

Milwaukee County

Capacity, Management, Operations, and Maintenance CMOM Program 2017 Annual Report

Prepared by

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1.0 Program Overview

The County CMOM Program was developed to meet the terms stated in the 2002 Stipulated Agreement with the Wisconsin Department of Natural Resources and State Attorney General's Office to cure problems cited in Claim WI-0047341-03. It also satisfies the requirements of MMSD's Rules concerning satellite municipalities.

1.1 Report Purpose

In addition to annual reporting of sanitary collection inspection and improvement activities to the MMSD in the form of a spreadsheet, and to the Wisconsin Department of Natural Resources (WDNR) in the form of the online Capacity Maintenance Annual Report (CMAR), the County is required to prepare and submit this annual CMOM program report to MMSD.

The CMOM Program Annual Report provides summary descriptions of CMOM Program activities (past and planned) and is intended to be a communication tool. The report is intended for County staff, regulatory authorities, customers, and the general public. The report serves four general purposes:

1. To provide an overview of the activities completed under the CMOM Program on an annual basis.
2. To describe and document changes to the CMOM Program documentation on an annual basis, which may include changes to objectives, strategies, tactics, and performance measures.
3. To describe the activities that are planned or currently being undertaken under the CMOM Program.
4. To continue compliance with the 2002 Stipulation Agreement between the District and the State of Wisconsin, which requires that "On a regular basis the District shall report to the Department on the implementation and performance of the CMOM program."

2.0 Activities Completed

The County's accomplishments in terms of managing, operating, and maintaining its sanitary sewer systems over the past twelve years are significant, and continue through 2018 as we constantly identify sources of infiltration and inflow (I/I) and improve our sanitary sewer infrastructure. In addition to inspecting every manhole, televising pipes, smoke testing, dye testing, field investigating, documenting and maintaining a GIS database of our sanitary sewer systems, our work to date includes:

- Installing solid and gasketed sanitary sewer lids on every sanitary manhole
- Installing internal and/or external chimney seals on every sanitary manhole
- Abandoning 3.72 miles of sanitary sewer and 126 sanitary manholes

- Locating and adjusting rim elevations for dozens of buried sanitary manholes
- Eliminating storm water connections to the sanitary sewer system
- Performing sanitary sewer and manhole rehabilitation including cast-in-place pipe lining, ream grout of pipe joints, spray manhole lining, epoxy injection of manholes.
- Repairing and replacing sanitary sewer pipes.

We plan at least one capital improvement project to correct deficiencies identified during the prior year's inspections. In 2017 we spent \$120,791 on the following:

Inspect 25% sanitary sewer manholes, clean and televise sewer pipes, perform dye water testing, smoke testing, and field investigations, organize and submit documents, organize and attend CMOM annual meetings and activities, update GIS mapping and databases, upload inspection reports and convert information to City Works, search record drawings, analyze inspection data, prepare list of recommended projects, prepare list of recommended inspections for following year, prepare MMSD I/I Management Annual Progress Report, prepare WDNR Compliance Maintenance Annual Report, complete sanitary sewer rehabilitation projects at General Mitchell International Airport, the County Grounds, Various Parks, and House of Corrections, and the County Zoo.

3.0 Program Documentation

Milwaukee County developed and submitted to the Milwaukee Metropolitan Sewerage District (MMSD) documentation of its CMOM Program in June 2009. The County CMOM Program documentation consists of the following four plans:

- Management Plan,
- Overflow Response Plan
- Communication Plan
- Audit Plan

3.1 Goals and Performance Measures

Milwaukee County strives to meet the following CMOM Program goals:

- Comply with the conditions of the WPDES permit
- Minimize the occurrence of preventable overflows
- Ensure proper O&M is performed on County sewer collection system assets
- Improve or maintain system reliability
- Reduce the potential threat to human health from sewer overflows
- Provide adequate capacity to convey peak flow
- Manage infiltration and inflow

- Protect collection system worker health and safety
- Operate a continuous CMOM Program

These goals are acknowledged by the Milwaukee County Board of Supervisors annually as part of our CMAR.

Each goal includes one or more performance measures, which we have listed in **Table 1**. We provided a value/status for 2016 to gauge achievement of our goals and objectives. While we have successfully achieved our goals, we have a few performance measures that have room for improvement.

