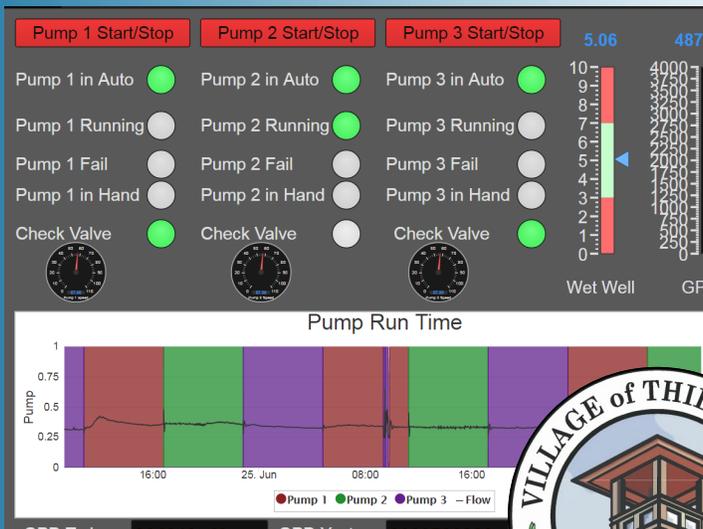


Village of Thiensville

Capacity, Management, Operations, and Maintenance (CMOM) Program

2019 Annual Report



Access geographic and land information

AssetAlly equips you with 24/7 access to a user-friendly GIS system available via mobile devices

- Sanitary Utilities
- Stormwater Utilities
- Streets & Highways

Support

*Prepared by
Andy LaFond
Director of Community Services/Public Works
June 2020*



1. Program Overview

In May 2002, the Milwaukee Metropolitan Sewerage District (MMSD) entered into a Stipulation (MMSD Stipulation) with the Wisconsin Department of Natural Resources (WDNR). Among other items, the Stipulation requires MMSD to implement a Capacity assurance, Management, Operations and Maintenance (CMOM) Program. The MMSD Stipulation also required MMSD to amend its rules to by June 30, 2007 to require CMOM Programs for all MMSD satellite municipalities.

In December 2005, the Village of Thiensville, along with other MMSD satellites, entered into a Stipulation with the WDNR (Satellite Stipulation), that committed the Village to develop and implement a CMOM Program.

The CMOM concept was set forth in a U.S. Environmental Protection Agency (USEPA) rule that addresses sanitary sewer overflow (SSO) control. A provision of the document is a requirement for a comprehensive collection system program that includes four key components, 1) Capacity assurance, 2) Management, 3) Operation, and 4) Maintenance; hence the acronym “CMOM.” The goal of CMOM is to clearly define proper operation and maintenance of the collection system and a system owner’s duty to mitigate SSOs. The USEPA requires a collection system owner to:

- Properly manage, operate and maintain, at all times, all parts of the collection system that it owns or over which it has operational control.
- Provide adequate capacity to convey base flows and peak flows for all parts of the collection system it owns or over which it has operational control.
- Take all feasible steps to stop, and mitigate the impact of, sanitary sewer overflows in portions of the collection system it owns or over which it has operational control.
- Provide notification to parties with a reasonable potential for exposure to pollutants associated with the overflow event.
- Develop a written summary of the CMOM program and make it, and the audit under section (e)(2)(ix), available to any member of the public upon request.

1.1.1. Village of Thiensville Sewer Utility Mission Statement:

“To efficiently collect and convey all of our customers’ wastewater in the most cost-effective manner while remaining in compliance with WPDES permits, the Clean Water Act, Wisconsin Law, and MMSD Rules and Regulations.”



1.1 Report Purpose

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 Village staff, the Village Board, regulatory authorities, residents, 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 2005 Stipulation Agreement between the Village and the State of Wisconsin, which committed the Village to develop and implement a CMOM program and report annually to MMSD. The report consists of this Program Overview section plus one section for each of the CMOM Program Plans (Management Plan, Asset Management Plan, Overflow Response Plan, System Evaluation and Capacity Assurance Plan, Communication Plan, and Audit Plan).

1.2 Goals

The following CMOM Program Goals were established by the Village. After the 2015 Audit report, these goals have been redefined as the Villages Sanitary System Core Goals. These core goals serve to lay out a basic framework for accomplishing our mission statement. In 2015 the Village established a list of smaller yearly goals that will be referred to as Action goals. These are short term goals that can be accomplished within a 1-2 year budget cycle. These new Action goals are defined later in this report in table 4.1.3 These goals will be set yearly in the Annual report and will be addressed in the following year's report.

