VILLAGE OF MENOMONEE FALLS

CMOM PLAN

(Capacity Assurance, Management, Operations and Maintenance)

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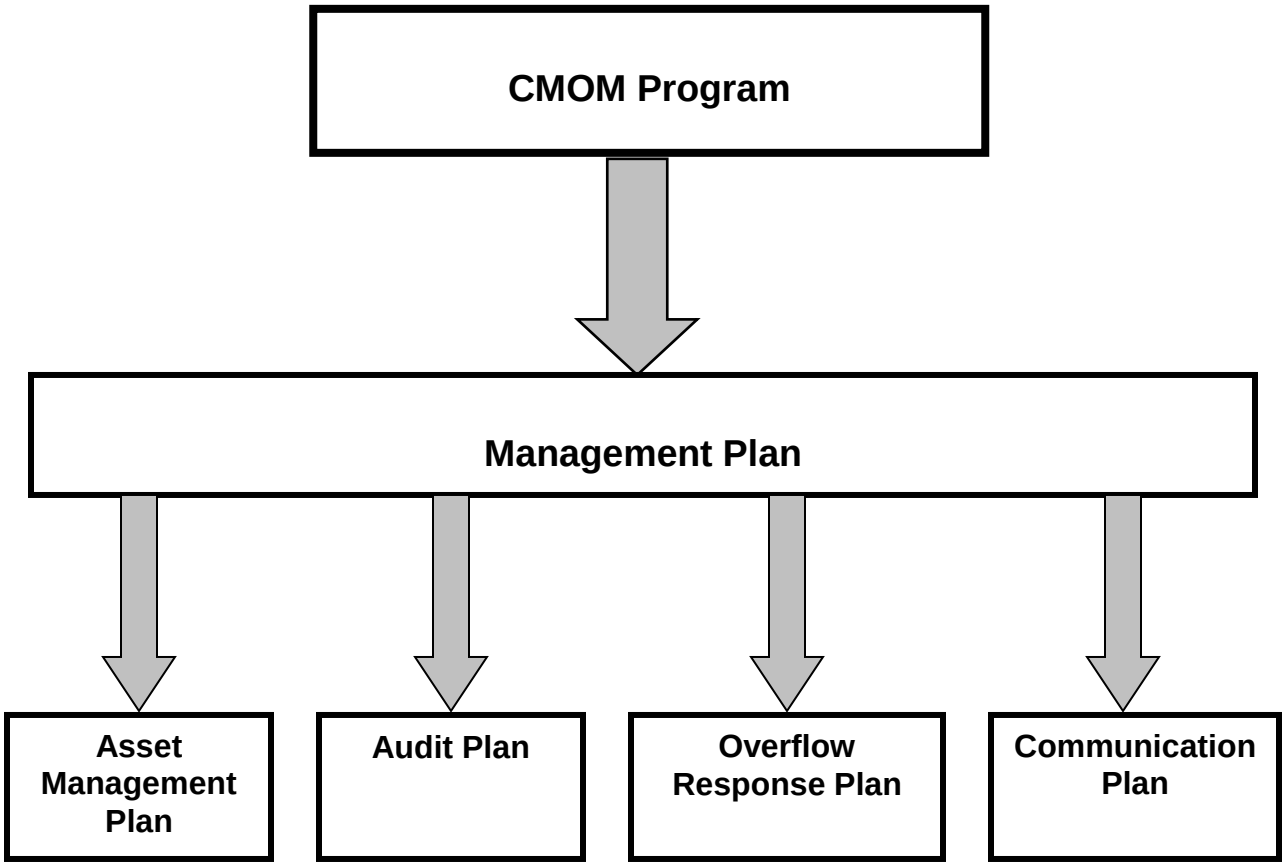
SOP - Equipment Inspection

SOP - Asset Maintenance

List of Acronyms

AP	Audit Plan
ASCE	American Society of Civil Engineers
CCTV	Closed-Circuit Televising
CIP	Capital Improvement Program
CMAR	Compliance Maintenance Annual Report
CMOM	Capacity assurance, Management, Operation and Maintenance
CP	Communication Plan
ERP	Emergency Response Plan
FOG	Fats, Oils, and Grease
FP	Facilities Plan
GIS	Geographic Information System
Ill	Infiltration and Inflow
LSSES	Limited Sanitary Sewer Evaluation Survey
MIS	Metropolitan Interceptor Sewer
MMSD	Milwaukee Metropolitan Sewerage District
MOM	Management, Operations and Maintenance
MP	Management Plan
NPDES	National Pollutant Discharge Elimination System
NR	Natural Resource Code
O&M	Operations and Maintenance
ORP	Overflow Response Plan
PM	Preventive Maintenance
QNQC	Quality Assurance and Quality Control
RCFA	Root Cause OF failure Analysis
SCBA	Self Contained Breathing Apparatus
SECAP	System Evaluation and Capacity Assurance Plan
SOP	Standard Operation Procedure
SSES	Sanitary Sewer Evaluation Survey
SSO	Sanitary Sewer Overflow
WDNR	Wisconsin Department of Natural Resources
WEF	Water Environment Federation
WERF	Water Environmental Research Foundation
WPAP	Water Pollution Abatement Program
WPDES	Wisconsin Pollution Discharge Elimination System
WWPFMP	Wet Weather Peak FLOW Management Program
WWTP	Wastewater Treatment Plant
USEPA	United States Environmental Protection Agency



Introduction and Background

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 requires MMSD to amend its rules by June 30, 2007 to require CMOM Programs for all MMSD satellite municipalities.

In December 2005, the Village of Menomonee Falls, 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 is set forth in a U.S. Environmental Protection Agency (USEPA) draft rule that addresses sanitary sewer overflow (SSO) control. A provision of the draft 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 SSO’s. The USEPA CMOM draft would require a collection system owner to:

1. Properly manage, operate and maintain, at all times, all parts of the collection system that it owns or over which it has operational control.
2. 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.
3. 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.
4. Provide notification to parties with a reasonable potential for exposure to pollutants associated with the overflow event.
5. 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.

The WDNR developed its CMOM regulations which closely follow the federal version. The WDNR permit staff has the authority to include CMOM provisions in individual Wisconsin Pollution Discharge Elimination System (WPDES) permits and the general collection system WPDES permits. The Village is required to follow WDNR CMOM permit requirements.

Program Structure

The CMOM Program is comprised of the following:

Asset Management Plan

The Asset Management Plan addresses asset needs such as asset knowledge, asset planning, asset refurbishment and replacement, asset development, asset operation and maintenance, asset condition monitoring, asset financing and financial reporting.

Management Plan

The Management Plan contains the goals and objectives, organizational structure to manage the CMOM Program, legal authority to control I/I, design criteria, benchmarking methods, performance measures and reporting methods for CMOM compliance reviews.

Overflow Response Plan

The Overflow Response Plan contains the procedures for being aware of, responding to and reporting and reporting of overflows. The response includes review and analysis to develop corrective actions, where necessary, to prevent future overflows.

Communication Plan

The Communication Plan contains the Village’s plan for communicating its CMOM Program to stakeholders, including internal, regulatory and public stakeholders, as well as receiving feedback from stakeholders.

Audit Plan

The Audit Plan contains the plan for conducting an audit of the entire CMOM Program in the year 2014.

The MMSD Stipulation and amended rules required satellite municipality CMOM adoption within two years of MMSD initiating its CMOM Program. MMSD completed all activities essential to CMOM Implementation, including CMOM Rule adoption, by June 30, 2007; the Village implemented its CMOM Program by June 30, 2009. The Village developed the following documents by that date:

1. Management Plan
2. Overflow Response Plan
3. Communication Plan
4. Audit Plan
5. Annual CMOM Report

MANAGEMENT PLAN

The Management Plan describes the means and methods the Village of Menomonee Falls has in place to ensure complete execution of a CMOM Program. The Village of Menomonee Falls Management Plan satisfies the Stipulation Agreement, signed with the State of Wisconsin in May 2002.

MANAGEMENT PLAN. A plan that outlines the goals of the CMOM, the organizational structure to manage it, the legal authority to control Infiltration and Inflow (I/I), design criteria, benchmarking data and performance measures to attain the goal. A significant effort associated with the management plan shall be the development of an asset management program (AM) that provides for both programmed maintenance and tracking of the asset condition to enable early recognition of expansion or major rehabilitation necessary to avoid capacity limitations.

There are three objectives the Management Plan must satisfy. First, it satisfies the requirements stated in the Stipulation agreement. Second, it must satisfy the MMSD Rules & Regulations pertaining to CMOM Program of all MMSD satellite municipalities. Third, it must serve to achieve the larger CMOM Program goals that the Village of Menomonee Falls has established.

Overview of the Village of Menomonee Falls

The Village of Menomonee Falls, located in Waukesha County, is a satellite municipality served by MMSD through five (5) Metropolitan Interceptor System (MIS) connections as well as several other local connections. The Village serves approximately 30,000 people in total through its Sanitary Sewer Utility, with 27,000 people served through MMSD and 3,000 people served through the Fox River treatment plants in Sussex and Brookfield. The collection system consists of approximately 217 miles of 4 to 60 inch diameter sanitary sewers, of which 188 miles are in the MMSD tributary area and 29 miles in the Fox River basins. The Village system also contains 10 lift stations of which 6 are in the MMSD service area and 4 in the Fox River sewer sheds. The Village of Menomonee Falls also maintains 3 lift stations for the Village of Lannon. Service agreements are in place with neighboring communities where applicable.

The Village's government is headed by the Village President, who governs the six (6) member Board of Trustees. The Board of Trustees is the elected body that is fundamentally responsible for making policy decisions for the Village based upon information from the Village staff. There are several committees within the Board of Trustees that focus on making recommendations for actions by the Board of Trustees. Of these, the Utilities and Public Works Committee is responsible for reviewing issues and making recommendations regarding public works projects and operations including the Water, Storm Water and Sanitary Sewer Utilities.

The Sanitary Utility is principally responsible for the operation and maintenance of the sanitary sewer collection system and the lift stations. The Utility and the Director of Utilities monitor, evaluate, and improve the sanitary sewer system for (I/I) reduction. The Utility also works to ensure WDNR Permit compliance as it applies to sanitary sewer overflows (SSO'S).

CMOM Regulations Requirements for Management Plan
According to proposed federal and state regulations, the Management Plan addresses the following issues pertaining to waste water conveyance in the Village of Menomonee Falls.

1.) Goals and objectives of the CMOM
2.) Organizational structure to manage CMOM
3.) Legal authority required to control I/I
4.) Existing design criteria
5.) Benchmarking data for utility performance
6.) Performance measures to attain CMOM goals
7.) Reporting methods for CMOM Compliance review

Each of these items is described in detail in this plan. In addition, the Management Plan will contain a CMOM Program Summary.

Goals and Objectives of the CMOM Program
Goals and objectives of the CMOM Program are established in order to provide justification for activities and proof of compliance. The program goals and objectives include those that are required by regulations or other legal constraints and those making the program consistent with other village project and programs. The Management Plan documents these goals in such a way that they are clear, lead to clear actions, and are measurable.

Federal and State regulations that indicate CMOM compliance
1.) Properly manage, operate and maintain, at all times, all parts of collection systems that the utility owns or over which the utility has operational control
2.) Provide adequate capacity to convey base flows and peak flows for all parts of the collection system the utility owns or has operational control
3.) Take all feasible steps to stop, and mitigate the impact of, SSO's in portions of the collection system the utility owns or have operational control
4.) Provide notification to parties with reasonable potential for exposure to pollutants associated with the overflow event
5.) Develop a written summary of the utility CMOM Program and make it, and an audit of the program audit, available to any member of the public upon request

CMOM Program Goals and Objectives
The following CMOM Program Goals were established by the Village of Menomonee Falls.

***Strategies* - developed to implement objectives**
***Objectives* - necessary to achieve goals**
***Goals* - goals are achieved by using strategies to implement objectives which are necessary to achieve goals.**
***Performance measures* – used to evaluate progress toward achieving each of the strategies, objectives and goals.**

1. ***Goal***: ***Comply with the conditions of the WPDES permit***

   Objective:
   Ensure procedures are in place to identify SSO's, report SSO's to WDNR, and mitigate impacts from the SSO's per the WPDES permit.

   Strategies:
   - Develop and review procedures for identifying, reporting and mitigating SSO's with sewer system staff
   - Develop a comprehensive ORP that addresses the requirements of the WPDES permit
   - Conduct training with staff to ensure operational readiness and communicate protocols during SSO events

   Performance measures:
   - Flows are compared to and comply with MMSD performance standards as identified in MMSD Rule 3.201
   - Development of ORP by June 30, 2009
   - Number of wet weather SSO's

2. ***Goal***: ***Minimize the occurrence of preventable overflows***

   Objective:
   Determine critical system components where overflows are most likely to occur.

   Strategies:
   - Review past operational reports, including SSO reports to the state, to confirm locations where overflows have occurred in the past.
   - Compare basement finished floor elevations to sewer main to determine house laterals with highest risk of backup.
   - Evaluate locations of potential overflow or basement back-up to determine if a capital or maintenance project would reduce or eliminate the likelihood of such events. Implement recommendations as necessary.

   Objective:
   Establish dry and wet weather operating protocols that ensure overflows are identified and mitigated immediately thereafter.

   Strategies:
   - 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
   - Conduct mock drills on an annual basis to confirm staff and equipment readiness
   - Perform annual reviews of plan materials to identify areas requiring updates

Objective:
Implement projects that will have immediate impact on known operation and capacity related overflows.

Strategies:
- Work to establish a Fats, Oils and Grease (FOG) program, including any necessary modifications to existing sewer use ordinances.
- Continue to implement I/I reduction efforts that will resolve wet weather capacity problems. Continue to implement capacity improvements that will resolve capacity related overflows.

Performance Measures:
- Number of wet weather SSO's and basement backups.
- Volume of wet weather SSO's and basement backups.
- Emergency power needs and options at critical pumping stations.
- Complete I/I rehabilitation of LSSES identified defects
- Capacity improvements to resolve SSO's

3. *Goal:* Minimize the life cycle ownership costs of the collection system assets

Objective:
Ensure preventive maintenance is performed on pump stations, manholes, and sewer pipes on regular intervals.

Strategies:
- Continue a program for routine pump station inspections and related preventive maintenance activities.
- Continue a program for routine manhole inspections and related preventive maintenance activities.
- Continue a program for gravity sewer inspection and related preventive maintenance activities.
- Establish a preventive maintenance program for force mains that includes valves and appurtenant structures.
- Continue a documented asset management program for tracking the findings of preventive maintenance programs and plan corrective maintenance in response to those findings.

Objective:
Ensure that appropriate condition assessments are conducted on sewer assets.

Strategies:
- Review sewer assets to determine whether condition assessments will be performed on them and at what frequency.

Objective:
Ensure that established design, construction, and inspection standards are followed on all new construction.

Strategies:
- Document the standards used for design, construction, inspection, and testing on all new sewer construction projects, including private sewers and building laterals.

Objective:
Establish sufficient funding streams to ensure replacements or refurbishments before asset failures occur.

Strategies:

- Based on asset data such as age and condition, determine the likely replacement schedule for asset types.
- Using the inventory, condition assessments, and replacement schedule, develop a replacement schedule for sewer assets on an annual basis, projecting out 5 years.

Objective:

Regularly review the sufficiency of funding for sewer system operation and maintenance activities.

Strategies:

- Forecast future operation and maintenance funding needs if anticipated to change due to system and organizational changes.

Performance Measures:

- Updated GIS maps available to sewer crews including easements
- Pump station maintenance reports completed regularly
- Manhole inspection forms filled out and catalogued
- Sanitary sewer cleaning records maintained
- TV inspection logs for sanitary sewers performed and reviewed

4. *Goal:* Improve or maintain the level of customer service

Objective:

Establish the current customer service satisfaction and develop future goals.

Strategies:

- Conduct a mail survey of customers to determine customer satisfaction
- Based on survey input, report back to customers what was learned and how it will affect system performance goal setting in the future.

Performance Measures:

- Complaint log reviewed
- Call back to confirm customer satisfaction

5. *Goal:* Improve or maintain system reliability

Objective:

Confirm the existence of any component that does not function according to established reliability standards.

Strategies:

- Continue review of operating records to determine incidence of failing to meet reliability standards.

Performance Measures:

- Pump station maintenance reports completed regularly
- Manhole inspection forms filled out and catalogued
- Sanitary sewer cleaning records maintained
- TV inspection logs for sanitary sewers performed and reviewed

6. *Goal:* Reduce the potential threat to human health from sewer overflows

Objective:

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

Strategies:

- A Sanitary Sewer System Management Plan was completed in 2000 by the Village's consultant. This formed the basis of a correction plan that is well underway.
- Continue to document locations of reported overflows, including basement backups.
- Continue to review each location for the potential to threaten human health and document findings.

Performance measures:

- Log trouble spots and inspect weekly
- Jet trouble spots quarterly or sooner if needed
- 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.

7. *Goal:* Provide adequate capacity to convey peak flow

Objective:

Gain an understanding of the current system's ability to convey peak flows and what steps are necessary to address system inadequacies.

Strategies:

- Review the findings of MMSD'S Limited SECAP project specific to the Village and determine which capacity problems have not yet been addressed through I/I reduction efforts or capacity enhancements projects.
- Install flow meters in areas identified as having capacity problems
- Evaluate alternative for eliminating system bottlenecks

Performance Measures:

- % of system televised and evaluated annually
- Utilization of evaluation as a tool for development of five-year capital plan

8. *Goal:* Manage infiltration and inflow

Objective:

Understand the current level of I/I in the system, the extent to which if poses a threat to the regional or municipal system operation, sources of I/I, and potential remedial measures.

Strategies:

- Review available flow data to determine areas that warrant further I/I investigations
- Establish and SESS program for regularly identifying sources of high I/I in system
- Conduct additional flow monitoring in areas suspected of generating significant I/I

Objective:

Establish a program to reduce I/I in situations where I/I results in service problems, including overflows and building sewer backups.

Strategies:

- Evaluate the extend to which I/I contributes to the Village system overflows and building backups and initiate a program to reduce I/I in those areas.
- Perform flow monitoring following I/I reduction activities to determine the effectiveness of effort.

Performance Measures:

- % of basins meeting performance standards developed by MMSD
- Peak flow performance standards established by MMSD 2020 Facility Plan are met

- Operating and capital funds necessary to continue to carry out programs.

9. *Goal:* Protect collection system workers health and safety

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

Strategies:
- 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

Performance Measures:
- Annual training hours per employee

10. *Goal:* Operate a continuous CMOM Program

Objective:
Establish procedures for monitoring CMOM Program implementation and initiating program modifications.

Strategies:
- On a schedule dictated by MMSD Rules, produce a cyclical report that describes the CMOM Program's accomplishments, challenges, and future directions.

Performance Measures:
- Sewer collection employees are knowledgeable about their portions of CMOM program initial training on CMOM to be completed by 2/28/2010.
- CMOM documents are updated annually or as necessary
- Annual progress is made on CMOM and target dates for completing high, medium, and low priority issues are achieved and recorded on the CMOM Strategic Plan Appendix B and contained in the annual report due 6/30 of each year

ORGANIZATIONAL STRUCTURE TO MANAGE CMOM

The Village of Menomonee Falls intends to fulfill the requirements for CMOM organizational structure by utilizing existing staff and redefining job responsibilities accordingly. Specifically Director of Utilities will serve as CMOM Program Manager.

The CMOM Program Manager is responsible for developing, implementing, periodically auditing, and maintaining the Village's CMOM program. The CMOM Program Manager may delegate the responsibility for developing, implementing, periodically auditing, and maintaining the CMOM Program to his staff.

Additional CMOM responsibilities are assigned as follows:

Sewer System Operations: Superintendent is responsible for daily operation of sewer system.

Sewer System Maintenance: Superintendent is responsible for daily planned and corrective sewer system maintenance activities.

Sewer System Capacity Assessment: Director of Utilities is responsible for tracking the capacity of the sewer system relative to actual planned base and peak flows.

Sewer System Condition Assessment: Director of Utilities is responsible for assessing the condition of sewer system assets, including I/I reduction program.

The Sewer Utility is responsible for the CMOM program.

LEGAL AUTHORITY TO CONTROL I/I

The Village of Menomonee Falls has incorporated ordinances into the municipal code that establish and regulate: waste water, the collection system, O&M, and enforcement of provisions. These are included in Chapter 18, Article 6, Plumbing and Chapter 110, Article 3, Sewer & Sewerage Disposal, and require compliance with MMSD Rules and Regulations. Construction standards are established and administered by the Village through its engineering department.

Additionally, the MMSD legal authority concerning I/I control provided through its Rules & Regulations – Chapter 3, "Infiltration and inflow Control." The MMSD Rules & Regulations address I/I control, construction standards, satellite collection systems, and other issues that relate to its mission. MMSD regulations seek to: conserve sewerage system capacity; establish a continuing duty for users of the sewerage system and governmental units to minimize I/I; reduce the exposure of the public to pathogens carried by wastewater; and minimize the probability, duration and magnitude of overflows. Within these rules, the MMSD imposes no quantitative limits on I/I for existing sewer service areas.

DESIGN CRITERIA

The Village of Menomonee Falls requires that all new sewer design be completed by a professional engineer using the State, MMSD and Village standards. These standards are updated from time to time to reflect new technology. MMSD has developed additional design criteria presented in Chapter 2, "Planning, Design and Construction of Sewers and Ancillary Facilities" of the Rules & Regulations. These MMSD Rules pertain to "any person or governmental unit who is planning, designing, or constructing a sewer or ancillary facility within the MMSD's planning area." Specifically, the rules describe requirements for sewer system and construction plans, construction activity, direct connections to MMSD interceptor sewers, and design requirements for constructing sewers in the MMSD service area.

CMOM PROGRAM MISSION STATEMENT

The goals of the Village of Menomonee Falls CMOM program are to properly manage, operate, and maintain the collection system, to maintain design construction standards and specifications for the installation of new wastewater systems, to verify that the wastewater collection system has adequate capacity to convey sewage during peak flows, to minimize the frequency of sanitary sewer overflows, to respond to sanitary sewer overflows quickly and mitigate the impact of the overflow, to provide training on a regular basis for staff in collection maintenance and operations, to maintain a Fats, Oil and Grease (FOG) program to limit fats, oils, grease and other debris that may cause blockages in the sewage collection system, to identify and prioritize structural deficiencies and implement short-term and long-term maintenance rehabilitation actions to address each deficiency, to meet all applicable regulatory notification and reporting requirements, and to provide excellent customer service.

SANITARY SEWER OVERFLOW RESPONSE AND REPORTING

In an overflow situation within the Village system, the Utility Superintendent will notify others within the Village, local and state public health agencies, and the public of the situation. A comprehensive communication plan allows quick identification of the contact person and notification procedure. Public notification often also includes an overflow signage component. At this time, Menomonee Falls does not intend to implement a signage program for SSO outfalls in the event of an infrequent discharge from these sites. Menomonee Falls will release a media advisory to make public note of an SSO. The village reports unscheduled overflow occurrences to the WDNR according to the following WPDES permit requirements according to General Permit 0047341 for bypassing and overflow from the sewage collection system.

STAFFING AND EQUIPMENT

STAFFING

1 – Director of Utilities
1 –Utility Superintendent
1 – Sewer Utility Crew Chief
3 – Sewer Utility Maintenance Personnel
Note: If during emergency conditions, (Heavy rains, Main blockages.) extra personnel are needed, Personnel from other Village departments are recruited to aid in handling any situation that might occur.

EQUIPMENT

One- Combination Cleaning Unit. (Vactor)
One- Crane truck supplied with a generator and air compressor
One- One ton dump truck
One – ¾ ton pickup truck with lift gate
One – CCTV Inspection van
One – ½ ton pickup
Seventeen – 4” trash pumps
Three – 3” trash pumps
One – 3” mud pump
Two – 6” trash pumps
One – trailer mounted portable generator

COLLECTION SYSTEM MAPPING

The Village has a Geographical Information System (GIS) that includes the information for its wastewater collection system assets including: gravity line segments, manholes, pumping facilities, and force mains. The Village also has information on its GIS for its storm drainage system and water system. The Village Uses ESRI and Arc Map software for mapping. The Village updates map as new information (as built) is received. The Village did a GPS survey on all sanitary manhole structures. Hard copy and electronic (mobile GIS) mapping is available to sewer utility personnel.
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CMOM I/I INFORMATION MANAGEMENT

Information obtained from I/I investigations is used to track sources of I/I and schedule corrective measures to address system defects. The Village is able to meter almost its entire collection system through 14 permanent metering sites. If a specific area needs to be metered the Village has 6 portable meters. With information obtained through metering the Village will use CCTV mainline inspection, CCTV lateral inspection, manhole inspection, smoke testing and dye testing to isolate the leaks.

PERFORMANCE MEASURES TO DETERMINE GOAL ATTAINMENT

A critical aspect of CMOM implementation is establishing performance measures that are aligned with the goals and objectives of the program. The CMOM Compliance Strategy proposed states that for each goal, objective, and strategy, a sufficient number of performance measures should be tracked by Menomonee Falls.

Performance measures fit into a category of organization commonly referred to as "benchmarking". Benchmarking enables an agency to conduct internal assessment of its programs, compare with other similar agencies, and attempt to answer questions such as:

Where are we now?

Where do we want to go?

How are we going to get there?

When are we going to get there?

