City of Saint Paul's

2018 Stormwater Permit Annual Report

Minnesota Pollution Control Agency

National Pollutant Discharge Elimination System

Permit No. MN 0061263

June 2019

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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, and again on July 12, 2018. The reissued permit requires submittal of a revised Stormwater Management Program (SWMP), which will be submitted to the MPCA with this Annual Report.

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 2018.

MS4 Permit Coordinator

Pat Murphy
Department of Public Works
651-266-6254
patrick.g.murphy@ci.stpaul.mn.us

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 and 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.

2018 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/Minneapolis 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 the Saint Paul area in 2018. In addition, the WaterShed Partners partnered with Hamline University to develop and host the Storm Drain Goalie, Adopt-a-Drain, and arcade exhibit in the Eco Experience building at the Minnesota State Fair. 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.

Clean Water Minnesota

To assist cities with educational efforts, Metro WaterShed Partners is conducting Clean Water Minnesota, a collaborative outreach project of the Metro WaterShed Partners. This type of collaboration allows for the development of a consistent message, which is distributed cost effectively across Saint Paul/Minneapolis metropolitan area. The campaign was funded in 2018 with money raised from local units of government, including the City of Saint Paul. The 2018 report for the Metro Clean Water Campaign is located in the appendix.

Adopt-a-Drain

In 2018, the City of Saint Paul once again partnered with the Center for Global Environmental Education at Hamline University, Capitol Region Watershed District, and Ramsey-Washington Metro 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. In 2018, the partnering agencies increased the social media marketing efforts, timing information to coincide with activities such as street sweeping, and embarked on a Program update for metro-wide implementation. Results of the 2018, Adopt-a-Drain Program included participation of 361 new volunteers who adopted 561 drains, and the dispersal of 9,600 door hangers.

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.

The 2018 Annual Report on the Saint Paul Adopt-a-Drain Program is located in the appendix.

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.

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.

2018 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. In 2018, FMR coordinated the stenciling of 2,224 storm drains and distribution of 5,738 door hangers in partnership with 1,150 volunteers. The 2018 Stenciling Program Report and Water Quality Education Program are located 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 2018 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.

Storm Drain Mural Project

In 2018 the City of Saint Paul, through the Public Works and Parks Departments, coordinated with FMR on the installation of an additional Storm Drain Mural located at Como Lake. The project involved: engagement with a local artist, public process with a neighborhood group, and installation of Mural at a public event. The public event allowed area residents to learn about water quality, the interaction of stormwater and Como Lake, and observe the artist create the Mural.

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.

2018 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.

2018 Activities

Spill Response

The Sewer Maintenance section of the Sewer Utility or 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 and created a fact sheet (both included within the appendix) in 2013 defining allowable discharges to the storm sewer system.

The City's Right of Way (ROW) 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 included within 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 2018, DSI sent out 91 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 2018 are within 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, Allowable Discharges to the Storm sewer System, Best Management Practices, etc. Attendees are comprised of various municipal employees and utility businesses.
- In 2018, the Sewer Utility hired a Consultant to prepare an Illicit Discharge Detection and Elimination Field Guide for the Sewer Utility. Training on the Field Guide occurred in March 2018.
- In 2018, the Department of Safety and Inspections conducted Illicit Discharge Training for 63 staff.
- In 2018, various Sewer Utility personnel attended the Sewer Collection System Operators Conference conducted by the Minnesota Pollution Control Agency.

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.

2018 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.

In 2018, a comprehensive map was created that identifies BMP locations, and their contributing drainage areas, that Public Works operate. This map will be integrated into the City's GIS map to aid in spill response, maintenance, inspection, and locating.

Watershed and Storm Sewer Outfall Inventory

An inventory of Saint Paul's storm sewer outfalls is located 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 located 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 potential 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

2018 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 conducts its own stormwater monitoring activities via a Consultant, and also coordinates with the Capitol Region Watershed District on comprehensive stormwater monitoring program in Saint Paul. 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 Public Works Department have Clean Water Policies which are distributed, reviewed, and signed by all field staff. (See appendix)
- The Sewer Utility developed an Illicit Discharge Detection and elimination Field Guide 2018 to aid staff in investigating and responding to Illicit Discharges. Upon creation of the Field Guide, a training for Sewer Utility personnel occurred in March 2018.
- In 2108, the Department of Safety and Insp0ctions conducted Illicit Discharge Training for 63 staff.

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.

2018 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 2018 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.

2018 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 2018, City Departments received 88 site plan applications, and issued final approval, with the appropriate permits issued, on 92 (4 site plans were from a previous year). 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 2018, DSI inspectors conducted 170 erosion control inspections at various new and redevelopment sites.

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 standard forms for both public and private construction sites.
- Public Works Right-of-Way Division uses a form when ROW inspectors inspect Utility Installation work. (See appendix.)
- In 2018, DSI revised the Site Plan Erosion and Sediment Control Review Procedure. 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.

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.
- 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, Public Works ROW 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.

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.

2018 Activities

Non-Linear, 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 forms 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 2018, Public Works Construction inspectors continued to work with internal forces and watershed district staff on erosion and sediment control compliance.

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.
- 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, Public Works ROW 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. In 2018.

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.

2018 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 2018, 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.

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.

2018 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. It is anticipated the Local Surface Water Management Plan will be adopted by City Council in 2019.

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.

2018 Activities

- ***Public Works Projects***
    - Como Avenue Phase II: Public Works installed a subsurface infiltration trench ($107,000).
    - Margaret Street: Public Works installed a subsurface infiltration trench ($246,000).
    - Wheelock Parkway: Public Works installed a subsurface infiltration trench ($102,000).
    - Woodlawn-Jefferson: Public Works installed a SAFL Baffle System ($44,000).
    - Jackson Street: Public Works began installation of a SAFL Baffle System (Anticipated 2019 Completion $80,000)
    - Sackett Pond: Public Works furthered the design phase of the Sackett Pond Retrofit with Iron-enhanced sand filtration (Construction Costs TBD).

- ***Parks and Recreation Projects***
    - Lilydale Regional Park - North Knob: In 2018, Parks and Recreation constructed slope stabilization and stormwater enhancements along the Brickyard Trail area in Lilydale Regional Park. (Construction budget is $740,000). Project also was able to secure $53,000 for restoration of the area through Great River Greening and L-SOHC for Outdoor Heritage Funds as part of their Metro Big Rivers Partnership.
    - Frogtown Community Center – Parks and Recreation added underground stormwater retention chambers with infiltration volume of 25,030 CF. The drainage area captured by the new on-site stormwater system is 3.47 acres.
    - Frogtown Park and Farm - Planted 1 acre of prairie and installed infiltration basin.

- Victoria Park Universal Play Area – series of infiltration basins for water quality and rate control above the bluff.
- Rice Park – 1.6 acre park redesign includes two tree trenches and an underground filtration bmp comprised of coarse filter aggregate and a layer of engineered soil which provides infiltration volume of .33 ac-ft (.12 ac-ft required) and removal of 81% of TSS.
- Received 3,500 hours 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.
- Received a $79,750 Conservation Partners Legacy Grant to enhance 29 acres of forest and prairie habitat at Highwood Nature Preserve and Henry Park to reduce erosion, keep water on the land, and improve wildlife habitat.
- Planted three acres of prairie at Cherokee Regional Park and at the Bruce Vento Nature Sanctuary to keep water on the land.

- ***City-Partner Collaborative Efforts***
  - Trout Brook Lift Station: Parks and Recreation, Public Works, and Capitol Region Watershed District began installation of a Storm Lift Station to deliver additional flow to Trout Brook Nature Sanctuary (Anticipated 2019 Completion $1.3 Million).
  - Cherokee Heights Ravine Stabilization and Water Quality Improvements: Public Works, Lower Mississippi River WMO, West Saint Paul, and Mendota Heights participated in the design of Ravine Stabilization and CDS installations for Cherokee Heights (Anticipated Completion in 2019).
  - Como Lake In-lake Loading Analysis: Parks and Recreation, Public Works, Capitol Region Watershed District, MNDNR, BWSR, Ramsey County, etc. participated in an In-lake Loading Assessment for Como Lake.
  - Como Park Stormwater Master Plan: Parks and Recreation, Public Works, and Capitol Region Watershed District participated in the initial development of a Como Park Stormwater Master Plan to assist in planning water quality improvements near Como Lake.

Staff Training

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

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.

2018 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.

In 2017-2018, Parks and Recreation, Public Works, and Capitol Region Watershed District participated in the initial development of a Como Park Stormwater Master Plan that will aid in the installation of water quality improvement projects impacting Como Lake. Anticipated implementation of regional BMPs to occur in 2019.

In 2018, the Public Works Department furthered plans evaluating the Sackett Pond for a possible retrofit with Iron-enhanced sand filtration.

In 2018, the Public Works Department engaged with a consultant on conducting a feasibility study of retrofitting Bush-Desoto Pond for potential stormwater quality benefits.

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.

2018 Activities

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. Construction Cost for Phase I of the Phalen Creek Storm Tunnel System Rehabilitation is $3.3 Million. Rehabilitation continued during Phase II, in 2017, with a construction cost of $2.3 Million. In 2018, the final Phase began, with an estimated

construction cost of $1.9 Million. Rehabilitation of the Phalen Creek Storm Tunnel is anticipated to be completed in 2019, at which time rehabilitation efforts will be focused on the East and West Kittsondale Storm Tunnel Systems.

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. In 2018, two separate river flooding events required the operation of three of these pump stations. 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.

Broadway Pump Station

In 2018, the Sewer Utility embarked on an upgrade to the Broadway Sanitary Pump Station, which added a stormwater flood control pump station. The stormwater flood control pump station was installed to help mitigate temporary pumping operations required during a river flood scenario. Other improvements included the installation of a natural gas back-up generator. The project is anticipated to be completed in 2019 at a project cost of $1.6 Million.

Storm Sewer Inspection, Cleaning & Rehabilitation

- Snelling-Larpenteur Televised Inspection: 102,000 L.F. of Storm Sewer ($114,000).
- Como-Cleveland Televised Inspection: 66,000 L.F. of Storm Sewer ($106,000).
- Sewer Maintenance Televised Inspection: 46,626 L.F. of Storm Sewer ($160,000; combined with Cleaning).
- Sewer Maintenance Cleaning: 25,052 L.F. of Storm Sewer

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.

2018 Activities

- Catch Basin Maintenance ($604,391)
  - Inspected: 408
  - Cleaned: 3,461
  - Repaired: 322
- Manhole Maintenance ($113,471)
  - Inspected: 508
  - Cleaned: 487
  - Repaired: 215

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.

2018 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 2018 the following outfalls were inspected:

Mississippi River: 52
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.

2018 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, 2013/2014, 2017/2018. 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.

Ponds receiving major sediment removal and riprap replacement in 2017/2018 include: Barge Channel North, Great Western, Arthur, Barge Channel South, Sylvan/Acker, Flandrau/Hoyt, and Westminster/Mississippi. Removed tonnage equates to approximately 13,000 tons ($700,000, 2017/2018 Costs).

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.

Staff Training

In 2018, a Sewer Utility employee attended Stormwater BMP Maintenance Certification Training conducted by the University of Minnesota Erosion and Stormwater Management Certification Program.

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.

2018 Activities

- Material removed from stormwater ponds by Contractor: 8,000 tons ($250,000).
- Material removed from stormwater ponds, BMPs and catch basins by Sewer Utility: 1,136 tons ($28,395).

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

2018 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 May 25, 2018 and November 24, 2018, respectively. The primary material swept in the spring is debris from winter months. Fall sweeping occurred October 22, 2018-November 24, 2018. 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 October and November for fall cleanup and every 3 to 6 weeks in April through September for Spring cleanup, 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 1,141,220 square yards of paved streets were chip sealed in 2018. 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 84,640 square yards of paved alleys were chip sealed in 2018.

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.

2018 Street Sweeping Quantities (Cubic Yards)

Season	Spring/Summer	Fall
Totals	4,476	9,100

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.

2018 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

Typically 3 or 4 snow emergencies are declared during per winter. It is anticipated that ice control materials used for 2019 will be similar to 2018 quantities.

2018 Ice Control Material Quantities

	Jan to April	**Nov to Dec**	**Total**
Salt (tons)	12,075	4,587	16,662

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 new operators attended a Snow and Ice Control training session. 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

2018 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.

SWPPP Development: Public Works hired a consultant to prepare a SWPPP for the Sewer Maintenance Property in 2018. Public Works has requested proposals for development of SWPPPs at Como-Western, Pleasant-View, and the Dale Street Complex.

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 new operators attended a Snow and Ice Control training session. 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.
- In 2018, the Sewer Utility hired a Consultant to prepare an Illicit Discharge Detection and Elimination Field Guide for the Sewer Utility. Training on the Field Guide occurred in March 2018.
- 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

2018 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 new operators attended a Snow and Ice Control training session. 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.
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- In 2018, the Sewer Utility hired a Consultant to prepare an Illicit Discharge Detection and Elimination Field Guide for the Sewer Utility. Training on the Field Guide occurred in March 2018.
- 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 thirty Parks staff attended Turf Management training for clean water hosted by the University of Minnesota.
- Approximately ninety Parks staff renewed their non-commercial pesticide application licenses to ensure proper application and management of pesticides.

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 Monitoring Program. Monitoring is completed at various locations including: constructed stormwater BMPs, proposed locations for stormwater BMPs, and groundwater sites. Electronic water monitoring equipment is used to collect water quantity and quality data on a continuous basis from selected sites.

2018 Activities

Monitoring Program

The City of Saint Paul collaborated with CRWD on the 2018 Stormwater Monitoring Program. Sites monitored by CRWD include: outfalls, BMPs, lakes and ponds. Many sites are full water quality monitoring stations, while other sites capture level data. CRWD publishes their current Monitoring information on their website at: www.capitolregionwd.org.

In 2018, the City, through a consultant, conducted the Stormwater Monitoring Program. Below is a list of the range of Stormwater Monitoring. 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 8 of the BMPs
- Composite water quality sampling at 5 of the BMPs
- Groundwater at 4 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 comprehensive report summarizing 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.

In 2017, the City, through a consultant, participated in the formation of the Twin Cities Water Monitoring and Data Assessment Group. The group is formed from public-sector water resources practitioners as a way to establish and promote standard practices for: water quality monitoring, data analysis and data stewardship. The City's representative has continued to participate in this group on an annual basis.

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 from 2018 is found in the Appendix. Historically, pollutant loading calculations were offset by one year due to analysis timelines. With improvements in data management, the timeline needed for analysis has been reduced.

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.

Assessment Process for Annual Reporting

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

2018 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.

TCMA Chloride TMDL (Como, Battle Creek, Kasota Ponds West, Mallard Marsh)

- Participation in the Adopt-a-Drain Program.
- Participation in the Storm Drain Stenciling Program.
- Membership and Participation in Watershed Partners and Clean Water MN Public Education Program.
- Public Works equipment upgrades, advancements in de-icing technologies, and training.
- Cooperative Monitoring Program.

South Metro Mississippi River TSS TMDL

- Participation in the Adopt-a-Drain Program.
- Participation in the Storm Drain Stenciling Program.
- Membership and Participation in Watershed Partners and Clean Water MN Public Education Program.
- Public Works Street Sweeping Program.
- Public Works Pond Cleaning and Sump Cleaning Programs.
- Public Works Municipal Mitigation Program (2018: Como Avenue, Margaret Street, Wheelock Parkway, Woodlawn-Jefferson, Jackson Street, Cherokee Heights).
- Cooperative Monitoring Program.
- Development & Redevelopment Mitigation Program (2018: MLS Soccer Stadium, other Private Site Plans).

Como Lake Excess Nutrients TMDL

- Participation in the Adopt-a-Drain Program.
- Participation in the Storm Drain Stenciling Program.
- Membership and Participation in Watershed Partners and Clean Water MN Public Education Program.
- Public Works Street Sweeping Program.
- Public Works Pond Cleaning and Sump Cleaning Programs.
- Cooperative Monitoring Program.
- Participation in Como In-Lake Management Plan
- Participation in Como Park Stormwater Master Plan.

Battle Creek TSS TMDL

- Participation in the Adopt-a-Drain Program.
- Participation in the Storm Drain Stenciling Program.
- Membership and Participation in Watershed Partners and Clean Water MN Public Education Program.
- Public Works Street Sweeping Program.
- Public Works Pond Cleaning and Sump Cleaning Programs.
- Cooperative Monitoring Program.

Fish Creek E. Coli TMDL

- Participation in the Adopt-a-Drain Program.
- Participation in the Storm Drain Stenciling Program.
- Membership and Participation in Watershed Partners and Clean Water MN Public Education Program.
- Public Works Street Sweeping Program.
- Public Works Pond Cleaning and Sump Cleaning Programs.
- Cooperative Monitoring Program.

Wakefield Lake Phosphorus TMDL

- Participation in the Adopt-a-Drain Program.
- Participation in the Storm Drain Stenciling Program.
- Membership and Participation in Watershed Partners and Clean Water MN Public Education Program.
- Public Works Street Sweeping Program.
- Public Works Pond Cleaning and Sump Cleaning Programs.
- Cooperative Monitoring Program.

Appendix

Minnesota Pollution Control Agency

National Pollutant Discharge Elimination System

Permit No. MN 0061263

June 2019

Budget	2018	2019	2020	2021	2022	2023
Storm Sewer Projects						
Stormwater Quality Improvements	$850,000	$867,000	$884,340	$902,027	$920,067	$938,469
Storm Sewer Tunnel Rehabilitation	$4,000,000	$4,080,000	$4,161,600	$4,244,832	$4,329,729	$4,416,323
	$4,850,000	**$4,947,000**	**$5,045,940**	**$5,146,859**	**$5,249,796**	**$5,354,792**
Storm Sewer Maintenance						
Storm Sewer Cleaning, Inspection & Repair	$380,132	$387,734	$395,489	$403,399	$411,467	$419,696
Pond-Levee Inspection & Maintenance	$288,639	$294,412	$300,300	$306,306	$312,432	$318,681
Catch Basin Inspection, Cleaning & Repair	$604,391	$616,479	$628,809	$641,385	$654,213	$667,297
Manhole Cleaning, Inspection & Repair	$113,472	$115,741	$118,056	$120,417	$122,826	$125,282
BMP Cleaning	$75,409	$76,917	$78,455	$80,024	$81,625	$83,257
	$1,462,042	**$1,491,283**	**$1,521,109**	**$1,551,531**	**$1,582,561**	**$1,614,213**
Stormwater Modeling & Monitoring						
Stormwater Modeling	$80,000	$260,000	$265,200	$270,504	$275,914	$281,432
Stormwater Monitoring	$196,017	$139,927	$142,726	$145,580	$148,492	$151,461
	$276,017	**$399,927**	**$407,926**	**$416,084**	**$424,406**	**$432,894**
Street Maintenance						
Street Sweeping	$3,145,956	$3,208,875	$3,273,053	$3,338,514	$3,405,284	$3,473,390
Neighborhood Cleanups	$175,141	$178,644	$182,217	$185,861	$189,578	$193,370
	$3,321,097	**$3,387,519**	**$3,455,269**	**$3,524,375**	**$3,594,862**	**$3,666,759**
Public Education Program						
Storm drain stenciling including door hangers	$49,500	$49,275	$50,261	$51,266	$52,291	$53,337
MN Cities Stormwater Coalition	$4,950	$5,099	$5,201	$5,305	$5,411	$5,519
Metro Clean Water Campaign	$10,500	$20,000	$20,400	$20,808	$21,224	$21,649
Adopt a Storm Drain	$20,565	$10,544	$10,755	$10,970	$11,189	$11,413
	$85,515	**$84,918**	**$86,616**	**$88,349**	**$90,116**	**$91,918**
Total Budget	**$9,994,671**	**$10,310,647**	**$10,516,860**	**$10,727,197**	**$10,941,741**	**$11,160,576**

2% used for annual inflation where projected amounts unknown

DEPARTMENT OF SAFETY AND INSPECTIONS
Ricardo X. Cervantes, 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:

Staff Procedure - Review Checklist for Site Plan Erosion Control
revised 2018

Project Name and/or Address:_____ Site Plan Review Date:_____

1. Does this project result in moving 50 cubic yards or more or will building permit be issued?
   Unless grading activity is included in a general building permit, a grading permit shall be required for the placement, removal or movement of more than fifty (50) cubic yards of fill
   ☐ Yes – Continue ☐ No – Stop

2. Does this project disturb greater than 10,000 square feet?
   Grading activities in excess of ten thousand (10,000) square feet require site plan review in accordance with section 61.402(a) of the Saint Paul Legislative Code.
   ☐ Yes – Continue ☐ No – Complete erosion control review per §33.03(g)3

3. Does this project disturb greater than 1-acre?
   If yes, MPCA Construction Stormwater Permit required; verify watershed permit.
   ☐ Yes – Continue per §52.04 ☐ No – Complete erosion control review per §61.402(c)(11)

Document on this form, or other form as appropriate, the adequacy of erosion and sediment control. Use the minimal criteria below as a starting point for beginning the standard procedure.