Core Goals:

- Comply with the conditions of the WPDES permit
- Minimize the occurrence of preventable overflows
- Improve or maintain system reliability
- Reduce the potential threat to human health from sewer overflows
- Provide adequate capacity to convey peak flow
- Continue to manage infiltration and inflow
- Protect collection system worker health and safety



1.3 Program Summary By Plan

1.3.1 Management Plan

The Management Plan describes the goals and objectives of the Village related to sewerage conveyance, the strategies and tactics the Village is employing to achieve the goals, and the performance measures being used to assess attainment of the goals.

The Village is working towards the goals of the CMOM plan and annually reviews the management plan.

1.3.2 Asset Management Plan

The Asset Management Plan describes the objectives, strategies, and tactics specifically related to asset management in more detail than is described in the Management Plan. These objectives are related to asset information, asset maintenance, asset rehabilitation and replacement, levels of service, and cost minimization.

The Asset management plan is ongoing within the Management plan and is reviewed annually.

1.3.3 Overflow Response Plan

The Overflow Response Plan describes the measures the Village has put in place to be aware of, respond to, and provide notification of, overflows from the Village system.

The plan is updated annually to reflect the changes in the DNR reporting contact, change in staff, equipment updates, remote monitoring capabilities, and new procedures.



1.3.4 System Evaluation and Capacity Assurance Plan

The SECAP describes the actions that the Village has taken and will take to determine capacity requirements, evaluate system capacity, and undertake capacity enhancement measures.

The Village has corrected all deficiencies identified in the SECAP. The one remaining segment that could have limited future development and capacity needs was addressed in a 2015 construction project.

1.3.5 Communication Plan

The Communication Plan serves to document the types and frequency of communications that will be prepared and distributed regarding the implementation of the CMOM Program.

In 2013 the Village significantly increased its online and social media presence, including a complete overhaul of the Village website. The new website has up-to-date sewer utility information, as well as capabilities to reach many residents in the case of a flooding or sewer emergency. In 2019 the website was continuously updated to relay educational content and sewer utility news and communications. Social media was used to share informational videos provided by the district.

1.3.6 Audit Plan

The Audit Plan serves to define the method, responsibilities, timeline, and documentation that will be used to complete an audit of the Village CMOM Program, the first audit was completed in 2015. The Village reviewed and updated the CMOM readiness review to reflect all gaps that have been addressed since the start of the CMOM program. In preparation for the Audit the Village met with another similar sized community to compare program strategies, tactics, and performance measures with a peer community. The Village will update the audit plan upon further guidance of updated requirements from MMSD

1.4 Key Performance Indicators

Since 2008 there have been no sewer bypass or overflows within the Village system. In 2019 there were no basement backups caused by a public sewer. The Village maintains a policy to make initial contact and investigation into SSOs and basement backups within 30 minutes of notification.



1.5 Significant Activities

In 2019 the Village and City of Mequon designed, bid, and awarded the lining of 2,500 feet of a shared 36 inch diameter interceptor sewer. Major lift station upgrades were made with rehabilitated pumps, installation of a flush system, and a new pumping scheme. Additional SCADA and computerized controls modifications were made as well as updates to the user interface and mobile applications. Updates to the GIS sanitary sewer applications were completed in 2019, including entering documents and as-builts. In 2019 the Village televised the entire sanitary sewer system.

In 2015 a change in state law now prevents the Village from performing Clearwater Code compliance inspections prior to the sale of a property. The Village can no longer prevent the title transfer until corrections are made. Prior to 2015 5% to 10% of inspections resulted in finding illegal cross connections.

2. Management Plan Implementation and Ongoing Activities

This section of the report will discuss the changes to the defined performance measures and the evaluation of the Village's performance using the defined measures. The review of the performance using the defined measures is intended to be an evaluation of the Village's status with respect to achieving its objectives. The review then provides impetus to continue existing strategies and tactics or to modify them to better achieve the objectives.

Table 1.

