City of Saint Paul's

2016 Stormwater Permit Annual Report

Minnesota Pollution Control Agency

National Pollutant Discharge Elimination System

Permit No. MN 0061263

June 2017

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Background

The National Pollutant Discharge Elimination System (NPDES) program was created in 1990 by the United States Environmental Protection Agency to safeguard public waters through the regulation of the discharge of pollutants to surface waters including lakes, streams, wetlands and rivers. The Minnesota Pollution Control Agency (MPCA) is the local authority responsible for administering this program. Under this program, specific permits are issued to regulate different types of municipal, construction and industrial activities.

The MPCA issued the first Municipal Separate Storm Sewer System (MS4) NPDES Permit to the City of Saint Paul on December 1, 2000. The City's MS4 Permit was reissued on January 21, 2011. The reissued permit required submittal of a revised Stormwater Management Program (SWMP), which was approved by the MPCA in October of 2013.

The Saint Paul SWMP was developed and is administered by the City departments that are responsible for permit activities. Included are the Public Works Department, Saint Paul Parks and Recreation Department and the Department of Safety and Inspection. These stakeholders are jointly responsible for the completion of the required permit submittals. The Department of Public Works provides program coordination. The Permit also requires public input on the development of the priorities and programs, and adoption by Council Resolution of the Annual Report. This Report provides documentation of the activities conducted in 2016.

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MCM 1: Public Education & Outreach

BMP 1.1: STORMWATER PUBLIC EDUCATION ACTIVITIES

Description

The City implements public education and outreach programs to increase the awareness of stormwater pollution impacts on waters of the state to encourage changes in public behavior to reduce impacts to receiving waters.

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 materials developed.

2016 Activities

Metro WaterShed Partners

Saint Paul has been an active Metro WaterShed Partners since 1997. Metro WaterShed Partners is an innovative, dynamic coalition of over 40 public, private and non-profit organizations in the Saint Paul/St. Paul metropolitan area that, through collaborative educational outreach, teaches residents how to care for area waters. This partnership has leveraged grant dollars and staff time to develop educational literature and a nationally recognized interactive display. The WaterShed exhibit was at schools and events in and around Saint Paul in 2016. The WaterShed exhibit is also at the Minnesota State Fair in the Department of Natural Resources Building each year. In addition, the WaterShed Partners partnered with Hamline University to develop and host the StormDrain Goalie in the Eco Experience building. This exhibit raised awareness about the importance of protecting water in Minnesota and asks people to commit to take action at home to prevent run-off pollution.

Metro Clean Water Campaign

To assist cities with educational efforts, Metro WaterShed Partners is conducting the Metro Clean Water Campaign. This type of collaboration allows for the development of a consistent message, which is distributed cost effectively. The campaign was funded in 2016 with money raised from local units of government, including the City of Saint Paul. The 2016 report for the Metro Clean Water Campaign is found in the appendix.

Adopt-a-Drain

In 2016, the City of Saint Paul partnered with the Center for Global Environmental Education at Hamline University and the Capitol Region Watershed District to develop, and administer, the Adopt-a-Drain Program. This Program allows residents to adopt a storm drain in their neighborhood, and pledge to keep it free of pollutants. The Program consists of an online map

of storm drains in Saint Paul, and a simple interface that allows people to sign up to "adopt" a storm drain. Adopted storm drains are flagged with the name of the resident who has adopted it on an online map. Targeted neighborhoods in 2016 included Hamline-Midway and North End.

The program includes the following components:

- Create and produce outreach materials including: yard signs, recruitment materials, automatic confirmation email for registrants and four seasonal reminder messages to be sent to program participants.
- Conduct focus groups of people within the target neighborhood to evaluate the draft outreach materials and to guide the framing of the program.
- Track participation in the program in response to the door hangers.
- Evaluate program by conducting a follow-up survey within the pilot neighborhood.

Annual Spring Parks Clean-Up and Neighborhood Litter Campaign

The Saint Paul Parks and Recreation Department hosts an Annual Spring Parks Clean-Up every year during the month of April. The City provides clean-up supplies, trash removal, recycling services and a "thank you" celebration. During this event volunteers remove litter from Saint Paul's Parks and Recreation Centers. Without the help of volunteers during the cleanup, trash accumulates in these natural areas harming wildlife, polluting lakes and rivers and detracting from the beauty of our community. This event is a fun and effective way to improve the environment in our community.

Waterfest

The City of Saint Paul is a sponsor of Waterfest, which is a family festival put on each May at Lake Phalen by the Ramsey-Washington Metro Watershed District. The Watershed District estimates that 1000 people attend this free family festival. The Parks Department and the Public Works Department assist with this event.

Staff Training

- City staff from multiple departments attended the Minnesota Water Resources Conference
- City staff from multiple departments attended the Clean Water Summit.

MCM 1: Public Education & Outreach

BMP 1.2: STORM DRAIN STENCILING & WATER QUALITY EDUCATION PROGRAM

Description

The objective of this program is to educate the participants and the public by stenciling storm drains with the message "Storm Drains – Keep 'em Clean," and distribute multi-lingual educational door-hangers to residents and businesses in the stenciled neighborhoods in the City of Saint Paul.

Assessment Process for Annual Reporting

- Report on number of volunteers, storm drains stenciled and door hangers distributed.

2016 Activities

Storm Drain Stenciling Education Program

The City of Saint Paul has been conducting a successful storm drain stenciling education program since 1993. The Friends of the Mississippi River (FMR) coordinates this program for the City. FMR is the leading citizens' organization working to protect the Mississippi River and its watershed in the Twin Cities area. In 2016, FMR coordinated the stenciling of 2,519 storm drains and distribution of 6,262 door hangers in partnership with 996 volunteers. The 2016 Stenciling Program Report and a copy of the door hanger are found in the Appendix.

The storm drain stenciling project is designed to meet the following three objectives:

- To involve Saint Paul residents in hands-on learning experiences about urban runoff pollution and ways to prevent it.
- To facilitate school service learning initiatives that include storm drain stenciling, litter cleanups and/or habitat restoration as a key components.
- To stencil storm drains with the message "Keep 'em Clean-Drains to River and distribute educational door hangers to residents and businesses in the stenciled neighborhoods in the City of Saint Paul.

The 2016 program objectives were implemented through the following activities:

- Coordinated the stenciling of storm drains and distribution of door hangers in partnership with volunteers from school groups, community groups, and residents of the City of Saint Paul.
- Provided a 15 to 30 minute educational orientation to each volunteer group.
- Provided educational presentations and workshops on urban runoff pollution to volunteers, classrooms and other community members.
- Coordinated the purchase, maintenance and storage of all stenciling and workshop supplies.

MCM 2: Public Participation & Involvement

BMP 2.1: Encourage & Solicit Input from the Public

Description

Saint Paul citizens are actively engaged in many aspects of the City's governance, being involved through commissions, district councils, volunteer organizations and electronic communications. Other public involvement techniques include workshops, web page accessibility and outreach by elected officials. The objective of this program is to make the SWMP and related documents available to the public and to provide a process for public input in the development and implementation of the SWMP.

Assessment Process for Annual Reporting

- Summary of public input and the City's response.
- Annual meeting attendance.
- Adopted council resolution.
- Summary of web site updates.

2016 Activities

The Annual Report is a coordinated effort by various City departments. Information in the Annual Report provides documentation of the activities conducted in the previous year.

The City holds a public meeting to provide an opportunity for public input regarding the Annual Report. A notice of the availability of the Report for review and public comment is sent to all Saint Paul neighborhood organizations, to the governmental entities that have jurisdiction over activities relating to stormwater management, and to other interested parties.

Once finalized, the Annual Report is also made available on the web site. All testimony presented at the public meeting, and all written comments received, are recorded and given due consideration. The public comments, response to comments and a copy of the council resolution adopting the Stormwater Permit Annual Report are submitted each year to the Minnesota Pollution Control Agency.

MCM 3: Illicit Discharge Detection & Elimination

BMP 3.1 PROHIBITED DISCHARGE MANAGEMENT PROGRAM

Description

The objective of this program is to effectively prohibit through ordinance or other regulatory mechanism and appropriate enforcement procedures, the introduction of non-stormwater discharges into the MS4.

Assessment Process for Annual Reporting

- Number of reported or discovered prohibited discharges, number investigated and number eliminated.
- Development of procedures to address prohibited discharges.
- Training events and staff trained.

2016 Activities

Spill Response

The Sewer Maintenance section of the Sewer Utility and the Saint Paul Fire Department personnel typically serve as the first responders to a spill event. The immediate goals of this response are safety, containment of the spill, recovery of hazardous materials and collection of data for use in assessment of site impacts. Recovery efforts can take several forms, but typically fall into two broad categories: recovery for disposal and the use of absorbents or other media to collect hazardous waste for disposal.

The life cycle of an event requires City personnel to work as a team, utilizing all available resources to protect residents, the environment and property. Each event is followed by a post-action debriefing to determine the cause of the event, to identify measures to improve the City's response, and to determine the means to limit future occurrences. Outside agencies and private emergency response contractors are incorporated as needed. Spills that fall within the minimum reporting requirements are reported to the Minnesota Pollution Control Agency (MPCA) Public Safety Duty Officer. For these spills, an Oil and Hazardous Materials Spill Data form must be completed within 24 hours, or by the next business day. The completed forms are used to document the type of spill, as well as the response to the spill. The Sewer Utility follows the spill reporting policy, which is signed off on by employees as part of the annual policy review.

Prohibited Discharges

Pollution prevention and control is achieved through educational efforts, inspections and coordinated community outreach. These activities may include enforcement, pursuant to

applicable City codes, and coordination with other regulatory agencies at the county, state and federal levels. Enforcement yields identification of the responsible party, documentation of clean-up activities, and efforts to reduce the flow of pollutants from illegal dumping and disposal. Complaints are received from the public, City staff and other government agencies. Department of Safety and Inspections and Public Works staff respond to reports of unauthorized discharges and illicit connections. The City adopted an ordinance (see Appendix for ordinance and fact sheet) in 2013 defining allowable discharges to the storm sewer system.

The City's Right of Way inspectors responded to complaints resulting from utility contractors dewatering or saw cutting and construction site dewatering and tracking. Each year at the Utility Coordination Meeting requirements and BMPs are reviewed with contractors. A handout is provided, which is found in the Appendix. The ROW inspectors enforce these requirements in the field, respond to complaints and coordinate with DSI to address issues originating on private property.

In 2016, DSI sent out 67 leaf letters to properties throughout the City. This letter states that a complaint was received by the City of leaves being raked into the street. It explains these leaves negatively impact downstream water bodies and gives info about compost sites in Ramsey County. The first letter is a warning and subsequent complaints will result in a fine to the property owner.

Discharges addressed in 2016 can be found in the Appendix.

Staff Training

- The Department of Public Works hosts an Annual Utility Coordination meeting to facilitate utility and street system reconstruction projects. A component of this meeting includes stormwater management items such as erosion and sediment control in the public Right-of-Way, etc. Attendees are comprised of various municipal employees and utility businesses.

MCM 3: Illicit Discharge Detection & Elimination

BMP 3.2 STORM SEWER SYSTEM MAP & INVENTORY

Description

The objective of this program is to minimize pollutants in stormwater through the effective use of electronic tools for data storage, retrieval, display and analysis. An electronic inventory and map and electronic inventory 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.

Assessment Process for Annual Reporting

- Report on status of electronic inventory and mapping completion.

2016 Activities

Storm Drain System Infrastructure

Approximately 150 years ago, Saint Paul first constructed portions of a sewer system that today comprises 450 miles of storm sewers and over 26,000 catch basins. The system was designed to satisfy the City's obligation to provide reasonable drainage of stormwater and to prevent street flooding, which satisfied the City's responsibility to protect neighboring properties, allow for normal traffic flows, and prevent damage to streets, sidewalks and boulevards.

The Department of Public Works is developing a computer based asset and infrastructure management system. This system will include both the storm and sanitary sewer networks. When the asset and infrastructure management system is complete, the City will have the data and systems necessary to accurately determine the sub-watershed for each of the outfalls. The Sewer Utility is in the process of converting its hand drawn sewer maps to an electronic format. All of the converted sewer data was checked for accuracy and is now going through a QA/QC process.

Watershed and Storm Sewer Outfall Inventory

An inventory of Saint Paul's storm sewer outfalls is found in the Appendix. This inventory includes the outfall identification number, outfall name, watershed name, size of pipe and drainage area. The following information is provided in the Outfall Inventory found in the Appendix for each of the 23 watersheds in St. Paul: drainage area, land use types and distribution, population, percent impervious surface area, and the runoff coefficient. The following table shows the total number of discharge points to each water body in Saint Paul.

Discharge points to receiving waters

Receiving Water	Total Discharge Points
Bridal Veil Creek	1
Mississippi River	59
Upper Lake	1
Crosby Lake	3
Fairview North Pond	2
Lake Como	11
Loeb Lake	1
Lake Phalen	5
Beaver Lake	4
Suburban Pond	2
Little Pig's Eye Lake	1
Pig's Eye Lake	5
Battle Creek	11

Stormwater Ponds

A map showing the stormwater ponding areas in the City of Saint Paul is found in the Appendix. The Appendix also contains the tributary area and design capacity for each City ponding area and a list of ponding areas by watershed.

NPDES Permitted Facilities

Facilities in Saint Paul that are issued NPDES permits by the MPCA are found in Appendix.

Industrial Land Use

Industrial land uses may generate higher concentrations of hydrocarbons, trace metals, or toxicants than are found in typical stormwater runoff. Maps showing the areas of industrial land use in Saint Paul and pollutant source locations are included in the Appendix.

MCM 3: Illicit Discharge Detection & Elimination

BMP 3.3 DRY WEATHER FIELD SCREENING PROGRAM

Description

The objective of this program is to develop, and as necessary continue to develop, and implement a dry weather field screening program to detect and eliminate non-stormwater discharges, including illegal dumping, to the system. The City shall inspect each outfall at least once over the five-year term of the current permit for evidence of illicit discharges.

Assessment Process for Annual Reporting

- Number of outfalls inspected.
- Number of reported or discovered prohibited discharges, number investigated and number eliminated.
- Narrative summarizing dry weather flow inspections, activities, results and responses.
- Training events and staff trained

2016 Activities

Detection and Removal Screening Program

The field screening program to detect and investigate contaminated flows in the storm drain system is part of the City's daily operations. Sewer Maintenance crews routinely inspect and clean storm drain structures throughout the City. In addition, inspections of flows that generate unusual odors, stains, and deposits are included in the annual outfall inspection program.

Any suspect flows are then reported to appropriate City staff for further investigation. These combined efforts result in an annual screening of more than 20% of City drainage areas.

The City works with the Capitol Region Watershed District to conduct a stormwater monitoring program in Saint Paul as well as conducting its own BMP monitoring program. The best avenue for a continued effective screening program in the City of Saint Paul, without duplication of services, is to continue to use current practices, and to explore the development of certain aspects of the program to improve enforcement results.

The City investigates prohibited discharges as part of its regular tunnel, outfall and pond inspection program. The City also investigates complaints and issues identified in the monitoring program. The Department of Safety and Inspections carries out enforcement on property code violations. Under Chapter 45 of City Code, the City is authorized to collect via assessment its cost of abating property-related health and safety problems when an owner has

failed to perform the work following notice by the City. The City may assess property owners to recover unpaid city charges.

Continue existing programs as outlined in the program overview, and continue to develop and improve documentation of program activities. GIS mapping will be implemented as a tool to support various activities. Information that is gained through the inspection program will be used to compile data on non-stormwater discharges, storage of hazardous materials, and activities or operations that may be potential water pollution point sources. The City will continue to investigate prohibited discharges as part of its regular tunnel, outfall and pond inspection program.

Standard Operating Procedures and Checklists

- The Parks Department uses a Spill Reporting form and instructions (See Appendix). Form is completed in the event of a spill if petroleum or hydraulic spills greater than five gallons, and other materials spill of any size. The Minnesota Duty Officer is notified, as required, in the event of a reported spill.
- The Parks Department and the Department of Public Works have Clean Water Policies which are distributed, reviewed, and signed by all field staff. (See Appendix)

MCM 3: Illicit Discharge Detection & Elimination

BMP 3.4 INDUSTRIAL ACTIVITIES MANAGEMENT PROGRAM

Description

The objective of this program is to minimize the discharge of pollutants from industrial activities 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 program.

Assessment Process for Annual Reporting

- Number of water and land pollution complaints.
- Number of discharge incidents reported to MPCA Industrial Permit Program.
- Industrial facilities inventoried.
- Stormwater hotspots inventoried.
- Number of discharges eliminated from industrial facilities.

2016 Activities

A map of the industrial land use areas in the City is included in the Appendix. Complaints in the ROW are handled by the Public Works ROW inpectors. Those that originate on private property are referred to DSI. The City coordinates with the MPCA Industrial Stormwater Program for sites that are permitted by the MPCA. Discharges addressed in 2016 can be found in the Appendix.

MCM 4: Construction Site Erosion & Sediment Control

BMP 4.1: DEVELOPMENT & REDEVELOPMENT CONTROL PROGRAM

Description

The objective of this program is to minimize the discharge of pollutants from construction sites disturbing one acre or more by requiring erosion prevention and sediment control measures. Chapter 52 of the Saint Paul Code of Ordinances requires projects disturbing one acre or more to provide for erosion and sediment control during construction. Sites one or more acres in size are also required to obtain NPDES General Construction Permits from the Minnesota Pollution Control Agency, the Capitol Region Watershed District and the Ramsey-Washington Metro Watershed District.

This program encompasses a variety of individuals responsible for water quality concerns from construction activities. These individuals include designers of erosion control plans; staff responsible for plan review; and, field inspectors with municipal authority over contractors.

Assessment Process for Annual Reporting

- Report on number of site plans reviewed and approved.
- Report on number of site erosion and sediment control inspections recorded.
- Report on development and implementation of written procedures for site plan review and erosion and sediment control inspections.
- Report on number of non-compliance incidents that were identified and addressed by municipal inspectors.
- Report on development of citizen complaint process and number of citizen complaints received and addressed.
- Report on number of staff trained related to construction site erosion and sediment control.

2016 Activities

Program Overview

Saint Paul Code of Ordinances, Part II – Legislative Code, Title VI - Building and Housing, Chapter 52 Stormwater Runoff contains erosion and sediment control requirements, and stormwater management requirements for new developments and other land-disturbing construction activities. Construction activities and new development projects are reviewed through the City's Site Plan Review process. This review provides comments that are integrated into a final plan submittal that is subsequently routed to the City's Departments for approval. The Department of Safety and Inspections reviews projects for compliance with the erosion &

sediment control requirements and water quality requirements. The Sewer Utility reviews projects for rate control, flood protection and capacity issues.

Site Plan Review

DSI and Public Works staff provide a detailed review of site plans, and track process to identify stormwater management opportunities. Additionally, DSI and Public Works staff provide a review of all site plans from a sustainable water quality perspective. During 2016, City Departments reviewed 95 site plans, of which 69 received final approval with the appropriate permits issued. Continued attention to erosion and sediment control plan submittals, along with increased awareness in the industry, provided for better compliance during site inspections.

Requirements

The ordinance addresses development sites, utility excavations, demolition projects and all other land disturbing activities of 1 acre or more. For disturbances less than 1 acre, erosion and sedimentation control practices must be installed and inspected before land disturbing activities begin. Sites disturbing more than 10,000 square feet need to submit an erosion and sediment control plan as part of the City's Site Plan Review process. City Zoning Code Chapter 33 requires a grading permit for the placement, movement and removal of fifty cubic yards of fill and to incorporate stabilization methods on soil stockpiles greater than 10 cubic yards, if left for more than 10 days.

Inspection and Enforcement

Ongoing site inspections are performed by Public Works ROW and DSI inspectors. In 2016, DSI inspectors conducted 120 erosion control inspections at 88 properties.

Inspectors may issue a warning notice citation or a "Stop Work Order". Failure of the permittee to comply with the ordinance will constitute a violation and will be considered a nuisance pursuant to the laws of the State of Minnesota. If there is a demonstrated failure to comply, the City reserves the right to terminate a permit at any time. The City then has the option of proceeding with the necessary restoration of the site. This restoration would be done at the expense of the owner/permittee. Increased awareness of the ordinance, improved plan submittals, and a continued compliance based inspection program resulted in a continued rise in compliance. Inspections were coordinated with the Capitol Region and Ramsey-Washington Metro Watershed Districts.

New public and private developments and other projects that disturb one acre or more will be inspected for erosion and sediment control. This effort will lead to a continued awareness of the problems associated with construction site sediment. This will also result in a continuing increase in the overall rate of compliance citywide. The City will continue to study options to

increase compliance, and to help limit the amount of erosion and sediment loss associated with construction projects.

Standard Operating Procedures and Checklists

The City of Saint Paul utilizes standard forms for both public and private construction sites. The standard form utilized for documenting field inspections on private projects is found in the Appendix. The forms supplement a database which tracks multiple levels of information including inspections for erosion control. The City has developed the following standard operating procedures (SOPs) and checklists for Erosion and Sediment Control (ESC) on public and private construction sites:

- The City of Saint Paul utilizes a standard form for both public and private construction sites.
- Public Works Right-of-Way Division uses a form when ROW inspectors inspect Utility Installation work. This form was distributed at the annual Utility review meeting. (See Appendix.)
- Continue to improve SOPs and checklists and distribute to appropriate parties.
- City staff will continue to develop performance measures and to improve data collection, tracking and analysis. The City will also pursue means of measuring and understanding water quality impacts.
- Erosion control plans and inspections are tracked in the City's AMANDA system.
- Handouts and worksheets are distributed to all relevant applicants.
- Requested database programming resources from department administration in 2016 in order to develop and implement standardize procedures regarding erosion control for site plan review and field inspection.

Staff Training

- ESC information was distributed at the City's Annual Utility Project Review meeting in 2016. Included new Erosion and Sediment Control policy for Right of Way.
- City of Saint Paul inspectors are trained and certified through the University of Minnesota's Erosion and Stormwater Management Certification Program. This includes Department of Public Works Street Construction inspectors, Department of Safety and Inspections Building inspectors and Parks Environmental Services staff. The certification includes a recertification component within a 3-year period, which ensures training stays current with techniques and regulations.
- Various Parks Environmental Services staff remained current with Erosion and Sediment Management training from the University of Minnesota.

MCM 4: Construction Site Erosion & Sediment Control

BMP 4.2 MUNICPAL CONTROL PROGRAM

Description

The objective of this program is to minimize the discharge of pollutants from construction sites disturbing 1 acre or more carried out by the City by requiring erosion and sediment control measures. Sites one or more acres in size are required to get NPDES General Construction Permits from the Minnesota Pollution Control Agency, the Capitol Region Watershed District and the Ramsey-Washington Metro Watershed District.

This program encompasses a variety of individuals responsible for water quality concerns from construction activities. These individuals include designers of erosion control plans, staff responsible for plan review and field inspectors.

Assessment Process for Annual Reporting

- Report on number of non-compliance incidents that were identified and addressed on City projects.
- Report on staff attending erosion and sediment control training.
- Report on development of citizen complaint process and number of citizen complaints received and addressed.

2016 Activities

Municipal site projects go through the site plan review process and are inspected by the building inspectors for erosion and sediment control. Please see the description of this program in BMP 4.1. The standard form utilized for documenting field inspections for street reconstruction projects is intended to be handwritten in the field and included in the project file. Staff started using the forms in 2011. During 2016, Public Works Construction inspectors continued to work with internal forces and watershed district staff on erosion and sediment control compliance.

Staff Training

- ESC information was conveyed at the City's Annual Utility Project Review meeting in 2016.
- City of Saint Paul inspectors are trained and certified through the University of Minnesota's Erosion and Stormwater Management Certification Program. This includes Department of Public Works Street Construction inspectors, Department of Safety and Inspections Building inspectors and Parks Environmental Services staff. The certification

includes a recertification component within a 3-year period, which ensures training stays current with techniques and regulations.

- Various Parks Environmental Services staff remained current with Erosion and Sediment Management training from the University of Minnesota

MCM 5: Post-Construction Stormwater Management

BMP 5.1: DEVELOPMENT & REDEVELOPMENT MITIGATION PROGRAM

Description

The objective of this program is to minimize the post-construction discharge of pollutants and stormwater runoff volume from construction projects disturbing one acre or more. Chapter 52 of the Saint Paul Code of Ordinances requires projects disturbing one acre or more to provide post-construction stormwater management. Sites one or more acres in size are also required to obtain NPDES General Construction Permits from the Minnesota Pollution Control Agency, the Capitol Region Watershed District and the Ramsey-Washington Metro Watershed District.

Projects are reviewed through the City's site plan review process, which is facilitated by the Department of Safety and Inspections. The Site Plan Review Committee is made up of staff from various departments including the PW Sewer Utility, Saint Paul Regional Water Services, PW Traffic Division, Zoning and Fire & Safety. Building permits are not issued until site plan review approval is formally attained.

Assessment Process for Annual Reporting

- Narrative on number of projects reviewed, number of projects approved, number and type of structural BMPs constructed or installed.

2016 Activities

Ongoing Stormwater Management

Redevelopment of existing sites provides an opportunity to lessen the impacts of urbanization on the Mississippi River and other Saint Paul water resources. During 2016, Stormwater Best Management Practices (BMPs) were installed on sites reviewed through the Site Plan Review process. BMP types that were constructed include:

- Rain gardens
- Pervious pavement
- Infiltration areas
- Stormwater ponds
- Underground infiltration/filtration and detention facilities

Plan Review

Stormwater management plans are required for all construction projects, which disturb one acre or more of land. These plans are reviewed through the Site Plan review process and approved by the Department of Safety and Inspections and the Saint Paul Public Works Sewer Utility. Sites disturbing less than one acre are also required to provide runoff rate control, if the project disturbs greater the 10,000 square feet. In addition, sites under one acre are

encouraged to incorporate green infrastructure stormwater BMPs into their design as a means of satisfying other city codes, such as parking requirements. The City updated its Off-Street Parking Code to include stormwater landscaping requirements in June of 2010. In July of 2010, the City began implementation of the green building policy requirements for city building projects and private projects receiving more than $200,000 in City funding to facilitate design and construction of stormwater quality practices.

Staff Training

- City staff from multiple departments attended the Minnesota Water Resources Conference.
- City staff from multiple departments attended the Clean Water Summit.

MCM 5: Post-Construction Stormwater Management

BMP 5.2 COMPLIANCE PROGRAM for PRIVATE SITE CONTROLS

Description

The objective of this program is to implement a program for maintenance, inspection, record keeping and reporting of private stormwater devices constructed in accordance with the City's requirements.