CMOM Program Performance Measures		
Program Element Preventive Maintenance	**Performance Criteria / Standards Practices**	**Benefit**
Cyclic Sewer Cleaning	Length performed annually	Establishes municipality's dedication to system maintenance through setting annual goals.
CCTV Inspection	Length performed annually	
Manhole Inspection	Number inspected	
Pump Station Inspections	Frequency performed	
I/I Reduction		Provides integration with current Chapter 2 requirements for I/I control plan updates
SSES	Description of activities performed	
Rainwater Compliance Inspection	Description of activities performed	
Disconnect Clearwater Sources	Number disconnected	
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	Ensures accurate inventory of sewer collection assets and is fundamental to subsequent asset management activities
Skills and Safety Training	Certification skills training identified, tracked, provided, and updated for applicable personnel	Ensures and documents sewer worker safety training activities
Capacity Evaluation	Evaluation completed in priority basins as necessary for development of 2020 Facilities Plan alternatives analysis and level of service evaluations	Identifies potential impact on MMSD system if municipality attempts to reduce I/I or construct relief capacity to eliminate overflows.
Information Management System	Periodically updated and set-up according to MMSD Standards	Makes data collection more consistent and retrieval more cost-effective.
Documents		
Annual sewer financial reports	Documents produced annually	Establishes linkage between financial needs

		and funding
Annual CMOM Status Report	Documents produced annually	Would eventually satisfy state requirements for CMOM Program summary
Organizational Chart	Document produced and updated as necessary	Provides documentation of roles and responsibilities for CMOM activities
Design and Inspection Standards	Confirm MMSD and State of Wisconsin standards in Place	Provides clearer communication to designers and contractors on sewer construction projects
System Evaluation and Capacity Assurance	Document produced if required	Establishes that municipality has evaluated potential linkage between system flows, system capacity, and overflows
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
Cleaning	Document produced and updated as necessary	
Inspection	Document produced and updated as necessary	
Overflow Response Plan (ORP)	Document produced and updated as necessary	Provides for consistent training of new staff, communicates to public that an updated plan exits and is followed when responding to system overflows
Capital Improvement Plan	Major rehabilitation identified on 5-year planning horizon.	Provides for better financial decision-making as it looks more than one or two years into the future
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
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
System Performance		
Number of dry weather SSOs	Annual number of dry weather SSO events	Establish additional practices to prevent SSOs, maintain or improve system performance, and avoid preventable failures.
Number of wet weather SSOs	Annual number of wet weather SSO events	Establish additional practices to prevent SSOs, maintain or improve system performance, and avoid preventable failures.
Volume of wet weather SSOs	Annual volume of wet weather SSOs	Establish additional practices to prevent SSOs, maintain or improve system performance, and avoid preventable failures.

Number of building backups caused by Village	Annual review of building backup data, to determine those attributable to Village	Establish additional practices to prevent SSOs.

BENCHMARKING DATA

This topic of the Stipulation Agreement involves comparing Menomonee Falls to other similar municipalities with respect to utility performance. The "Qualserve Benchmarking Program" provides benchmarking data and analysis in key areas of wastewater utilities operations and management. Using this information, utility managers can determine how their utilities performance compares to other wastewater utilities. The primary objective of the benchmarking program is to build a performance measure system specific to wastewater utilities. These measures are designed to help utilities improve efficiency and effectiveness. The Qualserve Benchmarking Program is a joint program of the American Water Works Association and the Water Environment Federation.

The following data will be collected and validated:
Organizational Best Practices
Bond Rating
CMAR overall score
Employee Health and Safety Severity Rate
Training Hours per Employee
Collection System Integrity

Benchmarking data will be evaluated on a (frequency) basis

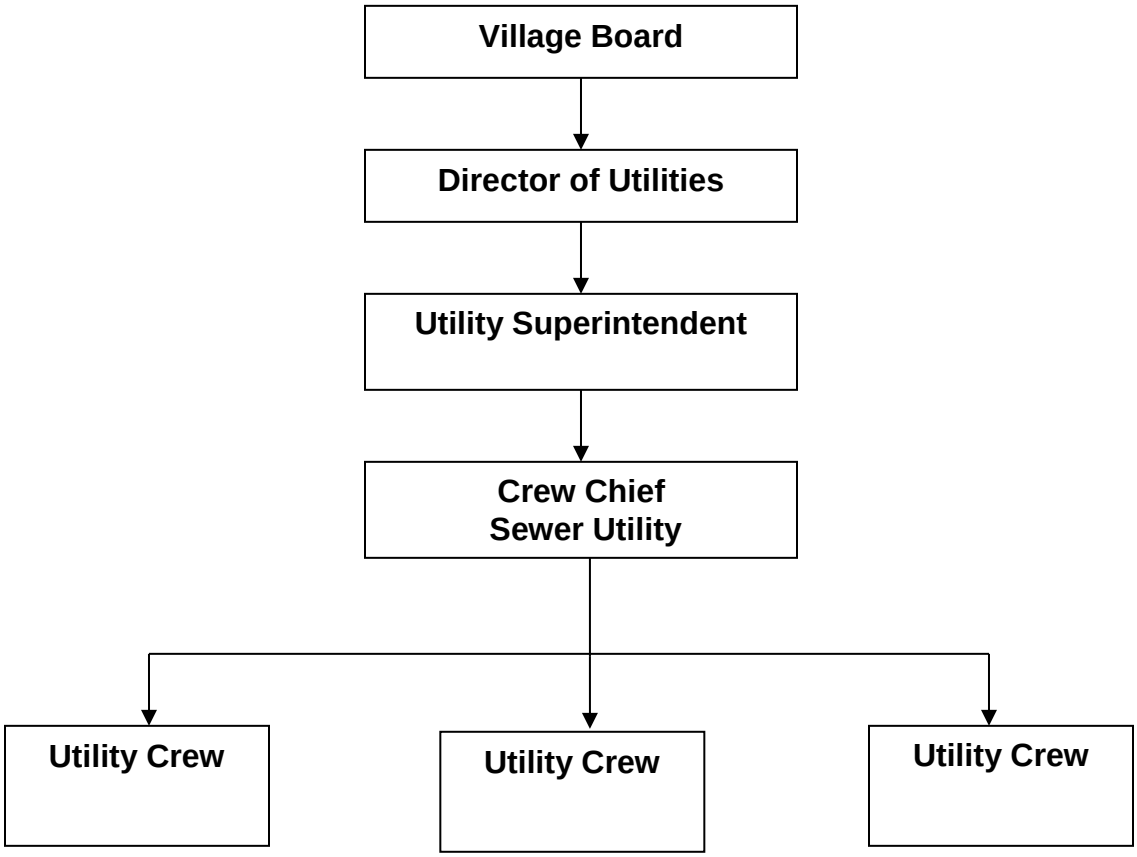
Benchmarking	Comparison Source	Data Requirements	Objective
Organizational Best Practices Index	Qualserve - Benchmarking Performance Indicators for Water and Wastewater Utilities	Self rating on a scale of 1 to 5 of seven areas: Strategic planning, Long-term financial planning, Risk management planning, Performance measurement system, Optimized asset management program, Customer involvement program, continuous improvement program	Enable implementation of the CMOM Program with the District Organization Structure
Bond Rating		Assigned by Rating Agencies	Continue to maintain adequate financial planning
CMAR overall score	Wisconsin DNR	Determined through completing CMAR form	Continue to comply with regulatory requirements
Training hours per employee	Qualserve - Benchmarking Performance Indicators for Water and Wastewater Utilities	Total qualified formal hours of training for employees/total full time equivalent positions during the reporting period	Continue to maintain a safe work environment for employees and sustain a competent workforce
Employee Health and Safety Severity Rate	Qualserve - Benchmarking Performance Indicators for Water and Wastewater Utilities	100 x total days away from work/total days worked by all employees during reporting year.	Continue to maintain a safe work environment for employees and sustain a competent workforce

System integrity	Qualserve-Benchmarking Performance Indicators fro Water and Wastewater Utilities	100 x total number of collection system failures/total miles pipe in collection system during reporting period. (failures are defined as a loss of capacity resulting from flow restriction)	Minimize the cost of system ownership

REPORTING METHODS FOR CMOM COMPLIANCE REVIEWS

Draft federal and state regulations would require annual compliance reporting for CMOM Programs. Given Wisconsin's delegated authority, only annual reporting to WDNR would be required. USEPA Region 4 developed a template, dated 1999. MMSD has developed an annual report template that would satisfy the annual reporting requirements as per MMSD rules. Currently annual reporting by the Village is required to MMSD and the Brookfield Fox River Water Pollution Control Center.

Organizational Structure
Sewer Utility



VILLAGE OF MENOMONEE FALLS
FATS, OILS AND GREASE PROGRAM

Overview

Sanitary sewers are designed and installed with sufficient diameter to carry the normal waste discharges from a residence or business. When FOG is discharged to the sewer system, it cools and accumulates on the sidewalls of the sewer pipes. Over time, this accumulation of fats, oils and grease congeals to the inside of the sewer collection system which restricts the flow, requires regular maintenance, requires more frequent replacement of collection system and causes blockages in the main which may result in overflowing manholes or residential and commercial sewer backups.

Enforcement

In accordance with Wisconsin Administrative Code Comm 82.34 (5) (c) and MMSD Discharge Regulations and Enforcement Procedures 11.201 (1), and 11.202 (3), The Village of Menomonee Falls Sewer Utility will work to require a FOG abatement program.

Wisconsin Administrative Code, Comm 82.34 (5) (c) states "All plumbing installations for occupancies, other than dwelling units, where grease, fats, oils or similar waste products of cooking or food are introduced into the drain system shall be provided with grease and oil treatment in accordance with this subsection."

"Exterior grease interceptors shall receive the entire waste discharge from kitchens or food processing areas. All exterior interceptors shall be designed and constructed in accordance with this paragraph, so as to constitute an individual structure."

MMSD Discharge Regulations and Enforcement Procedures 11.201(1), and 11.202 (3) states "Users may not discharge to the sewerage system:
(3) Solid or viscous pollutants that will obstruct the flow in the sewerage system"

Existing installations. The Village of Menomonee Falls may require the installation of any treatment device deemed necessary for existing plumbing installations where the waterway of a drain system, sewer system or private onsite wastewater treatment system is reduced or filled due to grease.

Inspection

All food service facilities are subject to routine inspections. In addition, food service facilities may be inspected without notice and during business hours at any time, in response to complaints or reports of sewer blockage and will verify that all required fixtures are connected to a FOG treatment device and that the FOG treatment is adequately sized and properly installed. Inspectors may also review maintenance records or other documents related to the operation of the device.

It shall be the duty of Building Inspector to require that the construction, reconstruction, and alteration of all plumbing & sanitary drainage installed in all of the buildings in the Village of Menomonee Falls, shall conform to the laws of the state, the
rules of the Department of Commerce, rules and regulations adopted by the Village of Menomonee Falls.

Utility Maintenance
Through its sewer cleaning and sewer (CCTV) inspection program the Menomonee Falls Sewer Utility has acquired a list of mains deemed to be ”grease problem areas” which require more maintenance than the regular seven (7) year cleaning cycle. These “problem areas” are cleaned on a quarterly basis. Since grease has a corrosive effect on concrete pipe, these lines are also televised on a more frequent basis. Additional televising also allows the Sewer Utility to monitor Food Service Facilities on proper FOG treatment.

ASSET MANAGEMENT PROGRAM (AMP)

Asset Management Plan Development (AMP)

Stipulation
“A significant effort associated with the Management plan shall be the development of an asset management (AM) program that provides for both programmed maintenance and tracking of the asset condition to enable early recognition of expansions or major rehabilitation necessary to avoid capacity limitations.”

The AMP describes the measures and activities that the Village (Menomonee Falls) will undertake to ensure proper function of the assets that provide for conveyance of wastewater.

The following areas were considered in the development of the AMP:

1. General principles of asset management
2. Capacity, Management, Operation, and Maintenance (CMOM) Program objectives.

The Asset Management Plan must have:

1. A system for ensuring programmed maintenance
2. A system for obtaining condition information and programming capital asset replacement to avoid capacity limitations.

Measures and activities the Village must undertake that indicate CMOM compliance:

The CMOM program must address the following elements that are appropriate and applicable to the system and identify the person or position responsible for each element:

1. Provide adequate maintenance facilities and equipment
2. Maintenance of a map of the collection system
3. Management of information and use of timely, relevant information to establish and prioritize CMOM activities, and identify and illustrate trends in overflows, such as frequency and volume.
4. Routine preventive operation and maintenance activities
5. A program to assess the current capacity of the collection system
6. Identification and prioritization of structural deficiencies and identification and implementation of short-term and long-term rehabilitation actions to address
7. Appropriate training on a regular basis
8. Equipment and replacement parts inventories including identification of critical replacement parts

Asset Management Principles

The key elements of asset management are:

1. Taking a life-cycle approach
2. Developing cost-effective management strategies for the long-term
3. Providing a defined level of service and monitoring performance
4. Managing risks associated with asset failures
5. Using the physical resources in a sustainable manner
6. Continuously improving Asset Management Practices

Asset Management Defined

Managing infrastructure assets to minimize the total cost of owning and operating them, while providing the desired level of service. The level of management can be well defined or as simple as rule of thumb or operator judgment.

Another way of stating this is to say that an asset management plan is a defined system to improve the management of asset life-cycle costs such that:

1. There is a defined level of service
2. The system provides the ability to forecast operations, maintenance, repairs, refurbishments and replacement costs and compare predicted costs to realized costs for improved decision making.
3. There is a standard procedure for approving capital project spending
4. The system allows easy visual access to the required cost data necessary for making decisions regarding asset spending
5. Personnel are trained according to documented procedures

Program Objectives

1. Continue to establish and document level of protection, design, and performance standards for new conveyance assets constructed in the Village
2. Minimize the cost of conveyance asset ownership while maintaining necessary stewardship of assets and achieving defined protection levels.

Plan development

Asset Knowledge

Asset knowledge is that quantified asset information which is readily available for AM purposes. Having this information for all sewer utility assets is the foundation for good decision making.

Asset knowledge has five objectives:

1. Define the minimum level of detail for an asset (what assets to track)
2. Establish a uniform asset enumeration scheme (asset organization)
3. Identify existing assets and related attributes (asset data)
4. Identify the probability and consequences of failure of an asset (asset risk)
5. Establish the level of AM performed (asset management strategy)

Each of these objectives is discussed in more detail.

Objective: Define the minimum level of detail for an asset

Tactics:

1. Review existing information regarding capital assets
2. Determine the definition of an asset

Objective: Establish a uniform asset enumeration system
Tactics:

1. Review the documentation regarding asset location and asset class description and hierarchies.
2. Update hierarchy documentation

Classifying assets in a hierarchical manner by location allows management at different levels and facilities accumulation of cost by asset, by facility, by infrastructure segment etc. Maintaining class hierarchies allows the comparison of maintenance, operations, construction cost and life histories of asset type. This can improve the gathering of data necessary to make life-cycle planning decisions.

Objective: Continue to identify existing assets and related attributes
Tactics:

1. Review asset databases for conformity with defined level of asset detail. Re-inventory, renumber, and add/change class assignments as required
2. Define identifying and maintenance data required for each asset class. Review databases and add the required data where it is not present.

Asset data will fall into three sets:

1. Identifying information, such as serial number, date installed, and original cost
2. Parametric information, such as horsepower, flow capacity, length and diameter
3. Maintenance history, such as types and frequencies

Objective: Identify the Consequences of failure for assets

The consequences of failure for an asset are used to prioritize assets by criticality and determine an appropriate management method.

Objective: Continue to establish the level of Asset Management performed
Tactics:

1. Review asset listings and assign preliminary numerical cut-off points for the management strategies
2. Review assets assigned to each management strategy
3. Based on the second review, establish additional management strategies if substantial groups of assets need management methods different from those discussed above.
4. Formalize the reviews by documenting the management strategies used and the criteria for determining the strategy
5. Establish procedures to ensure that assets are being managed according to the appropriate modes.

Once the Village has identified, enumerated and determined criticalities for assets, assets can be assigned to appropriate levels of management. The intent is to assign the most critical (highest risk) assets to the more intensive management modes, so that resources can be focused where they will have the greatest effect.

Modes of Management of Assets

Depending on the criticality of an asset the Village will use three modes of management:

1. Condition monitoring-based management: These assets are so critical that unplanned failures will have serious consequences in level of service or regulatory violations. The Village will base condition monitoring, maintenance, refurbishment and replacement schedules on minimizing the risk associated with these assets.
2. Economic — based management: These assets are less critical in that they can experience unplanned failures that do not have an adverse impact on service delivery and will not cause a regulatory violation. For these assets, condition monitoring, maintenance, refurbishment arid replacement schedules will be based on economic analysis.
3. Operate to failure-based management: These assets are not critical in that a failure will not have an impact on service delivery and will not cause a regulatory violation. For these assets, it is not economically practical to complete some or all of the monitoring and maintenance activities, but is cheaper to replace the asset when it fails.

Asset Planning

Asset planning refers to the preparation of the expected life-cycle costs of ownership of an asset. Such costs typically include short-interval activities (operations, maintenance, energy, condition monitoring) and long term activities (refurbishment, replacement, and disposal).

Asset planning is important for two reasons:

1. Reducing ownership costs. An AM Program accomplishes this through the plan/act/measure/control cycle.

2. Having cost of ownership plans for all significant assets means that the Village can accurately forecast aggregate ownership costs well into the future, giving a solid foundation for long-range funding plans.

Asset Refurbishment and Replacement

One of the focuses of AM is the improvement of asset refurbishment and replacement (R&R) decisions. R&R goals may vary from risk avoidance, in the case of highly critical assets, to risk management for less critical assets, where unplanned failures can be accepted. Improved asset knowledge is the key to better R&R decisions. Improved R&R planning arising from asset knowledge greatly improves the quality of capital funding strategies.

Asset R&R has three objectives:
1. Improve R&R Planning
2. Improve R&R Analysis
3. Ensure R&R Actions are properly reflected in financial reporting

Objective: Improve R&R Planning
Tactics:

Review current data and methods to project R&R needs

Objective: Improve R&R Analysis
Tactics: Require staff to perform preliminary analysis on asset replacement requests

Objective: Ensure R&R Actions are properly reflected for Financial Reporting
Tactics:

1. Prepare guidelines for classifying R&R transactions for financial reporting purposes.
2. Prepare procedures for analyzing and reporting R&R transactions as retirements, replacements, and improvements.
3. For refurbishments that affect the useful life of the asset, procedures should ensure that the fixed asset register is updated to reflect the new remaining useful life.
4. Prepare procedures for assigning costs to R&R actions.

Asset Development

The role of AM in asset development is to assure that the Village optimizes its investment in new infrastructure. That means that the alternative that best meets the identified needs, meets the required level of service/level of protection, and that has the lowest anticipated life-cycle costs is implemented. Asset development is a critical role for AM because the greatest opportunity for savings exits when making the choice to build new infrastructure.

Condition Monitoring

Inspection procedures have been developed for condition monitoring of the sewer system (pipes and structures). The procedures require that the person performing the inspection be certified by the National Association of Sewer Service Companies (NASSCO) and use NASSCO standardized defect coding. With current condition monitoring information the remaining useful life can be updated.

Asset O&M

The Objectives of Asset O&M are:

1. Define required preventive maintenance (PM) activities.
2. Perform required preventive maintenance at the prescribed intervals
3. Perform corrective maintenance (CM) on a timely basis.
4. Measure the balance between preventive maintenance (PM) and corrective maintenance (CM) and managing the maintenance process to achieve the optimum ratio between the two.
5. Record maintenance costs on an activity basis, by asset.
6. Track asset failures consistently

Objective:

Define required preventive maintenance activities

Tactics:

Discussed in the SOP section for asset maintenance

Objective:

Perform required preventive maintenance at the prescribed intervals

Tactics:

Discussed in the SOP section for asset maintenance

Objective:

Perform corrective maintenance on a timely basis.

Measure the balance between preventive maintenance and corrective maintenance and managing the process to achieve the optimum ratio between the two.

Tactics:

Through proper recording and analysis of asset deterioration and failure, the Village is refining its maintenance program to better predict proper service intervals.

Objective:

Record maintenance costs on an activity basis, by asset

Tactics:

Using employee time sheets, and a database listing all asset maintenance costs, the Village is able to document the maintenance costs of it's assets.

Objective:

Track asset failure consistently

Tactics:

Review current maintenance documentation to ensure that they provide sufficient information for the desired purpose. Update if necessary.

Asset Financing

Using asset life cycles, asset inspection, asset maintenance costs, manufacturer recommendations and asset replacement costs the Utility Superintendent makes out a budget to properly finance the maintenance of utility assets. Operating revenue sources for utility operations (capital and operational) comes from customer fees, property taxes, impact fees and investment earnings, the majority of which (91%) coming from customer fees.

Proper Asset Management should assure that funding is properly budgeted for utility operations. If a non- budgeted emergency should occur the Village has procedures in place to fund the emergency.

OVERFLOW RESPONSE PLAN GENERAL

The purpose of a Capacity assurance, Management, Operations and Maintenance (CMOM)- based Overflow Response Plan (ORP) is to document a standardized course of action that the Village of Menomonee Falls wastewater collection system personnel will follow in the event of a sanitary sewer overflow (SSO) event. To match the recommendation within the U.S Environmental Protection Agency's (USEPA) draft CMOM regulations, the Village of Menomonee Falls has designed it's ORP to ensure that designated personnel immediately dispatch every report of a confirmed sewage overflow to appropriate field crews to minimize the effects of the overflow with respect to impacts to public health, beneficial uses and water quality of surface waters, and customer service. Further, the Village of Menomonee Fall's ORP includes provisions to ensure safety of collection system workers. Finally, the ORP ensures that the Village of Menomonee Falls notifies and reports overflows to the public and appropriate local, state, and federal authorities in order to meet Wisconsin Pollution Discharge Elimination (WPDES) permit compliance requirements as stated in WI-0047341-04-O Sanitary Sewer Overflows from Sewage Collection Systems. This chapter of the CMOM Strategic Plan documents the ORP for the Village of Menomonee Falls.

OBJECTIVES

The primary objectives of the ORP are:

1. Reducing sewer system overflow frequencies and volumes
2. Protect public health and safety
3. Minimizing adverse water quality and other environmental impacts due to an overflow
4. Avoiding WPDES permit violations
5. Complying with all local, state, and federal rules and regulations
6. Protecting public and private property
7. Minimizing the liability of the collection system owner
8. Improving the quality of customer service

CURRENT ACTIVITIES

Developing and implementing a comprehensive ORP requires:

1. An understanding of the critical facilities
2. Development of an organizational structure to facilitate quick response
3. Development of a comprehensive ORP communication plan
4. ORP
5. Maintaining adequate staff and equipment
6. Establishing a panel of outside contractors who can respond to overflow events
7. Establishing comprehensive reporting procedures
8. distributing the plan so that customers, agencies an Village personnel are aware of the ORP requirements

CRTICAL FACILITY

A critical facility is any structure or component of the collection system that could allow an overflow that would result in significant impact to public health or environment.

Examples of critical facilities

Pumping stations

Mechanical, instrumentation, power, and structural failures at pumping stations can result in

basement flooding, surcharged manholes and overflows of untreated wastewater that may directly impact public health and receiving water quality. The Village owns, maintains and operates 10 lift stations of which 6 are in the MMSD service area and 4 are in the Fox River sewersheds. Three stations can bypass wastewater (SSO) via a valve from the forcemain to surface water, only when the Menomonee Falls Interceptor is full. The Village also maintains and operates 2 lift stations and 7 grinder pump stations for the Village of Lannon. All these are in the Fox River sewersheds.

Collection System
The collection system collects and conveys the wastewater from domestic, commercial, and industrial sources to a WWTP. Collection system deficiencies may cause wastewater backups, resulting in untreated wastewater discharges which can produce adverse public health and environmental impacts. The Village owns over 217 miles of sanitary sewer collection system mains and interceptors. The most critical elements of the gravity system are shallow manholes and pipes at elevations very close to those of nearby basements.

Siphon
Inverted siphons are sewer lines installed lower than the normal gradient of the sewer line to pass under obstructions such as watercourses and depressed roadways. The Village owns, operates and maintains one siphon facility which was relaid in 2015 as a three barrel structure versus the former one-barrel structure.

ORGANIZATIONAL STRUCTURE

See attachment for the organizational chart that shows the chain of command and relationships among program components. The organizational chart shows lines of authority, including the chain of command for responding to SSOs, from the receipt of the complaint to the person responsible for reporting to the WPDES authority. For the Village, the permit authority reporting responsibility falls on the Utility Superintendent.

ORP COMMUNICATION PLAN

In an overflow situation within the Village system, the Utility Superintendent or the Director of Utilites will notify others within the Village, local and state public health agencies, and the public of the situation. See attachment for flow chart of notification procedures for spills, accidental discharges, and unidentified releases to the Village's system.

Public notification is a key component of the communication plan, and a requirement under the WDNR general discharge permit. Also, the CMOM regulations require" notifications to parties with a reasonable potential for exposure to pollutants associated with the overflow event. The Village will use it's web page and media advisory to make public note of an SSO.

State regulations view scheduled (typically related to construction) and unscheduled overflows differently. The Village must report unscheduled overflow occurrences to the WDNR according to General Permit WI-0047341-05-0 for bypasses and overflows from sewage collection systems:
Telephone, fax, or by e-mail within 24 hours

Submit a written report within five days using WDNR form or equivalent

.
See Attachment for copies of forms and reports.

OVERFLOW RESPONSE

The ORP presents a strategy to mobilize labor, materials, tools and equipment to correct any condition, which may cause or contribute to an unpermitted discharge. The plan considers a wide range of potential system failures that could create an overflow to surface waters, land or buildings.

Receipt of information Regarding an SSO

Identification by the Public
During regular working hours (Mon — Fri. 7:00 AM to 3:30PM)
Numbers are listed in the phone book
Menomonee Falls Village of:
Sewer Maintenance 262- 532 -4855 or 262-532-4850

After regular working hours, weekends and holidays:
Police Dispatcher 262-532-1700

The Menomonee Falls Sewer Utility has an informational brochure (Coping with Sewer Backups) Educating the public concerning sanitary sewer overflows.

Overflow Response

The response of the Village to a possible overflow includes three parts.

1. Receive and document the information and direct it to the proper personnel
2. Respond to the possible overflow
3. Complete an analysis of the overflow

Telephone Overflow Reports

If the overflow notice comes in through a phone call, the following information is collected from the caller:

a. Date and time call was received
b. Specific location
c. Description of problem including if noticed where the backup originated i.e. floor drain, toilet, sink or sump crock.
d. Time possible overflow was noticed by caller
e. Caller's name and phone number
f. Observations of the caller
g. Other relevant information that will enable the responding crew to quickly locate, asses and stop the overflow

Pump Station Failure Reports

Pump station failures are monitored and received by the Utility Superintendent through the SCADA computer. Pump station failures monitored include:

1. Power failure
2. High wet well level
3. Pump failure
4. Communication Failure

Response Procedures

The Utility Superintendent directs the response, which may include calling in staff, securing emergency resources, securing the site, stopping, containing or mitigating the overflow and

documenting the incident.

Overflow Confirmation
Sewer utility personnel shall confirm the overflow. Until verified, the report of a possible spill will not be referred to as an overflow.

