stormwater management.	Residents		Attendance
Earth Day Cleanup	Partner with other agencies to organize Earth Day cleanup activities along the Mississippi River in Minneapolis.	Residents	No	Participation
Mississippi River Challenge	Opportunity for participants to raise pledges and participate in a 44-mile paddling event on the Mississippi River. This river trip allows for educational opportunities for participants along the route.	Residents	No	Participation

Public Education Activity	Description	Audience	Alternate Languages	Metrics
Friends of Diamond Lake friendsofdiamondlake.org Go Blue! – Gail Schaal www.goblue.friendsofdiamondlake.org *Friends of Diamond Lake is a nonprofit, proactive, citizen-led organization dedicated to restoring, protecting and improving the natural resources of Diamond Lake and its watershed. Founded by a group of neighbors in early 2008, it is led by residents from the neighborhoods in the Diamond Lake area in south Minneapolis. The Diamond Lake watershed includes major portions of the Hale, Page, Diamond Lake, Tangletown, and Windom neighborhoods in Minneapolis.*				
Go Blue! Blue Community Makeover	A program through which property owners in the Diamond Lake watershed implement stormwater mitigation projects that have a direct and positive impact on the water quality of Diamond Lake. The program provides educational opportunities through community workshops for property owners to learn more about the many things they can do themselves to improve water quality—like organic lawn care, native plantings, trees, rain barrels, and storm drain "adoption."	Property owners in the Diamond Lake watershed	No	Participation
Friends of Lake Nokomis www.friendsoflakenokomis.org *Friends of Lake Nokomis is a dedicated, citizen-led, nonprofit organization focused on preserving and improving the condition of Lake Nokomis through community education and volunteering. In partnership with the MPRB they are active stewards of the lake and its surrounding watershed. As part of this partnership they work with the MPRB to coordinate volunteer stewardship activities and to assist in lake monitoring projects.*				
Citizens for the Minnehaha Creek Corridor Denise Leezer deniseleezer@aol.com *Citizens for the Minnehaha Creek Corridor (CMCC) is a group that formed out of a desire to be involved with the neighborhoods and communities touched by the Minnehaha Creek. Their goal is to work with individuals and groups to keep Minnehaha Creek and its recreational areas green and vibrant. They plan and organize creek cleanups, informational outings, canoe trips, etc. They also are an advocate for the creek and a source of information about issues related to the creek.*				
Community Cleanup for Water Quality	Encourage residents to join the community during a designated time and cleanup organic debris from the curb and boulevard in front of their homes.	Neighborhood residents	No	Participation and # of bags of debris removed
Information Booth at community events	Participate in community events such as the MPRB Earth Day Watershed Clean Up in Lynnhurst Park and Pearl Park, MPRB Picnic in the Park at Pearl Park, Minnehaha Creek Clean-up at Lake Hiawatha, and geocaching along the creek. During these events, posters are displayed that discuss environmental concerns along the creek, and literature and brochures are distributed that detail actions the resident can take to improve water quality in the creeks and lakes.	Community residents	No	Participation

Public Education Activity	Description	Audience	Alternate Languages	Metrics
Clean Water Minnesota Jana Larson cleanwatermn.org *The Clean Water Minnesota Media Campaign (formerly the "Minnesota Water – Let's Keep It Clean!" Media Campaign) places stormwater pollution prevention public education messages in the mass media and maintains the www.cleanwatermn.org web site with resources for stormwater educators and seasonal clean water tips for residents.*				
Online Resources	The Clean Water Minnesota Media Campaign maintains the www.cleanwatermn.org web site with "Classroom Curriculum" resources for stormwater educators, and "Info You Can Use" seasonal clean water tips for residents.	Web site users	No	Web site hits