Indicate plan sheets containing erosion control methods:

	CRITERIA	OK	Issue	N/A	Comment
	Rock construction entrance identified on plans				
	Perimeter protection				
	Inlet protection for catch basins				
	Street sweeping note on plans				
	Stabilization shown for disturbed areas				
	Other items as scope of work requires				

Supplemental Plan Information
Disturbed area:
Permanent runoff control practice(s):

Staff Notes for site plan revision/approval:

Procedure

1. Review plan in accordance with grading §33.03(g)3, site plan review and approval §61.402(c)(11) and/or stormwater pollution control plan §52.04. (MPCA "Manual for Protecting Water Quality in Urban Areas")
2. Document plan review comments in Site Plan Review Committee conditional approval letter.
3. Document plan review decision in Site Plan Review approval letter. State if MPCA Construction Stormwater Permit is required; if so, approval contingent on obtaining permit card, verified at https://cf.pca.state.mn.us/water/stormwater/csw/search.cfm

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

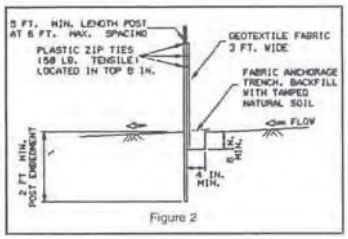

Figure 2

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**
kit absorbs ~8 gallons	30	17"x19" pads
	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**
kit absorbs ~5 gallons	10	17"x19" pads
	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.

2018 Discharges Addressed

Date	Discharge	Action
March 2018	Complaint from MPCA re Erosion & Sediment Control issues at 572 Burlington Road.	DSI ordered Contractor to address.
March 2018	Complaint from Public re oversalting on Battle Creek Road.	PW swept up excess salt.
March 2018	Complaint from Public re oversalting at MPCA Parking Lot.	PW and Contractor swept up excess salt. DSI made contact with Propoerty Manager.
April 2018	City staff noted Glycol spill in Fourth Street near Landmark Towers.	PW responded and cleaned CBs. DSI made contact with Property Manager.
April 2018	Defective sanitary sewer service connection at 2111 Gordon Avenue.	PW responded and cleaned area, DSI had fresh water supply turned off.
April 2018	Defective sanitary sewer service at 286 Front backing up. Sewage contained to low spot on property.	Water shut off until clean-up and repair made.
May 2018	Complaint from Ramsey County re discharge hose alley near 936 Jefferson.	Investigated by ROW, determined to be groundwater.
May 2018	Complaint from MPCA re Erosion & Sediment Control issues at 1425 Victoria Way.	DSI ordered Contractor to address.
May 2018	Complaint from CRWD re Erosion & Sediment Control issues at Weyerhauser Development.	CRWD issued a Cease and Desist Order.
May 2018	Complaint of Illicit Discharge at Como Sr. High School.	Investigated by CRWD, determined not to be a IDDE.
July 2018	Complaint from MN Duty Officer re Gas/Grease entering Storm Sewer at 520 Front Street.	Investigated by DSI, no evidence of contamination in storm drains.
July 2018	Complaint from MPCA re Erosion and Sediment Control Issues at 1795 Beechwood.	DSI ordered Contractor to address.
July 2018	Complaint from EPA re oil sheen on Mississippi River.	PW investigated the area. No sheen at time of inspection.
July 2018	Private sanitary sewer cross connected to storm sewer at 1602 Victoria.	PW investigated and cleaned storm sewer. PW built sandbag wall until propoer
July 2018	Complaint from CRWD re Erosion & Sediment Control issues at Waldmann Brewery.	Addressed by DSI.
August 2018	Complaint from MPCA re Erosion & Sediment Control issues, and concrete washout issues at 1425 Victoria Way.	DSI ordered Contractor to address.
August 2018	Complaint from MN State Patrol re dumping into CB at Indiafest near State Capitol.	PW investigated the area. DSI to review allowable discharges with special event
August 2018	Complaint of water coming out of sanitary manhole. City sanitary main plugged near 1355 Farrington.	PW opened sanitary main and cleaned catch basins and storm main in the area.
August 2018	Complaint of Illicit Discharge from State of MN Duty Officer at Winner Gas Station.	Addressed by Fire Department.
September 2018	Complaint from MPCA re "sewer like" odor at Hidden Falls.	PW investigated area, no smell or evidence of sanitary sewage.
September 2018	Complaint from Public re black goo on sidewalk from 914 University.	DSI ordered Property Representative to address.
November 2018	Complaint from MPCA re Salt Spillage at 602 Prior Ave.	DSI ordered Property Representative to address.
November 2018	Complaint from RWMWD re Erosion and Sediment Control issues near 619 Burlington Road.	ROW ordered Utility to address.
November 2018	Complaint from Public re salt spill near Annapolis & Chippewa.	PW responded and cleaned up salt. Trying to determine responsible entity for education.
November 2018	Complaint from Ramsey County re intentional dumping of leaves in CB near Superior & Cliff.	Referred to DSI to address.
November 2018	City staff noted poor best management practices in utility vault dewatering on Jackson Street.	Addressed by DSI onsite.
December 2018	Complaint of water coming out of sanitary manhole. City sanitary main plugged near 505 Rice Street.	PW opened sanitary main and cleaned catch basins and storm main in the area.
December 2018	Complaint from MN Duty Officer re Glycol spill from Landmark Ice Rink.	PW responded and cleaned CBs, MH and impacted pipes.

Metro Watershed Partners

2018 Annual Program Report

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.

MINNESOTA WATER
LET'S KEEP IT CLEAN

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Table of Contents

Metro Watershed Partners 2018 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.

WATERSHED PARTNERS

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 2018 members contributed $30,762 to support monthly meetings, exhibit checkout, administrative functions, and state fair outreach to hundreds of thousands of people. Members contributed $90,287 to support the Clean Water Minnesota 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 2018, our steering committee members were:

Alisa Reckinger, Hennepin County Environment and Energy
Angie Hong, Washington Conservation District (*convenor)*
Deirdre Coleman, Freshwater Society
Jen Dullum, Vermillion River Watershed JPO
Jessica Bromelkamp, Capitol Region Watershed District
Lyndon Torstenson, National Park Service, Mississippi National River & Recreation Area
Mike Trojan, Minnesota Pollution Control Agency
Telly Mamayek, Minnehaha Creek Watershed District
Tracy Fredin, Center for Global Environmental Education, Hamline University

Clean Water MN

2018 Outreach Projects Report

MINNESOTA WATER
LET'S KEEP IT CLEAN

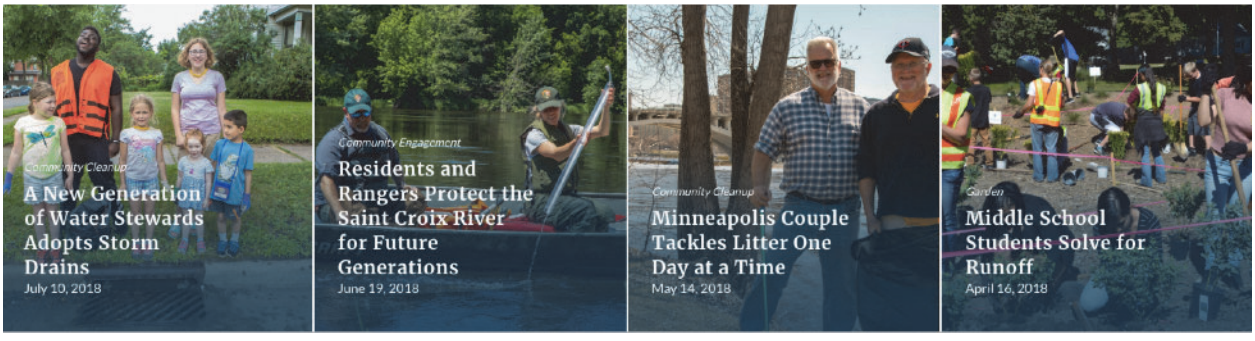
Clean Water MN is the collaborative outreach project of the Metro Watershed Partners. Working together, we provide resources, training, and support to partners as they work to inspire homeowners in the Twin Cities metro area to keep water clean and healthy.

The steering committee of the Metro Watershed Partners oversees the work of Clean Water MN. Jana Larson from Hamline University manages campaign fundraising and the creation and implementation of communication and outreach programs. As part of this work, we regularly ask stakeholders to tell us how to best serve the needs of MS4s.

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.

Along with each story we create a suite of professional photographs, accessible to partners online for use in their own stories and publications. Additionally, each story links to informational resources on our own site and other websites. In 2018 we published 12 new stories.

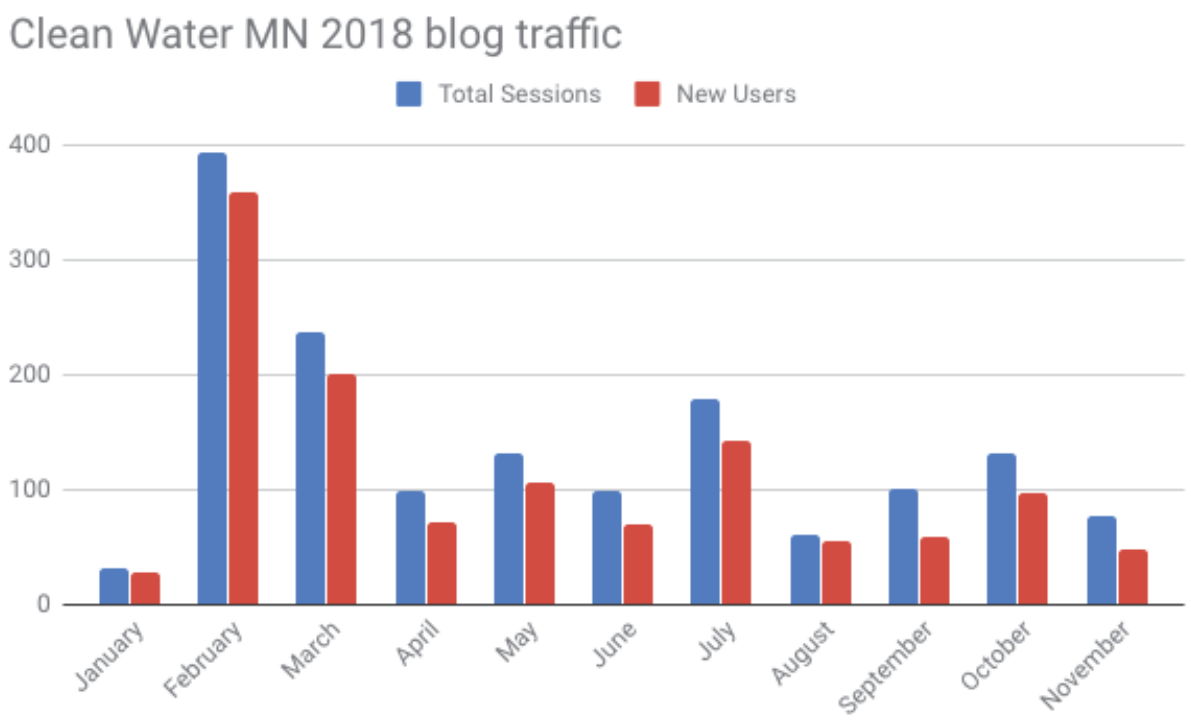
The cleanwatermn.org website also features informational pages, calls to action, a “Find My Watershed” map, information about the partnership, educational resources, and a list of our partners. We will continue to develop and add content to the site in 2019 and beyond.



Campaign Analytics

In order to provide some measure of the impact of our work, we have created a system of unique, trackable links for our partners to use when they publish a story from Clean Water MN. This allows us to measure click-through rates to CleanWaterMN.org for each partner individually. Below you will find a summary of these analytics, which paint a general picture of engagement with each story. These numbers do not reflect, however, the total number of readers for any given story, since trackable links are not always used, and some readers may not click on the link to read the full story. Analytics reports with a breakdown for each partner can be found at: http://bit.ly/2rxvGE6

Month	Blog Title	Total sessions	New users	Pages per visit	Average duration
January	Water and Soil Conservation Practices Sustain Dairy Farm	31	27	1.38	0:00:59
February	Road Salt: Less is More	393	359	1.13	0:00:25
March	Monarch Mile: Pollinators Plant Seeds of Change	236	200	1.34	0:00:57
April	EcoFaith Network Puts Creation Care in Action	99	72	1.23	0:00:34
May	Middle School Students Solve for Runoff	131	105	1.30	0:00:39
June	Minneapolis Couple Tackles Litter One Day at a Time	99	69	1.27	
July	Residents and Rangers Protect the Saint Croix River for Future Generations	178	142	1.17	
August	A New Generation of Water Stewards Adopts Storm Drains	61	54	1.43	
September	Roots Return Farm Turns Rainwater into Pollinator Paradise	101	59	1.48	0:00:23
October	Maintaining Rain Gardens through the Changing Seasons	132	96	1.33	0:00:44
November	Community Gardens Plant Seeds of Peace in Rondo	76	48	1.24	0:01:26
December	Artful Environmental Education at Highpoint Center for Printmaking				
Total click-throughs to CWMN site		1537	1231		



The blog posts that received the most traffic through social media were:

- *Road Salt: Less is More* (February)
- *Monarch Mile: Pollinators Plant Seeds of Change* (March)
- *Residents and Rangers Protect the Saint Croix River for Future Generations* (July)

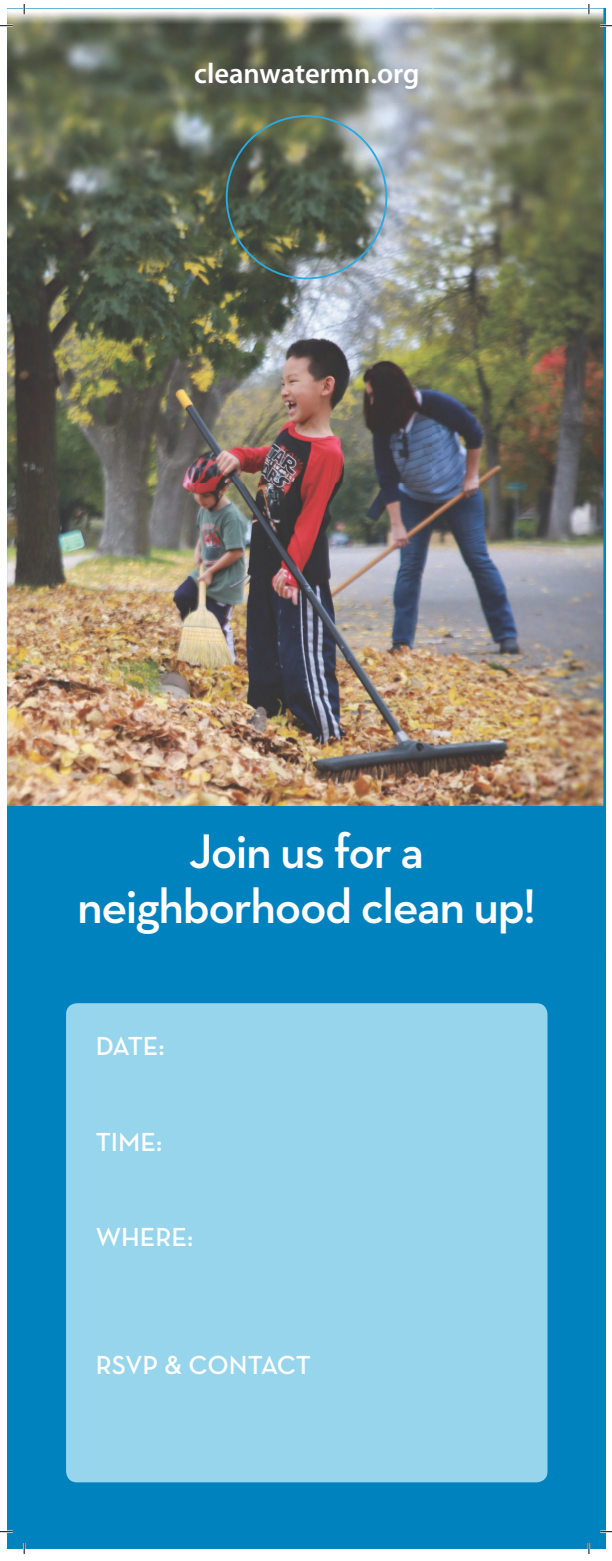
Clean Water MN activities in 2018

2018 was a year of focus groups, listening sessions, pilots, evaluations, surveys, and findings.

In March, we created an online survey to evaluate the strengths and weaknesses of the **Clean Water MN website and blog**. Responses from 26 partners helped us to modify blog posts, photographs, informational PDFs, and the website to better serve partner communications needs. This included creating new **PDF resources on a variety of subjects including lawn care, salt, and rain garden maintenance.**

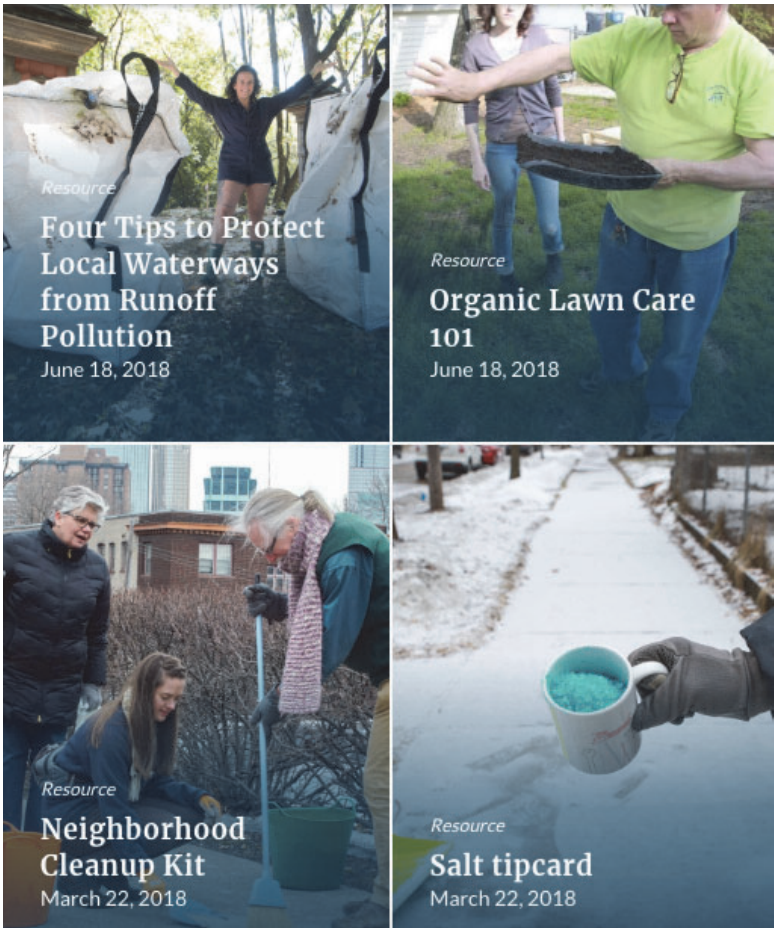
In spring, an **online survey of Minneapolis Adopt-a-Drain participants** gave us additional insights into barriers, motivations, and demographics of program participants.

Researchers from the University of Minnesota began an in-depth baseline study of Adopt-a-Drain in Minneapolis focused on understanding how to promote and implement Adopt-a-Drain so that it resonates with underserved communities. This research will also inform the development of a pilot program aimed at including businesses and community organizations in Adopt-a-Drain. This multi-faceted evaluation project, funded by the City of Minneapolis, will continue through 2020.



In April, we hired Karen DeYoung to lead a **listening session with 50 partners aimed at understanding how to structure the Adopt-a-Drain program** to best serve the partnership. Her report helped us adapt our existing program to provide multiple levels of partner engagement and recognition for the 2019 rollout of Adopt-a-Drain. Partner feedback and suggestions from this session also helped us to design a more dynamic user interface for the new Adopt-a-Drain website.

In spring, we piloted the ***Clean Streets, Clean Water Neighborhood Cleanup Kit*** in neighborhoods across the metro area. We gave printed outreach materials for free to groups who participated in the pilot and, in exchange, event leaders participated in one of two follow-up **focus groups led by Lune LLC** to give feedback on what worked well and how to improve the kit. Lune LLC also workshopped the kit with partners at our September meeting and collected feedback. We are using the findings from these sessions to modify and update materials. These will be available online for the March launch of Adopt-a-Drain.



In November, the roundtable event was a **listening session, facilitated by Lune, llc, focused on planning the next three years of work for the partnership.** We found that partners are particularly fired up about the Adopt-a-Drain program, and about using the coming years to understand how to reach underserved audiences with our messages and programs. The findings from the roundtable were presented at the December meeting, and the 35 partners who were present used a dot-voting activity to help rank the items in terms of priorities for the partnership.

Adopt-a-Drain—metro wide launch in March, 2019!

Adopt-a-Drain is a pilot program created in 2014 by Hamline University with support from the City of Saint Paul and Capitol Region Watershed District. Adopt-a-Drain allows residents to claim responsibility for a storm drain near their home and keep it clear of trash and organic debris in order to reduce water pollution.

Since launching the program in Saint Paul, Hamline has expanded implementation, adding new neighborhoods and cities. There are currently more than 2,000 residents in five cities participating in the program, who have together diverted tens of thousands of pounds of trash and organic debris from local waterways.

In August 2018, we opened registration for the Adopt-a-Drain program to all metro area residents during the State Fair. The response was fantastic; 700 Minnesota residents signed up to adopt a drain over the twelve days of the fair.