Coordination with Hazardous Material Response
Should the Utility Superintendent determine the need to alert a hazardous material response team or fire department, the response crew shall await the arrival of the hazardous material response team or fire department to take over the scene only when the lead person of the hazardous response team or fire department determines it is safe, can the sewer utility crew proceed under the ORP with containment, clean up and correction.

Overflow Correction, Containment, and clean-up
Responsibilities of Response Crew upon Arrival:

1. Determine cause of the overflow
2. Identify if necessary, assistance or additional resources to correct the overflow
3. Determine if private property is impacted
4. Take immediate steps to stop the overflow
5. Request additional personnel, material, supplies, or equipment that will expedite and minimize the impact of the overflow

Initial Measures for Containment:

1. Determine immediate destination of the overflow (storm drain, creek bed etc.)
2. Identify and request if necessary additional materials and equipment to contain or isolate overflow
3. Take immediate steps to contain overflow (divert to downstream manhole, recover through vacuum truck etc.)

Additional Measures under Potentially Prolonged Overflow Conditions:

1. In the event of a prolonged sewer blockage or sewer collapse, a determination should be made to set up a portable by-pass pumping operation around the obstruction

Clean-up

1. Sewer overflow sites are to be thoroughly cleaned after an overflow

Additional Resources

The Village has an informal intergovernmental agreement with Germantown to share resources (e.g. vactor, cctv). If shared resources are required to contain, clean-up, or rectify the SSO contact:

Tim Zimmerman, Superintendent of Wastewater Utility, Village of Germantown
Contact Phone # 262-253-7765

Assessment of Damage to Private and Public Property
The response crew shall try to enter private property for purpose of assessing damage only. Still photographs and video footage should be taken of the impacted area in order to thoroughly document the nature and extend of impact.

Site Specific Overflow Response Procedures

See attachment for site specific overflow response procedure

OVERFLOW NOTIFICATION

Permit Required Notification

If an overflow is verified, the Utility Superintendent will notify the WDNIR within 24 hours of initiation or overflow occurrence by telephoning the wastewater staff in the regional office. The primary WDNR contact is Theera Ratarasarn: phone (414) 263-8650or email:. Theera.Ratarasarn@wisconsin.gov.

Within 5 days of conclusion or the bypass or overflow occurrence the following information is reported to the WDNR in writing:

1. Reason for the overflow
2. Date the overflow occurred
3. Location where overflow occurred
4. Duration of overflow
5. Steps taken to prevent future occurrences
6. Receiving water for overflow
7. Other relevant information
8. Forward a copy to MMSD

Water Treatment Plant Notification

The Water treatment plants are notified via phone or e-mail, see list in the appendix.

Public Advisory Procedure

Temporary Signage

The Village of Menomonee Falls will decide if and when to post notices of polluted surface water bodies or ground surfaces that result from uncontrolled wastewater discharges from its facilities. The postings do not necessarily prohibit use of recreational areas, unless posted otherwise, but provide a warning of potential public health risks due to sewage contamination.

Should the posting of surface water bodies or ground surfaces subjected to a sewer overflow be deemed necessary by the Utilities Director/Utility Superintendent, he shall determine the need for further public notification through the use of pre-scripted notices made available to the media or by other measures (e.g. front door hangers).

Media Notification Procedure

When an overflow has been confirmed and is a threat to public health, the following actions will be taken, if necessary to notify the media:

1. Response crew verifies overflow and reports back to Utility Superintendent
2. The Utility Superintendent will inform the Utilities Director. The Utilities Director shall be the “first-line” of response to the media for any overflow
3. After hours and weekend sewer overflows are reported to the Utility Superintendent or the on-call staff person.
4. Calls received from the media at any time are referred to the Director of Utilities.
5. The following personnel are authorized to be interviewed by the media and are designated spokespersons:
   - Director of Utilities
   - Assistant Village Manager/Director of Public Works
   - Village Manager
   - Village President

Overflow Analysis

For each overflow an event summary is prepared and reviewed by utility personnel. The Village uses a "bypassing notification summary form" to serve as a checklist and for capturing information for overflow analysis. The analysis will focus on identifying all details of the cause of the overflow and possible solutions. The analysis, generally termed a root cause failure analysis (RCFA), is used for overflows, possible overflows, failures and other unusual events.

As a result of the RCFA, the Village may perform abatement activities to prevent the recurrence of the overflow. The nature of the overflow determines what the immediate and long-term abatement activities are, if any. Short term steps may include jetting the sewer pipe to clean out a grease build-up.

Long term abatement activities include some type of preventive maintenance (PM) on the pipeline.

If it is a recurring overflow, is there a project pending to address the problem, if not the analysis will focus on identifying all details of the cause of the overflow and possible solutions. If there is a project pending, the analysis will focus on whether the proposed project would have eliminated the overflow.

Performance Measures

As with other aspects of the CMOM Strategic Plan, the Village has developed performance measures related to implementing a CMOM - based ORP. Once the Village has completed the ORP and trained staff on its use, the primary measurement parameters will consider the effective implementation of the ORP procedures during an overflow event. The table organizes five performance measures into topic areas related to the ORP.

Topic	**Performance Measure**
1. ORP Communication Plan	Were the proper personnel and agencies notified
2. Availability of Staff & Equipment	Were the necessary staff and equipment available? Were the responding crews sufficiently qualified to perform the necessary tasks? Was the equipment in proper working order?
3. Response Time & Efficiency	How quickly were the crews dispatched to the overflow area? How quickly were they able to contain, control, and mitigate the overflow?
4. Root Cause of Failure Analysis the failure? Was the underlying cause	Were adequate data available to determine the Root cause of failure? Was the RCFA committee adequately staffed to quickly evaluate of failure determined? Were conclusions and strategies for action communicated according to the RCFA policy?
5. Annual ORP Review & Updates	Has the Village updated the communications plan to reflect changes in staff and contact information? Has the Village reviewed and

updated the equipment inventory? Has the Village documented any changes in the response procedures?

Plan Distribution and Training

Many of the elements of the ORP have already been implemented. However, to ensure that they are all being implemented in accordance with the ORP, there will be an initial implementation that will include targeted training with the staff involved. Thereafter at a minimum, the sewer ORP will be reviewed; updated, and redistributed annually to reflect all changes in policies and procedures as may be required to achieve its objectives. And, the ORP will be updated when there are personnel changes, regulatory changes, or other changes that would impact the status of the ORP.

Staff Training

The Village uses a combination of in-house classes; on the job training; and conferences, seminars and other training opportunities to train its wastewater collection system staff.

Availability of ORP

The overflow response plan will be distributed to the following:

1. Utility Superintendent.
2. Director of Utilities
3. Emergency Dispatch Center
4. Assistant Village Manager/Director of Public Works
5. Village Manager
6. Emergency Management Director

Review and Update of ORP

The ORP shall be reviewed annually and amended as appropriate. The Village will:

1. Update the ORP with the issuance of a revised or new Wisconsin Pollution Discharge Elimination System 9WPDES) permit
2. Conduct annual training sessions with appropriate personnel
3. Review and update, as needed, the various contact person lists included in the ORP.

There will be an annual review of:

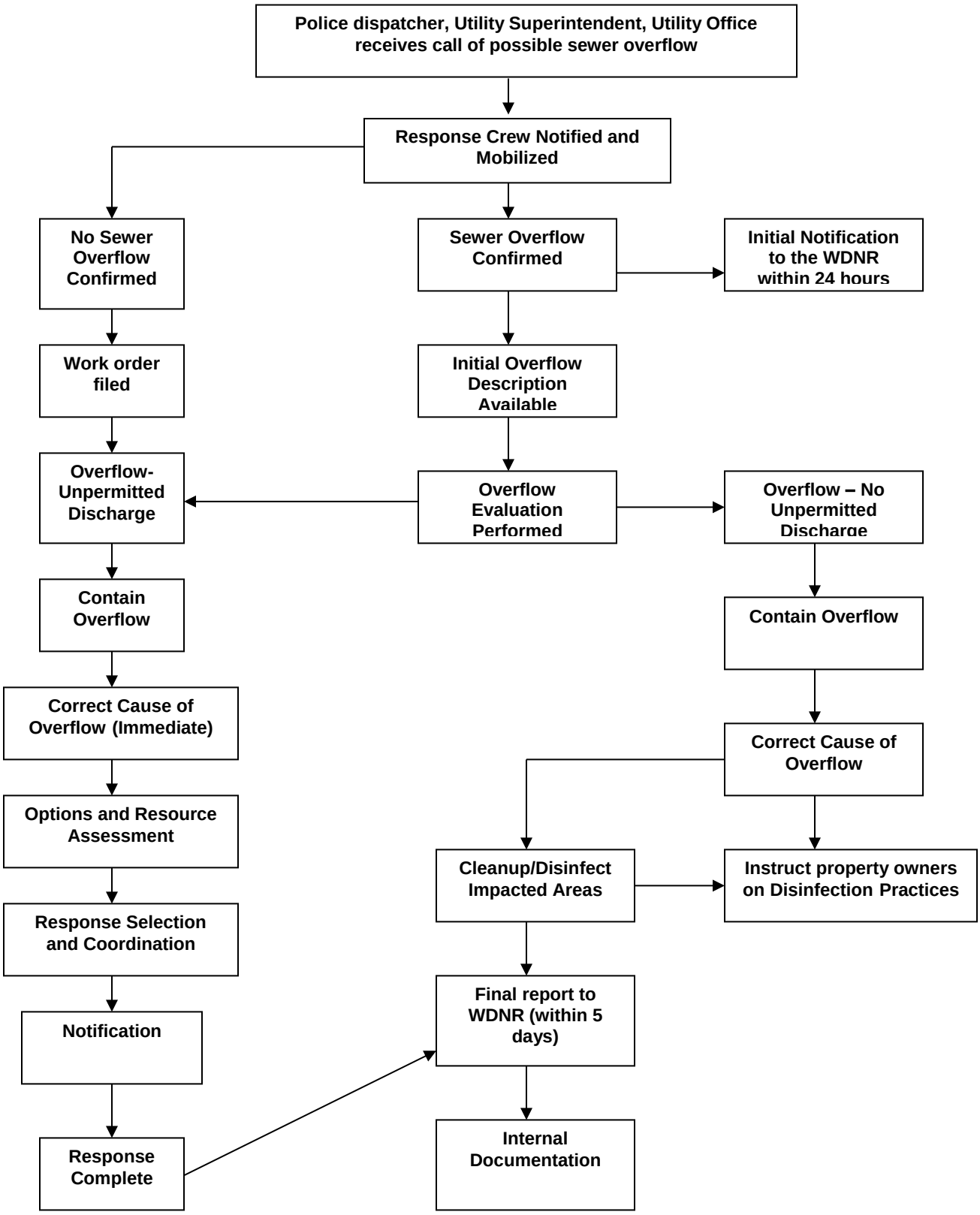
1. Overflows, failures and other emergencies
2. Responses to and notifications of overflows, failures and other emergencies
3. Issues encountered that affected timely response and notification
4. Methods of addressing the issues
5. Implementation of the methods

The documentation of changes to the ORP will be included in the CMOM Program Annual Report, which will be submitted by June 30 of each year.
A quarterly report is also submitted that summarizes all the overflows that occurred in the quarter and is considered the final documentation of the overflows. The Compliance Maintenance Annual Report (CMAR) that is submitted by June 30 each year also includes a summary of the overflows that occurred during the year.

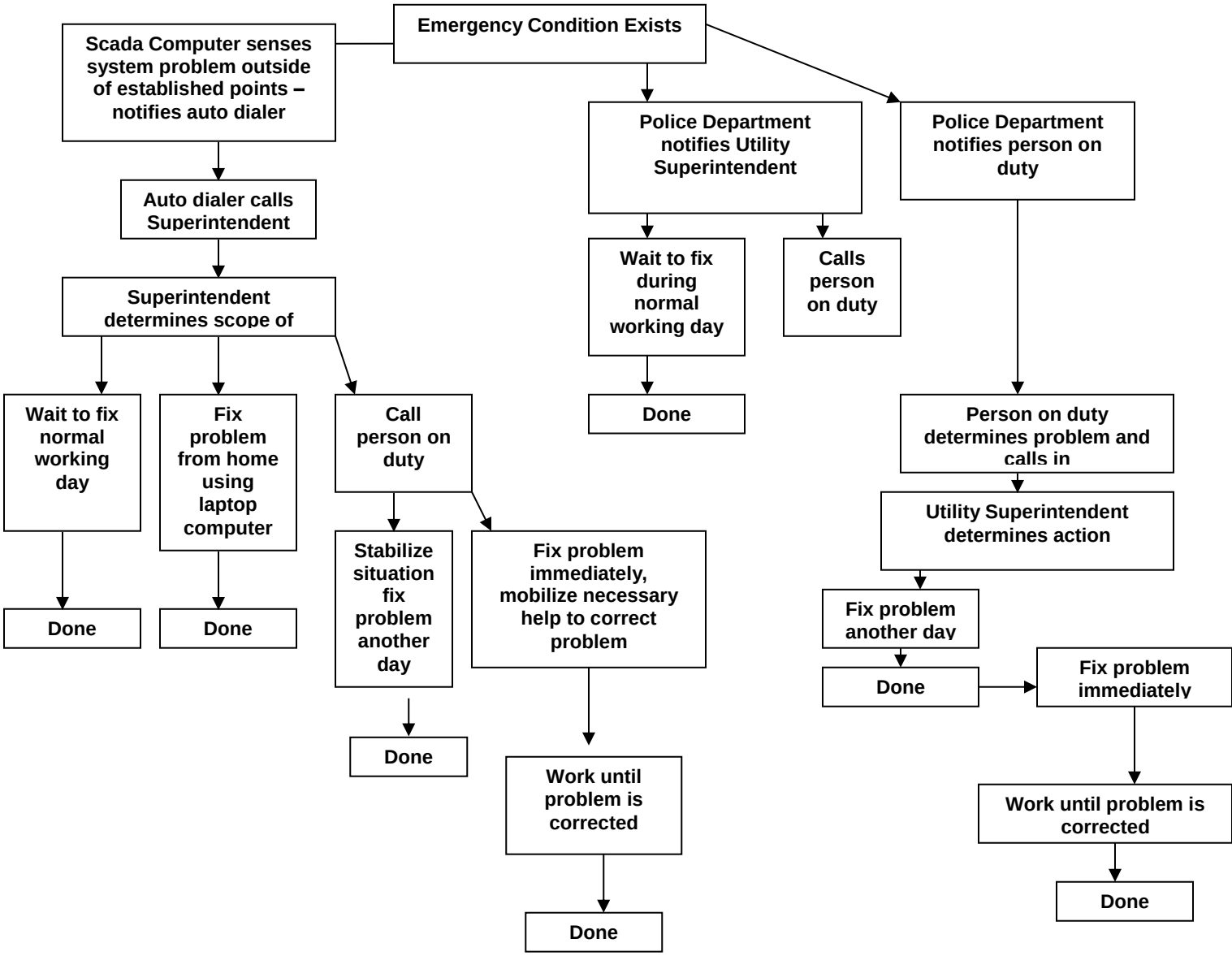
The Utility Superintendent is responsible for confirming that the Overflow Report is provided to all regulatory agencies within the specified time.

FORMS: See attachment for forms the Village uses to document and report overflows.

SSO Response Flow Diagram



After Hours Operational Procedures for the Menomonee Falls Sewer Utility



COMMUNICATION PLAN

The CMOM program communication plan (CP) articulates the process for reporting to various stakeholders the implementation activities and performance of the Village of Menomonee Fall's CMOM program. The plan will include performance measures for communication strategy implementation. The communication plan will allow for public input during development and implementation of the CMOM.

Objectives of the Communication Plan:

1. Facilitate internal reporting on CMOM Program progress to staff
2. Provide information on CMOM Program to stakeholders
3. Report on short-term, long-term, and cyclical CMOM Program actions
4. Coordinate with other municipality and MMSD communications initiatives
5. Satisfy CMOM regulatory requirements for program communications

The Communication Plan includes:

1. A description of the reports and summaries related to CMOM implementation
2. The targeted audience for reports and information
3. The methods of delivering the information to the targeted audience
4. The method for receiving input regarding the CMOM Program

The documents that will result from the Village's CMOM program are:

1. CMOM Program documentation
2. CMOM Program annual report
3. CMOM Program five-year audit report
4. Regulatory reporting

The Utility Superintendent will manage production of these reports but will rely on contributions from staff throughout the Village of Menomonee Falls.

CMOM Program Documentation

The CMOM Program is described by this document. It will contain all the plans that are part of the CMOM Program.

CMOM Program Annual Report

The CMOM Program Annual Report will include an overview of the program, program highlights, any changes in the program, changes in the organizational structure and changes in the rules that impact the CMOM Program.

The annual report will contain a discussion of the CMOM performance measures comparing the actual data result for the year versus the plan target and the previous year's performance.

CMOM Program Five-Year Audit Report

The Audit Report will focus on the performance measures that have been identified as benchmarks. The Village will measure the program's performance by comparison to target values.

Following the trending of the benchmarks and performance measures, a review of the CMOM Program will be completed. By having trended the performance measures first, the review will be able to focus on the results obtained through implementation of Village strategies. Successful strategies can be continued and strategies that were not successful can be modified, replaced, or eliminated.

Regulatory Reporting

The Village's current Wisconsin Pollution Discharge Elimination Program (WPDES) permit requirements specify overflow reporting on both a cyclic and incident-driven basis.

The WDNR requires municipal collection system owners to perform and submit a self-audit of practices relative to managing the system. This process is called the Compliance Maintenance Annual Report.

MMSD and the DNR require an annual
Capacity assurance, Management, Operations and Maintenance (CMOM) Report.

Target Audience for Reports and Information

CMOM Program stakeholders (target audience) will include internal and external groups and individuals.

Internal Stakeholders:

1. Village Board of Trustees
2. Sewer Utility
3. Public Works
4. Engineering Services Department
5. Financial Services Department
6. Village Emergency Management Director
7. Police Department
8. Fire Department

External Stakeholders:

1. MMSD
2. City of Brookfield
3. Village of Sussex
4. WDNR
5. Waukesha County Department of Health
6. Public

Methods of Distributing Information and Receiving Input regarding the CMOM Program

Village Board of Trustee Briefings
Briefings will provide an opportunity for Village staff to present information on the status of the CMOM Program to the Village Board of Trustees.
Stakeholder Briefings
Meetings with community organizations, environmental groups, the business community, and professional organizations are another venue for the communication of CMOM Program information and activities.

Knowledge Sharing
The Village plans to participate in knowledge sharing of CMOM concepts and activities with other satellite municipalities in the service area and beyond the sorts of knowledge sharing would include:

1. Effective infiltration and inflow detection and reduction methods
2. Overflow response planning and training
3. Public communications techniques
4. Other CMOM activities

Village Web Site

Performance Measures

Performance measures are needed to evaluate the Communication Plan implementation. The measures used to measure performance are

1. Number of internal and external stakeholder briefings per year
2. Number of Village Board of Trustee briefings per year
3. Informed stakeholders of SSOs in a timely manner
4. Completed the CMOM Annual Report in a timely manner

AUDIT PLAN

The Village of Menomonee Falls intends to audit the CMOM Program to evaluate the program's implementation and performance. The draft CMOM regulations released by the USEPA included requirements to submit an audit report to the permitting authority. The Audit Plan serves to define the method, responsibilities, timeline, and documentation that will be used to complete an audit of the Village of Menomonee Falls Capacity, Management, Operation and Maintenance Program.

Stipulation

The Stipulation which requires the Village to develop and implement a CMOM program is the primary driver of the Audit Plan. The Stipulation states:

"On a regular basis the Village shall report to the Department on the implementation and performance of the CMOM program. The communication and program audit shall allow for public input during the development and implementation of the CMOM."

Using the federal CMOM regulations as guidance, the village intends to produce a CMOM audit report approximately every five years. However the Village may evaluate the CMOM Program through performance measures on a more frequent basis.

The report will include updates to the program. The audit will include a review of the entire CMOM Program. Any large scale and structural changes found to be necessary to the CMOM Program will be completed and documented during the audit.

Objectives of the Audit Plan:

1. Communicate the goals and objectives of the CMOM Program to internal and external stakeholders.
2. Solicit suggestions and obtain stakeholder input.
3. Allow for periodic review and changing of CMOM Program according to input and benchmark data.
4. Establish processes for changing the CMOM Program according to results of periodic review with respect to performance measures.
5. Reflect CMOM implementation status within the audit process
6. Provide data to the Communication Plan regarding plan changes in order to demonstrate that the CMOM Program is being regularly updated.

CMOM Program Input

The Village will make it possible for staff members to make comments anonymously, including those specific suggestions relating to the member's CMOM responsibilities. The Utility Superintendent will review these suggestions and determine potential actions. The Village will also solicit input on the CMOM Program from stakeholders (internal and external) through a variety of means discussed in the communication plan.

Five-Year Program Review

The five-year audit is an in-depth evaluation of the Village's CMOM performance and an opportunity to structure the future direction of the program. During the audit, several items

may affect a change in the CMOM Program. They are:

1. Existing WPDES Permit Requirements
2. Anticipated Regulatory Requirements
3. Strategic Plan Goals

Ideally, the Village would complete the program audit and report six months prior to permit reissuance, making the results useful in the permit drafting process.

WPDES Permit Requirements

When the Village receives the next WPDES Permit, it may contain additional requirements. These may impact the goals and objectives that are stated in the CMOM program. These will be discussed and addressed in the CMOM Program Audit Report.

Review and Program Change Procedures

1. Review the performance measures established in the Management Plan of the CMOM Program.
2. Determine whether any performance measures are missing, obsolete, or require modifications. Review the measure from an effectiveness perspective.
3. If no process exists for continual data collection, gather data required for evaluating the program within each performance measure.
4. Review the goals established in the Management Plan and determine if changes are necessary.
5. If the performance measure is used for an external comparison or benchmarking, review the quality of the external data set to determine if this information is still applicable, up to date, and appropriately defined for comparison to the Village performance.
6. Prepare the performance measure status report. This report should include all applicable internal trending and external comparison summaries. The report will include, if necessary, a prioritized list of action items that will improve the CMOM Program overall and the CMOM audit process
7. Prepare a comment for each performance measure that provides an interpretation of the program performance relative to the goal. The comment may include a recommendation to change the goal, a change to the program such that the Village can attain the goal, or a statement that the Village has attained the goal.
8. A listing of Priority Areas for Improvement (gaps) was created during the Villages' readiness review. This listing of Priority Areas for Improvement will be addressed through the implementation of the CMOM Program. Review the list to ensure that the Areas for Improvement are being addressed properly.

Benchmark Data

The benchmarks that are listed in the CMOM Program Management Plan will be reviewed in a manner similar to the performance measures. Where specific benchmarks are indicating that the Village is not meeting an objective a detailed discussion and commentary will be included. The result may be a recommended change to the program, which could take form of a revised objective, a revised strategy, a revised tactic, or a revised benchmark.
The Director of Utilities will determine whether sharing certain CMOM Program-related data with other organizations would benefit the program. If so, the Village will identify up to three

partnering agencies that are interested in sharing the needed performance data. These agencies would share similar characteristics with the Village such that they would provide appropriate comparisons.

Through the CMAR program, the WDNR is gathering a substantial amount of benchmarking data from Wisconsin public sewer systems. WDNR intends to eventually share this information for the purpose of comparing performance in a number of areas, including:

1. Sewer cleaning and root removal
2. Flow monitoring
3. Smoke testing
4. Sewer line televising and manhole inspection
5. Manhole and sewer rehabilitation
6. Private sewer inspection and Ill removal activities

Program Change Procedures

As a result of the audit, the CMOM Program will be updated. The procedure for updating this will be similar to the preparation of the initial CMOM Program.

The Director of Utilities will be responsible for facilitating periodic audits of the Village's CMOM Program.

VILLAGE OF MENOMONEE FALLS

SEWER UTILITY

STANDARD OPERATING PROCEDURES

STANDARD OPERATING PROCEDURE
Sewer Blockage or Surcharging into Basement

EMERGENCY PROCEDURES:

- Utility Superintendent receives call from homeowner, municipal staff, or police dispatcher concerning sewage backing up into basement.
- Dispatch sewer utility personnel or on call personnel, if after hours, to complainant address.
- Upon arrival, notify the property owner you are on the site.
- Check the flow in the upstream and downstream manholes. If the flow from both manholes is reasonable for the area, notify the property owner that the problem is in their lateral and to contact a plumber or sewer service contractor to relieve blockage.
- Call for vactor to come to site. Make sure truck is loaded with water. Engage the truck in the downstream manhole with the nozzle pointing upstream; ensure the proper nozzle is used.
- Install proper size collection shoe in downstream invert of manhole to capture debris. From debris collected, try to determine cause of blockage.
- Operate the high pressure hose back and forth several times to dislodge blockage. Insure that the high pressure hose is operated slowly back and forth to dislodge and wash material away from the walls. Operator should note reel counter so that distance of the blockage can be located. Note time blockage cleared and flow normalized.
- Make out a report indicating the time of call, description of the problem, how the repair was made, personnel present and any other information related to the backup. (Include pictures of damages.)
- Inform homeowner of policy of the municipality concerning sewage backups.
- If sewage bypassed the collection system, inform proper agencies and fill out proper permits.
- Televise line to aid in determining cause of backup.

SEWAGE BACKUP (ISOLATED CONDITION) OPERATIONAL PROCEDURES

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A. VILLAGE POLICY - Sewer Line Maintenance

The Village is the maintaining authority for all main line sanitary sewers, mainline manholes and other appurtenances. The Property Owner is responsible for the maintenance and operation of his sanitary sewer lateral pipe from the connection joint located at the main line sanitary sewer to the house and plumbing fixtures. In some cases, there are private sanitary sewer mains that are the maintenance responsibility of the property owner. The sanitary sewer system maps identify those sanitary sewers that are under the village jurisdiction.

B. INVESTIGATION PROCEDURE

The Sewer Utility personnel receiving a complaint on sewage backup shall immediately investigate the problem by checking the depth of flow in the main line sanitary sewer upstream and downstream of the address of the complaint to determine if a surcharge exists in the mainline sanitary sewer. When checking the depth of flows in manholes located in roadways, the vehicle shall be parked in front of the manhole under observation with its amber light flashing which will provide protection for you and sufficient warning to oncoming motorists. Make sure you wear a safety vest and never leave a manhole cover off or unattended.