Assessment Process for Annual Reporting

- Narrative on development of procedures.
- Number of new listings entered for privately owned BMPs.
- Once procedures are implemented, identify percent compliance with submittal of compliance reporting documents.

2016 Activities

City ordinance requires the design to minimize the need of maintenance and to provide access for equipment and personnel. The facilities must have a plan of operation and maintenance that ensures effective removal of pollutants. The ordinance also allows the City right of entry and inspection. In 2015, the City began a comprehensive review of its stormwater policies. In 2016, the City entered into a contract to update the Local Surface Water Management Plan. As a part of this planning effort, various ordinances will be analyzed and revisions proposed. This will assist in future planning to meet the identified Proposed Activities and Implementation Schedule. The City coordinates with the CRWD and RWMWD in the development of BMP database and procedures to ensure that private BMPs are maintained.

MCM 5: Post-Construction Stormwater Management

BMP 5.3 MUNICIPAL MITIGATION PROGRAM

Description

The stormwater management objective of this practice is to reduce the discharge of pollutants through the proper planning, design, and construction management of projects carried out by the City.

Assessment Process for Annual Reporting

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

2016 Activities

- ***Stormwater Modeling –*** Modeling projects were completed in support of the sewer and street projects. A map showing the completed modeling projects in the City is included in the Appendix.

- ***Public Works Street Reconstruction Projects***
    - Raymond Avenue: Public Works installed a SAFL Baffle System ($29,000).
    - University Avenue: Public Works installed a SAFL Baffle System ($55,000).
    - Jackson Street: Public Works began installing a porous asphalt bike path (Anticipated 2017 Completion $285,000).
    - Jackson Street Bioretention Basins (Anticipated 2017 Completion $165,000).
    - Como-Chatsworth: Public Works installed a subsurface infiltration trench ($80,000).
    - Wheelock Parkway: Public Works began retrofitting an existing pond with the installation of an Iron-enhanced sand filtration bench (Anticipated 2017 Completion $82,000).

- ***Parks and Recreation***
    - Parks and Recreation installed a stormwater diversion structure in preparation for a regional treatment system at McMurray Field ($80,000).
    - Parks and Recreation (McMurray Field Transportation Improvements) installed a SAFL Baffle System ($19,000).
    - Parks and Recreation received $53,000 of in-kind labor from Conservation Corps Minnesota for installation and maintenance of stormwater best

management practices in Saint Paul. Funding was made possible through the Legacy amendment.

- Parks and Recreation received a $168,000 Conservation Partners Legacy Grant to enhance approximately 210 acres of floodplain forest at Crosby Farm Regional Park.
- Parks and Recreation received a $40,000 Capitol Region Watershed District grant to restore 4.25 acres of lakeshore, oak savanna, and oak woodland habitat adjacent to Lake Como.
- Parks and Recreation received $10,500 from the Ramsey-Washington Metro Watershed District to restore one acre of oak savanna and install a raingarden at the Phalen Lakeside Activity Center.
- The City of Saint Paul, in cooperation with the Capitol Region Watershed District, is enhancing 16 acres of wetlands at Willow Reserve where the Trout Brook storm sewer interceptor diverts rainwater in an effort to reduce localized flooding.
- The City of Saint Paul, in cooperation with Great River Greening, is undertaking the enhancement of approximately 90 acres of disturbed floodplain within Crosby Farm Regional Park.

Staff Training

- City staff from multiple departments attended the Minnesota Water Resources Conference and the Clean Water Summit.

MCM 5: Post-Construction Stormwater Management

BMP 5.4 STORMATER RUNOFF VOLUME REDUCTION PLAN

Description

The objective of this program is to conduct a study of how stormwater volume reduction practices will best fit into Saint Paul's overall goals of stormwater management for projects that disturb one acre or more. Volume reduction practices include infiltration, bioinfiltration, stormwater reuse, evapotranspiration, minimizing and disconnecting impervious surfaces.

Assessment Process for Annual Reporting

- Narrative of progress towards plan development and implementation.

2016 Activities

The City submitted its Volume Reduction Plan to the MPCA in January of 2015. This plan provided a summary of the City's volume reduction projects, identified opportunity sites and identified areas in the City where there are limitations on the construction of volume reduction BMPs.

In 2016, the City entered into a contract to update the Local Surface Water Management Plan. As a part of this planning effort, various ordinances will be analyzed and revisions proposed. This will assist in future planning to meet the identified Proposed Activities and Implementation Schedule.

MCM 6: Pollution Prevention & Good Housekeeping

BMP 6.1: STORM SEWER SYSTEM OPERATION & MAINTENANCE

Description

The objective of this program is to minimize the discharge of pollutants through proper and cost effective operation and maintenance of the City's storm sewer system. General operations and maintenance efforts include inspections, cleaning, repairs, rehabilitation and reconstruction.

The City's stormwater system includes 450 miles of storm sewers, 28 ponding areas, 4 lift stations, numerous water quality best management practices and over 26,000 catch basins. The Sewer Maintenance section allocates substantial resources to cleaning, inspecting and maintaining the City's stormwater system. All installed stormwater facilities are maintained and operated in accordance with adopted policies and ordinances. All storm sewer pipes are cleaned and inspected in advance of City street reconstruction projects. Where defects are observed, repairs are made at the time of discovery or during the reconstruction project. The City also regularly inspects, cleans and maintains stormwater ponding areas. Storm sewer tunnels are inspected every two years.

In 1995, the City completed a ten-year sewer separation program by constructing 189 miles of storm sewer and 12 miles of sanitary sewer (some combined sewer was converted to storm sewer). In 1997, the City began a 20-year rehabilitation program for its storm and sanitary sewer system. The Sewer Utility complies with MnDOT's Standard Specifications for Construction, and has its own set of Standard Plates.

Assessment Process for Annual Reporting

- Report on storm sewer and tunnel repair and rehabilitation projects.
- Report on miles of storm sewers and tunnels assessed, miles of storm sewers and tunnels cleaned and amount of material removed.
- Report on development of standard operating procedures.
- Narrative of training activities including number of staff trained and types of training conducted.

2016 Activities

Sherman Street Storm Tunnel System

The Sherman Street Storm Tunnel System was originally constructed in the late 1800s. Much of the tunnel system was mined within a sandrock formation, and then partially lined with brick to provide protection of the sandrock from the erosive forces of stormwater flows. In 2015 & 2016, the tunnel system was rehabilitated by removing the failing brick lining and installing a reinforced concrete tunnel liner. Additional access shafts were also installed to better facilitate future maintenance activities. The Storm Tunnel rehabilitation efforts were completed in Spring of 2016 at a cost of approximately $1.5 million.

Phalen Creek Storm Tunnel System

The Phalen Creek Storm Tunnel System was originally constructed in the 1800s. The tunnel system is comprised of varying types of construction (brick, granite blocks, corrugated metal pipe etc.). In 2016, a multi-phase rehabilitation effort was initiated to address deficiencies in the ceiling, walls and invert of the tunnel system. Approximate cost for Phase I of the Phalen Creek Storm Tunnel System Rehabilitation is $3.5 million.

Pump Stations

The City has four stormwater flood control pump stations that are located along the Mississippi River. These pump stations provide interior drainage during flood events on the Mississippi River. The stormwater flood control pump stations are inspected and operated twice per year. All of the stations are connected to the City's Supervisory Control and Data Acquisition system.

Storm Sewer Inspection, Cleaning & Rehabilitation

- Grand-Macalester Televised Inspection: 81,575 L.F. of Storm Sewer.
- Summit-Lexington Televised Inspection: 87,964 L.F. of Storm Sewer.
- Sewer Maintenance Televised Inspection: 6,571 L.F. of Storm Sewer
- Sewer Maintenance Cleaning: 4,517 L.F. of Storm Sewer
- Arterial Sewer Lining: 121 L.F. of Storm Sewer
- Chatsworth-Jackson Sewer Lining: 723 L.F. of Storm Sewer
- 2016 Major Sewer Repair: 155 L.F. Storm Sewer Replacement

MCM 6: Pollution Prevention & Good Housekeeping

BMP 6.2: CATCH BASIN/MANHOLE OPERATION & MAINTENANCE

Description

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

Assessment Process for Annual Reporting

- Report on number of catch basins and manholes cleaned and/or repaired and quantity of material removed.
- Report on implementation of the catch basin sump management program.

Catch Basins

A catch basin is an inlet to the storm drain system. A field survey of the City's catch basins using GPS equipment located all city owned catch basins. The total number of catch basins inventoried was 26,200. As part of the City's Saint Paul Street Vitality Program (SPSVP), existing catch basins within a street reconstruction project area are replaced with new catch basins. Cleaning catch basins, while ensuring proper runoff conveyance from City streets, also removes accumulated sediments, trash and debris. Catch basins that are reported as plugged or damaged are given a priority for repair and cleaning. Sewer Maintenance has set a goal of cleaning 2,000 catch basins per year. Augmenting this effort is the street sweeping program, carried out by the Street Maintenance Division. The street sweeping program targets the pick-up of street sediment, debris and leaves prior to their reaching catch basins.

2016 Activities

- Catch basins inspected: 784
- Catch basins cleaned: 4,396
- Catch basins repaired: 364
- Manholes inspected: 713
- Manholes cleaned: 83
- Manholes repaired: 190

MCM 6: Pollution Prevention & Good Housekeeping

BMP 6.3: OUTFALL OPERATION & MAINTENANCE

Description

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

Assessment Process for Annual Reporting

- Report on outfalls inspected, dates, comments on repairs needed and dates of repairs.

2016 Activities

Storm Drain Outfalls

A storm drain outfall is the point where the storm sewer system discharges to receiving waters. Outfalls are inspected on a 5-year schedule. Outfall inspections include an evaluation of the general condition of structure, determination of significant erosion and identification of any non-stormwater discharges. When indications of non-stormwater discharges are observed, they are reported to the appropriate City staff for follow-up investigation and resolution and reported to the Minnesota Duty Officer, as required. Any identified structural repairs or maintenance work is prioritized and scheduled within the constraints of available personnel, funding and coordination with other essential operations. All of the Mississippi River outfalls were inspected in 2013, and in 2016 the following outfalls were inspected:

Mississippi River: 96
Upper Crosby Lake: 8
Crosby Lake: 4
Crosby Pond: 5

MCM 6: Pollution Prevention & Good Housekeeping

BMP 6.4: STORMWATER POND/STRUCTURAL POLLUTION CONTROL DEVICE OPERATION & MAINTENANCE

Description

The objective of this program is to minimize the discharge of pollutants through the proper operation and maintenance of stormwater ponds and water quality devices. Stormwater ponds, filtration/infiltration areas, and structural controls are water quality devices that manage stormwater runoff. General operations and maintenance efforts include assessment and maintenance of the functionality of stormwater ponds and water quality devices.

Assessment Process for Annual Reporting

- Report on number of stormwater ponds and structural pollution control devices inspected, assessed and cleaned, by category. Include date of inspection, date and results of assessment, antecedent weather conditions and nature of repairs.

2016 Activities

Stormwater Ponds

Saint Paul's stormwater ponding areas are constructed to collect and detain flows from storm events and in some cases to also improve water quality. These ponds are designed to reduce peak flow rates in downstream storm sewers. A map showing the stormwater ponding areas in the City of Saint Paul is found in the Appendix. The Appendix also contains the tributary area and design capacity for each of the City's ponding areas and a list of stormwater ponding areas by watershed. The City's stormwater ponding areas are inspected by Sewer Maintenance staff after major rainfall events. Routine maintenance is completed as needed based on the inspection results.

The City implemented a program to evaluate its ponding areas for major sediment removal in 2002. This program involves an initial inspection, prioritization, survey, timber removal, sediment removal and inlet/outlet reconstruction. Major sediment removal took place in a majority of the City's ponds in the winters of 2002/2003, 2003/2004, and 2013/2014. The estimated cycle for sediment removal from ponding areas is 20 years. Projects included re-installation of rip rap at inlet and outlet structures and vegetation restoration by seeding and erosion control blankets. Sediment was tested and disposed of in accordance with state guidelines.

Structural Pollution Control Devices

The city constructs water quality and volume control BMPs as required by the MPCA Construction Permit and Watershed District Rules. Since 2006, the City has constructed BMPs,

including infiltration trenches and rain gardens. In 2015, an inventory of constructed BMPs was developed and entered into the City's asset management system. BMPs will be added each year once as-builts are received. The BMPs are programmed to be cleaned annually, beginning in 2015.

As part of the Water Quality and Quantity Monitoring Program, a maintenance inspection is conducted on each of the BMPs that are monitored. This inspection includes documentation of sediment depth in the pre-treatment device, sediment depth in the infiltration gallery, depth of standing water in the infiltration gallery and observation notes.

MCM 6: Pollution Prevention & Good Housekeeping

BMP 6.5: HANDLING & DISPOSAL of 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 the storm sewer system.

Assessment Process for Annual Reporting

- By categories shown in BMP Sheet 6.1.4, report estimated annual total mass (pounds) removed, characterization and destination(s) of material removed.

Program Overview

Material is collected from catch basin sumps, the storm sewer system, ponding areas and water quality BMPs. Removed substances are screened for visual or olfactory indications of contamination. If contamination of the material is suspected, representative samples are selected for an environmental analysis. Contaminated substances are disposed of in a landfill or another site that is approved by the Minnesota Pollution Control Agency. Uncontaminated sediments are disposed in the same manner as street sweepings, as reported in Section IV: Street Management Program. During cleaning operations, sediment control measures are applied as needed to prevent removed material from re-entering the storm drain system.

2016 Activities

- Material removed from stormwater ponds, BMPs and catch basins: 1,635 tons

MCM 6: Pollution Prevention & Good Housekeeping

BMP 6.6 STREET SWEEPING PROGRAM

Description

The objective of this program is to minimize the discharge of pollutants to the storm sewer 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 744 miles of residential streets, 127 miles of arterial streets and the city's approximately 330 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.

Assessment Process for Annual Reporting

- Number of miles swept in program categories
- Approximate amount of material removed in each program category

2016 Activities

Street Sweeping

The City of Saint Paul conducts a street and alley cleaning program to promote the health and welfare of its citizens and to reduce the amount of pollutants to receiving waters from stormwater discharges. Sweeping is a major operation for the Street Maintenance Division and is done during the spring, summer and fall. Elgin Pelican mechanical sweepers handle the vast majority of the sweeping. An Elgin Crosswind regenerative air sweeper is utilized downtown almost every weekday.

Residential street spring and fall sweeping were completed on April 26, 2016 and November 9, 2016, respectively. The primary material swept in the spring is debris from winter months. Fall sweeping occurred October 18, 2016-November 9, 2016. Typically, the fall sweep is timed so that a majority of the leaves are down and enough time is allowed to sweep all Saint Paul streets before the first snow. Currently, the wide variety of trees with varying leaf drop times makes it impossible to wait for all of the leaves to drop. To compensate for this, touch up sweeping continues most years through November and early December. In the interest of continued improvement to our sweeping program, workers attend training and best management practices are implemented.

Street Sweeping

Streets and alleys are divided into classes, each of which receives a different level of service as defined below:

Class I-A & B Downtown or Loop streets

Downtown or loop streets are within the following boundaries: Kellogg on the south, 12th on the north, Broadway on the east and Main on the west. These streets are swept approximately two times per week during the spring, summer, fall and winter as weather allows. All routine maintenance, including patching and repairing of street surfaces, is performed on an as-needed basis.

Class II - Outlying Commercial and Arterial Streets

These streets, which have business or commercial properties fronting on them, are the City's major arteries. They have heavy volumes of both vehicular and pedestrian traffic. Typical examples are University, Snelling, West 7th, East 7th, Rice, Payne, Arcade, Summit and Grand. Class II streets are typically swept or cleaned six to ten times annually on the following schedule: every two weeks in April, May, October and November for spring and fall cleanup and every 3 to 6 weeks in June through September for litter, tree debris and sediment cleanup. Occasional winter sweeping is done if weather permits, and there are special events. All routine maintenance, including patching and repairing of street surfaces, is done on a scheduled or as-needed basis. In 2016, Class II maintenance priorities were shifted from sweeping to patching and paving operations. The result of this shift in operations was less frequent sweeping between the spring and fall sweeps.

Class III - Residential Streets

In the spring, all residential streets, including oiled, paved and intermediate streets, receive a thorough sweeping. Patching and repairing is done on a scheduled or as-needed basis. All existing paved and oiled streets are on the 8 year cycle chip seal list. Approximately 1,144,405 square yards of paved streets were chip sealed in 2015. Oil and sand sealing of oiled streets is no longer done. The City recycles the reclaimed chip seal rock. In the fall, streets are swept for leaf pickup. All material swept up during the fall cleanup is hauled to a State licensed disposal facility.

Class IV - Oiled and Paved Alleys

All oiled and paved alleys are swept during the late spring and summer. All routine maintenance, including patching and repairing of the alley surfaces, is performed on a scheduled or as-needed basis. All existing paved and oiled alleys are now on an 8-year cycle chip seal list. Approximately 239,000 square yards of paved alleys were chip sealed in 2016.

Class V and VI - Unimproved Streets and Alleys

Unimproved streets and alleys are right-of-ways that have not been developed. There are approximately 50 miles of unimproved streets and approximately 288 miles of unimproved assessed alleys in the City. Because they are City right-of-ways, the City has the responsibility to perform minimal repairs and maintenance work on them to make them passable and to reduce hazards. The maintenance and repair of these streets and alleys consists of patching, minor blading, and placing of crushed rock or other stabilized material.

Disposal

The materials collected from street sweeping are delivered to the City's Pleasant/View and Como/Western yards. The City's hauling contractor hauls the material away to have it screened and disposed of properly. The contractor composts the organic materials, which are mostly collected in the fall sweep.

Street Maintenance has a Hazardous Waste Disposal Policy in place. Any hazardous materials collected from City streets are disposed of in environmentally acceptable means. In 2001, the sweepings collected from City streets and alleys were tested and found to be within the Environmental Protection Agency's guidelines for recycling purposes, after screening out waste and debris. Approximately 7 to 10% of swept up material is disposed of in a landfill. Street Maintenance also services over 440 trash receptacles and disposes of refuse from neighborhood cleanups each year.

2016 Street Sweeping Quantities (Cubic Yards)

Season	Spring/Summer	Fall
Totals	3,952	8,924

MCM 6: Pollution Prevention & Good Housekeeping

BMP 6.7: ROADWAY DEICING MATERIALS MANAGEMENT

Description

The objective of this program is to minimize the runoff of deicing materials applied to roadways under its jurisdiction, consistent with public safety and to properly store deicing materials.

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 number of staff attending training on use of salt.

2016 Activities

Snow and Ice Control

Minnesota weather conditions may require ice control from late September through early May. Frost forming on bridge decks is usually the first and last ice control event of the winter season. From early November through mid-April, the need for pavement treatment is determined by temperature and precipitation. Frequency of snow events through the winter season influences amounts of material used. The City's foremost objective is to maintain safe roads for all users. The consequences of icy roads are longer travel times, adverse economic impact, accidents and injuries.

Salt is the primary material used to melt snow and ice. Salt and treated salt is effective to 15°F and 0°F respectively, but factors such as darkness, continuing snow, type and quantity of precipitation, all reduce melting performance. Sand is sometimes used to enhance traction, usually when temperatures are below 0°F and snowfall amount is likely to be greater than 3 inches. Specific application rates are decided upon for each snow event and adjusted to the minimum amount necessary to achieve the desired results.

Saint Paul uses treated salt for pavement temperatures below 15°F and regular salt for temperatures from 15°F and above. Salt brine is used to pre-wet salt from the salt spreaders, making the salt more effective. The benefits of pre-wetted salt are better melting performance, less bounce, residual value and reduction in amount of salt used. All salt trucks are presently fitted with salt pre-wetting equipment. Public Works developed and adopted a formal Salt Management Plan in the fall of 2011.

Additionally, Saint Paul anti-ices major streets and bridges with salt brine prior to winter events. Anti-icing helps decrease the bond of snow and ice to the pavement. Anti-icing can be used as the primary tool to fight frost.

Storage of De-icing Materials

Salt and mixed piles of sand and salt are covered year round to eliminate runoff. Storage facilities are located at the following locations:

873 N. Dale Street
310 South Victoria Street

Snow and Ice Control

Two snow emergencies were declared late in 2016. Typically 3 or 4 snow emergencies are declared during this period. It is anticipated that ice control materials used for 2017 will be similar to 2016 quantities.

2016 Ice Control Material Quantities

	Jan to March	Nov to Dec	Total
Salt (tons)	3,579	2,505	6,084
Treated Salt (tons)	2,232	1,998	4,230

Employee Training

Saint Paul Public Works is an advocate of networking and regularly attends events such as the American Public Works Association North American Snow Conference and the Fresh Water Society Road Salt Symposium. All operators attended a Snow and Ice Control training session in November 2016. Attendees received certification from the MPCA. The main purpose of this session was to train employees to get the most out of every application, maintaining the safest roads possible in the most economical way, while protecting the environment. The session addressed the following: abrasives, salt, pre-wetting. anti-icing, equipment calibration and material storage. The Minnesota Snow and Ice Control Handbook and Saint Paul Public Works Salt Management Plan are available to all employees and are used as a guide in our best practices.

MCM 6: Pollution Prevention & Good Housekeeping

BMP 6.8: CITY PARKING LOT & EQUIPMENT YARD MANAGEMENT

Description

The objective of these activities is to minimize 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. Program categories include the following:

a) Saint Paul Parks and Recreation – parks, recreation centers, maintenance facilities

b) Planning & Economic Development –city owned parking lots

c) Public Works

- Dale Street Facility includes Street Maintenance, Traffic Operations and Municipal Equipment
- Sewer Maintenance
- Asphalt Plant

Assessment Process for Annual Reporting

- Narrative of training activities
- Report on development of standard operating procedure

2016 Activities

The Parks Department and the Department of Public Works have Clean Water Policies which are distributed, reviewed, and signed by all field staff. (See Appendix)

Dale Street Facility Sediment Control Structure: Public Works hired WSB and Associates to complete a Facility Improvements Feasibility Report for four Public Works facilities and one Parks and Recreation facility. In 2012, a large pre-fabricated sediment control and collection structure was constructed at the Public Works' Dale Street Facility. This structure is inspected and cleaned as necessary.

Parks and Recreation Wash Stations: Contracted with ESD Waste2Water, Incorporated to complete site visits and provide five proposals for installation of permanent or portable equipment wash stations. Parks will seek funding for future installation.

Employee Training

- Saint Paul Public Works is an advocate of networking and regularly attends events such as the American Public Works Association North American Snow Conference and the Fresh Water Society Road Salt Symposium. All operators attended a Snow and Ice Control training session in November 2016. Attendees received certification from the MPCA. The main purpose of this session was to train employees to get the most out of every application, maintaining the safest roads possible in the most economical way, while protecting the environment. The session addressed the following: abrasives, salt, pre-wetting. anti-icing, equipment calibration and material storage. Public Works and Parks staff annually attends the Road Salt Symposium. The Minnesota Snow and Ice Control Handbook and Saint Paul Public Works Salt Management Plan are available to all employees and are used as a guide in our best practices.
- The Department of Public Works hosts an Annual Utility Coordination meeting to facilitate utility and street system reconstruction projects. A component of this meeting includes stormwater management items such as erosion and sediment control in the public Right-of-Way, etc. Attendees are comprised of various municipal employees and utility businesses.
- Illicit Discharge Training and Program Development, November 2015. This training session involved 8 city staff. The purpose was to educate municipal employees regarding illicit discharges and discuss enforcement including current procedures to receive, track and enforce violations as well as areas where process development is needed.
- A fact sheet was developed and distributed with the adoption of the new ordinance (See Appendix). Several staff meetings were held throughout the development of the ordinance.

MCM 6: Pollution Prevention & Good Housekeeping

BMP 6.9: FIELD OPERATIONS MANAGEMENT

Description

The objective of this program is to minimize the discharge of pollutants from the operation and maintenance of City right-of-way and park property.

Assessment Process for Annual Reporting

- Narrative of training activities
- Report on development of standard operating procedures

2016 Activities

The Parks Department and the Department of Public Works have Clean Water Policies which are distributed, reviewed, and signed by all field staff. (See Appendix)

Employee Training

- Saint Paul Public Works is an advocate of networking and regularly attends events such as the American Public Works Association North American Snow Conference and the Fresh Water Society Road Salt Symposium. All operators attended a Snow and Ice Control training session in November 2016. Attendees received certification from the MPCA. The main purpose of this session was to train employees to get the most out of every application, maintaining the safest roads possible in the most economical way, while protecting the environment. The session addressed the following: abrasives, salt, pre-wetting. anti-icing, equipment calibration and material storage. Public Works and Parks staff annually attends the Road Salt Symposium. The Minnesota Snow and Ice Control Handbook and Saint Paul Public Works Salt Management Plan are available to all employees and are used as a guide in our best practices.
- The Department of Public Works hosts an Annual Utility Coordination meeting to facilitate utility and street system reconstruction projects. A component of this meeting includes stormwater management items such as erosion and sediment control in the public Right-of-Way, etc. Attendees are comprised of various municipal employees and utility businesses.
- Illicit Discharge Training and Program Development, November 2015. This training session involved 8 city staff. The purpose was to educate municipal employees regarding illicit discharges and discuss enforcement including current procedures to receive, track and enforce violations as well as areas where process development is needed.
- A fact sheet was developed and distributed with the adoption of the new ordinance (See Appendix). Several staff meetings were held throughout the development of the ordinance.

- Approximately twenty five Parks staff attended Turf Management training for clean water hosted by the University of Minnesota.

MCM 7: Monitoring & Analysis

BMP 7.1: Cooperative Monitoring Program

Description

The objective of this program is to develop and implement a cooperative monitoring, analysis, and reporting effort with partnerships that could include: adjacent municipalities, Capitol Region Watershed District, Mississippi Watershed Management Organization, Ramsey-Washington Metro Watershed District, Metropolitan Council Environmental Services, Ramsey County Environmental Health and Metropolitan Mosquito Control District.

Assessment Process for Annual Reporting

- Number and type of monitoring sites.
- Annual monitoring and analysis results.