Work on a new Adopt-a-Drain site began in 2018; the new website will launch in March, 2019. This new site will include the GIS data of all 280,000 storm drains in the seven-county metro area, and supporting members of the Metro Watershed Partners will have an administrative interface to view program data for their service area.

With your continued support, in addition to launching the metro-wide Adopt-a-Drain program, we will continue to update and improve cleanwatermn.org, publishing monthly blog stories, with new photographs, and informational PDFs.

Please find the proposed budget for 2019 on page 17 of this report. The invoice for 2019 membership can be returned with payment to to: Hamline University, CGEE, 1536 Hewitt Ave. MS-A1760, Saint Paul, MN 55104

2018 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 2018, the Watershed Partners held 11 meetings. Meeting attendance totaled 386; attendance varied from 15 to 115 but on average 35 partners attended each meeting. We're pleased to see that partners continue to value our meetings, and demonstrate energy for collaboration and information sharing; we plan to continue offering workshops and events our partners will find useful in 2018 and beyond.

2018 PARTNER MEETINGS — TOPICS AND PRESENTERS

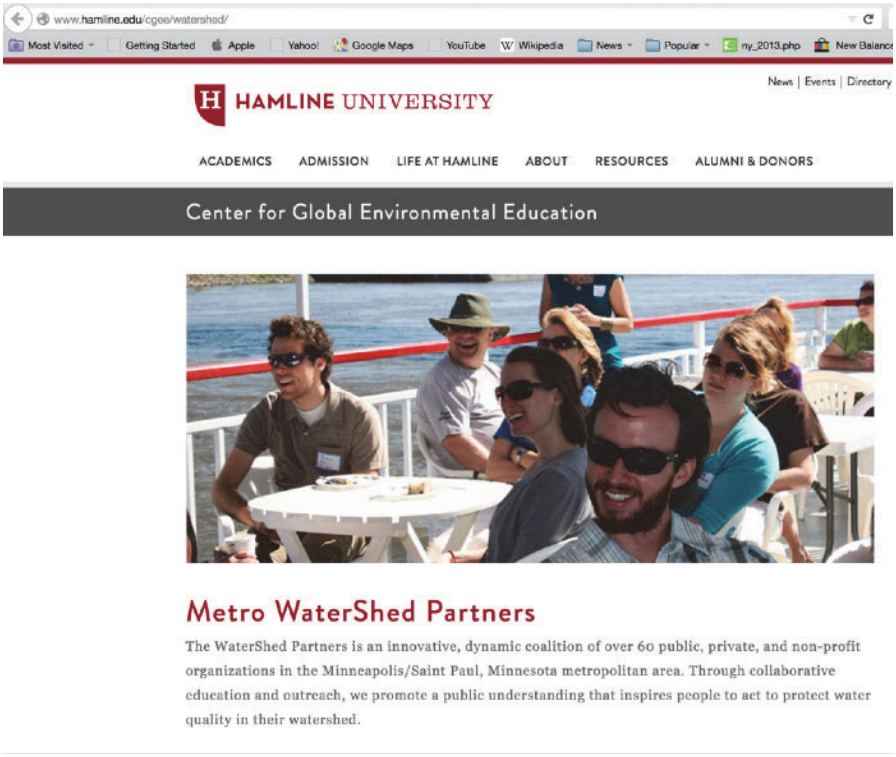
January	Smart Salting	Brooke Asleson, MPCA
February	Legislative Update	Trevor Russell, FMR
March	Climate Change Communication: Introduction to Strategic Framing	Abby Moore, MWMO
April	Working with niche audiences: Engaging Homeowners' Associations to implement Clean Water projects; Engaging Faith-based Communities; Getting Seniors Outdoors	Angie Hong, EMWREP Randy Thoreson, NPS
May	The Quest for Equity and Environmental Justice: Outreach and Education WITH vulnerable communities and traditionally underserved watershed stakeholders.	Kimberly Carpenter, Metro Blooms
July	Our St. Croix: Preserving a Natural, Recreational, and Economic Amenity	
August	Walker Art Center: Tour of the water reuse features of the sculpture garden	Marcy Bean, MWMO Jacqueline Stahlmann, Walker Art Center Abby Moore, MWMO
September	Clean Streets, Clean Water: Key findings & recommendations from a focus group-based evaluation of the Neighborhood Cleanup Toolkit	Emma Ramsbottom, LUNE, llc
October	The Remand Rule and New Concepts for the Draft MS4 General Permit	Cole Landgraf, MPCA
November	Watershed Partners roundtable: Scripting the future of the partnership and your role in achieving outcomes.	Jana Larson, Hamline University, Amanda Meyers, U of M, Vanessa Perry, LUNE, llc
December	Potluck, Year-in-Review, Adopt-a-Drain model partnerships	Erica Sniegoski, Nine Mile Creek Watershed District

The internal website for the Metro Watershed Partners

is 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 2018, 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

2018 was another record year for the state fair, with total attendance breaking 2 million visitors. The Watershed Partners hosted an exhibit in the Eco-experience where approximately 250,000 people were exposed to our message about taking action to protect Minnesota's lakes and rivers.

The Metro Watershed Partners partnered with Hamline University to host the Adopt-a-Drain photo booth and exhibit at Eco Experience. The exhibit features: an Adopt-a-Drain photo booth (re-designed in 2018), air hockey, foosball, an Adopt-a-Drain sign-up station, a video table with in-depth interactive information about the Mississippi River, and three portable tabletop exhibits 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. For the first time this year, the exhibit provided a chance for visitors to formalize their commitment by signing up to adopt a drain.

There were more than 250,000 visitors to the Eco-experience in 2018. Approximately 8,000 of them took a photo in the Adopt-a-Drain photo booth. (We took and printed 3,441 photos during the fair, with an average of 2.5 people per photo.) 50% of photos were shared via email or text.

Over the twelve days of the fair, 700 Minnesota residents from 73 cities signed up to adopt a storm drain. Those who adopted a drain were able to take home an informational packet and a small yard sign that reads “We Protect Minnesota Lakes, Rivers and Wetlands.”

There was a Watershed Partner or Master Water Steward present during 60 of the 144 hours of the fair, to interact with the public, answer questions, and promote water-friendly behaviors.

Thank you for all your help making the exhibit a success!

Education and Outreach at 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 below) 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

Exhibit-in-a-Box on Eutrophication.

2018 Financial Report

In response to our fundraising requests, 48 supporting members contributed: $30,762 to the Watershed Partners in support of meetings, state fair outreach, administration, exhibit maintenance, development and checkout; and $90,287 to support the Clean Water MN website and public outreach campaign.

Supporting Members of the Metro Watershed Partners and the Clean Water MN Media Campaign in 2018

Andover
Apple Valley
Bassett Creek WMC
Blaine
Bloomington
Brown's Creek WD
Canon River WP
Capitol Region Watershed District
Carver County
Chisago Lakes Improvement District
Columbia Heights
East Metro Water Resources
Eden Prairie
Edina
Elm Creek WMC
Excelsior
Faribault
Farmington
Hennepin County
Hilltop
Lauderdale
Lower Mississippi River WMO
Minneapolis
Minnehaha Creek WD
Minnetonka
Minnetrista
MNRRA
Mound
New Brighton
Nine Mile Creek WD
Pioneer-Sarah Creek WC
Prior Lake
Rice Creek WD
Riley-Purgatory Bluff Creek WD
Rochester
Roseville
Ramsey-Washington Metro WD
Saint Louis Park
Saint Paul
Shingle Creek WMC
Shoreview
South Washington WD
Vadnais Lake Area WMO
Vermillion River Watershed JPO
Washington County
Wayzata
West Mississippi WMC
Woodbury

Clean Water MN/Watershed Partners 2018 Financial Report

	IN-KIND	CASH	TOTAL
REVENUE			
CWMN funds rollover		$15,284.66	$15,284.66
Watershed Partners coordination	$53,800.00	$22,770.00	$76,570.00
Watershed Partners exhibit	$22,000.00	$7,992.00	$29,992.00
Media campaign	$5,500.00	$90,287.00	$95,787.00
Meeting registration fees			
Total revenue	**$81,300.00**	**$136,333.66**	**$217,633.66**
EXPENSE			
1. Watershed Partners Coordination			
Principle Investigator	$2,500.00	$5,488.61	$7,988.61
Program Coordinator	$12,000.00	$12,000.00	$24,000.00
Steering Committee	$32,400.00		$32,400.00
Meeting room rental fees	$4,500.00	$600.00	$5,100.00
Technology maintenance	$2,400.00		$2,400.00
Meeting expenses		$1,858.00	$1,858.00
Postage and printing		$200.00	$200.00
Accounting/indirect fees		$2,625.00	$2,625.00
Subtotal	**$53,800.00**	**$22,771.61**	**$76,571.61**
2. Watershed Exhibit Implementation			
Exhibit coordination	$4,500.00	$5,500.00	$10,000.00
State fair expenses	$15,000.00	$9,463.13	$24,463.13
Storage and check-out	$2,500.00		$2,500.00
Subtotal	**$22,000.00**	**$14,963.13**	**$36,963.13**
3. Clean Water MN			
Campaign coordination	$5,500.00	$45,000.00	$50,500.00
Printing and postage		$431.30	$431.30
Blog writing and photography		$14,675.00	$14,675.00
Web hosting and maintenance		$2,500.00	$2,500.00
Graphic design		$5,820.00	$5,820.00
Web design and programming		$0.00	$0.00
Focus group research		$5,027.00	$5,027.00
Adopt-a-Drain program support		$15,000.00	$15,000.00
Meeting expenses		$431.00	$431.00
Accounting/indirect fees		$7,477.94	$7,477.94
Subtotal	**$5,500.00**	**$96,362.24**	**$101,862.24**
TOTAL	**$81,300.00**	**$134,096.98**	**$215,396.98**
ROLLOVER TO 2019		$2,236.68	$2,236.68

Clean Water MN/Watershed Partners 2019 Budget

	IN-KIND	CASH	TOTAL
REVENUE			
CWMN funds rollover		$2,236.68	$2,236.68
Watershed Partners coordination	$53,800.00	$23,400.00	$77,200.00
Watershed Partners exhibit	$9,500.00	$20,500.00	$30,000.00
Clean Water MN	$5,500.00	$46,900.00	$52,400.00
Adopt-a-Drain		$80,000.00	$80,000.00
Total revenue	**$68,800.00**	**$173,036.68**	**$241,836.68**
EXPENSE			
1. Watershed Partners Coordination			
Principle Investigator	$2,500.00	$4,500.00	$7,000.00
Program Coordinator	$12,000.00	$12,000.00	$24,000.00
Steering Committee	$32,400.00		$32,400.00
Meeting room rental fees	$4,500.00	$1,200.00	$5,700.00
Technology maintenance	$2,400.00		$2,400.00
Meeting expenses		$3,000	$3,000
Postage and printing		$200	$200
Accounting and indirect fees		$2,500.00	$2,500.00
Subtotal	**$53,800.00**	**$23,400.00**	**$74,700.00**
2. Watershed Exhibit Implementation			
Exhibit coordination	$4,500.00	$5,500.00	$10,000.00
State fair expenses		$15,000.00	$15,000.00
Storage and check-out	$5,000.00		$5,000.00
Subtotal	**$9,500.00**	**$20,500.00**	**$30,000.00**
3. Clean Water MN			
Campaign coordination	$5,500.00	$20,000.00	$25,500.00
Printing and postage		$400	$400
Blog writing and photography		$15,000.00	$15,000.00
Web hosting and maintenance		$2,500.00	$2,500.00
Graphic design		$2,000.00	$2,000.00
Focus group research		$500.00	$500.00
Meeting expenses		$2,000.00	$2,000.00
Cleanup kit resources		$500.00	$500.00
Accounting and indirect fees		$4,000.00	$4,000.00
Subtotal	**$5,500.00**	**$46,900.00**	**$52,400.00**
4. Adopt-a-Drain			
Site license		$30,000.00	$30,000.00
Program coordination		$20,000.00	$20,000.00
Program implementaion		$15,000.00	$15,000.00
Social media, photography and media production		$7,000.00	$7,000.00
Program evaluation		$5,000.00	$1,000.00
Accounting and indirect fees		$5,000.00	
Subtotal	**$0.00**	**$82,000.00**	**$73,000.00**
TOTAL	**$68,800.00**	**$172,800.00**	**$241,600.00**

ADOPT A STORM DRAIN

December 21, 2018

2018 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 Saint 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.

SAINT PAUL
The Most Livable City in America

CAPITOL REGION WATERSHED DISTRICT

Center for Global Environmental Education
HAMLINE UNIVERSITY

RAMSEY-WASHINGTON METRO WATERSHED DISTRICT

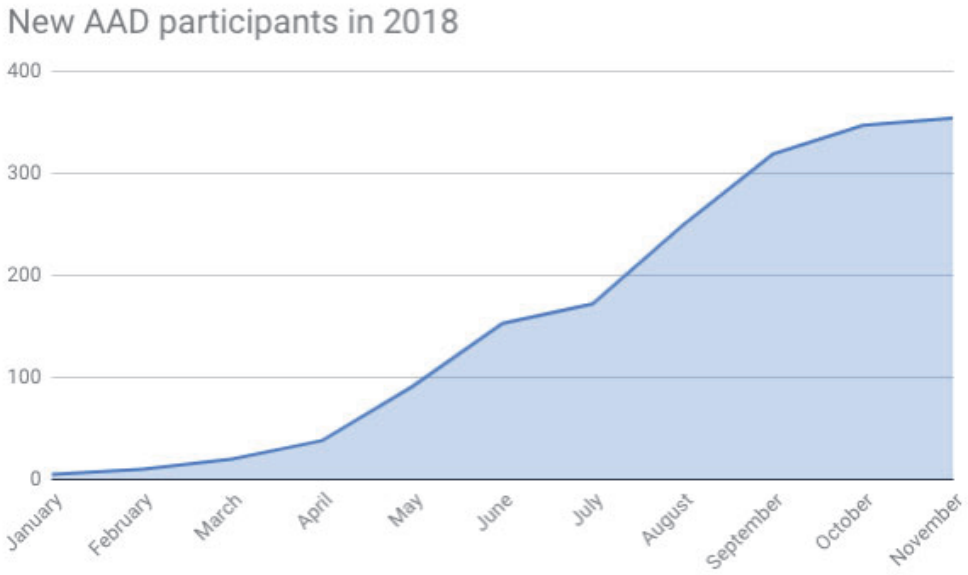
CLEAN WATER LAND & LEGACY AMENDMENT

2018 Summary

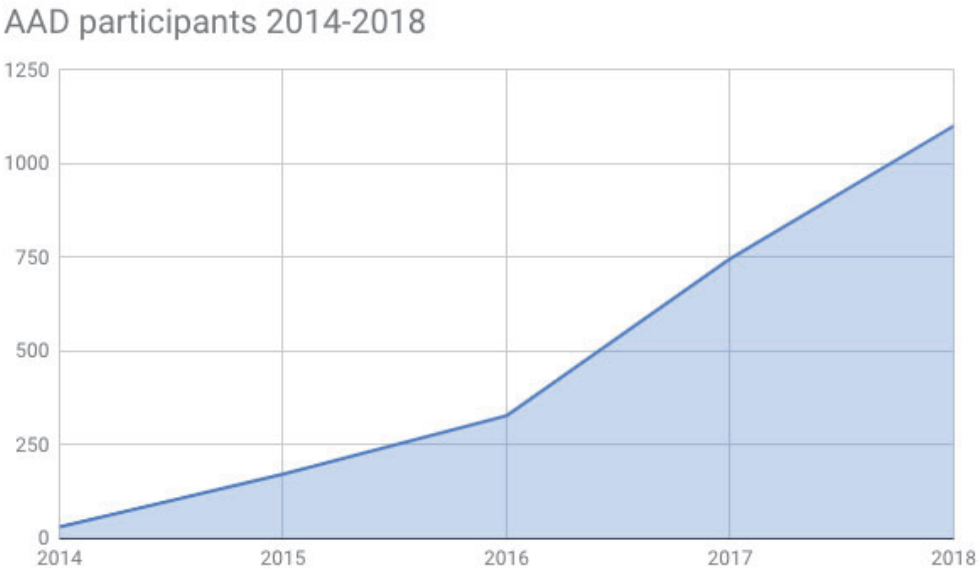
City of St. Paul
- In 2018, 361 new participants adopted 561 drains.
- Current total: 1,104 participants have adopted 1,757 drains

Capitol Region Watershed District (St. Paul only)
- In 2018, 307 new participants have adopted 488 drains.
- Current total: 927 participants have adopted 1,476 drains.

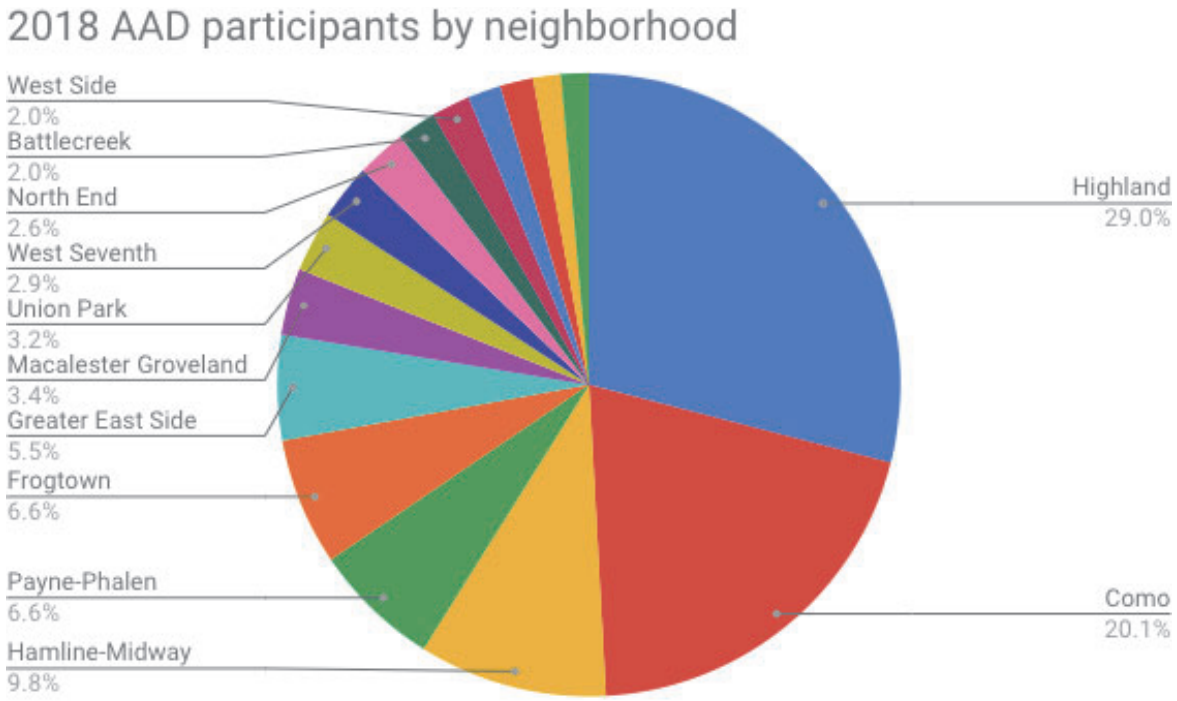
Ramsey Washington Metro Watershed District (St. Paul only)
- In 2018, 45 new participants adopted 61 drains.
- Current total: 138 participants have adopted 228 drains.



Doorhanging occurred April-June. The State Fair (August and September) also increased participation in Adopt-a-Drain.



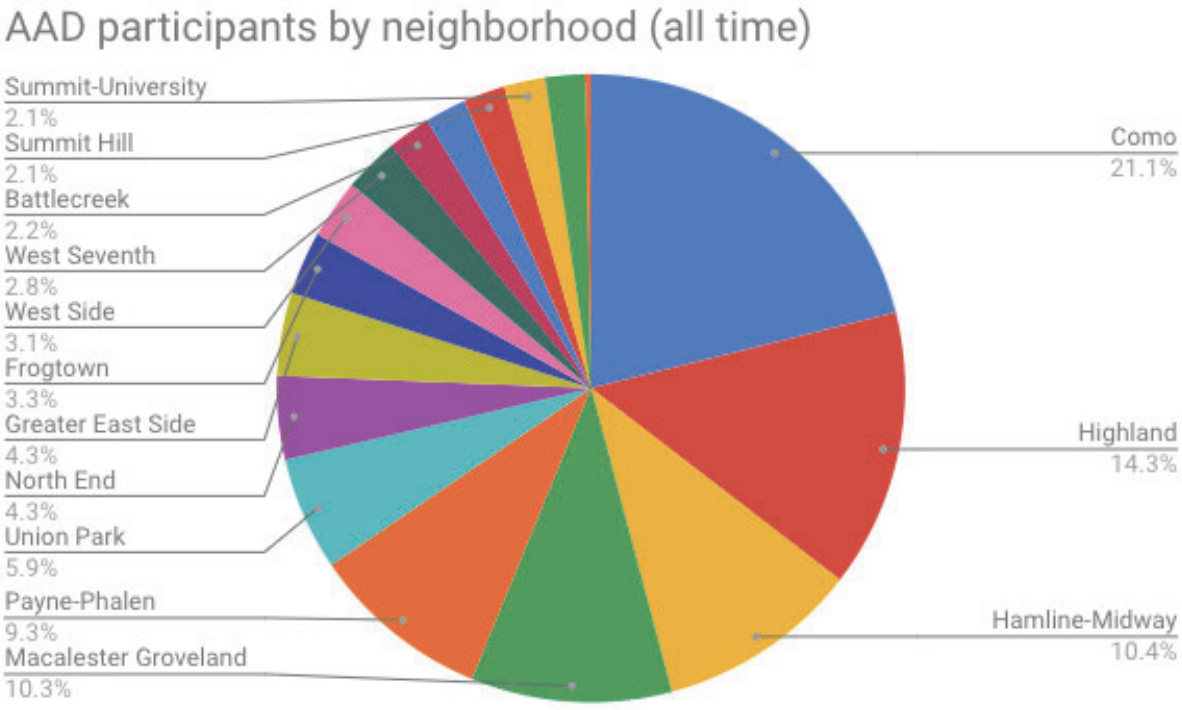
In 2017, there were 425 new Adopt-a-Drain participants in St. Paul.