1. Private Lateral Problem

   If there is no surcharge in the main line sanitary sewer or the sanitary sewer is flowing at normal depth, the problem then lies in the private lateral. The property owner shall be notified that the problem lies in his lateral and that he is responsible to correct his problem. He may wish to correct the problem himself or hire a plumbing contractor.

2. Village Main Line Sewer Problem

If there is a surcharge in the main line sanitary sewer IMMEDIATE ACTION SHALL be taken to eliminate this condition. The corrective action can be a cleaning or clearing action, or a pumping action or a combination of both. REMEMBER, time is of the essence as sewage is continuing to backup into the basement from all the upstream owners. Special care and speed are necessary on interceptor lines or collector lines surcharging where there is flow from many upstream owners compounding the problem rapidly.

After determining the problem and responsibility contact your supervisor or crew leader immediately by radio for additional help. If you cannot reach either one, then contact the Police Dispatcher and have the Dispatcher call another helper by telephone or pager and have him give the address location of the problem. First take corrective action and then document on a time basis the location, depth of surcharge, worst condition, and duration in the basement, observe damages and record on the appropriate record card.

3. Additional Notification

   In addition, the following people shall be kept informed:

a. Utility Superintendent

Normal work hours Monday thru Friday 7:00 A.M. to 3:30 P.M. The Utility Superintendent shall be kept informed as to what the problem is and what course of action is being pursued and also when you are in and out of service. (A village main problem or a private lateral problem so that she is able to handle any telephone inquires and be able to complete the service request form.)

b. Police Dispatcher

The Dispatcher is our communication center with the public when the Municipal Office is not in service. Keep the Police Dispatcher informed about the situation and also when you are in or out of service. The Superintendent or the Crew Leader shall inform the Dispatcher of the actions taken to complete her record.

C. DOCUMENTATION

All private and public surcharges or blockages are to be documented on the appropriate forms. (See Section F in the Operation and Maintenance Manual)

In addition, if any public mainline sewer backup occurs, the supervisor should contact the Administrative Services. (Telephone Number 262-532-4240).

Remember on main line sanitary sewer backups, this information will be provided to our Administrative Services Dept. and the form is to be filled in completely. On the back of the form is space for additional information for items that may not be covered. Tell your story step by step on a time base of your observations and actions based on your observation. Interviews maybe months or years later after the fact so keep a good record. When talking to people who experience a backup condition and they are excited, upset or both, make sure that you are truthful and be careful of what you say. Be sure you speak slowly and clearly and make sure that you feel comfortable that the people understand and comprehend what you are saying. If you do not feel that they understand or want to debate a situation, call your Superintendent. In the excitement and speed to solve the problem people hear what you say to each other and you understand what your partner means, but occasionally, some people tend to listen only to what they want to hear or misinterpret what you say and rationalize to a different conclusion than what the actual situation is. Remember, only after all the pertinent facts are known and put together on a time pertinent facts are known and put together on a time base can answers be accurately given. If you are unsure of the situation, record your observations on a time base and the village will meet with the people at a later date. Do not be afraid to say that you don't know if you really don't. **Never discuss matters of legal claims or liability for damage. Explain that the Village will investigate and make out a report.** The resident may call Administrative Services at 262-532-4243 or stop at the Village Hall to pickup a claim form from Administrative Services Department.

D. CLEAN UP PROCEDURES

The village **does not** provide or arrange for any cleaning that may be needed inside a building following a sewer back-up.

1. Policy

a. Private Laterals
If the backup was caused by blockage of the private cleanup responsibility is the property owners.

b. Public mains
The Village has a duty to exercise **"ORDINARY AND REASONABLE CARE"** to keep its sewers free from obstructions. It does not necessarily mean the Village is strictly liable in cases of sewer backups and resulting damage to property.

E. PREPARATION NEXT EMERGENCY

On completion of a job, always put equipment back in its proper place fully serviced (gas, oil, water, etc.) ready for the next emergency. If a piece of equipment is not operable, tag it and have it repaired the next regular day of operation.

FOLLOWING A SEWER BACK-UP GUIDE LINES

The following guidelines are intended to assist the resident or owner and are not intended to be an inclusive list of suggested procedures and precautions following a sewer backup. Depending on the individual circumstances of each loss situation and in order to ensure a healthy indoor environment for current and future occupants, it may be necessary to contact a professional water damage restoration service.

Sewage and floodwaters contain bacteria and other hazardous microorganisms. These can be transmitted by touching contaminated items or by tracking them into uncontaminated areas on shoes. Children and pets are especially vulnerable. Frequent hand washing is an important preventive measure.

Potential health and safety hazards must be identified and, if possible, eliminated prior to implementing cleaning or restoration procedures. Before entering the affected area, the potential for electrical shock hazards and gas leaks must be assessed.

It is very important to begin mitigation procedures as soon as safely possible to minimize subsequent health hazards and primary property loss and to avoid secondary damage to structural materials or microorganism development (mold and mildew). Loss mitigation begins with rapid response and involves reasonable and prudent steps required to preserve, protect and secure property from additional secondary damage. Unlike fire or other similar type losses, water losses may not start out severe, but may end up causing damage because of delay in cleaning up the water or sewage. The prospect of successful restoration depends largely on the speed with which the building and personal property can be dried. Generally, by taking proper emergency action immediately, a sewer backup will result in either no damage or minimum damage caused by the water.

The Village does not provide or arrange for any cleaning that may be needed inside a building following a sewer backup. The resident or owner has the responsibility to minimize damage.

1. Treat all water-impacted surfaces and furnishings as unhealthy, until properly cleaned.

2. Keep children and pets out of the affected area until the area is properly cleaned.

3. If there is no risk of electrical shock, turn off circuit breakers supplying electricity to wet areas; unplug and remove any small electrical devices currently located on wet floor coverings or other wet areas.

4. Do not use any electrical equipment while standing in water. Operate wet vacuums only when plugged into a ground fault interrupter or ground fault equipped outlet.

5. Take pictures before cleanup and after cleanup of affected areas.

6. Remove all water and sewage from the basement or other affected area as

rapidly and safely as possible.

7. Extracted wastewater must be disposed of in a sanitary sewer system.

8. Ventilate the affected area with the use of floor fans, and a dehumidifier if available, to properly dry the area. You may rent floor fans and dehumidifiers. If it has not been directly contacted by water, activate the building's HVAC (heating, ventilation and air-conditioning) system; turn on exhaust or ceiling fans and open windows and doors when conditions are favorable. Careful consideration must be given to whether use of existing drying resources might serve as a means of spreading contamination or pose a safety hazard.

Water will not hurt metal or wood if thoroughly dried and wiped down with some form of oil. Clothing and carpet not cleaned and dried will mildew and stain. Motors and machine metal parts can be saved if thoroughly dried by a professional. Floor tile and carpeting will remain secure if the water is removed immediately, otherwise, the water will dissolve the adhesives used in securing the floor tile or carpet to the floor. Wood furniture, wood paneling, and other wooden objects will crack, separate, stain or warp if left wet.

For additional information about sewer back-ups, call the Village of Menomonee Falls Utility Superintendent at (262) 532-4800.

Customer Relations Guidelines

It is important for employees to communicate effectively with Menomonee Falls customers, especially in an SSO situation. How we communicate – on the phone, in writing, or in person – is how we are perceived. Good communication with the homeowner results in greater confidence in staff's ability to address the problem satisfactorily and potentially reduces the time needed to resolve the claim.

As a representative of the Village, staff will occasionally have to deal with an irate homeowner. A sewer backup is a stressful event and even a reasonable homeowner can become irate should he/she perceive staff as being indifferent, uncaring, unresponsive, or incompetent.

Although sometimes difficult, effective management of a sewage backup situation is critical. If it is not managed well, the situation can end up in a costly, prolonged process with the homeowner. The Village wants the homeowner to feel assured that we are responsive and the homeowner's best interest is a top priority.

Communication Tips

- Give the homeowner ample time to explain the situation or to vent.
- As soon as possible, let the homeowner know you will determine the cause of the sewer backup and correct it if possible.
- Acknowledge the homeowner's concern. And if it is determined that the Village is at fault, the owner/occupant has a right to file a claim for any reasonable repairs or losses resulting from the incident.
- Express regret for any inconveniences caused by the incident, but do not admit fault.
- As much as possible, keep the homeowner informed on what is being done and will be done to correct the problem.
- Keep focused on the incident. Do not get involved with too much unnecessary small talk with the homeowner.
- Don't find fault or lay blame on anyone.
- Before you leave, make sure the homeowner/occupant has the name and telephone number of the Utility Superintendent and to call if he/she requires more detailed information.
- The Utility Superintendent will follow up with a telephone call to ensure everything is being handled as it should be.

STANDARD OPERATING PROCEDURE LIFTSTATION FAILURES

STANDARD OPERATING PROCEDURE
Emergency Procedure:
Pumping Station Failure Caused by Force-Main Break Inside the Drywell
Pump or Valve Failure. (Wetwell/Drywell Type Station)

- **SCADA** notifies Utility Superintendent that high level/station flood alarm in

- Ensure personnel are confined space trained and are following the Confined Space SOP.

- Dispatch sewer utility personnel to the pumping station immediately.

- Upon arrival, the crew should identify if the drywell and wetwell are flooded. The pumps may be still pumping if the motor is located at floor level and the pumps are on the lower level or if dry pit submersibles were installed.

- After further investigation, prior to entering the drywell, if possible, the crew should determine the nature of the failure, i.e., pump(s), valve(s) or force main(s).

- Call additional crew to bring appropriate portable pump(s) including all required lengths of suction and discharge house, to the pumping station.

- Because of depth of wet wells at Silver Spring, Westbrook, MacLynn, and Appleton Ave. lift stations, sewer utility has a submersible pump to pump into the bypass riser which drains to the forcemain.

- Before entering the drywell, measure the atmospheric conditions for sufficient oxygen and the presence of explosive or toxic gases. Remove all hazards as appropriate prior to entering station (including electrical and engulfment hazards).

- Constantly monitor the atmospheric conditions while working in the drywell of the station.

- Upon arrival of the portable pump, connect the appropriate lengths of suction hose that will suspend well into the wetwell, and then connect enough discharge hose to pump into bypass connection.

- Lock out and tag out (LOTO) the mainline, disconnect (if applicable).

- Set up an additional portable trash pump to pump out the drywell into the wetwell.

- Enter drywell and inspect the following facilities:
  Lighting
  Ventilation
  Sump pump operation

Motor control system including air compressors
Auxiliary power systems and controls
Bubbler system (if applicable)
Pump alternator or processor
Control and instrument readings
MCC failure indicators
Temperature of pump motors
All internal piping

- Isolate the failed component by valve operation. Start the auxiliary pump and motor, if possible (after exiting the drywell). Shut down bypass operation if possible.

- Complete repairs to pipe, pump or valve as per policy. If permanent materials are not readily available, install blind flanges for temporary conditions. If auxiliary systems associated with the permanent station are in operation, LOTO prior to installing repaired components.

- Restore facilities to normal and inspect other components of the force main and pumping system for signs of similar failure.

- Shut down bypass operation. Do not disconnect hoses until repair is checked for leaks. Operate pumps to check repair under pressure and normal operating conditions.

- If no leaks are observed, return pumps to normal conditions by removing LOTO. Monitor pumps to check lead/lag operations.

- Proceed to wetwell for inspection. Before entering the wetwell, measure the atmospheric conditions for sufficient oxygen and the presence of explosive or toxic gases. Check the following:
  Wetwell level
  Float controls/level sensors
  Grease assessment

- Make out a report indicating; the time of the call, description of the problem, how the repair was made, personnel present and equipment used.

- If sewage bypassed the collection system, inform proper agencies and fill out proper notification pursuant to permit and regulatory requirements.

Minimum Levels of Staffing (people 2 - 4	
Minimum Emergency Equipment	**Specialized Equipment**
• Harness and lifeline • Flashlight • Emergency lighting • Portable pumps and hoses • Miscellaneous tools • Personal protection equipment • Gas meter-for oxygen deficient, explosive or toxic gases	• Self Contained Breathing Apparatus (SCBA)

STANDARD OPERATING PROCEDURE

Pumping Station Failure Caused by Force-Main Break inside Valve Pit, Pump or Valve Failure (Submersible Type Application)

EMERGENCY PROCEDURES:

- **SCADA** notifies Utility Superintendent that high level / station flood alarm in
- Ensure personnel are confined space trained and are following the Confined Space SOP
- Dispatch sewer utility personnel to the pumping station immediately.
- Upon arrival the crew should identify the storage capacity in the wetwell. This will give some indication of the time available for response.
- Inspect the motor control circuit looking for failure indications. Check processor to determine failure if applicable. If pump failure is determined, skip to wetwell inspection steps (Refer to appropriate SOP.)
- Inspect the valve pit. Observe all valves and force mains. If flooded, arrange to pump out the valve pit. If failure within the valve pit is detected, skip to bypass steps.
- Prior to viewing the wetwell, measure the atmospheric conditions for sufficient oxygen and the presence of explosive or toxic gases. If flooded, skip to bypass steps.
- Constantly monitor the atmospheric conditions while working in or above the wetwell. Inspect the wetwell. Check the wetwell floats or level control system, and pump volute for clogging or other problems.

Bypass Steps

- If pump failure, determine if bypass pumping is necessary. If unnecessary, skip to repair procedures (see below).
- Bypass pump. Call additional crew to bring appropriate portable pump(s), including all required lengths of suction and discharge house, to the pumping station if necessary. Upon arrival of the portable pump, connect the appropriate lengths of suction hose that will suspend well into the wetwell, and then connect enough discharge hose to pump into appropriate manhole or bypass connection (if so equipped). Go through the procedures for starting the portable pump, and begin pumping. .

Repair Steps

- Lock out and tag out (LOTO) the mainline, disconnect (if applicable).

- If pump station valve pit is flooded, pump out the valve pit with portable trash pump as necessary to effect repairs.

- Enter valve pit or wetwell and inspect the piping and valves for cause of failure. (Monitor the atmospheric conditions for sufficient oxygen and the presence of explosive or toxic gases).

- Complete repairs to pipe, pump or valve as per policy. If permanent materials are not readily available, install temporary repairs until the permanent repairs can be completed.

- Restore facilities to normal and inspect other components of the force main and pumping system for signs of similar failure.

- Shut down bypass operation. Do not disconnect hoses until repair is checked for leaks. Operate pumps to check repair under pressure and normal operating conditions.

- If no leaks are observed, return pumps to normal conditions by removing LOTO. Monitor pumps to check lead/lag operations.

- Make out a report indicating; the time of the call, description of the problem, how the repair was made, personnel present and equipment used.

- File Bypass Notification Log and By-Pass Report Form as required by Permit.

NOTES:

1. If sewage bypassed the collection system, inform proper agencies and fill out proper permits.

Minimum Levels of Staffing (people): 2 - 4	
Minimum Emergency Equipment	**Specialized Equipment**
• Harness and lifeline • Flashlight • Emergency lighting • Portable pumps and hoses • Gas meter-for oxygen deficient, explosive or toxic gases • Personal protection equipment	• Self Contained Breathing Apparatus (SCBA)

STANDARD OPERATING PROCEDURE

Pumping Station Failure Caused by Secondary Power Failure During Power Outage

EMERGENCY PROCEDURES:

- **SCADA** notifies Utility Superintendent that power fail alarm in.
- Dispatch sewer utility personnel to the pumping station immediately. The crew needs to bring the auxiliary generator stored at water dept. well #9 as a backup, assuming that repair to the dedicated generator is untimely.
- Dispatcher shall request the assistance of the power company in restoring power to the station if necessary. Determine the estimated time of arrival of the power company crew and then notify the pumping station operators.
- Pumping station operators should check the overhead power lines for fuses that might have blown or down power lines as they approach the pumping station. If the operators notice a blown fuse or down power line, identify the pole number(s), and notify the dispatcher to relay to the power company the location and the pole number(s).
- Lock out and tag out (LOTO) the mainline, disconnect (if applicable).
- Check all components of dedicated generator to determine failure cause. Utilize manufacturer prepared trouble-shooting guide to aid in diagnosis. If unrepairable immediately, connect the portable generator to the auxiliary power connection located outside the building. Examine plug type and ensure consistency. Use adapters as necessary.
- Go through the specific procedures for starting the generator to supply power to the station.
- Obtain the services of a qualified generator repair facility to address the dedicated generator failure.
- Once fully repaired, disconnect the portable generator and reconnect the dedicated unit. Operate the dedicated unit through several pump cycles. Check unit for regular exercise.

Minimum Levels of Staffing (people): 2 - 3	
Minimum Emergency Equipment	**Specialized Equipment**
• Harness and lifeline • Flashlight • Emergency lighting • Portable pumps and hoses • Personal protection equipment • Gas meter-for oxygen deficient, explosive or toxic gases	• Power testing equipment

STANDARD OPERATING PROCEDURE
Sewage Force-Main Break

EMERGENCY PROCEDURES:

- Utility Superintendent receives call from resident, municipal staff, or police dispatcher concerning sewage bubbling up from ground.
- Dispatch sewer utility personnel to location of break.
- Call Diggers Hotline for emergency locate.
- Set up signs, barricades, and/or barrels for traffic control and public safety.
- After Diggers Hotline has located all utilities, excavate break.
- Bypass pumping from the pump station wetwell to the force-main discharge manhole may be required. If bypass pumping cannot be completed, utilize a vactor truck to remove water from the wetwell.
- If vactor truck has insufficient volume, a portable submersible pump/tanker truck combination may be needed to remove water.
- Lockout and Tagout (LOTO) the pumps at the station.
- Draw down the wetwell as much as possible and maintain low level.
- Drain the force-main by first closing the gate valve on the upstream side of the discharge check valve.
- Open check valve by hand and secure it in place.
- Slowly bleed the force-main back into the wetwell by slowly opening the gate valve on the discharge side of the pump, but only to the point where the force-main stops leaking and there is enough room to make repair. Constant communication must take place between crew at break and crew at pumping station.
- Close gate valve and return check valve to its normal position and then fully open gate valve.
- Repair force-main.
- After repair is complete, remove LOTO and return pumps to normal operating position.
- Run pump manually to fill force-main. Run pumps for several cycles before backfilling for proper operation.
- Make out a report of repair.
- If sewage bypassed collection system, notify proper agency and fill out proper notification requirements.

STANDARD OPERATING PROCEDURE
Sewer Main Break/Collapse

EMERGENCY PROCEDURES:

- Utility Superintendent receives call from resident, municipal staff, or police dispatcher concerning sewage backing up into basement.
- Dispatch sewer utility personnel or on call personnel, if after hours, to complainant address
- Upon arrival, notify the property owner you are on the site.
- Check the flow in the upstream and downstream manholes. If the flow from both manholes is reasonable for the area, notify the property owner that the problem is in their lateral and to contact a plumber or sewer service contractor to relieve blockage.
- If the downstream manhole is flowing full, continue checking manholes downstream until a dry manhole is found. Log water level of surcharged manholes.
- Call for vactor to come to site. Make sure truck is loaded with water. Engage the truck in the downstream manhole with the nozzle pointing upstream; ensure proper nozzle is used.
- Install proper size collection shoe in downstream invert of manhole to capture debris.
- Operate the high pressure hose back and forth several times to dislodge blockage.
- If blockage can't be dislodged, note reel counter so that distance of blockage can be located.
- Call Diggers Hotline for emergency locate.
- Set up signs, barricades, and/or barrels for traffic control and public safety.
- Reroute traffic as necessary.
- Deploy traffic control measures such as police or flag person as needed.
- Bypass pumping from the upstream manhole to the downstream manhole may be required. If necessary, set up bypass pumping equipment. If not necessary, prepare for repairs while the pipe is flowing.
- After Diggers Hotline has located all utilities, excavate the break/collapse and make necessary repairs. Use repair procedures consistent with policy.
- Take ties to record the location and scope of the repair.

- Upon confirmation of adequacy of the repair, backfill the excavation and restore surface conditions.

- To restore the sewer line to full capacity, remove any debris that may have entered and accumulated in the sewer line downstream and upstream from the break collapse.

- Install the proper size collection shoe in the downstream invert of the downstream manhole to trap any debris which may have accumulated in the sewer line.

- Use a high velocity jet-flushing machine to clean line.

- Make out a report indicating description of problem, how repair was made and personnel and equipment used.

- If sewage bypassed collection system, notify proper agency and fill out proper permit.

Wastewater Pump Station Alarm

EMERGENCY PROCEDURES:

- **SCADA** computer senses system problem. If outside normal working hours, SCADA computer notifies auto dialer.
- Acknowledge alarm to determine scope of problem, send personnel to station to investigate alarm.
- If after hours, Utility Superintendent decides to acknowledge alarm and wait to fix during normal working day or send personnel to station indicating an alarm.
- NOTE: A detailed troubleshooting guide should be kept at station.
- If there is a power outage, always check with the power company. There have been instances when a power failure has occurred and it has not been reported to the power company.

Wetwell/Drywell Type Stations

- Check atmosphere within drywell prior to entering with gas meter.
- Take your time entering drywell. Never enter a flooded drywell.
- Note any unusual odors or noises.
- Check telemetry equipment for proper operation.
- Lightly touch pump motors and pump bearing housing. Note any which seem unusually hot.
- Observe every piece of equipment in station. Note anything which looks out of place.
- Check all gage readings. (i.e. wetwell levels, hour meters, electrical readings, etc.)
- Check pump operation using manual position, level controls, and output by checking valve.
- Based on available information and using troubleshooting guide, troubleshoot the failure.
- Once problem is isolated, engage mechanical or electrical repair.
- Log repair data when completed.
- Reset any/all alarm feature indicator lights.

Submersible Type Stations

- Check atmosphere within wetwell prior to working over the top with gas meter.
- Check telemetry equipment for proper operation.
- Note any unusual odors.
- Listen and note if pumps are running and for any unusual noises.
- Observe every piece of equipment in the station, especially level control system.
- Note anything that looks out of place.
- Check and record all gage readings from the control panel.
- Based on available information, troubleshoot the failure using the troubleshooting guide, systematically run through the system. By process of elimination, the failure will be isolated. Check level controls and pump operation using manual position and pump output by observing the check valve counterweight.
- Engage mechanical or electrical repair.
- Log all repair data.
- Reset any/all alarm feature indicator lights.

STANDARD OPERATING PROCEDURE

FOR ENTRY INTO A CONFINED SPACE

I. PURPOSE

The goal is to provide a safe working environment in and around confined spaces. The elements contained in this program shall be followed in all situations where entry into a confined space is necessary.

II. SCOPE

The Village of Menomonee Falls intends to comply with OSHA 29 CFR 1910.146 Permit Required Confined Space Entry regulation and the State of Wisconsin, Department of Commerce, Comm 32 additional requirements with this written program.

III. DEFINITIONS

Acceptable entry conditions means the conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter and work within the space.

Attendant means an individual stationed outside a permit space who monitors the authorized entrants and who performs all attendants' duties assigned in the program.

Authorized entrant means an employee who is authorized by the sewer utility superintendent to enter a permit space.

Blanking or *blinding* means the absolute closure of a pipe, line, or duct by the fastening of a solid plate that completely covers the bore and is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

Confined space means a space that:

A. Is large enough and so configured that an employee can bodily enter and perform assigned work; and

B. Has limited or restricted means for entry or exit (i.e.; tanks, vessels, silos, storage bins, hoppers, vaults and pits); and

C. Is not designed for continuous employee occupancy.

Double block and bleed means the closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

Emergency means any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

Engulfment means the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, or crushing.

Entry means the action by which a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred when any part of the entrant's body breaks the plane of an opening into the space.

Entry permit means the written or printed document provided by the employer to allow and control entry into a permit space and that contains the information specified in OSHA 1910.146.

Entry supervisor means the person responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this part.

NOTE: An entry supervisor also may serve as an attendant or as an authorized entrant, if that person is trained and equipped as required by this section for each role he or she fills. Also, the duties of the entry supervisor may be passed from one individual to another during an entry operation.

Hazardous atmosphere means an atmosphere having one or more of the following characteristics:

A. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);

B. Airborne combustible dust at a concentration that meets or exceeds its LFL; NOTE: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet or less.

C. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent.

D. Atmospheric concentration of any substance for which a dose or permissible exposure limit is published in COMM 32 General Occupational Health Standards, which could result in employee exposure in excess of its dose or permissible exposure limit.

E. Any other atmospheric condition that is immediately dangerous to life or health.

Hot work permit means the employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

Immediately dangerous to life or *health (IDLH)* means any condition that poses an immediate or delayed threat, would cause irreversible adverse health effects, or would interfere with an individual's ability to escape unaided from a permit space.

Inerting means the displacement of the atmosphere in permit space by a non-combustible gas to such an extent that the resulting atmosphere is non-combustible.

NOTE: This produces an *IDLH oxygen-deficient atmosphere.*

Isolation means the process by which a permit space is removed from service and completely protected against the release of energy and material into the space by such means as: blanking or blinding and bleed system; lockout or tag out of all sources of energy; or blocking or disconnecting all mechanical linkages.

Line breaking means the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

Oxygen *deficient atmosphere* means an atmosphere containing less than 19.5 percent oxygen by volume or has a partial pressure of 148 millimeters of mercury or less.

Oxygen Enriched Atmosphere means an atmosphere containing more than 23.5 percent oxygen by volume.

Permit-Required Confined Space (PRCS or permit space) means any space that has one or more of the following characteristics:

A. Contains or has potential to contain a toxic and or hazardous atmosphere;

B. Contains a material that has the potential for engulfing an entrant;

C. Has internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross-section;

D. Contains any other recognized serious safety or health hazard.

Permit-Required Confined Space *Program (permit space program)* means the employer's overall program for controlling, and, where appropriate, for protecting employee from, permit space hazards and for regulating employee entry into permit spaces.

Permit System means the employer's written procedure for preparing and issuing permits and for returning the permit space to service following termination of entry.

Plugging means the closure of a line, duct, or pipe by the insertion of a mechanical or inflatable plug to ensure absolute closure or partial closure to allow for by-passing or redirecting through a smaller diameter connection within the plugging device.

Prohibited Condition means any condition in a permit space that is not allowed by the permit during the period when entry is authorized.

Rescue Service means the personnel designated to rescue employees from permit spaces.

Retrieval System means the equipment used for rescue of persons from permit spaces.

Testing means the process by which the hazards that may confront entrants of a permit

space are identified and evaluated. Testing includes specifying the tests that are to be done in the permit space.