History

As part of the two part application for the NPDES permit, the City of Saint Paul conducted stormwater monitoring at 5 sites for one season. From 2001 through 2004, the Cities of Saint Paul and Minneapolis and the Minneapolis Park and Recreation Board participated in a joint stormwater monitoring program, as required by the stormwater permit. Minneapolis Park Board staff conducted the monitoring program. The Stormwater Monitoring Program Manual was completed by Minneapolis Park Board staff and submitted separately to the MPCA in April of 2001. The joint monitoring agreement was submitted to the MPCA in 2002.

Sampling sites were identified in the Stormwater Monitoring Program Manual. The sampling sites were selected from the sites used in the stormwater permit application monitoring program. Five sites were chosen, representative of the following land use types: two residential sites, two industrial/commercial sites and one mixed use site. Two sites were located in Minneapolis and three were in Saint Paul. The permit required two years of mercury monitoring, which was conducted in 2002 and 2003.

Beginning In 2005, the City began a partnership with the Capitol Region Watershed District, to conduct the stormwater permit monitoring program for Saint Paul as part of CRWD's overall monitoring program. CRWD established a monitoring program in 2004 to collect stormwater data from the major subwatersheds and stormwater best management practices (BMPs).

In 2012, the City began its Stormwater Quantity and Quality BMP Monitoring Program. Monitoring is completed at stormwater volume reduction BMPs in the City of Saint Paul.

Electronic water monitoring equipment is used to collect water quantity and quality data on a continuous basis from selected BMPs.

2016 Activities

Monitoring Program

CRWD operates multiple stormwater monitoring stations, including a number of full water quality monitoring stations. The Capitol Region Watershed District 2016 Monitoring Report is available on the district website at www.capitolregionwd.org.

In 2016, the City conducted the Stormwater Quantity and Quality Monitoring Program. Monitoring was completed at several stormwater volume reduction BMPs in the City of Saint Paul. Electronic water monitoring equipment was used to collect water quantity and quality data on a continuous basis from stormwater BMPs, which included:

- Water level in 11 BMPs
- Flow volumes at 7 of the BMPs
- Composite water quality sampling at 5 of the BMPs
- Groundwater at 5 locations

Analysis of the collected data generated valuable information related to the performance of each BMP. This information included:

- Average infiltration rates measured in the BMPs exceeded the rates recommended in the Minnesota Stormwater Manual and watershed district rules for specific soil types.
- The BMPs are more effective at reducing stormwater volume and pollutant loads to downstream water bodies than is currently being recognized by the watershed districts.
- The Dynamic Method for sizing volume reduction BMPs was shown to be more accurate than the Simple Method. Allowing the use of the Dynamic Method in demonstrating compliance with watershed district rules would generate significant cost savings to the public.

A map summarizing the CRWD and City monitoring sites in Saint Paul can be found in the Appendix. The City's BMP monitoring program can be found on the City's Stormwater page at https://www.stpaul.gov/departments/public-works/sewer-utility-divison/stormwater.

Stormwater Runoff and Water Quality Modeling

In 2010, the City completed the first phase of a program that includes stormwater modeling, a citywide volume reduction inventory and plan to address stormwater on the 2010 Residential Street Reconstruction Program. The modeling includes the development of an XPSWMM and P8 modeling and uses the CRWD monitoring data for calibration. Three major subwatersheds, as well as the 2010 street reconstruction subwatersheds, were modeled. In 2011, the City began modeling as a component of the storm tunnel rehabilitation program. The Saint Anthony

Park and Davern subwatersheds have been modeled. In 2012, the City began modeling the Phalen Creek storm sewer interceptor. Modeling projects were completed in support of the Sewer and street projects. The citywide modeling map is found in the Appendix. These models will be used by the City in the development of future stormwater programs and projects.

Pollutant Loading Calculations

The estimation of pollutant loadings is found in the Appendix. In addition, the average concentrations and annual loading results for the subwatersheds monitored by the CRWD can be found in Capitol Region Watershed District's 2016 Monitoring Report.

MCM 8: Discharges to Impaired Waters with a TMDL

BMP 8.1: TMDL Program

Description

Stormwater runoff from Saint Paul is discharged to several surface waterbodies including the Mississippi River. Several of these have been listed on Minnesota's Impaired Waters List for having the presence of concentrations of certain pollutants identified at levels higher than Minnesota standards. A TMDL study has been completed and approved for Lake Como.

Assessment Process for Annual Reporting

· For each impaired waterbody with an EPA-approved TMDL, report on progress toward addressing Waste Load Allocations.

2016 Activities

The City participated in the Metro Chloride Project and the Upper Mississippi River Bacteria TMDL process. Through the LMRWMO, the City participated in a WRAPs Project that was completed in 2015, which included Pickerel Lake.

Como TMDL

This is a categorical TMDL for which CRWD is the aggregator. The TMDL Annual Report Form can be found in the Appendix. Outfalls that drain to Como Lake can be found in the Outfall Inventory in the Appendix.

Appendix

Minnesota Pollution Control Agency

National Pollutant Discharge Elimination System

Permit No. MN 0061263

June 2017

Budget	2016	2017	2018	2019	2020	2021
Storm Sewer Projects						
Stormwater Quality Improvements	$123,000	$850,000	$500,000	$500,000	$500,000	$500,000
Storm Sewer Tunnel Rehabilitation	$3,500,000	$4,000,000	$4,080,000	$4,161,600	$4,244,832	$4,329,729
	$3,623,000	**$4,850,000**	**$4,580,000**	**$4,661,600**	**$4,744,832**	**$4,829,729**
Storm Sewer Maintenance						
Storm Sewer Cleaning, Inspection & Repair	$245,048	$249,949	$254,948	$260,047	$265,248	$270,553
Pond Inspection & Maintenance	$224,807	$229,303	$233,889	$238,567	$243,338	$248,205
Catch Basin Inspection, Cleaning & Repair	$787,838	$803,595	$819,667	$836,060	$852,781	$869,837
Manhole Cleaning, Inspection & Repair	$87,979	$89,739	$91,533	$93,364	$95,231	$97,136
BMP Cleaning	$64,337	$65,623	$66,936	$68,274	$69,640	$71,033
	$1,410,009	**$1,438,209**	**$1,466,973**	**$1,496,312**	**$1,526,239**	**$1,556,763**
Stormwater Modeling & Monitoring						
Stormwater Modeling	$143,800	$143,800	$146,676	$149,610	$152,602	$155,654
Stormwater Monitoring	$198,194	$198,497	$202,467	$206,516	$210,647	$214,860
	$341,994	**$342,297**	**$349,143**	**$356,126**	**$363,248**	**$370,513**
Street Maintenance						
Street Sweeping	$2,869,903	$2,927,301	$2,985,847	$3,045,564	$3,106,475	$3,168,604
Neighborhood Cleanups	$79,986	$81,586	$83,217	$84,882	$86,579	$88,311
	$2,949,889	**$3,008,886**	**$3,069,064**	**$3,130,445**	**$3,193,054**	**$3,256,915**
Public Education Program						
Storm drain stenciling including door hangers	$48,925	$49,815	$50,811	$51,828	$52,864	$53,921
Metro Clean Water Campaign	$10,500	$10,500	$10,500	$10,710	$10,924	$11,143
Adopt a Storm Drain	$15,000	$15,000	$15,300	$15,606	$15,918	$16,236
	$74,425	**$75,315**	**$76,611**	**$78,144**	**$79,706**	**$81,301**
Total Budget	**$8,399,316**	**$9,714,707**	**$9,541,791**	**$9,722,627**	**$9,907,080**	**$10,095,221**

2% used for annual inflation where projected amounts unknown

DEPARTMENT OF SAFETY AND INSPECTIONS
Bob Kessler, Director

CITY OF SAINT PAUL
Christopher B. Coleman, Mayor

375 Jackson Street, Suite 220
Saint Paul, Minnesota 55101-1806

***Telephone**: 651-266-9090*
***Facsimile**: 651-266-9124*
***Web**: www.stpaul.gov/dsi*

Standard Operating Procedures for Erosion and Sediment Control Complaint

1) Someone sees an erosion and sediment control issue (dirt on street, etc).
- They should call the City Complaints Office: 651-266-8989

2) Complaint is passed on from Complaints Office to Senior Building Inspector (651-266-9021)

3) Building Inspector follows up on complaint using DSI Erosion and Sediment Control Worksheet

4) If Building Inspector determines source is from the Public Right-of-Way (ROW) or from City Construction Projects the complaint will be forwarded to the Public Works Inspectors –
- For Private Utility Construction in ROW: 651-487-7250 (General Number for ROW Permit Section)
- For City Construction Projects: 651-266-6081 (Street Engineering Construction Division)

Public Works Inspector will inspect and follow up accordingly

5) First Inspection
- DSI Erosion and Sediment Control Worksheet completed
- If site is non-compliant: Building Inspector issues immediate verbal order, if possible, or issues a written order if no one is on site, to address situation, sets a compliance date based on the nature of the complaint, and notes details of non-compliance in Worksheet

6) Second Inspection
- Building Inspector Conducts 2nd inspection of site after compliance date
- 2nd DSI Erosion and Sediment Control Worksheet completed
- If continued non-compliance: Building Inspector issues written orders, sets a new compliance date based on the nature of the complaint, and notes details of non-compliance in Worksheet

7) Third Inspection
- Building Inspector Conducts 3rd inspection of site after compliance date
- 3rd DSI Erosion and Sediment Control Worksheet completed
- If continued non-compliance, proceed with stopping construction work at the site, or submitting the violation to the City Attorney for potential prosecution, or pursue abatement if sediment crosses boundary of the site and project is greater than 1 acre.

DEPARTMENT OF SAFETY AND INSPECTIONS
Bob Kessler, Director

CITY OF SAINT PAUL
Christopher B. Coleman, Mayor

375 Jackson Street, Suite 220
Saint Paul, Minnesota 55101-1806

***Telephone**: 651-266-9090*
***Facsimile**: 651-266-9124*
***Web**: www.stpaul.gov/dsi*

Erosion and Sediment Control Worksheet

Property Address:

Inspector:

Permit # (if applicable):

Inspection Date:

Re-inspection Date:

Inspection Type:

Size of Site:

Inspection Results

Sewer Inlet Protection:

Comments:

Street Condition:

Comments:

Rock Entrance:

Comments:

Concrete Washout Area:

Comments:

Silt Fence/Sediment Control:

Comments:

Stock Pile Erosion Control:

Comments:

Site Erosion Control:

Comments:

Corrective Action:

Comments:

CITY OF SAINT PAUL
Christopher B. Coleman, Mayor

Public Works
Right-of Way Division

Telephone: 651-266-6151
Facsimile: 651-266-9765
Email: PW-ROWpermits@ci.stpaul.mn.us

EROSION AND SEDIMENT CONTROL FOR UTILITY PROJECTS IN THE RIGHT-OF-WAY

It is essential to prevent dirt, debris, oils and other waste from entering storm drains or water resources.

Erosion and sediment control devices are **REQUIRED** for any utility construction or grading project that will result in significant land disturbing activity in the public right-of-way.

- Sediment control practices (inlet protection and perimeter control /silt fence) must be installed **BEFORE** any land disturbance activities begin.
- Temporary land stabilization practices should be installed:
  - Daily over all temporary stockpiles on or near street (including plastic cover and temporary down drains); *and*,
  - Within 7 days after work is completed over all disturbed areas not on or near the street (including temporary seeding of spoil piles though seeding and mulching).

Refer to the Mn/DOT Pocketbook Guide (June 2009) for guidance to preventing pollutants from leaving construction sites. Note: general operations, including dewatering and concrete washout, begin on page 57.
http://www.dot.state.mn.us/environment/pdf_files/erosion-sediment-control-handbook.pdf

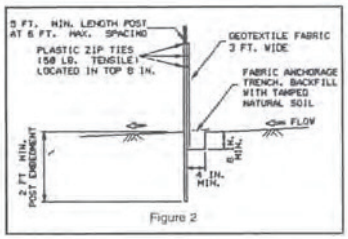

Figure 2

SILT FENCE

Silt fence is used as perimeter control to keep sediment on-site and away from areas you want to protect. For work in the right-of-way, silt fence can be installed between the top of the curb and the disturbed boulevard.

TEMPORARY SEEDING AND MULCHING OR PLASTIC COVER

Temporary seeding and mulching is to quickly provide temporary cover that will protect the soil from erosion until establishment of permanent stabilization. Applicable areas include any topsoil stockpiles and any areas disturbed by grading activities.

For areas that must be stabilized each day (located on or near the street) plastic cover should be used instead.

STORM DRAIN INLET PROTECTION

Storm drain inlet protection prevents sediment from entering a storm drain by surrounding or covering the inlet with a filtering material. This allows sediment-laden runoff to pond and settle before entering the storm drain.

The type of filter used will depend on inlet type (curb inlet or drop inlet), slope, and amount of flow. Some commercial inlet filters are placed in front of or on top of an inlet, others are placed inside the inlet and under the grate.

DAILY AND AS-NEEDED STREET SWEEPING

Street sweeping is used to clean the pavement and curb-line area on a regular basis to remove sediment, debris, and other pollutants from road and parking lot surfaces that are a potential source of pollution to waterways.

CITY OF SAINT PAUL
Christopher B. Coleman, Mayor

Public Works
Right-of-Way Division

Telephone: 651-487-7250
Fax: 651-487-7245

ROW Erosion and Sediment Control Worksheet

Project: **Project File No.**:

Property Address:

Inspection Date: **Re-inspection Date**:

Inspection Type: **Size of Site**:

Inspection Results

Sewer Inlet Protection:

Comments:

Street Condition:

Comments:

Silt Fence/Sediment Control:

Comments:

Stock Pile On or Near Street:

Comments:

Stock Pile Not On or Near Street:

Comments:

Corrective Action:

Comments:

SPILL REPORTING FORM

City of Saint Paul - Department of Parks and Recreation

INSTRUCTIONS

EMPLOYEE: Form should be filled out as completely as possible, on the same day as the spill occurred, by the individual involved in the spill. Describe all the events in as much detail as possible, especially the cleanup activities. If you have any questions regarding this form, contact your supervisor, or Environmental Services staff (651-632-5111). When completed, return form to your supervisor.

SUPERVISOR: Please return form as soon as possible to Adam Robbins, Como Central Service Facility.

Date of Spill:_____ Name (PRINT):_____

Time of spill:_____ Supervisor:_____

Section:_____ Phone number to reach you:_____

What was spilled?:_____

How much was spilled?:_____

Did the spill flow into a sewer? If yes, what type of sewer (sanitary, storm or unknown)?

_____

What type of surface did the spill occur on (soil, concrete, etc)?:

_____

Location of Spill (Be specific- address, intersection, exact location):

_____

_____

Describe what was happening when the spill occurred:

_____

_____

_____

What caused the spill (overfill, broken line, etc)? Be specific:

_____

Describe how the spill was cleaned up:

_____

_____

How were the spill cleanup materials disposed of?:

_____

List the names of other employees involved in the spill or cleanup:

_____

Was the MN Duty Officer called (651-649-5451)? _____

If yes: Who called?_____ Date_____Time_____

Duty Officer Report #:_____PCA Spill #_____

Employee Signature:_____

Spill Kit Instructions

Stop source of spill, if it can be safely done. If not, immediately call the Minnesota Duty Officer.

Contain spill. Wear gloves. Your first priority is to protect the spill from flowing into a storm sewer or drain. Use the 3" x 4' socks to create a barrier between the spill storm sewers/drains. Use the pillows to absorb pools of contained material (up to a half gallon per pillow). Small spills can be cleaned up with the absorbent pads.

Contact your supervisor or Environmental Services staff as soon as it is safe/practical to do so. If neither are available, contact the MN Duty Officer.

Complete a spill report form for all spills, **regardless of size**. The Minnesota Duty Officer must be notified for:

Petroleum (gasoline, diesel, hydraulic fluid, oil) spills of unknown amounts or over 5 gallons
Non-petroleum (antifreeze, pesticides, etc) spills of any amount

Phone Numbers
Environmental Services – (651) 632-5111
MN Duty Officer – (651) 649-5451

Disposal of used materials:
Used socks, pads and pillows should be placed in yellow hazardous waste bags found in the spill kit. Materials used to soak up petroleum spills should be disposed of in the 55 gallon barrel marked "Used Oil Sorbents" in the fuel shed at the Como Central Service Facility. For instructions on how to dispose of materials used to clean up non-petroleum substances, contact your supervisor or Environmental Services staff.

Replace used spill kit items promptly. All materials found in your spill kit are available from the Storeroom at the Como Central Service Facility.

FACILITY SPILL KIT INVENTORY	**qty**	**type**
	30	17"x19" pads
kit absorbs ~8 gallons	3	3"x4' socks
	4	2"x10"x10" pillows
	4	Hazardous Waste Bags
	2	Pair Nitrile Gloves
	4	Spill Reporting Forms

VEHICLE SPILL KIT INVENTORY	**qty**	**type**
	10	17"x19" pads
kit absorbs ~5 gallons	2	3"x4' socks
	2	Hazardous Waste Bags
	1	Pair Nitrile Gloves
	4	Spill Reporting Forms

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SAINT PAUL PARKS AND RECREATION

POLICY

DEPARTMENT

NUMBER: DIV. 4.4.2
PLACEMENT: Physical Resource Management
EFECTIVE DATE: 03/2010
UPDATED: 03/10

SUBJECT: Water Protection Policy

PURPOSE: To protect natural water bodies through the use of best management practices by all employees working near rivers, streams, lakes, ponds, and/or near storm sewers and impervious surfaces that lead to such water.

SCOPE: All Parks and Recreation employees.

POLICY STATEMENT:
As stewards of the environment, employees will take all precautionary measures to protect local water resources. The Department is committed to maintaining compliance with applicable environmental laws and regulations and to continually improve operations to prevent pollution of waterways that can harm local ecosystems and public health. This policy applies to any intentional act or unintentional act resulting from poor or neglectful work practices.

PROCEDURES (AND/OR REQUIREMENTS, EXPECTATIONS):

1. No dirt, silt, vegetation, organic material, debris, or other foreign materials will be deposited into any river, lake, stream, pond, or into any sewer system that leads to such water.

2. Employees will not blow, broom, sweep, whip, or shovel anything including dirt, silt, sand, debris, weeds, or other organic material into such body of water.

3. While performing work near such water, all debris will be picked up and removed from the site to be properly disposed of. In the event that an employee is not sure of proper disposal, the Supervisor should be called immediately.

4. No dirt, grass, organic material, debris or other foreign materials shall be intentionally deposited onto streets or other impervious surfaces without a plan for its immediate removal. This includes anything that may enter the sewer system. Exception: Sand/salt/deicers approved for controlling snow and ice when used appropriately.

5. When sweeping boulevards or edging curbs, a plan is required to immediately remove all dirt and debris deposited into the street. This may mean coordinating the clean up with Public Works or other street sweepers prior to the start of the job. If rain is expected, work should be delayed.

REQUIRED ITEMS AND/OR RELATED INFORMATION:

SECTION MANAGER'S RESPONSIBILITIES	SUPERVISOR'S RESPONSIBILITIES	EMPLOYEE'S RESPONSIBILITIES
Ensure all employees under his/her jurisdiction are aware of this policy and procedures.	Advise all employees of this policy and procedures.	Adhere to the policy.
Ensure that supervisors in his/her section enforce this policy and procedures.	Ensure that employees follow this policy and procedures.	Follow the procedures.
	Issue warnings or initiate disciplinary action as needed to ensure employee compliance.	Ask for additional training if needed.

Owner: Karin Misiewicz, Parks Supervisor **Next Review Date:** 02/11

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DEPARTMENT OF PUBLIC WORKS
Policy and Procedures
Water Protection
Number:_____ Effective Date: November 1, 2010, Revision Date:

POLICY STATEMENT:
As stewards of the environment, employees will take all precautionary measures to protect local water resources. The Department of Public Works is committed to maintaining compliance with applicable environmental laws and regulations and to continually improve operations to prevent pollution of waterways that can harm local ecosystems and public health. This policy applies to any intentional act or unintentional act resulting from poor or neglectful work practices.

PROCEDURES (AND/OR REQUIREMENTS, EXPECTATIONS):

1. No dirt, silt, vegetation, organic material, debris, or other foreign materials will be deposited into any river, lake, stream, pond, or into any sewer system that leads to such water.

2. Employees will not blow, broom, sweep, whip, or shovel anything including dirt, silt, sand, debris, weeds, or other organic material into such body of water.

3. While performing work near such water, all debris will be picked up and removed from the site to be properly disposed of. In the event that an employee is not sure of proper disposal, the Supervisor should be called immediately.

4. No dirt, grass, organic material, debris or other foreign materials shall be intentionally deposited onto streets or other impervious surfaces without a plan for its immediate removal. This includes anything that may enter the sewer system. Exception: Sand/salt/deicers approved for controlling snow and ice when used appropriately.

5. When sweeping streets or edging curbs, a plan is required to immediately remove all dirt and debris deposited into the street. This may mean coordinating the clean up with other street sweepers prior to the start of the job. If rain is expected, work should be delayed.

Policy Approval:

_____
Rich Lallier, Public Works Director

Date: November 1, 2010

Owner: Rich Lallier	**Next Review Date:** November 1, 2010

CITY OF SAINT PAUL
Mayor Christopher B. Coleman

390 City Hall
15 West Kellogg Boulevard
Saint Paul, MN 55102

Telephone: 651-266-8510
Facsimile: 651-228-8513

Fact Sheet

Chapter 51. Allowable Discharges to the Storm Sewer System

What is the focus of the new ordinance?

This ordinance is intended to prevent pollution from entering the City's storm sewer system, which discharges directly to our lakes and the Mississippi River. The ordinance formally defines what is allowed and prohibited.

Prohibitions include, but are not limited to:

- Motor oil, paint, solvents, or other liquids poured into a catch basin;
- Grass, leaves, or landscape material intentionally disposed in the street or waters;
- Sanitary connections to the storm system; or,
- Wash water, concrete wash out to the street or other improper disposal of waste.

Why is the ordinance needed?

The Minnesota Pollution Control Agency regulates Saint Paul's stormwater under the federal Clean Water Act. This serves to protect water quality in lakes and rivers. Under this permit, the City is obligated to enact regulatory controls to prevent pollutants from entering the storm sewer system.

What is the City currently doing to address this and how will this help?

- The City educates citizens on how to prevent pollution going into the storm sewer system by working with volunteer groups to stencil "don't pollute, drains to river" graphics on city storm drains and distribute multi-lingual door hangers.
- The City addresses municipal maintenance operations by implementing policies and procedures to avoid improper behaviors leading to stormwater pollution.
- Improper discharges to the storm sewer system are currently addressed on a complaint basis.

Several existing ordinances indirectly address pollution prohibitions, but lack specificity. The new ordinance clarifies and strengthens pollution prevention controls. It better positions the City to take enforcement steps, if necessary. Public Works and DSI jointly share enforcement responsibilities.

How does this ordinance affect citizens, businesses, or other constituents?

It is difficult to generalize due to the range of potential circumstances and impacts of prohibited discharges – from raking leaves into the street to dumping oil into a storm drain.

This ordinance will primarily be used to respond to public complaints. Awareness and education about the new ordinance, and avoiding water quality impacts, will be stressed. Enforcement in the form of abatement letters may be taken, depending on the circumstance and threat to water quality.

2016 Discharges Addressed

Date	Discharge	Action
February 2016	Sediment Control-Dewatering (Hatch & Chatsworth)	City copied on watershed agency complant/enforcement to SPRWS
Mar 2016	Complaint received on stabilization for the Crashed Ice site.	Addressed by ROW.
April 2016	Sediment Control-Dewatering (Como & Chatsworth)	City copied on watershed agency complant/enforcement to SPRWS
April 2016	Erosion Control re: 685 Raymond	Erosion and tracking from gravel lot. BMPs installed after complaint.
May 2016	Complaint from MPCA re: sawcutting at Olive &Phalen Blvd.	Crew was notified, and debris cleaned up.
June 2016	Complaint from MPCA re: directional drilling discharge to Pickeral Lake	ROW Inspector identified Q3 as performing work. Weber contacted Parks who verified all ESC in place. Weber to call MPCA
June 2016	Camlock Fitting on sanitary bypass pumping system came loose at Sherman P.S.	Contractor called State Duty Officer, and notified Sewer Design. No discharge to surface waters.
August 2016	Complaint from MPCA re: Highland Nusery (1742 West Seventh) discharge going to 7th St. Storm Sewer. By time the City was notified, it was a week old.	Addressed by DSI.
September 2016	Como & Western Spilled Slurry	Truck spilled slurry. Public Works responded & cleaned within 24 hours.
November 2016	Complaint re: Auto work/Fluids at 150 Urban Place.	Addressed by DSI.
December 2016	Waste Grease	City copied on state agency complaint; MDH responded.

Metro Watershed Partners & Clean Water MN

2016 Annual Program Report

MINNESOTA WATER
LET'S KEEP IT CLEAN

INDEX PAGE

Table of Contents

Metro Watershed Partners 2016 Report

Introduction

Metro Watershed Partners is a coalition of more than seventy public, private and non-profit organizations in the Twin Cities metro area. Through collaborative education and outreach, the Metro Watershed Partners promote a public understanding that inspires people to act to protect water in their watershed. Since 1996, partners have cooperated through educational projects, networking, and resource sharing.

The mission of the Metro Watershed Partners is two-fold:

- to provide and promote collaborative watershed education programs with consistent messages to the general public, local government staff and elected officials, and
- to provide WSP members a place and means to share information, generate ideas, and coordinate and support collaborative watershed education programs.

In 2016 members contributed $30,087.50 to support monthly meetings, exhibit checkout, administrative functions, and state fair outreach to hundreds of thousands of people. Members contributed $90,262.50 to support the development of a new Clean Water Minnesota website and outreach campaign.