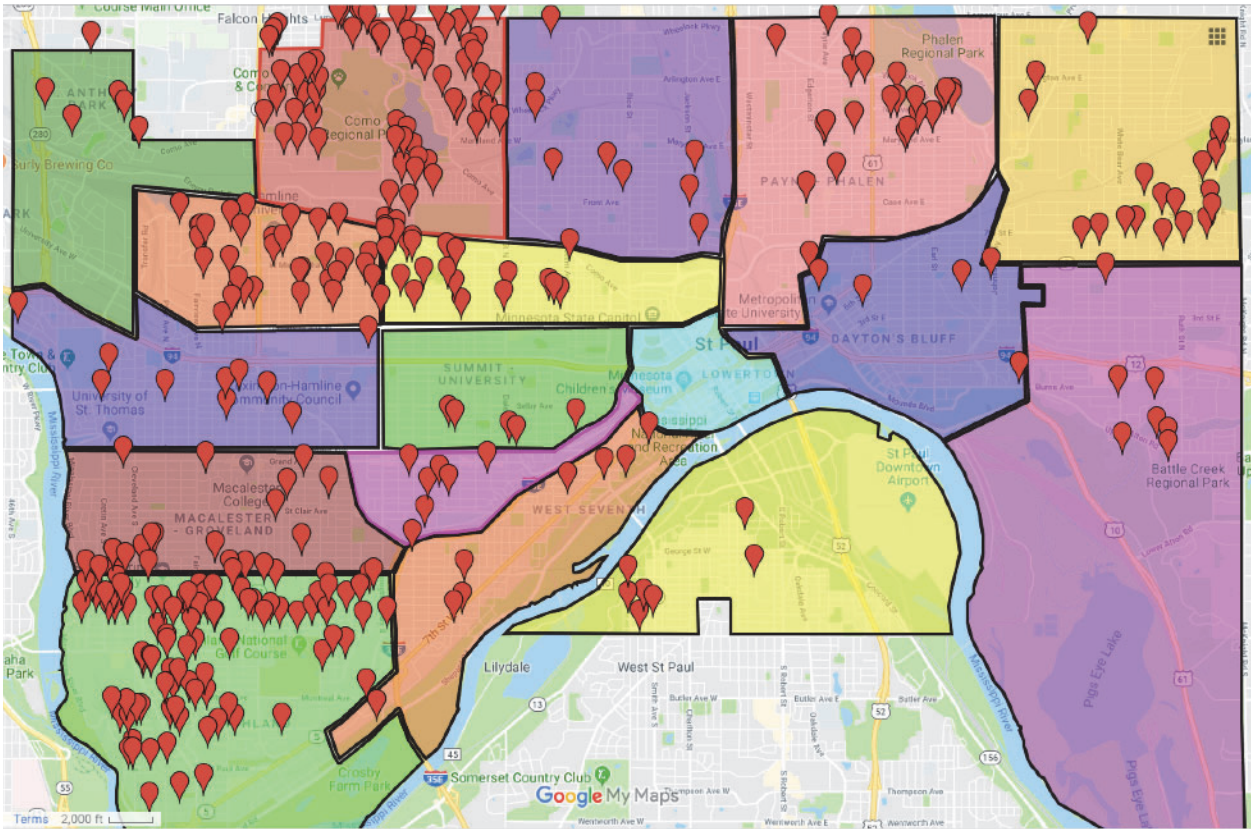
The top neighborhoods in 2018 were:

- Highland (101 new participants)
- Como (70 new participants)
- Hamline-Midway (34 new participants)
- Payne-Phalen (23 new participants)
- Frogtown (23 new participants)
- Greater East Side (19 new participants)

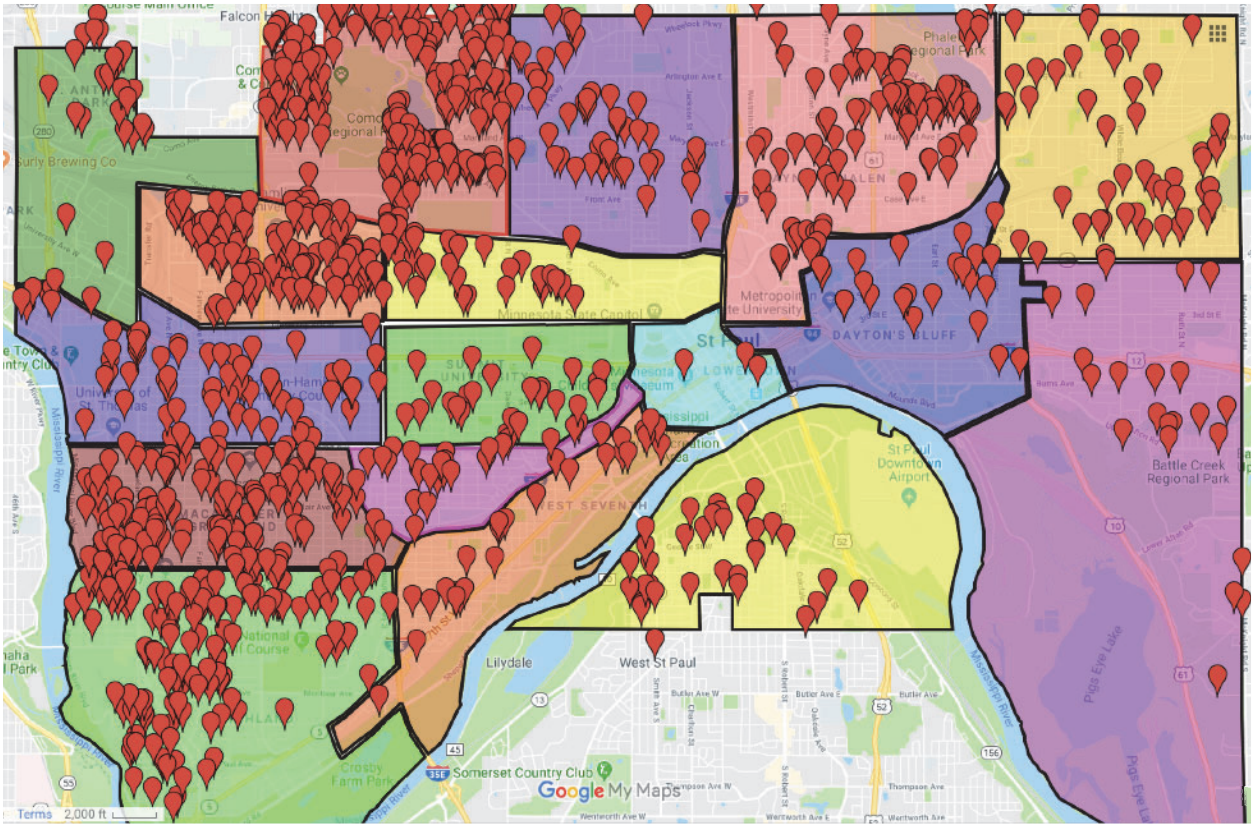
We doorhangered in Highland, Frogtown, and Greater East Side. Como and Hamline-Midway were part of the Adopt-a-Drain neighborhood challenge.



New participants in 2018:



All current participants:

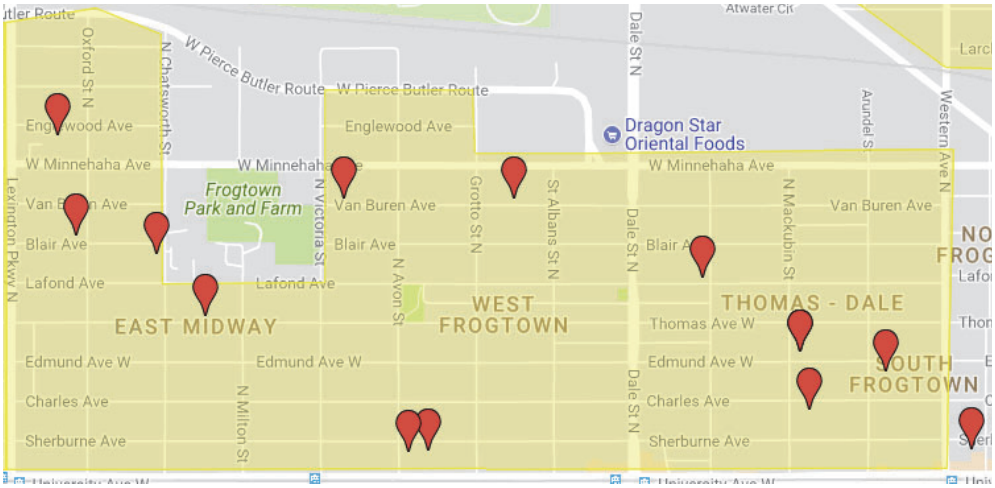


Frogtown Promotion

2,500 doorhangers were distributed to homes in Frogtown from April 26-May 4. Hamline University teamed up with Frogtown Farm for this promotion. St. Kate's students who were visiting the Farm distributed 500 doorhangers to the west of the park on April 27th. Frogtown Farm flyers and Adopt-a-Drain doorhangers were delivered simultaneously. The zone that was doorhangered is highlighted in yellow on the maps below.

23 new participants adopted drains in Frogtown in 2018. There are now a total of 35 Adopt-a-Drain participants in the Frogtown neighborhood.

Beginning of 2018:



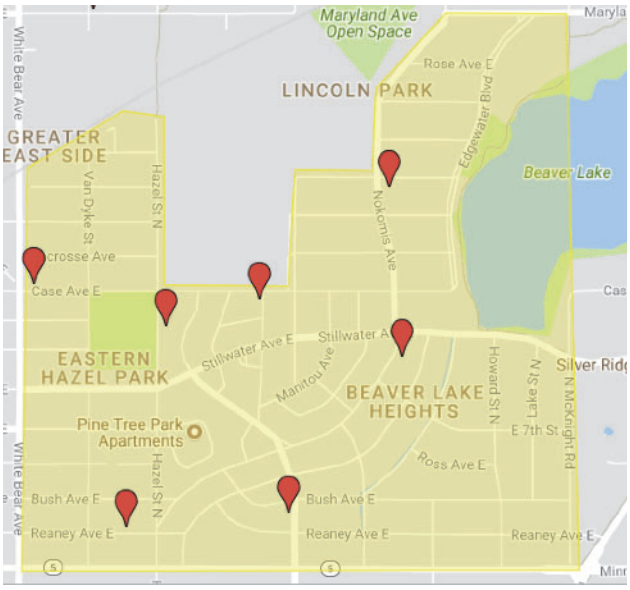
End of 2018:

Beaver Lake promotion

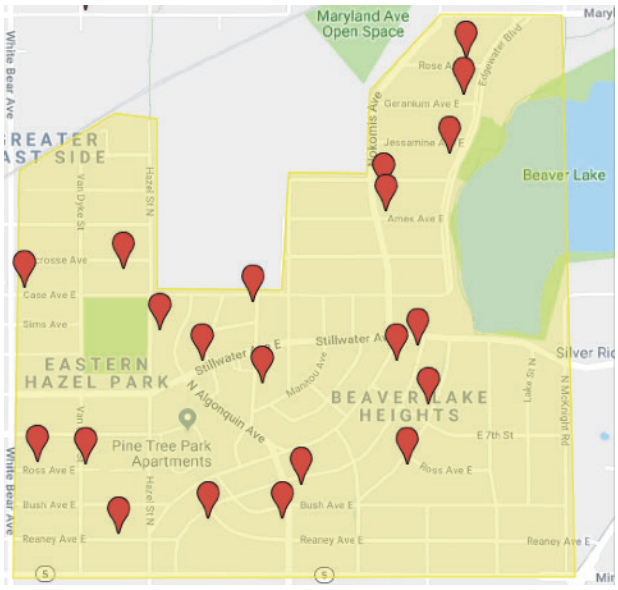
On May 2, Nokomis Montessori students distributed 500 doorhangers in the Beaver Lake neighborhood. On May 7-11, Hamline student workers distributed an additional 1,100 doorhangers in the neighborhood. The zone that was doorhangered is highlighted in yellow on the maps below.

14 new participants adopted drains in the Beaver Lake area after the doorhanging promotion. There are now a total of 21 Adopt-a-Drain participants in this neighborhood.

Beginning of 2018:



End of 2018:

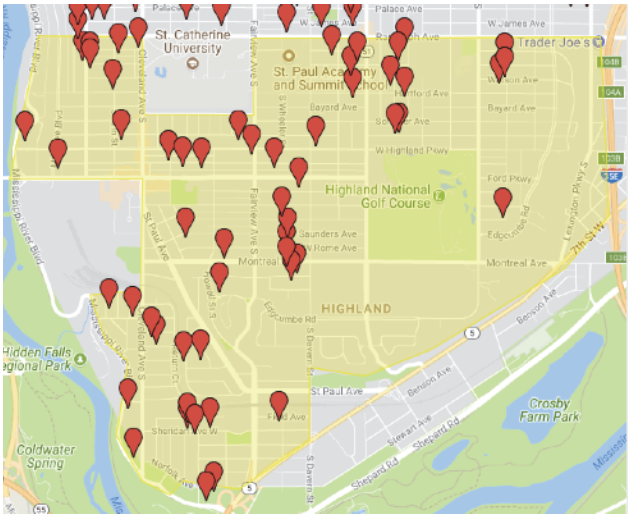


Highland promotion

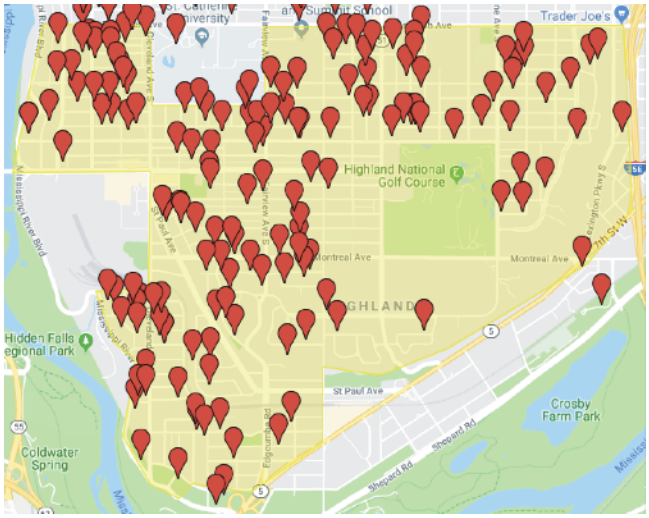
Hamline student workers distributed 5,500 doorhangers in Highland from May 23-June 11. The zone that was doorhangered is highlighted in yellow on the maps below.

After the doorhanging promotion, 101 new participants adopted storm drains. There are now a total of 154 Adopt-a-Drain participants in Highland.

Beginning of 2018:



End of 2018:



Community Outreach

Photos from the Community Peace Celebration

Our outreach efforts brought us to a variety of St. Paul neighborhoods, including: Frogtown, Rondo, the East Side, and North End.

At each of these events, a few St. Paul residents signed up to adopt drains and were given a yard sign to take home with them. These events are not the most efficient way to get a high volume of people signing up. However, the value of these events is in building and reinforcing awareness of Adopt-a-Drain. Folks who have already adopted drains stop to say hi. Children enjoy the table-top exhibit and the corn hole game, both of which provide a chance to talk with them about non-point source pollution.

Frogtown Green Gathering
February 24, Rondo Library

An annual gathering of organizations that are doing work in the Frogtown neighborhood.

WaterFest
June 2, Lake Phalen

Visitors took "Storm Drain Goalie" photos in front of a backdrop. They received a printed copy of their photo as well as a multi-lingual Adopt-a-Drain info sheet.

Community Peace Celebration, June 15, Ober Community Center
This is a long-running community event in the Rondo neighborhood. It was a rainy day, but we had great conversations with St. Paul and east metro residents.

The State Fair, Aug 23-Sept 3

Over the course of the fair, 70 St. Paul residents signed up to adopt a drain. Many St. Paul residents commented that they were aware of the Adopt-a-Drain program and had been meaning to sign up.

State Fair

St. Paul neighborhood challenge
Beginning in August

Members of Como/District 10 and Hamline-Midway environmental groups started a drain adopting competition among their neighborhoods. Later during the fall, Highland Park and Macalester Groveland joined the challenge, and there has been interest from St. Anthony Park and Union Park. This is a grassroots effort—and already a very successful one!

MaryDale Festival, September 22, Marydale Park

Art and community festival. We connected with the North End Neighborhood Organization, and kids enjoyed the game and exhibit.

Reporting Data

Spring

St. Paul (total)
- 168 participants reported
- Total of 8,926.2 lbs of debris
- 53.1 lbs per participant
- 18.7% reported
- 5 participants reported their time spent cleaning their drain(s)
- Participants spent an average of 1.1 hours cleaning their drain(s)

CRWD (St. Paul only)
- 139 participants reported
- Total of 6,549.6 lbs of debris
- 47.1 lbs per participant
- 18.4% reported

RWMWD (St. Paul only)
- 26 participants reported
- Total of 1,312.2 lbs
- 50.5 lbs of per participant
- 21.8% reported

Como watershed
- 14 participants reported
- Total of 706.8 lbs
- 50.5 lbs per participant
- 12.7% reported

Phalen watershed
- 12 participants reported
- Total of 501.0 lbs
- 41.8 lbs per participant
- 25.0% reported

Fall

St. Paul (total)
- 219 participants reported
- Total of 17,200.25 lbs
- 78.5 lbs per participant
- 20.3% reported
- 26 participants reported the time spent cleaning their drain(s)
- Participants spent an average of 2.9 hours cleaning their drain(s)

CRWD (St. Paul only)
- 176 participants reported
- Total of 12,231.25 lbs
- 69.5 lbs per participant
- 19.3% reported

RWMWD (St. Paul only)
- 28 participants reported
- Total of 2,242.0 lbs
- 80.1 lbs per participant
- 19.6% reported

Como watershed
- 45 participants reported
- Total of 4,690.0 lbs
- 104.2 lbs per participant
- 28.9% reported

Phalen watershed
- 13 participants reported
- Total of 1,056.0 lbs s
- 81.2 lbs per participant
- 24.0% reported

Reporting photos from St. Paul residents, 2018.

Proposed 2019 Budget

CRWD match: 150 adoptions
RWMWD match: 50 adoptions

ITEM	NUMBER	RATE	COST
Community Outreach			
Promotion at community events	37.5	$20	$750
Summit-University doorhangers	1600	0.54	$864.00
Union Park doorhangers	2150	0.54	$1,161.00
Doorhanging staff time	70	20	$1,400.00
Doorhanging transportation	35	8.5	$297.50
200 packets			
Materials and postage	200	$5	$1,000.00
Data management and packet assembly	12	$20	$240.00
200 yard signs			
Yard signs	200	$14	$2,800.00
Assembling yard signs	6	$20	$120.00
Delivering yard signs	50	$20	$1,000.00
Hourcar transportation for sign delivery	50	$8.50	$425.00
Tier 3 Management and Evaluation	20	$80.00	$1,600.00
Subtotal			$11,657.50
Administrative fee		15%	$1,748.63
Credit: Roll-over funds paid in 2018			$2,485.00
TOTAL			**$10,921.13**

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- 2018 Final Report
Submitted by Friends of the Mississippi River
November 17, 2018

This report summarizes Friends of the Mississippi River's activities in fulfillment of our 2018 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 four key program areas, which are described in greater detail in this report:

1. Storm drain stenciling and cleanups
2. Extra education
3. Storm drain mural installation
4. Community educational workshops, events and tours
5. Buck-slip insert content guidance

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 housed three stenciling kits/bins 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 15-30 minute presentation. In addition to stenciling outings, FMR also coordinates 2-3 litter-cleanups/invasive species pulls within the city each year.

Outreach:

In 2018, 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)
- Announcement at Big River Journey teacher trainings in February and August 2018
- Posting on FMR's website, social media (Facebook, Instagram and Twitter pages), as well as announcements in FMR's email newsletter, *Mississippi Messages*
- Postings on other volunteer websites including VolunteerMatch, TwinCities.com/Pioneer Press, Do It Green, Next Step/SEEK, Minnesota Parent, The Villager, and the Children and Nature Network

Accomplishments:

Stenciling:

Kate Clayton (Youth Coordinator) and Daurius Mikroberts (Outreach Assistant) for Friends of the Mississippi River facilitated storm drain stenciling outings with 44 school and college groups, community groups, corporations and residents of the City of St. Paul. A list of the 44 groups, with event dates and goals achieved, is attached at the end of this report.