Satellite Municipality CMOM 2019 Annual Report

Village of Thiensville



Program Element	Performance Criteria/Standard	Benefit	2019 Performance
Practices			Indicators
Preventive Maintenance			82,660 feet in 2019
Cyclic Sewer Cleaning	Length performed annually	Establishes municipality's dedication to system maintenance through setting annual goals. Some utilities will justify needed PM expenses through this requirement	84,998 ft in 2019
CCTV Inspection	Length performed annually		84 (25%) in 2017
Manhole Inspections	Number inspected		5 times a week
Pump Station inspections	Frequency performed		
I/I Reduction Program		Provides integration with current Chapter 2 requirements for I/I control plan updates.	Planning and implementing pp/II Project
SSES	Description of activities performed		Building inspection department. Erosion Control Inspections
Rainwater Compliance Inspection	Description of activities performed		No manhole rehab in 2019
Disconnect Clearwater Sources	Number disconnected		N/A
Number of Manholes Repaired	Number repaired		
Length of Sewer Repaired or Replaced	Length repaired		
System Map	Data verified, QA/QC implemented, all facilities mapped and inventoried (completeness, accuracy and availability)	Ensures accurate inventory of sewer collection assets and is fundamental to subsequent asset management activities.	GIS data entered for inspection, inventory, maintenance, and basement backups.
Skills and Safety Training	Certification/skills training identified, tracked, provided, and updated for applicable personnel	Ensures and documents sewer worker safety training activities.	Staff receive annual safety training with the Fire Dept. CMOM Inspectors Conference
Capacity Evaluation	Evaluation completed in priority basins as necessary for development of 2020 Facilities Plan alternatives analysis and level of service evaluations.	Identifies system at risk of surcharge from MMSD system. Identifies potential impact on MMSD system if municipality attempts to reduce I/I or construct relief capacity to eliminate overflows.	Reduction of the 100 year floodplain as a result of the Pigeon Creek project has increased the reliability of the system during wet weather peak flow. No bypasses since 2008
Information Management System	Periodically updated and setup according to MMSD Standards	Makes data collection more consistent and retrieval more cost-effective for the municipality.	GIS system used to tabulate data and report. All defects now mapped in GIS
Documents			
Annual sewer financial reports	Document produced annually.	Establishes linkage between financial needs and funding.	Sewer defect inventory determines budget needs.
Annual CMOM Status Reports	Document produced annually.	Would eventually satisfy state requirements for CMOM Program summary.	Report prepared for June 30 th submittal
Organizational Chart	Document produced and updated as necessary.	Provides documentation of roles and responsibilities for CMOM activities.	Updated in 2019
Design and Inspection Standards	Confirm MMSD and State of Wisconsin standards in place	Provides clearer communication to designers and contractors on sewer construction projects.	Information and contacts listed on website
System Evaluation and Capacity Assurance (SECAP)	Document produced if required.	Establishes that municipality has evaluated potential linkage between system flows, system capacity, and overflows.	In 2010 Addressed one capacity restriction identified in MMSD SECAP. In 2015 one issue limiting future development was addressed
Standard Operating Procedures			
CCTV and manhole inspection	Document produced and updated as necessary, according to approved standard.	Provides for clear training of new staff and communicates to public that standards exist and are followed for these activities.	100% of system televised in 2019

Satellite Municipality CMOM 2019 Annual Report

Village of Thiensville



Program Element	Performance Criteria/Standard	Indicators	2019 Performance Indicators
Practices			
Cleaning Inspections (structures, pump stations)	Document produced and updated as necessary. Document produced and updated as necessary.		GIS tool built to track inspections
Overflow Response Plan (ORP)	Document produced and updated as necessary.	Provides for consistent training of new staff, communicates to public that an updated plan exists and is followed when responding to system overflows.	Emergency alerting system added to Village website. Continued SCADA system with smartphone and tablet compatibility developed in 2015 updates scheduled for 2020
Capital Improvements Plan	Major rehabilitation identified on 5-year planning program. Summary document produced and updated as necessary.	Provides for better financial decision-making as it looks more than one or two years into the future.	2019 Village-wide CCTV results will be utilized to set project priorities
Condition Assessment	Inspection results reviewed, defects identified and prioritized, repair/rehabilitation projects identified and incorporated into Capital Improvements Plan.	Ensures that inspection findings are assigned a priority and scheduled for correction.	Continue investigating sources of I/I in private infrastructure
Legal Authority	Appropriate ordinances identified and adopted.	Clearly communicates the responsibilities of property owners with respect to eliminating sources of clear water from the sewer system.	1000 Friends of Wisconsin completed a comprehensive review of green infrastructure ordinances



Table 2.

Satellite Municipality CMOM 2019 Annual Report

Village of Thiensville



Strategy Element	Steps	Priority	Progress	Change
Management Plan	1. Brief Village Board on CMOM Strategy	High	Completed	No
	2. Finalize Management Plan	High	Completed	No
	3. Resolve High Priority Areas for Improvement (from CMOM Readiness Review)	High	Completed	Yes
	4. Resolve Medium Priority Areas for Improvement (from CMOM Readiness Review)			
	5. Resolve Low Priority Areas for Improvement (from CMOM Readiness Review)	Medium Low	Ongoing Ongoing	Yes Yes
Overflow Response Plan	1. Develop ORP.	High	Complete	Updated equipment inventory
	2. Complete yearly updates	Medium	Complete	
SECAP	<ol style="list-style-type: none"> Review Village design criteria related to system capacity. Evaluate Village's conveyance system using hydraulic analysis tools. Perform any appropriate field investigations Evaluate system flows relative to MMSD Peak Flow Performance Standards. Evaluate a wide range of capacity-enhancement and peak flow reduction measures Develop a CIP list of capacity enhancement projects Evaluate the impact of inter-municipality connection discharges Produce a SECAP document 	To be determined	Completed Completed Completed Completed Completed Completed Completed	All restrictions in the Village have been corrected. Study completed to analyze additional service to a City of Mequon Project.
Communication Plan	1. Update the CP yearly	High	Completed	Post Annual Report on Village Website
Audit Plan	1. Develop AP.	High	Completed	Submitted Audit Plan 5 year report to MMSD. Next Audit 2020
	2. Develop a "suggestion box" to solicit input on the CMOM Program.	High	Ongoing	
	3. Develop review and program change procedures.	High	Ongoing	
	4. Acquire benchmark data.			
	5. Perform five-year audit of CMOM Program.	Medium Medium	Completed Completed	