Leadership

The work of **Metro Watershed Partners** is guided by a steering committee that includes stormwater education professionals from watershed organizations, non-profits and government agencies. In 2016, our steering committee members were:

Angie Hong, Washington Conservation District (*convenor)*
Cole Landgraf, Minnesota Pollution Control Agency
Deirdre Coleman, Freshwater Society
Jen Dullum, City of Farmington
Jessica Bromelkamp, Capitol Region Watershed District
Lyndon Torstenson, National Park Service, Mississippi National River & Recreation Area
Telly Mamayek, Minnehaha Creek Watershed District
Tracy Fredin, Center for Global Environmental Education, Hamline University

Clean Water Minnesota
2016 Media Campaign Report

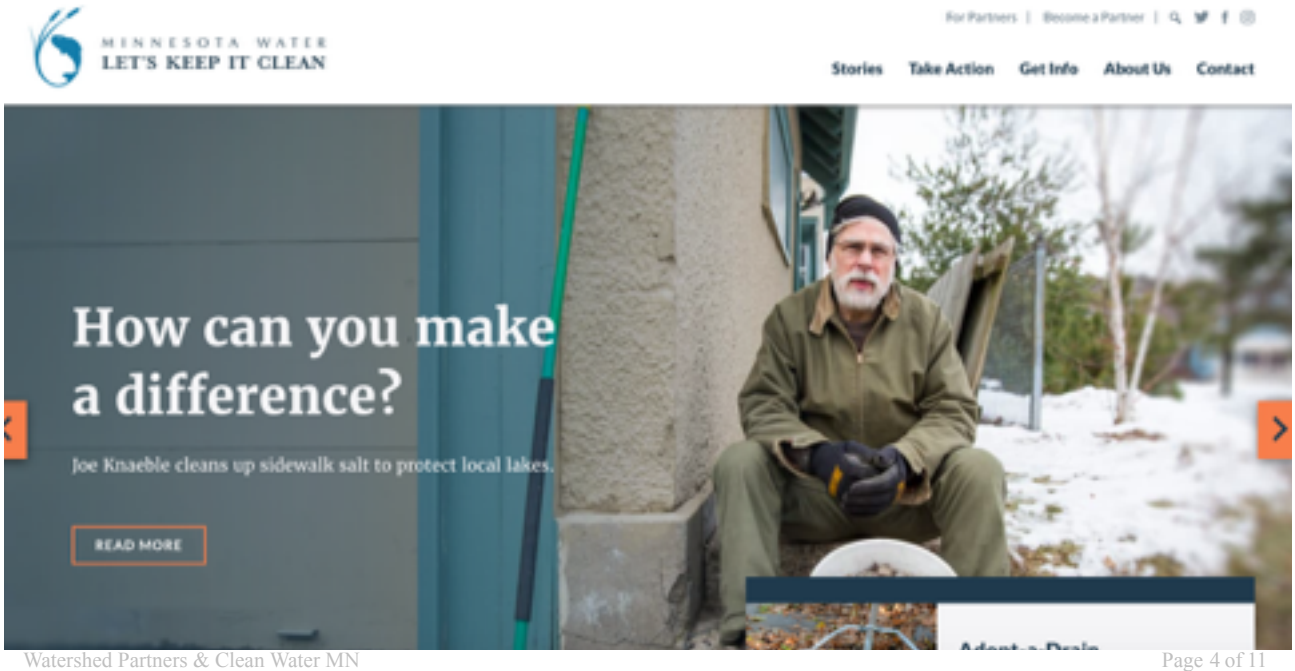
Clean Water Minnesota is the collaborative outreach project of the Metro Watershed Partners. Working together, we provide resources, training, and support to partners as they work to inspire homeowners in the Twin Cities metro area to keep water clean and healthy.

The steering committee of the Metro Watershed Partners oversees the work of Clean Water Minnesota. Jana Larson from Hamline University serves as project manager for campaign fundraising and communication and outreach programs. In addition, we regularly ask stakeholders to tell us how to best serve the needs of MS4s.

A new Clean Water MN campaign and website in 2016

In 2016 we kicked off a three-year plan to develop a new campaign with new resources focused on inspiring metro area residents to take action and do more to protect Minnesota's lakes and streams.

This year we launched a new website at www.cleanwatermn.org.



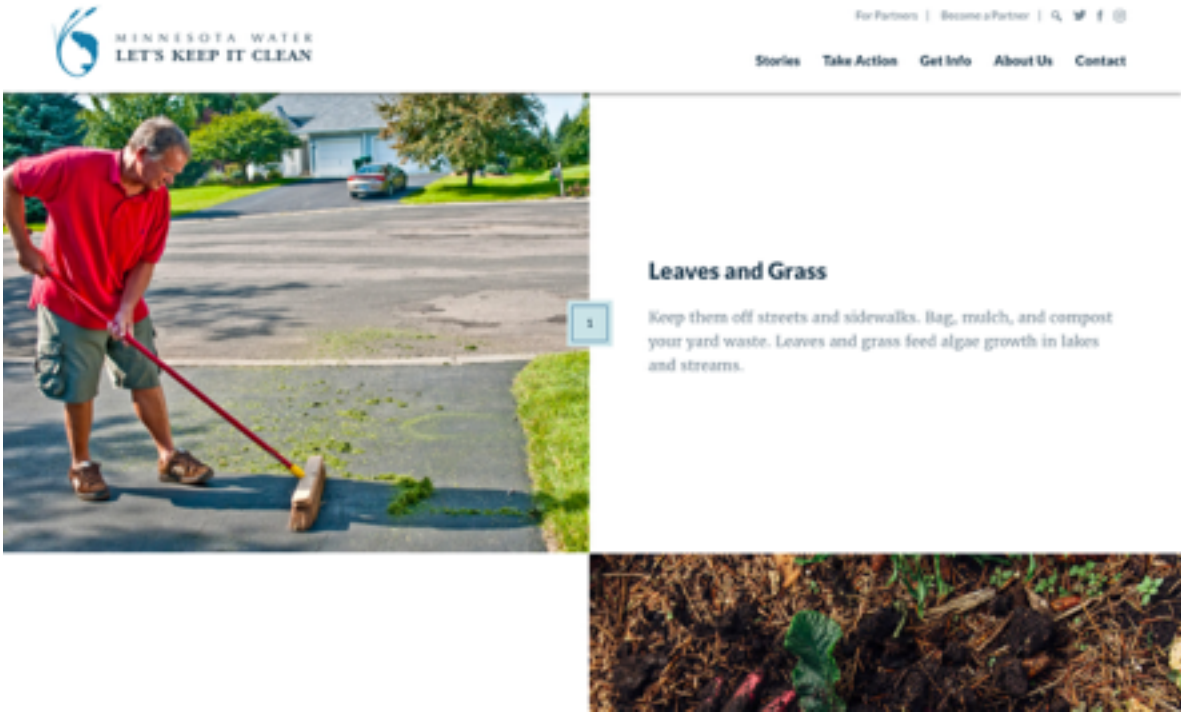
Cleanwatermn.org features seasonally appropriate stories about metro area residents taking action at home and in their lives to keep Minnesota water clean and healthy. The stories are designed for partners to use in their own communications—via websites, Facebook, Twitter, newsletters, and such. A system of trackable links allows us to measure engagement with Clean Water MN stories and content overall, and for each partner individually.

Along with each story we create a suite of professional photographs, accessible to partners online for use in their own stories and publications. Each story links to informational resources on our own site and other websites. In 2016 we published four new stories, more than 50 new photos, and a downloadable pdf on composting. In the future, we will publish new stories, photographs and downloadable informational resources monthly.

The cleanwatermn.org website also features informational pages, calls to action, a “Find My Watershed” map, information about the partnership, and a list of our partners. We will continue to develop and add content to the site in 2017 and beyond.

The team at Westwerk developed the site, Maddy Wegner wrote the blog posts, and Scott Andre did the photography. Jana Larson worked as the project manager, and Angie Hong, Tracy Fredin, Deirdre Coleman and the whole steering committee pitched in to make the project happen.

It cost nearly 60,000 to develop the web site, stories and photography. This cost is higher than projected, in part because the bids we received from web design firms were higher than anticipated, and in part because we added features to the site that were beyond the initial scope and vision of the project.



2016 Accomplishments of the Metro Watershed Partners

Networking and Sharing Resources

The Watershed Partners hold monthly meetings that provide members a way to gather, share information, generate ideas, and form partnerships that support watershed education in the state of Minnesota. These meetings keep our members up to date on new developments in the field of water resources and water education by featuring presentations by experts in fields such as watershed management, education, marketing, legislation and outreach.

In 2016, the Watershed Partners held eleven meetings. Meeting attendance totaled 319; attendance varied from 11 to 63, but on average 28 partners attended each meeting. That's good—record-breaking, actually. We're pleased to see our partners continuing to show up and demonstrate energy for collaboration and information sharing; we plan to continue offering workshops and events our partners will find useful in 2017 and beyond.

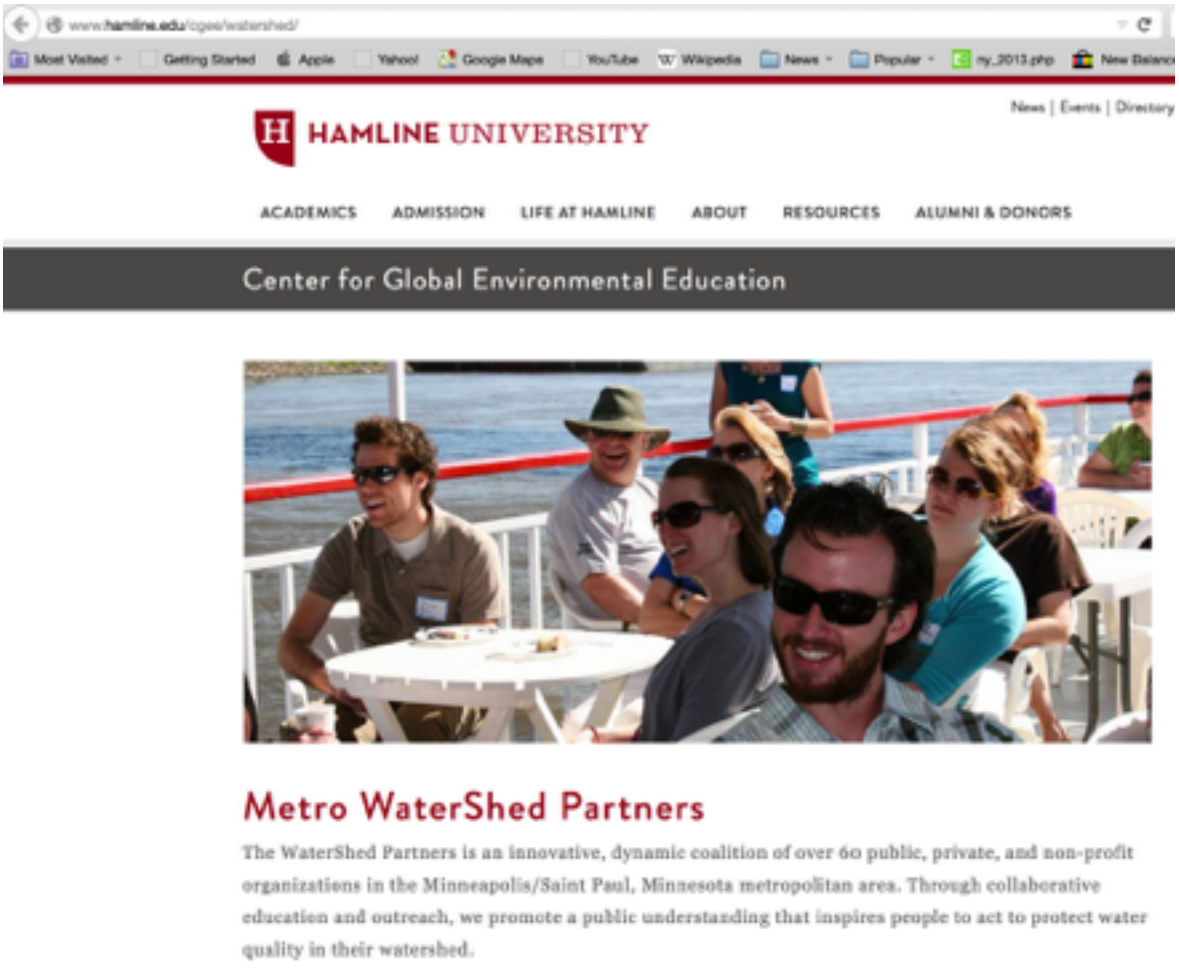
2016 PARTNER MEETINGS — TOPICS AND PRESENTERS

January	Vanessa Perry, University of Minnesota Department of Forest Services.	The Luxury of Participation: Understanding Diversity and Inclusion in Water Resources Projects
February	John Anderson, Conservation Minnesota	Legislative update
March	John Bilotta, U of M Extension	Using the Watershed Game, a training for educators
April	Cole Landgraf, MPCA	Presentation on the MS4 Permit
May	Brian Lieb, Hennepin County	Using Plain Language for Effective Communication
June	John Anfinson and Gordon Dietzman, National Park Service, Mississippi National River and Recreation Area	Birding and River History on the Magnolia Blossom Riverboat
July	SUMMER BREAK	
August	Tyler Karlberg	Best Practices in Social Media
September	Darren Lochner, MCWD Michaela Neu, MWMO Angie Hong, EMWREP	Using signs as a tool for watershed education
October	Westwerk team	Introduction to Clean Water MN site
November	Jana Larson, Hamline University and Deirdre Coleman, Freshwater Society	Clean Water MN materials training
December	Lark Weller, NPS and Trevor Russell, FMR	State of the River Report

The internal website for the Metro Watershed Partners
is still hosted by Hamline University at: www.hamline.edu/cgee/watershed.

The site contains:

- information about our monthly meetings
- an archive of minutes, agendas and presentations from past meetings
- the most recent annual report
- information on becoming a member and contributing membership funds to support our partnership and outreach activities
- a directory of partners
- information on borrowing exhibits
- information about outreach activities at the Minnesota State Fair
- general information and a brief history of the partnership



Please contact Jana Larson if you have questions or need help finding the information you are looking for: jlarson25@hamline.edu.

Watershed Partners listserv

The Metro Watershed Partners listserv is a forum for watershed educators, legislators and industry professionals throughout the state to share information and resources.

In 2016, the Metro Watershed Partners listserv continued to provide more than two hundred user-members with an effective tool to promote educational programs, share information about professional programs, and exchange information with other watershed educators, legislators and businesses. The email address for the listserv is: watershedpartners@listserv.hamline.edu. If you would like to send and receive listserv emails, send a request to Jana Larson: jlarson25@hamline.edu.

Education and Outreach at the Minnesota State Fair and Community Events

2016 was a record year for attendance at the fair, with nearly 2 million visitors. (1,943,719 to be exact.) The Watershed Partners had two exhibits—at the DNR and Eco-experience—where approximately 800,000 people were exposed to our messages about taking action to protect Minnesota's lakes and rivers.

Eco Experience: The Metro Watershed Partners partnered with Hamline University to host the Storm Drain Goalie photo booth and exhibit at Eco Experience for the fifth consecutive year. The Eco-action exhibit features: a photo booth, StormDrain Goalie air hockey, iPad games, a video table with in-depth interactive information about the Mississippi River, and three portable Exhibits-in-a-Box focused on the science of Eutrophication, taking action to reduce run-off, and the urban water cycle. Together, these exhibits raise awareness about the importance of protecting water in Minnesota and ask people to commit to take action at home to prevent run-off pollution.

(Eco-experience, cont.)
There were 262,322 visitors to the Eco-experience in 2016, and we figure more than 10,000 of them took a photo in the Storm Drain Goalie photo booth. (We took and printed 4,398 photos during the fair, with an average of 2.5 people per photo.) 41% of those people shared their photo via Facebook, Twitter, or email, and our posts reached an additional (estimated) 10,000 people.

Anecdotally, many people told us they were return visitors to the photo booth, and that Storm Drain Goalie had become a state fair tradition. A few people use the photo for their Christmas card, and many hang them in their cubicles at work, so the photos are working to get the message of Storm Drain Goalie out!

There was a Watershed Partner or Master Water Steward present during most of the 144 hours of the fair, to interact with the public, answer questions, and promote water-friendly behaviors. This, along with the addition of new signage, likely accounts for the fact that most visitors had fun *and* understood the clean water messages of the exhibit.

Minnesota Department of Natural Resources (DNR) building:
Approximately 500,000 (one in four) fair-goers visit the DNR building each year. Our *StormDrain Goalie* foosball table (see below) was a big hit again this year, always in play! (Weirdly, we still haven't lost a single ball.)

Exhibit-in-a-Box, on Eutrophication.

Community events:
Throughout the year, the Metro Watershed Partners make our tabletop exhibits available free of charge to organizations doing education and outreach on non-point source pollution and preservation of clean water. If you are interested in checking out one of our kiosks or table-top exhibits (see above) for an event in your community, you can find more information and a check-out form at: http://www.hamline.edu/education/environmental/cgee/watershed/exhibit/index.html

2016 Financial Report

In response to our fundraising requests, members contributed $30,087.50 to the Watershed Partners in support of meetings, state fair outreach, administration, exhibit maintenance, development and checkout. Supporting members of the Clean Water Minnesota Media Campaign contributed $90,262.50 to support the development of the new Clean Water MN website and public outreach campaign.

Supporting Members of the Metro Watershed Partners and the Clean Water Minnesota Media Campaign in 2016

Andover
Bassett Creek WMC
Blaine
Bloomington
Canon River WP
Capitol Region Watershed District
Carver County
Chisago County
Columbia Heights
East Metro Water Resources
Eden Prairie
Edina
Elm Creek WMC
Faribault
Farmington
Hennepin County
Hilltop
Lauderdale
Lower Mississippi River WMO
Middle Saint Croix WMO
Minneapolis
Minnehaha Creek WD
Minnetonka
Minnetrista
MNRRA
Mound
MWMO
New Brighton
Nine Mile Creek WD
Pioneer-Sarah Creek WC
Prior Lake
Rice Creek WD
Rochester
RWMWD
Saint Louis Park
Saint Paul
Saint Peter
Shingle Creek WMC
Shoreview
South Washington WD
Vadnais Lake Area WMO
Valley Branch WD
Vermillion River Watershed JPO
Washington County
Wayzata
West Mississippi WMC
Woodbury

REVENUE	INKIND	CASH	TOTAL
Budget rollover from 2015		$3,947.68	$3,947.68
Watershed Partners Coordination	$54,400.00	$30,087.50	$84,487.50
Watershed Partners Exhibit	$22,000.00	$0.00	$22,000.00
Media Campaign	$21,512.50	$90,262.50	$111,775.00
Total Revenue	**$97,912.50**	**$124,297.68**	**$222,210.18**
EXPENSE			
1. Watershed Partners Coordination			
Principle Investigator	$2,500.00	$2,500.00	$5,000.00
Program Coordinator	$12,000.00	$14,649.37	$26,649.37
Steering Committee	$32,400.00	$0.00	$32,400.00
Technology maintenance	$2,400.00	$218.22	$2,618.22
Meeting expenses	$300.00	$2,640.00	$2,940.00
Postage	$0.00	$5.33	$5.33
Accounting/indirect fees	$4800.00	$0.00	$3,600.00
Subtotal	**$54,400.00**	**$20,012.92**	**$73,212.92**
2. Watershed Exhibit Implementation			
Exhibit coordination	$4,500.00	$5,390.00	$9,890.00
State fair expenses	$15,000.00	$3,120.00	$18,120.00
Storage and check-out	$2,500.00	$2,000.00	$4,500.00
Subtotal	**$22,000.00**	**$10,510.00**	**$32,510.00**
3. Clean Water MN			
Project Management	$0.00	$31,237.60	$31,237.60
Web Development	$7,012.50	$50,250.00	$57,262.50
Blog Writing	$0.00	$4,225.00	$4,225.00
Photography	$0.00	$4,095.00	$4,095.00
Printing and postage	$0.00	$582.73	$582.73
Web hosting and tech fees	$0.00	$1,799.54	$1,799.54
Meeting expenses	$100.00	$682.13	$782.13
Accounting/indirect fees	$14,400.00	$0.00	$14,400.00
Subtotal	**$21,512.50**	**$92,872.00**	**$114,384.50**
TOTAL 2016 EXPENDITURES	**$84,800.00**	**$123,394.92**	**$220,107.42**
ROLLOVER TO 2017		$2,102.76	

2016 Implementation of Adopt-a-Drain in Saint Paul

Adopt a Drain engages residents in regularly clearing debris from storm drains and keeping the street clean, thereby preventing pollutants from entering storm drains and ending up in local waterways. A web-based application at adopt-a-drain.org allows residents of St. Paul to sign up to adopt a storm drain in their neighborhood and pledge to keep it free of pollutants.

In addition to reducing pollutants that flow into local lakes and streams, Adopt a Drain works to create new social norms around water-friendly behaviors by making commitments visible. Yard signs displayed by program participants provide social cues to neighbors that protecting water is the right, accepted thing to do for everyone in the city.

Individuals have the capacity to take action to protect and improve their neighborhoods and local water bodies. Engaging in one action often expands their capacity for engagement, and thus a community's capacity to engage in sustainability also increases.

Adopt-a-Drain Saint Paul is a collaborative project of Hamline University, the City of Saint Paul, and Capitol Region Watershed District

The Adopt-a-Drain program began in 2013, when Hamline University proposed the idea in a partner grant to Capitol Region Watershed District (CRWD). The idea was given support, and Hamline developed the web application in 2014. Hamline held focus groups, developed promotional materials and began pilot implementation in the Como Lake neighborhood in the Fall of 2014, with funding from the City of Saint Paul. Currently, implementation of the program continues with support from Saint Paul and CRWD, focusing promotion of the program (door-hangering and social media) in one neighborhood at a time. In 2015, we promoted the program in all of the Como Lake neighborhood, and in the Railroad Island neighborhood; and in 2016, in North End and Hamline-Midway.

Current Participation in Saint Paul

- 340 people have adopted at total of 561 storm drains.
- Participants collected between 10,000 - 22,000 pounds of debris from storm drain catch basins in 2016.

Spring 2016 Participation

- 30 participants adopted drains in the spring of 2016.
- 6 participants reported collecting an average of 4.1 bags weighing 10 lbs.
- If we were to extrapolate that average to the 210 participants, we could estimate that approximately 8,610 pounds of trash and debris were collected by program participants. However the sample size is too small to construct a statistically significant estimate. Thus, all we know for sure is that 6 people removed 24.5 bags or 245 pounds of debris.

Fall 2016 participation

- 132 participants adopted drains in the fall of 2016.
- 340 participants collected between 8,830 and 14,630 pounds of trash and debris. We calculated a 95% confidence rate for this number, based on the reports of 64 participants. The average reported amount collected was 4.16 bags weighing an estimated 10 lbs.

Center for Global Environmental Education

HAMLINE UNIVERSITY

CAPITOL REGION WATERSHED DISTRICT

SAINT PAUL

The Most Livable City in America

Promotion of Adopt-a-Drain, 2016

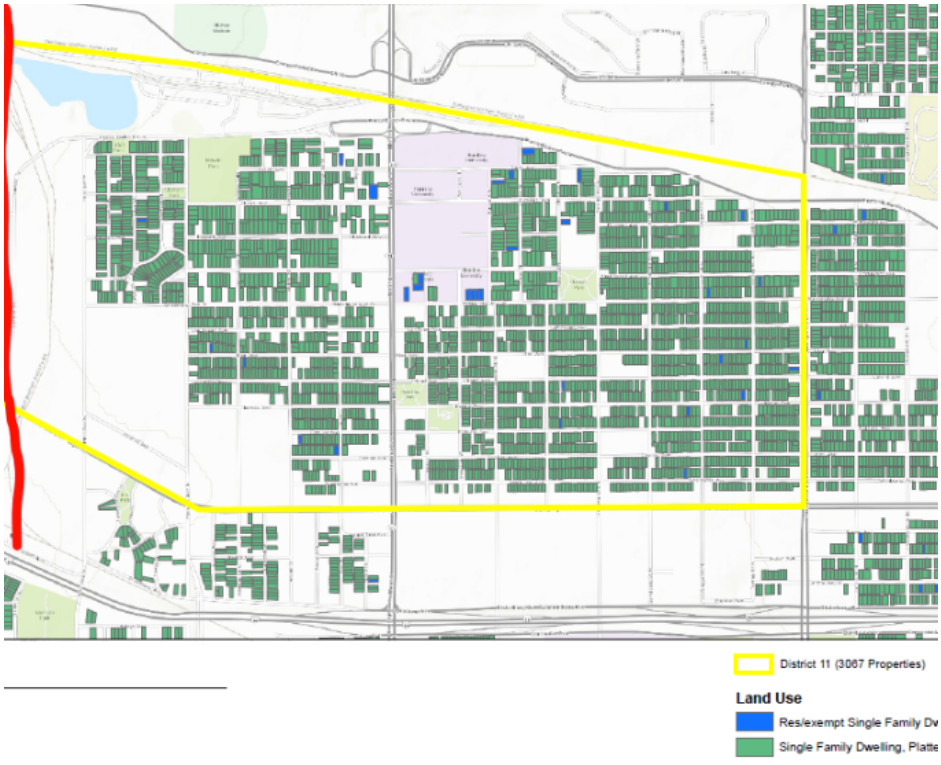
North End/ District 6, Spring 2016

Hamline student workers hung door hangers at 3,700 homes in the North End Neighborhood in April. They also went to an Earth Day clean up event at Rice Recreation Center with a Wi-Fi hotspot and iPad. Several people signed up while they were there. One woman was very enthusiastic and asked for pamphlets to give to her neighbors at an upcoming neighborhood event.

In the Spring of 2016 about 30 people in District 6 signed up for the program. Student workers delivered yard signs. Lindsay did some social media posts on Nextdoor.com over the summer. Spring sign ups were predominantly from North End neighborhood.

Hamline-Midway, Fall 2016

Hamline student workers hung promotional door hangers at 3,076 homes in the Hamline-Midway Neighborhood (see map below) at the end of September-early October. They also had a table at Hamline Elementary Fall Festival at Hancock Recreation Center with a Wi-Fi hotspot and iPad. Several people signed up at this event. Between September - December of 2016, 61 people in Hamline-Midway adopted storm drains. Student workers delivered yard signs to participants.