Public Service Announcements on TV & Radio	The Clean Water Minnesota Media Campaign places stormwater pollution prevention public education messages in the mass media.	Metro and statewide radio and TV audience	No	No
Minnesota MS4 Toolkit Online	A one-stop shop for municipal stormwater pollution prevention education materials.	Educators	No	Web site hits
Document Upload Tool	The document upload tool allows MS4 educators and other stormwater pollution prevention experts to upload documents, brochures, posters, images, and other resources for others to use. This allows all of Minnesota's stormwater pollution prevention education community to share successful education materials with their peers.	MS4 educators and stormwater pollution prevention experts	No	# of documents uploaded / downloaded
Clean Water MN Quarterly e-Newsletter	Delivered electronically to all campaign members. Each newsletter features a suite of ready-to-run materials, season-specific stormwater education materials including: press releases, brochures, photos, print ads, and other education products. All materials are free for member use in publications, web sites, and other public education efforts.	Campaign members	No	No
Metro Watershed Partners Jana Larson http://www.hamline.edu/cgee/watershed *The WaterShed Partners is an innovative, dynamic coalition of over 60 public, private and non-profit organizations in the Minneapolis/Saint Paul metropolitan area. Through collaborative education and outreach, they promote a public understanding that inspires people to act to protect water quality in their watershed.*				
State Fair Exhibit "What is a Watershed?"	The WaterShed interactive exhibit in the Minnesota Department of Natural Resources Education Building at the Minnesota State Fair provides attendees the opportunity to learn about metropolitan watersheds and about human connections to rivers and water through everyday actions.	State Fair attendees	N/A	Survey results
WaterShed interactive tabletop exhibits	Two museum-quality tabletop exhibits are brought by WaterShed Partners to community events and locations throughout the metro area to provide learning opportunities about metropolitan watersheds and about human connections to rivers and water through everyday actions.	Community event attendees	No	# of community events participated in

Public Education Activity	Description	Audience	Alternate Languages	Metrics
"Water Down the Drain" Interactive Multi-Media Program	An interactive multi-media program available on kiosks and iMacs. Six modules introduce the user to a watershed perspective of the landscape and provide information about the impacts of impervious surfaces and pollution on our waterways.	Citizens	No	Participation
Minnesota Clean Water Challenge	As part of its efforts to foster and sustain water-friendly behaviors in Minnesota, and in response to current research in psychology suggesting that programs focused on behavior change are best carried out at the community level, the Metro WaterShed Partners will launch the Minnesota Clean Water Challenge in 2012. Building on past successes in raising awareness of water-related problems in Minnesota, the Minnesota Clean Water challenge will use community-based social marketing strategies to get Minnesotans to adopt water friendly practices to protect and improve water resources in Minnesota.	Local communities within Minneapolis	No	Participation
Metro WaterShed Partners list serve: watershedpartners@listserv.hamline.edu	A forum for information sharing to promote educational programs, share information about professional programs, and exchange information with other watershed educators, legislators, and businesses.	Educators, legislators, and industry professionals throughout Minnesota	N/A	Membership
Freshwater Society of Minnesota Joan Nephew/Peggy Knapp freshwater.org *The Freshwater Society is a non-profit organization dedicated to educating and inspiring people to value, conserve and protect all water resources. The Freshwater Society works to ensure the sustainability of groundwater and to protect lakes, rivers and aquifers from pollution.*				