Table 1: CMOM Goals and Performance Measures

Program Goal	Regulatory Expectations	Objectives	Performance Measures	2016 Status/Value	2017 Status/Value
Comply with the WPDES permit concerning sanitary sewer overflows	Untreated wastewater discharges from the system are a violation of the WPDES permit.	Ensure procedures are in place to identify SSOs, report SSOs to the WDNR, and mitigate impacts from the SSOs per the WPDES permit.	Number of Dry Weather SSOs	0	0
			Number of Wet Weather SSOs	0	0
			Number of Dry Weather Building Backups	3 See Note 1	0
			Number of Wet Weather Building Backups	0	0
Minimize the occurrence of preventable overflows	The WDNR General Permit for SSOs provides specific circumstances under which the WDNR may not take enforcement action against the discharger. These circumstances include situations where the SSO occurred to prevent loss of life, personal injury, or severe property damage.	Determine critical system components where overflows are most likely to occur.	Number of capital improvement projects aimed at improving reliability of critical system components	2	3
			Establish dry and wet weather operating protocols that ensure overflows are identified and mitigated immediately thereafter.	Easily accessible ORP with reporting forms on County website	Yes See Note 2
		Annual staff training session to identify and report overflows		Yes	Yes
		Procedure for incorporating system changes into system maps and drawings		Yes	Yes
		Implement projects that will have immediate impact on known operation and capacity-related overflows.	Number of projects that provide more reliable conveyance or reduce I/I	4	3
			Schedule for sewer cleaning in known problem areas	Yes	Yes
			Schedule and enforcement of grease trap cleaning for each grease trap tributary to a County sewer or lateral	Yes See Note 3	Yes See Note 3

Table 1: CMOM Goals and Performance Measures

Program Goal	Regulatory Expectations	Objectives	Performance Measures	2016 Status/Value	2017 Status/Value
2Ensure proper O&M is performed on County sewer collection system assets	CMAR grade depends upon financial account for collection system repair and rehabilitation	Ensure condition assessments and preventive maintenance is performed on pump stations, manholes, and sewer pipes on regular intervals.	Develop O&M Manual	Done previously See Note 4	Done previously See Note 4
			Budget line items for each department to perform inspections and preventative maintenance of pump stations, sanitary sewers, manholes, and force mains	Yes	Yes
			Number of pump stations inspected	5 See Note 5	25 See Note 5
			Number of manhole inspected	206	218
			Footage of gravity sewer inspected (televised)	13,711	0
			Footage of force main inspected	0 See Note 5	0 See Note 5
		Ensure that appropriate condition assessments are conducted on sewer assets.	Budget line item for updating sanitary sewer portion of GIS	Yes	Yes
			Number of sanitary sewer updates to the GIS	20 Minimum See Note 6	30 Minimum See Note 6
			Backlog of sanitary sewer updates to the GIS	1	0
		Ensure that established design, construction, and inspection standards are followed on all new construction.	Documented design and construction standards for Milwaukee County	State Plumbing Code and State Standards for Sewer and Water in WI	State Plumbing Code and State Standards for Sewer and Water in WI

Table 1: CMOM Goals and Performance Measures

Program Goal	Regulatory Expectations	Objectives	Performance Measures	2016 Status/Value	2017 Status/Value
		Establish sufficient funding streams to ensure replacements or refurbishments before asset failures occur.	Sanitary sewer project line item in five-year capital improvement plan.	\$150,000	0
		Regularly review the sufficiency of funding for sewer system operation and maintenance activities.	Number of sanitary sewer project estimates prepared for County annual budgeting process.	2	3
Improve or maintain system reliability		Confirm the existence of any system components that do not function according to reliability standards established by the County.	Number of overflows and basement backups resulting from unreliable system components	0	0
Reduce the potential threat to human health from sewer overflows	Overflows from the system are a violation of the WPDES permit, Clean Water Act, and Wisconsin State law.	Confirm the existence of locations where system overflows could pose a threat to human health.	Number of overflows and basement backups with the potential to threaten human health	0	0
		If such locations exist, develop response measures and investigate alternatives for eliminating the potential threat.	Documented and easily accessible ORP.	Yes – is now located on County Website	Yes – is now located on County Website
Provide adequate capacity to convey peak flow	Evidence that suggests the system does not possess the capacity to convey peak flows would likely cause the State to require a SECAP for the County.	Gain an understanding of the current system’s ability to convey peak flows and what steps are necessary to address system inadequacies.	Number of flow monitoring locations	2	2
			Number of facilities in meter-sheds that comply with MMSD performance standards as identified in MMSD Rule 3.201	99% See Note 7	99% See Note 7
Manage infiltration and inflow	If the State or MMSD determines a SECAP is required of the County, a component of this plan will include I/I evaluation and reduction.	Understand the current level of I/I in the system, the extent to which it poses a threat to the regional or municipal system operation, sources of I/I, and potential remedial measures.	Footage of gravity sewers smoke tested	0	0
			Number of dye tests	1	1
			Footage of gravity sewers tributary to a flow monitor	24,108	24,108
			Footage of sanitary sewers within areas contributing excessive I/I	300	300