NOTE: *Testing enables employers* both to devise and *implement adequate control measures* for *the protection* of an *authorized entrant* and to *determine* if *acceptable* entry *conditions* are *present immediately before, during* entry, and *occupancy.*

IV. RESPONSIBILITIES

The Utility Superintendent shall ensure that:

A. Personnel assigned to work in permit spaces are properly trained and qualified for safe performance of their assigned duties.

B. All equipment needed for safe entry into any permit spaces is available and in proper working order.

C. A copy of each canceled entry permit will be on file at the Sewer utility office for the prior twelve months as required by law.

D. All sites that meet the definition of a confined space, and will be entered by Sewer utility personnel, shall be evaluated and all known hazards listed.

E. All permit-required confined spaces with the exception of manhole structures shall be clearly labeled as such.

F. All employees that enter permit-required confined spaces shall immediately upon discovery, notify their supervisor of any previously unknown hazard.

G. Rescue services/teams shall be evaluated to ensure they are adequately trained and prepared.

H. The permit-required confined space program is reviewed annually along with all cancelled permits, and changes to the program are documented and affected personnel are notified of any changes.

V. AIR MONITORING PROCEDURES

A. No employee may enter a permit space until the atmosphere has been sampled and air quality is determined for all levels and all areas of the permit space.

1. The sampling of the atmosphere of a confined space for hazardous substances shall be by the use of a testing device capable of detecting and measuring the concentrations of hazardous substances likely to be present.

B. The atmosphere of the permit space shall be sampled for:

1. Oxygen

2. Combustible gases and vapors
3. Toxic gases and vapors likely to be present

C. There may be no hazardous atmosphere within the permit space whenever any employee is inside the permit space.

1. Authorized entrants will immediately exit the permit space when any of the air monitors alarm set points are reached.

D. The air monitoring device(s) shall be bump tested (verification the sensors are working by exposing them to the appropriate known concentration test gas) prior to using and field calibrated if necessary according to the manufacturer's instructions.

E. The air monitoring device shall be field calibrated to the oxygen content of the ambient air at the time of sampling.

1. Calibration of the air monitor relative to the oxygen content shall be performed where the 20.9% by volume of natural content of oxygen in the air is most likely to occur.
2. Oxygen calibration shall not be performed in or near a permit space.

F. The air monitor shall be zeroed in a clean atmosphere before sampling begins.

1. The air monitor shall not be zeroed in or near a permit space.

G. Only trained operators who are skilled and knowledgeable with the use and limitations of the monitoring device shall perform the testing.

VI. DUTIES

A. Authorized Entrant

Each **"authorized entrant"** as defined in this policy shall be responsible for:

1. Having knowledge of the hazards associated with the specific permit space including, mode of exposure (e.g. respiratory, dermal), signs, or symptoms, and consequences of exposure prior to entry.

2. Properly use all equipment including personal protective equipment required for safe entry operations. This includes all personal protective equipment listed on the entry permit.

3. Communicate with the attendant as necessary to enable the attendant to monitor entrant status and to enable the attendant to alert entrants of the need to evacuate the space.

a. Communicate air monitoring results to the attendant and any changes in the results as they develop with the air monitor.

4. Alert the attendant whenever:

    a. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
    b. The entrant detects a prohibited condition.

5. Exit the confined space as quickly as possible whenever:

    a. An order to evacuate is given by the attendant or the entry supervisor.
    b. The entrant recognizes any warning sign or symptom of exposure to a dangerous situation.
    c. The entrant detects a prohibited condition.
    d. An evacuation alarm is activated.
        1. Air monitoring device.

B. Attendant

The **"attendant"** as defined in this policy is responsible for:

1. Having knowledge of the hazards and potential hazards associated with the specific permit space including mode of exposure (e.g., respiratory, dermal), signs or symptoms, and consequences of exposure prior to entry.

2. Remaining outside the permit space until termination of the entry operation, or until relieved by another qualified attendant.

3. Maintaining an accurate count of authorized entrants within the permit space.

4. Maintaining communication with the authorized entrant(s) to monitor his/her status and to alert the entrant of any need to evacuate the space.

5. Monitoring activities inside and outside the space to determine if it is safe for entrants to remain in the space or order evacuation if the attendant:

    a. detects a prohibited condition;
    b. detects behavioral effects in the authorized entrant as a result from exposure to atmospheric hazards;
    c. detects a condition outside the space that could endanger the authorized entrant(s);
    d. can not effectively and safely perform all required duties of an attendant.

6. Summon rescue and other emergency services as soon as the attendant determines that authorized entrants need assistance to escape from permit space hazards

7. Performing non-entry rescues as required by the specific entry permit.

8. Performing no other duties that interfere with primary attendant duties.

C. Entry Supervisor

The **"entry supervisor"** as defined by this policy is responsible for:

1. Having knowledge of the hazards and potential hazards associated with the specific permit space including mode of exposure (e.g., respiratory, dermal), signs or symptoms, and consequences of exposure that may be faced during entry.

2. Verifying that the appropriate entries have been made on the permit, all tests specified on the permit have been conducted, and all procedures and equipment specified on the permit are in place, before endorsing the permit and allowing entry to begin.

3. Terminating the entry and canceling the permit when the entry operation has been completed or a prohibited condition arises in or near the space.

4. Verifying that rescue services are available and that the means for summoning them are operational.

5. Removes unauthorized individuals who enter or who attempt to enter the permit space during entry operations.

6. Ensuring that the entry operations remain consistent with the terms of the entry permit and that acceptable entry conditions are maintained.

VII. Training

Training will be provided so that all affected employees who may need to enter confined space, or are responsible for acting as an attendant or entry supervisor understand potential hazards, and obtain the skill necessary for safe performance of their assigned duties.

A. Training will be provided to each affected employee:

1. Before the employee is first required to work in permit space;

2. When there is a change of assigned duties;

3. When there is a change in the regulations affecting confined space entry that presents a hazard about which an employee has not previously been trained;

4. When different air monitoring or retrieval equipment is purchased and made available for use in permit space entry;

5. When the authorized supervisor has reason to believe either that there are deviations from the permit space entry procedures or that there are inadequacies in the employee's knowledge or use of the confined space entry procedures.

B. Training Content

Training will include instruction on the duties of each team member as listed below:

1. Authorized Entrants:

   a. Know the hazards associated with the permit space and their effects.
   b. Properly use the equipment required for entry.
   c. Maintain a continuous means of communication with the attendant.
   d. Alert the attendant in case of an emergency.
   e. Evacuate the space if an emergency occurs.

2. Attendants:

   a. Know the hazards associated with the permit space and their effects.
   b. Maintain an accurate account of the authorized entrants.
   c. Remain at their assigned station until relieved by another attendant or until the permit space entry is complete.
   d. Monitor conditions in and around the permit space.
   e. Summon rescue and applicable medical services in case of an emergency. Perform non-entry rescue procedures.
   f. Perform appropriate measures to prevent unauthorized personnel from entering the permit space.

3. Entry supervisors:

   a. Know the hazards associated with the permit space and their effects.
   b. Verify that the safeguards required by permit have been implemented.
   c. Verify that rescue services are available and that means for summoning them are operable.
   d. Cancel the written permit and terminate the permit space entry when required.
   e. Remove personnel who are not authorized to enter the permit space during entry operations.
   f. Periodically, determine that the entry operation is being performed in a manner consistent with the requirements of the permit space entry procedures and that is acceptable.

4. Permit-Required Confined Space (PRCS) Program Training

Full permit-required confined space training will include instruction on the following topics:

a. Types of confined spaces that may be encountered in various field activities.
b. Components of the written PRCS program.
c. Components of the entry permit system.
d. Atmospheric testing equipment including its use, calibration, and maintenance.
e. Atmospheric testing protocol:
    1. Oxygen, combustibles, toxic
    2. Pre-entry, frequent, or continuous testing
    3. Check all levels of the space
f. Methods for the control or elimination of any atmospheric hazards:
    1. Inerting
    2. Draining
    3. Purging and cleaning
    4. Continuous forced air ventilation
g. Procedures the employees must follow if they detect a hazard.
h. The evaluation process to be used if they detect a hazard.

Train employees on the use of entry equipment.

j. Personal protective equipment required:
    1. Full body harness
    2. Respiratory protection
    3. Chemical protective clothing
    4. Eye and face protection
k. Personnel and their responsibilities
    1. Authorized entrant
    2. Attendant
    3. Entry supervisor
    4. Rescue team

Employees covered by this policy that are required to act in the capacity of an entrant, attendant, or supervisor during confined space entry, will receive training to maintain proficiency of these subjects.

VIII. PROCEDURES

A. Permit Space Identification

1. The Utility Superintendent will identify and label with appropriate signs all areas that come under the definition of a permit required confined space.

B. Permit Space Planning

1. Employees will pre-plan before entering a PRCS. Planning must include provisions for the following:

a. The task to be conducted within the permit space;
b. Personnel involved and their specific responsibilities;
c. Evaluation of the possible hazards within the space. This includes information on atmospheric hazards, hazardous energies, and the possibility of engulfment and the risk of falling;
d. The work site must be surveyed to determine the potential escape of gases or vapors from surrounding areas and the prevailing wind direction;
e. Requirements for making the space safe. Isolation, ventilation, atmospheric monitoring, guarding and fall protection are included in this area;
f. Equipment needed for entry. Personal protective equipment (PPE) appropriate for the hazards that may be encountered. Personal monitors, ventilation equipment, rescue equipment, radios, spark proof tools, and lights are examples of equipment that may be needed;
g. Communications between the entrant and the attendant;
h. Emergency procedures to be followed.

C. Emergency Procedures

1. Knowing the locations of emergency exits (if applicable);

2. Knowing the telephone number and procedures to summon emergency help.

3. Developing a brief description of your location to give for an emergency call.

D. Permit-Required Confined Space Evaluation

Before an employee is allowed to enter a permit space, an initial evaluation (including atmosphere testing within the space) must be conducted. Atmospheric conditions within the space will address the following conditions:

1. Toxic Atmospheres: If the contamination is below the permissible exposure limit (PEL) as defined in OSHA 29 CFR 1910.146, the entry may be made without a respirator. Atmospheres where contamination is above the PEL, but below values immediately dangerous to life or health (IDLH) may be entered with approved respiratory equipment although it is to be avoided, if possible. Employees shall not enter atmospheres that are IDLH.

2. Oxygen deficiency or Excess: Atmospheres having an oxygen content below 19.5%, or greater than 23.5%, will not be entered by employees.

3. Flammable Gases or Vapors: Atmospheres that contain or could contain flammable gases or vapors will not be entered if the concentration of the gas or vapor in any pad of the space is more than 10% of the lower explosive limit (LEL).

4. Mechanical Hazards: Confined spaces containing pads that may move or which contain agitators, fans, or other power driven parts that may be hazardous will not be entered until such parts are controlled and isolated.

   Conditions within the confined space will be tested to determine if acceptable entry conditions exist before entry can be authorized.

   All atmospheric testing and monitoring equipment used for permit space entry must be calibrated before each use and operated according to the equipment manufacturer's instructions.

   The operator of the test equipment will be properly trained in its function, calibration procedures, and operational limitations.

   The entry supervisor must make evaluation of the atmosphere within the confined space.

   1. The evaluation will be made immediately before entry.

   2. Each entry will include the following testing which must be conducted in the order listed;

      a. Test for percent of oxygen
      b. Test Flammable gases and vapors (%LEL)
      c. Test for toxic gases or vapors

E. Ventilation

Mechanical ventilation will be used to purge any permit space and will continue throughout entry activities. Atmospheric testing will be conducted following purging, before entry.

Although the time required to purge the space will depend on the volume of the permit space and the air volume capacity of the blower, permit space will be purged at a minimum of 15 minutes before entry.

Ventilation equipment will be set up such that it blows air into the space rather than exhausting air from the enclosure.

Locate blowers so there are no unnecessary bends in the hose. One 90-degree bend reduces the blower capacity to 50% or one-half. For continuous ventilation with workers in a manhole, a blower of at least 500-CFM will be used.

The air should enter the space near where the workers will be in the space. It is generally most efficient to blow air into the confined space by placing the end of the blower hose approximately one-fourth of the height above the floor.

Blowers will be located outside the space so they will not pick up exhaust gases from vehicles, heaters, furnaces, etc. The blowers will be operated for one minute, to flush out the hose, before placing it in the space.

F. Written Permit

A confined space entry permit must be completed for each PRCS entry by employees and must be completed before entry into the space. The permit must be signed by the on-site entry supervisor.

If the confined space conditions remain the same, the permit will be valid for up to eight hours. No permit will be issued for more than one work shift or eight hours, whichever is shorter. Following the completion of entry operations, a copy of the canceled permit will be kept at the Sewer utility office and remain on file there for 1 year from the cancellation date.

G. Personal Protection

A comprehensive evaluation must be completed for all hazards that may be encountered. Every reasonable effort will be made to reduce or minimize the hazards before permitting entry into the confined space.

Personal protective equipment (PPE) will not be substituted for hazard elimination if this is feasible. If required, PPE will be used to protect the entrant from respiratory, eye, or skin contact hazards. All required PPE will be provided by the Village of Menomonee Falls and it is the responsibility of all affected employees to use the equipment properly. If in doubt as to the correct PPE or if any question as to the adequacy of the provided protection for a given task, the employee will contact their supervisor before entry operations.

H. Entry Procedures

1. Entry supervisor initiates the permit space entry permit and ensures the appropriate items listed below are noted on the permit.

2. Ensure that the proper isolation has been accomplished.

3. Ensure that the initial cleaning and vapor freeing (ventilation) has been completed.

4. Conduct the required atmospheric testing and proceed only if conditions are safe.

5. Ensure that continuous ventilation is in place and the appropriate air monitoring equipment is on hand and working correctly.

6. Assemble all required tools and equipment.

7. Station an attendant outside the PRCS with the capability of maintaining communication with the entrant.

8. If the space to be entered is classified as a PRCS, the use of body harness (Class III), and lifeline is required.

9. Don all required PPE.

10. Enter the permit space.

11. Evacuate the space if an evacuation order is given by the attendant or if there is any indication of ill effects such as dizziness, irritation or excessive order. If anything does not appear safe, the space must be evacuated immediately.

12. All work within the confined space should be conducted in an alert and cautious manner, always looking for signs of danger.

I. Reclassifying a Permit Space to Non-Permit Space

A permit space can be reclassified to a non-permit space by the total elimination of all hazards. A permit space can be reclassified as a non-permit space if there are no actual or potential hazards and if all the other hazards within the space are eliminated without entry into the space.

Note: *Control* of *atmospheric hazards though continuous forced air ventilation does not constitute elimination* of *the hazards.*

J. Emergency Procedures

The requirements of this policy are provided to eliminate or control any hazards before and during entry operations. However, in spite of all these precautions, hazards may arise which could incapacitate an entrant and prevent his or her self-rescue.

Confined space rescues are extremely dangerous operations that must only be performed by properly trained and equipped individuals. It is well known that most fatalities that occur are would-be rescuers who rush into a permit space without receiving proper training and/or without instituting the appropriate precautions. It cannot be stressed enough that entry rescues must only be performed by properly trained and equipped employees.

The Menomonee Falls Fire Dept. will perform entry rescues.

STANDARD OPERATING PROCEDURE

ASSET INSPECTION

STANDARD OPERATING PROCEDURES
Dye Testing

Purpose
Dye testing is a method used to locate rain or ground water entry points into the sanitary sewer system.

Method
Dye testing with the use of pellets or powder. The dye is introduced into the suspected drains and flushed with water; the downstream sanitary sewer manhole is checked for the presence of dye colored water.

Preparation
1. Obtain service request from supervisor
2. Use street guide to determine best route
3. Obtain the necessary drawings for the sewer to be tested
4. Enter the following pre-investigation information in your personal work logbook:

    a. Problem description
    b. Location
    c. Basin number & manhole number
    d. Crew members
    e. Additional pertinent information and/or comments

Equipment
1. Dye - powder or pellets (non-toxic)
2. Digital camera
3. Manhole cover remover: pick ax/pry bar
4. Water source

Procedure
1. Remove manhole cover downstream from suspected inlet
2. Prepare water source
3. Introduce specified amount of dye
4. Flush area with water
5. Observe manhole for water colored dye
6. Take pictures of suspected faults(s)
7. Take notes relative to locations of suspected fault(s).

Recordkeeping
1. Document dye testing inspections using “Dye Testing Report”
2. Record dye source
3. Description of source location
4. Picture number

5. Crew members
6. Weather conditions
7. Address
8. Manhole number
9. Field comments
10. Draw a sketch if necessary

Follow up

1. Provide findings to Director of Utilities.
2. Findings will be utilized to determine next steps in investigation or repairs.

DYE TESTING FORM

MUNICIPALITY _____ CREW _____
LOCATION (STREET/MH NO.) _____
DATE _____ TIME _____ WEATHER _____

POSITIVE DYE SOURCES

01-PAVEMENT CRACKS
02-MANHOLE FRAME
03-CATCH BASIN
04-SURFACE OVER LATERALS
05 - SURFACE OVER SEWER (IF OTHER THAN PAVEMENT)
06 - SUMP PUMP
07 - STORM MH
08 - FLOOR DRAIN
09-DOWNSPOUT/ROOF DRAINS
10-AREA DRAIN
11-OTHER SOURCE (I/I)

ROLL/PIC NUMBER	DYE SOURCE	DESCRIPTION OF POSITIVE SOURCE LOCATION

FIELD COMMENTS
_____
_____
_____
_____
_____
_____

SEE SKETCH ON OPPOSITE SIDE OF REPORT YES_____ NO _____

STANDARD OPERATING PROCEDURES

MANHOLE INSPECTION

Purpose

Manhole inspections are required periodically to inspect the interior of the sewer manhole. This inspection is performed to view the condition of the manhole and identify any defects in the manhole. Pursuant to the stipulation entered into with the State of Wisconsin (Case No. 2005-CX-000013, #30109), the municipality is required:

"By no later than June 30, 2006,. . . develop and begin implementing a program under which it will inspect each of its sanitary sewer manholes at least once every five years to identify defects which may contribute to leakage. Furthermore, the program shall require, where cost effective. . ., the correction of each such defect within eighteen months of discovery unless demonstrated extraordinary circumstances indicate that a longer period of time, not to exceed twenty-four months from discovery, is necessary."

Method

This standard operating procedure outlines a visual inspection; entry into the manhole is not required.

Preparation

1. Obtain service request from supervisor
2. Obtain the necessary drawing for the manholes to be inspected
3. Enter the following pre-investigation information in your personal work logbook. (if required)
    a. Location
    b. District number or basin number
    c. Crew member
    d. Additional pertinent information and/or comments

Equipment

1. Digital camera
2. Manhole cover remover: pick ax/pry bar
3. Compass
4. Clipboard
5. Inspection forms

Procedure

1. Remove manhole cover
2. Determine "NORTH" side of manhole
3. Card information
    a. Basin number
    b. Manhole number
    c. Date
4. Place manhole info cards on "NORTH" side of opening
5. Take picture of cards on ground
6. Note type of construction — Block — Pre-cast
7. Inspect:

a. Cover
    I. Seal in place
    II. Number of pick holes
    III. Number of vent holes
    IV. Sits flush with frame
b. Frame
    I. Internal seal
    II. Sprayed seal
c. Chimney
    I. Loose bricks
    II. Signs of inflow
d. Walls
    I. Cone and Barrel
e. Bench
    I. Debris

Record Keeping

1. Document Manhole Inspection using “Sanitary Manhole Inspection Form” Utilize NASSCO *Manhole Assessment and Certificate Program system and Coding,* or equivalent.

    a. Cover condition seal in good shape
    b. Frame condition any signs of Fl
    c. Chimney condition any signs of Ill
    d. Wall condition any signs of I/I
    e. Bench clear of debris
    f. Steps condition
    g. Field comments

STANDARD OPERATING PROCEDURES

SMOKE TESTING

Purpose
Smoke testing is critical to protecting public health and the environment through Infiltration/Inflow (I/I) control. It is intended to detect sources of inflow, such as area drains, abandoned building sewers, storm sewer cross connections, roof downspouts and illegal connections, and, if performed in very dry weather conditions with low ground water, will detect sources of infiltration, such as cracks and offset joints in sewers.

Method
Smoke testing involves pumping smoke through sanitary sewers from utility holes in streets or within public easements and observing and documenting where smoke exits.

Preparation
1. If possible, schedule testing during dry weather
2. Advance notices [See HOME AND BUILDING OWNER NOTICE OF SMOKE TESTING PROGRAM SOP]
    a. Residents are notified of the purpose and approximate date of the work
    b. Residents are told that they will see smoke emerging from their roof vents
    c. Residents are asked to fill all drains, especially basement drains.
3. Obtain service request from supervisor
4. Enter the following pre-investigation information in you personal work logbook: (if required)
    a. Location
    b. District number or basin number
    c. Crew members
    d. Additional pertinent information and/or comments

Equipment
1. Blowers suitable for smoke testing sewers that have a circular flange or plate for mounting on an open manhole and are gasoline engine driven
2. Blower should have a free-air delivery of at least 1700 CFM.
3. Smoke must be very visible (white), non-hazardous and is free of oil and colored particles which could leave residue or stain.
4. Smoke “Bomb” should last 3 to 5 minutes in duration.
5. Digital camera.

Procedure
1. Set up blower over manhole.
2. Place smoke bomb at the blower intake or lower the smoke bomb into the manhole.
3. Start blower.
4. Observe smoke (take pictures with digital camera of suspected fault(s)).
5. Take notes relative to locations of suspected fault(s).

Recordkeeping
1. Document smoke testing inspections using “Smoke Testing Report”
    a. Record smoke source
    b. Description of source location
    c. Picture number

d. Crew members
e. Weather conditions
f. Street name
g. Manhole number
h. Field Comments
i. Draw a sketch if necessary

Follow up

1. Provide findings to Utility Superintendent
2. Findings will be utilized to determine next steps in investigation or repairs.

SANITARY SEWER EVALUATION SURVEY

SMOKE TESTING REPORT

MUNICIPALITY _____ CREW _____
LOCATION (STREET/MH NO.) _____
DATE _____ TIME _____ WEATHER _____

POSITIVE SMOKE SOURCES

01-PAVEMENT CRACKS
02-MANHOLE FRAME
03-CATCH BASIN
04-SURFACE OVER LATERALS
05 - SURFACE OVER SEWER (IF OTHER THAN PAVEMENT)
06 - SUMP PUMP
07 - STORM MH
08 - FLOOR DRAIN
09-DOWNSPOUT/ROOF DRAINS
10-AREA DRAIN
11-OTHER SOURCE (I/I)

ROLL/PIC NUMBER	SMOKE SOURCE	DESCRIPTION OF POSITIVE SOURCE LOCATION

FIELD COMMENTS
_____
_____
_____
_____
_____
_____

SEE SKETCH ON OPPOSITE SIDE OF REPORT YES_____ NO _____

HOME AND BUILDING OWNER
NOTICE OF SMOKE TESTING PROGRAM

The Village of Menomonee Falls is commencing a comprehensive study of the sanitary sewer and storm water drainage systems to prevent the flooding of homes and business during rain storms.

An early step of the study is testing to determine where clear water (ground water, rain water, etc.) is entering the sanitary serer system during heavy rains. The test that will be used is a "smoke test". The "smoke test" program will be conducted on sanitary sewers throughout the Village. During the next few _____"smoke testing" will be occurring in your neighborhood. You do not have to be home during the testing period.

The "smoke testing" process has been endorsed by the Environmental Protection Agency and has been safely used by sewer service contractors and municipalities for more than 20 years. The "smoke" is not a true smoke. It is a mist containing a large percentage of atmospheric moisture that is highly visual at low concentration. The mist is seeded by zinc chloride and other products such as free carbon. It will not stain, and it will disappear rapidly without leaving a residual odor.

During the testing, "smoke" will be blown through the sanitary sewers from a manhole in the street. The "smoke" will then fill the sewer pipes and appear from any roof drains, catch basins, or house vent stacks connected to the sewer system. "Smoke" may also appear from cracks in the pavement above the sewer, from lawns, or around buildings that have foundation drains connected to the sewer.

It is possible that "smoke" may also appear in basements through unused floor drains, disconnected or faulty plumbing fixtures, or any direct opening to the building sewer (lateral). To reduce the likelihood of "smoke" entering your home or business, pour a bucket of water down all floor drains, sinks or other plumbing fixtures. The water will fill the plumbing trap and prevent the entry of the "smoke".

If "smoke" should appear in your building during the testing, open a window or door to dissipate the mist, and leave the area for the brief time it takes for the air to clear. Overexposure to the "smoke" can cause minimal irritation of the throat, or pose difficulties for persons with severe breathing problems, such as emphysema. Such incidents rarely occur and can be alleviated by moving the affected person or persons into the fresh air. If you have any concerns about situations that could be affected by the "smoke testing" please call_____

Thank you in advance for your patience and cooperation throughout the testing period.

Sincerely,

STANDARD OPERATING PROCEDURES

CCTV BUILDING SEWERS (LATERALS)

Purpose
Building Sewer (Lateral) televising is a task which is performed to view sewer laterals connecting to the sewer mainline

Method
This standard operation procedure outlines the sewer television method which is employed using television cameras, television monitors, cables, power source, lights and related equipment that is designed and constructed for sewer inspection.

Preparation
1. Obtain service request from supervisor
2. Obtain release form from homeowner
3. Enter the following pre-investigation information in your personal work logbook: (if required)

    a. Problem description
    b. Location
    c. District number or basin number
    d. Crew members
    e. Additional pertinent information and/or comments

Procedure
1. Move camera through lines in either direction at a uniform rate, stopping when necessary to ensure full documentation of pipe, lateral, and riser conditions. Do not pull camera faster than 30 feet per minute. Use winches, cable, powered rewinds, and devices that do not obstruct camera view nor interfere with documentation of pipe conditions. If television camera will not pass through entire span between manholes. Then setup equipment from opposite manhole to perform inspection.
2. If non-remote powered and controlled winches are used to pull television camera, use telephones or radios at span's end manholes to ensure adequate communication between crew members.
3. Check accuracy of measurement meters daily using a walking meter, roll-a-tape, or other suitable device. Begin footage measurement where sewer line penetrates upstream manhole, unless approved otherwise. Show footage on video data view at all times.
4. If televised section has substantial flow entering between manholes which impairs inspection, then arrange with flow source owner to temporarily stop flow, or reschedule work when reduced flow permits inspection
5. If flow depth at upstream manhole of span being televised exceeds that allowable for television inspection, then reduce the flow to permit inspection
6. Do not perform videotaped survey while using jetting equipment. Allow standing water to show extent of vertical pipeline misalignment.