FreshwaterSocietyBlog	A regular source of information about water and the environment. Each week, the blog publishes a digest of regional, national and international articles and research on water and the environment. Scan the digest, then follow the links to read articles in the original sources in their entirety -- publications such as the New York Times, Scientific American, journals of all kinds and news releases from state and federal agencies.	General public	No	Web site hits
Community Cleanups for Water Quality	A robust Take Action program in partnership with MWMO and MCWD to promote community cleanup efforts. Such efforts include citizen cleanup of parking lots and other areas in their communities that aren't covered by city cleaning efforts.	General public	No	Collected debris is analyzed for content to measure the success of the cleanup efforts.
Water is Life: Protecting A Critical Resource For Future Generations	A Freshwater Society report on Minnesota's ground and surface waters. The October 2008 report focuses on the sustainability of groundwater and the pollution that contaminates many lakes and streams. The report was prepared by the Guardianship Council advisory group. A shorter Executive Summary of the report also is available.	General public	No	Web site hits

Public Education Activity	Description	Audience	Alternate Languages	Metrics
Online Fact Sheets	Freshwater Society fact sheets available online: Sustainability of Ground Water, Success Stories, What You Can Do, Value of Water, Groundwater Quality, Groundwater Quality Success Stories, Groundwater Quality: What You Can Do, and Groundwater Quality: Resource Materials, What You Can Do to Save Water and Have a Green Lawn.	General public	No	Web site hits
Facets of Freshwater	A regular newsletter produced for members and interested citizens. An electronic archive of newsletters since 2004 is available.	General public	No	Web site hits
Minnesota Weatherguide Environment Calendar	A calendar available in wall and desk formats that the Society has published for three decades. It offers weather records, phases of the moon, times for sunrise and sunset, plus phenology data on the response of living organisms to seasonal and climatic changes. Free curriculum guides are available for elementary school teachers who use the calendars in their science classes.	General public	No	Participation
Guide To Lake Protection and Management	A 27-page brochure published in cooperation with the MPCA. The guide includes information on watersheds, the chemistry of lakes, exotic species, development of a lake management plan and best management practices for preserving water quality.	General public	No	Web site hits
Original Sources	A digest of electronic links to reports on water quality and the environment from researchers and regional, national and international agencies.	General public	No	Web site hits
Environmental Initiative environmental-initiative.org/ *Environmental Initiative (formerly Minnesota Environmental Initiative) builds partnerships with nonprofit, business and government leaders to work collaboratively to solve environmental problems.*				

Table A-7 Stormwater Management Practice (SMP) Responsible Departments and Divisions

Stormwater Management Category	MPW Surface Water and Sewers	MPW – Transportation Maintenance and Repair	MPW Solid Waste and Recycling	MPW – Traffic and Parking Services	Regulatory Services	Property Services	CPED	MPRB	Other
Public Education and Outreach on Stormwater Impacts									
1.1 STORMWATER PUBLIC EDUCATION ACTIVITIES	X							X	X
Public Participation, Public Involvement									
2.1 ENGAGE a DIVERSE PUBLIC in STORMWATER MANAGEMENT PROGRAM AWARENESS, DECISIONS and ACTIVITIES	X							X	X
2.2 PUBLIC EDUCATION and OUTREACH on PUBLIC PARTICIPATION, PUBLIC INVOLVEMENT CATEGORY	X							X	
Illicit Discharge Detection and Elimination									
3.1 PHOSPHORUS-FREE FERTILIZER PROGRAM					X				
3.2 PESTICIDES PROGRAM					X				
3.3 ILLICIT DISCHARGES in STORM DRAINS INVESTIGATION PROGRAM	X				X				
3.4 SPILL RESPONSE PROGRAM	X	X			X				X
3.5 FACILITIES INSPECTION PROGRAM					X				
3.6 STORMWATER MANAGEMENT for REGULATED ACTIVITIES PROGRAM	X				X				
