Metropolitan Council

Environmental Services

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April 29, 2014

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

Subject: *Combined Sewer Bypasses and Overflows: Annual Report - 2013*
Metropolitan Council/City of Minneapolis Combined Sewer Overflow (CSO)
NPDES/SDS Permit No. MN0046744

To Whom It May Concern:

As required by Part II.A.3 of the above-referenced permit, enclosed is the 2013 Annual Report on the Combined Sewer System in Minneapolis. Please note that St. Paul completed the verification of its separation program in 2001 and an annual report is not required.

Should you have any questions, please feel free to contact Ms. Mary Gail Scott, Environmental Compliance Manager, at (651) 602-1073.

Sincerely,

Leisa Thompson
General Manager

LT/JOR

Enclosure

cc: FILE (CSO Reports)
Lisa Cerney, City of Minneapolis
Kelly Moriarty, City of Minneapolis
Bill Moeller, RMF

2013 Annual Report

Combined Sewer System in Minneapolis and St Paul

April, 2014

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Table of Contents

Topic	Section
Summary	I
Metropolitan Council Environmental Services	II
City of Minneapolis	III

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Section I. Summary

A. *Purpose of Report*

The purpose of this report is to meet the requirements of Part II.A.3 of the National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Permits issued to the City of Minneapolis, and Metropolitan Council, (Permit No. MN0046744) and to the City of Saint Paul, and Metropolitan Council (Permit No. MN0025470) (Permittees).

The report contains information regarding permit administration, regulator monitoring results, maintenance of the regulators, outfalls, and combined sewers, improvements to the interceptor system, optimization of combined sewer overflow control, city sewer separation programs, rain leader elimination programs, progress in meeting other permit requirements, and a summary of special problems encountered during 2013. The report is intended to consolidate the activities of each of the three (3) joint Permittees.

B. *NPDES/SDS Permits*

The Combined Sewer Overflow (CSO) NPDES/SDS Permits MN0046744 and MN0025470 were reissued on February 26, 1997; these permits expired on June 30, 2001. Applications for reissuance of the permits were submitted on December 28, 2000 and to date have not been acted on by the Minnesota Pollution Control Agency (MPCA).

C. *Metropolitan Council Environmental Services*

Metropolitan Council Environmental Services (MCES) monitored ten regulators in Minneapolis and Saint Paul during 2013. Additionally, MCES continued with previously required interceptor and regulator maintenance functions during 2013. Overflow duration and volume at the regulators and overflow sites, as well as the interceptor and regulator maintenance activities, are reported monthly and summarized herein. Substantial efforts have been made to rehabilitate the Interceptor System in Minneapolis during 2013 thereby reducing I/I intrusion into the system, maximizing conveyance capacity and reliability.

D. *City of Minneapolis*

See Section III of this Report for the complete portion detailing the Combined Sewer Overflow (CSO) Program in the City of Minneapolis.

E. *City of St Paul*

The City of Saint Paul has reported the completion of their CSO separation effective June 30, 2001. The MPCA (as reported by the City of St. Paul in 2001) has indicated that reporting from

the City is no longer required. The City subsequently requested termination of NPDES/SDS Permit No. MN0025470 in 2006; the termination request has not been acted on as of the date of this report.

Section II. Metropolitan Council Environmental Services 2013 Activities and Progress

A. *Operational Plan*

General operation of the Combined Sewer System is described in the operational plan, which was approved by the MPCA on May 11, 1987. An amendment to the plan was submitted to MPCA in April 1991. A second amendment to the plan was submitted to MPCA on May 11, 2004. This Plan remains in effect under the continuing NPDES/SDS permits.

B. *Regulators Eliminated in 2013*

No regulators were eliminated during 2013. However, events occurred that provided new information regarding elimination scheduling.

C. *Monitoring Summary*

All regulators in Minneapolis and Saint Paul are monitored continuously by means of level sensing systems and are visually inspected at least twice a month and after every 0.2" rainfall event. A list of the monitored sites is provided below:

Minneapolis

1. R04 (1-37) Minnehaha Parkway & 39th Ave. S.
2. R06 (5-34) Northwest Meters
3. R07 (20-17) Portland Ave. S. & Washington Ave
4. R08 (7-33) E. 26th & Seabury
5. R10 (4-34) Southwest Meters
6. R12 (6-48) East Meters
7. R14 (2-35) East 38th St. & 26th Ave.
8. R20 Oak & 5th St. (city regulator)

St. Paul

1. R02 (33-100A) 3rd & Commercial
2. R05 (001A) East Tunnel Joint Interceptor Relief

Telemetry systems at the remotely monitored regulators send the level signal to a computer system located at the MCES Regional Maintenance Facility (RMF) in Eagan. Data is stored, collected, and analyzed at RMF to compute overflow duration and volume for each event. Estimated overflow volume is computed using hydraulic formulas applicable to the geometry of each

regulator. Monthly regulator reports have been submitted to the MPCA in accordance with Part I.C.1 of the Minneapolis CSO permit.

Caution is advised regarding use of the flow data. The instrumentation and weir configurations at the monitored sites are hydraulically unsuitable for highly accurate flow measurement; the error at any site may therefore be in the magnitude of 10% to 15%. Reported volumes are approximate calculations.

Ten (10) recording-type rain gauges are operated in the area tributary to the respective regulators. Rainfall data from these sites are telemetered to the computer system at RMF.

D. *Maintenance Program*

Each NPDES/SDS permit requires routine inspection of regulators and/or outfalls. Attachment A to each permit specifies inspection frequency and responsible party (MCES or City). Inspection frequency for the regulators and/or outfalls is based on a combination of factors including overflow volume, overflow frequency, and maintenance history.