2.1 Report on Dollars Expended to Support CMOM efforts

**W Reduction Projects
Village of Thiensville**

Year	Project Location	Project Description	Total Cost	Category*
1999	Village-wide	LSSSES	22,780	1
1999	Village-wide	TV and Cleaning	9,075	1
2000	Village-wide	LSSSES	77,187	1
2000	Village-wide	TV and Cleaning	26,283	1
2001	Village-wide	TV and Cleaning	65,281	1
2002	Village-wide	TV and Cleaning	5,223	1
2003	Village-wide	TV and Cleaning	9,592	1
2004	Village-wide	TV and Cleaning	19,482	1
2005	Village-wide	TV and Cleaning	8,488	1
2006	Village-wide	TV and Cleaning	6,069	1
2007	Village-wide	TV and Cleaning	10,268	1
2008	Village-wide	TV and Cleaning	17,935	1
2009	Village-wide	TV and Cleaning	9,536	1
2009	Village-wide	Grant Applications Investigation	9,667	1
2009	Village-wide	Matters/Laurel/Riverview/TV and Cleaning & GIS Implementation	2,865	1
2010	Village-wide	TV and Cleaning	34,250	1
2011	Village-wide	TV and Cleaning	10,344	1
2012	Village-wide	TV and Cleaning	9,465	1
2013	Village-wide	TV and Cleaning	8,198	1
2014	Village-wide	TV and Cleaning	7,415	1
2015	Village-wide	TV and Cleaning	10,497	1
2015	Village-wide	Main Street Relay	1,450	1
2016	Village-wide	TV and Cleaning	10,803	1
2017	Village-wide	TV and Cleaning	10,117	1
2018	Village-wide	TV and Cleaning	8,371	1
2019	Village-wide	TV and Cleaning	101,023	1
		SUB-TOTAL	511,725	
2000	Village-wide	Manholes and Sewer Rehab	201,141	2
2001	Wisconsin Lutheran and Village	Wisconsin Lutheran Sewer Relay and Manhole Rehab	523,465	2

Satellite Municipality CMOM 2019 Annual Report

Village of Thiensville



2002	Village-wide	Manholes and Sewer Rehab	599,130	2
2003	Village-wide	Manholes and Sewer Rehab	125,993	2
2004	Village-wide	Manholes and Sewer Rehab	59,899	2
2005	Village-wide	Manholes and Sewer Rehab	47,600	2
2006	Village-wide	Manholes and Sewer Rehab	84,461	2
2007	Village-wide	Manholes and Sewer Rehab	63,131	2
2008	Village-wide	Manholes and Sewer Rehab	79,415	2
2009	Village-wide	Manholes and Sewer Rehab & Repairs	80,201	2
2010	Village-wide	Manholes and Sewer Rehab	84,854	2
2011	Village-wide	Manholes and Sewer Rehab	83,203	2
2012	Village-wide	Manholes and Sewer Rehab	60,000	2
2014	Village-wide	Manholes and Sewer Rehab	954	2
SUB-TOTAL			2,093,447	
2003	Elm Street	Sanitary Sewer Relay/Upgrade	102,980	3
2005	Laurel Drive	Sanitary Sewer Relay/Upgrade	467,009	3
2006	Village-wide	Sewer Lateral Repairs	3,202	3
2007	Riverview Drive	Sanitary Sewer Relay/Upgrade	6,850	3
2008	E. Freistadt Road	Sewer Lateral Repairs	12,453	3
2009	W. Freistadt Road	Sanitary Sewer Relay/Upgrade	80,345	3
2010	W. Freistadt Road	Sanitary Sewer Relay/Upgrade	5,666	3
2011	Green Bay Road	Sanitary Sewer Relay	59,470	3
2011	Green Bay Road	Sanitary Sewer Lateral Repairs	29,883	3
2013	Thiensville-Mequon Interceptor	Sanitary Sewer Relay/Upgrade	19,000	3
2014	Alta Loma/Madero	Sanitary Sewer Relay/Upgrade	6,303	3
2014	Thiensville-Mequon Interceptor	Sanitary Sewer Relay/Upgrade	2,253	3
2015	Main Street Relay	Sanitary Sewer Relay/Upgrade	242,845	3
2016	Thiensville-Mequon Interceptor	402404Lining	5,688	3
2016	Madero/Lusita PP/II	PP/II	8,349	3