3.7 SOURCE CONTROL EDUCATION and OUTREACH PROGRAM	X				X			X	X
3.8 EDUCATION and OUTREACH PROGRAM – CATCH BASIN STENCILING	X								
Construction Related Erosion and Sediment Control									
4.1 DEVELOPMENT and REDEVELOPMENT PROGRAM	X				X				
4.2 EROSION and SEDIMENT CONTROL for CITY and MPRB CAPTIAL PROJECTS	X	X		X		X	X	X	X
Post-Construction Stormwater Management for Public and Private Projects									
5.1 REVIEW and APPROVAL PROGRAM for PRIVATE DEVELOPMENT / REDEVELOPMENT PROJECTS	X				X				X
5.2 ONGOING COMPLIANCE PROGRAM for PRIVATE DEVELOPMENT / REDEVELOPMENT PROJECTS	X				X				
5.3 REVIEW and APPROVAL for PROJECTS PROPOSING TO MODIFY MS4 SYSTEM	X								
5.4 PROJECT MANAGEMENT for STORMWATER in CITY and MPRB CAPITAL PROJECTS	X	X		X		X	X	X	X
5.5 LOCALIZED FLOOD MITIGATION CAPITAL PROJECTS	X								
5.6 RUNOFF VOLUME REDUCTION PLAN	X								
5.7 HYDROLOGIC and HYDRAULIC MODELING	X								
5.8 WATER QUALITY MODELING	X								
5.9 PILOT PROJECTS	X								
Pollution Prevention and Good Housekeeping for Municipal Operations									
6.1.0 OPERATE and MAINTAIN MS4 SYSTEM in ACCORDANCE with NPDES MS4 PERMIT to MINIMIZE DISCHARGE of POLLUTANTS	X								

Table A-7 Stormwater Management Practice (SMP) Responsible Departments and Divisions

Stormwater Management Category		MPW Surface Water and Sewers	MPW – Transportation Maintenance and Repair	MPW Solid Waste and Recycling	MPW – Traffic and Parking Services	Regulatory Services	Property Services	CPED	MPRB	Other
6.1.1	STORM DRAIN and DEEP STORM TUNNEL OPERATION & MAINTENANCE	X								
6.1.2	CATCH BASIN and MANHOLE OPERATION & MAINTENANCE	X								
6.1.3	OUTFALL OPERATION & MAINTENANCE	X								
6.1.4	PUMP STATION OPERATION & MAINTENANCE	X								
6.1.5	LEVEL CONTROL WEIR, BULKHEAD and OPEN DITCH/VEGETATED CHANNEL OPERATION & MAINTENANCE	X								
6.1.6	GRIT CHAMBER OPERATION & MAINTENANCE	X								
6.1.7	OPERATION & MAINTENANCE of STORMWATER RETENTION PONDS and DETENTION BASINS, STORMWATER WETLANDS, and BIO-(IN)FILTRATION AREAS (RAIN GARDENS)	X					X		X	
6.1.8	STORMWATER RETENTION POND DREDGING PROCESS	X				X	X		X	
6.1.9	HANDLING and DISPOSAL of STORED and STOCKPILED DREDGED or OTHER REMOVED MATERIALS	X							X	
6.9.10	OPERATE and MAINTAIN MPRB STORM DRAIN CONVEYANCE SYSTEM in ACCORDANCE with NPDES MS4 PERMIT to MINIMIZE DISCHARGE of POLLUTANTS	X							X	
6.1.11	ELECTRONIC INVENTORY and MAPPING	X							X	
6.2	STREET SWEEPING and CLEANING PROGRAM	X	X							X
6.3	CITY and MPRB PARKING LOT and EQUIPMENT YARD MANAGEMENT	X	X		X		X	X	X	X
6.4	APPLICATION of SNOW and ICE CONTROL MATERIALS for STREETS		X							X
6.5	APPLICATION of SNOW and ICE CONTROL MATERIALS for CITY and MPRB PROPERTIES	X	X	X	X		X	X	X	X
6.6	VEGETATION MANAGEMENT for RIGHT-OF-WAY and CITY PROPERTIES	X	X				X	X	X	X
Stormwater Discharge Monitoring and Analysis										
7.1	MONITORING and ANALYSIS to ASSIST in ASSESSING STORMWATER MANAGEMENT PROGRAM EFFECTIVENESS	X							X	X
7.2	MAJOR OUTFALL MONITORING and ANALYSIS PROGRAM					X				
7.3	PUBLIC EDUCATION and OUTREACH on STORMWATER DISCHARGE MONITORING and ANALYSIS	X							X	
Progress Toward Waste Load Allocations for Approved Total Maximum Daily Loads										
8.1	TMDL PROGRAM	X							X	
8.2	PUBLIC EDUCATION and OUTREACH on TMDL PROGRAM	X							X	
Coordination and Cooperation with Other Entities										
9.1	COORDINATION and COOPERATION with OTHER ENTITIES	X				X			X	
Stormwater Management Program Assessment, Modification, and Annual Reporting										
10.1	STORMWATER MANAGEMENT PROGRAM ASSESSMENT, MODIFICATION, and ANNUAL REPORTING	X							X	

Cross-Reference of Permit Requirements with Minneapolis Stormwater Management Program	
Column 1: Reference to location of requirement in MN0061018 Permit issued January 21, 2011. Included in Cross Reference table are Permit Parts V and VI. Part V is STORMWATER MANAGEMENT PROGRAM, pages 7-26 of Permit. Part VI is STORMWATER MANAGEMENT PROGRAM ASSESSMENT, REPORTING AND OTHER SUBMITTALS, pages 26-32 of Permit. Column 2: Reference to location in the Stormwater Management Program submitted September 28, 2011 of practices that address the requirements in Column 1.	
Col. 1	Col. 2
V.A	
	N.A.