Every MCES regulator is inspected after each 0.2-inch rainfall event and twice per month; inspections made during 2013 are indicated in Table 1, below. During each inspection, the level-sensing instrument in the monitored regulators is inspected. Repairs and/or removal of obstructions are completed as needed.

Table 1. Inspections Completed in 2013

January	February	March	April	May	June
1/11/2013	2/11/2013	3/6/2013	4/1/2013	5/3/2013	6/10/2013
1/28//13		3/11/2013	4/9/2013	5/20/2013	6/13/2013
		3/19/2013	4/15/2013	5/30/2013	

July	August	September	October	November	December
7/10/2013	8/6/2013	9/16/2013	10/4/2013	11/3/2013	12/4/2013
7/15/2013	8/7/2013	9/20/2013	10/7/2013	11/29/2013	12/30/2013
7/22/2013			10/16/2013	11/18/2013	

E. *Inflow/Infiltration(I/I) Surcharge Program*

The Metropolitan Council has established I/I goals for all communities discharging wastewater to the Metropolitan Disposal System (MDS) based on the design peak-hour capacity of the interceptor(s) serving the community. Communities that have excessive I/I in their sanitary sewer systems are required to eliminate the excessive I/I within a reasonable time period.

Since June of 2004, each community that experienced flow rates in excess of its maximum allowable rate in any of its metersheds has received a surcharge payable to MCES under this program. The communities had the option to commit to I/I reduction programs and expend funds, equal to or greater than the amount of the surcharge they were assigned. All communities deemed to have excessive I/I chose to commit to perform I/I reduction in lieu of paying MCES.

F. *Capital Improvements and Studies*

A number of capital improvements and studies were completed during 2013, are currently underway to reduce CSO overflows and in the planning phases, as described in this section and the following 'Minneapolis Capital Projects' map and project listing.

(1) Construction was completed on the 3rd and Commercial (R02) regulator in 2013. The work of this project consists of installing new sluice gates, electrical equipment, a standby generator and restoration of concrete surfaces. This work and upcoming regulator work includes improvements to the remaining sites to allow facilities to function effectively as CSO regulators in the near term and as emergency bypass locations in the long term.

(2) Numerous rehabilitation projects involving cured-in-place pipe (CIPP), slip-lining, and manhole rehabilitation were planned, designed, or constructed during 2013 to reduce Inflow/Infiltration and assure structural reliability.

   a. Lining and cleaning of 1-MN-330 was completed.

   b. Lining, cleaning and pipe replacement on North Minneapolis interceptors 1-MN-311, 1-MN-312, 1-MN-313 and 1-MN-314 were completed.

   c. Improvements to south Minneapolis interceptors 1-MN-341, 1-MN-342, 1-MN-343 including manhole rehabilitation, pipe replacement and CIPP lining were completed. Additional work on 1-MN-341 and 1-MN-344 will occur in 2014.

(3) Inspections to deep tunnels in Minneapolis utilizing closed circuit television and sophisticated analysis equipment was performed on 1-MN-300, 1-MN-310,1-MN-340, 1-MN-344, Minneapolis East Interceptor (MEI) tunnel, 1-SP-250 and the Joint Interceptor 1-MS-100 to identify I/I and structural issues.

(4) Preliminary evaluation of an interconnect between 1-MN-310/320 on the west side of the river and MEI on the east side was initiated. Future construction of this facility would allow further optimization of conveyance capacity, reliability and allow future rehabilitation of 1-MN-310.

(5) Preliminary design for improvements to regulators which are expected to remain as emergency bypass locations into the future was completed during 2013.

G. *2013 Regulator Performance*

Last year there were zero overflows to the river recorded from the ten monitored regulator sites. By comparison, in 1984 at the start of the separation program there were 18 monitored regulator sites, which recorded 77 overflow events and over 1 billion gallons of overflow. An average of 0.33 overflow events from telemetered sites have occurred per year over the last six years; however, zero overflow events occurred in 2008, 2009, 2011 and 2012, 2013. The two overflow events which occurred in 2010 resulted from abnormal conditions associated with storm tunnel breaches allowing storm water to directly enter the sanitary system. These have been corrected.

Based on system performance, maintenance and capital improvements, CSO outfall status has been updated, as shown in Table 2, below.

Table 2. Proposed Regulator Removal Schedule

NPDES Outfall No.	Regulator Code	MCES No.	Name and/or Location	Removal Status
Minneapolis Regulators				
001	1-37	R04	**Minnehaha Tunnel Outfall** Minnehaha Pkwy. & 39th Ave S.	A
002	2-35	R14	**East 38th St. Outfall** East 38th St. & 26th Ave. S.	A
004	4-34	R10	**Southwest Interceptor Outfall** Southwest Meters Diversion	B
005	5-34	R06	**Northwest Interceptor Outfall** Northwest Meters Diversion	B
006	6-48	R12	**Eastside Interceptor Outfall** East Meters Diversion	B
007	7-33	R08	**East 26th St. Outfall** East 26th St. & Seabury Ave.	2014
020	2-17	R07	Chicago Ave. S. & N. Mpls *Tunnel* Outfall Portland Ave. S. & Washington	B
012	12-28b*	R20	**Oak St. Southeast Outfall** Oak St. & 5th St. SE	2014
St. Paul Regulators				

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001A	001A	R05	**MEI Joint Pressure Relief Outfall** Joint Interceptor at River Crossing	A
033	33-100A	R02	**Plum (Troutbrook) St. Outfall** Third and Commercial	B

***Replaced Original 12-28B**

Removal Status for Combined Sewer Overflow Regulators: A: Monitoring is required before elimination can be scheduled. B: Additional monitoring is required; may be necessary to remain as an emergency outfall.