Satellite Municipality CMOM 2019 Annual Report

Village of Thiensville



2017	Madero/Lusita PP/II	PP/II	323,951	3
2018	Shared Interceptor	Lining	278,000	3
2019	Main Street Lift Station	Lift Station Rehab	201,092	3
SUB-TOTAL			1,855,339	
1999	Spring Street Storm	Storm Water Management	102,802	4
2000/2001	MATC Detention Pond	Storm Water Management	120,367	4
2001	Williamsburg Drive Storm	Storm Water Management	69,488	4
2002/2003	Elm Street Storm	Storm Water Management	157,318	4
2004	Storm Sewer Inspection	Storm Water Management	1,695	4
2005/2010	Pigeon Creek Flood Control	Storm Water Management	3,127,657	4
2005	Laurel Drive Storm	Storm Water Management	199,067	4
2006	Village-wide	Catch Basin Repairs	25,435	4
2007	Village-wide	Catch Basin Repairs	9,161	4
2007	Vernon Avenue Culvert	Culvert Repair	15,904	4
2007	Riverview Drive	Storm Water Management	121,015	4
2008	E. Freistadt Road	Storm Water Catch Basin Repairs	16,890	4
2008	Village-wide	Storm Water Catch Basin Repairs	3,413	4
2009	W. Freistadt Road	Storm Water Management	151,869	4
2009	Village-wide	Storm Water Catch Basin Repairs	19,631	4
2010	W. Freistadt Road	Storm Water Management	5,619	4
2010	Lining Detention Basin	Storm Water Management	39,482	4
2010	Village-wide	Catch Basin Repairs	126,403	4
2011	Village-wide	Catch Basin Repairs	19,870	4
2011	Pigeon Creek Flood Control	Storm Water Management	2,171	4
2011	Ehlers Storm Easement & Culvert	Storm Water Management	48,941	4
2011	Crescent Detention Basin	Storm Water Management	67,970	4
2012	Village Wide	Storm Water Management	18,777	4
2013	Village-wide	Storm Water Management	52,349.43	4
2013	Green Bay Road	Storm Water Management	98,780	4
2014	Village-wide	Storm Water Management	19,124	4
2014	Village-wide	Storm Water	172,350	4



		Management		
2014	Village-wide	Storm Water		
		Management	48,635	4
2016	Village-Wide	Storm Water		
		Management	53,817	4
2016	Village-Wide	Storm Water		
		Management	20,239	4
2019	Village-Wide	Storm Water	42,228	4
SUB-TOTAL			4,936,631	
GRAND TOTAL			\$9,397,142	

Categories

1=I/I Investigation

2=I/I Reduction

3=Sewer Relay/Upgrade

4=Storm Water Management

2.2 Report on all Performance Measures (see appendix 1)

3. Overflow Response Plan Implementation and Ongoing Activities

The Overflow Response Plan (ORP) included with the CMOM Program documentation has listings and methods in place for knowing there is an overflow, response procedures, analysis, and public notifications. The plan was reviewed in 2018.

There has been no reported overflows in the system since 2008.

4. SECAP Implementation and Ongoing Activities

In June 2006 MMSD completed a limited SECAP analysis. The results of the analysis indicated there were no bypassing conditions or pipe deficiencies found for the different conditions modeled.

Monitoring of the local trunk sewer system had indicated that there was one segment of trunk sewer that should be reinforced during peak flow conditions. That sewer is a 350 foot section on Main Street south of Freistadt Road that was reinforced with a parallel 12 inch sanitary relief sewer. This project was completed in 2010. There are no remaining deficiencies. The analysis identified one pipe segment that could limit future development in the business district. This segment was engineered in 2014 and a project was completed 2015. In 2018 the Village worked with MMSD to monitor manhole flow data for future I/I studies

5. Communications Plan Implementation and Ongoing Activities



The Communication Plan documents the types and frequency of communications that are prepared and presented or distributed regarding the implementation of the CMOM Program.

Discussed below are the activities of the communication plan that have been completed during 2019:

- Fats Oil and Grease (FOG) article in the Village electronic newsletter.
- MMSD PP/II and Green Infrastructure program discussed at the Village board.
- Website used to display information on MMSD and local medication drop-off days.
- Web link to household hazardous waste information posted.