V.B	
1	All Stormwater Management Practice Sheets
2	All Stormwater Management Practice Sheets
3	Section 1, Table 1.3 (financial information) All Stormwater Management Practice Sheets (staff resources)
4	All Overview Sheets
5	All Stormwater Management Practice Sheets
6	All Stormwater Management Practice Sheets
7	N.A.
V.C	
1	OVERVIEW of CATEGORY 1
1a	1.1 STORMWATER PUBLIC EDUCATION ACTIVITIES 2.1 ENGAGE a DIVERSE PUBLIC in STORMWATER MANAGEMENT PROGRAM AWARENESS, DECISIONS and ACTIVITIES 3.7 SOURCE CONTROL EDUCATION and OUTREACH PROGRAM 3.8 EDUCATION and OUTREACH PROGRAM – CATCH BASIN STENCILING 9.1 COORDINATION and COOPERATION with OTHER ENTITIES
1b,c	1.1 STORMWATER PUBLIC EDUCATION ACTIVITIES 2.1 ENGAGE a DIVERSE PUBLIC in STORMWATER MANAGEMENT PROGRAM AWARENESS, DECISIONS and ACTIVITIES 2.2 PUBLIC EDUCATION and OUTREACH on PUBLIC PARTICIPATION, PUBLIC INVOLVEMENT CATEGORY 3.1 PHOSPHORUS-FREE FERTILIZER PROGRAM 3.2 PESTICIDES PROGRAM 3.3 ILLICIT DISCHARGES in STORM DRAINS INVESTIGATION PROGRAM 3.4 SPILL RESPONSE PROGRAM 3.7 SOURCE CONTROL EDUCATION and OUTREACH PROGRAM 3.8 EDUCATION and OUTREACH PROGRAM – CATCH BASIN STENCILING 4.1 DEVELOPMENT and REDEVELOPMENT PROGRAM 4.2 EROSION and SEDIMENT CONTROL for CITY and MPRB CAPTIAL PROJECTS 5.4 PROJECT MANAGEMENT for STORMWATER in CITY and MPRB CAPITAL PROJECTS 6.1.0 OPERATE and MAINTAIN MS4 SYSTEM in ACCORDANCE with NPDES MS4 PERMIT to MINIMIZE DISCHARGE of POLLUTANTS 6.1.1 STORM DRAIN and DEEP STORM TUNNEL OPERATION & MAINTENANCE 6.1.2 CATCH BASIN and MANHOLE OPERATION & MAINTENANCE 6.1.3 OUTFALL OPERATION & MAINTENANCE 6.1.4 PUMP STATION OPERATION & MAINTENANCE 6.1.7 OPERATION & MAINTENANCE of STORMWATER RETENTION PONDS and DETENTION BASINS, STORMWATER WETLANDS, and BIO-(IN)FILTRATION AREAS (RAIN GARDENS) 6.6 VEGETATION MANAGEMENT for RIGHT-OF-WAY and CITY PROPERTIES 7.3 PUBLIC EDUCATION and OUTREACH on STORMWATER DISCHARGE MONITORING and ANALYSIS

Cross-Reference of Permit Requirements with Minneapolis Stormwater Management Program		
	8.2	PUBLIC EDUCATION and OUTREACH on TMDL PROGRAM
	9.1	COORDINATION and COOPERATION with OTHER ENTITIES
1d	1.1	STORMWATER PUBLIC EDUCATION ACTIVITIES
	3.7	SOURCE CONTROL EDUCATION and OUTREACH PROGRAM
1e	1.1	STORMWATER PUBLIC EDUCATION ACTIVITIES
	3.1	PHOSPHORUS-FREE FERTILIZER PROGRAM
	3.2	PESTICIDES PROGRAM
	3.3	ILLICIT DISCHARGES in STORM DRAINS INVESTIGATION PROGRAM
	3.4	SPILL RESPONSE PROGRAM
	3.7	SOURCE CONTROL EDUCATION and OUTREACH PROGRAM
	3.8	EDUCATION and OUTREACH PROGRAM – CATCH BASIN STENCILING
	4.2	EROSION and SEDIMENT CONTROL for CITY and MPRB CAPTIAL PROJECTS
1f	2.1	ENGAGE a DIVERSE PUBLIC in STORMWATER MANAGEMENT PROGRAM AWARENESS, DECISIONS and ACTIVITIES
2	OVERVIEW of CATEGORY 2	
2a	2.1	ENGAGE a DIVERSE PUBLIC in STORMWATER MANAGEMENT PROGRAM AWARENESS, DECISIONS and ACTIVITIES
	2.2	PUBLIC EDUCATION and OUTREACH on PUBLIC PARTICIPATION, PUBLIC INVOLVEMENT CATEGORY
	6.6	VEGETATION MANAGEMENT for RIGHT-OF-WAY and CITY PROPERTIES
2b-e	2.1	ENGAGE a DIVERSE PUBLIC in STORMWATER MANAGEMENT PROGRAM AWARENESS, DECISIONS and ACTIVITIES