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Minneapolis Capital Projects

Interceptors
Meters
Regulators
Rain Gauges

1 inch = 5,000 feet

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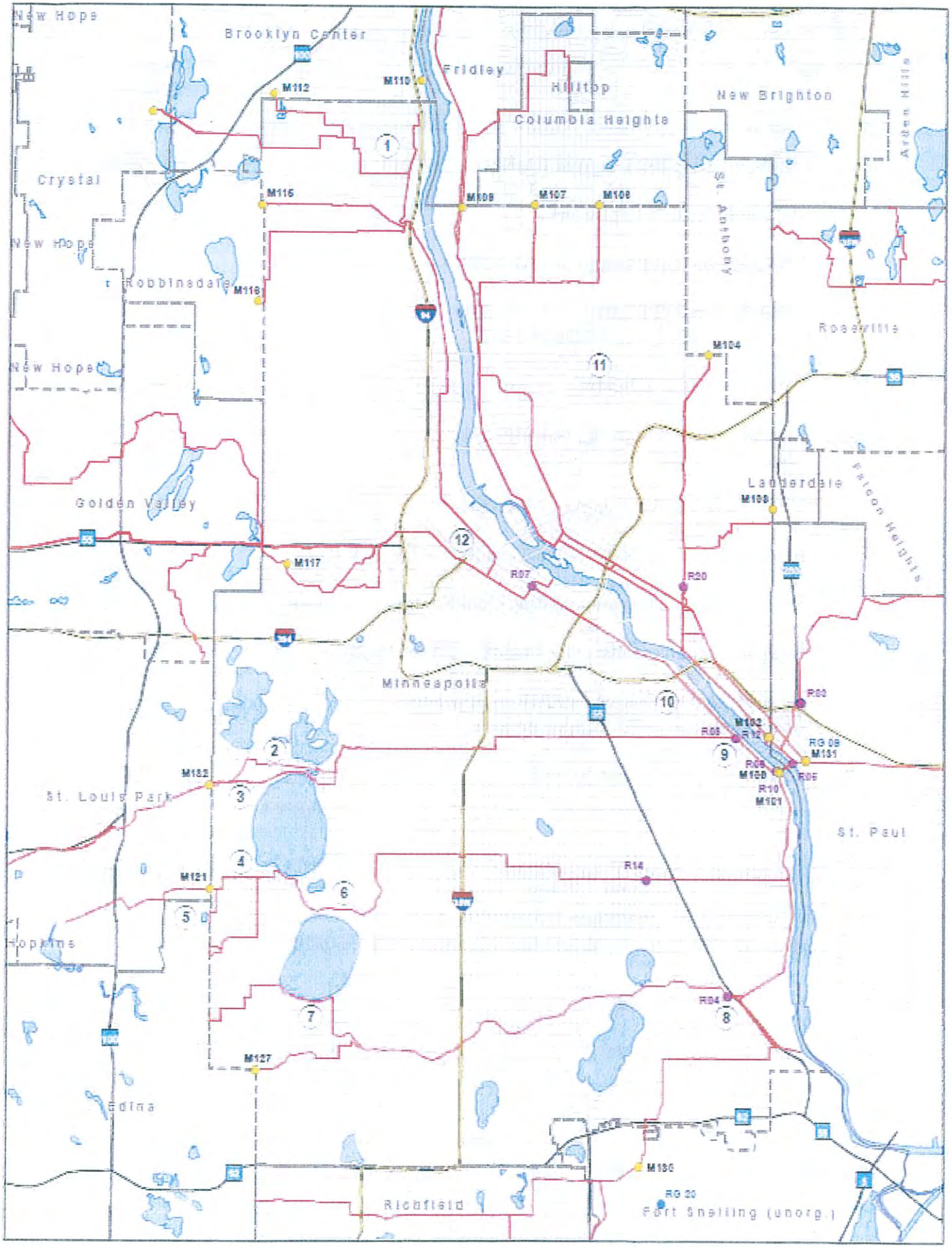

MCES CAPITAL PROGRAM IN MINNEAPOLIS

No.	Project Description	Construction Schedule
1	Rehabilitation (CIPP lining) of 1-MN-311, 212, 313, and 314	2013 – 2014
2	Hopkins Forcemain Replacement	2013 – 2014
3	Rehabilitation (CIPP lining) of 1-MN-330	2013
4	Rehabilitation (CIPP lining) of 1-MN-341 (west of Lyndale Park), 1-MN-343, 343A	2013
5	Replacement of 1-MN-342	2014
6	Rehabilitation (CIPP lining) of 1-MN-341 (through Lyndale Park)	2014 – 2015
7	Rehabilitation (CIPP lining) of 1-MN-344	2014 – 2015
8	Replacement of 1-MN-344 Tunnel and R04; Odor Control	2015-2016
9	Replacement or Elimination of R08; Odor Control; Elimination of R05	2015-2016
10	Regulator Improvements; Odor Control; SCADA Improvements	2015-2016
11	Rehabilitation of Maintenance Access Structures (those not included in foregoing projects)	2016-2017
12	1-MN-310/320 Diversion to MEI	2018-2020

Notes:
1. Deep interceptor inspectors substantially completed in 2013. These may lead to additional capital projects during 2015 to 2020.
2. Oak Street regulator eliminated in April 2014.
3. Portland & Washington regulator improvements completed in 2005.