6. Audit Plan Implementation and Ongoing Activities

The Audit Plan is comprised of three sections: (1) Annual updating, which is completed through the Annual Report; (2) Program audit, which is completed through the Program Audit Report and undertaken on a five-year cycle, with the first report completed in 2015, and (3) Program change procedures, which will be implemented following the Program Audit. The Village is reviewing the readiness review to identify gaps that have been filled since the start of the CMOM program. The Village will then compare the review to similar communities. The next audit will be in 2020

CMOM Program Objectives

Each of the CMOM Program Goals identified in Section 1 requires further definition in terms of objectives necessary to achieve each goal. Table 4.1.2 provides the details of the objectives as well as regulatory expectations that relate to each goal. Table 4.1.3 Action Goals

Table 4.1.2 CMOM Program Core Goals, Objectives, and Regulatory Expectations

Program Goal	Objectives	Regulatory Expectations
Comply with the WPDES permit concerning sanitary sewer overflows	Ensure procedures are in place to identify SSOs, report SSOs to the WDNR, and mitigate impacts from the SSOs per the WPDES permit.	Untreated wastewater discharges from the system are a violation of the WPDES permit.
Minimize the occurrence of	Determine critical system	The WDNR General Permit for SSOs



Table 4.1.2 CMOM Program Core Goals, Objectives, and Regulatory Expectations

Program Goal	Objectives	Regulatory Expectations
preventable overflows	<p>components where overflows are most likely to occur.</p> <p>Establish dry and wet weather operating protocols that ensure overflows are identified.</p> <p>Implement projects that will have immediate impact on known operation and capacity-related overflows.</p>	<p>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.</p>
Improve or maintain system reliability	<p>Confirm the existence of any system components that do not function according to established reliability standards.</p>	<p>Correct or improve system to improve reliability when necessary</p>
Reduce the potential threat to human health from sewer overflows	<p>Confirm the existence of locations where system overflows could pose a threat to human health.</p> <p>If such locations exist, develop response measures and investigate alternatives for eliminating the potential threat.</p>	<p>Overflows from the system are a violation of the WPDES permit, Clean Water Act, and Wisconsin State law.</p>
Provide adequate capacity to convey peak flow as identified in the 2006 SECAP analysis	<p>Gain an understanding of the current system’s ability to convey peak flows and what steps are necessary to address system inadequacies.</p>	<p>Evidence that suggests the system does not possess the capacity to convey peak flows would likely cause the State to require a System Evaluation/Capacity Assurance Plan for the Village.</p>
Continue to manage infiltration and inflow	<p>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.</p> <p>Maintain 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.</p>	<p>If the State or MMSD determines a SECAP is required of the Village, a component of this plan will include I/I evaluation and reduction.</p>
Protect collection system worker health and safety	<p>Make all collection system workers aware of potential hazards, equip them with proper safety gear, and provide proper training in dealing</p>	



Table 4.1.2 CMOM Program Core Goals, Objectives, and Regulatory Expectations

Program Goal	Objectives	Regulatory Expectations
	with these hazards.	
Operate a continuous CMOM Program	Establish procedures for monitoring CMOM Program implementation and initiating program modifications.	The CMOM program is modified as needed during a yearly review of the program elements

Table 4.1.3

In 2015 The Village added action goals that will be set yearly, to be reported on in the following year annual report. These are specific goals that can be completed in a 1-2 year budget cycle. These action goals are specific items intended to continue to address our core goals.

2018-2019 Action Goals	Objectives	Expectations
Complete NAD 87 data conversion	Convert GIS sanitary sewer data to updated data set	Completed in 2018
Complete Lift Station Programming upgrades	Implement new programming theory to address low flow conditions	Completed in 2019
Complete Lift station infrastructure upgrades	Rebuild pumps, install new walkway, add automated recirculation plumbing and valves, update check valves	Completed in 2019
Implement suggested changes to Village Ordinances that could prevent Green Infrastructure	Work with Village administration to make suggested ordinance changes	Bring suggested edits to ordinance to the Village Board in 2019 - Ongoing
Implement year 2 of system-wide CCTV inspection schedule and data storage.	Complete year 2/4 village-wide sewer televising	Favorable bids allowed the village to televise the entire system in 2019



Appendix 1

CMOM Program Strategies/Tactics/Performance Measures

Each of the established objectives needs one or more strategies for implementation. This section details the strategies developed for the Village, as well as the tactics to carry out the strategies and the measures used to gauge performance.

2019 performance measures underlined

1) *Ensure procedures are in place to identify SSOs, report SSOs to the WDNR, and mitigate impacts from the SSOs per the WPDES permit.*

- Develop and continually review procedures for identifying, reporting, and mitigating SSOs with sewer system staff.
- Maintain comprehensive ORP that addresses the requirements of the WPDES permit.
- Conduct training with staff to ensure operational readiness and communication protocols during SSO events.