1,150 volunteers stenciled 2,224 storm drains and distributed 5,738 educational door hangers within the City, for a total of 1,976 hours of volunteer work. Stenciling took place in a majority of St. Paul neighborhoods. A map of specific locations included at the end of this report.

Cleanups:

The interest in clean-ups seems to vary widely from year to year. In 2018 FMR facilitated two groups with a total of 63 people, contributing 144 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 general education, trash bags and gloves as well as coordinated with the City of St. Paul Parks and Recreation Department.

In total, FMR engaged 1,113 volunteers for 2,120 hours in cleanup and stenciling outings in 2018. This year FMR met and surpassed the goals for total number of volunteers (1,000), volunteer hours (1,500) and drains stenciled (2,200). We did not reach the goal of 6,500 door hangers distributed. This can most likely be attributed to the high amount of weather

cancelations we had, since groups are often not as excited to flyer as they are to paint; it often takes recruiting more groups to achieve this goal.

Unfortunately, there was poor weather much of the event season this year. 14 scheduled stenciling outings were canceled due to weather or by group leaders for various reasons. One of these outings became a clean-up and another became a talk about water quality, however this had a great impact on the number of volunteers and the success of working toward our goals. 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. 100% of survey respondents think that the stenciling program is a good teaching tool and 100% rated their experience with FMR as good or excellent. 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 for the 2018 season. Below is an inventory of supplies remaining at the end of the 2018 season. See previous reports for a comparison with prior years.

Equipment:
Gloves: Plenty
Clipboards: 27
Goggles: 77
Full paint cans: 35 Partial paint cans: 13
Brushes: 41
Vests: 56
Cones: 18
Buckets: 17
Trash Bags: Plenty
Flyers/Door Hangers: 3.5 boxes, approx. guess 6,500

Stencils:
Drains to River: 43
Drains to Creek: old, w/ fish: 19
Drains to Lake: 34
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, expos or locations. 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 Daurius Mikroberts.

Outreach:

In 2018, 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 and August 2018
- Posting on FMR's website, social media (Facebook, Twitter and Instagram 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, Next Step, Green Hands USA, Minnesota Parent and the Children and Nature Network

Accomplishments:

This year, FMR coordinated 31 classroom presentations, and participated in 2 special events (Children's Water Festival at the State Fair Grounds and Waterfest located around Lake Phalen). In total we provided extra education for 786 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.

Storm Drain Mural

Building on the successful storm drain mural work in 2017, FMR contracted again with artist Gustavo Lira in 2018. Gustavo created two mural designs from the 2017 community

workshop. We let the workshop participants vote on which one to install first, leaving the second design available to install in the same parking lot as the first in 2018.

Since the design for the 2018 mural was already available, the mural was painted earlier in the year. We hoped that this gave members of the public more time to enjoy the murals during the warmer weather months. The rest of 2018 has been spent in preparing for the 2019 mural hopefully to be painted at Lake Phalen during Waterfest. FMR attended 2018 Waterfest to help gather ideas as to elements the mural could include. We also have classroom visits scheduled with French Immersion Magnet School in St. Paul to gather ideas from youth who are interested in water quality and we are working with Ramsey-Washington Metro Watershed District to schedule the 2019 community workshop sometime in the early winter.

- 6/02/2018 Tabling at Lake Phalen Waterfest (75 people)
- 6/23/ - 6/24/2018 Painting Days

COMMUNITY EDUCATION WORKSHOPS AND EVENTS

Description:

FMR hosted two community education workshops or stenciling outings open to the public in 2018. 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 & Education Program Director Adam Flett coordinated all of the educational workshops and events, 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 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 1 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 24, 2018 (21 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 the following venues. These also have 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 June 26, 2018 (34 participants, 28 barrels)

Outreach:

Participants for the workshops and outings 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 Instagram
- 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/PioneerPress, Do It Green, Spokesman Recorder, Northern Gardener, Minnesota Master Naturalist and others.
- 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, 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 more

Accomplishments:

The following table summarizes public event participation in 2018:

Name	Date	Location	# Participants
Make and Take Rain Barrel Workshop	6/26/18	Wellstone Center	34
Storm Drain Stenciling @ Tin Whiskers Brewing	7/24/18	Tin Whiskers Brewing Co.	21
Total			67

Buck-slip Insert:

This idea was generated at a partner meeting early in the year between FMR and the City of St. Paul Public Works. The goal was to create an insert the city could use in water bills to encourage home owners to adopt water quality practices. In August, FMR created and submitted a co-branded draft document of two bill insert options to highlight tips, behavior change suggestions and resources for St. Paul residents. These drafts focus on spring and winter water quality issues. The city is currently perusing translation services for the documents to better serve the St. Paul community.

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/72157696730241201

Storm Drain Mural

- https://www.flickr.com/photos/friendsmissriv/albums/72157670538177798

Rain Barrel Workshop:

- https://www.flickr.com/photos/friendsmissriv/albums/72157698447466485

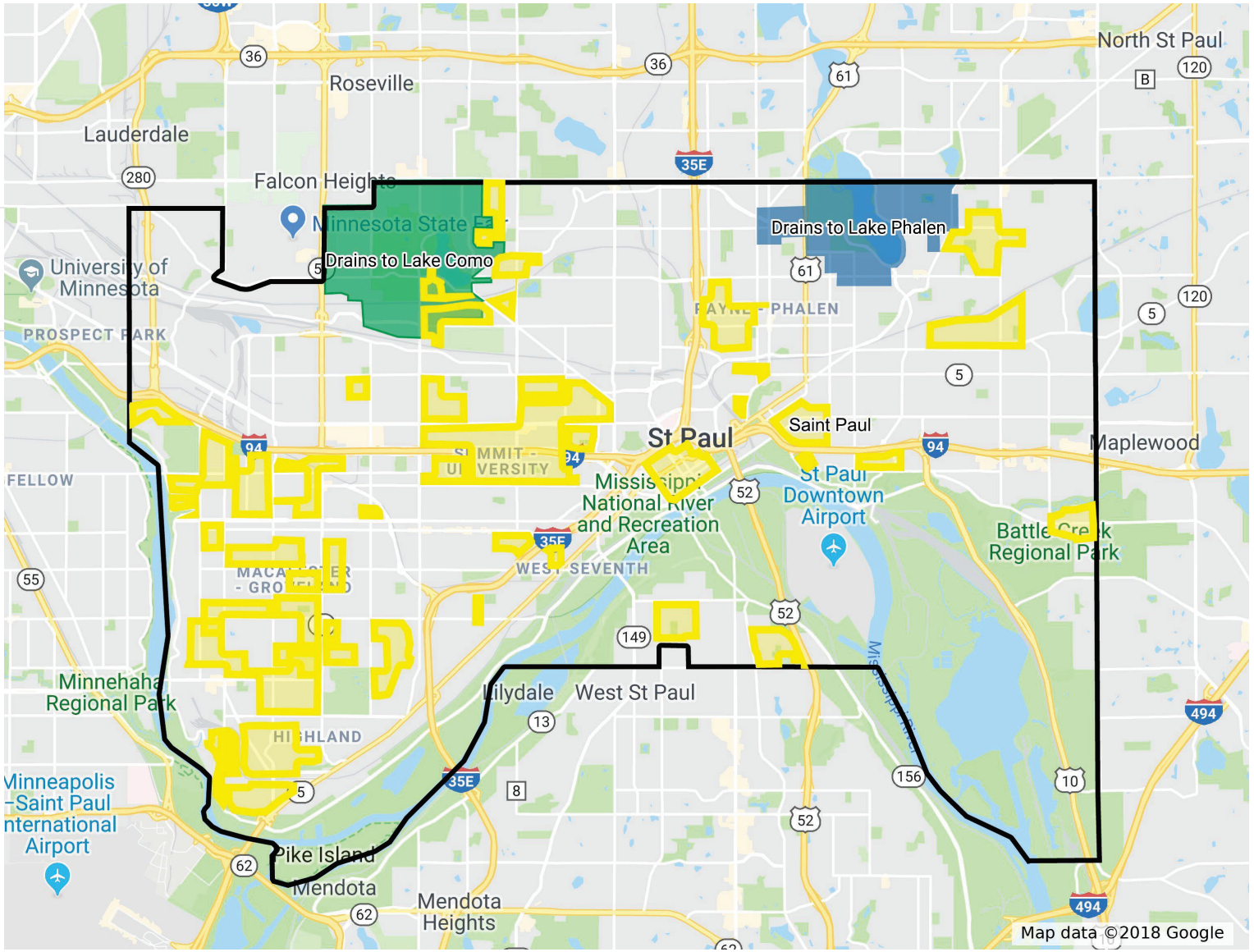
Stenciling Location

Overlay

- Saint Paul
- Drains to Lake Phalen
- Drains to Lake Como

2018 Stencil Locations

- All items




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

5 ways to restore and protect habitat

Our river corridor's prairies, wetlands and woodlands are home to thousands of species of wildlife. You can nurture and help protect their habitat as you enjoy our great outdoors.

1 Stop aquatic hitchhikers

As you explore our lakes and streams, help protect them by keeping invasive species at bay. Trailers and boats of all kinds can pick up unintended hitchhikers like mussels and plants. Some are harmless, but others can significantly disrupt (and harm) the next ecosystem you visit.

So when you dock, clean off any visible plants or animals from the hull. Then drain any water you've picked up (including ballast tank, motor or bilge). This ensures you'll only bring family and friends along on your next boating adventure.

2 Get the lead out of shot and tackle

For years, manufacturers of sinkers, jigs and bullets used lead because it was inexpensive and easy to mold. But lead is a neurotoxin for wildlife and for humans. It leaches into the ground and water, or straight into fish, eagles and loons.

Minnesota hunters and anglers proud of their conservation heritage choose lead-free shot and tackle. The Minnesota Pollution Control Agency keeps a list of where you can buy safe tackle: **tinyurl.com/NonLeadTackle**.

3 Garden for pollinators

Small but mighty, pollinators have an enormous job. Without them, most plants, including the crops we eat, couldn't fruit. That would cause food shortages for wildlife and people alike.

If you rent or live in the city, you may feel like converting part of a small yard to pollinator habitat couldn't impact much. But pollinators are actually drawn to patch-like gardens. They serve as crucial oases, especially in urban and residential neighborhoods where habitat can be scarce. So plant some pollinator favorites like milkweed, coneflower and aster; then see who drops by. Check out **fmr.org/pollinators** for more resources.

4 Don't move firewood

Just as your boat can pick up invasive hitchhikers, so can firewood. Logs can harbor diseases and insects like the emerald ash borer (EAB) that is decimating Minnesota's ash trees. If the spread of EAB continues, we could lose about 8% of Minnesota's total tree population.

A good rule of thumb is to use wood sourced from within at least 10 miles of your campfire. If you buy your wood, visit **FirewoodScout.org** to find safe vendors near you.

Karen Schik
FMR Senior Ecologist and monarch nurturer

"Monarch caterpillars rely entirely on milkweed for their munching needs. Common milkweed is their favorite, but they also like all our native milkweeds. The adult butterflies are less picky, getting nectar from many kinds of plants. One of my favorites — and theirs — is blazing star, the 'monarch magnet!' The important thing is to have blooming flowers of multiple species throughout the summer."

A monarch that Karen raised emerges from its chrysalis.

5 Become a citizen scientist

Scientists often turn to the public to help collect wildlife and insect data. Locally, the University of Minnesota Monarch Lab has collected data on monarch larvae from enthusiasts since 1997. Visit **MonarchLab.org** to learn more. And if you're an educator who'd like your students to monitor an FMR restoration site, let us know! Contact our youth coordinator Kate Clayton: **KClayton@fmr.org**.

Friends of the Mississippi River • 651-222-2193 • 101 E. 5th St. Ste. 2000 St. Paul 55101 • fmr.org

FRIENDS OF THE MISSISSIPPI RIVER
FMR.ORG

25 WAYS YOU CAN HELP THE RIVER

As the Mississippi River faces enormous challenges — habitat loss, water pollution and constant development pressure — individual action might seem like a drop in the bucket. But we become a powerful force for change when we take actions like these collectively, just as the river we love gains its might from gathering many waters together along its course.

5 ways to reduce lesser-known water pollutants

When we say water pollution, many people think of oil slicks or gasoline. But some threats to water aren't as obvious: pills, soaps, salts, plastics — even leaves! Here are five ways to ensure these lesser-known pollutants don't end up in the river.

1 Avoid microplastics

Since plastic can stick around for 500 years or longer, it inevitably ends up in our water. Tiny pieces called microplastics are even making their way up the food chain — they're in our drinking water and in the fish we eat. They come from plastic bags, take-out containers, cosmetics and more. But the main source affecting our river is less visible: plastic fibers in synthetic fabrics like microfleece. Through laundering, these fibers enter wastewater treatment, but slip through to the river.

In addition to choosing reusables over single-use plastics, river-conscious residents can be careful not to litter or flush plastics, check out **BeatTheMicrobead.org** for products to avoid, and buy clothing and other fabrics made of natural fibers.

2 Mix up your deicing game plan this winter

Road crews often use salt to melt ice on streets and highways, but such deicers are the primary source of chloride to Minnesota's waters. Just 1 teaspoon of salt can permanently pollute 5 gallons of water.

Use these safe alternatives on your walkways and driveway: Shovel early and often to prevent ice buildup. Use deicers sparingly and sweep up extra for future use. And if it's below 15 degrees Fahrenheit, know that rock salt loses its melting power. So when it's truly cold, turn to an alternative deicer or try sand for traction. Learn more at **fmr.org/winter**.

3 Adopt your street's storm drain

Grass clippings and leaves that blow into the street will wash down the storm drain and into the river. Why would these natural materials be a problem? All that organic matter has to decompose, sucking up oxygen and releasing nitrogen — factors that lead to fish kills and algal blooms.

RICH WAHLS

One solution is to adopt your street's storm drain. On your neighborhood walks, stop by and scoop out whatever is caught in the grate. Before big storms, be sure to unclog the drain. And you can prevent buildup by raking leaves out of your street.

4 Don't flush pills

While it's important to get rid of expired or unwanted medications, don't send them down the drain. Wastewater treatment systems won't remove acting agents — leading to reproductive, growth and feeding issues for fish and other aquatic wildlife. Find out where you can get rid of old pills safely at **DisposeMyMeds.org**.

5 Use a car wash

Washing a car in your driveway might seem like a water-conscious choice since you can control how much water you use. But all those suds, built-up salts, grease and dust rinse right down the road into your storm drain, then straight to the rivers and lakes nearby — unfiltered and untreated.

Luckily, most car washes are required by law to route their water through treatment systems that can pull out cleaners and residue. Some even reuse their water!

5 ways to make your yard river-friendly

Whether urban, suburban or rural, our yards are part of the Mississippi watershed. The effects of how we landscape and route rain show up far beyond our property lines. Dig in to these tips to help protect the river right from your own backyard.

Adam Flett
FMR Stewardship & Education Program Director and rain barrel aficionado

"You can make your own rain barrel if you don't want to buy one! There are a lot of options for the barrel — plastic drums, recycling bins — anything that holds water well. Plus, you can now find handy converter kits that make connecting a barrel to your roof much easier."

1 Plant natives

To endure Minnesota's hot summers and deep-freeze winters, prairie grasses like big bluestem grow roots down to 8 feet to reach nutrients and water. These deep roots hold soil in place and allow the earth to absorb far more rain than a turfgrass lawn can. Plus, birds, bees and other critters that live here depend on native plants for habitat.

Unsure where to start? Visit **Blue-Thumb.org** for resources, including classes.

2 Reduce chemical use

Pesticides and herbicides that keep turfgrass weed-free can be toxic to people and wildlife. Lawn chemicals account for the majority of reported wildlife poisonings to the Environmental Protection Agency (EPA).

To reduce lawn chemical usage in problem areas, try to find the root cause. The actual roots of your plants may be in poor soil. Aerate your lawn once a year to break up the soil so nutrients and water more easily reach roots. Mulch your leaves in place in the fall. Amend your soil with a thin layer of rich compost. You could also replace some of your lawn with native plants to make a garden that doesn't need as much chemical assistance to flourish.

3 Rig up a rain barrel

Rain barrels collect the rain that runs off your roof and slides down your gutters so you can use it later to water your garden or lawn. But rain barrels do more than conserve water. They also prevent runoff and the pollution it carries from entering already-taxed stormwater systems. Make your own or join us at one of our make-and-take rain barrel classes. Learn more at **fmr.org/rain-barrels**.

4 Prevent runoff

Thanks to climate change, when it rains it pours, causing stormwater system overflows. That means pollution discharges into the river. You can help by keeping rain where it lands. One easy way is to cut your lawn to three inches or more. The higher the lawn, the deeper its roots. And the deeper its roots, the more absorptive the ground. Leaving lawn clippings in place also encourages richer, more absorptive soils. Finally, reroute your downspouts away from pavement and into grass, a rain barrel or rain garden.

5 Pick up after your pet

This one's simple. Make sure to pick up after your four-legged friends. Pet waste contains harmful bacteria. If pet waste is still in your yard or at the park when it rains, bacteria leaches into runoff and into the river. In fact, some areas of the Mississippi are impaired for E. coli. So be vigilant, especially before rains and snowmelt events.

5 ways to educate yourself and your community

By learning, sharing and exploring with your friends and family, you can help grow support for the Mighty Mississippi.

1 Stencil storm drains with your group or class

You've probably seen a spray-painted warning beside a storm drain: "Keep 'em clean — drains to river!" FMR has led school, religious and service groups on stenciling missions for the past 23 years, reminding all of us that if it's in our streets, it's in our streams. We'd love to teach your class or group about our waters and lead a St. Paul cleanup or stenciling outing. Email **stenciling@fmr.org** for more information.

2 Share the 'State of the River Report'

So, how is the Mississippi River? In collaboration with the National Park Service, we pulled together answers to that question in our "State of the River Report."

Updated in 2016, the report highlights 14 key indicators of river health, and is an approachable, engaging way to learn about all the forms of pollution mentioned in this "25 ways to help the river" feature. Read and share the report and companion guides for at-home and community stewardship, policy, and education at **StateOfTheRiver.com**.

3 Encourage pride in our national park

Many Minnesotans think our only national park is Voyageurs, some 300 miles north of the Twin Cities. But the entire 72-mile stretch of the river that runs through our metro area makes up the Mississippi National River and Recreation Area (MNRRA).

Watch the story of this unique national park's designation in "Rebirth" at **fmr.org/rebirth**. Then head to **nps.gov/miss** to plan your next outing.

4 Educate yourself about river corridor policy

While clean water is a simple concept, it can get complicated quickly. How can the average person learn about and speak up effectively about agricultural issues or river corridor development policies with their local or state representatives?

Get involved with your local planning council or board. Read your local newspaper. Check out our Water Blog, where we tackle many issues facing the river and update readers on developments: **fmr.org/waterblog**.

5 Visit the river together

One of the best ways to foster care for our river is through experience. For three years, the Twin Cities has been ranked highest in the nation for park accessibility. Check out our Special Places map at **fmr.org/celebrating-25-years** to find a few of our favorite spots. And make sure to share the special places you find with others. Visit by foot, by boat or simply be still on the shoreline. The river is sure to inspire connection.

TOM REITER

Sophie Downey
FMR Outreach Assistant and river explorer
Photo by Tom Reiter

"My favorite place on the river is the trail along the sand flats in Minneapolis. You get beautiful, up-close views of the river there. And there's always the chance that you might see some interesting wildlife. Easy access from West River Parkway is also a plus!"

5 ways to be a part of Friends of the Mississippi River

1 Volunteer

Join 2,000+ volunteers: **fmr.org/volunteer**

2 Donate

Join 2,600+ members: **fmr.org/donate**

3 Learn

Join 1,500+ learners: **fmr.org/events**

Did you know FMR offers classes on rain barrels, river-friendly homes and gardens and more?

4 Speak up

Join 2,000+ River Guardians: **fmr.org/advocate**

Amy Kilgore
FMR Volunteer Coordinator and River Guardian

"Issues that threaten the Mississippi don't always make it into the news. The FMR Water Blog makes it easy to stay connected and informed. That way I can speak up when issues that affect the river need my voice."