Section III. City of Minneapolis 2013 Activities and Progress

minneapolis
city of lakes

ANNUAL REPORT ON 2014 MINNEAPOLIS COMBINED SEWER OVERFLOW PROGRAM & 2013 ACTIVITIES

APRIL 17, 2014

I hereby certify that this plan, specification, or report, was prepared by me or under my direct Supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Lisa K. Cerney

Lisa Cerney, PE

Minneapolis Public Works, Surface Water & Sewers
Registration No. 42688

MINNEAPOLIS MINNESOTA CSO PROGRAM

Table of Contents

NPDES/SDS Combined Sewer Overflow Permit Background 3

Sewer Separation History In Minneapolis 3

CSO Program - Current Status and Progress 4

Completed CSO Progects 9

Additional CSO Program Activities 10

Flood Mitigation Program 10

Sanitary Sewer Collection System 11

Storm Drain Collection System 12

System Challenges 13

Future Improvements 13

List of Figures

Figure 1 - Combined Sewer Separation Projects 5

Figure 2 - Rainleader Disconnection Program Status 6

Figure 3 - CSO Volume/Precipitation Comparison 7

Figure 4 - Flow Meter Data 10

NPDES/SDS Combined Sewer Overflow Permit

The 1972 amendments to the Federal Water Pollution Control Act (also known as the Clean Water Act) provided the statutory basis for the National Pollutant Discharge Elimination System (NPDES) permit program. The NPDES program is designed to regulate the discharge of pollutants from point sources to waters of the United States. The Minnesota Pollution Control Agency (MPCA) has issued joint NPDES Combined Sewer Overflow (CSO) permits to the City of Minneapolis (City) and Metropolitan Council Environmental Services (MCES) since 1985.

These permits regulate CSOs by defining certain conditions that should be followed if an overflow event from the sanitary system occur, including:

- Keeping detailed records of the number of CSO events
- Maintaining overflow volume data
- Maintaining operation and maintenance data for overflow events and elimination efforts
- Cooperation of both joint permittees is also maintained

A separate inter-agency agreement between the City and MCES details each permittee's responsibilities with respect to operation of the collection system, and notification in the event of a CSO from the sanitary sewer system.

The most recent CSO permit was issued on February 26, 1997 and expired on June 30, 2001 (Permit MN 0046744). The City and MCES applied to renew this permit in December of 2000, and began negotiating with the MPCA regarding the terms for a new permit. The City has continued to operate under the expired permit requirements, and has developed a plan to control CSOs, including an aggressive approach to eliminate connected areas and appropriate operation and maintenance of the system(s).

Sewer Separation History in Minneapolis

The oldest Minneapolis sewers were built in 1870, and were designed to carry both sewage and stormwater. In 1922, construction started for a separate storm drain system around Minneapolis lakes, as well as newly developing areas. Older areas continued to be served by combined sewers. Sewer separation began in earnest in the 1960s, in conjunction with a citywide paving program.

In 1986, the City began an accelerated sewer separation program called ***Minneapolis Combined Sewer Overflow Program - Phase I***. CSOs were greatly reduced by Phase I efforts. Phase I included the construction of storm infrastructure to disconnect stormwater runoff from 4,600 acres tributary to the sanitary sewer system. The Phase I program was supported in part by federal and state funds.

The Minneapolis Combined Sewer Overflow Program – Phase II was developed in 2002, based on a 1999/2000 comprehensive planning process and an April 2002 Brown & Caldwell study entitled ***Combined Sewer Separation Evaluation***. The study identified *inflow*, rather than *infiltration*, as the major contributor to CSOs. The 2002 study recommended that Minneapolis:

- Disconnect public sector inflow sources: isolated catch basins (storm drain inlets), alley drains, and storm drains
- Disconnect private sector inflow sources: rainleader connections, area drains, or other clean water discharges
- Study and implement storage and conveyance improvements

CSO Program - Current Status and Progress

The City of Minneapolis system is a combined system due to the known inflow at catch basin and roof leader connections, and unknown sources of Inflow and Infiltration (I & I). Progress has been made, but separation is not complete (see Figures 1 and 2).