Tactics

- Review standard operating procedures
- Implement the ORP
- Implement training measures

Performance Measures

- Development of ORP by June 30, 2009 Completed in 2009
- Number of wet weather SS's No SSOs since 2008
- Number of training sessions 2 Safety Training Sessions in 2019

2) *Determine critical system components where overflows and system-induced basement backups are most likely to occur.*

- Review past operational reports, including SSO reports to the state, to confirm locations where overflows have occurred in the past.
- Review system drawings and the results of computer modeling (if available) to determine locations where manhole overflows are prone to occur.
- Evaluate locations of potential overflow or basement backup to determine if a capital or maintenance project would reduce or eliminate the likelihood of such events. Implement recommendations as necessary.

Tactics



- Prepare list of critical conveyance facilities
- Review operational reports for critical conveyance facilities
- Add response requirements to overflows of critical facilities to ORP
- Compile root cause failure analysis (RCFA) of SSO's

Performance Measures

- Number of wet weather SSOs and basement backups. None
- Volume of wet weather SS's and basement backups. None
- Number of private property I/I sources removed. 2017 PP/II project Area
- Number of conveyance upgrades/sewer rehab projects. 2015 Main Street Relay

3) ***Establish dry and wet weather operating protocols that ensure overflows are identified and mitigated immediately thereafter.***

- Develop a comprehensive overflow response plan for the collection system that complies with state and federal laws and permits
- Train staff on the use of the plan during dry and wet weather operations.
- Perform annual reviews of ORP to identify areas requiring updates.

Tactics

- Developed ORP in 2009
- Implement training program
- Review and update ORP annually

Performance Measures

- ORP created Created in 2008, revised in 2019
- Training programs implemented Safety program implemented
- Number of staff trained on ORP 5 staff trained
- ORP updated annually Updated 3/19

4) ***Implement projects that will have immediate impact on known operation and capacity-related overflows.***

- Implement I/I reduction efforts that will resolve wet weather capacity problems.
- Establish (or continue) a program to maintain easements and rights of way (both legally and physically) in which there is sewer infrastructure.
- Encourage MMSD to establish a Fats, Oils, Grease (FOG) program, where communities can contract for that service.

Tactics



- Review past I/I efforts and compare to LSSES findings
- Identify sewer easements
- Field review sewer easements
- Implement MMSD PP/II project
- Continue to use green infrastructure fund to construct permeable surface in public projects
- Work with MMSD Technical Advisory Team (TAT) to develop FOG inspection protocol and regional inspector resource

Performance Measures

- Complete I/I rehabilitation of LSSES identified defects. All but 5% of manholes rehabilitated.
- Clear obstructions from easements to allow CCTV and cleaning. Obstructions cleared as required, all sewer pipes and manholes are accessible.
- FOG program and inspector resource. Village Engineer served on MMSD FOG committee. Website promotion of FOG education materials
- PP/II Program. Project completed in 2017 in 2019 study additional areas for Future PP/II projects

5) Confirm the existence of any system components that do not function according to reliability standards established by the Village.

- Document system components for which reliability standards are appropriate, such as pumping stations, and what those standards are for the Village.
- Review operating records to determine incidence of failing to meet reliability standards.
- Evaluate root causes for not meeting reliability standards.

Tactics

- Prepare reliability standards for pumping stations.
- Define where reliability standards are not being met.
- Review RCF and develop plan to fix failures.

Performance Measures

- RCF completed. Completed design of PP/II Project area
- Plan developed to fix identified failures. Joint interceptor repair project completed in 2019.

6) Confirm the existence of locations where system overflows could pose a threat to human health.

- Document locations of reported overflows, including basement backups.
- Review each location for the potential to threaten human health and document findings.

Tactics

- Track locations of overflows/basement backups.



- Field check locations of overflows and map downstream drainage route of overflow discharge.

Performance Measures

- GIS link to overflow data, discharge drainage map and basement backups. GIS application development completed and data entry is ongoing depending on staff time and new incidents. New GIS layer developed to locate private laterals and track inspection and rehab of private laterals.
- Flow monitoring. 2019 install flow monitors in business district capacity study area.
- Study aging siphon under Pigeon Creek on Williamsburg Drive for potential reliability issues. Broken pipe located upstream in 2019 determined to be the cause of siphon issues

7) *If such locations exist, develop response measures and investigate alternatives for eliminating the potential threat.*

- Document response measures to be used by municipality staff and contractors in the event of system overflow. Documentation should be site specific or specific to the type of overflow (such as basement backup).
- Review alternatives, construction-related and operation-related, for eliminating the threat and document the findings.

Tactics

- Develop ORP.
- Recommend sewerage improvements to eliminate potential threats.
- Notify residents and agencies of incidence of overflows.

Performance Measures

- ORP Completed in 2008, the ORP was updated in 2018 to reflect new contact information and emergency equipment.
- Construction of sewerage improvements to eliminate potential threats . Major goal of ongoing I/I program is to eliminate basement backups and SSOs. In 2016 plans, specifications and a bypass plan were developed for the Mequon-Thiensville Interceptor rehabilitation project. Construction was completed in 2017. In 2019 a second phase of rehabilitation was implemented
- Use Siphon performance study to establish a level of overflow threat.