5 Share

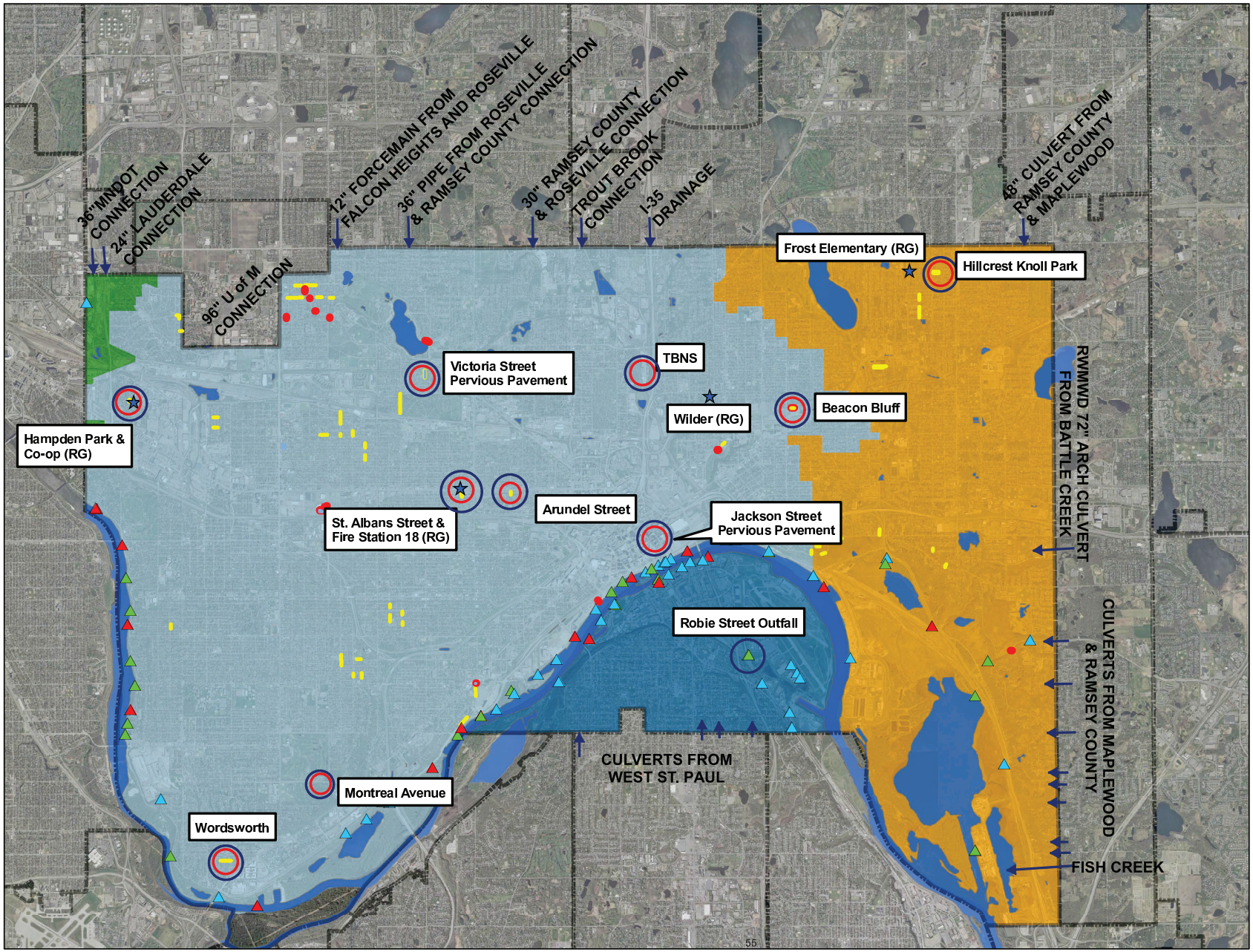
Friends of the Mississippi River
@FriendsMissRiv
@FriendsMissRiv

City of St. Paul

2018 Water Quantity & Quality Monitoring Program

Figure 1-1

2018 Monitoring Site Locations



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0 2,500 5,000 10,000
Feet

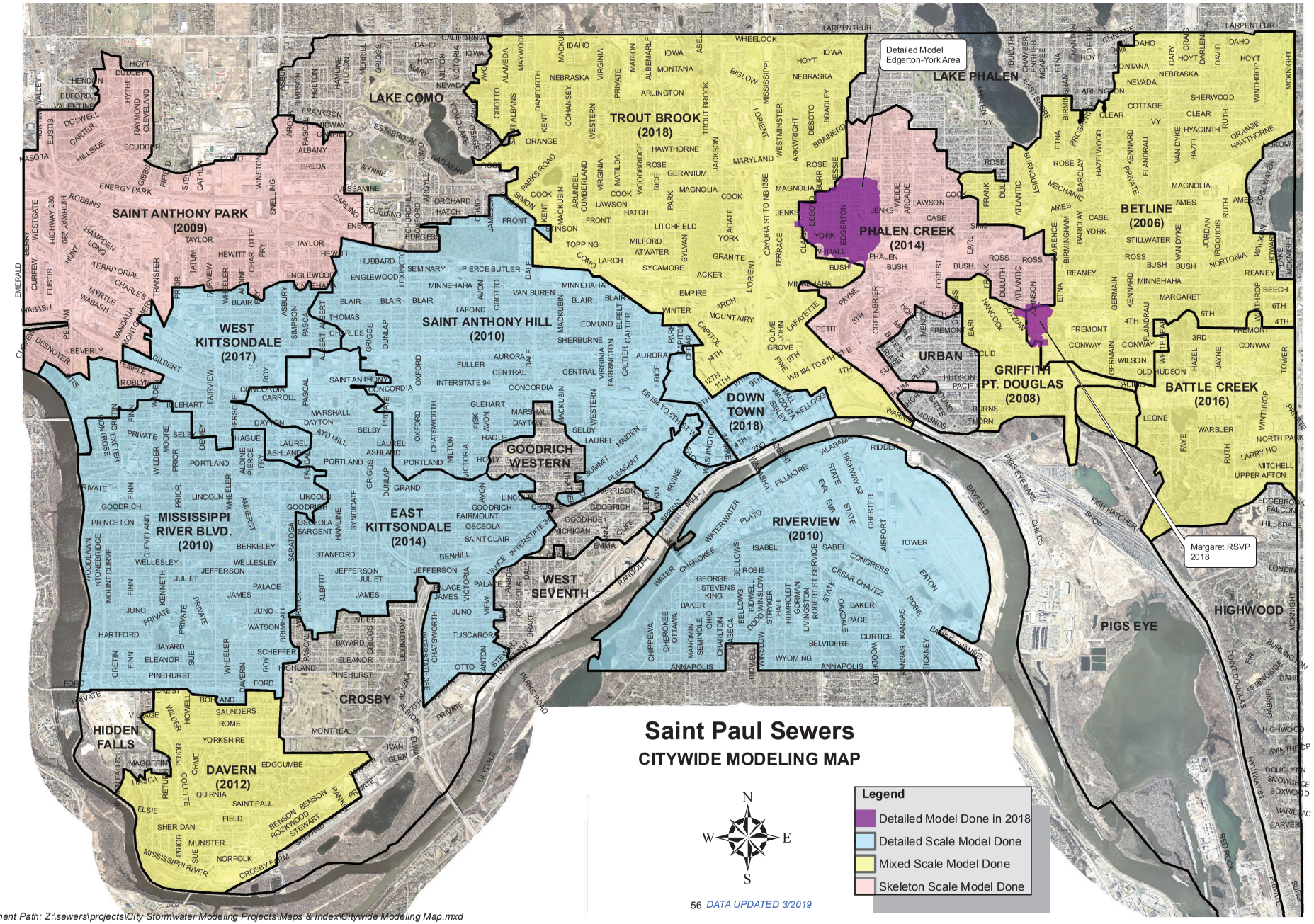
Legend

- Raingarden/Infiltration Basin
- Infiltration Trench
- Pervious Pavement
- Capitol Region Watershed District
- Lower Mississippi River WMO
- Mississippi WMO
- Ramsey/Washington/Metro WD
- 2017 Monitoring Locations
- 2018 Monitoring Locations
- Rain Gauge Locations

Outfalls

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

wsb


Detailed Model Edgerton-York Area
LAKE COMO
TROUT BROOK (2018)
LAKE PHALEN
SAINT ANTHONY PARK (2009)
PHALEN CREEK (2014)
BETLINE (2006)
WEST KITTSONDALE (2017)
SAINT ANTHONY HILL (2010)
URBAN
GRIFFITH
PT. DOUGLAS (2008)
BATTLE CREEK (2016)
DOWN TOWN (2018)
GOODRICH
WESTERN
MISSISSIPPI RIVER BLVD. (2010)
EAST KITTSONDALE (2014)
WEST SEVENTH
RIVERVIEW (2010)
HIGHWOOD
PIGS EYE
CROSBY
HIDDEN FALLS
DAVERN (2012)
Margaret RSVP 2018
Saint Paul Sewers
CITYWIDE MODELING MAP
N
W
E
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Legend
Detailed Model Done in 2018
Detailed Scale Model Done
Mixed Scale Model Done
Skeleton Scale Model Done
56 DATA UPDATED 3/2019
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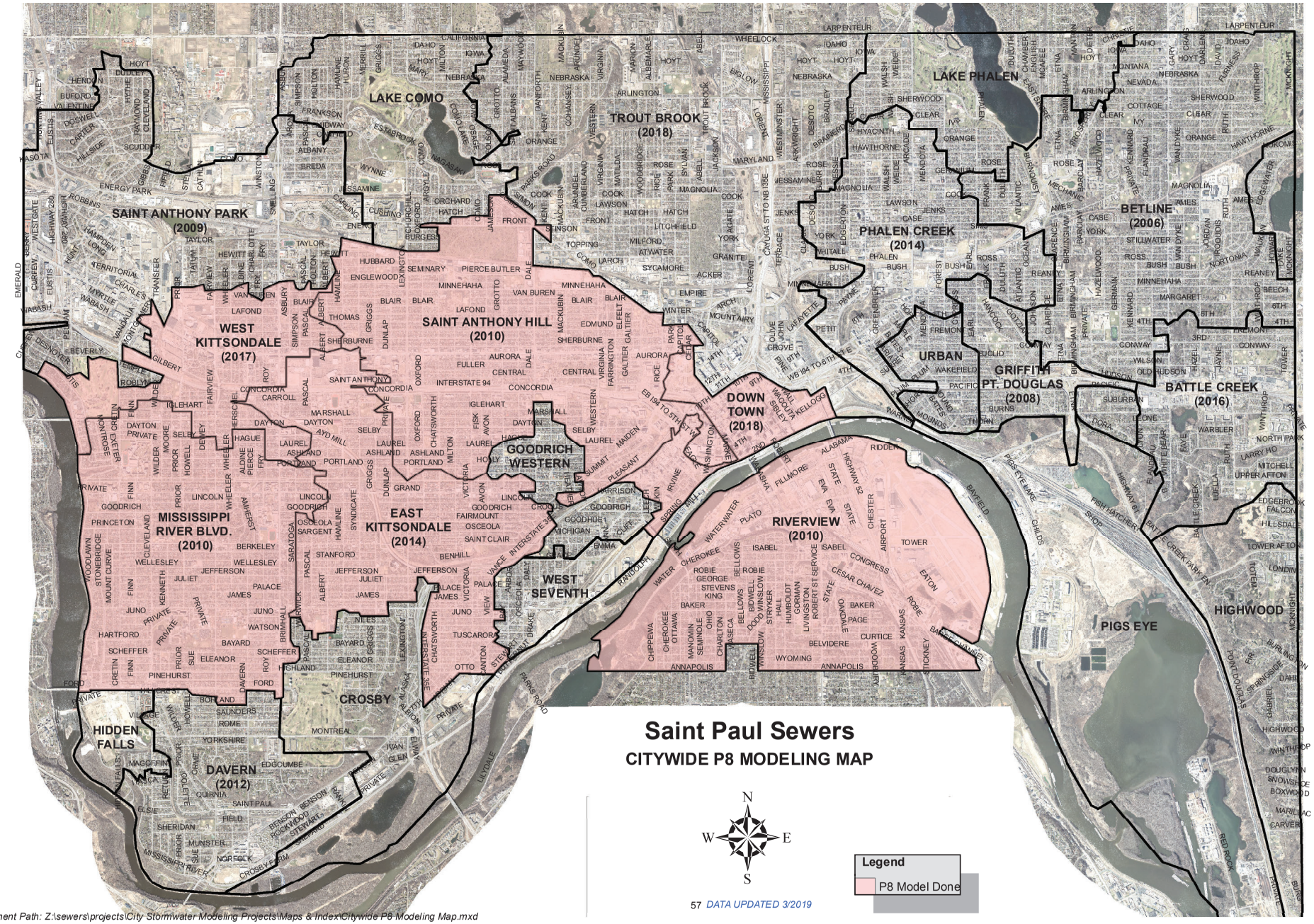

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Memorandum

To: Pat Murphy, City of St. Paul

From: Linnea Henkels, WSB & Associates

Date: April 30th, 2019

Re: Estimates of 2018 Annual and Season Stormwater Pollutant Loads
WSB Project No. R-01610-100

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 2018.

2018 Pollutant Loading Calculations
Monitoring of major outfalls within the City of Saint Paul was completed by Capitol Region Watershed District (CRWD) in 2018. 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 subwatersheds was utilized for this assessment: East Kittsondale, St. Anthony Park, Trout Brook, and Hidden Falls. Monitoring of the Phalen Creek subwatershed was not completed in 2018 due to a tunnel replacement at that location. 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	Wilder
Belt Line	2,882	0.55	Wilder
Crosby	1,446	0.45	Hampden Park Co-op
Davern	1,277	0.55	Hampden Park Co-op
Downtown	669	0.75	Engine House 18
East Kittsondale	1,870	0.62	Engine House 18
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	Hampden Park Co-op
Highwood	1,139	0.50	Wilder
Lake Como	1,240	0.47	Hampden Park Co-op
Lake Phalen	995	0.42	Wilder
Mississippi River Blvd.	2,373	0.58	Hampden Park Co-op
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	Fire House 18
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**):

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

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	74.0	2.4	0.46	0.39	231.1	66.0
Q1 (Jan-Mar)	585.8	7.0	0.95	0.69	308.5	105.2
Q2 (Apr-Jun)	58.7	2.9	0.50	0.37	255.8	84.2
Q3 (Jul-Sep)	19.2	1.9	0.41	0.36	213.8	56.3
Q4 (Oct-Dec)	56.7	1.2	0.36	0.40	217.1	52.7

Based on these calculated flow-weighted mean concentrations, the Simple Method was used to calculate each subwatershed's pollutant loading. Loads for the four 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 three 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[1]	Engine House 18	Hampden Park Co-op	Wilder
Annual	31.08	32.01	32.08
Q1 (Jan-Mar)	3.69	3.69	3.69
Q2 (Apr-Jun)	9.01	9.75	10.53
Q3 (Jul-Sep)	13.57	13.71	14.7
Q4 (Oct-Dec)	6.13	6.25	6.13

1 – The monitored rainfall data was supplemented with data collected from the University of Minnesota – St. Paul.

The annual and seasonal pollutant loads for each of the City's subwatersheds are presented in **Tables 4-8**. Loads for the four 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	273091	8840	1711	1457	853240	243481
Beaver Lake	28981	938	182	155	90547	25838
Belt Line	758229	24543	4750	4045	2368991	676016
Crosby	323187	10461	2025	1724	1009757	288144
Davern	306312	9915	1919	1634	957034	273099
Downtown	182738	5915	1145	975	570943	162924
East Kittsondale	357633	7064	1212	891	607509	186998
Fish Creek	10938	354	69	58	34173	9752
Goodrich/Western	118335	3830	741	631	369722	105504
Griffith/Pt. Douglas	128306	4153	804	685	400876	114394
Hidden Falls	73637	2384	461	393	230070	65653
Highwood	256749	8311	1609	1370	802180	228910
Lake Como	260149	8421	1630	1388	812804	231942
Lake Phalen	194605	6299	1219	1038	608018	173504
Mississippi River Blvd.	593196	19201	3716	3165	1853366	528877
MRWMO	40422	1308	253	216	126295	36040
Phalen Creek	66977	3726	707	600	311945	108255
Pigs Eye	548890	17767	3439	2928	1714937	489375
Riverview	265066	8580	1661	1414	828167	236326
St. Anthony Hill	751615	24329	4709	4010	2348326	670119
St. Anthony Park	182134	5929	1091	1604	530976	175173
Trout Brook	109851	7902	1732	947	867810	212785
Urban	85228	2759	534	455	266284	75987
West Kittsondale	298630	9666	1871	1593	933031	266250
West Seventh	119876	3880	751	640	374539	106878

Monitored Locations

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

Subwatershed	Cl	TKN	Total P	NO2+NO3	TSS	VSS
Battle Creek	248747	2953	402	294	130979	44678
Beaver Lake	26389	313	43	31	13895	4740
Belt Line	690422	8196	1115	817	363545	124009
Crosby	314682	3735	508	372	165697	56521
Davern	298251	3540	482	353	157046	53570
Downtown	171804	2039	278	203	90464	30858
East Kittsondale	278716	2584	311	246	96308	38401
Fish Creek	9963	118	16	12	5246	1789
Goodrich/Western	111254	1321	180	132	58581	19983
Griffith/Pt. Douglas	116868	1387	189	138	61538	20991
Hidden Falls	71699	851	116	85	37754	12878
Highwood	233861	2776	378	277	123141	42005
Lake Como	253303	3007	409	300	133378	45497
Lake Phalen	177201	2103	286	210	93306	31828
Mississippi River Blvd.	577585	6856	933	684	304131	103742
MRWMO	39359	467	64	47	20725	7069
Phalen Creek	49684	999	158	166	27323	11882
Pigs Eye	499959	5935	808	592	263256	89799
Riverview	241437	2866	390	286	127130	43365
St. Anthony Hill	706640	8388	1142	836	372085	126922
St. Anthony Park	51307	436	64	116	33702	8038
Trout Brook	27559	1225	202	61	58277	17788
Urban	77630	922	125	92	40877	13943
West Kittsondale	290771	3452	470	344	153107	52226
West Seventh	112703	1338	182	133	59344	20243
Monitored Locations						

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

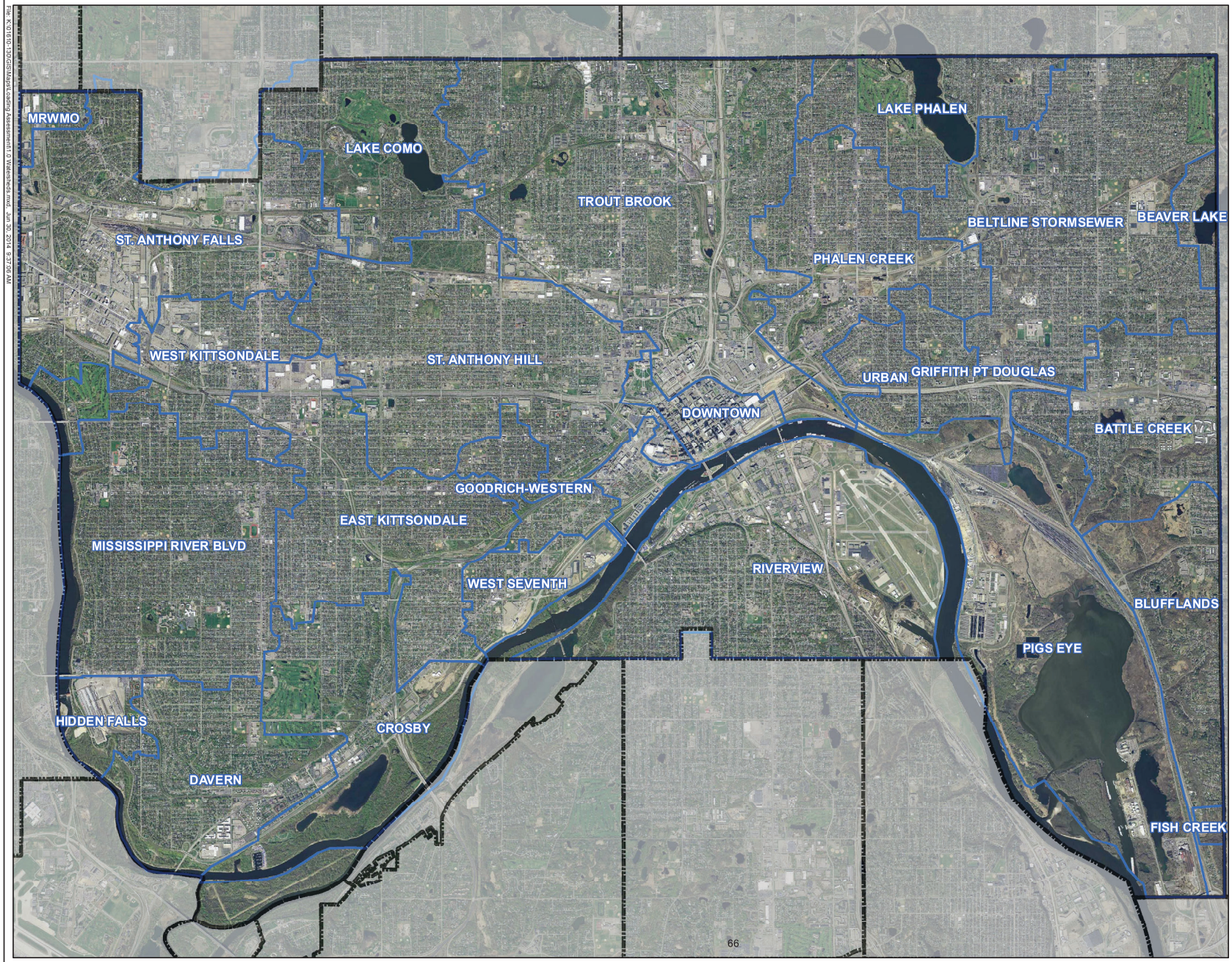
Subwatershed	Cl	TKN	Total P	NO2+NO3	TSS	VSS
Battle Creek	65829	3230	561	418	286947	94512
Beaver Lake	6984	343	59	44	30442	10027
Belt Line	182714	8965	1556	1161	796449	262327
Crosby	80544	3952	686	512	351093	115640
Davern	76339	3746	650	485	332761	109602
Downtown	42015	2061	358	267	183146	60323
East Kittsondale	68820	2115	349	234	197811	72437
Fish Creek	2636	129	22	17	11492	3785
Goodrich/Western	27208	1335	232	173	118598	39063
Griffith/Pt. Douglas	30928	1517	263	197	134816	44404
Hidden Falls	298	46	8	4	7274	1827
Highwood	61889	3037	527	393	269775	88856
Lake Como	64834	3181	552	412	282613	93084
Lake Phalen	46895	2301	399	298	204414	67328
Mississippi River Blvd.	147836	7254	1259	940	644417	212252
MRWMO	10074	494	86	64	43913	14464
Phalen Creek	12351	1361	231	198	125350	47027
Pigs Eye	132310	6492	1127	841	576738	189961
Riverview	63894	3135	544	406	278515	91735
St. Anthony Hill	172812	8479	1472	1098	753290	248112
St. Anthony Park	22861	1920	296	369	159609	50955
Trout Brook	34457	2123	424	196	186445	56310
Urban	20544	1008	175	131	89552	29496
West Kittsondale	74424	3652	634	473	324416	106853
West Seventh	27562	1352	235	175	120143	39572
Monitored Locations						