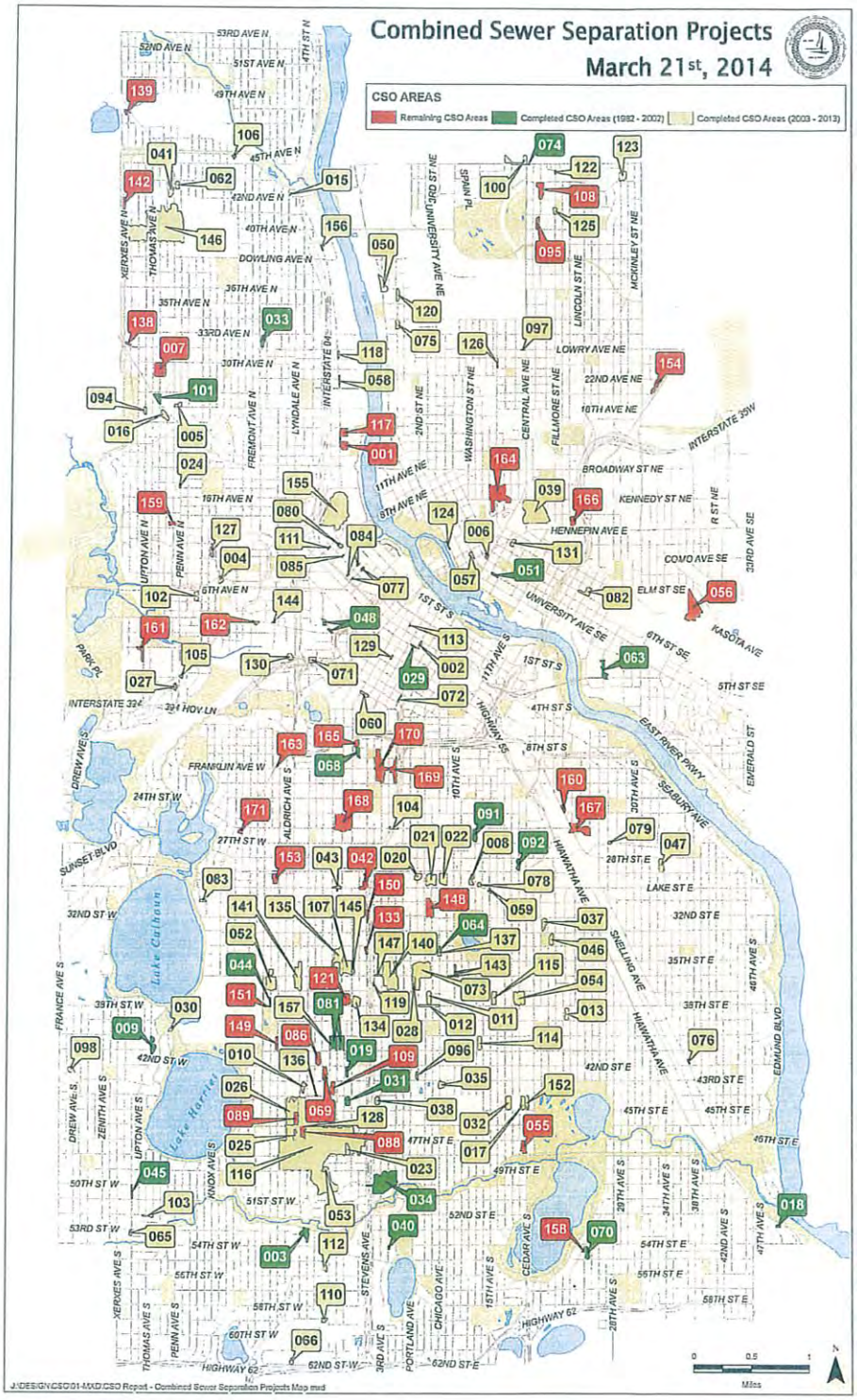
Combined Sewer Separation Projects
March 21st, 2014
CSO AREAS
Remaining CSO Areas
Completed CSO Areas (1982 - 2002)
Completed CSO Areas (2003 - 2013)
Lake Calhoun
Lake Harriet
Miles

Figure 1

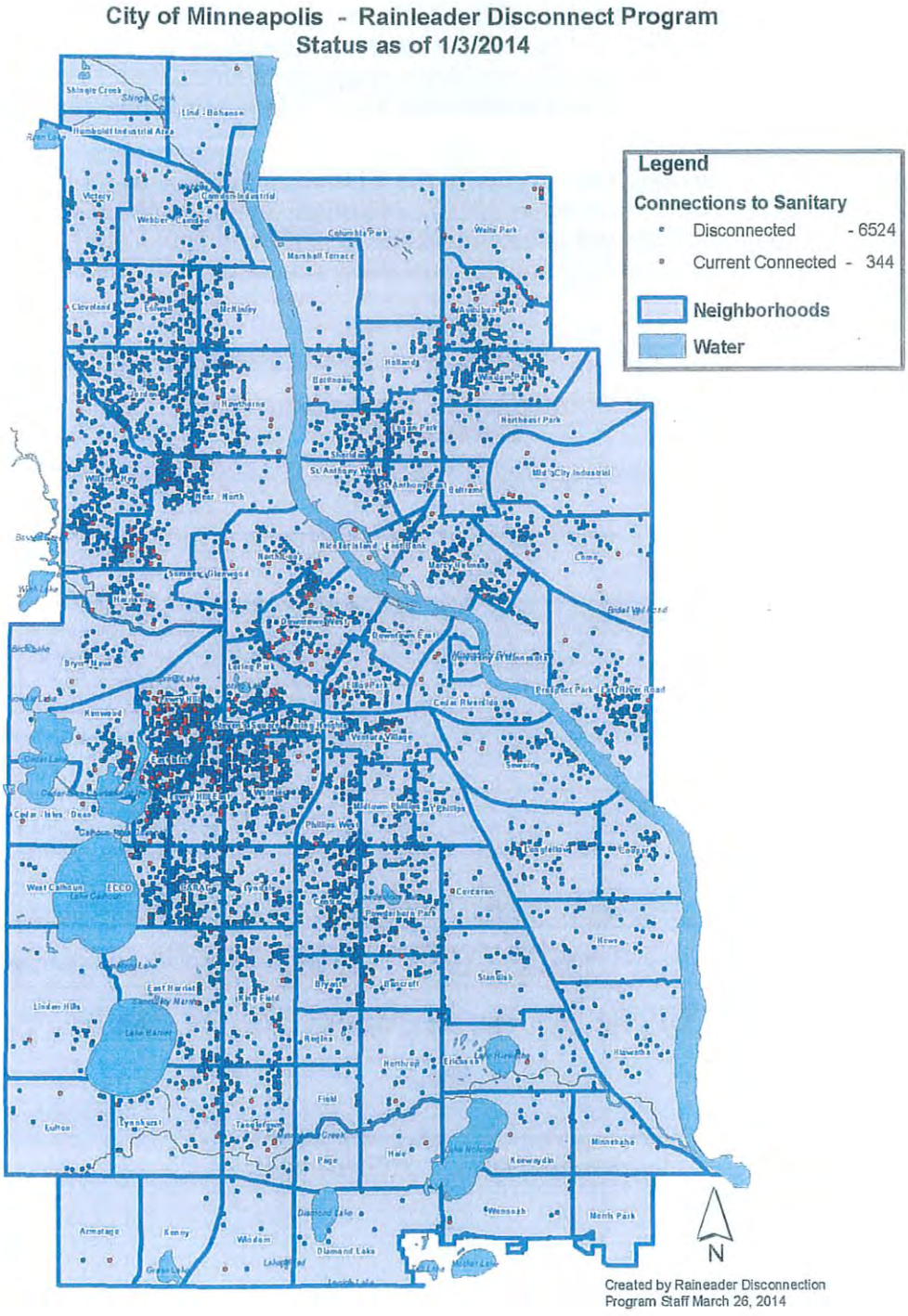
City of Minneapolis - Rainleader Disconnect Program
Status as of 1/3/2014
Legend
Connections to Sanitary
Disconnected - 6524
Current Connected - 344
Neighborhoods
Water
N
Created by Raineader Disconnection Program Staff March 26, 2014