Table 1: CMOM Goals and Performance Measures

Program Goal	Regulatory Expectations	Objectives	Performance Measures	2016 Status/Value	2017 Status/Value
		Establish a program to reduce I/I in situations where I/I results in service problems, including overflows and building sewer backups or exceeds peak flow performance standards of MMSD. Such standards may include those that would prevent I/I from increasing in the future.	Number of projects to reduce I/I	3	3
			Number of overflows and basement backups resulting from excessive I/I	0	0
			Budget line item for I/I reduction including study, design, and implementation	Yes	Yes
			Reduction in wet weather flows as a result of I/I reduction efforts	Yes See Note 8	Yes See Note 8
Protect collection system worker health and safety		Make all collection system workers aware of potential hazards, equip them with proper safety gear, and provide proper training in dealing with these hazards.	Annual training hours per employee	12	12
Operate a continuous CMOM Program		Establish procedures for monitoring CMOM Program implementation and initiating program modifications.	Web site updated annually to include new reports and communications	No See Note 9	No See Note 9
			Annual CMOM meeting with MMSD completed	Yes	Yes
			Annual reporting to MMSD and WDNR completed on time	Late- Plan to deliver CMAR resolution in July	Late- Plan to deliver CMAR resolution in July
			Compliance Maintenance Annual Report (CMAR) overall score	100	100
			Annual Cost of CMOM activities	\$263,931	\$120,791
			Cost to date on CMOM activities	\$5,268,482	\$5,389,273

Notes for performance measure value/status:

1. “Number of Dry Weather Building Backups”. Couple that were caused by human error...flushing things that shouldn’t be flushed and / or grease.
 - In 2016, backup at the Greenfield Clubhouse.
 - In 2016, two backups at GMIA in E concourse, due to grease issues.
2. “Easily Accessible ORP with reporting forms on County website”. We have added a link on the County webpage to access the ORP.
3. “Schedule and enforcement of grease trap cleaning for each grease trap tributary to a County sewer or lateral.” We have developed a list of grease traps within County facilities. The responsibility of cleaning and maintaining the grease traps usually lies with the users of the grease traps who lease the space from the County. We are working with the individual departments to diligently manage and enforce grease trap usage, cleaning and maintenance. We are subject to state and local rules and ordinances regarding Fat, Oil, and Grease (FOG), however, we need to educate the users of our facilities on controlling their FOG waste streams and keeping them out of the sewers (<http://www.docstoc.com/docs/61892217/Grease-Interceptor-Maintenance>). This may include performing our own grease trap inspection using a form similar to the City of Glendale: <http://www.glendale-wi.org/cm/pdfs/grease.pdf>. *See Attachment 3*

Update for 2014: We have been doing minimal grease trap inspections of our own. Lessees are still largely responsible for inspections and maintenance. We have worked with our legal team to add language to vendor contracts spelling out their obligations in regards to the FOG program.

Update for 2015: A new grease trap has been installed in a kitchen remodel for the Brown Deer Park clubhouse kitchen remodel. The Airport has plans to install new Grease Traps in all three of its concourses where grease is known to be an issue.