	6.6	VEGETATION MANAGEMENT for RIGHT-OF-WAY and CITY PROPERTIES
3	OVERVIEW of CATEGORY 3	
3a	3.3	ILLICIT DISCHARGES in STORM DRAINS INVESTIGATION PROGRAM
	5.2	ONGOING COMPLIANCE PROGRAM for PRIVATE DEVELOPMENT / REDEVELOPMENT PROJECTS
	5.7	HYDROLOGIC and HYDRAULIC MODELING
	6.1.7	OPERATION & MAINTENANCE of STORMWATER RETENTION PONDS and DETENTION BASINS, STORMWATER WETLANDS, and BIO-(IN)FILTRATION AREAS (RAIN GARDENS)
	6.1.10	OPERATE and MAINTAIN MPRB STORM DRAIN CONVEYANCE SYSTEM in ACCORDANCE with NPDES MS4 PERMIT to MINIMIZE DISCHARGE of POLLUTANTS
	6.1.11	ELECTRONIC INVENTORY and MAPPING
	9.1	COORDINATION and COOPERATION with OTHER ENTITIES
3b	3.3	ILLICIT DISCHARGES in STORM DRAINS INVESTIGATION PROGRAM
	3.4	SPILL RESPONSE PROGRAM
	3.6	STORMWATER MANAGEMENT for REGULATED ACTIVITIES PROGRAM
3c	1.1	STORMWATER PUBLIC EDUCATION ACTIVITIES
	3.1	PHOSPHORUS-FREE FERTILIZER PROGRAM
	3.2	PESTICIDES PROGRAM
	3.3	ILLICIT DISCHARGES in STORM DRAINS INVESTIGATION PROGRAM
	3.4	SPILL RESPONSE PROGRAM
	3.6	STORMWATER MANAGEMENT for REGULATED ACTIVITIES PROGRAM
	3.7	SOURCE CONTROL EDUCATION and OUTREACH PROGRAM
	3.8	EDUCATION and OUTREACH PROGRAM – CATCH BASIN STENCILING
	4.1	DEVELOPMENT and REDEVELOPMENT PROGRAM
	4.2	EROSION and SEDIMENT CONTROL for CITY and MPRB CAPTIAL PROJECTS
	6.1.1	STORM DRAIN and DEEP STORM TUNNEL OPERATION & MAINTENANCE
	6.3	CITY and MPRB PARKING LOT and EQUIPMENT YARD MANAGEMENT
	6.6	VEGETATION MANAGEMENT for RIGHT-OF-WAY and CITY PROPERTIES
3d	3.3	ILLICIT DISCHARGES in STORM DRAINS INVESTIGATION PROGRAM
	3.4	SPILL RESPONSE PROGRAM
3e	3.3	ILLICIT DISCHARGES in STORM DRAINS INVESTIGATION PROGRAM
	3.4	SPILL RESPONSE PROGRAM
	6.1.3	OUTFALL OPERATION & MAINTENANCE

Cross-Reference of Permit Requirements with Minneapolis Stormwater Management Program		
3f	3.3	ILLICIT DISCHARGES in STORM DRAINS INVESTIGATION PROGRAM
	3.5	FACILITIES INSPECTION PROGRAM
	3.6	STORMWATER MANAGEMENT for REGULATED ACTIVITIES PROGRAM
3g	3.6	STORMWATER MANAGEMENT for REGULATED ACTIVITIES PROGRAM
	3.7	SOURCE CONTROL EDUCATION and OUTREACH PROGRAM
4	OVERVIEW of CATEGORY 4	
4a-e	4.1	DEVELOPMENT and REDEVELOPMENT PROGRAM
	4.2	EROSION and SEDIMENT CONTROL for CITY and MPRB CAPTIAL PROJECTS
4f	4.1	DEVELOPMENT and REDEVELOPMENT PROGRAM
4g-h	3.7	SOURCE CONTROL EDUCATION and OUTREACH PROGRAM
	4.1	DEVELOPMENT and REDEVELOPMENT PROGRAM
	4.2	EROSION and SEDIMENT CONTROL for CITY and MPRB CAPTIAL PROJECTS
5	OVERVIEW of CATEGORY 5	
5a	5.6	RUNOFF VOLUME REDUCTION PLAN
5b	5.1	REVIEW and APPROVAL PROGRAM for PRIVATE DEVELOPMENT / REDEVELOPMENT PROJECTS
	5.3	REVIEW and APPROVAL for PROJECTS PROPOSING TO MODIFY MS4 SYSTEM
	5.4	PROJECT MANAGEMENT for STORMWATER in CITY and MPRB CAPITAL PROJECTS
5c	5.1	REVIEW and APPROVAL PROGRAM for PRIVATE DEVELOPMENT / REDEVELOPMENT PROJECTS
5d	5.1	REVIEW and APPROVAL PROGRAM for PRIVATE DEVELOPMENT / REDEVELOPMENT PROJECTS
	5.2	ONGOING COMPLIANCE PROGRAM for PRIVATE DEVELOPMENT / REDEVELOPMENT PROJECTS
	5.9	PILOT PROJECTS