Figure 2

Progress has been dramatic throughout both Phase I and Phase II as upgrades to the system have been carried out (see Figure 3). Figure 3 indicates a very high percent capture since 1984. Frequency and volume of untreated sewage overflowing into the stormwater system during intense rainstorms and discharging into the Mississippi River have steadily diminished.

Minneapolis has had zero CSO events to the Mississippi River in six of the past seven years (two very small events occurred in 2010). Although combined sewer overflows can still occur, many years of dedicated efforts by Minneapolis Public Works staff have resulted in fewer CSO events. The remaining separations are the most difficult and complex to resolve.

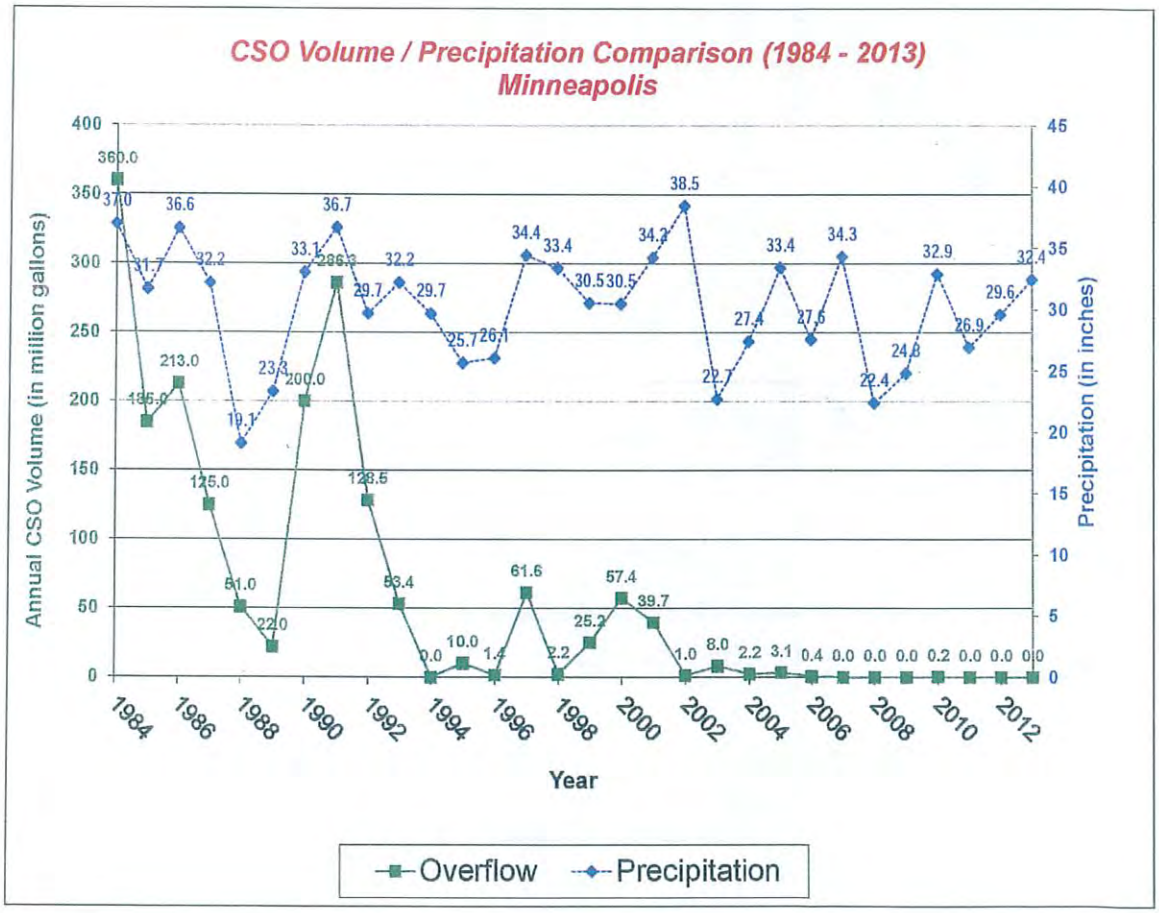

Figure 3

The following table shows information about the eight regulators remaining in Minneapolis:

Regulator Site Location	Regulator Number	Responsible Party
39th Av S & Minnehaha Parkway	M001	MCES
38th St E & 26th Av S	M002	MCES
Southwest Meters	M004	MCES
Northwest Meters	M005	MCES
East Meters	M006	MCES
26th St E & Seabury Av	M007	MCES
Oak St SE & 5th St SE	M012	MCES
Portland Av & Washington Av S	M020	MCES

The elimination of overflow structures may not be feasible in every case without causing a public health or safety hazard. Some overflow regulators may need to remain operational for emergency relief necessitated by extreme storm or flood events, or to minimize damage due to accidents or system failures.