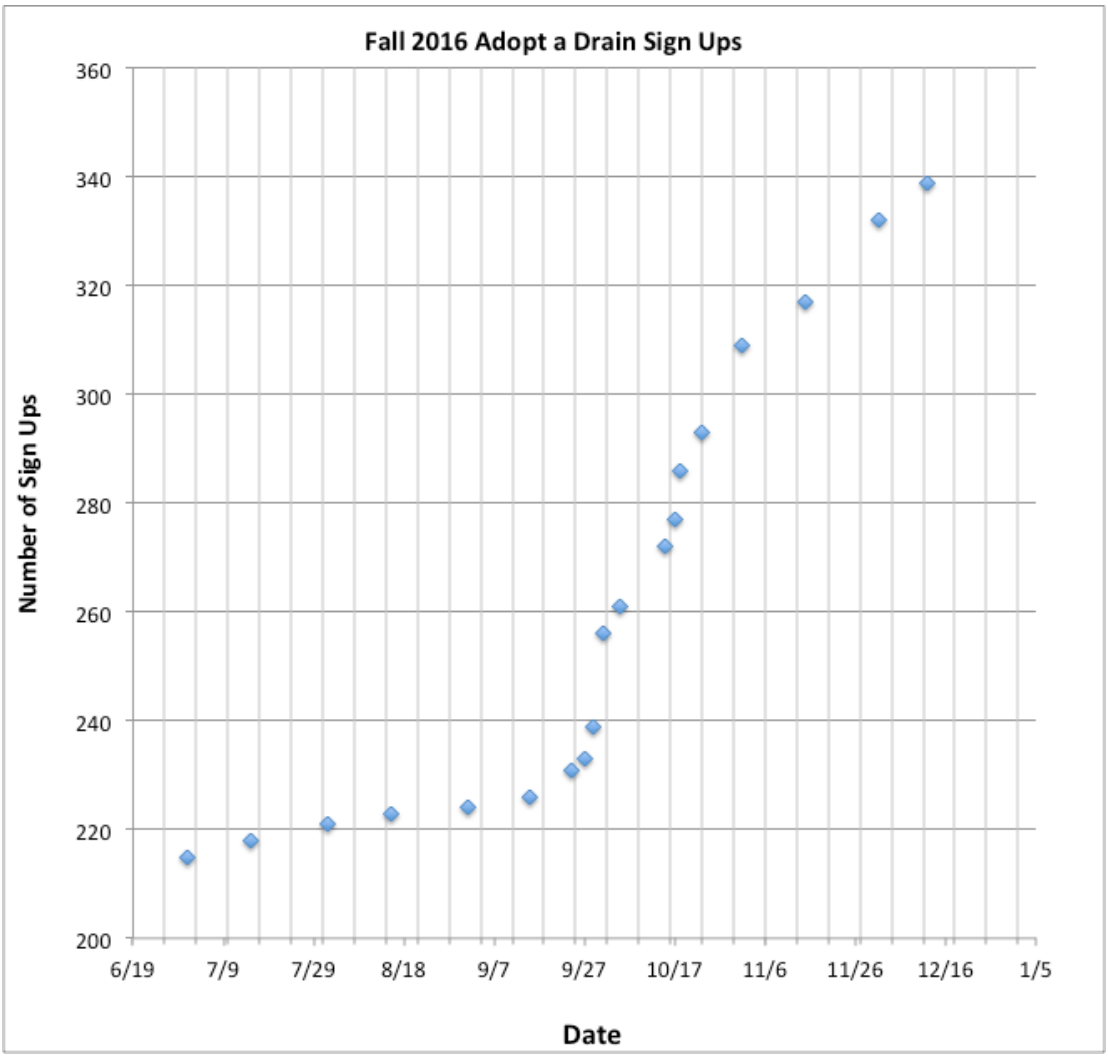


Sign ups vs. Promotion, Fall 2016

Student workers delivered doorhangers from September 27th - October 5. Sign delivery began October 15.

Anecdotally, when a sign was delivered, neighbors near the home with the yard sign adopted their drains. Many new adopters from previous pilot areas (Como, North End, Railroad Island) lived near to other homes with yard signs.

It is difficult to correlate a specific promotion effort and number of adoptions because of time overlap of promotion.



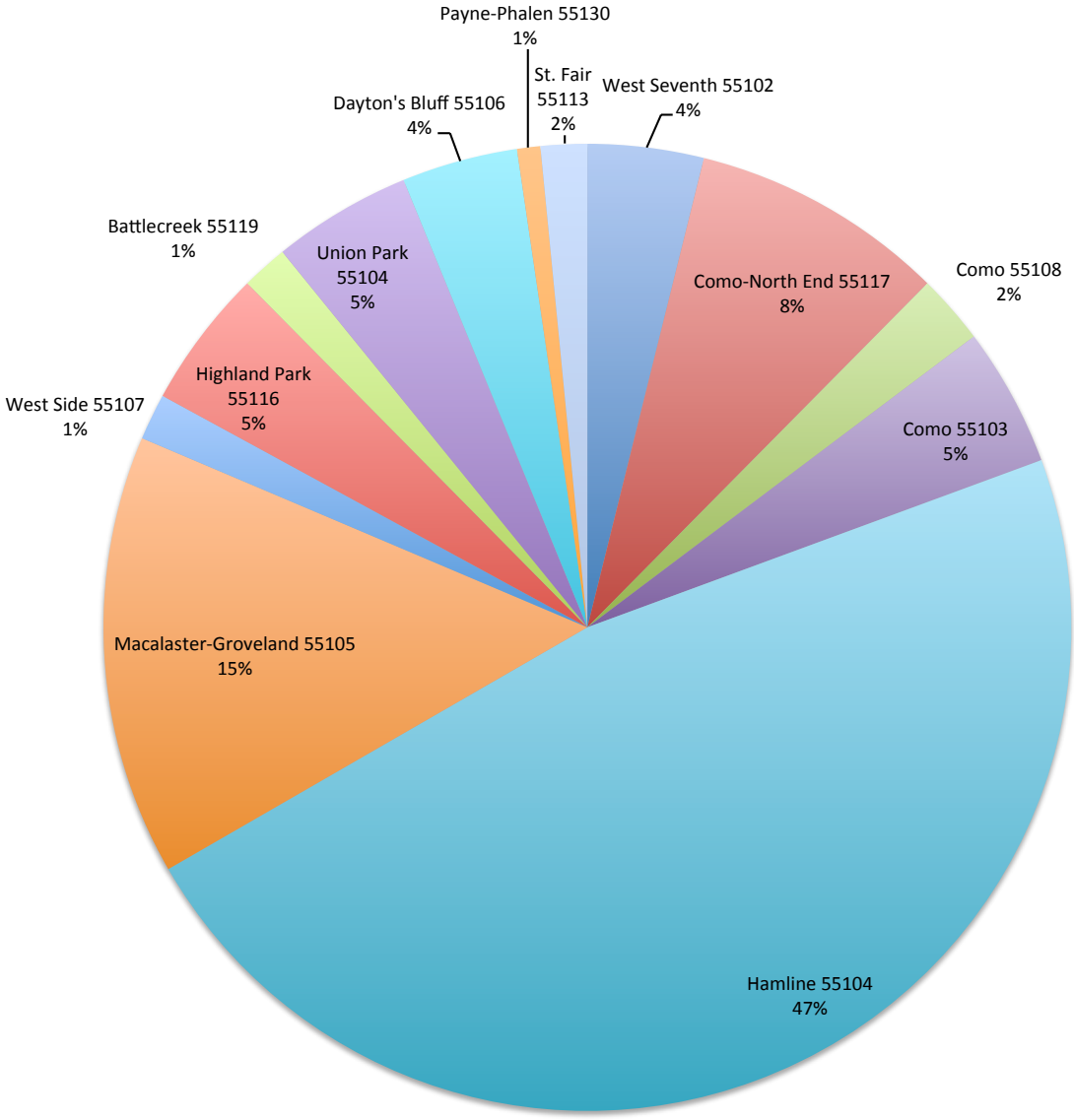
Promotional activities

Date	Description	Activity	Audience	Persons reached
18-May	LVPS post on Next Door	Next Door	Como, Frogtown, Hamline, Lex-Ham, Saint Anthony	N/A
7-Jul	LVPS post on Next Door	Next Door	Como, Frogtown, Hamline, Lex-Ham, Saint Anthony	N/A
8-Sep	Ad in Como-Midway Monitor	Newspaper Ad	Hamline Midway and Como neighborhoods	50,000
17-Sep	Frogtown Farm Festival	Tabling	Frogtown and Hamline Midway	50
27-Sep	Doorhanger Distribution Begins	Doorhanger	Hamline Midway	1000
27-Sep	CRWD FB post	Facebook	Saint Paul residents	N/A
27-Sep	LVPS FB post on Hamline Midway Neighbors	Facebook	Hamline Midway neighbors	5000
1-Oct	Hamline Elementary Fall Festival	Tabling - on-site sign up	Hamline Midway	100
1-Oct	October Works Watch item - Public Works External Newsletter Email	Email	City of St. Paul	1000
9-Oct	Twin Cities Pioneer Press Article	Article online and in print	City of St. Paul	N/A
15-Oct	Sign Delivery	Sign Delivery	City of St. Paul	N/A
17-Oct	City of St Paul FB Post	Facebook	City of St. Paul	3,636
17-Oct	Saint Paul Public Works Tweet	Twitter	City of St. Paul	4421
1-Nov	November Works Watch item - Public Works External Newsletter Email	Email	City of St. Paul	1000

Distribution of Drain Adoption, Fall 2016

About half of new sign ups were from the new pilot area, Hamline-Midway. 17% of new sign ups were from previous pilot areas.

There was great interest in Macalaster-Groveland neighborhood, and some interest in the Highland Park, West Seventh and Union Park neighborhoods. Due to great interest with very little promotion, we recommend promoting the program in these areas next.



Distribution of Adopt a Drain Sign Ups Fall 2016

FRIENDS OF THE MISSISSIPPI RIVER

Working to protect the Mississippi River and its watershed in the Twin Cities area.

101 East Fifth Street
Suite 2000
Saint Paul, MN 55101

651-222-2193
www.fmr.org
info@fmr.org

St. Paul Water Quality Education Project - 2016 Final Report
Submitted by Friends of the Mississippi River
November 22, 2016

This report summarizes Friends of the Mississippi River's activities in fulfillment of our 2016 Water Quality Education Program contract with the City of St. Paul. The Program Objectives were:

1. To involve St. Paul residents and community members in hands-on learning experiences about urban runoff pollution and ways to prevent it.
2. To facilitate school service learning initiatives, including storm drain stenciling, litter cleanups and/or habitat restoration as key components.
3. To stencil storm drains with the message "Keep 'em Clean—Drains to River," and distribute educational door-hangers to residents and businesses in the stenciled neighborhoods.

These objectives were met through three key program areas, which are described in greater detail in this report:

1. Storm drain stenciling and cleanups
2. Extra education – additional classroom visits, outings, etc.
3. Community educational workshops, events and tours

What follows are descriptions of activities, outreach and promotion efforts, and specific accomplishments for each program area.

STORM DRAIN STENCILING

Description:
Storm drain stenciling is a service-learning program in which community volunteers receive a 15-30 minute lesson about urban runoff pollution and ways to prevent it, then spray paint the message "Keep 'em Clean – Drains to River" next to storm drains on St. Paul city streets. Volunteers also distribute educational door hangers and pick up trash along their way. This year FMR created two stenciling kits available for check-out to groups of less than 15 people. These kits provide all of the supplies to stencil as well as educational materials, however these groups do not receive the staff presentation. In addition to stenciling outings, FMR also coordinates 3-4 litter-cleanups/invasive species pulls within the city each year.

Outreach:
In 2016, storm-drain stenciling and cleanups were promoted using the following means:

- Emailing previous years' stenciling participants
- Contacting past participants and potential new contacts (St. Paul schools, after-school programs and service-learning programs)
- Posting on FMR's website, social media (Facebook and Twitter pages), as well as announcements in FMR's email newsletter, *Mississippi Messages*
- Postings on other websites including VolunteerMatch, TwinCities.com/Pioneer Press, Do It Green, TC Daily Planet, Next Step/SEEK, Green Hands USA, Minnesota Parent, The Villager, and the Children and Nature Network
- Announcement at National Park Service Big River Journey teacher trainings in February 2016

Accomplishments:

Stenciling:

Kate Clayton (Youth Coordinator) and Adam Flett (Stewardship Events Coordinator) for Friends of the Mississippi River facilitated storm drain stenciling outings with 50 school and college groups, community groups, corporations and residents of the City of St. Paul. A list of the 50 groups, with event dates and goals achieved, is attached at the end of this report.

Cleanups:

The interest in clean-ups seems to vary widely from year to year. In 2016 FMR facilitated 6 groups with a total of 81 people, contributing 146 hours in cleanups around St. Paul. A list of groups, with event dates and goals achieved, is attached at the end of this report. For these outings, FMR provided a brief educational orientation and supplied gloves & bags, as well as coordinated with the City of St. Paul Parks and Recreation Department.

In total, FMR engaged 1,077 volunteers in cleanup and stenciling outings to stencil 2,519 storm drains and distribute 6,262 educational door hangers within the City, for a total of 1,869 hours of volunteer work.

This year FMR met and surpassed the goals for volunteer hours (1,600) and drains stenciled (2,400) set out in the contract. We did not meet the goals for number of total volunteers (1,100) or number of door hangers distributed (7,000) however we were very close to both of those goals.

Unfortunately, 6 scheduled stenciling outings were canceled due to weather or by group leaders for various reasons. None of these events were ever successfully rescheduled and this had a great impact on the number of volunteers. Because a similar number of hours are spent on planning an outing whether or not that outing is canceled, these cancellations also lead to a higher ratio of program-hours/volunteers.

All of the feedback from the participants survey was positive. The program is well received, educational and productive. Most of the survey respondents also express an interest in continuing to work with FMR to learn more about water quality.

Equipment:
FMR staff coordinated the purchase, storage and maintenance of storm drain stenciling supplies, including door hangers, for the 2016 season. Below is an inventory of supplies remaining at the end of the 2016 season. See previous reports for a comparison with prior years.

Equipment:
Gloves: Plenty
Clipboards: 29
Goggles: 61
Full paint cans: 54
Brushes: 49
Vests: 65
Cones: 19
Buckets: 19
Trash Bags: 10
Flyers/Door Hangers: 6.5 boxes, approx. guess 7,000

Stencils:
Drains to River: 18
Drains to Creek: old, w/ fish: 19
Drains to Lake: 36
Hmong language: 7
Somali language: 12

EXTRA EDUCATION

Description:
Additional water-quality education programming, separate from the lessons included in storm drain stenciling outings, is provided to schools and community groups in multiple formats including classroom presentations, interpretive field trips, participation in special events (i.e. the Children's Water Festival) or through tabling at local fairs or expos. Each educational program includes information about urban runoff pollution and methods for its prevention, but additional topics may include the water cycle, watersheds, erosion, wetlands, river ecosystems, landscape change, and habitat restoration. These presentations are designed to increase knowledge of urban non-point source pollution and related environmental issues, and may include demonstrations, PowerPoint presentations, games and/or group discussions. Primarily Kate Clayton provided extra education, with assistance from Adam Flett.

Outreach:
In 2016, extra educational programs were promoted using the following means:

- Emailing previous-years' stenciling participants
- Contacting past participants and potential new contacts (St. Paul schools, after-school programs and service-learning programs)
- Announcement at Big River Journey teacher trainings in February 2016
- Posting on FMR's website, social media (Facebook and Twitter pages), as well as announcements in FMR's email newsletter, *Mississippi Messages*
  Postings on other websites including VolunteerMatch, TwinCities.com/Pioneer Press, Do It Green, TC Daily Planet, Next Step, Green Hands USA, Minnesota Parent and the Children and Nature Network

Accomplishments:
This year, FMR coordinated 22 classroom presentations, and participated in 1 special event (Children's Waterfest at the State Fair Grounds) providing extra education for a total of 728 participants in the City of St. Paul**.** Classroom lessons averaged 1 hour while interactions with classes at Children's Waterfest were half hour. A list of the schools and participants is attached to the end of this report.

We far exceeded the goals in this area of our work; our contract called for 10-12 additional educational programs that would engage 200 people, but we worked with twice the number of groups due to strong interest from local schools and groups.

COMMUNITY EDUCATION WORKSHOPS AND EVENTS

Description:
FMR hosted a number of community education workshops, presentations or stenciling outings open to the public in 2016. Each event provided attendees with background on river pollutants coming from our homes, yards, and streets or developed areas, and encouraged water-friendly actions for individuals to take to improve water quality.

Stewardship Events Coordinator Adam Flett coordinated all of the educational workshops, events and presentations, with assistance from other FMR staff.

The workshops and stenciling outings included continued development of our River Friendly Homes and Gardens workshops (updating information on the impact of storm water pollutants on water quality, best practices for rain garden design and installation, benefits and techniques for composting in residential yards and gardens, rain barrel assembly, installation and use, watershed-friendly lawn care strategies, and local resources related to these topics). Much of the messaging is crafted around quick, memorable items that individuals can take home, making them more easily interjected under shorter formats for presenting, like those of the stenciling events. Staff also updated a host of printed materials on these topics that were distributed at the workshops.

Specific descriptions of each public event follow.

Brewing Clean Water and Storm Drain Stenciling:
In the past the Brewing Clean Water program focused on presenting information within the brewery setting. Starting last year, FMR began to offer storm drain stenciling as the primary activity in addition to providing the educational aspect. This past year, FMR hosted 2 storm drain stenciling events for the public. As part of another FMR program, "Brewing Clean Water," enables FMR and Brewer's to unite around clean water interests, and provides a new venue for delivering our message to new and old FMR participants.

- Tin Whiskers Brewing Company, July, 26, 2016 (28 participants)
- Bad Weather Brewing Company, August 11, 2016 (14 participants)

River Friendly Homes and Gardens- Make and Take Rain Barrel Workshop:
Much of the workshop focuses on conserving water and reducing runoff pollution. In addition to providing an overview of stormwater issues related to urban runoff pollution, the workshop introduces alternative lawn-care practices, landscaping with native plant species, proper use of lawn fertilizer, rain gardens, rain barrels, backyard composting, green roofs, pervious pavement, soil testing and more. Participants are provided with handouts listing local resources for additional education, cost-share programs, or purchasing supplies. The workshop was presented at a venue that has a specific focus on rain barrels and provides an opportunity for participants to assemble and take home their own 55-gallon rain barrel. The barrels were donated by Coca-Cola, and conversion kits were purchased at a reduced price by workshop participants. Participants were then guided through assembling their own rain barrel, which they took with them to install and use at home. The workshop was presented at the following venue:

- Wellstone Center/Neighborhood House October 5, 2016 (32 participants, 25 barrels)

Science Museum Event:
A large-format educational presentation was held on September 22, 2016, in partnership with the Science Museum of Minnesota. Speakers Lark Weller of the National Park Service and Trevor Russell of Friends of the Mississippi River, addressed the state of the Mississippi River in the Minnesota National River Recreation Area and surrounding area. Honing in on key indicators of river health and updated to reflect current pollution trends and improvements since the original, the second release of the State of the River provided 202 event attendees with a glimpse at the health of our local river.

Outreach:
Participants for the workshops, public stencil outings and Science Museum event were recruited using the following means:

- Email or posts to various daily and community newspapers both print and online
- Posting on FMR's website and announcements in FMR's Mississippi Messages and through social media, including Facebook and Twitter
- Posting on various online event calendars: Mississippi National River and Recreation Area/National Park Service, Minnesota Environmental Forum,

Minnesota Environmental Partnership, MNOEA's Next Step, TwinCities.com/Pioneer Press, Blue Thumb, Do It Green, TC Daily Planet, Northern Gardener, Minnesota Master Naturalist, GreenHandsUSA, Riverfront Development Corporation, 1Mississippi (Mississippi River Network) and Good Age and MN Parent
- Emailing to all St. Paul FMR contacts, including numerous partner and civic organizations such as community organizations and neighborhood groups and local institutions such as the Science Museum of Minnesota, the Department of Natural Resources, Metropolitan Council, Friends of the Parks and Trails of St. Paul, and additional various foundation, student and civic groups
- Emailing to special interest groups, such as garden clubs, home school group outing organizers, biology club members and others

Accomplishments:
The goal set forth in our contract for public workshop participation was 75-90 people, and for the SMM event it was 150-250. We engaged 74 people in the workshops and 202 people at the SMM event for a total of 276 public (i.e. non-group) program participants. The following table summarizes public event participation in 2016:

Name	Date	Location	# Participants
Storm Drain Stenciling @ Tin Whiskers Brewing	7/25/16	Tin Whiskers Brewing Co.	28
Storm Drain Stenciling @ Bad Weather Brewing	8/11/16	Bad Weather Brewing Co.	14
State of the River 2.0 Presentation	9/22/16	Science Museum of MN	202
Make and Take Rain Barrel Workshop	10/5/16	Wellstone Center	32

Photos:
Photographs of the events listed in this report can be viewed on FMR's Flickr site at the following links:
- Storm Drain Stenciling
  https://www.flickr.com/photos/friendsmissriv/albums/72157667360911670
- "Brewing Clean Water":
  - Tin Whiskers:
    https://www.flickr.com/photos/friendsmissriv/albums/72157671814601626
  - Bad Weather:
    https://www.flickr.com/photos/friendsmissriv/albums/72157672540734195


Drains to River
Storm
Drains
Keep em'
Clean

KEEP THESE OUT OF STORM DRAINS

PET WASTE
Desechos de mascotas
Quav tsiaj yug

LEAVES, GRASS & TRASH
Hojas, hierba y basura
Nplooj ntoos, Nyom & Khib Nyiab

HAZARDOUS WASTES
Residuos peligrosos
Khoom Phem Siv Tas Lawm

MANTENGA FUERA DE LOS DRENAJES PARA TORMENTAS
MUAB COV NTAWM NO TSHEM TAWM NTAWM LUB QHOV DEJ NQIS

Keep storm drains clean. These drains are part of the storm sewer system, which carries rainfall and snowmelt directly from your neighborhood to our lakes and rivers.

What You Can Do

1. **Keep leaves and grass clippings out of street.**
   Mantenga las hojas y las hierbas o el cesped podados fuera de la calle.
   Muab cov nplooj ntoos thiab nyom tshem tawm ntawm txoj kev.

2. **Keep fertilizer off paved surfaces and sweep up excess.**
   Mantenga el fertilizante fuera de las superficies pavimentadas y limpie los excesos.
   Txhob muab cov tshuaj ywg nyom tso rau ntawm cov kev luam yas thiab muab cov tshuaj seem cheb mus.

3. **Don't litter and pick up pet waste.** No arroje basura en la vía pública. Recoja los desechos de sus mascotas.
   Tsis txhob pov khib nyiab. Khaws tej quav tsiaj yug.

4. **Wash your car on the lawn or at a carwash - not in the driveway or street.**
   Lave su vehículo en el jardín o en un lavadero – no lo haga en el entrada de su casa o en la calle.
   Ntxuav koj lub tsheb rau ntawm cov nyom ntawm koj tog tsev los yog tom lub chaw ntxuav tsheb - tsis txhob ntxuav rau ntawm lub chaw nres tsheb los yog tom kev.

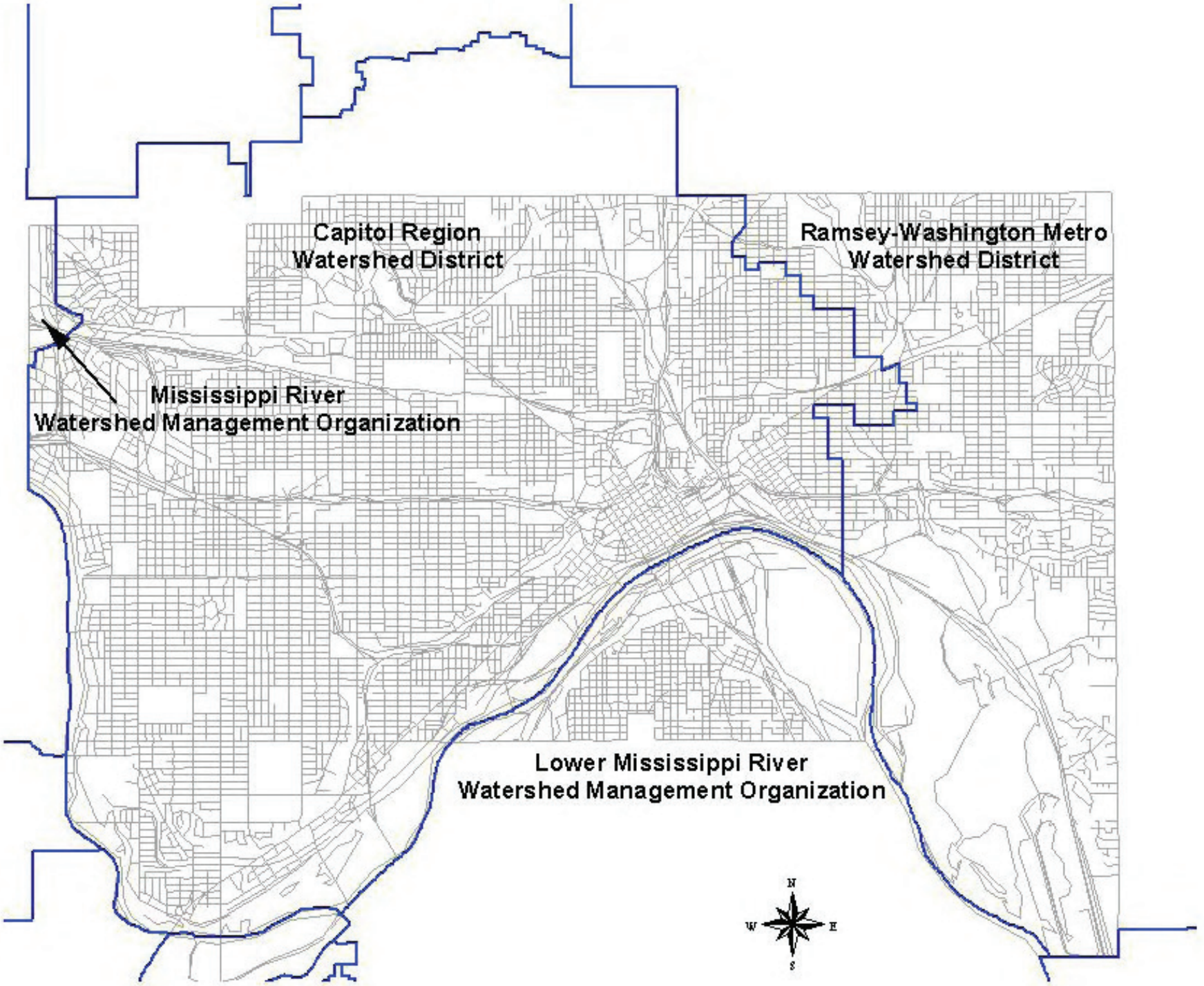
5. **Keep your vehicle tuned up and clean up any oil leaks or spills from paved surfaces.**
   Mantenga su vehículo en buenas condiciones y limpie cualquier pérdida de aceite o salpicaduras en las superficies pavimentadas.
   Saib xyuas thiab tu koj lub tsheb thiab tu tej roj uas tau txeej los yog nchuav rau tej kev luam yas.