Table 7: Q3 (Jul-Sep) Pollutant Loading

Subwatershed	Cl	TKN	Total P	NO2+NO3	TSS	VSS
Battle Creek	30297	3038	653	572	337318	88847
Beaver Lake	3214	322	69	61	35785	9426
Belt Line	84092	8431	1812	1588	936259	246603
Crosby	34442	3453	742	650	383466	101002
Davern	32644	3273	703	616	363444	95728
Downtown	20712	2077	446	391	230599	60738
East Kittsondale	7656	1817	401	346	250761	56768
Fish Creek	1213	122	26	23	13510	3558
Goodrich/Western	13412	1345	289	253	149327	39332
Griffith/Pt. Douglas	14234	1427	307	269	158481	41743
Hidden Falls	954	109	27	24	16685	3083
Highwood	28484	2856	614	538	317132	83530
Lake Como	27724	2780	597	524	308671	81301
Lake Phalen	21583	2164	465	408	240297	63292
Mississippi River Blvd.	63217	6338	1362	1194	703835	185384
MRWMO	4308	432	93	81	47962	12633
Phalen Creek	5925	1365	319	266	172293	137370
Pigs Eye	60894	6105	1312	1150	677979	178574
Riverview	29407	2948	634	555	327406	86236
St. Anthony Hill	85189	8541	1836	1609	948467	249818
St. Anthony Park	42465	2993	578	694	275611	95221
Trout Brook	38505	4062	925	628	454300	107623
Urban	9455	948	204	179	105272	27728
West Kittsondale	31825	3191	686	601	354328	93327
West Seventh	13587	1362	293	257	151273	39844
Monitored Locations						

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

Subwatershed	CI	TKN	Total P	NO2+NO3	TSS	VSS
Battle Creek	40755	870	260	291	156119	37872
Beaver Lake	4330	92	28	31	16589	4024
Belt Line	113300	2420	722	809	434017	105285
Crosby	48588	1038	310	347	186125	45151
Davern	46051	984	293	329	176407	42793
Downtown	27608	590	176	197	105757	25655
East Kittsondale	2441	549	151	65	62629	19393
Fish Creek	1632	35	10	12	6253	1517
Goodrich/Western	17878	382	114	128	68485	16613
Griffith/Pt. Douglas	19148	409	122	137	73349	17793
Hidden Falls	1103	53	14	9	6751	1413
Highwood	38316	818	244	274	146776	35606
Lake Como	39111	835	249	279	149821	36344
Lake Phalen	29079	621	185	208	111393	27022
Mississippi River Blvd.	89181	1905	568	637	341625	82873
MRWMO	6077	130	39	43	23279	5647
Phalen Creek	7745	961	260	66	45183	25459
Pigs Eye	81913	1749	522	585	313785	76119
Riverview	39557	845	252	283	151531	36759
St. Anthony Hill	113553	2425	724	811	434987	105521
St. Anthony Park	65500	581	152	425	62054	20959
Trout Brook	9329	491	182	62	168788	31064
Urban	12719	272	81	91	48722	11819
West Kittsondale	44896	959	286	321	171983	41720
West Seventh	18111	387	115	129	69377	16830
Monitored Locations						



City of St. Paul
Loading Assessment

SAINT PAUL
The Most Livable City in America

Figure 1.
Watersheds

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Feet

Legend

Major Subwatersheds

wsb

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

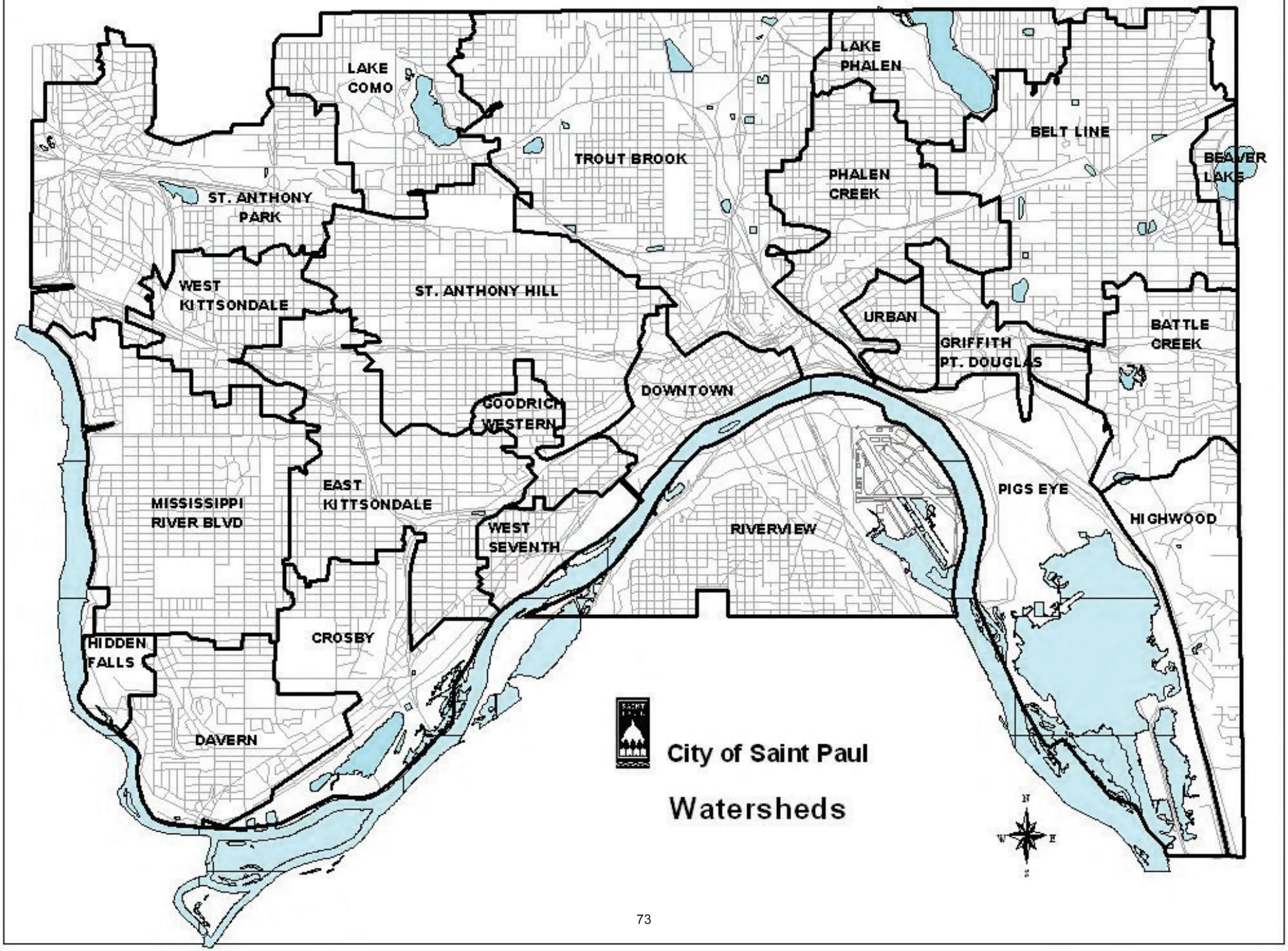
Outfall	Location	Watershed	Pipe Size	Acres
	Upper Lake			
152	Springfield	Crosby	15"	
	Crosby Lake			
153	Rankin	Crosby	27"	
154	Homer	Crosby	30"	
155	Leland	Crosby	30"	
	Fairview North Pond			
500	Tatum & Pierce Butler	St. Anthony Park	6'	
510	Pierce Butler & Aldine	St. Anthony Park	54"	
	Lake Como			
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"	

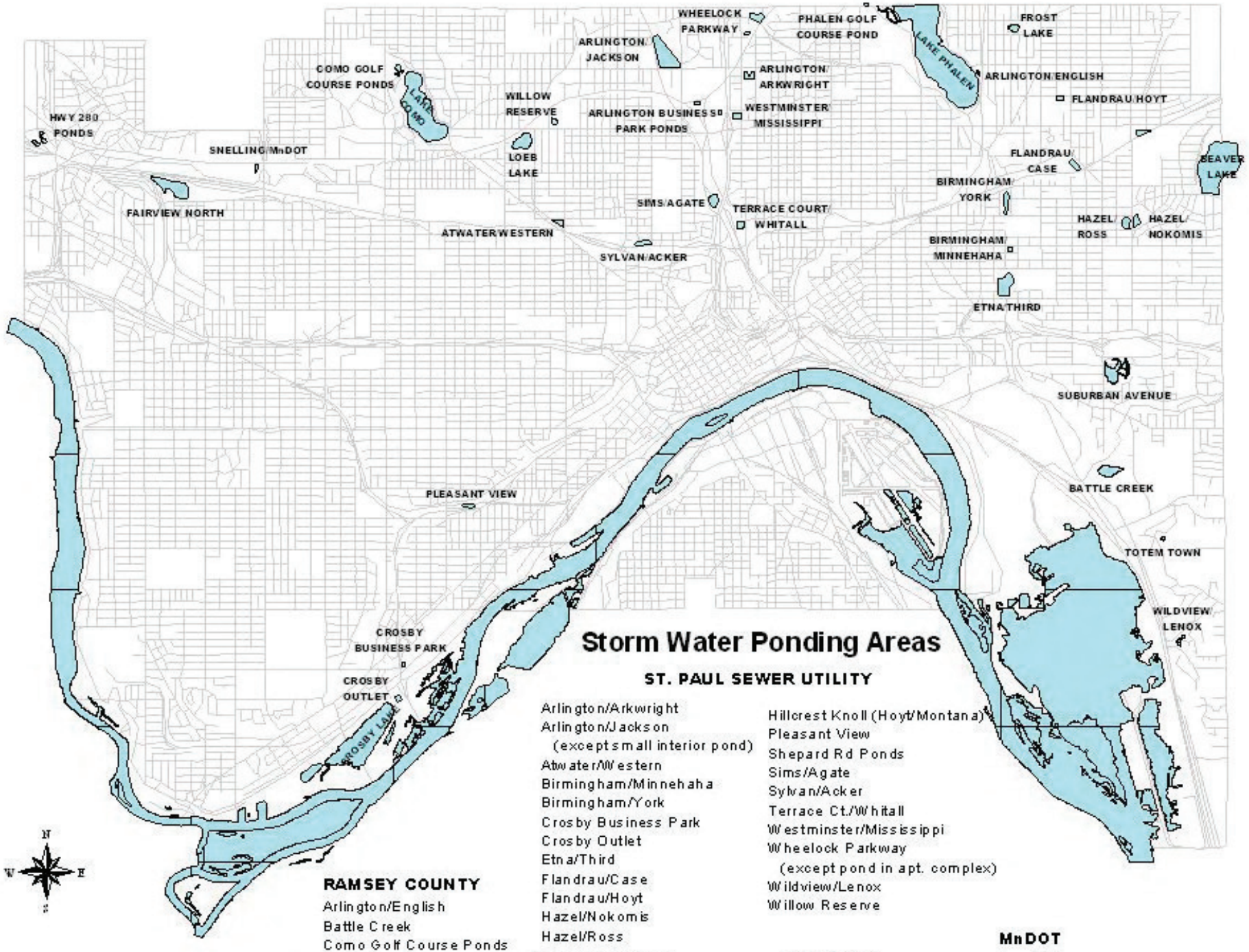
Outfall Inventory

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

List of Industrial Stormwater Permit Holders
Obtained from MPCA Industrial Stormwater Permit database on 9/11/2017

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MNRNE396P	1199	7th St E	Buzzard Lips Press	Yes	Buzzard Lips Press
MNR0534ZL	44	Acker St E	HAP Transportation	No	PET Enterprises
MNR0534NK	206	Airport Dr	Army Aviation Support - Holman Field	No	Met Council Environmental Services, Mn Dept Of Military Affairs
MNR053CBY	206	Airport Dr	Army Aviation Support - Holman Field	No	Met Council Environmental Services, Mn Dept Of Military Affairs
MNR053526	270	Airport Rd	St Paul Flight Center	No	St Paul Flight Center
MNR0534ZS	335	Alpha Ln	Horton Transportation Inc	No	Horton Transportation Inc.
MNR0538R7	335	Alpha Ln	Horton Transportation Inc	No	Horton Transportation Inc.
MNR0533Z2	106	Arlington Ave E	Action Auto Parts of St Paul Inc	No	Action Auto Parts
MNR053C35	106	Arlington Ave E	Action Auto Parts of St Paul Inc	No	Action Auto Parts
MNR05379G	240	Arlington Ave E	Addco Building	No	Actus Manufacturing Inc
MNR053B84	240	Arlington Ave E	Addco Building	No	Actus Manufacturing Inc
MNR053B2W	80	Arlington Ave East Ste A B	First Student Inc 20757	No	First Student, Inc.
MNRNE38FV	300	Atwater St	Northern Screw Machine Co Inc	Yes	Thomas Kieger
MNR05372L	432	Atwater St	Linders Specialty Co Inc	No	Dan and Vince Linders
MNR05393N	432	Atwater St	Linders Specialty Co Inc	No	Dan and Vince Linders
MNR053487	521	Barge Channel Rd	Great Western Recycling Industries Inc	No	Northern Metals LLC dba Northern Metal Recycling
MNR053BKF	521	Barge Channel Rd	Northern Metal Recycling - St Paul	No	Northern Metals LLC dba Northern Metal Recycling
MNR053534	565	Barge Channel Rd	Keith Krupenny & Son Disposal Service	No	Keith Krupenny & Sons
MNR053CB5	565	Barge Channel Rd	Keith Krupenny & Son Disposal Service	No	Keith Krupenny & Sons
MNR0533F8	607	Barge Channel Rd	J&J Recycling	No	J & J Recycling
MNR053CNV	607	Barge Channel Rd	J&J Recycling	No	J & J Recycling
MNR053429	701	Barge Channel Rd	Hawkins Terminal II - SW	No	Hawkins, Inc., Hawkins, Inc.
MNR053B8Z	701	Barge Channel Rd	Hawkins Terminal II - SW	No	Hawkins, Inc., Hawkins, Inc.
MNR0534J4	751	Barge Channel Rd	Alter River Terminal	No	Saint Paul Port Authority
MNR053BSY	780	Barge Channel Rd	Gerdau - St Paul Metallics Raw Materials	No	Gerdau - Metallics Raw Materials
MNR053B2J	795	Barge Channel Rd	St Paul Alter River Terminal	No	Alter Trucking and Terminal Corporation
MNR05343M	801	Barge Channel Rd	Alter Metal Recycling - St Paul	No	Alter Trading Corp
MNR053B32	801	Barge Channel Rd	Alter Trading Corp	No	Alter Metal Recycling
MNR0534Z2	644	Bayfield St	St. Paul Downtown Airport	No	Metropolitan Airports Commission
MNR053B4B	644	Bayfield St	Metropolitan Airport Commission	No	Metropolitian Airports Commission
MNR053473	690	Bayfield St	3M - St Paul - Holman Field	No	3M Company
MNR0539WR	690	Bayfield St	3M - St Paul - Holman Field	No	3M Company
MNRNE399W	1966	Benson Ave	Amidon Graphics	Yes	Amidon Graphics
MNR053C79	500	Block Of Eaton St	Eaton Maintenance Facility	No	Union Pacific Railroad
MNRNE38JG	1520	Buerkle Rd	Loftech Prototype Mfg LLC	Yes	Daniel Feser
MNRNE39WL	1927	Case Ave E	3M Saint Paul Distribution Center	Yes	Ras Properties LLC
MNR0535G5	261	Chester St	ISD 625 Transportation Garage	No	Fedex
MNR0534NC	936	Childs Rd	Cemstone Products - Childs Rd	No	Cemstone Products Company
MNR053486	1031	Childs Rd	Great Western Dock & Terminal	No	Northern Metals LLC dba Northern Metal Recycling

List of Industrial Stormwater Permit Holders
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MNR053BKC	1031	Childs Rd	Northern Metal Recycling - Dock	No	Northern Metals LLC dba Northern Metal Recycling
MNR053426	1125	Childs Rd	Hawkins Inc - Terminal I	No	Hawkins Inc
MNR053B94	1125	Childs Rd	Hawkins - Terminal 1	No	Hawkins Inc
MNR0534C3	2209	Childs Rd	Flint Hills Resources Pine Bend LLC - St Paul	No	Flint Hills Resources Pine Bend LLC
MNR053CJ3	2209	Childs Rd	Flint Hills Resources Pine Bend LLC - St Paul	No	Flint Hills Resources Pine Bend LLC
MNR0535RN	2400	Childs Rd	Met Council Metropolitan WWTP	No	Metropolitan Council Env Services
MNR053CNY	515	Cleveland Ave	Overhaul Base	No	Metro Transit
MNR05346G	508	Cleveland Ave N	Minnesota Commercial Railway Co	No	Minnesota Commercial Railway Co
MNR053C5X	508	Cleveland Ave N	Minnesota Commercial Railway Co	No	Minnesota Commercial Railway Co
MNR05353R	515	Cleveland Ave N	Metro Transit Overhaul Base - SW	No	Metropolitan Council
MNR0534MS	309	Como Ave	Advanced Disposal Services	No	Advanced Disposal Services Vasko Solid Waste Inc
MNR053B96	309	Como Ave	Advanced Disposal Services Vasko Solid Waste Inc	No	Advanced Disposal Services Vasko Solid Waste Inc
MNRNE38FS	1608	Como Ave Ste B1	Engraphics Inc	Yes	Engraphics Inc
MNR05349X	2576	Doswell Ave	Metro Metals Corp	No	Metro Metals Corp
MNR053CQY	2576	Doswell Ave	Metro Metals Corp	No	Metro Metals Corp
MNR053DGV	930	Duluth St	Ray Anderson & Sons	No	Ray Anderson & Sons Co Inc, Ray Anderson & Sons Co Inc
MNRNE3BLZ	355	E 8th St	Meritex - St. Paul	Yes	Meritex
MNR05374S	51	E Maryland Ave	Splash Products Inc	No	Elliott Auto Supply Co Inc dba Splash Products
MNR05384T	51	E Maryland Ave E	Splash Products	No	Elliott Auto Supply Co Inc dba Splash Products
MNRNE37ZP	223	E Plato Blvd	Tursso Companies Inc	Yes	Tursso Companies, Inc
MNR0537Y3	345	E Plato Blvd	528 Partnership LLP Brown & Bigelow Bldg	No	528 Limited Partnership
MNR0534ZY	515	Eaton St	Signature Flight Support STP	No	Signature Flight Support
MNR0538P4	515	Eaton St	Signature Flight Support STP	No	Signature Flight Support
MNR0535N5	701	Eaton St	Hubbard Broadcasting Hanger	No	Hubbard Broadcasting Inc, St Croix Partners LLC
MNR0537VP	701	Eaton St	Hubbard Hanger	No	Rodney Burwell, TriFly LLC
MNR0538PH	701	Eaton St	Hubbard Broadcasting Hanger	No	Hubbard Broadcasting Inc, St Croix Partners LLC
MNR053939	701	Eaton St	Hubbard Hanger	No	Rodney Burwell, TriFly LLC
MNR0535N2	719	Eaton St	Minnesota Jet Inc	No	Northern States Power a MN Corp dba Xcel
MNR0538VB	719	Eaton St	Minnesota Jet Inc	No	Northern States Power a MN Corp dba Xcel
MNR053772	22	Empire Dr	Molex Inc - Copper Flex Products	No	Molex Copper Flex Products Inc
MNRNE39DG	87	Empire Dr	Saint Paul Stamp Works	Yes	Saint Paul Stamp Works
MNRNE3BLL	1220	Energy Park Dr	Quality Tool	Yes	Lakewood Land LLC
MNRNE38Q5	1835	Energy Park Dr	Minnesota Wire & Cable	Yes	Minnesota Wire
MNRNE385Q	2020	Energy Park Dr	Larkin Industries Inc	Yes	Michael S. and Lynnette Larkin
MNR0534MX	2058	Energy Park Dr	Cemstone Products - Midway	No	Cemstone Products Co.
MNRNE3CT7	1280	Energy Pk Dr	GLS Co	Yes	GLS Co
MNRNE3CHV	139	Eva St	Rexam Beverage Can Co - St Paul	Yes	Rexam BCNA Corp
MNRNE38HM	314	Eva St	US Postal Service - St Paul Vehicle Main	Yes	Us Postal Service/Fac Svc Office
MNRNE3CLC	274	Fillmore Ave E	Vomela Specialty Co	Yes	Vomela Specialty Co
MNR053C3X	403	Fillmore Ave E	Americraft Carton Inc	No	Americraft Carton, Inc