Since its inception in 2002, Minneapolis Combined Sewer Overflow Program, Phase II, Surface Water & Sewers Division personnel have identified, categorized, and prioritized 171 "CSO areas", meaning areas in the right-of-way with a known connection of stormwater drainage to the sanitary sewer system. The CSO Program coordinates with the Capital Improvement Project schedule to address CSO areas within the construction limits of that capital project. Occasionally, new CSO areas are discovered by City staff. This information is a result of:

- Private sewer and water connection reviews (for possible combined connections) that are done prior to issuing any new/repair permits
- Utility and plumbing inspectors' identification of CSO areas as part of their current activities
- Continued education of City staff on the importance of identifying and disconnecting CSO areas
- Flow metering and smoke testing programs

Completed CSO Projects (public separation work)

PROJECT NAME	PROJECT LOCATION	ACRES
CSO136	Grand Ave S & 44th St W	0.14
CSO144	Glenwood Ave & Colfax Ave N	0.16
CSO155	2nd St N & 14th Ave N Overflow	30.84
CSO156	Washington Ave N & Dowling Ave N	0.23
CSO157	Pillsbury Ave S & 40th St W	0.93
	Total Area Removed in 2013	**32.3**

Minneapolis initiated a targeted metering program in 2008. One of the goals of this investigation is to identify sources of unknown Inflow and Infiltration (I & I). The 2013 target metering program included the following components:

1) Flow metering installation – 57 sites

2) Smoke testing - 80 miles of smoke testing was completed in 2013. Since 2007, over 265 miles have been tested.

3) CSO Investigations – Potential connections between the storm and sanitary sewer system are identified from record drawings as the City reviews and updates the GIS database. 37 CSO investigations were completed in 2013.

4) I&I Repairs – repairs to sewers manholes and bulkheads were identified from smoke testing and CSO investigation. 27 I&I repairs were completed in 2013.

The unknown sources of inflow have an effect on the system demonstrated by the following meter data in Figure 4. This metering data reveals an immediate reaction of increased flow in the sanitary system after a rainfall event. This meter is located on the City's system in Minneapolis on 18th Avenue North and 2nd Street North. This is representative of inflow in a sewer shed located in North Minneapolis.

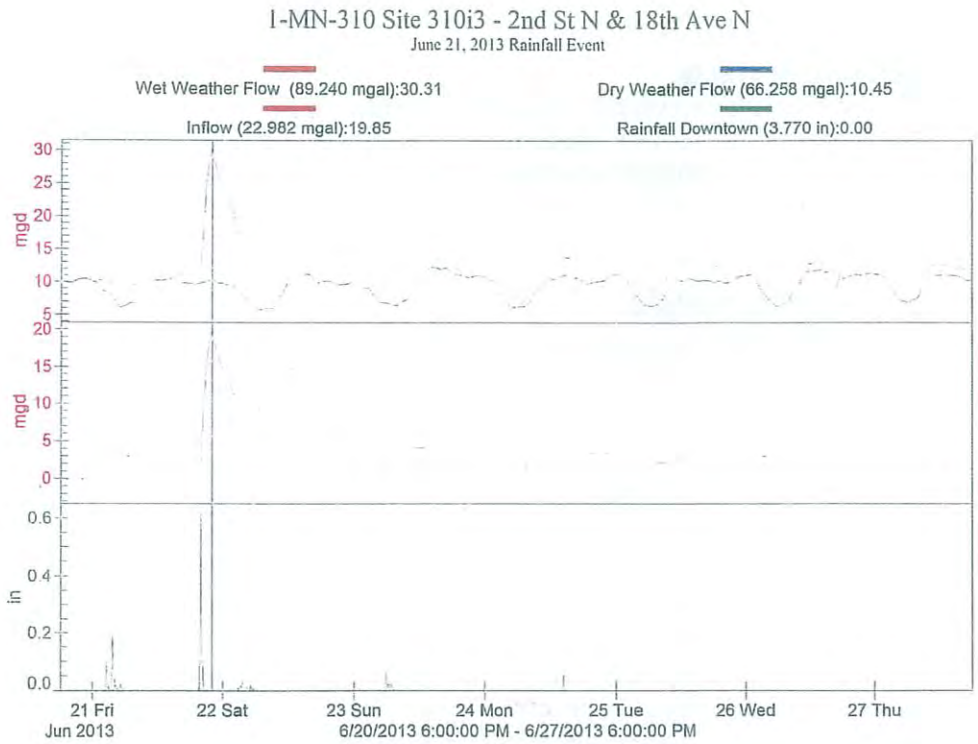

Figure 4: Meter Data

Additional CSO Program Activities

These activities directly or indirectly benefit the elimination of CSOs:

Flood Mitigation Program

Construction of projects from the Flood Mitigation Program has the benefit of reducing inflow and infiltration to the sanitary system.

- Construction of a new alley storm drain at 25 ½ St and Hennepin Ave S to reduce or eliminate flooding which could allow water to enter the sanitary system.
- Construction of new, larger storm drains at 5th St N and 6TH Ave N to control street and property flooding which allowed water to enter the sanitary sewers.
- Winter St storm drain improvements and stormwater pond. Construction of the ponds and associated storm drain improvements reduces street flooding which can enter the sanitary sewer and also allowed for the disconnection of private roof and area drains that were connected to sanitary sewers.

Rainleader Disconnection Projects

Rainleader disconnection projects include the construction of public storm drains for private rainleader separation. RLD017 – Johnson St NE & 28th Ave NE was completed in 2013.

Tunnel Rehabilitation Projects

The Hennepin Ave Tunnel system includes a sanitary pipe mined in the bottom of a storm pipe. Significant infiltration was observed in the sanitary pipe at access locations within the tunnel. The storm also system pressurizes during heavy rainfall. Storm tunnel rehabilitation was completed in 2013. A project to slip line the sanitary sewer was started in 2013.