6. **Properly dispose of paint and other household hazardous wastes.**
   Deshágase adecuadamente de restos de pinturas y de otros residuos domésticos peligrosos.
   Muab cov xim tha thiab lwm cov khoom phem hauv vaj tsev pov tseg kom zoo.

7. **Shovel snow first and only apply salt when it is above 15° F.**
   Retire la nieve con una pala primero y aplique sal cuando esté sobre los 15°F.
   Thob daus ua ntej thiab tsuas siv ntsev.

Recycling & Disposal Guide
ramseyatoz.co.ramsey.mn.us
www.stpaul.gov/publicworks
www.fmr.org

Watershed Organizations in Saint Paul



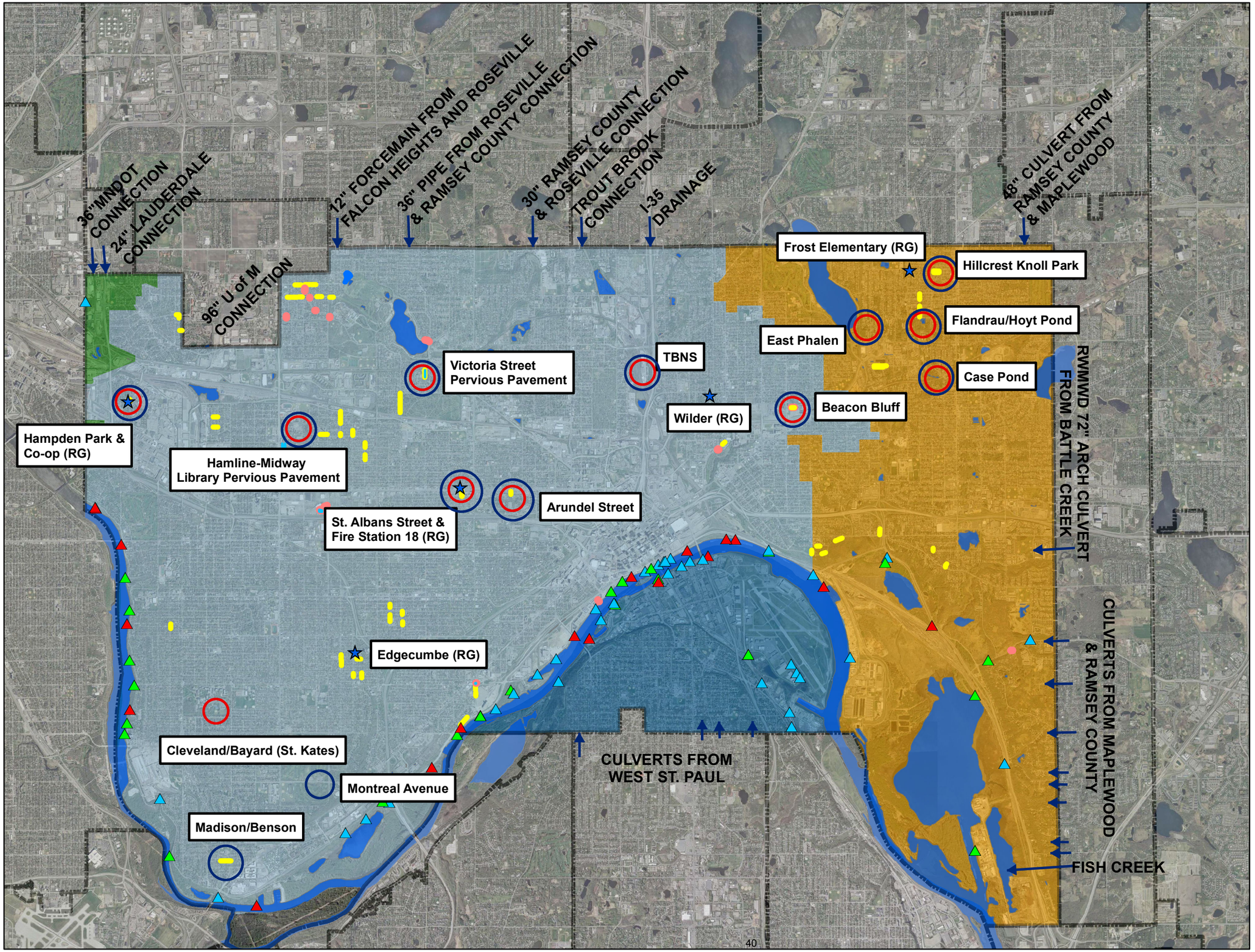
City of St. Paul

Stormwater Monitoring Program

The Most Livable City in America

Figure 1

Monitoring Site Location Map



N
W E
S

0 2,500 5,000 10,000 Feet

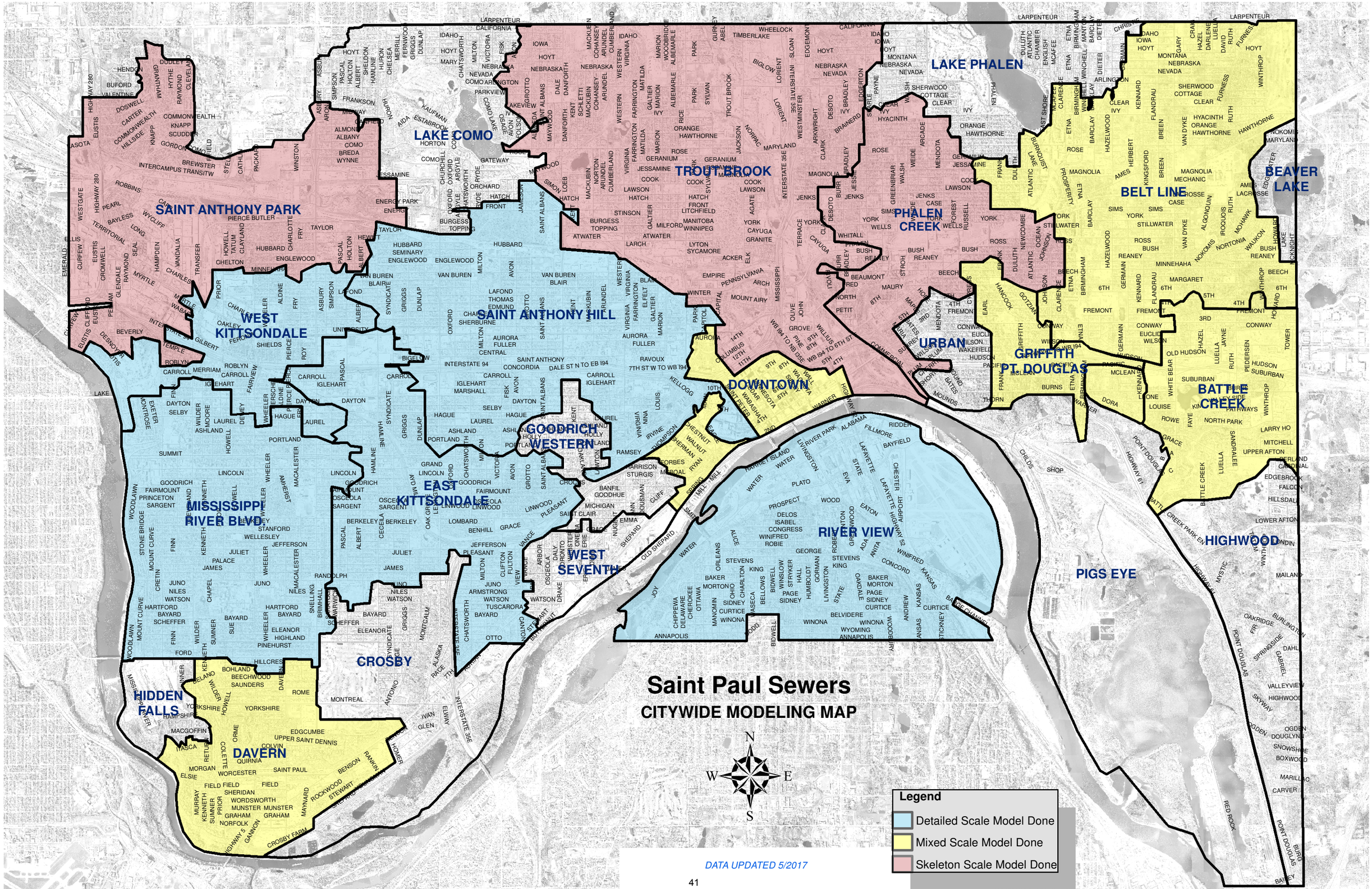
Legend

- Raingarden/Infiltration Basin
- Infiltration Trench
- Pervious Pavement
- Capitol Region Watershed District
- Lower Mississippi River WMO
- Mississippi WMO
- Ramsey/Washington/Metro WD
- 2015 Monitoring Locations
- 2016 Proposed Monitoring Locations
- Rain Gauge Locations
- Inflows

Outfalls

- 30" - 48"
- 50" - 72"
- > 72"

WSB & Associates, Inc.



Document Path: Z:\sewers\projects\City Stormwater Modeling Projects\Citywide Modeling Map.mxd

477 Temperance Street | St. Paul, MN 55101 | (651) 286-8450

Memorandum

To: ***Pat Murphy, City of St. Paul***

From: ***Linnea Henkels, WSB & Associates***

Date: ***June 9th, 2017***

Re: ***Estimates of 2015 Annual and Season Stormwater Pollutant Loads (2016 Report)***
WSB Project No. 01610-130

The City of St. Paul (City) is a Phase I MS4 permittee and is required to evaluate their annual and seasonal pollutant loads. This memorandum summarizes the loading assessment completed for the City for 2015.

2015 Pollutant Loading Calculations

Monitoring of major outfalls within the City of Saint Paul was completed by Capitol Region Watershed District (CRWD) in 2015. The City of Saint Paul's Stormwater Monitoring Program was focused on BMP performance monitoring, and that data is summarized under a separate report. Annual and seasonal pollutant loads were estimated for each subwatershed within the City for the loading parameters identified in the City's MS4 permit which include: chloride (Cl), total kjeldahl nitrogen (TKN), total phosphorus (TP), nitrate plus nitrite (NO_3 +NO_2), total suspended solids (TSS), and volatile suspended solids (VSS). The subwatersheds within the City are included in **Table 1** below and on **Figure 1** (attached).

Monitoring data collected by CRWD from the following subwatershed was utilized for this assessment: East Kittsondale, St. Anthony Park, Trout Brook, Hidden Falls, and Phalen Creek. Monitoring of each subwatershed was completed at or near the outfall. The stations were configured to collect continuous flow measurements, and water quality, in accordance with the City's MS4 Permit.

Table 1. Watershed Inventory

Watershed	Area [acre]	Runoff Coefficient [.]	Rainfall Station
Battle Creek	1,089	0.54	Wilder
Beaver Lake	278	0.33	Frost Elem.
Belt Line	2,882	0.55	Frost Elem.
Crosby	1,446	0.45	Edgecumbe
Davern	1,277	0.55	Edgecumbe
Downtown	669	0.75	Engine House 18
East Kittsondale	1,870	0.62	Edgecumbe
Fish Creek	46	0.70	Wilder
Goodrich/Western	424	0.63	Engine House 18
Griffith/Pt. Douglas	458	0.61	Wilder
Hidden Falls	237	0.55	Edgecumbe
Highwood	1,139	0.50	Wilder
Lake Como	1,240	0.47	Hampden Park Co-op
Lake Phalen	995	0.42	Frost Elem.
Mississippi River Blvd.	2,373	0.58	Edgecumbe
MRWMO	135	0.52	Hampden Park Co-op
Phalen Creek	1,406	0.62	Wilder
Pigs Eye	2,995	0.40	Wilder
Riverview	2,658	0.57	Wilder
St. Anthony Hill	2,542	0.64	Engine House 18
St. Anthony Park	2,467	0.68	Hampden Park Co-op
Trout Brook	3,959	0.62	Wilder
Urban	339	0.57	Wilder
West Kittsondale	847	0.67	Hampden Park Co-op
West Seventh	450	0.60	Edgecumbe

Monitored Subwatershed

Annual and seasonal city-wide flow-weighted averages were calculated for each of the loading pollutants from the monitored outfall data. TKN, TP, TSS and VSS loads were generated by CRWD in the WISKI data management program. This allowed for the extraction of baseflow and the associated load from the event load for those parameters. Cl and NO_2+NO_3 loads were calculated for the event-based volume (baseflow volume extracted), although the base flow loading for those parameters was not extracted. The following formula was used to calculate the annual/seasonal flow weighted mean concentrations (**Table 2**):

$$\boldsymbol{C} = \frac{\sum(\boldsymbol{F_i} \times \boldsymbol{C_i})}{\sum(\boldsymbol{F_i})}$$

C = annual/seasonal flow weighted mean concentration [mg/L]*

F_i = the event based flow for an individual event [cf]

C_i = the pollutant concentration for an individual event [mg/L]

*As described above, the flow-weighted mean concentration for TKN, TP, TSS, and VSS, was calculated from loads generated in the WISKI program, which extracted baseflow loading (not reflected in the formula above)

Table 2: City-wide Annual and Seasonal Flow-weighted Mean Concentrations

Parameter	Cl	TKN	TP	NO_2+NO_3	TSS	VSS
Units	[mg/L]	[mg/L]	[mg/L]	[mg/L]	[mg/L]	[mg/L]
Annual	21.8	1.9	0.48	0.25	306.9	86.6
Q1 (Jan-Mar)	514.2	7.3	1.11	0.77	290.8	96.6
Q2 (Apr-Jun)	29.6	2.9	0.58	0.31	355.2	120.3
Q3 (Jul-Sep)	16.9	1.6	0.47	0.28	413.7	92.0
Q4 (Oct-Dec)	13.9	1.2	0.39	0.14	131.2	49.6

Based on these calculated flow-weighted mean concentrations, the Simple Method was used to calculate each subwatershed's pollutant loading. Loads for the five monitored subwatersheds were generated using actual monitored loads. The Simple Method is show below:

$$\boldsymbol{L = 2.72\left(\frac{PP_jR_v}{12}\right)(CA)}$$

L = pollutant loading for the year/season [lb]
P = rainfall depth for the year/season [in]
P_j = correction factor for storms that produce no runoff [.]
R_v = runoff coefficient [.]
C = flow-weighted mean concentration [mg/L]
A = area of the watershed [acre]

Values used in loading calculations:
R_v and A = Table 1
C = Table 2
P = Table 3
P_j = 0.85

The annual/seasonal precipitation totals for five different rainfall monitoring locations in St. Paul are provided in the **Table 3**. Each subwatershed was assigned precipitation data from the nearest precipitation monitoring site (see **Table 1** for assignments). The rainfall data was used as an input to the Simple Method for load calculations, as described above.

Table 3: Precipitation Data

Season	Edgecumbe	Engine House 18	Frost Elementary	Hampden Park Co-op	Wilder	HD[1]
Annual	32.93	32.65	35.3	32.07	36.43	35.01
Q1 (Jan-Mar)	1.21	1.21	1.21	1.21	1.21	1.21
Q2 (Apr-Jun)	10.42	9.64	11.27	10.3	11.56	11.28
Q3 (Jul-Sep)	13.35	13.85	14.82	12.61	15.65	14.45
Q4 (Oct-Dec)	9.43	9.43	9.48	9.43	9.49	9.55

1 – Rainfall data collected from the HD location was used to supplement periods of no data at the other monitoring locations.

The annual and seasonal pollutant loads for each of the City's subwatersheds are presented in **Tables 4-8**. Loads for the five monitored sites are actual totals calculated for each station. Those sites are highlighted blue.

Table 4. Annual Pollutant Loadings (lbs)

Subwatershed	Cl	TKN	Total P	NO2+NO3	TSS	VSS
Battle Creek	91374	8107	2024	1061	1286700	363187
Beaver Lake	9393	833	208	109	132269	37335
Belt Line	245752	21803	5443	2854	3460587	976793
Crosby	104489	9270	2314	1213	1471377	415314
Davern	99033	8786	2194	1150	1394552	393629
Downtown	56562	5018	1253	657	796483	224817
East Kittsondale	66588	4247	765	518	381466	181639
Fish Creek	3660	325	81	42	51533	14546
Goodrich/Western	36627	3250	811	425	515773	145583
Griffith/Pt. Douglas	42930	3809	951	499	604527	170635
Hidden Falls	2600	303	79	77	55698	9812
Highwood	85906	7622	1903	998	1209701	341453
Lake Como	81912	7267	1814	951	1153454	325576
Lake Phalen	63074	5596	1397	732	888183	250701
Mississippi River Blvd.	191785	17015	4248	2227	2700651	762292
MRWMO	12728	1129	282	148	179226	50589
Phalen Creek	33308	4389	985	564	488129	252032
Pigs Eye	183654	16294	4068	2133	2586154	729973
Riverview	88689	7869	1964	1030	1248890	352514
St. Anthony Hill	232643	20640	5153	2701	3275986	924687
St. Anthony Park	80555	3680	723	851	350473	138906
Trout Brook	155720	10793	3293	1033	2440189	466484
Urban	28517	2530	632	331	401560	113345
West Kittsondale	94028	8342	2083	1092	1324069	373735
West Seventh	37423	3320	829	435	526973	148745

Table 5: Q1 (Jan-Mar) Pollutant Loading (lbs)

Subwatershed	Cl	TKN	Total P	NO2+NO3	TSS	VSS
Battle Creek	71594	1012	154	107	40494	13444
Beaver Lake	7595	107	16	11	4296	1426
Belt Line	198717	2810	427	297	112394	37315
Crosby	90572	1281	195	135	51227	17007
Davern	85843	1214	185	128	48552	16119
Downtown	49449	699	106	74	27968	9285
East Kittsondale	51082	421	43	32	10344	5133
Fish Creek	2867	41	6	4	1622	538
Goodrich/Western	32021	453	69	48	18111	6013
Griffith/Pt. Douglas	33637	476	72	50	19025	6316
Hidden Falls	0	0	0	0	0	0
Highwood	67310	952	145	101	38070	12639
Lake Como	72906	1031	157	109	41235	13690
Lake Phalen	51002	721	110	76	28847	9577
Mississippi River Blvd.	166241	2350	358	249	94025	31216
MRWMO	11328	160	24	17	6407	2127
Phalen Creek	6183	89	16	2483	893	19608
Pigs Eye	143898	2034	310	215	81389	27021
Riverview	69491	982	149	104	39304	13049
St. Anthony Hill	203385	2876	438	304	115034	38191
St. Anthony Park	16177	109	18	25	10084	2266
Trout Brook	25236	524	97	44	22813	6889
Urban	22344	316	48	33	12637	4196
West Kittsondale	83690	1183	180	125	47335	15715
West Seventh	32438	459	70	49	18347	6091

Table 6: Q2 (Apr-Jun) Pollutant Loading (lbs)

Subwatershed	Cl	TKN	Total P	NO2+NO3	TSS	VSS
Battle Creek	39358	3863	778	410	472516	159988
Beaver Lake	4071	400	80	42	48871	16547
Belt Line	106501	10453	2105	1110	1278615	432922
Crosby	44880	4405	887	468	538817	182436
Davern	42537	4175	841	443	510683	172911
Downtown	22669	2225	448	236	272152	92147
East Kittsondale	8568	1662	284	152	194410	60227
Fish Creek	1576	155	31	16	18925	6408
Goodrich/Western	14679	1441	290	153	176236	59671
Griffith/Pt. Douglas	18491	1815	366	193	222001	75167
Hidden Falls	819	135	29	30	27532	5327
Highwood	37002	3632	731	386	444240	150414
Lake Como	35710	3505	706	372	428726	145161
Lake Phalen	27334	2683	540	285	328165	111112
Mississippi River Blvd.	82375	8085	1628	858	988975	334854
MRWMO	5549	545	110	58	66616	22555
Phalen Creek	12351	1907	371	198	261274	86023
Pigs Eye	79105	7764	1564	824	949716	321561
Riverview	38201	3749	755	398	458631	155287
St. Anthony Hill	93237	9151	1843	971	1119378	379007
St. Anthony Park	24856	1555	277	320	181793	75484
Trout Brook	44864	4258	866	272	461978	157471
Urban	12283	1206	243	128	147466	49930
West Kittsondale	40992	4023	810	427	492141	166633
West Seventh	16074	1578	318	167	192977	65339

Table 7: Q3 (Jul-Sep) Pollutant Loading

Subwatershed	Cl	TKN	Total P	NO2+NO3	TSS	VSS
Battle Creek	30491	2954	842	511	744912	165713
Beaver Lake	3063	297	85	51	74835	16648
Belt Line	80143	7764	2213	1344	1957925	435559
Crosby	32904	3188	909	552	803871	178829
Davern	31186	3021	861	523	761898	169491
Downtown	18637	1806	515	312	455319	101290
East Kittsondale	3529	1274	223	220	119020	90591
Fish Creek	1221	118	34	20	29834	6637
Goodrich/Western	12069	1169	333	202	294848	65592
Griffith/Pt. Douglas	14326	1388	396	240	349981	77856
Hidden Falls	1059	113	36	32	22428	3107
Highwood	28666	2777	792	481	700335	155796
Lake Como	25018	2424	691	419	611208	135969
Lake Phalen	20569	1993	568	345	502515	111789
Mississippi River Blvd.	60395	5851	1668	1013	1475471	328232
MRWMO	3887	377	107	65	94971	21127
Phalen Creek	5925	1365	319	266	172293	137370
Pigs Eye	61285	5937	1692	1027	1497209	333068
Riverview	29595	2867	817	496	723023	160843
St. Anthony Hill	76657	7427	2117	1285	1872757	416612
St. Anthony Park	18793	1352	252	296	115285	45562
Trout Brook	60410	4227	1587	638	1635257	191985
Urban	9516	922	263	160	232476	51717
West Kittsondale	28719	2782	793	481	701616	156081
West Seventh	11785	1142	325	198	287906	64047

Table 8: Q4 (Oct-Dec) Pollutant Loading (lbs)

Subwatershed	Cl	TKN	Total P	NO2+NO3	TSS	VSS
Battle Creek	15164	1322	427	155	143314	54118
Beaver Lake	1607	140	45	16	15188	5735
Belt Line	42046	3666	1185	429	397365	150051
Crosby	19063	1662	537	194	180156	68030
Davern	18067	1575	509	184	170750	64478
Downtown	10407	907	293	106	98358	37142
East Kittsondale	3587	890	216	117	57692	25688
Fish Creek	607	53	17	6	5740	2167
Goodrich/Western	6740	588	190	69	63693	24052
Griffith/Pt. Douglas	7125	621	201	73	67333	25426
Hidden Falls	722	56	14	15	5737	1378
Highwood	14257	1243	402	145	134738	50879
Lake Como	15345	1338	433	156	145017	54761
Lake Phalen	10791	941	304	110	101986	38512
Mississippi River Blvd.	34989	3051	986	357	330670	124866
MRWMO	2384	208	67	24	22533	8509
Phalen Creek	7745	961	260	66	45183	25459
Pigs Eye	30479	2658	859	311	288049	108772
Riverview	14719	1283	415	150	139103	52528
St. Anthony Hill	42807	3732	1207	437	404554	152766
St. Anthony Park	20719	664	175	209	43223	15562
Trout Brook	25210	1784	743	638	320141	110137
Urban	4733	413	133	48	44726	16889
West Kittsondale	17614	1536	497	180	166467	62861
West Seventh	6827	595	192	70	64523	24365

City of St. Paul
Loading Assessment

SAINT PAUL
The Most Livable City in America

MRWMO
LAKE COMO
LAKE PHALEN
TROUT BROOK
BELTLINE STORMSEWER
BEAVER LAKE
ST. ANTHONY FALLS
PHALEN CREEK
WEST KITTSONDALE
ST. ANTHONY HILL
URBAN
GRIFFITH
PT DOUGLAS
DOWNTOWN
BATTLE CREEK
GOODRICH-WESTERN
EAST KITTSONDALE
MISSISSIPPI RIVER BLVD
RIVERVIEW
WEST SEVENTH
BLUFFLANDS
PIGS EYE
HIDDEN FALLS
CROSBY
DAVERN
FISH CREEK

Figure 1.
Watersheds

N
W E
S

0 2,000 4,000 8,000
Feet

Legend

Major Subwatersheds

WSB & Associates, Inc.