Recordkeeping
1. Document television inspections using an in-vehicle or in-house computer system. Report defects and general information on pipe being viewed with and index for retrieving the information.

2. Make television inspection logs typewritten. Show the location, in relation to adjacent manhole, of each infiltration source discovered. Record other data of significance including building and house service connection locations, joints, unusual conditions, roots, storm sewer connections, collapsed sections, presence of scale and corrosion, and other discernible features. Make a brief and informative voice recording in the videotapes on the sewer conditions.
3. Make color VHS-format videotape/ DVD recordings of the data on television monitor. Before submittal, remove cassette tab (DVD read only) to prevent accidental erasure.
4. Make playback speed of videotape the same as the recording speed. Slow motion or stop motion playback features may be supplied as an option. Include the following information on the videotapes/DVD's:
   A. Data view
      (1) Date of TV inspection
      (2) Upstream and downstream manhole numbers
      (3) Current distance along reach (tape counter footage)
      (4) Printed labels on tape container and tape cartridge with location information, date and other descriptive information
      (5) Report number
   B. Audio
      (1) Date and time of TV inspection, operator name, and name of adjacent street
      (2) Verbal confirmation of upstream and downstream manhole numbers and TV direction relative to flow
      (3) Verbal description of pipe size, type and pipe joint length.
      (4) Verbal description and location of service connections and pipe defects.
      (5) Type of weather during inspection
      (6) Include the following information on computerized logs:
      (7) Location of leakage points.
      (8) Location of service connections.
      (9) Location of damaged sections, nature and damage and location relative to pipe axis
      (10) Deflection in alignment or grade of pipe
      (11) Date, time, street, basin manhole section, reference manhole number, name of operator and weather conditions.
      (12) Pipe diameter, pipe material, section length and corresponding video identification.

STANDARD OPERATING PROCEDURES

CCTV MAINLINE

Purpose
Sewer line televising is a scheduled maintenance task which is performed to view misaligned pipe joints or structural defects which could cause a collapse or backup of the sewer mainline, or be a cause of infiltration or inflow into the sanitary conveyance system.

Method
This standard operation procedure outlines the sewer television method which is employed using television cameras, television monitors, cables, power source, lights and related equipment that is designed and constructed for sewer inspection..

Preparation
1. Obtain service request from supervisor
2. Obtain the necessary drawings for the sewer to be televised
3. Enter the following pre-investigation information in your personal work logbook: (if required)

    a. Problem description
    b. Location
    c. District number or basin number
    d. Crew members
    e. Additional pertinent information and/or comments

Procedure
1. Move camera through lines in either direction at a uniform rate, stopping when necessary to ensure full documentation of pipe, lateral, and riser conditions. Do not pull camera faster than 30 feet per minute. Use winches, cable, powered rewinds, and devices that do not obstruct camera view nor interfere with documentation of pipe conditions. If television camera will not pass through entire span between manholes, then setup equipment form opposite manhole to perform inspection.
2. If non-remote powered and controlled winches are used to pull television camera, use telephones or radios at span's end manholes to ensure adequate communication between crew members.
3. Check accuracy of measurement meters daily using a walking mete, roll-a-tape, or other suitable device. Begin footage measurement where sewer line penetrates upstream manhole, unless approved otherwise. Show footage on video data view at all times.
4. If televised section has substantial flow entering between manholes which impairs inspection, then arrange with flow source owner to temporarily stop flow, or reschedule work when reduced flow permits inspection
5. If flow depth at up stream manhole of span being televised exceeds that allowable for television inspection, then reduce the flow to permit inspection
6. Do don't perform videotaped survey while using jetting equipment. Allow standing water to show extent of vertical pipeline misalignment.

Recordkeeping

1. Document television inspections using an in-vehicle or in-house computer system. Report defects and general information on pipe being viewed with and index for retrieving the information.
2. Make television inspection logs typewritten. Show the location, in relation to adjacent manhole, of each infiltration source discovered. Record other data of significance including building and house service connection locations, joints, unusual conditions, roots, storm sewer connections, collapsed sections, presence of scale and corrosion, and other discernible features. Make a brief and informative voice recording in the videotapes on the sewer conditions.
3. Make color VHS-format videotape/DVD recordings of the data on television monitor. Before submittal, remove cassette tab (DVD read only) to prevent accidental erasure.
4. Make playback speed of videotape the same as the recording speed. Slow motion or stop motion playback features may be supplied as an option. Include the following information on the videotapes/DVD's:
    a. Data view
        (1) Date of TV inspection
        (2) Upstream and downstream manhole numbers
        (3) Current distance along reach (tape counter footage)
        (4) Printed labels on tape container and tape cartridge with location information, date and other descriptive information
        (5) Report number
    b. Audio
        (1) Date and time of TV inspection, operator name, and name of adjacent street
        (2) Verbal confirmation of upstream and downstream manhole numbers and TV direction relative to flow
        (3) Verbal description of pipe size, type and pipe joint length.
        (4) Verbal description and location of service connections and pipe defects.
        (5) Type of weather during inspection
    c. Include the following information on computerized logs:
        (1) Location of leakage pints.
        (2) Location of service connections.
        (3) Location of damaged sections, nature and damage and location relative to pipe axis
        (4) Deflection in alignment or grade of pipe
        (5) Date, time, street, basin manhole section, reference manhole number, name of operator and weather conditions.
        (6) Pipe diameter, pipe material, section length and corresponding video identification.

STANDARD OPERATING PROCEDURES

CONSTRUCTION MANAGEMENT

CM1. Construction Planning

Planning for sanitary sewer system expansion, repair, and rehabilitation shall incorporate a review of the Condition Assessment Report from system **M**aintenance and **O**perations, a review of the current **C**apacity of the local system to be worked on and the system downstream, and a review of current funding sources and available alternatives/options. Based upon the above review, system improvements can be prioritized and **M**anaged in a combined operations and capital improvement program (5 year, 10 year projection recommended). Operations programs should be reviewed yearly and the capital improvement program reviewed every 5 years. Operational programs are those projects and repairs that can be accomplished by Village of Menomonee Falls personnel or contracted without formal plans or bid. Capital improvement projects are those projects designed by Village of Menomonee Falls personnel or consultant and formally bid and awarded to a contractor.

CM2. Construction Standards and Details

Standards for the construction, repair, and rehabilitation of any portion of a sanitary sewer system for the conveyance of sewage shall be the latest edition of the Standard Specification for Sewer and Water Construction in Wisconsin, MMSD Rules and Regulations, Standard Specifications of NASSCO, those portions of Wisconsin DNR regulations and State Statutes, and specifications/recommendations of product manufacturer(s). The use of these specifications, standards, and statutes must be guided by sound engineering judgment practical experience, and consideration of the special conditions of each project as to their application and priority.

Standards for Inspection, Sampling, Testing and Laboratory work shall be in accordance wit the specifications and standards referenced above. See section CM3. Construction Liability Control below for safety training of inspection personnel. Records shall be maintained of inspection personnel training in construction inspection and construction safety. Inspecting forms and reports shall follow the format of the “Village of Menomonee Falls Daily Inspection Report”.

Control of mobile and pedestrian traffic during operations shall conform to the Manual of the Manual of Uniform Torn Traffic Control Devises as adopted by WDOT and those portions of Wisconsin State Statutes.

Erosion/Containment Controls shall conform to the applicable sections of NR216, NR151 and of the specifications and standards previously referenced above.

Project Plans should consist of the following:

Title sheet with regional project location and sheet Index,
Project Overview Plan Sheet,
Plan/Profile Sheets,

Details and Notes Sheets,
Traffic Control Plan,
Erosion/Containment Plan,
As-built Project Plan set upon completion.

Project Specifications and documents should follow the format developed by the America Society of Civil Engineers. Check with Engineering?

Right-of-Way Management Village of Menomonee Falls requirements for open cut excavations and permit requirements for such work shall be reviewed and application form acquired.

Utility location and marking for planning shall be conducted through Diggers Hotline. Records shall be maintained of all Hotline requests and activity. Photographs of marking shall be taken and maintained.

CM3. Construction Liability Control

Construction Liability Control shall designate the party that shall be liable for each portion of the project. The Engineering Dept. shall review all project documents with project staff to ensure that liability is properly designated to consultants, contractors, and (local agency name). Agency Liability Insurance shall be reviewed as to coverage and limits for personnel actions. Agency personnel shall be certified in CSE, CSR, Trenching & Excavation Safety, Fall Protection, Lockout/Tagout Safety, Construction Zone Traffic Control, and PPE. Photographic evidence shall be taken as much as possible and maintained.

CM4. Submittals, Approvals, Notifications

All construction, repairs, and rehabilitation shall be reviewed and approved by the Engineering Dept., submitted to MMSD as required by its rules and regulations, and submitted to WDNR as required by its rules and statutes. No work shall begin until all agency approvals have been received, reviewed, and recommendation integrated into the project.

Depending upon project size, businesses and residents should be informed of the project and its impact upon them. This may be conducted through written communications and/or public informational meetings. During construction the public should be informed of the status of the project through written communication, public informational meetings and municipal website.

In the instance of emergency repairs, all local police, fire, health divisions/departments, MMSD and its contract operator; WDNR; regional water utilities as required by WPDES permit; and all affected businesses and residents shall be notified of the repair and the possible by-passing of sewage to the storm water system, possible loss of service, and/or possible sewer surcharging.

CM5. Contracted Projects - General

Bidding and award of a project contract shall be in accordance with Wisconsin State Statutes and Village of Menomonee Falls adopted fiscal policies for the size project and estimated cost. Village of Menomonee Falls legal counsel shall review all final contract documents prior to the Village President and clerk's signatures.

Pre-construction Meeting shall be held to finalize contract documents, insurance, and bonds if not completed, set schedule of work, location of materials, access routes, traffic and pedestrian controls, project meeting schedule, communication information, payment schedule, safety requirements, survey work, submittals and testing, restoration and post inspection.

Public Notice and Utility Mark-out for Construction. Provide written notice to those properties directly affected by the project with tentative schedule and description of work, utility mark-out information, contact name and information, access and parking information, service loss information,. The general public should be given notice through the local paper, bulletin boards , agency website, or door hangars. Notify the contractor to proceed with Diggers Hotline mark-out after public notifications.

Pre-construction site review should be conducted to note, photograph, or video existing conditions, utility markings, access routes, material location areas,

Construction and Restoration Inspection and communication with contractor, site maintenance and safety, schedule adjustments, public relations,

Inspection/Samples/Testing/Laboratory. Conduct as required by standards and specification quality control of application and placement of materials.

As-builts/Punch List/CCTV Develop as-built plan of actual measurements and special notes from inspections, final list of items for completion and schedule of warranty work, CCTV inspection of project if not included in contract work.

CM6. Force Account Projects (small projects unless noted) - General

Emergency Work Notices. In the instance of emergency repairs, all local police, fire, heat divisions/departments; MMSD and its contract operator; WDNR; regional water utilities required by WPDES permit; and all affected businesses and residents shall be notified of the repair and the possible by-passing of sewage to the storm water system, possible loss service, and/or possible sewer surcharging. Notify Diggers Hotline to mark-out.

Schedule Work Request Order. Assign or call in qualified personnel required for the work/repair to be conducted. Review project with personnel and establish a schedule for the project. Personnel may need to isolate work area and establish traffic controls prior to finalizing the work order.

Schedule Equipment and Rentals Assign equipment and/or rent equipment as required for the work/repair to be conducted.

Material Orders/Re-stock If material for work/repair is not in stock, order and schedule delivery of materials for the project. After the project is completed, order material to replace stock used.

Public Notice and Utility Mark-Out. Provide oral/written (larger project) notice to those properties directly affected by the project with tentative schedule and description of work, utility mark-out information, contact name and information,

access and parking information, service loss information. For a large project provide the general public notice through the local paper, bulletin boards, agency website, and door hangars Notify Diggers Hotline to mark-out after public notifications, if an emergency mark-out call has not been made.

Traffic Controls Establish traffic controls for work zone and notify police and fire departments of closures or restrictions and schedule for when normal traffic operations will be re-established.

Construction Safety Inform personnel of use of PPE, CSE, CSR, LO/TO.

Construction and Restoration Inspection and communication with work crew, site maintenance and safety, schedule adjustments, public relations.

Inspection/Samples/Testing/Laboratory Conduct, as required by standards and specification quality control of application and placement of materials — for larger force account projects.

As-builts/CCTV/Repair Report Develop as-built plan of actual measurements and special notes from inspections (may be part of Repair Report), final list of items for completion by crew, CCTV inspection of project, Repair Report detailing work completed and costs.

STANDARD OPERATING PROCEDURES

CONSTRUCTION SPECIFIC DAY-TO-DAY

CG1. INSTALL, RELAY, or REPAIR OF SEPARATED SANITARY SEWER GRAVITY MAIN

Objective:
This maintenance activity is performed to install, relay, repair or abandon gravity main whose integrity has been compromised due to cracks, breaks, collapses due to soil movement impact, root intrusion contact with other structures, temperatures, corrosion due to hydrogen sulfide, improper laying/repair, and combinations of any of the above. It should be noted the contact with raw sewage is a potential health hazard and care should be taken to prevent contamination of clothing/uniform, skin, or tools by using appropriate personal protective equipment as may be necessary due to field conditions at the job site.
IT IS ESSENTIAL THAT GOOD HYGIENE PRACTICES BE USED DURING OPERATIONS AND APPROPRIATE CLEAN-UP AFTER WORK IS COMPLETED TO ENSURE SAFETY.

Personal Safety Equipment:
hard hat, back brace (for heavy lifting), safety glasses, full face shield, safety vests, wore gloves, elbow length rubber gloves, steel toed work and/or rubber boots, (APR) respirator environmental coveralls, Isopropyl Alcohol, ear protection.

Job Site Safety Equipment:
ladder (extra heavy duty industrial with 1A Duty Rating), safety harness, tripod with winch and fall arrest winch, safety rope, gas detector, vent fan, flood lights, hand lights, drop lights with heavy duty bulb U.A. rated explosion proof, traffic wand, traffic control devices such 2 flags and stands, cones, barricades, and arrow board, mesh safety fencing, shoring and/ trench box.

Construction Equipment:
backhoe, dump truck(s), jackhammer, shovels, hydrant wrench, water/waste pump(s), suction and discharge hoses, cutoff saw, wrenches, tamper, air compressor, laser, surveyor's level stringline, grade boards, transit, surveyor rod, pipe burster, pipe beveller, rasp, small hand tools, chain, sling, jute, air plugs or wing plugs, steel plates, generator with GFCI, lift truck.

Erosion/Containment Controls:
sand bags, filter/absorption dike, filter bag, silt fence.

Construction Materials:
approved pipe (appropriate to type of pipe in ground), rubber adapters and/or stainless steel clamps (appropriate to type of material in ground), retainers and sleeves, brick or concrete support blocks, hydro-cement as required, select bedding/backfill materials (3/4 chips, % -crushed gravel or crushed recycled, #2 slurry fill, fly ash flowable fill), clean rags, asphalt cold mix.

Reference Materials:
System maps, as-builts, profiles, CCTV log/record, aperture cards.

Optimizing Installation, Relay, Repair of Separated Sanitary Sewer Gravity Main

Major tasks and work steps for installing, relaying, repairing or abandoning sanitary sewer gravity mains:

1. When possible, coordinate with camera crew to televise line in question, using a transponder to pinpoint breaks or sags in the line.

2. Make a Diggers Hotline request and secure a (ROW Open Cut) permit if necessary.

3. Analyze the job site. If possible, have all necessary transition pieces on hand at the job site. Set up traffic control following the MUTCD as adopted by the Wisconsin DOT. The Superintendent or person in charge of the work site will visually inspect site and insure that documentation is made to record pre-existing conditions. Documentation should consist of written field notes and photographs with the location, date, and name of the person documenting the site listed on the back of the photographs. Larger jobs may require use of a video camera to document pre-existing conditions. If it is noted that the street is under construction or is new, report this fact and field conditions to engineering dept. by radio or telephone for assistance or possible special billing. Care should be taken to avoid working in the drip line or root system of protected trees. Property owner should be contacted to advise them of your plans and measures taken to protect trees.

4. Before any work begins, it is mandatory for each crew member in the work zone to properly wear and maintain all assigned personal safety equipment required for safe job performance. This procedure will be strictly enforced on all jobs at all times.

5. In sanitary sewer entry/excavations, it is essential that you ensure that the atmosphere is regularly checked, using gas detectors to ensure personnel safety. Before entering a confined space, consult the Confined Space Entry Standard Operating Procedure, which establishes guidelines for working in a confined space.

6. If necessary, set up a pump to provide a clean, dry area for the repair work. Sewage contaminated water shall be pumped into a containment unit or other sanitary sewer line. Pump or bypass shall be of adequate size and capacity to handle flow from the existing sewer that shall be worked on.

7. Open Excavation:

   a. Break, cut, removal of asphalt/concrete street, curb/gutter, driveway, sidewalk. The person in charge will make decision to cut or break the paved surface; however, cutting is the preferred construction method. Crew should wear safety glasses and hearing protection during breaker operation as well as (APR) respirator and full face shield when using an abrasive saw. Cut asphalt/concrete with an asphalt spade with jackhammer, pavement saw, cut-off saw, or hoe ram.

   b. Normally, excavation should not proceed until utilities are located and clearance given. However, during emergencies after all site preparations are made and erosion/containment controls are in place, with supervisory approval hand excavation using extreme caution may begin immediately. After underground utility lines are located, excavation with heavy construction equipment may begin. All utility lines shall be exposed by hand shovel.

c. Other utilities that have been exposed shall be properly supported and protected from damage. On trenches 5 feet deep or greater, Wisconsin DCOMM (OSHA regulations require a trench safety system. Follow the manufacturer's Tabulated Data Sheet for shoring chosen as the trench safety system appropriate to the type of soil conditions prevalent on the job undertaken. The referenced data sheet should be kept with the trench shoring equipment at all times. As an alternate method, sloping may be used following OSHA guidelines. Trench shoring or sloping should be used if there is any question about the safety of the trench, regardless of trench depth. A ladder is required in any trench 4 feet deep or greater, with additional ladders placed every 25 feet. The ladder should be a minimum height of 3 feet higher than the existing embankment. Insure that lighting is adequate to safely perform the necessary work.

d. Excavate to expose main. Care should be taken to prevent additional damage to areas outside the trenchline. Excavate down to flow line. If bedding is contaminated or too wet, then excavate down at least 18 inches below damaged or broken pipe or until stable material is found, and remove all unsuitable materials. Contaminated materials shall be separated and disposed of properly.

e. If ground water is encountered, set up pump and dewater trench as necessary. See 6 and 10b, for contaminated water and materials.

f. Establish a method of maintaining proper grade by any of the following methods:

    i. Grade board and Stringline: Set up a grade board (a 2 inch by 6 inch straight edge that will extend across the trench). Set a string at the same elevation above the flowline at both points. Pull the string as tightly as possible. Check the string with a 2 foot level from the bottom of the string to insure that flow is in right direction. Then take a grade pole with a shelving "L" and mark pole at a predetermined point from the flowline Then mark the grade pole for the thickness of the pipe, and finally mark the grade pole 6 inches above the bottom of the pipe mark (for bedding depth).

    ii. Laser: The laser is set up in essentially the same manner as the grade board and stringline. The laser shoots grade from flowline to flowline after the percent is dialed in.

    iii. Surveyor's rod , surveyor's level or transit: Take the difference in elevation of the flowline, between starting and ending points, and divide this by the distance to get the feet of rise per foot--always working from the low point.

g. Before any extensive repairs are made to a sanitary sewer line, consult the list of rehab jobs or with Engineering Staff before making decision about what and how repairs should proceed. Possible types of repairs that may be made are as follows:

    i. For pipe that has deteriorated or is in poor condition, remove the existing pipe, starting downstream and staying on the downhill side. Work uphill to the high point. Work from the first good bell on the low side to the first good spigot on the high side. If there are very poor pipe conditions. lay new

section(s) from manhole to manhole, starting at the lowest manhole and working to the highest manhole with bell ends pointing uphill.

ii. Other types of repairs that can be made to pipe which has not deteriorated badly are: slip lining, cured-in-place pipe repairs, pipe bursting, micro tunneling, or actual reconstruction of the sanitary sewer main.

h. If existing pipe material is found to be different than planned upon, insure you get appropriate couplings for the material in place.

i. Re-bed the trench to proper grade.

j. Make sure the flowlines match when installing the first joint of pipe. If using a rubber coupling, ensure it is supported with a concrete cradle. The cradle should extend 3 inches beyond the width of the coupling. Insure there is no loose material under the concrete cradle as this should sit on a stabilized portion of the trench (this may or may not sit on bedding material).

k. When existing service laterals are encountered, if possible, install a new main size by 6 (or match existing size) inch gasketed "Tee". If it is not possible to install a "Tee", then a main size by 6 (or match existing size) inch saddle with stainless steel straps may be used in emergency situations only.
CAUTION: Insure that hole in the pipe has been cut to proper dimensions prior to installing tap saddle. The hole should be centered in the direction and grade of the existing service. Check to insure that the main pipe is properly aligned and does not have any obstructions or jagged edges, using a rasp or grinding tool to remove obstructions or jagged edges. Make sure that the locator ring or shoulder is properly fitted inside the cut opening. Insure that all clamps have been properly installed and tightened. After the "Tee" or tap saddle has been properly installed, reconnect the service to the main, insuring that the gasket has been properly installed.

l. Finish laying all pipe. During pipe installation, insure that no joints are glued and that all gaskets are properly placed in the bell end, except when dealing with a pressurized system or when PVC Schedule 40 pipe is used. Bed and cover pipe 12 inches. If possible before backfilling pipe, CCTV line to insure there are no sags or offsets. If scheduling of camera crew will not allow pipe to be televised before backfilling is complete, schedule this activity as soon as possible. Backfill pipe according to Standard Specifications. This should be done carefully to prevent damage to the newly placed pipe.

m. Backfill pipe with crushed gravel, crushed concrete, or approved spoils in uniform lifts of 12 inches (maximum of 18 inches) depending on the depth of the pipe. Compact each layer in accordance with specifications (95% compaction is required). If backfill is behind the curb or in an easement, all areas to receive vegetation should be filled and compacted to within 4 inches from finished grad. This can be accomplished by using a jumping jack, air tamper, or other approved equipment.

n. Remove remaining spoil, insuring that all contaminated spoils are handled in an appropriate manner and hauled to an approved site for proper disposal. Clean up work site and remove containment controls. Always insure that work site is

properly cleaned before removing any erosion controls.

o. Restore pavement per specifications. For asphalt base, asphalt patch should be equal to existing material in place or a minimum of 6 inches, whichever is greater. It should be compacted in 2 inch lifts in accordance with specifications (100% compaction is required) and should be placed to match with the existing surface. For concrete streets, concrete patch should be equal to the existing pavement and doweled to existing pavement with #8 dowels. For asphalt overlay, install concrete patch and install asphalt to match existing. In emergencies, apply temporary paving (cold mix) and compact to existing grade, emergencies, apply temporary paving (cold mix) and compact to existing grade. If street is less than 5 years old, follow requirements for cuts in new streets.

p. Restore turf areas per specifications. Apply starter fertilizer, seed and hydro-mulch, or sod. Maintain erosion controls in place until such time as vegetation has adequately covered disturbed area.

q. Remove traffic control devices.

r. Before leaving the site, ensure proper clean-up and disinfection of all contaminated uniforms and tools to ensure health and safety of personnel. Place door hanger with information regarding work done, supervisor's name, and telephone number for any questions customer may have. If work is done after hours, write your name and telephone number in the appropriate space on the door hanger as the person responsible for the work done. Also place the name and telephone number of the utility so the customer can contact them if they have urgent needs or questions regarding the work done. Never place notice in customer's mailbox and use caution when entering private property at night.

s. If there are any changes in the location of this line or the type of material used, send marked up as-builts or profile to Engineering staff for updating system maps and records.

t. Fill out a Job Completion Report, Status Report, and if needed a Property Damage Report and/or Special Billing Report and other related, required documentation completely and in a timely manner. If a customer, plumber or third party is being special billed for this work, it is important that the proper notification is made to. Insure that reports for these charges reflect all actual time, equipment and materials so charges are accurate.

8. When installing, relaying, or repairing a sanitary sewer main, there are certain incidental activities pertaining to sanitary sewer construction or repair that may be regulated by Wisconsin Department of Natural Resources or other entities. These activities have been subdivided and succinctly described so that you are familiar with the most common of these. For any specific problems you may encounter with any of the following, contact Engineering staff for assistance.

<u>PARALLEL LAY OR CROSSING OF WATERMAINS</u>

When installing a sanitary sewer line parallel to, or crossing a water main, you must insure that at a minimum, 150 psi. pressure rated pipe is used. The crossing sewer pipe must be centered on the water main to allow a separation of 9 feet on either side of the existing

water main to the ends of the pressure rated pipe. Additionally, pressure rated fittings must be used on both ends of the pressure rated pipe. These fittings may consist of a coated, solid sleeve with a transition gasket or other approved products. For sanitary sewer mains that cannot be installed with a separation of a minimum of 9 feet from the existing water line, pressure rated pipe and fittings must be used. Preferred construction method is to maintain a separation of a minimum of 4 feet from the existing water line for all new sanitary sewer installation. Exceptions from this norm should be discussed with Engineering staff.

CREEK CROSSING

When installing a sanitary sewer line across a creek bed; the preferred construction method is to use SDR-35 pipe, HDPE pipe, or lined Ductile Iron pipe encased in concrete. Depending on field conditions, special backfill and trench/cap encasement may be required. Consult with Engineering staff for assistance.

AERIAL OR BRIDGE CROSSING

When installing a sanitary sewer line that will be suspended aerially, the preferred construction method is to use SDR-35 Pipe, HDPE Pipe, or Ductile Iron Pipe (with restrained joints). An appropriate support structure equal to or better than existing should be designed for this work, depending on existing site conditions. For assistance with design, installation, and insulation of these lines, consult with Engineering staff.