Sanitary Sewer Collection System

The sanitary sewer system within the City of Minneapolis is 852 miles in length. Of those, 777.2 miles of sewers are owned and maintained by the City, while 74.8 miles are owned and maintained by MCES.

Minneapolis Public Works has a sanitary manhole cover replacement program that switches out the older seven-hole manhole covers with one-hole manhole covers. The older manhole covers allow standing water to discharge into the sanitary system during storm events. Approximately 4,041 covers have been replaced thus far, including 409 in 2013.

The Sewer Operations section of MPW–SWS routinely inspects sanitary infrastructure, and performs needed maintenance to ensure proper operation. Staff has divided the City into 100 areas for their sewer main cleaning program. This program is significant to the CSO program because it uncovers and reveals inflow and infiltration (I & I). Sewer mains are cleaned by many different methods, which include jetting, discing and rodding. Annual records are kept that describe the condition, as well as the cleaning that was done for that year. City staff also utilizes GIS to create maps to better track progress.

Each year, sanitary sewers are selected for cleaning on the basis of past experience, pipe size and location in relation to flood-prone areas and poor soil conditions. Some mains are cleaned annually, but occasionally additional cleanings are needed. The 10 sanitary lift stations in the City are cleaned each spring, and then checked on a regular basis to determine if additional cleaning is needed. In addition to cleaning, maintenance in 2013 also included:

- 1 major sanitary sewer repairs
- 7.8 miles of sanitary sewer lined with a cured-in-place
- 151 (requested by residents) possible sanitary backups were inspected.
- 5441 problematic sanitary locations were inspected
- 31 sanitary cave-ins were addressed
- 83 minor sanitary repairs were addressed
- 349.5 miles of sanitary sewer were jetted with high pressure forced water
- 17.3 miles of sanitary sewer were rodded (cleaned)
- 43.8 miles of sanitary sewer were televised

Storm Drain Collection System

Minneapolis Sewer Operations section routinely inspects storm drain infrastructure, and performs needed maintenance to ensure proper operation. Inspection and maintenance frequency are event-driven, based on experience and inspection results history.

There are currently 145 grit chambers in Minneapolis that are inspected, cleaned and maintained by Minneapolis Sewer Operations. These grit chambers help to prevent sediment, debris and oil from entering area lakes, rivers and streams. Grit chambers inspection is based on a schedule by Minneapolis Sewer Operation personnel, and cleaned if necessary. Sediment is removed, the presence of floatables is noted, and the grit chamber cleaning dates are logged. This information is then compiled into a database and maintained by the Sewer Operations section of the Surface Water & Sewers Division.

Storm drain outfalls are inspected on a five-year schedule, generating information on:

- Condition of structures
- Significant erosion
- Any necessary repairs

Grit chamber maintenance and repairs are planned within the constraints of resources and budget, as well as the schedules of other operations. Ponds and pump stations are inspected after significant rainfall events; however, other events might require a maintenance response.

Catch basins are cleaned, removing accumulated sediment, trash and debris. This prevents pollution of receiving waters and minimizes flooding problems. Employees from the Public Works division of Street Maintenance section performs annual inspections, during which they clean catch basin grates on summer street sweeping routes, removing debris and sediment from blocked structures.

Statistics from the 2013 Storm Drain Maintenance program include:

- No major repairs to the storm drain system
- Performed 279 minor repairs to storm drain lines, catch basins or manholes
- Responded to 526 plugged catch basins complaints
- Televised and condition assessed 129 miles of storm drain pipe
- Inspected 111 and cleaned 103 grit chambers. A total of 420.75 cubic yards was removed from the grit chambers and another 267 cubic yards was removed from a storm tunnel, for a total of 687.75 cubic yards that was removed and properly disposed of.
- Maintained 11 stormwater holding ponds
- Inspected 15 of 387 known storm drain outfalls. (Because of unusually high water and persistent rains during 2013 only 15 outfalls of the scheduled 60 were inspected, designs for 2 outfall repairs have been completed, and one design is in final analysis before construction begins.)
- Monitored and maintained 26 pump stations
- 2.21 miles of storm drain were jetted with high pressure forced water

System Challenges

The City of Minneapolis has separated a significant amount of clear water out of the sanitary sewer system and is moving it to the stormwater system. The remaining sources of inflow pose both technical and financial challenges. The receiving stormwater system is at or above capacity in many locations, creating structural and operational risks with the infrastructure. Much of the receiving storm system discharges into storm tunnels. During heavy rain events, pressurization occurs, creating various problems that affect the integrity of the storm tunnels. These problems include fracturing of the tunnel liner, which in turn creates voids in the sandstone surrounding the tunnel. Some of the storm tunnel system needs a significant amount of maintenance and rehabilitation prior to adding additional stormwater. The City has identified priority needs in the storm tunnel system and is working actively to address structural deficiencies. In addition, there are discussions to identify funding sources to assist with the design and construction of a parallel I-35W South tunnel to provide the necessary capacity in that tunnel system.

There are also known areas with localized flooding. Moving additional clear water to a system that is causing the flooding exacerbates the problem. In these situations, we cannot just separate the clear water, but must also respond to the risk of property damage.

In some instances, removing additional clear water and routing instead to the storm drain system is met by additional challenges from watershed organization rules or impaired water status.

Operating and maintenance costs are also increasing as a result of sedimentation occurring in the pipes due to inadequate velocities in the combined pipe system. The sedimentation is also causing methane gas build up and increased corrosiveness in the system.

Future Improvements

The City of Minneapolis will continue to make further reasonable progress maintaining and rehabilitating the combined sewer system and the storm sewer system, and increase the performance of those systems keeping in mind the goal of being the highest performing CSO system.