Outfall Inventory

Outfall	Location	Watershed	Pipe Size	Acres
	Bridal Veil Creek			
005	South of Buford	Bridal Veil	42"	
	Mississippi River			
010	Eustis	St. Anthony Park	tunnel	2467
020	Lotus	Miss. River Blvd.	tunnel	31
030	Marshall	Miss. River Blvd.	tunnel	121
040	West Kittsondale	West Kittsondale	tunnel	977
050	Otis	Miss. River Blvd.	tunnel	14
060	Portland Ave	Miss. River Blvd.	tunnel	508
070	Summit	Miss. River Blvd.	16" cast iron	30
080	Goodrich	Miss. River Blvd.	tunnel	456
090	Princeton	Miss. River Blvd.	tunnel	150
095	Berkeley	Miss. River Blvd.	24"	
100	Jefferson	Miss. River Blvd.	tunnel	139
110	Randolph	Miss. River Blvd.	tunnel	39
115	Hartford	Miss. River Blvd.	tunnel	580
120	Scheffer	Miss. River Blvd.	tunnel	8
130	Highland Parkway	Miss. River Blvd.	tunnel	165
135	Hidden Falls	Hidden Falls	48"	269
140	Sheridan	Davern	tunnel	145
145	West 7th	Davern	30"	30
150	Davern	Davern	tunnel	963
151	Watergate Marina	Crosby	21"	

Outfall Inventory

Outfall	Location	Watershed	Pipe Size	Acres
156	Elway	Crosby	60"	
158	Elway	Crosby	90"	820
160	Otto	E. Kittsondale	tunnel	177
170	Bay	E. Kittsondale	tunnel	1699
180	Sumac	West 7th	tunnel	8
190	Drake	West 7th	tunnel	158
195	Fountain Cave	West 7th	42"	39
200	Richmond	West 7th	20"	142
201	Richmond	West 7th	42"	
206	Western	West 7th	30"	98
210	Smith -1992	Good/West	tunnel	424
220	Sherman	Downtown	48"	41
230	Chestnut	Downtown	27"	82
240	Eagle	Downtown	3'x5' brick	77
~~250~~	~~Ontario~~ abandoned	~~Downtown~~	~~24"~~	
260	Market	Downtown	24"	
270	St. Peter	St. Anthony Hill	tunnel	2653
280	Cedar	Downtown	tunnel	
290	Minnesota	Downtown	tunnel	115
295	Robert	Downtown	tunnel	5
300	Jackson	Downtown	36"	27
310	Sibley	Downtown	48"	10
~~315~~	~~Wacouta~~	~~Downtown~~	~~12"~~	~~10~~

Outfall Inventory

Outfall	Location	Watershed	Pipe Size	Acres
320	Broadway	Downtown	7'x8' concrete	115
325	Troutbrook	Troutbrook	dual 10'	4025
330	Plum	Phalen Creek	tunnel	1406
340	Urban	Urban	48" brick	328
343	Warner and Childs	Pig's Eye	24"	
346	Warner and Childs	Pig's Eye	18"	
350	Beltline (RWMWD's)	Beltline	9'	3524
~~352~~	~~off Child's Road~~	~~Pig's Eye~~	~~12"~~	
~~354~~	~~off Child's Road~~	~~Pig's Eye~~	~~12"~~	
~~356~~	~~off Child's Road~~	~~Pig's Eye~~	~~12"~~	
360	Battle Creek	Pig's Eye	36"	
365	Wyoming	Riverview	30" culvert	8
380	Page and Barge Ch Rd	Riverview	42"	69
385	Robie and Witham	Riverview	54"	
390	Robie and Kansas	Riverview	42"	264
400	Airport	Riverview	12"	
405	Chester St	Riverview	tunnel	326
407	Eva St	Riverview	36"	
410	Custer St	Riverview	tunnel	188
420	Moses St	Riverview	5'6"	95
430	Belle	Riverview	2-36"x40"	37
440	Riverview	Riverview	2-77"x121"	801
460	Chippewa and Baker	Riverview	16"	71

Outfall Inventory

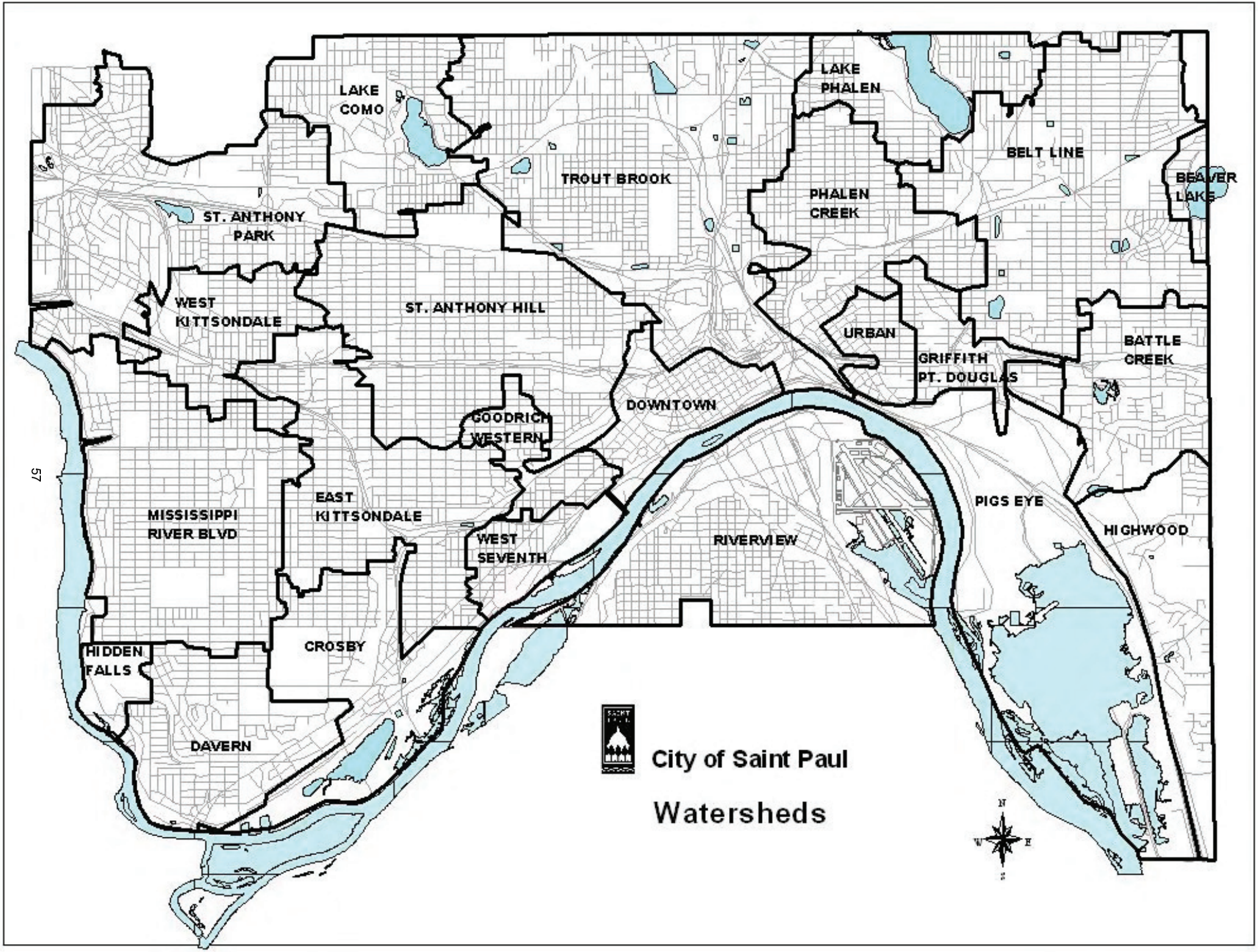
Outfall	Location	Watershed	Pipe Size	Acres
	Upper Lake			
152	Springfield	Crosby	15"	
	Crosby Lake			
153	Rankin	Crosby	27"	
154	Homer	Crosby	30"	
155	Leland	Crosby	30"	
	Fairview North Pond			
500	Tatum & Pierce Butler	St. Anthony Park	6'	
510	Pierce Butler & Aldine	St. Anthony Park	54"	
	Lake Como			
520	Arlington & Chelsea	Como	60"	310
530	Chatsworth North	Como	36"	201
540	Milton North	Como	36"	79
550	Parkview East	Como	18"	17
560	Ivy East	Como	18"	24
570	Wheelock Pkwy East	Como	24"	23
580	Rose East	Como	36"	30
590	Victoria South	Como	30"	49
600	Chatsworth South	Como	24"	75
610	Horton West	Como	15"	311
620	Park West	Como	36"	50

Outfall Inventory

Outfall	Location	Watershed	Pipe Size	Acres
	Loeb Lake			
630	Jessamine	Troutbrook	36"	
	Lake Phalen			
680	Arlington West	Phalen	72"	380
690	Blomquist South	Phalen	36"	71
700	Arlington East	Phalen	42"	209
710	between Hoyt & Neb.	Phalen	42"	69
720	Larpenteur East	Phalen	84"	17
	Beaver Lake			
726	Lacrosse	Beaver	15"	
728	Ames	Beaver	15"	
730	Rose North	Beaver	42"	67
740	McKnight North	Beaver	21"	22
	Suburban Pond			
---	Suburban & VanDyke (RWMWD's)	Battle Creek	102"	
750	Suburban & WB Ave	Battle Creek	27"	
760	Suburban & Hazel	Battle Creek	54"	
	Little Pig's Eye Lake			
770	near fish hatchery	Griffith/Pt. Douglas	72"	
	Pig's Eye Lake			
780	Burlington	Highwood	66"	
784	Winthrop @ Lower Afton	Highwood	30"	

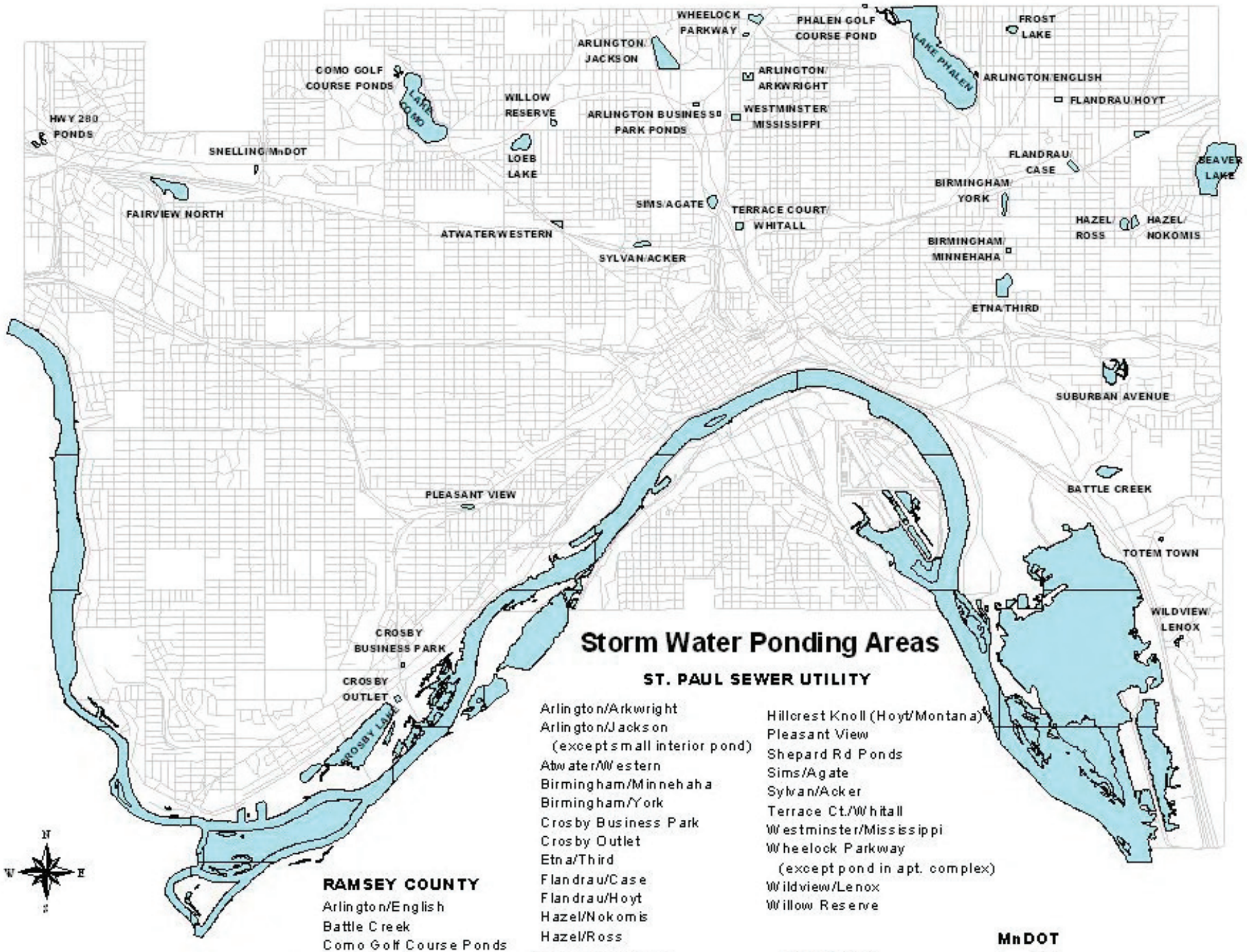
Outfall Inventory

Outfall	Location	Watershed	Pipe Size	Acres
786	Morningside @ Lower Afton	Highwood	18"	
790	Springside Drive	Highwood	33"	
791	Highwood	Highwood	48"	
	Battle Creek			
~~800~~	~~N. Park Drive & Faye~~	~~Battle Creek~~	~~33"~~	
808	Sandralee	Battle Creek	24"	
810	Ruth	Battle Creek	42"&73-1/2" arch	
812	Warren	Battle Creek	18"	
814	Cutler	Battle Creek	24"	
816	Nelson	Battle Creek	24"	
818	Winthrop & Larry Ho	Battle Creek	30"	
820	Winthrop & N. Park Dr	Battle Creek	36"	
825	Michael N	Battle Creek	33"	
826	Michael S	Battle Creek	30"	
830	McKnight & N. Park Dr	Battle Creek	36"	
836	A Street	Battle Creek	18"	


LAKE COMO
LAKE PHALEN
TROUT BROOK
BELT LINE
BEAVER LAKE
PHALEN CREEK
ST. ANTHONY PARK
WEST KITTSONDALE
ST. ANTHONY HILL
URBAN
BATTLE CREEK
GRIFFITH
PT. DOUGLAS
DOWNTOWN
GOODRICH
WESTERN
EAST KITTSONDALE
MISSISSIPPI RIVER BLVD
WEST SEVENTH
RIVERVIEW
PIGS EYE
HIGHWOOD
CROSBY
HIDDEN FALLS
DAVERN
City of Saint Paul
Watersheds
N
W
E

Watershed Inventory

Watershed	WS#	Area (acres)	Population (2000 Census)	Percent Impervious	Runoff Coefficient
Beaver Lake	1	278	2,070	31	0.33
Belt Line	2	2,882	30,994	56	0.55
Lake Phalen	3	995	7,626	41	0.42
Trout Brook	4	3,959	37,665	63	0.62
Lake Como	5	1,240	9,753	47	0.47
St. Anthony Park	6	2,467	13,140	70	0.68
Phalen Creek	7	1,406	18,418	64	0.62
St. Anthony Hill	8	2,542	36,410	66	0.64
Griffith/Pt. Douglas	9	458	5,264	63	0.61
W. Kittsondale	10	847	7,732	69	0.67
Urban	11	339	4,491	58	0.57
Battle Creek	12	1,089	8,201	54	0.54
Downtown	13	669	6,097	78	0.75
E. Kittsondale	14	1,870	18,353	64	0.62
Mississippi River Blvd.	15	2,373	27,251	59	0.58
Goodrich/Western	16	424	5,010	64	0.63
Pigs Eye	17	2,995	913	39	0.40
Riverview	18	2,658	14,860	58	0.57
Highwood	19	1,139	5,216	50	0.50
W. Seventh	20	450	2,543	61	0.60
Crosby	21	1,446	8,804	45	0.45
Davern	22	1,277	6,628	56	0.55
Hidden Falls	23	237	1,263	56	0.55
Total		34,040	278,706		



Storm Water Ponding Areas

ST. PAUL SEWER UTILITY

Arlington/Arkwright
Arlington/Jackson
(except small interior pond)
Atwater/Western
Birmingham/Minnehaha
Birmingham/York
Crosby Business Park
Crosby Outlet
Etna/Third
Flandrau/Case
Flandrau/Hoyt
Hazel/Nokomis
Hazel/Ross
Hillcrest Knoll (Hoyt/Montana)
Pleasant View
Shepard Rd Ponds
Sims/Agate
Sylvan/Acker
Terrace Ct./Whitall
Westminster/Mississippi
Wheelock Parkway
(except pond in apt. complex)
Wildview/Lenox
Willow Reserve

RAMSEY COUNTY

Arlington/English
Battle Creek
Como Golf Course Ponds
Surburban Avenue
Totem Town

ST. PAUL PARKS

Phalen Golf Course Pond

RAILROAD

Fairview/North

MnDOT

Hwy. 280
Snelling/MnDOT

City of Saint Paul

Storm Water Ponding Area Inventory

Ponding Area	Drainage Area (acres)	Population 2000 Census	Pond Area (acres)	Storage Capacity (Acre-feet
Arlington/Arkwright	302.3	4001	5	20.4
Arlington/Jackson	699.4	6562	14.5	75.6
Atwater/Western	127.3	1230	2.7	13.3
Birmingham/Minnehaha	41.0	457	0.9	2.5
Birmingham/York	146.5	2050	2.2	9.5
Crosby Business Park	39.6	198	1	5.52
Crosby Outlet	866.0	6295	5.5	40.6
Etna/Third	244.0	2457	4.7	25.1
Flandrau/Case	95.2	1331	0.7	3
Flandrau/Hoyt	479.5	4582	1.9	20.8
Hazel/Nokomis	73.0	511	2.3	6.3
Hazel/Ross	67.8	949	4	3.8
Pleasant View	164.5	2053	2.3	14.5
Sims/Agate	174.6	1357	5.3	12.8
Sylvan/Acker	376.9	3617	2.1	11.7
Terrace Ct./Whitall	4.7	28	0.5	0.5
Westminister/Mississippi	123.4	1912	2.2	10.1
Wheelock Parkway	19.0	265	1.3	1.7
Wildview/Lenox	19.3	111	0.73	2.2
Willow Reserve	372.1	3669	20.3	42.6
Total	4436.2	43633.6		

Drainage area only includes area in St. Paul.

Storage capacity is for a 100 year storm in acre-feet.

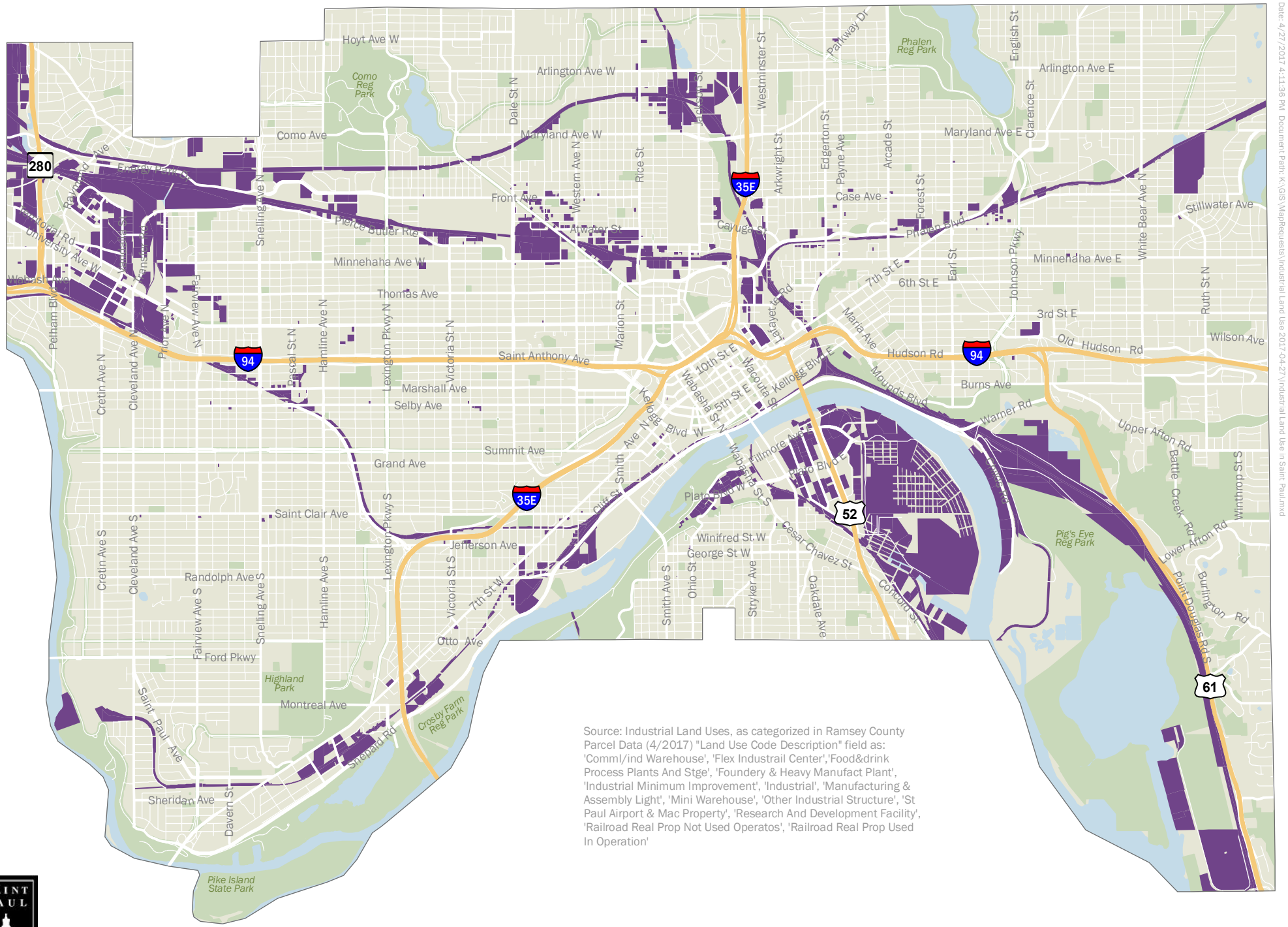
Storm Water Ponding Areas by Watershed Area

Beaver Lake	None
Belt Line	Birmingham/Minnehaha Birmingham/York Etna/Third Flandrau/Hoyt Flandrau/Case Hazel/Nokomis Hazel/Ross Hillcrest Knoll (Hoyt/Montana)
Lake Phalen	Arlington/English Phalen Golf Course Pond
Trout Brook	Arlington/Jackson Arlington/Arkwright Atwater/Western Sims/Agate Sylvan/Acker Terrace Ct./Whitall Westminster/Mississippi Wheelock Parkway Willow Reserve
Lake Como	Como Golf Course Ponds
St. Anthony Park	Fairvew/North Highway 280 Snelling/MnDOT
Phalen Creek	None
St. Anthony Hill	None
Griffith/ Pt. Douglas	None
W. Kittsondale	None
Urban	None
Battle Creek	Battle Creek Surburban Avenue
Downtown	None

E. Kittsondale	Pleasant View
Mississippi River Blvd.	None
Goodrich/ Western	None
Pigs Eye	None
Riverview	None
Highwood	Totem Town Wildview/Lenox
W. Seventh	None
Crosby	Crosby Business Park Crosby Outlet
Davern	None
Hidden Falls	None

Permit #	Permitee	Facility Address	Waterbody	Use	MPCA Activity Subtype Name	MPCA Active	MPCA Site ID
MNG255045	528 Partnership LLP Brown & Bigelow Bldg	345 E Plato Blvd	Mississippi River	Commercial Lithographic Printing; Commercial Printing (except Screen and Books)	NPDES/SDS permit	Y	4946
MN0059765	Captain Ken's Foods Inc	344 S Robert St	Mississippi River	Frozen Fruit, Juice, and Vegetable Manufacturing	NPDES/SDS permit	Y	4953
MN0064696	Flint Hills RPB Airport & Wisconsin Pipelines	See location description	Mississippi River	Pipeline Transportation of Refined Petroleum Products	NPDES/SDS permit	Y	61893
MNG790000	Ground Water Pump-Out General Permit	520 Lafayette Rd N	Mississippi River	(null)	NPDES/SDS permit	Y	58936966
MN0064700	Koch - Wood River Pipeline	See location description	Mississippi River	Pipeline Transportation of Crude Oil	NPDES/SDS permit	Y	61924
MNG490239	MNDNR - St Paul	500 Lafayette Rd N	Mississippi River	Construction Sand and Gravel Mining; Environment, Conservation and Wildlife Organizations	NPDES/SDS permit	Y	57067
MNG870005	MNDNR Division of Fisheries and Wildlife	500 Lafayette Rd	Mississippi River	(null)	NPDES/SDS permit	Y	63733281
MN0029815	Met Council Metropolitan WWTP	2400 Childs Rd	Mississippi River	Sewage Treatment Facilities	NPDES/SDS permit	Y	445
MN0046744	MCES Minneapolis CSO	230 5th St E	Mississippi River	Sewage Treatment Facilities	NPDES/SDS permit	Y	3850
MN0070629	Met Council - Mississippi Basin Total Phosphorus	390 Robert St N	Mississippi River	(null)	NPDES/SDS permit	Y	68547809
MNG870001	Metropolitan Mosquito Control District	2099 University Ave W	Mississippi River	(null)	NPDES/SDS permit	Y	62828162
MNG870002	Minnesota Department of Agriculture	625 Robert St N	Mississippi River	(null)	NPDES/SDS permit	Y	62828822
MN0062031	NEA Galtier LLC	380 Jackson St Ste 320	Mississippi River	Lessors of Residential Buildings and Dwellings; Lessors of Nonresidential Buildings (except Miniwarehouses)	NPDES/SDS permit	Y	123395
MNG255066	Pearson Candy Co	2140 W 7th St	Mississippi River	Confectionery Manufacturing from Purchased Chocolate	NPDES/SDS permit	Y	1173
MN0054577	SIGH Properties LLC	1 Ridder Cir	Mississippi River	Newspaper Publishers	NPDES/SDS permit	Y	56698
MNG490034	Saint Paul Department of Public Works/Asphalt Plt	456 Burgess St	Mississippi River	Asphalt Paving Mixture and Block Manufacturing	NPDES/SDS permit	Y	13
MN0056081	St Paul Port Authority-Southport Barge	637 Barge Channel Rd	Mississippi River	Water and Sewer Line and Related Structures Construction	NPDES/SDS permit	Y	138893
MN0002968	United & Children's Hospital	333 N Smith Ave	Mississippi River	Electric Power Distribution; General Medical and Surgical Hospitals	NPDES/SDS permit	Y	1765
MN0060755	Viking Gas Transmission	825 Rice St	Mississippi River	Pipeline Transportation of Natural Gas	NPDES/SDS permit	Y	3812
MN0048984	WestRock MN Corp	2250 Wabash Ave	Mississippi River	Paperboard Mills	NPDES/SDS permit	Y	326
MN0000884	Xcel Energy - High Bridge Combined Cycle Plant	155 Randolph Rd	Mississippi River	Fossil Fuel Electric Power Generation; Steam and Air-Conditioning Supply	NPDES/SDS permit	Y	210

Information Obtained from What's In My Neighborhood 3-22-2017



Source: Industrial Land Uses, as categorized in Ramsey County Parcel Data (4/2017) "Land Use Code Description" field as: 'Comml/ind Warehouse', 'Flex Industrail Center','Food&drink Process Plants And Stge', 'Foundery & Heavy Manufact Plant', 'Industrial Minimum Improvement', 'Industrial', 'Manufacturing & Assembly Light', 'Mini Warehouse', 'Other Industrial Structure', 'St Paul Airport & Mac Property', 'Research And Development Facility', 'Railroad Real Prop Not Used Operatos', 'Railroad Real Prop Used In Operation'

Industrial Land Use in Saint Paul

Industrial Land Use - April 2017
Parks
Water Bodies

0 0.5 1 2 Miles

Pollutant Source Locations
Stormwater Modeling
Volume Reduction Inventory
2010 RSVP Stormwater Study
City of St. Paul, MN

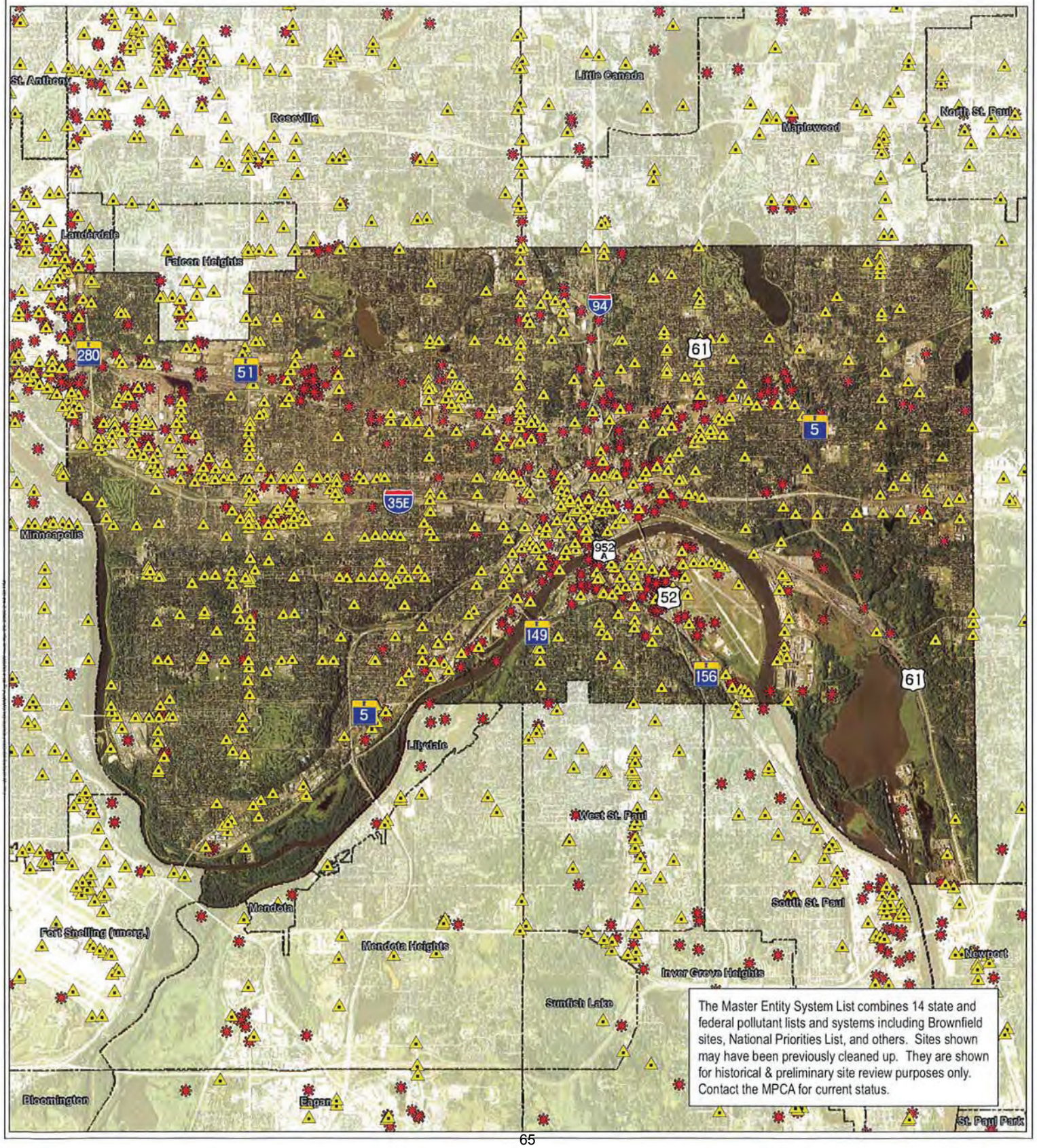
Legend

- Leaking Underground Storage Tank
- Pollution Source Locations

N
W E
S

0 7,500 15,000 Feet

WSB & Associates, Inc.