9. Cured-In-Place Pipe Liner/Fold & Formed Pipe Liner Repair of Separated Sanitary Sewer Gravity Main

Follow CM6 Public Notice and Utility Mark-out. Follow sections 1 through 7 of CG1 as required for municipal personnel and for contractor for installation of liner.

a. Sanitary sewer shall be thoroughly cleaned by sewer jet. Sewer shall be CCTV inspected and sewer re-cleaned for removal of roots and deposits that may adversely affect the installation of the liner and/or flow of the sewer. All existing service lateral connections shall be located and confirmed as being in service for the reinstatement phase. Sections with missing pipe sections and/or offset joints shall be reviewed for possible excavation and repair prior to lining. If required follow CG1. 8. Open Excavation for spot repairs.

b. Notify those properties that will temporarily lose service of the schedule of reduced water usage and emergency contact information. Users shall not be out of service for more than 24 hours during lining process. Liner shall be installed per the referenced specifications and standards, and per the manufacturer's instructions.

c. Contractor shall reinstate/reconnect all confirmed active service laterals via CCTV and cutting device in the sanitary sewer. All cutting debris shall be collected and removed from the sewer. Services shall have a minimum 95% flow capacity of the original connection. Service lateral connections may then have a "T" type liner installed or be air tested and sealed with a chemical grout (see contract) for testing and chemical grout sealing). Service laterals should be sealed a minimum of 5 feet from the sewer main. Repeat property notification, of reduced service, for this work as required.

d. Reconstruct benches and channels in manholes with grout to match the invert of

the liner. At the manhole, provide a watertight seal between the existing pipe and the liner pipe.

e. Complete project with a final CCTV inspection and record. Ensure that the work site has been cleaned, any damage recorded for repair, traffic and pedestrian controls removed.

10. <u>Slip Liner Repair of Separated Sanitary Sewer Gravity Main</u>

Follow CM6 Public Notice and Utility Mark-out. Follow sections 1 through 7 of CG1 as required for municipal personnel and for contractor for installation of liner. Work zone shall be established to provide for excavation points and layout of pipe for jacking/pulling distances.

a. Sanitary sewer shall be thoroughly cleaned by sewer jet. Sewer shall be CCTV inspected and sewer re-cleaned for removal of roots and deposits that may adversely affect the installation of the liner and/or flow of the sewer. All existing service lateral connections shall be located and confirmed as being in service for the reinstatement phase. A go-no-go mandrel equivalent to the outside diameter of the liner pipe shall pass through the existing sewer and obstructions and/or offset joints shall be removed or repaired prior to lining. Follow CGI. 8. Open Excavation for spot repairs.

b. Notify those properties that will temporarily lose service of the schedule of reduced water usage and emergency contact information. Users shall not be out of service for more than 24 hours during lining process. Liner shall be installed per the referenced specifications and standards, and per the manufacturer's instructions.

c. Contractor shall reinstate/reconnect all confirmed active service laterals via CCTV and cutting device in the sanitary sewer. All cutting debris shall be collected and removed from the sewer. Services shall have a minimum 95% flow capacity of the original connection. Service lateral connections may then have a "T" type liner installed or open excavation and saddle connection. Service laterals should be sealed or replaced a minimum of 5 feet from the sewer main. Repeat property notification, of reduced service, for this work as required.

d. If annular space grouting is required, consult Engineer and standard specifications.

e. Reconstruct benches and channels in manholes with grout to match the invert of the liner. At the manhole, provide a watertight seal between the existing pipe and the liner pipe.

f. Complete project with a final CCTV inspection and record. Ensure that the work site has been cleaned, any damage recorded for repair, traffic and pedestrian controls removed.

11. <u>Pipe Bursting Repair of Separated Sanitary Sewer Gravity Main</u>

Follow CM6 Public Notice and Utility Mark-out. Follow sections 1 through 7 of CG1 as required for municipal personnel and for contractor for installation of pipe. Work zone

shall be established to provide for excavation points and layout of pipe for pulling distances.

a. Sanitary sewer shall be thoroughly cleaned by sewer jet. Sewer shall be CCTV inspected and sections with sags and horizontal offsets shall be reviewed for possible open excavation for removal. All existing service lateral connections shall be located and confirmed as being in service for the reinstatement phase. Follow CG1. 8. Open Excavation for removal of sags/horizontal offsets and reinstatement of service laterals.

b. Notify those properties that will temporarily lose service of the schedule of reduced water usage and emergency contact information. Users shall not be out of service for more than 24 hours during lining process. Pipe shall be installed per the referenced specifications and standards, and per the manufacturer's instructions.

c. Contractor shall reinstate/reconnect all confirmed active service laterals. Services shall have 100% flow capacity of the original connection. Service lateral connection reinstatement shall be by open excavation and welded (preferred) or saddle connection. Service laterals should be replaced a minimum of 5 feet from the sewer main or more to obtain minimum slope.

d. Reconstruct benches and channels in manholes with grout to match the invert of the liner. At the manhole, provide a watertight seal between the existing pipe and the liner pipe.

e. Complete project with a final CCTV inspection and record. Ensure that the work site has been cleaned, any damage recorded for repair, traffic and pedestrian controls removed.

12. <u>Horizontal Auger Boring and Horizontal Directional Drilling Repair of</u> <u>Separated Sanitary Sewer Gravity Main</u>

Consult Engineering and standard specifications for these operations because of the specialty and usual deep depth.

CG2. ABANDONMENT OF SANITARY SEWER GRAVITY MAIN

Objective:

This maintenance activity is performed to abandon a gravity main whose integrity has been severely compromised due to cracks, breaks, collapses, impact, root intrusion, contact with other structures, temperatures, corrosion, improper laying/repair, and combinations of any the above. This work is to be accomplished after the installation of a replacement sanitary sewer and service connections have been transferred to the new sewer. It should be noted the contact with raw sewage is a potential health hazard and care should be taken to prevent contamination of clothing/uniform, skin, or tools by using appropriate personal protective equipment as may be necessary due to field conditions at the job site.

IT IS ESSENTIAL THAT GOOD HYGIENE PRACTICES BE USED DURING OPERATIONS AND APPROPRIATE CLEAN-UP AFTER WORK IS COMPLETED TO ENSURE SAFETY.

Personal Safety Equipment:
Same as for CG1. Especially for manhole entry.

Job Site Safety Equipment:
Same as for CG1. Especially for manhole entry.

Construction Equipment:
Same as for CG1.

Erosion/Containment Controls:
Same as for CG1.

Construction Materials:
Brick or concrete blocks, hydro-cement as required, select bedding/backfill materials (3/4 chips, ¾ - 1 1/2 crushed gravel or crushed recycled, #2 slurry fill, fly ash flowable fill), clean rags, asphalt cold mix.

Reference Materials:
system map, as-builts, profiles, CCTV log/record, aperture cards.

Optimizing Abandonment of Sanitary Sewer Gravity Main

Major tasks and work steps for abandoning sanitary sewer gravity mains:

1. **Abandonment during installation of replacement sewer.** Follow all procedure provided in CG1 for all open excavations. Follow CSE procedures for manhole entries. Once replacement sewer is laid and has passed testing, upstream flow shall be diverted to the new sewer and service lateral connections shall be transferred to the new sewer. Lateral connections shall be transferred beginning from the downstream end of the existing sewer. Plug the downstream end of the main at the manhole invert or at the end of the main, using concrete or mortar and bricks. Allow breather hole if flowable fill used to fill abandoned pipe. As each service lateral is transferred to the new sewer, the existing downstream sewer shall be collapsed if exposed or pumped full with an approved flowable fill until fill discharges from breather/access hole. Place temporary plug in hole and allow required time for fill to set. Remove temporary plug and fill hole with hydro-cement. Ensure that crossing service lateral is properly bedded at crossing abandoned pipe. This may be done with the flowable fill operation. Repeat process to upstream end of sewer pipe. Complete process by plugging the upstream end of the sewer at the manhole connection or end of pipe.

2. **Abandonment with no replacement sewer**. Conduct a smoke test and/or CCTV for the section to be abandoned to verify that no live or improperly abandoned service lateral connections exist. Follow CM6 Public Notice and Utility Mark-out and all procedure provided in CGI for all open excavations. Follow CSE procedures for manhole entries. Plug upstream end of the main at the manhole (if manhole is not to be abandoned) invert or at the end of the sewer pipe, using concrete, mortar and bricks. Allow breather/access hole for flowable fill. Plug the downstream end of the main at the manhole invert or at the end of the sewer pipe, using concrete, mortar and bricks. Allow breather/access hole for flowable fill. Pump flowable fill into sewer until fill discharges from breather/access holes. Place temporary plugs in

holes and allow required time for fill to set. Remove temporary plugs and fill holes with hydro-cement.

CG3. INSTALL, REPAIR, OR ABANDONMENT OF SANITARY SEWER MANHOLE

Objective:
This maintenance activity is performed to provide access to the sanitary sewer system due to the following: change of pipe size, branch connections, change of grade, or other special conditions. Manholes should be no farther than 300 feet apart. It should be noted that contact with raw sewage is a potential health hazard and care should be taken to prevent contamination of uniform, skin, or tools by using appropriate personal protective equipment as may be necessary due to field conditions at the job site.
IT IS ESSENTIAL THAT GOOD HYGIENE PRACTICES BE USED DURING OPERATIONS AND APPROPRIATE CLEANUP AFTER WORK IS COMPLETED TO ENSURE SAFETY.

Personal Safety Equipment:
Same as for CG1. Especially for manhole entry.

Job Site Safety Equipment:
Same as for CG1. Especially for manhole entry.

Construction Equipment:
Same as for CG1.

Erosion/Containment Controls:
Same as for CG1.

Construction Materials:
Approved manhole sections, approved pipe (appropriate to type of pipe in ground), appropriate frame and cover, concrete or recycled rubber grade rings (donuts), rubberized asphalt mastic or butyl rubber gasket (trowel or rope form), 12" rubberized mastic wrap, stainless steel clamps (appropriate to type of material in ground), rubber gaskets/waterstops, sleeves, joint lubricant, brick or concrete blocks, hydro-cement as required, select bedding/backfill materials (3/4 chips, 3/4 - 1½ crushed gravel or crushed recycled, #2 slurry fill, fly ash flowable fill), 4 mil polywrap, poly tape, clean rags, and cold mix.
Reference Materials:
System map, as-builts, profiles, CCTV log/record, aperture cards.

Optimizing Installation, repair, or abandonment of Manhole of Sanitary Sewer System

Major tasks and work steps for installing a manhole of a sanitary sewer system.

1. Analyze the job site. If possible, have all necessary manhole and transition pieces on hand at the job site. Follow CM6 Public Notice and Utility Mark-out if this is a separate project, and all procedures provided in CG1 for all open excavations. Follow CSE procedures for manhole entries.

2. Install sanitary sewer manholes per Standard Details in the Standard Specifications for Sewer & Water Construction in Wisconsin, current edition or the project contract specifications as applicable.

3. Excavate a minimum of 16 inches below the outside diameter (O.D.) of the outlet pipe. Care should be taken to prevent additional damage to areas outside the excavation. If undesirable material is encountered, continue excavation to suitable subgrade material. Support all existing pipes.

4. Build manhole invert at the proper elevation. Preferred construction method is to maintain a minimum 0.10 foot (approximately 1.25 inches) fall through the manhole, when possible. Otherwise, follow the slope of the pipe.

5. The pipe coming into the manhole should be supported with bricks, ensuring that these are located outside the perimeter of the manhole base. The manhole base should have a minimum inside diameter of 42 inches and an outside diameter of 66 inches (or I.D. + 24 in.). This can be achieved by marking the center point with a nail and scribing a 21 inch radius and 33 inch radius.

6. The concrete should be a minimum of 12 inches thick below the bottom of the outside diameter of the outlet pipe. The roll of the invert should be half the diameter of the outlet pipe. Keep the flow through invert the same diameter as the outlet pipe, and never "T" in straight. There should be no hard corners, all bends shall be radius and outside drops and services turned to discharge with the flow and 1/3 up the invert wall. All surfaces shall have a smooth trowel finish. All manhole bases constructed in place should be constructed with Class D concrete with a 2 to 3 inch slump maximum (a stiff, dry mix). Curing time of 7 hours should elapse before manhole sections are stacked on the base, unless high early strength concrete is used, for which curing time will be a minimum of 12 hours.

7. Where field conditions will allow, precast base sections can be used as approved in (agency name) standards.

8. After curing time has elapsed, make a mortar mix (a sand and cement mix) with proportions of 3:1 (i.e. 3 parts sand to 1 part cement). This will be a stiff mix used as a sealant on interior and exterior walls of the manhole and at the seams of the foundation. Begin stacking precast sections or building sections with block or brick. For precast, the first section of the manhole should be set on 1 inch of the prepared mortar mix, which has been placed on the concrete base. After the first section has been placed on the mortar mix, subsequent sections will be stacked before mortar hardens. These joints will be mastic or gasketed (not mortared) in place. Then go back and re-wipe the bottom section with the mortar mix at the foundation to ensure a good seal. See standard specifications and details (insert name or #) for brick or block construction. Seal all inlet and outlet pipes by applying the proper waterstop seal and grouting in with hydro-cement mix.

   a. All subsequent gasketed joints should be sealed by liberally lubricating and installing an appropriate "O-Ring". Lubricate the groove and bottom of each subsequent joint with pipe soap.

   b. All mastic joints should be sealed by liberally applying mastic or flexible butyl rubber gasket to lower section.

c. An outer 12 inch rubberized mastic wrap shall be applied over all barrel and cone joints. An inner wrap is optional.

9. Ensure safe construction practices are observed when stacking manhole sections in place. Backfill should take place as each section is installed. Bed and backfill around manhole according to (agency name) Standard Specifications. This should be done carefully to prevent damage to the newly constructed manhole and connecting pipes from unbalanced fill.

10. If steps are installed, follow the standard specifications and details for type, location and installation.

11. Pour remainder of bench in bottom of manhole to match the top of the outlet pipe. Bench should be sloped to invert at 1½ inch per foot with a radius finish at the edge to the invert. For precast base sections, the concrete fill shall be a minimum of 4 inches bellow the invert of the outlet pipe.

12. Install adjusting rings as necessary, measuring from existing pavement or ground elevation. Try to set top of cone from grade equal to depth of cover frame plus three inches for ring and frame to chimney seal. Set frame and apply exterior and/or interior frame to chimney seal as required. If using rubber or poly rings, follow manufacturer's directions for installation of rings and frame.

13. If manhole located in any area subject to heavy flooding (such as a creek bed or drainage way), use a bolted frame and bolted sealed cover.
14. For manufactured manhole system, follow the manufacturer's instructions for installation.

15. Follow CG 1 for final backfill and restoration.

16. Do not subject manhole to traffic for at least 12 hours. The area may be plated off or barricaded, depending upon location and traffic.

Major tasks and work steps for repairing a sanitary sewer manhole:

1. If possible, isolate manhole by diverting the flow. If necessary, set up a pump around to provide a clean, dry area for the repair work.

2. For repairs to manhole bench and inverts, the following should be done:

   a. Thoroughly clean the area (down to sound concrete) with a high pressure spray, removing all grease or damaging chemicals.

   b. Prepare a hydro-cement mortar mix and repair or reshape the bottom of the base of the invert with the mortar mix. This should be a dry mix shaped to the bottom. Try to maintain a minimum 0.10 foot (approximately 1.25 inches) fall through the manhole, when possible. Otherwise, follow the slope of the pipe. Form a flow channel, creating a smooth flow line. Never "Tee' in straight. There should be no hard corners--always smooth corners with a smooth trowel finish.

c. Seal around all pipe connections, using quickset hydro-cement mortar, and cure for at least 4 hours before opening manhole to flow.

d. Depending upon the type of flow through the pipe, an epoxy coating may need to be applied to the invert. Check with (engineering) for application of protective coating or use of harder mix for the type of flow.

e. If installing a preformed invert unit, remove concrete as needed to set unit. Anchor and seal unit per manufacturer's directions. Fill around unit with a Class D concrete mix and finish bench as in 10. above.

3. For tie-ins, the following should be done:

   a. For tie-ins at the bench, see Standard Details in the Standard Specifications for Sewer & Water Construction in Wisconsin, current edition or the project contract specifications as applicable.

   b. For tie-ins above the bench where the inlet pipe invert is more than two feet above the bench use an outside drop or see Standard Details in the Standard Specifications for Sewer & Water Construction in Wisconsin, current edition or the project contract specifications as applicable.

4. For adjustments to manholes that exceed the (18" allowable ring adjustment), the following should be done:
   a. Saw cut the pavement by marking an 8 1/2 foot square around the top of the manhole, centered on the manhole. Break and remove the asphalt with a jackhammer or breaker. Begin to excavate down the side of the manhole to 1 foot below the cone section. Remove the frame and cover and any adjustment grade rings (donuts). Safely remove the cone section with an approved method such as wedging a steel beam inside the cone section or by using an approved lifting device. Pull the cone section out and remove it from the manhole. Clean the spigot end, removing any old mortar or debris. Preferred construction method is to install a new gasket. If a proper gasket is not available, clean the seam and re-mortar as you set the new section. If new section dimensions are not the same as the old section in place, or if the groove does not match up, mortar a new section riser of the appropriate length in place. If required, set steps to relate to existing steps below and cone section above. Replace cone section with new gasket or mortar it in place. Install exterior and interior seals as required. Reinstall frame and cover using adjusting grade rings as necessary to bring top of manhole to finish grade. Install exterior and/or interior frame to chimney seal as required. If using rubber or poly rings, follow manufacturer's directions for installation of rings and frame. Backfill excavation evenly and so as not to damage manhole and seals. Backfill and restore per open excavation requirements. If manhole located in any area subject to heavy flooding, such as a creek.

   a. Coating manholes is a maintenance task that is currently being performed by contract labor.

6. Chemical Grout Sealing of Manholes.

    a. See section of SOP's for chemical grouting of sewers.

7. For adjusting, re-sealing or replacing frame and cover, the following should be done:

    a. If required, saw cut the pavement by marking an 8 1/2 foot square around the top of the manhole, centered on the manhole. Break and remove the asphalt with a jackhammer or breaker. Begin to excavate down the side of the manhole to 1 foot below the adjusting rings. Remove the frame and cover and any cracked or broken adjustment grade rings. If existing frame and cover is still serviceable, remove all old grout and mortar mix. Clean all old grout and mortar mix from the adjusting ring or top of cone Thoroughly clean this section, using a brush, small chisel, and hammer. Insure surface is clean before covering the top of the cone section. For precast concrete adjusting rings place a minimum ¾ inch thick bead of mortar (use enough to bring section to finish grade). Re-wipe frame with generous amount of mortar and set the frame. Install exterior and/or interior frame to chimney seal as required. If using rubber or poly rings, follow manufacturer's directions for installation of rings and frame. Backfill and restore per open excavation requirements.

    b. If manhole located in any area subject to heavy flooding (such as a creek bed or drainage way), use a bolted frame and bolted sealed cover.

    c. Inspect cover seal/gasket and cover seat of frame. Clean cover seat on frame and cover seal/gasket prior to placing cover. If cover seal/gasket is damaged or worn, replace cover or seal/gasket. If cover lift ports are damaged or worn, replace the cover. If manhole has a seal insert unit, inspect and replace if required. Ensure that the cover is seated properly in the frame prior to leaving.

If it is determined that it is necessary to abandon a manhole, the following should be done:

    a. If required, saw cut the pavement by marking an 8 1/2 foot square around the top of the manhole, centered on the manhole. Break and remove the asphalt with a jackhammer or breaker. Remove the frame and cover. Plug all inverts with brick and mortar, placing brick 12 inches into the pipe. The manhole needs to be lowered to a minimum of 36 inches below existing street or ground surface by removal of adjusting rings and cone section as required. This material may be placed in the manhole. If the manhole to be abandoned is located in the street or is susceptible to being "washed out", fill it with fly ash flowable fill. Backfill and restore per open excavation requirements.

    b. If the manhole to be abandoned is located in any other area than those listed in "a" above, fill it with sand or gravel and cap it with 12 inches of concrete. Backfill and restore per open excavation requirements.

CG4. INSTALL, RELAY, REPAIR, OR ABANDONMENT OF SANITARY SERVICE LATERAL CONNECTION

Objective:
This maintenance activity is performed to install, relay or repair a sanitary sewer service lateral connection whose integrity has been compromised due to cracks, breaks, collapses due to soil movement, impact, root intrusion, contact with other structures, temperature corrosion due to hydrogen sulfide, improper laying or repair, and combinations of any of the above. This task may be performed because of problems with an existing service lateral connection or because it was inadvertently forgotten during construction. It should be noted that contact with raw sewage is a potential health hazard and care should be taken to prevent contamination of uniform, skin, or tools by using appropriate personal protective equipment as may be necessary due to field conditions at the job site.
IT IS ESSENTIAL THAT GOOD HYGIENE PRACTICES BE USED DURING OPERATIONS AND APPROPRIATE CLEANUP AFTER WORK IS COMPLETED TO ENSURE SAFETY.

Personal Safety Equipment:
Same as for CG1.

Job Site Safety Equipment:
Same as for CG1.

Construction Equipment:
Same as for CG1.

Erosion/Containment Controls:
Same as for CG1.

Construction Materials:
Same as for CG1.

Reference Materials:
Same as for CG1.

Optimizing Operation, Maintenance, Rehabilitation, and Abandonment of Service Lateral Connections

Major tasks and work steps for installing, relaying, repairing, or abandoning sanitary sewer service lateral connections:

1. If necessary, televise line in question with a mini-cam; coordinate this activity with camera crew. If problems with the line are indicated when line has been televised, the preferred construction method for repairing a service lateral connection shall be:

    a. When defect is under the street - replace that portion of pipe that is defective from the wye to the curb/shoulder. If the wye is defective, it too shall be replaced and any damaged sewer pipe adjacent to it.

    b. When defect is located between the property line and the back of the

curb/shoulder - replace that portion of pipe that is defective up to property line. If required due to length of service, install a clean out at the property line upon completion of the work.

c. If work requires repair of the private portion of the service lateral (in public or private lands) the Utility Superintendent shall keep records of all activities. For work on private land, the crew shall have a licensed plumber as a member; or a licensed plumber will need to be called to the site to supervise the work in accordance with State Plumbing Code. If a customer, plumber, or third party is being special billed for this work, it is important that the proper notification is made to the Building Inspection Dept.. Insure that reports for these charges reflect all actual time, equipment, and materials so charges are accurate.

2. Follow the remainder of CG1 items 2 through 7; and 8 through 12 as the type of repair method applies.

3. For abandonment of service lateral:

   a. Verify that service lateral is not active and in use. Follow all procedures provided in CG1 for all open excavations. Follow CSE procedures for manhole entries. **Excavate service lateral and remove. Remove and replace wye with standard sewer pipe section**. If manhole connection, plug opening in the manhole. Plug upstream end of lateral that remains from the private property.

   b. Verify that service lateral is not active and in use. Follow all procedures provided in CG1, 10 as it applies for cured-in-place liner. Follow CSE procedures for manhole entries. Liner shall be installed to seal wye connection and shall extend 2 feet beyond the joints of the wye section. If manhole connection, plug opening in the manhole. Following CG1 for open excavation, excavate service lateral at property line and fill with flowable fill or chemical grout. Plug upstream end of lateral that remains from the private property.

   c. Verify that service lateral is not active and in use. Follow all procedures provided in CG1 for all open excavations. Follow CSE procedures for manhole entries. Excavate service lateral as close to the pavement as possible for insertion pit. Insert Cured-in-place plug and place as close to the sewer main as possible. If manhole connection, plug opening in the manhole. Plug upstream end of lateral that remains from the private property.

CG5. INSTALL WASTE WATER CLEAN-OUT

Objective:

This maintenance activity is performed, if necessary, upon completion of maintenance work done on a sanitary sewer line. The clean-out is installed to allow an access point into the system so that blockage points may be verified and cleaned out. The clean-out also provides the means to inspect the customer's tie-in

to the system.
It should be noted that contact with raw sewage is a potential health hazard and care should be taken to prevent contamination of uniform, skin, or tools by using appropriate personal protective equipment as may be necessary due to field conditions at the job site.
IT IS ESSENTIAL THAT GOOD HYGIENE PRACTICES BE USED DURING OPERATIONS AND APPROPRIATE CLEANUP AFTER WORK IS COMPLETED TO ENSURE SAFETY.

Personal Safety Equipment:
Same as for CG1.

Job Site Safety Equipment:
Same as for CG1.

Construction Equipment:
Same as for CG1.

Erosion/Containment Controls:
Same as for CG1.

Construction Materials:
Same as for CG1.

Reference Materials:
Same as for CG1.

Major tasks and work steps for installing a clean-out:

1. Locate the service lateral connection using information found on as-builts or profile, if available. If none of these are available for consultation, use available CCTV and electronic locating technology to locate the service lateral connection and location at the property line.

2. Follow all procedures provided in CG1 for all open excavations. Follow CSE procedures for manhole entries. Excavate service lateral as close to property line as possible.

3. Cut the lateral open and install fittings as necessary to make proper connection. Due to existing field conditions, modifications may need to be made as necessary to ensure a good connection.
   NOTE: Never make a short radius 90 degree turn. Maintain a slow rolling radius by constructing a 90 degree turn with two 45 degree angle pieces or four 22 1/2 degree bends if there is enough room. DO NOT USE 90 DEGREE FITTINGS.

4. Install frost sleeve over clean out so that it extends 4 feet below existing grade. Place an iron rod next to frost sleeve for future locating.

5. Backfill and restore per open excavation requirements.

CG6. REHABILITATION, RELAY, REPAIR, OR ABANDONMENT OF SANITARY SEWER FORCE MAIN

Objective:
This maintenance activity is performed when it becomes necessary to rehabilitate, relay, repair, or abandon a sanitary sewer force main which may be damaged, causing leaks due to improper construction, soil movement, impact to the main, or deterioration of the pipe. Other causes of damage to these mains may consist of inadequate thrust restraint, chemical or sulfide damage, or combinations of any of the above.
It should be noted that contact with raw sewage is a potential health hazard and care should be taken to prevent contamination of uniform, skin, or tools by using appropriate personal protective equipment as may be necessary due to field conditions at the job site.
IT IS ESSENTIAL THAT GOOD HYGIENE PRACTICES BE USED DURING OPERATIONS AND APPROPRIATE CLEANUP AFTER WORK IS COMPLETED TO ENSURE SAFETY.