Update for 2016: Will submit grease flyers to new vendors at Grant Beach Clubhouse.
4. “O&M Manual” completed and distributed in December 2011.
5. “Pump stations inspections.” Historically owner departments have been doing their own inspections of pumping stations on an as-needed basis. We just started a program last year to start systematically replacing our lift stations, starting with the ones that are either oldest or need the most maintenance. We replaced the Grant Park lift station as well as the connected 120 LF force main in 2014 / 2015. In 2017, we replaced 550 feet of force main pipe for the South Shore Yacht club. The Dretzka Park lift station is scheduled to be replaced in 2019. The next one scheduled is the Oak Creek Parkway Mill. More lift station replacements will follow.
6. “GIS Updates.” We update our GIS mapping systems frequently, usually bi-monthly.
7. “Number of facilities in meter-sheds that comply with MMSD performance standards as identified in MMSD Rule 3.201”. All County facilities are in meter-sheds that comply with MMSD performance. In 2011, Sheridan Park, which is in a meter-shed under the jurisdiction of the City of Cudahy was out of compliance. Since then we’ve worked with Cudahy to reduce I/I and have eliminated two storm drain connection to the sanitary sewer and capped an unidentified connection to the sanitary sewer.

8. Our efforts to eliminate clear water to the sanitary sewer systems have reduced the wet weather flows to the MMSD. We have:

- Installed solid and gasketed sanitary sewer lids on every sanitary manhole. (Except Franklin landfill which carries lechate).
- Installed internal and/or external chimney seals on every sanitary manhole. (Where physically possible, small percentage of structures cannot receive a seal).
- Abandoned 3.72 miles of sanitary sewer and 126 sanitary manholes
- Located and adjusted dozens of buried sanitary manholes
- Eliminated storm water connections to the sanitary sewer system
- Performed sewer and manhole rehabilitation projects including cast-in-place pipe lining, ream grout of pipe joints, spray manhole lining, epoxy injection of manholes, Root cutting and foaming, annual televising and cleaning, grade adjustments, abandoning of unused sewer utilities.
- Spot repair and replacement of sanitary sewer pipes.

9. “Web site updated annually to include new reports and communications.” Update for 2014: We have added the following on website; ORP, 2010 CMOM report, 2011 CMOM report, 2012 CMOM report, 2013 CMOM report, Links to FOG Flyers, Link to MMSD’s CMOM program.

Update for 2016: We have added 2014 and 2015 CMOM reports to the County Website as well and have loaded our updated our ORP. Fixed broken Links to MMSD’s CMOM program webpage.

Update for 2017: We have added 2016 CMOM reports to the County Website.

3.2 Updated Sanitary Sewer System Structure and Assets

Milwaukee County (the County) is considered a satellite municipality served by the MMSD through a number of Metropolitan Interceptor System (MIS) connections. The County is divided into several entities, each with its own system, including the airports (Mitchell International and Timmerman), numerous Park Lands, the Milwaukee County Zoo, the House of Corrections, and the County Grounds. The County collection system consists of approximately 165,000 linear feet of -6- to -21- inch diameter sanitary sewers and 32 lift stations.

Each of the systems is comprised of various structures, including pumping stations, manholes, diversion structures, and miles of pipe. Additionally, each system is a different age, some with sewers dating back to the 1940s. Each entity is principally responsible for the operation and maintenance of its sewer collection system and the lift stations. Table 2 provides a current summary of sewer infrastructure by entity.

Table 2: County Sanitary Sewer Assets by Department

Department	Length of sewer main, ft (laterals not included)	Number of manholes (including lift stations, grease traps, etc.)	Number of sewage lift stations
Parks	91,238	511	18
County Grounds	27,722	202	0
Airports	26,044	164	12
Zoo	12,688	94	1
House of Corrections	5,983	34	0
Transit	1,341	23	1
Total	165,043	1,028	32

4.0 Activities Planned

The current budget for CMOM activities in 2018 is \$250,000. These activities include:

Inspect 25% sanitary sewer manholes, clean and televise sewer pipes, perform dye water testing, smoke testing, and field investigations, organize and submit documents, organize and attend CMOM annual meetings and activities, update GIS mapping and databases, upload inspection reports and convert information to City Works, view CCTV video, search record drawings, analyze inspection data, prepare list of recommended projects, prepare list of recommended inspections for following year, prepare MMSD CMOM Program Annual Report, Prepare WDNR Compliance Maintenance Annual Report, complete countywide sanitary sewer rehabilitation projects at multiple Park locations, County Grounds, General Mitchell International and Timmerman airports, Zoological Gardens, and House of Corrections.