8) *Monitor current system's ability to convey peak flows and what steps are necessary to address system capacity inadequacies.*

- MMSD's Limited SECAP project specific to the Village found no hydraulic problems. System inadequacies have been addressed through I/I reduction efforts and capacity enhancement projects. Thiensville has made significant progress in addressing historic capacity problems.
- If any future major storm events reveal new problem areas, install flow meters in areas of concern.



- Compare flow monitoring data to designed capacity conditions in the vicinity of the monitoring location to determine system adequacy for conveying base and peak flows.

Tactics

- Install flow meters as necessary to study new problem areas.
- Compare flow data to system capacity.

Performance Measures

- Verification of peak flows. Compared MMSD data with local flow monitor. Monitored new electronic data acquisition system to monitor flow in real time and to track in greater detail. Manhole flow meters installed in PP/II project area
- Sewer capacity limitations identified. All issues in the SECAP have been resolved. The Village's consultant engineer studied capacity on North Main Street in relationship to a City of Mequon request to take on a new development in the Village system.

9) *Understand the current level of I/I in the system, the extent to which it poses a threat to local and regional system operation, sources of I/I and potential remedial measures.*

- Continue to review available flow monitoring data at the pumping station to determine if the system generates significant I/I relative to the peak flow performance standards established by the MMSD.
- Review available flow data to determine areas that warrant further I/I investigations.
- Compare past SSES findings to the I/I characterization to determine likely significant sources of I/I in the system.

Tactics

- Determine actual peak flows based upon monitoring results.
- Compare flow data to MMSD sewer shed peak flow projections and to flow standards.
- Determine where additional flow monitoring is necessary and install flow meters.
- Determine likely sources of I/I.
- Perform additional SSES in sewersheds with high monitored peak to average flow ratios.

Performance Measures

- Identify meter sheds with excessive I/I. Thiensville monitors GIS data, LOMAR, SSLS flow data, and Dye testing to identify problem areas within its one sewer basin.
- Identify sources and locations of excessive I/I 2019 televising data is being leveraged to complete a comprehensive and interactive GIS inventory of defects and I/I
- Identify cost-effective remedial measures to remove excessive I/I. Thiensville has completed multiple I/I reduction removal projects and utilized the latest lining and rehab technologies for cost-effective repairs. In 2015, studies were done to determine links between ageing storm sewers and I/I.



10) Maintain a program to reduce I/I in situations where I/I results in service problems, such as overflows, building sewer backups, and flows in excess of acceptable levels.

- Continue program for reducing system I/I in areas that exceed peak flow performance standards established by the MMSD 2020 Facilities Plan and subsequent facilities plans.
- Continue a program to inspect sewers and manholes at regular time intervals and schedule repairs necessary to ensure structural integrity and cost-effective I/I management.

Tactics

- Perform SSES in meter sheds with excessive I/I.
- Determine RCF in locations with overflows and basement backups.
- Continue to study, design and rehab excessive I/I.
- Monitor flows after I/I removal or capacity improvements.
- Track overflows and basement backups.

Performance Measures

- Flow monitoring proves lower peak flows. Flow monitoring trended from beginning of significant rehab 14 years ago shows significant trends of decreased flow.
- Reduction in peak flows equates to reduction in number and volume of overflow incidences and basement backups. The Laurel Drive sewer relay project and the Pigeon Creek Flood Mitigation Project has eliminated all bypass pumping in areas of historic SSOs.

11) Make all collection system workers aware of potential hazards, equip them with proper safety gear, and provide proper training in dealing with these hazards.

- Continue to provide Village collection system worker training on sewer system hazards.
- Continue a safety program specific to sewer system work and include specifics such as sewer system hazards and safety gear.

Tactics

- Formalize technical and skills training program
- Provide safety program that includes hazard instructions and safety equipment

Performance Measures

- Document training program. Training sessions are documented and kept with personnel files
- Record training sessions. Training resources have been made available to staff.
- Safety Equipment. New safety equipment installed at the Main Street lift station in 2019.

12) Establish procedures for monitoring CMOM Program implementation and initiating program modifications.

- Track the closing of opportunities for improvement identified and prioritized by the CMOM review.

Tactics

Satellite Municipality CMOM 2019 Annual Report

Village of Thiensville



- Review CMOM on an annual basis and update to include improvements

Performance Measures

- Gaps closed in readiness review to achieve high defined approach.
- Continue to Monitor MMSD communications for any changes or new requirements to the CMOM program.
- Use GIS system for data tracking and policy implementation.
- Produce annual report for 2019 .
- Keep the annual report in a template format for easy use for future year reports.
- In 2015 Completed first Audit report. Next Report Audit in 2020.