The Master Entity System List combines 14 state and federal pollutant lists and systems including Brownfield sites, National Priorities List, and others. Sites shown may have been previously cleaned up. They are shown for historical & preliminary site review purposes only. Contact the MPCA for current status.

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

TMDL Annual Report Form

Municipal Separate Storm Sewer Systems (MS4) Program

Doc Type: Annual Report

Form Information

This form is to be completed annually by MS4s in order to track the completed BMP activities and to calculate the cumulative loading reduction for specific pollutants of concern associated with each applicable WLA. Navigate through this form using the tabs at the bottom of the page. All information is collected in accordance with Part III.E of the MS4 Permit.

Green Tabs (REQUIRED): user-input worksheet
Blue Tabs (hidden*): optional user-input worksheet
Yellow Tabs (hidden*): reference worksheet

*Reveal hidden spreadsheet tabs by navigating to Home->Cells->Format->Hide & Unhide->Unhide Sheet

Please refer to the Guidance for Completing the TMDL Reporting Form in the Minnesota Stormwater Manual for additional assistance and instructions. Sections of the guidance are hyperlinked throughout this spreadsheet.

User Information

Date Updated: 5/23/2017

Permittee: Capitol Region Watershed District

Permit ID: MS400206

Contact Name: Anna Eleria

Contact Phone: 651-644-8888

Contact email: anna@capitolregionwd.org

Mailing address: 1410 Energy Park Dr., Suite 4, Saint Paul, MN 55108

Reporting Year	Data Entry Date	Entered by	Notes
2014	6/8/2015	Anna Eleria	
2015	6/8/2016	Anna Eleria	
2016	5/23/2017	Anna Eleria	

BMP - Activities Completed Spreadsheet

For MPCA use only			Required		Optional	Required							Optional		Required: Place an "X" in a cell if the BMP applies to the TMDL shown in the column
															Como Lake: Excess Nutrients TMDL
Entry ID	Permittee	MS4 ID	Reporting year	BMP/Activity	BMP Description	Location and ID Information Needed?	BMP ID	y-coord (lat, e.g., 44.9866)	x-coord (long, e.g. -93.2581)	Coordinate system (e.g. lat-long, UTM)	Who owns this BMP/activity?	If applicable, name other owner(s)	Year when BMP was implemented	Note(s)	Como Lake - Phosphorus
MS400206-1	Capitol Region Watershed District	MS400206	2014	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K	04-001CR	44.98149843	-93.16557527	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2007	Arlington-Pascal Project - Asbury RG South	X
MS400206-2	Capitol Region Watershed District	MS400206	2014	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K	04-001CR	44.98165653	-93.16559136	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2007	Arlington-Pascal Project - Asbury RG North	X
MS400206-3	Capitol Region Watershed District	MS400206	2014	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K	04-001CR	44.98260893	-93.15949202	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2007	Arlington-Pascal Project - Frankson McKinley RG	X
MS400206-4	Capitol Region Watershed District	MS400206	2014	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K	04-001CR	44.98445802	-93.16066146	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2007	Arlington-Pascal Project - Arlington McKinley RG	X
MS400206-5	Capitol Region Watershed District	MS400206	2014	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K	04-001CR	44.98545969	-93.1616807	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2007	Arlington-Pascal Project - Pascal RG South	X
MS400206-6	Capitol Region Watershed District	MS400206	2014	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K	04-001CR	44.98564181	-93.16172361	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2007	Arlington-Pascal Project - Pascal RG Middle	X
MS400206-7	Capitol Region Watershed District	MS400206	2014	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K	04-001CR	44.98581128	-93.16169143	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2007	Arlington-Pascal Project - Pascal RG North	X
MS400206-8	Capitol Region Watershed District	MS400206	2014	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K	04-001CR	44.98154397	-93.15628409	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2007	Arlington-Pascal Project - Hamline Midway RG	X
MS400206-9	Capitol Region Watershed District	MS400206	2014	Infiltrator	Underground infiltration	Complete columns H through K	04-001CR	44.98437455	-93.15614462	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2007	Arlington-Pascal Project - Como Golf Course Pond	X
MS400206-10	Capitol Region Watershed District	MS400206	2014	Constructed_basin	Wet pond/wet detention pond	Complete columns H through K	04-001CR	44.98740987	-93.15284014	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2008	Como Regional Pond	X
MS400206-11	Capitol Region Watershed District	MS400206	2014	Infiltrator	Infiltration trench	Complete columns H through K	04-001CR	44.98637029	-93.16341877	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2007	Arlington-Hamline Facility	X
MS400206-12	Capitol Region Watershed District	MS400206	2014	Infiltrator	Infiltration trench	Complete columns H through K	04-001CR	44.98637788	-93.16273212	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2007	Infiltration Trench 1	X
MS400206-13	Capitol Region Watershed District	MS400206	2014	Infiltrator	Infiltration trench	Complete columns H through K	04-001CR	44.98638546	-93.16115499	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2007	Infiltration Trench 2	X
MS400206-14	Capitol Region Watershed District	MS400206	2014	Infiltrator	Infiltration trench	Complete columns H through K	04-001CR	44.98638799	-93.1598568	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2007	Infiltration Trench 3	X
MS400206-15	Capitol Region Watershed District	MS400206	2014	Infiltrator	Infiltration trench	Complete columns H through K	04-001CR	44.98452632	-93.1650281	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2007	Infiltration Trench 4	X
MS400206-16	Capitol Region Watershed District	MS400206	2014	Infiltrator	Infiltration trench	Complete columns H through K	04-001CR	44.98455667	-93.16372991	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2007	Infiltration Trench 5	X
MS400206-17	Capitol Region Watershed District	MS400206	2014	Infiltrator	Infiltration trench	Complete columns H through K	04-001CR	44.9845592	-93.16273749	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2007	Infiltration Trench 6	X
MS400206-18	Capitol Region Watershed District	MS400206	2014	Infiltrator	Infiltration trench	Complete columns H through K	04-001CR	44.98459461	-93.15859079	Lat-long	Permittee (you)	CRWD, Roseville, Falcon Heights, Saint Paul, Ramsey County	2007	Infiltration Trench 7	X
MS400206-19	Capitol Region Watershed District	MS400206	2014	Infiltrator	Infiltration basin	Complete columns H through K	08-008	44.99262619	-93.15017939	Lat-long	Other	Rainbow Foods, Roseville	2008	Roseville Rainbow Foods - CRWD Permit Project	X
MS400206-20	Capitol Region Watershed District	MS400206	2014	Infiltrator	Infiltration basin	Complete columns H through K	07-020	44.98323563	-93.15341681	Lat-long	Other MS4 permittee	Saint Paul	2007	Como Zoo Polar Bear Exhibit - CRWD Permit Project	X
MS400206-21	Capitol Region Watershed District	MS400206	2014	Infiltrator	Infiltration basin	Complete columns H through K	09-009	44.97803977	-93.13554525	Lat-long	Other MS4 permittee	Saint Paul	2009	Victoria Street IB #1 - CRWD Permit Project	X
MS400206-22	Capitol Region Watershed District	MS400206	2014	Infiltrator	Infiltration basin	Complete columns H through K	09-009	44.97785455	-93.13572764	Lat-long	Other MS4 permittee	Saint Paul	2009	Victoria Street IB #2 - CRWD Permit Project	X
MS400206-23	Capitol Region Watershed District	MS400206	2014	Infiltrator	Infiltration trench	Complete columns H through K	10-014	44.96975318	-93.1415534	Lat-long	Other MS4 permittee	Saint Paul	2010	Front-Victoria RSVP IT #1 - CRWD Permit Project	X
MS400206-24	Capitol Region Watershed District	MS400206	2014	Infiltrator	Infiltration trench	Complete columns H through K	10-014	44.96890305	-93.14148903	Lat-long	Other MS4 permittee	Saint Paul	2010	Front-Victoria RSVP IT #2 - CRWD Permit Project	X
MS400206-25	Capitol Region Watershed District	MS400206	2014	Infiltrator	Infiltration trench	Complete columns H through K	10-014	44.97310806	-93.13648939	Lat-long	Other MS4 permittee	Saint Paul	2010	Front-Victoria RSVP IT #3 - CRWD Permit Project	X
MS400206-26	Capitol Region Watershed District	MS400206	2014	Filter	Permeable pavement with underdrain	Complete columns H through K	10-014	44.97304126	-93.13646793	Lat-long	Other MS4 permittee	Saint Paul	2010	-Victoria RSVP Permeable Pavement - CRWD Permit Pro	X
MS400206-27	Capitol Region Watershed District	MS400206	2014	Infiltrator	Underground infiltration	Complete columns H through K	11-018	44.98169511	-93.1533578	Lat-long	Other MS4 permittee	Saint Paul	2011	Como Zoo Gorilla Forest - CRWD Permit Project	X
MS400206-28	Capitol Region Watershed District	MS400206	2014	Infiltrator	Underground infiltration	Complete columns H through K	12-002	44.99175515	-93.14721823	Lat-long	Other	Walgreens, Saint Paul	2012	Larpenteur Walgreens - CRWD Permit	X

Entry ID	Permittee	MS4 ID	Reporting year	BMP/Activity	BMP Description	Location and ID Information Needed?	BMP ID	y-coord (lat, e.g. 44.9866)	x-coord (long, e.g. -93.2581)	Coordinate system (e.g. lat-long, UTM)	Who owns this BMP/activity?	If applicable, name other owner(s)	Year when BMP was implemented	Note(s)	Como Lake - Phosphorus
MS400206-29	Capitol Region Watershed District	MS400206	2014	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K	10-020	44.9755535	-93.14995944	Lat-long	Other MS4 permittee	Saint Paul	2010	Como Pool RG #1 - CRWD Permit Project	X
MS400206-30	Capitol Region Watershed District	MS400206	2014	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K	10-020	44.97581686	-93.14996481	Lat-long	Other MS4 permittee	Saint Paul	2010	Como Pool RG #2 - CRWD Permit Project	X
MS400206-31	Capitol Region Watershed District	MS400206	2014	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K	10-020	44.97582445	-93.14961612	Lat-long	Other MS4 permittee	Saint Paul	2010	Como Pool RG #3 - CRWD Permit Project	X
MS400206-32	Capitol Region Watershed District	MS400206	2014	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K	10-020	44.97562712	-93.14922988	Lat-long	Other MS4 permittee	Saint Paul	2010	Como Pool RG #4 - CRWD Permit Project	X
MS400206-33	Capitol Region Watershed District	MS400206	2014	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K	10-020	44.97612424	-93.14845204	Lat-long	Other MS4 permittee	Saint Paul	2010	Como Pool RG #5 - CRWD Permit Project	X
MS400206-34	Capitol Region Watershed District	MS400206	2014	Supplemental_public_education_outreach	Publications	No ID information needed	NA	NA	NA	NA	Other MS4 permittee	Roseville		Roseville stormwater management webpage updates	X
MS400206-35	Capitol Region Watershed District	MS400206	2014	Supplemental_public_education_outreach	Workshops/Clinics	No ID information needed	NA	NA	NA	NA	Other MS4 permittee	Saint Paul, CRWD		Como Lake Spring Cleanup	X
MS400206-36	Capitol Region Watershed District	MS400206	2014	Improved_lawn_turf_vegetation_soil_practices	Yard waste collection	No ID information needed	NA	NA	NA	NA	Other MS4 permittee	CRWD, Saint Paul		Como Subwatershed Neighborhood Leaf Litter Cleanups	X
MS400206-37	Capitol Region Watershed District	MS400206	2014	BMP_improvement_enhancement_retrofitting	Clean and repair stormwater structures	No ID information needed	NA	NA	NA	NA	Other MS4 permittee	Ramsey County, Saint Paul		Como Golf Course Maintenance Dredging	X
MS400206-38	Capitol Region Watershed District	MS400206	2014	BMP_improvement_enhancement_retrofitting		No ID information needed	NA	NA	NA	NA	Other MS4 permittee	Ramsey County, Saint Paul		Como Lake Aeration System	X
MS400206-39	Capitol Region Watershed District	MS400206	2014	Supplemental_street_sweeping	Street sweeping	No ID information needed	NA	NA	NA	NA	Other MS4 permittee	Saint Paul, Roseville, Falcon Heights, Ramsey County		Municipal street sweeping	X
MS400206-40	Capitol Region Watershed District	MS400206	2014	BMP_improvement_enhancement_retrofitting	BMP maintenance	No ID information needed	NA	NA	NA	NA	Permittee (you)	CRWD, Saint Paul, Roseville, Falcon Heights, Ramsey County		Catch basin cleaning	X
MS400206-41	Capitol Region Watershed District	MS400206	2014	BMP_improvement_enhancement_retrofitting	Clean and repair stormwater structures	No ID information needed	NA	NA	NA	NA	Permittee (you)	CRWD, Saint Paul, Roseville, Falcon Heights, Ramsey County		Stormwater BMP maintenance	X
MS400206-42	Capitol Region Watershed District	MS400206	2014	Supplemental_public_education_outreach	Presentations	No ID information needed	NA	NA	NA	NA	Permittee (you)	CRWD, Saint Paul, Roseville, Falcon Heights, Ramsey County		Public education activities	X
MS400206-43	Capitol Region Watershed District	MS400206	2014	Supplemental_employee_education_training	Staff training	No ID information needed	NA	NA	NA	NA	Permittee (you)	CRWD, Saint Paul, Roseville, Falcon Heights, Ramsey County		Municipal training on winter road, parking lot and sidewalk maintenance	X
MS400206-44	Capitol Region Watershed District	MS400206	2015	Infiltrator	Underground infiltration	Complete columns H through K	15-181	44.992739	-93.139299	Lat-long	Other MS4 permittee	Roseville	2015	36" underground infiltration trench	x
MS400206-45	Capitol Region Watershed District	MS400206	2015	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K	15-182	44.992147	-93.139584	Lat-long	Other MS4 permittee	Roseville	2015	Raingarden at Church	x
MS400206-46	Capitol Region Watershed District	MS400206	2015	Infiltrator	Underground infiltration	Complete columns H through K		44.98169511	-93.1533578	Lat-long	Other MS4 permittee	Saint Paul	2011	Como Gorilla Subsurface Infiltration Pipe Gallery	X
MS400206-47	Capitol Region Watershed District	MS400206	2015	Infiltrator	Underground infiltration	Complete columns H through K		44.98169511	-93.1533578	Lat-long	Other MS4 permittee	Saint Paul	2011	Como Gorilla 2nd Subsurface Infiltration Pipe Gallery	X
MS400206-48	Capitol Region Watershed District	MS400206	2015	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K		44.9757004	-93.1442032	Lat-long	Other MS4 permittee	Private	2013	Twin Cities German Immersion School Rain Garden	X
MS400206-49	Capitol Region Watershed District	MS400206	2015	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K		44.9872017	-93.1564026	Lat-long	Other MS4 permittee	Saint Paul Public Schools	2012	Chelsea Heights Rain Garden	X
MS400206-50	Capitol Region Watershed District	MS400206	2015	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K		44.986599	-93.1569977	Lat-long	Other MS4 permittee	Private	2014	Como Language School Rain Garden	X
MS400206-51															
MS400206-52															
MS400206-53															
MS400206-54															
MS400206-55															
MS400206-56															
MS400206-57															
MS400206-58	Capitol Region Watershed District	MS400206	2015	Manufactured_device	Hydrodynamic separator	No ID information needed	NA	44.9789009	-93.153801	Lat-long	Other MS4 permittee	Saint Paul		W Picnic lot Stormceptor	
MS400206-59	Capitol Region Watershed District	MS400206	2015	Infiltrator	Underground infiltration	Complete columns H through K		44.9789009	-93.153801	Lat-long	Other MS4 permittee	Saint Paul		W Picnic lot Drain (Dry Well)	
MS400206-60	Capitol Region Watershed District	MS400206	2015	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K		44.9812012	-93.1547012	Lat-long	Other MS4 permittee	Saint Paul		Como Amusment Park Rain Garden	
MS400206-61	Capitol Region Watershed District	MS400206	2015	Infiltrator	Bioretention with no underdrain (rain garden)	Complete columns H through K		44.9822998	-93.1405029	Lat-long	Other MS4 permittee	Saint Paul		Lakeview Rain Garden East of Lake	
MS400206-62	Capitol Region Watershed District	MS400206	2015	Swale_or_strip	Grass channel/waterway	Complete columns H through K		44.9864006	-93.1451035	Lat-long	Other MS4 permittee	Saint Paul		Nebraska Ave W swale	

Entry ID	Permittee	MS4 ID	Reporting year	BMP/Activity	BMP Description	Location and ID Information Needed?	BMP ID	y-coord (lat, e.g. 44.9866)	x-coord (long, e.g. -93.2581)	Coordinate system (e.g. lat-long, UTM)	Who owns this BMP/activity?	If applicable, name other owner(s)	Year when BMP was implemented	Note(s)		Como Lake - Phosphorus
MS400206-63	Capitol Region Watershed District	MS400206	2015	Infiltrator	Underground infiltration	Complete columns H through K		44.9803009	-93.1514969	Lat-long	Other MS4 permittee	Saint Paul		Palm Lot Stormwater Recharge		
MS400206-64	Capitol Region Watershed District	MS400206	2015	Infiltrator	Underground infiltration	Complete columns H through K		44.9752007	-93.1524963	Lat-long	Other MS4 permittee	Saint Paul	2006	McMurray Soccer Field 1		
MS400206-65	Capitol Region Watershed District	MS400206	2015	Infiltrator	Underground infiltration	Complete columns H through K		44.9748993	-93.1504974	Lat-long	Other MS4 permittee	Saint Paul	2006	McMurray Soccer Field 2		
MS400206-66	Capitol Region Watershed District	MS400206	2015	Infiltrator	Underground infiltration	Complete columns H through K		44.9742012	-93.1520996	Lat-long	Other MS4 permittee	Saint Paul	2006	McMurray Soccer Field 3		
MS400206-67	Capitol Region Watershed District	MS400206	2015	Filter	Underground sand filter	Complete columns H through K		44.9782982	-93.1335983	Lat-long	Other MS4 permittee	Saint Paul	2013	West Como Park Elementary School		
MS400206-68	Capitol Region Watershed District	MS400206	2015	Filter	Underground sand filter	Complete columns H through K		44.9780998	-93.1340027	Lat-long	Other MS4 permittee	Saint Paul	2013	Dock Como Park Elementary School		
MS400206-69	Capitol Region Watershed District	MS400206	2015	Filter	Underground sand filter	Complete columns H through K		44.9821014	-93.1502991	Lat-long	Other MS4 permittee	Saint Paul		Japanese Garden		
MS400206-70	Capitol Region Watershed District	MS400206	2016	Infiltrator	Infiltration basin	Complete columns H through K	15-010	44.977079	-93.145001	Lat-long	Other MS4 permittee	Saint Paul	2016	Como-Chatsworth West Infiltration Basin		
MS400206-71	Capitol Region Watershed District	MS400206	2016	Infiltrator	Infiltration basin	Complete columns H through K	15-010	44.977271	-93.144623	Lat-long	Other MS4 permittee	Saint Paul	2016	Como-Chatsworth East Infiltration Basin		
MS400206-72	Capitol Region Watershed District	MS400206	2016	Infiltrator	Infiltration trench	Complete columns H through K	16-005	44.974908	-93.139207	Lat-long	Other MS4 permittee	Saint Paul	2016	Como-Chatsworth Infiltration Trench		
MS400206-73	Capitol Region Watershed District	MS400206	2016	Infiltrator	Underground infiltration	Complete columns H through K	16-011	44.974771	-93.14859	Lat-long	Other MS4 permittee	Saint Paul	2016	McMurray Field SAFL Baffle		
MS400206-74																
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Cumulative Reductions Spreadsheet

Category 1: Summary of quantitative reductions (Annual Pollutant Load Reduction)											Optional	
Permittee	MS4 ID	TMDL project	Units	2014	2015	2016	2017	2018	2019	2020	Calculation method	Notes
Capitol Region Watershed District	**MS400206**	Como Lake - Phosphorus	pounds reduced	140	187	187					P8, WinSLAMM,	Due to refined modeling of

Category 2: Summary of qualitative reductions (# of BMPs).										Optional
Permittee	MS4 ID	TMDL project	2014	2015	2016	2017	2018	2019	2020	Notes
Capitol Region Watershed District	**MS400206**	Como Lake - Phosphorus	24	24	24					

Non-implemented activities (BMP Inventory)

Permittee	MS4 ID	BMP description	Status	Reporting year	Notes (Optional)	Place an "X" in a cell if the activity applies to the TMDL shown in the column: Como Lake - Phosphorus
Capitol Region Watershed District	**MS400206**	Gotfried's Pit Improvement Project	Discontinued	2014	Construction was completed in 2012, however, this project provided primarily flooding reduction benefits	
Capitol Region Watershed District	**MS400206**	**Roselawn Ave. Street Reconstruction Project**	Under construction	2015	Construction completed in 2010, however, BMP performance not yet estimated.	x
Capitol Region Watershed District	**MS400206**	**Falcon Heights Street Reconstruction Project**	Under construction	2015	Construction completed in 2014, however, BMP performance not yet estimated.	x
Capitol Region Watershed District	**MS400206**					
Capitol Region Watershed District	**MS400206**	**Gotfried's Pit Subwatershed Feasibility Study**	Planned	2018	Roseville	x
Capitol Region Watershed District	**MS400206**	**Roseville public education on snow removal**	Planned	2015	Roseville	x
Capitol Region Watershed District	**MS400206**	**Roseville Design Standards Review and Revisions**	Planned	2015	Roseville	x
Capitol Region Watershed District	**MS400206**	**Roseville Public Education Partnerships**	Planned	2016	Roseville	x
Capitol Region Watershed District	**MS400206**	**Roseville Parks Renewal Program - Stormwater Improvements**	Planned	2016	Roseville	x
Capitol Region Watershed District	**MS400206**	**County Road Maintenance Program - Drainage Improvements**	Planned	2015	Ramsey County	x
Capitol Region Watershed District	**MS400206**	**County 5-Year Transportation Improvement Program - Stormwater BMPs**	Planned	2015	Ramsey County	x
Capitol Region Watershed District	**MS400206**					
Capitol Region Watershed District	**MS400206**					
Capitol Region Watershed District	**MS400206**					
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Capitol Region Watershed District	**MS400206**					

Provide an up-dated narrative describing any adaptive management strategies used (including projected dates) for

CRWD, Saint Paul, Roseville, Falcon Heights, and Ramsey County are working together to implement cost-effective stormwater best management practices to achieve the categorical wasteload allocation for phosphorus in Como Lake. As reported, CRWD and its partners have achieved over 50% of its load reduction goal. There are number of recent completed projects that will be reported next year that shall show continued progress towards achieving the TMDL goal for Como Lake. The partners have conducting subwatershed feasibility studies and other efforts to identify future opportunities for implementing stormwater BMPs. The partners have also conducted an in-depth inventory of existing BMPs constructed in the Como Park area and will be using this information to determine the areas within Como subwatershed to focus future water quality improvement efforts.