	6.1.0	OPERATE and MAINTAIN MS4 SYSTEM in ACCORDANCE with NPDES MS4 PERMIT to MINIMIZE DISCHARGE of POLLUTANTS
	6.1.10	OPERATE and MAINTAIN MPRB STORM DRAIN CONVEYANCE SYSTEM in ACCORDANCE with NPDES MS4 PERMIT to MINIMIZE DISCHARGE of POLLUTANTS
5e-f	5.3	REVIEW and APPROVAL for PROJECTS PROPOSING TO MODIFY MS4 SYSTEM
	5.4	PROJECT MANAGEMENT for STORMWATER in CITY and MPRB CAPITAL PROJECTS
	5.6	RUNOFF VOLUME REDUCTION PLAN
	5.9	PILOT PROJECTS
6	OVERVIEW of CATEGORY 6	
6a	6.1.0	OPERATE and MAINTAIN MS4 SYSTEM in ACCORDANCE with NPDES MS4 PERMIT to MINIMIZE DISCHARGE of POLLUTANTS
	6.1.10	OPERATE and MAINTAIN MPRB STORM DRAIN CONVEYANCE SYSTEM in ACCORDANCE with NPDES MS4 PERMIT to MINIMIZE DISCHARGE of POLLUTANTS
	6.2	STREET SWEEPING and CLEANING PROGRAM
	6.6	VEGETATION MANAGEMENT for RIGHT-OF-WAY and CITY PROPERTIES
6b	6.1.0	OPERATE and MAINTAIN MS4 SYSTEM in ACCORDANCE with NPDES MS4 PERMIT to MINIMIZE DISCHARGE of POLLUTANTS
	6.1.1	STORM DRAIN and DEEP STORM TUNNEL OPERATION & MAINTENANCE
	6.1.2	CATCH BASIN and MANHOLE OPERATION & MAINTENANCE
	6.1.3	OUTFALL OPERATION & MAINTENANCE
	6.1.4	PUMP STATION OPERATION & MAINTENANCE
	6.1.5	LEVEL CONTROL WEIR, BULKHEAD and OPEN DITCH/VEGETATED CHANNEL OPERATION & MAINTENANCE
	6.1.6	GRIT CHAMBER OPERATION & MAINTENANCE
	6.1.7	OPERATION & MAINTENANCE of STORMWATER RETENTION PONDS and DETENTION BASINS, STORMWATER WETLANDS, and BIO-(IN)FILTRATION AREAS (RAIN GARDENS)
	6.1.8	STORMWATER RETENTION POND DREDGING PROCESS
	6.1.9	HANDLING and DISPOSAL of STORED and STOCKPILED DREDGED or OTHER REMOVED MATERIALS
	6.1.10	OPERATE and MAINTAIN MPRB STORM DRAIN CONVEYANCE SYSTEM in ACCORDANCE with NPDES MS4 PERMIT to MINIMIZE DISCHARGE of POLLUTANTS
	6.6	VEGETATION MANAGEMENT for RIGHT-OF-WAY and CITY PROPERTIES
6c	6.2	STREET SWEEPING and CLEANING PROGRAM

Cross-Reference of Permit Requirements with Minneapolis Stormwater Management Program		
	6.3	CITY and MPRB PARKING LOT and EQUIPMENT YARD MANAGEMENT
	6.4	APPLICATION of SNOW and ICE CONTROL MATERIALS for STREETS
	6.5	APPLICATION of SNOW and ICE CONTROL MATERIALS for CITY and MPRB PROPERTIES
	8.2	PUBLIC EDUCATION and OUTREACH on TMDL PROGRAM
6d	3.7	SOURCE CONTROL EDUCATION and OUTREACH PROGRAM
6e	5.5	LOCALIZED FLOOD MITIGATION CAPITAL PROJECTS
	6.1.7	OPERATION & MAINTENANCE of STORMWATER RETENTION PONDS and DETENTION BASINS, STORMWATER WETLANDS, and BIO-(IN)FILTRATION AREAS (RAIN GARDENS)
	6.1.11	ELECTRONIC INVENTORY and MAPPING
6f	6.1.8	STORMWATER RETENTION POND DREDGING PROCESS
	6.1.9	HANDLING and DISPOSAL of STORED and STOCKPILED DREDGED or OTHER REMOVED MATERIALS
7	OVERVIEW of CATEGORY 7	
7a	7.1	MONITORING and ANALYSIS to ASSIST in ASSESSING STORMWATER MANAGEMENT PROGRAM EFFECTIVENESS
	7.2	MAJOR OUTFALL MONITORING and ANALYSIS PROGRAM
	7.3	PUBLIC EDUCATION and OUTREACH on STORMWATER DISCHARGE MONITORING and ANALYSIS
7b	7.1	MONITORING and ANALYSIS to ASSIST in ASSESSING STORMWATER MANAGEMENT PROGRAM EFFECTIVENESS
7c	7.1	MONITORING and ANALYSIS to ASSIST in ASSESSING STORMWATER MANAGEMENT PROGRAM EFFECTIVENESS
	7.2	MAJOR OUTFALL MONITORING and ANALYSIS PROGRAM