List of Industrial Stormwater Permit Holders
Obtained from MPCA Industrial Stormwater Permit database on 9/11/2017

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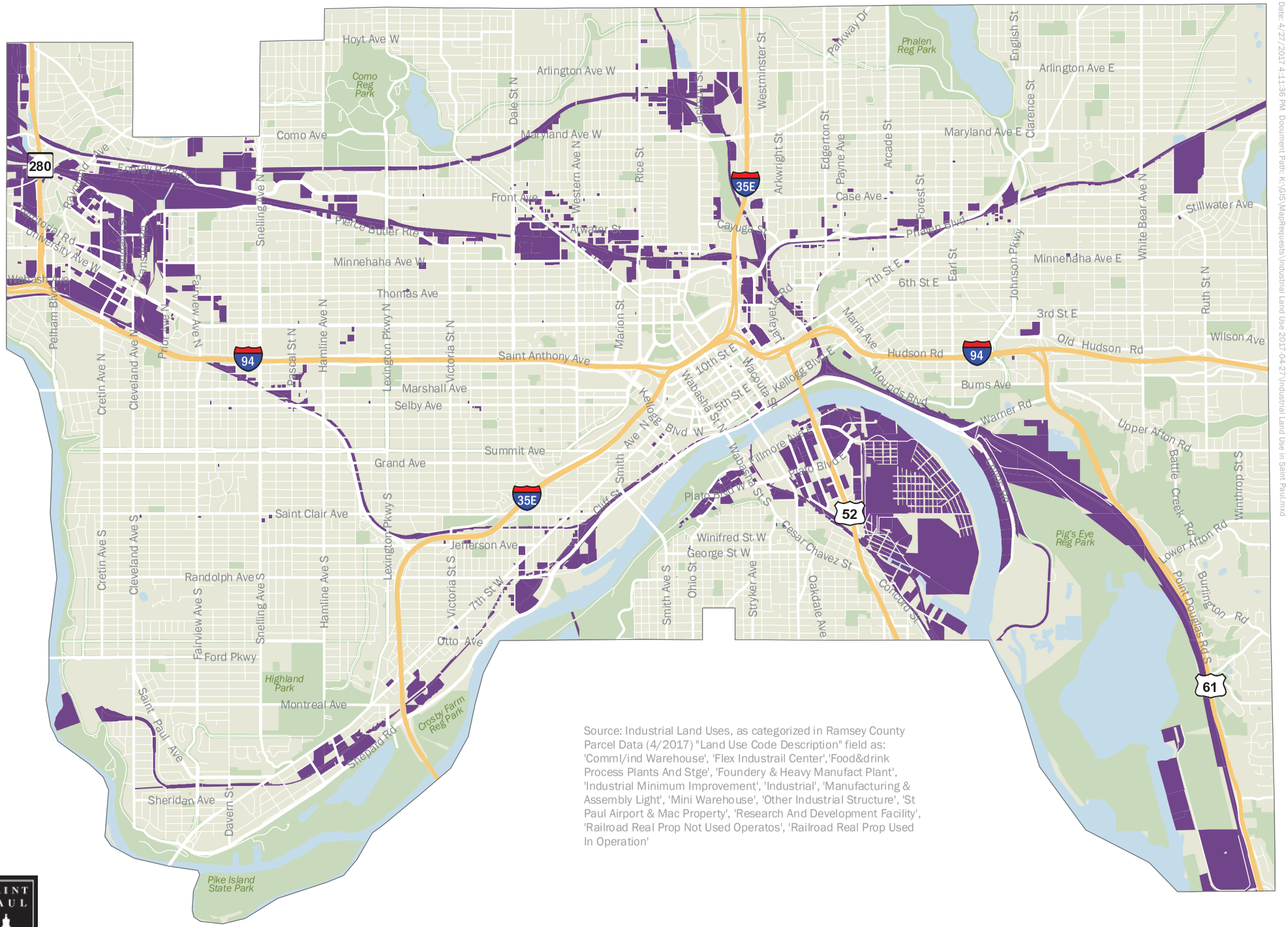
MNRNE3845	410	Fillmore Ave E	3M - Bldg 76	Yes	3M Company
MNR053D66	90	Fish Hatchery Rd	Dayton's Bluff Yard	No	BNSF Railway Co
MNRNE3CYW	181	Florida St	Aero Systems Engineering, Inc.-Florida Street Oper	Yes	Aero Systems Engineering, Inc.-Florida Street Oper
MNR0539Q8	867	Forest St	Northern Iron of St Paul LLC	No	Northern Iron Corp
MNRNE3CWV	432	Front Ave	AAA Metal Finishing Inc.	Yes	Raul F. Rivas
MNRNE3BJ9	2124	Gilbert Ave	J&D Custom Plating Inc	Yes	J & D Plating
MNRNE3CLJ	1265	Grey Fox Rd	Smiths Medical ASD Inc - St Paul	Yes	Smiths Medical ASD
MNRNE39Y8	431	Griggs St N	Rayven Inc	Yes	Ingalls Family Partnership
MNR0533X5	781	Hubbard Ave	Marshall Concrete Products Inc	No	Flittie Ready Mix Inc
MNRNE39HN	1457	Iglehart Ave	Loes Enterprises Inc	Yes	Loes Enterprises Inc
MNRNE3BHP	1605	Iglehart Ave	Co-Operative Plating Co	Yes	Co-operative Plating Co
MNRNE3D5L	2565	Kasota Ave	A-1 Recycling Inc	Yes	A-1 Recycling Inc
MNR053C7S	76	Kellogg Blvd W	District Energy St Paul Inc-Hans O Nyman	No	District Energy St Paul Inc
MNR0533YF	465	Kenny Rd	Metro Manufacturing Inc	No	JAMES FOX
MNR0539H9	465	Kenny Rd	Metro Manufacturing Inc	No	JAMES FOX
MNRNE399H	1457	Marshall Ave	Northwest Casting Inc	Yes	Mark Brudzinski and Chris Brudzinski
MNR053442	195	Minnehaha Ave E	St. Paul Transfer	No	Waste Management
MNR0537DN	195	Minnehaha Ave E	Strategic Materials Inc - Saint Paul Plant	No	Eric Fortin
MNR0534BX	198	Minnehaha Ave E	Apex Auto Parts & Radiators	No	Vince Reiter
MNR053B97	198	Minnehaha Ave E	Apex Auto Parts & Radiators	No	Vince Reiter
MNRNE39RP	888	Minnehaha Ave E	3M - Industrial Materials	Yes	3M Company
MNR0534MY	1520	Minnehaha Ave E	Cemstone Products - Minnehaha	No	Cemstone Products Co
MNR053B8H	195	Minnehaha Ave E Ste A	RRT LLC St Paul Transfer Suite A	No	Nicholas
MNR05353N	800	Mississippi St	East Metro Transit Facility - SW	No	Metro Transit
MNR053CP7	800	Mississippi St	East Metro Transit Facility	No	Metro Transit
MNR053CTB	218	N Pascal St	CROSSTOWN AUTO, INC	No	CLYDE PAYNE
MNR05355L	1102	N Snelling Ave	Student Transportation of America	No	First Student Inc
MNR0534CK	218	Pascal St N	Crosstown Auto Inc	No	Crosstown Auto Inc
MNRNE3BT2	650	Pelham Blvd Ste 100	NOVUS Inc	Yes	NOVUS Inc
MNR0534HV	945	Pierce Butler Rte	Lawrence Signs Inc	No	Walker Sign Holdings Inc
MNR053C4Q	945	Pierce Butler Rte	Walker Sign Holdings Inc	No	Walker Sign Holdings Inc
MNR0533XH	1305	Pierce Butler Rte	Pierce Recycling and Transfer Facility	No	Veit Companies Inc
MNR053C2X	1305	Pierce Butler Rte	Pierce Recycling and Transfer Facility	No	Veit Companies Inc
MNRNE37ZB	1319	Pierce Butler Rte	Twin City Metal Fab Inc	Yes	Jim Klibane
MNR05352N	1701	Pierce Butler Rte	BNSF Midway Hub Center	No	BNSF Railway Company
MNR053BF3	1701	Pierce Butler Rte	BNSF Midway Hub Center	No	BNSF Railway Company
MNR053C77	2160	Pigs Eye Lake Rd	Hoffman Pigs Eye Maintenance Facility	No	Union Pacific Railroad
MNR0534FC	2165	Pigs Eye Lake Rd	Environmental Wood Supply LLC	No	Environmental Wood Supply LLC
MNR053C7Q	2165	Pigs Eye Lake Rd	Environmental Wood Supply LLC	No	Environmental Wood Supply LLC
MNR0537Y2	345	Plato Blvd E	529 Limited Partnership LLP Brown & Bigelow Bldg	No	528 Limited Partnership

List of Industrial Stormwater Permit Holders
Obtained from MPCA Industrial Stormwater Permit database on 9/11/2017

Permit site number shown on City Permit Location Maps	Address Number	Street Address	Facility Name	Does MPCA Consider Site No Exposure ?	Owner Name
MNR053BCV	345	Plato Blvd E	528 Limited Partnership LLP Brown & Bigelow B1	No	528 Limited Partnership
MNR0537V4	875	Prior Ave	E-Z Recycling	No	Chris Reinhardt
MNR053BJL	875	Prior Ave	E-Z Recycling	No	Chris Reinhardt
MNRNE3CQ3	698	Prior Ave N	Graphic Finishers of America	Yes	Tom McCullough
MNRNE39LD	155	Randolph Ave	Former High Bridge Coal Generating Facility	Yes	Northern States Power Compant d/b/a Xcel Energy
MNR0534FN	1061	Red Rock Rd	Gavilon Grain LLC dba Peavey Co Red Rock	No	Gavilon Grain, LLC
MNR0538JV	1061	Red Rock Rd	Gavilon Grain LLC dba Peavey Co Red Rock	No	Gavilon Grain, LLC
MNR0534L9	1303	Red Rock Rd	AMG - Alliance LLC	No	AMG Alliance LLC
MNR0536K3	1303	Red Rock Rd	AMG Resources	No	AMG Resources Corp
MNR0537DC	1303	Red Rock Rd	Upper River Services- Pigs Eye	No	Upper River Services, LLC
MNR0538TV	1303	Red Rock Rd	Upper River Services- Pigs Eye	No	Upper River Services, LLC
MNR053CSG	1303	Red Rock Rd	AMG Resources	No	AMG Resources
MNR05352V	1359	Red Rock Rd	Barton Enterprises Inc	No	Commercial Asphalt Co
MNR053BWL	1359	Red Rock Rd	Barton Enterprises Inc	No	Commercial Asphalt Co
MNR053425	1425	Red Rock Rd	Hawkins Water Treatment Group - Red Rock	No	Hawkins, Inc.
MNR053BDW	1425	Red Rock Rd	Hawkins Water Treatment Group - Red Rock	No	Hawkins, Inc.
MNR0534WY	1678	Red Rock Rd	Gerdau Ameristeel US Inc - Saint Paul Mill	No	Gerdau Ameristeel US Inc.
MNR0539XY	1678	Red Rock Rd	Gerdau Ameristeel US Inc - Saint Paul Mill	No	Gerdau Ameristeel US Inc.
MNR0533SN	754	Rice St	Ace Auto Parts & Salvage Co Inc	No	Barb Weyandt
MNR0539QD	754	Rice St	Ace Auto Parts & Salvage Co Inc	No	Barb Weyandt
MNRNE39DF	1101	Rice St	Racy Printing	Yes	Racy Printing Inc
MNR053B2L	91	Ridder Cir	Semple Recycling & Crushing LLC	No	Doboszenski and Son Inc
MNRNE3CYJ	1742	Selby Ave	Atma-Sphere	Yes	Atma-Sphere
MNR0535GG	1999	Shepard Rd Ste A	Johnson Brothers Liquor Co	No	Johnson Brothers Liquor Co
MNR053BK9	1999	Shepard Rd Ste A	Johnson Brothers Liquor Co	No	Johnson Brothers Liquor Co
MNR05352D	1000	Shop Rd	Canadian Pacific Railway - St Paul Yard	No	Canadian Pacific Railway
MNR053C2P	1000	Shop Rd	Canadian Pacific Railway - St Paul Yard	No	Canadian Pacific Railway
MNR0537DD	40	State St	Upper River Services LLC	No	Upper River Services, Upper River Services, LLC
MNR0538TX	40	State St	Upper River Services LLC	No	Upper River Services, Upper River Services, LLC
MNR0537JK	51	State St	Pier Foundry & Pattern Shop	No	Matt Grilz
MNR0538N3	51	State St	Pier Foundry & Pattern Shop	No	Matt Grilz
MNRNE3929	355	State St	Viking Drill & Tool Inc	Yes	Viking Drill & Tool, Inc
MNRNE38YF	878	Stryker Ave	Palindrome dba Nomadic Press	Yes	Palindrome dba Nomadic Press
MNR0537JB	228	Sycamore St W	Atlas U-Pull LLC	No	79th Street Center Partnership LLP
MNR053CSY	228	Sycamore St W	Atlas U Pull	No	Atlas U Pull
MNR05352J	845	Terrace Ct	Univar USA Inc - Saint Paul Facility	No	Univar Usa Inc. - St. Paul
MNRNE396Q	2299	Territorial Rd	Arrow	Yes	Arrow
MNRNE38GQ	1332	Thomas Ave	Peak Printing	Yes	Norman Greg Inc
MNR053CYP	391	Topping St	Otto Packaging Midwest LLC	No	Otto Packaging Midwest LLC
MNRNE37SH	5000	Township Pkwy Ste A	Med-Tech Center	Yes	The Spearman Group LLC

List of Industrial Stormwater Permit Holders
Obtained from MPCA Industrial Stormwater Permit database on 9/11/2017

Permit site number shown on City Permit Location Maps	Address Number	Street Address	Facility Name	Does MPCA Consider Site No Exposure ?	Owner Name
MNR053C8P	858	Transfer Rd	Lubrication Technologies & Partners LLC	No	Lube-Tech & Partners LLC
MNR053CZP	1351	Trout Brook Cicrle	TCC Materials St Paul	No	TCC Materials
MNR0534JH	1351	Troutbrook Cir	Twin City Concrete Products Co - Saint Paul	No	TCC Materials
MNR053485	355	University Ave E	Metals Reduction Co	No	Regions Hospital
MNRNE3BMR	2447	University Ave W	Design Press	Yes	Terry Fleischhacker
MNRNE3D2B	2575	University Ave W Ste 180	Synovis Life Technologies Inc - Sub of Baxter Intl	Yes	Synovis LIfe Technologies, Synovis Life Technologies
MNRNE38PD	708	Vandalia St	E & L Bindery	Yes	Jeffrey Dahlin
MNRNE38TH	1396	W 7th St	Insty Prints	Yes	Bastian/Elm
MNR05349J	2020	W 7th St	Custom Rock	No	John Fallenstein
MNR053CH9	2020	W 7th St	Custom Rock	No	John Fallenstein
MNR053BMF	2140	W 7th St	Pearson's Candy Company	No	Pearson's Candy Holdings LLC
MNR0534F8	954	W Minnehaha Ave	St Paul Brass & Aluminum Foundry	No	St Paul Brass & Aluminum Foundry
MNR05396V	954	W Minnehaha Ave	St Paul Brass & Aluminum Foundry	No	St Paul Brass & Aluminum Foundry
MNRNE39YL	2635	W University Ave	Protatek International Inc	Yes	CSM
MNRNE3BMT	2635	W University Ave	Protatek International Inc	Yes	CSM
MNR0536KB	318	W Water St	Twin City Refuse Recycling & Transfer	No	Twin City Refuse & Recycling Inc
MNR053BRV	318	W Water St	Twin City Refuse Recycling & Transfer	No	Twin City Refuse & Recycling Inc
MNRNE39RR	42	Water St W	3M Company Building 75	Yes	3M Co
MNR0534KQ	268	Water St W	J&L Wire Cloth Co Inc	No	J & L Wire Cloth Co Inc
MNR053BSQ	268	Water St W	J&L Wire Cloth Co Inc	No	J & L Wire Cloth Co Inc
MNRNE3CDW	1050	Westgate Dr	Impressions Inc - St Paul	Yes	Impressions Inc
MNRNE39LQ	530	Wheeler St N	Western Graphics	Yes	Western Graphics
MNR05377R	550	Wheeler St N	Huot Manufacturing Co	No	Huot Manufacturing Co
MNR0538H2	550	Wheeler St N	Huot Manufacturing Co	No	Huot Manufacturing Co
MNRNE38YP	4835	White Bear Pkwy	Trane St. Paul	Yes	Trane US Inc.
MNRNE39C9	1125	Willow Lake Blvd	Dynamic Air	Yes	Dynamic Air Inc.
MNRNE394C	1200	Willow Lake Blvd	HB Fuller Co - Willow Lake	Yes	H.B. Fuller Co.
MNR053DJC	2313	Wycliff St	Precision Coatings Inc	No	Precision Coating Inc



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

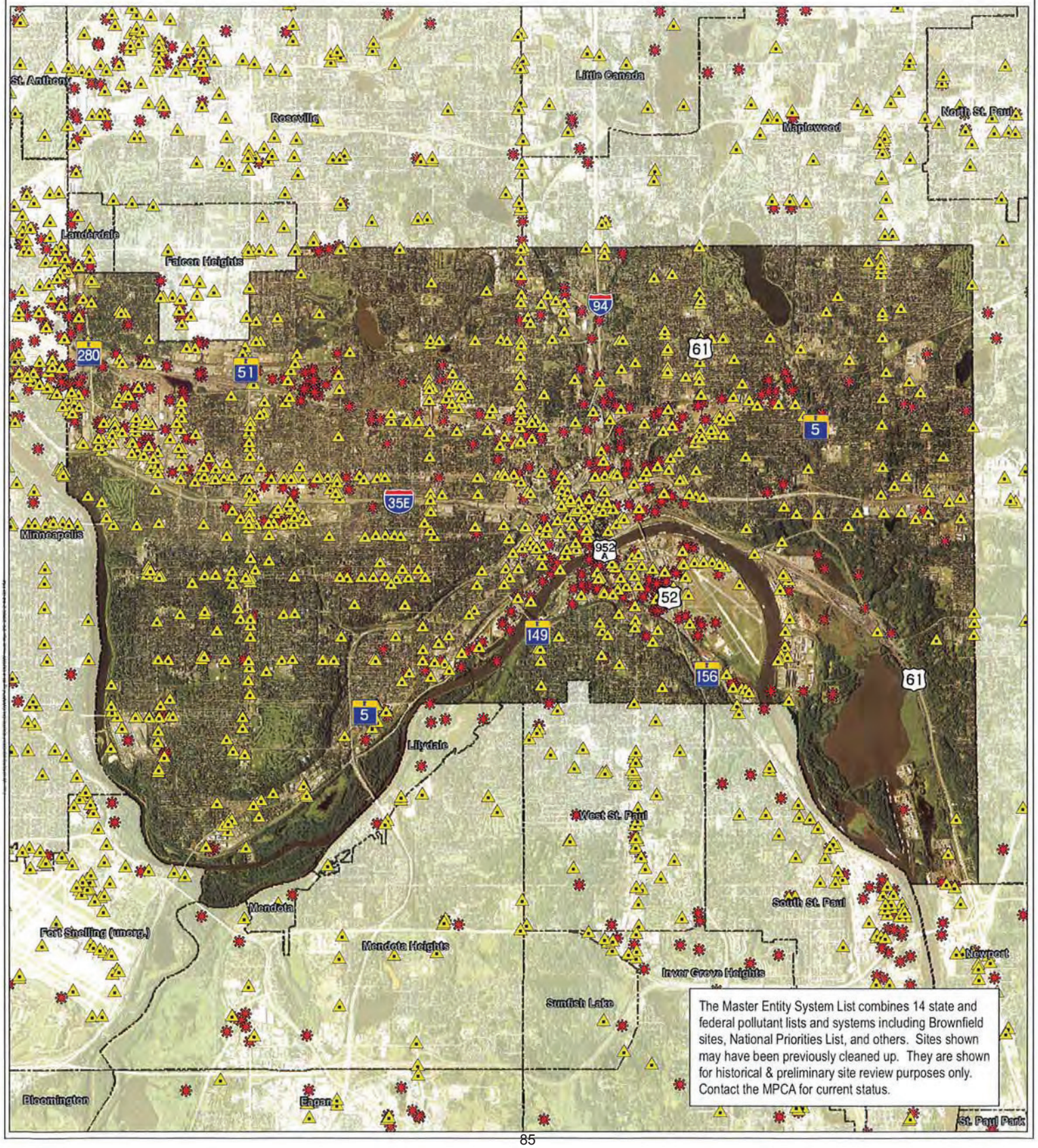
Pollutant Source Locations
Stormwater Modeling
Volume Reduction Inventory
2010 RSVP Stormwater Study
City of St. Paul, MN

Legend

- Leaking Underground Storage Tank
- Pollution Source Locations

N
W E
S

0 7,500 15,000 Feet



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.