7d	7.1	MONITORING and ANALYSIS to ASSIST in ASSESSING STORMWATER MANAGEMENT PROGRAM EFFECTIVENESS
	7.2	MAJOR OUTFALL MONITORING and ANALYSIS PROGRAM
	9.1	COORDINATION and COOPERATION with OTHER ENTITIES
7e	7.1	MONITORING and ANALYSIS to ASSIST in ASSESSING STORMWATER MANAGEMENT PROGRAM EFFECTIVENESS
7f	7.1	MONITORING and ANALYSIS to ASSIST in ASSESSING STORMWATER MANAGEMENT PROGRAM EFFECTIVENESS
	7.2	MAJOR OUTFALL MONITORING and ANALYSIS PROGRAM
8	OVERVIEW of CATEGORY 8	
	9.1	COORDINATION and COOPERATION with OTHER ENTITIES
8a	5.8	WATER QUALITY MODELING
	6.1.11	ELECTRONIC INVENTORY and MAPPING
	7.1	MONITORING and ANALYSIS to ASSIST in ASSESSING STORMWATER MANAGEMENT PROGRAM EFFECTIVENESS
	8.1	TMDL PROGRAM
8b	5.8	WATER QUALITY MODELING
	7.1	MONITORING and ANALYSIS to ASSIST in ASSESSING STORMWATER MANAGEMENT PROGRAM EFFECTIVENESS
	8.1	TMDL PROGRAM
8c	8.1	TMDL PROGRAM
V.D		
	10.1	STORMWATER MANAGEMENT PROGRAM ASSESSMENT, MODIFICATION, and ANNUAL REPORTING
V.E		
	10.1	STORMWATER MANAGEMENT PROGRAM ASSESSMENT, MODIFICATION, and ANNUAL REPORTING
V.F		
	1.1	STORMWATER PUBLIC EDUCATION ACTIVITIES
	2.1	ENGAGE a DIVERSE PUBLIC in STORMWATER MANAGEMENT PROGRAM AWARENESS, DECISIONS and ACTIVITIES
	3.7	SOURCE CONTROL EDUCATION and OUTREACH PROGRAM

	Cross-Reference of Permit Requirements with Minneapolis Stormwater Management Program
	5.3 REVIEW and APPROVAL for PROJECTS PROPOSING TO MODIFY MS4 SYSTEM 5.5 LOCALIZED FLOOD MITIGATION CAPITAL PROJECTS 6.1.0 OPERATE and MAINTAIN MS4 SYSTEM in ACCORDANCE with NPDES MS4 PERMIT to MINIMIZE DISCHARGE of POLLUTANTS 6.1.7 OPERATION & MAINTENANCE of STORMWATER RETENTION PONDS and DETENTION BASINS, STORMWATER WETLANDS, and BIO-(IN)FILTRATION AREAS (RAIN GARDENS) 6.1.11 ELECTRONIC INVENTORY and MAPPING 7.2 MAJOR OUTFALL MONITORING and ANALYSIS PROGRAM 9.1 COORDINATION and COOPERATION with OTHER ENTITIES Appendix Table A-5
VI.A	
	3.3 ILLICIT DISCHARGES in STORM DRAINS INVESTIGATION PROGRAM 3.6 STORMWATER MANAGEMENT for REGULATED ACTIVITIES PROGRAM 3.7 SOURCE CONTROL EDUCATION and OUTREACH PROGRAM 5.6 RUNOFF VOLUME REDUCTION PLAN 6.2 STREET SWEEPING and CLEANING PROGRAM 7.1 MONITORING and ANALYSIS to ASSIST in ASSESSING STORMWATER MANAGEMENT PROGRAM EFFECTIVENESS 10.1 STORMWATER MANAGEMENT PROGRAM ASSESSMENT, MODIFICATION, and ANNUAL REPORTING
VI.B	
	10.1 STORMWATER MANAGEMENT PROGRAM ASSESSMENT, MODIFICATION, and ANNUAL REPORTING
VI.C	
	10.1 STORMWATER MANAGEMENT PROGRAM ASSESSMENT, MODIFICATION, and ANNUAL REPORTING
VI.D	
	2.1 ENGAGE a DIVERSE PUBLIC in STORMWATER MANAGEMENT PROGRAM AWARENESS, DECISIONS and ACTIVITIES 3.3 ILLICIT DISCHARGES in STORM DRAINS INVESTIGATION PROGRAM 3.4 SPILL RESPONSE PROGRAM 3.6 STORMWATER MANAGEMENT for REGULATED ACTIVITIES PROGRAM 3.7 SOURCE CONTROL EDUCATION and OUTREACH PROGRAM 10.1 STORMWATER MANAGEMENT PROGRAM ASSESSMENT, MODIFICATION, and ANNUAL REPORTING Appendix Table A-5
VI.E	
	10.1 STORMWATER MANAGEMENT PROGRAM ASSESSMENT, MODIFICATION, and ANNUAL REPORTING

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