Personal Safety Equipment:
Hard Hat, Back Brace (For Heavy Lifting), Safety Glasses, Full Face Shield, Safety Vests, Work Gloves, Elbow Length Rubber Gloves, Steel Toed Work and/or Rubber Boots, (APR) Respirator, Environmental Coveralls, Isopropyl Alcohol, and Ear Protection.

Job Site Safety Equipment:
Equipment: Ladder (Extra Heavy Duty Industrial with IA Duty Rating), Safety Harness, Safety Rope, Gas Detector, Traffic Wand, Traffic Control Devices such as Flags, Flag Stands, Cones Barricades, and Arrowboard, Mesh Safety Fencing, Shoring and/or Trench Box.

Construction Equipment:
Backhoe, Jackhammer, Shovels, Hydrant Wrench, Water Pump, Suction and Discharge Hoses, Pipe Cutter (appropriate to material in ground), Wrenches, Tamper, Air Compressor, Laser, Surveyor's Level, String Line, Batter Board, Transit, Philadelphia Rod (Grade Rod), Pipe Beveller, Rasp, Trowel, Small Hand Tools, Chain, Sling, Jute, Air Plugs or Wing Plugs, Steel Plates, Generator with GFCI, Flood Lights, Hand Lights, Drop Lights with Heavy Duty Bulb U.A. Rated Explosion Proof, 5 Ton Crane, Vactor Truck, and Lift Truck.

Erosion Controls:
Sand Bag, Filter Dike and/or Silt Fence.

Construction Materials:
Approved Pipe (appropriate to type of pipe in ground and to the working pressure of the system in place) such as Coated Ductile honor PVC with a minimum PSI of 250 pressure rating for use in R.O.W. and 350 if used in easements, Fittings, Rubber Gaskets, Sleeves, Joint Lubricant, Brick or Concrete Support Blocks, Concrete or Cement as Required, Select Backfill Materials (flexible base, gem sand, crushed rock, washed rock or two sack flowable fill), Clean Rags, 4 mil. Polywrap, Poly Tape, and Cold Mix.

Reference Materials:
Quads, As-Builts, Profiles, and Aperture Cards.

Optimizing Operation Maintenance, and Rehabilitation of Sanitary Sewer Collection Systems

Major tasks and work steps for rehabilitation, relay, repair or abandonment of a sanitary sewer force main:

1. If possible, coordinate and schedule the shut down of the lift station prior to containment and repair with Division Technical Support staff during regular working hours and with Dispatch after hours, weekends, and holidays. NOTE: If you determine or suspect, through records or visual inspection, a restrained joint system is in place, refer to Section I.D. on page 18 of this manual regarding Installation of Restraint Systems.

2. Analyze the job site. If possible, have all necessary materials on hand at the job site. Set up traffic

REHABILITATE, RELAY, REPAIR, OR ABANDONMENT OF SANITARY SEWER FORCE MAIN

- Make a one call hot line request
- Set up traffic control
- Shut down liftstation and have by bass equipment in place.
- Before job begins, it is mandatory for each crew member in the work zone to properly wear and maintain all assigned personal safety equipment.
- Dig hole to expose main.
- Trench should extend at least 12 inches below damaged or broken pipe
- On trenches 5 feet or greater, OSHA regulations require a trench safety system.
- Locate the break(s) in the sanitary sewer force main.
- Determine type of break (beam, split, corrosion, blow-out, etc.)
- Make the appropriate repair. (repair clamp if break small enough or replace section)
- The repaired section should be temporarily supported with blocking
- After insuring there are no additional leaks, wrap all iron pipe and fittings with 4 mil polywrap to prevent corrosion. Insure that polywrap is sealed and secured on the end with poly tape.
- Perform a final visual inspection. Remove all temporary blocking and begin bedding with a minimum amount of cover to hold the pipe in place.
- Turn on liftstation pumps.
- Document repair and materials used.
- During activities to rehabilitate, relay or repair sanitary sewer force main, if it is determined that it is necessary to abandon a liftstation or a sanitary sewer force main, the following should be done:
- Plug both ends of the line on the section to be abandoned
- If necessary, the wet well should be cleaned
- Fill the wet well up with sand to within 36 inches of finish grade. Insure sand is thoroughly consolidated, compacting as each lift is placed.
- Remove the top 18 to 24 inches of structure, then place a concrete cap.
- Backfill site to Village specs

STANDARD OPERATING PROCEDURES

Trench Shield Procedures

Trench Shield Usage Procedures

Trench Shield Assembly:

- With Backhoe or Crane, lift shield side panels out of truck or trailer using the appropriate chains or nylon sling attached to lifting lugs.
- Lay one side panel on the ground inner side upward.
- Attach the desired spreaders (4) of equal length in channels or collars.
- Insert a bolt and cotter pin through spreader and collar or channel to keep spreader in place.
- Align matching panel, set over bottom panel inner side downward and attach open end of spreaders to collars or channels.
- Insert bolt and cotter pin to keep spreader in place.
- Attach chain or sling to top lifting lugs and with backhoe or crane, stand shield up and place in trench.

Trench Shield Usage STABLE Type A soils:

- Using a backhoe or crane, excavate trench to desired grade.
- Square off trench at comers and side walls.
- Make width and length slightly larger than trench shield.
- Lift and lower shield into trench.
- Shield may not be suspended any higher than 24” (2ft) from the bottom of the trench.
- If trench is sloped at top, slope must be no less than 18” from top of shield.
- If trench is not sloped at top, shield must extend a minimum 18” above grade of road.
- If necessary, assemble another trench shield to add another section onto existing shield to make work area safe before confined space entry.
- Upon entry, make necessary repairs and backfill the repaired area inside of shield so possible cave-ins won’t damage repairs when shield is moved.
- If further repairs are needed, excavate in front of trench shield squaring off walls and comers until reaching grade.
- Pull shield forward with excavating equipment using spreaders to pull to next work area.
- Continue excavating and making repairs pulling the shield forward.
- Backfill trench as work progresses behind trench shield.

Trench Shield Usage UNSTABLE Type B or C soils:

Similar procedures as in STABLE soil usage except:

- Excavate trench until soil is crumbly and caving in.
- Lift and lower trench shield into trench.

- Excavate inside of shield until desired grade is reached pushing down on trench shield along the corners as trench deepens.
- Perform desired repairs. Backfill over repair. Excavate in front of trench shield and pull up and forward on spreaders to bring shield to next work area.
- Continue excavating inside shield repeating steps backfilling as work progresses.

Trench Shield Removal:

- Before moving or removing trench shield, back fill repaired area up to bottom of shield. Lift up on spreaders to loosen shield up from pressure. Do not use lifting lugs.
- Attach chains or sling to lifting lugs and remove shield. Disassemble or place on truck or trailer assembled and ready for next excavation.

Standard Operating Procedure

Temporary Traffic Control in Work Zones

I Purpose
The goal is to provide for a safe working environment for employees and equipment performing duties in the public right of way and promoting safe and efficient movement for all road users (motorists, bicyclists, and pedestrians, including persons with disabilities) through and around work zones.

II Scope
The Village of Menomonee Falls shall follow the guidance provided in Section 6 of the Manual on Uniform Traffic Control Devices (MUTCD) entitled Temporary Traffic Control published by the United States Department of Transportation Federal Highway Administration and adopted by the Wisconsin Department of Transportation along with the Wisconsin MUTCD Supplement.

No one set of temporary traffic control devices can satisfy all conditions for a given project. The temporary traffic control selected for each situation depends upon the type of highway, road user conditions, duration of operation, physical constraints, and the nearness of the works space to road users.

III Definitions
Arrow panel means a device in the arrow or chevron mode that is used only to denote lane closures on multilane roadways.

Channeling devices means cones tubular markers, vertical panels, drums, and barricades.

Pavement Markings means the white lane lines when separating lines going in the same direction or yellow centerlines separating opposing directions of traffic.

Taper means the use of channeling devices to move traffic out of or into the normal path.

Temporary Warning Signs mean diamond shaped signs, having a black symbol or message on an orange background.

Traffic Control Devices means signs channeling devices, warning lights, pavement markings and arrow panels.

Warning Lights means lights placed as supplementary retroreflectorization on warning signs or channeling devices.

Work Duration means the length of time a work operation occupies a spot location

IV Responsibility
In order to promote a safe work site, all workers should be trained on how to work next to traffic in a way that minimizes their exposure and chance of an accident. Someone, usually a lead-worker or foreman at the job site should be charged with the responsibility of making sure that proper traffic control devices and procedures are utilized. That person should be trained in traffic control techniques, device usage and placement.

V Components of a Traffic Control Zone (See figure 1)
There are four components to a temporary traffic control zone:

1. Advance warning area: this may vary from an individual sign or rotating strobe lights on a vehicle to a series of signs in advance of the temporary traffic control zone activity area
2. Transition area: where road users are directed out of their normal path
3. Activity area: section of the roadway where the work activity takes place
4. Termination area: returns road users to their normal path

VI Use of Tapers
Tapers may be used if both the transition and termination areas to move traffic out of or into the normal path

There are criteria for determining the length of a taper.

On roadways with speed of 40 mph (60 km/h) or less:

$$L=\frac{WS2}{60}$$

L = taper length in feet
W = width of the offset in feet
S = posted speed limit

The maximum feet in between taper devices should not exceed 1.25 (Wisconsin MUTCD) the speed limit in mph

The test concerning adequate length of tapers involves observation of driver performance after temporary traffic control plans are put into affect.

VII Worker Considerations
The following are key elements of temporary Traffic Control Management that should be considered to improve worker safety:

1. Training- all workers should be trained on how to work next to motor vehicle traffic in a way that minimizes their vulnerability. Workers having specific temporary traffic control responsibilities should be trained in temporary traffic control techniques, device usage, and placement

2. Worker Clothing- workers close to the motor vehicle traveled way should wear, bright highly visible clothing meeting the requirements of ANSI 107-1999 Class 2 standard

   ANSI 107-1999 Class 2 standard

The American National Standard Institute (ANSI) approved the National Standard for High-Visibility Safety Apparel (ANSI/ISEA 107-1999) in June 1999, in an effort to provide consistent, authoritative guidelines for the selection and use of high-visibility apparel in the United States.

ANSIIISEA 107-1999 is a voluntary standard that offers performance specifications for reflective materials, including minimum amounts, placement, background material, test methods and care labeling.

Class II
Garments intended for users who need greater visibility in poor weather conditions and whose activities occur near roadways where traffic speeds exceed 25 mph. This class of garment is suitable for railway workers, school crossing guards, parking and toll gate personnel, airport ground crews and law enforcement personnel directing traffic.

3. Temporary traffic barriers- temporary traffic barriers should be placed along the work space depending on factors such as lateral clearance of the workers from adjacent traffic, speed of traffic, duration and type of operations, time of day, and volume of traffic

4. Speed Reduction- reducing the speed of motor vehicle traffic, mainly through regulatory speed zoning, funneling, use of law enforcement officials, lane reduction, or flaggers, should be considered.

Additional optional elements for improving worker safety include:

1. Shadow vehicle — primarily for use with mobile and constantly moving operations, a shadow vehicle should be equipped with appropriate lights, warning signs, and or a rear-mounted impact attenuator.

2. Road Closure — the road may be closed temporarily if an alternate route is available

3. Police use — Used in highly vulnerable work situations of short duration

4. Lighting — for nighttime work

5. Special Devices —judicious use of special warning and control devices may be helpful for certain difficult work situations and can include rumble strips, changeable message signs, hazard identification beacons, flags and warning lights.

VIII Placement & Removal of Traffic Control Devices

Always have all of your traffic control devices I place before work commences. Placement of the devices should start with the signage warning traffic of the work zone ahead and work toward back to the work zone. All devices should be in place before occupying the works zone. This includes devices that channel traffic back to the proper lane once vehicles have passed the work zone.

When removing traffic control devices workers should just reverse the process above. First abandon the work zone. Remove lane channeling devices that more back to the proper lane starting at the farthest point past the work zone and work back to the zone. Continue to remove devices from the zone to the advance warning signage. The advance signage would be the last traffic control element to be removed.

IX Work Duration

Work duration is a major factor in determining the number and type of devices used in temporary traffic control zones.

There are five categories of work duration and their time at a location:

1. Long-term stationary is work that occupies a location more than 3 days

2. Intermediate-term stationary is work that occupies a location more than one daylight period up to three days, or nighttime work lasting more than 1 hour

3. Short-term stationary is daytime work that occupies a location for more than 1 hour, but less than 12 hours

4. Short duration work is work that occupies a location up to one hour

5. Mobile is work that moves intermittently or continuously

Both long-term and intermediate-term work since they extend into a period of nighttime require the use of retroreflective and/or illuminated devices in the temporary traffic control zones.

Safety in short-duration and mobile operations should not be compromised by using fewer devices simply because the operation will frequently change its location.
A reduction in the number of devices may be offset by the use of other more dominant devices such as rotating lights or strobe lights on work vehicles.

X Location Considerations

Below is a list of other things to consider when designing your traffic control plan for a specific work location. It should not be viewed as having exhausted all of the considerations that may need to be made but to merely stimulate things that you may not have considered in past plans.

Traffic volume
Rail Crossings
Schools, libraries, churches and other buildings or facilities that may have frequent visitors or pedestrian or vehicular traffic.
Posted speed

XI Pedestrian & Bicycle Safety

If the route normally followed by pedestrians or bicyclists is disrupted by the work zone additional traffic control devices and signage may be needed to safely direct users around

the work site.

Items to consider for providing for continuous access for pedestrians bicyclists and bus stops:

Clearly mark obstructions especially for nighttime.

Do not lead them into conflicts with equipment or the work operation

Provide pedestrians with a safe convenient and clearly delineated travel path

When sidewalks need to be closed, make provisions for disabled pedestrians. (New regulations regarding this item will be incorporated into the 2008 revision of the MUTCD)

XII Supervisors Checklist

The project or field supervisor is responsible for the safety of his workers and ensuring proper use of traffic control plans and devices. Here are some tips:

1. Follow part 6 and the Wisconsin Supplement of the Manual on Uniform Traffic Control Devices.

2. Have a traffic control plan before going to the work site.

3. Ask yourself, “What is the driver’s view of the work site — at night, during peak hours, etc.

4. Do a drive by of the work zone after the traffic control devices have been placed to make sure all items are placed properly and the zone will effectively keep your workers safe.

5. Investigate crashes/incidents to identify if changes are needed in the traffic control plan.

REFERENCES

Manual On Uniform Traffic Control Devices Millennium Edition 2001; Joint publication by ATSSA/ITRE/ASSHTO and the U.S. Department of Transportation Federal Highway Administration

Work Zone Safety A Pocket Guideline for Construction, Maintenance, & Utility Operations, Transportation Information Center — LTAP University of Wisconsin — Madison; January 2006

STANDARD OPERATION PROCEDURES

LIFTSTATION MAINTENANCE

Lift Station Standard Operating Procedures
Table of Contents

Intent/Purpose- The intent of this SOP is to provide a guideline for lift station operation and maintenance. Because of the diversity of sizes and the differing requirements of individual manufacturers, many references will be made to manufacturers' specifications and Operating and Maintenance (O&M) Manuals. The manufacturers' specifications and O&M Manuals should be readily available for each lift station and municipal staff should be aware of the location of same.

I. Periodic Inspections and Preventative Maintenance
   A. Pumps
   B. Controls
   C. Wet wells
   D. Generators
   F. Buildings and Grounds
   F. Valves and Valve Vaults
   G. Misc.

II. Troubleshooting- Some problems may be generic in nature while others may be unique to one manufacturer. Always refer to the manufacturers' O&M manual for

each piece of equipment when troubleshooting a problem. Some problems may not be addressed in the manufacturers' O&M manuals. A qualified service technician should be consulted for problems not addressed in the O&M manuals or where a qualified person is not on staff.

A. Pumps
B. Controls
C. Communications

III. Pump Removal- Each manufacturer will have a recommended method to removing pumps from the station; therefore, consult the manufacturers' O&M Manual to determine the method required for pump removal. Each station will have unique characteristics regarding location and access. The following will be generic procedures that will apply to most situations. Lifting devices will be used to remove most pumps from the lift stations. These could be cranes, winches, chain falls, come alongs or other lifting devices. Make sure that the lifting device is rated for the weight of the equipment being lifted. Always refer to the Manufacturers' O&M manual before removing pumps from a lift station.

A. Submersible pump stations
B. Dry well stations
C. Wet Well mounted stations

IV. Repairs- Repairs should be performed by a qualified person with the proper tools and necessary equipment. Repairs should be done to bring equipment back to as near the Manufacturers' original specifications as practical. Always follow the procedures identified in the manufacturers' O&M manual for repairs to lift station equipment. Always use the proper replacement parts when repairing pumps. If a qualified person is not on staff or the necessary tools or equipment not available, hire a qualified service technician or take the pump to a qualified service center for repairs.

LIFTSTATION STANDARD OPERATING PROCEDURE

LIFSTATION INSPECTION / MAINTENANCE

WEEKLY INSPECTION

Building and Grounds

- Check landscaping
- Check fence, gate, locks
- Clear snow from access ways and hatches
- Check exterior surfaces for maintenance
- Check windows, doors, hatches
- Check lighting
- Check sump pump
- Cheek heater / dehumidifier
- Check exhaust fan
- Check pressure tanks and piping for pressurized seal system
- Check building for cleanliness

Wet wells

- Inspect hatch for proper operation
- Check floats for grease build up
- Check transducer for grease build up
- Check rails, cables, and hangers

Control panel

- Check on, off, hand, operations of pump switches
- Check pump alternators for proper operation
- Check run lights
- Check alarm lights
- Check hour meters for proper operation

Pumps

- Record pump run times
- Record amp readings
- Record gpm
- Record suction & discharge pressure gauge readings
- Check seal for leakage
- Check for abnormal noise, vibration, temperature
- Check seal water
- Check seal water filters
- Check pump priming system (One Mile Rd. liftstation)
- Check for proper check valve operation
- Exercise suction and discharge plug valves

Generators

- Check oil

- Check fuel tank level
- Check block heater operation
- Check coolant level
- Check battery / terminals
- Check battery charger operation and charge rate
- Check transfer switch for proper operation
- Record run time hrs.
- Check operation of louvers, louver motor

Valves and Valve Vaults

- Check locks on all covers hatches etc.
- Inspect check valves for proper operation
- Exercise plug valves & count and log turns
- Check bolts for deterioration
- Check structure for leaks
- Inspect valves
- Check for obstructions in by-pass valve boxes

Quarterly Inspection

Air Release Valve

- Pump out manhole if needed
- Check backwashing valves for proper operation
- Backwash air release valve
- Check for leaks

Force main

- Walk entire length of force main and check for pooling of sewage
- Check for depressions or anything out of the ordinary

Wet Well Mounted Lift Station Pump Removal

Wet well mounted lift stations have the pumps located above the wet well in a structure that may be above ground or slightly below ground, but above the water level in the wet well. The pumps are either self-priming or primed by a vacuum pump. Most of these pumps are smaller in size. The motors of these pumps could be part of the pump, directly connected to the pump or connected by drive belts. Always refer to the manufacturers' O&M manual before removing a wet well mounted pump.

Wet Well Mounted Lift stations

1. One Mile Rd. Liftstation

Procedure

1. Disconnect power source to motor and vacuum pumps, if applicable, using proper "Lockout/Tagout "procedures.
2. Close discharge side plug valve.
3. Connect lifting device.
4. Disconnect motor leads and conduit from pump motor.
5. Connect lifting device.
6. Loosen bolts in between the motor and the volute.
7. Put slight upward tension on the pump motor. If the motor does not break away

freely, use a chisel or other tapered instrument to loosen the motor from the pump volute.
8. Slowly lift the motor, pump and impeller from the volute and place on ground or in the back of a vehicle for inspection or removal.
9. Disconnect lifting device.
10. For reinstallation, clean the gasket area of the pump volute and replace the gasket. Follow these steps in reverse order to replace the pump.
11. When the pump is energized, the vacuum pump will run to prime the pump prior to the pump running.

Submersible Pump Station Pump Removal

Submersible pump stations have the pumps located in the wet well. Submersible pumps are designed to be submerged in liquid. Always refer to the manufacturers' O&M manual before removing a submersible pump.
Submersible Pump Stations

1. Wilson Dr.
2. Harmony Hills
3. Silver Spring Dr.
4. Sunset Ridge Dr.
5. Lloyd Dr.

Menomonee Falls maintains two submersible pump stations for the Village of Lannon

1. Main St.
2. Good Hope Rd.

Menomonee Falls maintains eight grinder pump stations for the Village of Lannon

Procedure

1. Disconnect the power source using proper "Lockout/Tagout" procedures.
2. Set up the lifting device and connect it to the pump.
3. Connect the lifting device to the pump using the chain, cable, or handle. If you must access the wet well to connect the pump to the lifting device, use proper Confined Space Entry Procedures.
4. Lift pump slowly. Make sure the pump is sliding evenly along its guide poles. Make sure it is not tangled in the power cords or float wires. If the pump will not break free from its mounting, you may have to clean any grease or debris from the guide poles.
5. When the pump is clear of the top of the wet well, swing it away from the opening and set it upright on its legs.
6. If it is to be removed from the lift station sight, the power cord will have to be disconnected and removed from the electrical junction box.
7. Disconnect lifting device.
8. For reinstallation, follow these steps in reverse order using care to not get the pump tangled in the electrical cables when reinstalling.

Dry Well Station Pump Removal

Dry well mounted lift stations have the pumps in a room or chamber underground and separate from the wet well. Always use proper Confined Space Entry Procedures where appropriate. The pumps in these stations vary in size and configuration. Some of these pumps may be removed with the motor intact. Others, because of their size, will require that the motor be separated from the pump. Some motors are directly connected to the pump while others may have a drive shaft or series of drive shafts between the motor and the pump. Always refer to the manufacturers' O&M manual when removing a dry well mounted pump.

Dry Well Stations

1. MacLynn (For the Village of Lannon)
2. Appleton & Shady Ln.
3. Westbrook
4. Ridgefield
5. River Road

Procedure

1. Disconnect the power source using proper "Lockout/Tagout" procedures.
2. Close both the intake and discharge plug valves.
3. Slowly loosen the bolts on the clean out under the pump to relieve any pressure left in the pump. When the pressure is relieved, the clean out may be removed slowly to drain the pump. This will also allow you to determine if the plug valves are fully closed.
4. Connect the lifting device to the top of the motor if the motor is directly connected to the pump. If the motor is connected with drive shafts move on to 9.
5. Disconnect the electrical leads from the motor. Disconnect the conduit from the motor and pull out all wiring from the motor housing.
6. Remove the bolts that connect the motor or drive shaft to the pump.
7. Using the lifting device, remove the motor from the pump and set it on the floor. Where there is a drive shaft, pull the drive shaft out of the way and tie it securely.
8. Remove the bolts from the top of the pump volute.
9. Using the lifting device, put some upward tension on the pump. If the pump does not break free, use a chisel or other tapered instrument to loosen the pump from the volute.
10. When the pump is free, remove it from the volute. It can now be set on the floor for inspection or removed from the station.
11. Disconnect lifting device.
12. For reinstallation, clean the gasket area between the pump and volute and replace the gasket. Follow these steps in reverse order to reinstall the pump.

STANDARD OPERATING PROCEDURE

LIFTSTATION BYPASS

Liftstation: One Mile Road Liftstation
Address W192 N5l04 One Mile Rd.
Estimated time before damage or sewer backup will occur — 2.6 hours

Bypass Steps

- Bring out appropriate pump
- Bring out appropriate length of suction hose
- Wet well depth — 19'
- Bring out appropriate length of discharge hose
- Distance to force main discharge manhole (32S037)— 891'

Liftstation: Silver Spring Liftstation
Address: N56 W20680 Silver Spring Dr.
Estimated time before damage or sewer backup will occur — 1.5 days

Bypass Steps

- Bring out the emergency submersible pump (Former Taylor's Woods LS pump).
- If power available at site, wire pump through station
- If no power available at site, bring out portable generator
- Bring out appropriate length of discharge hose
- Distance to force main discharge manhole (30S024) — 1730'
  Depth of wet well —42.26'
- Alternate bypass — pump into sewer utility vactor or call AAA Environmental for a tanker truck

Liftstation: Westbrook Liftstation
Address: Wt25 N8818 Westbrook Crossing
Estimated time before damage or sewer backup will occur —Unknown

- Bring out the emergency submersible pump (Former Taylor's Woods LS pump).
- If power available at site, wire pump through station
- If no power available at site, bring out portable generator
- Bring out appropriate length of discharge hose
  Depth of wet well — 31'
- If force main in service, connect discharge hose to riser from forcemain
- If force main not in service, pump into sewer utility vactor or call AAA Environmental for a tanker truck and haul to forcemain discharge manhole (12S084)

Liftstation: Wilson Dr. Liftstation
Address: W174 N7430 Wilson Dr.
Estimated time before damage or sewer backup will occur — Unknown

- Bring out the emergency submersible pump (Former Taylor's Woods LS pump).
- If power available at site, wire pump through station
- If no power available at site, bring out portable generator
- Bring out appropriate length of discharge hose
- Depth of wet well - 34'
- If force main in service, connect discharge hose to riser from forcemain
- If force main not in service, pump into sewer utility vactor or call AAA Environmental for a tanker truck and haul to forcemain discharge manhole (16N021)

Liftstation: MacLynn Court Liftstation (Owned by Village of Lannon)
Address: W218 N5853 MacLynn Dr.
Estimated time before damage or sewer backup will occur — 3.2 hours

Bypass Steps

- Bring out the emergency submersible pump (Former Taylor's Woods LS pump).
- If power available at site, wire pump through station
- If no power available at site, bring out portable generator (kept at well # 9)
- Bring out appropriate length of discharge hose
- Depth of wet well —32'
- Use sewer utility vactor or call AAA Environmental and haul sewage to forcemain discharge manhole (30S009)

Liftstation: River Road Liftstation
Address W217 N5107 Taylor's Lane
Estimated time before damage or sewer backup will occur — Unknown

Bypass Steps

- Depth of wet well — 17'
- Bring out appropriate portable pump
- Bring out appropriate length of suction hose
- If forcemain in service, hook-up portable pump to riser from forcemain
- If forcemain not in service, use sewer utility vactor and haul sewage to forcemain discharge manhole (31N026)

Liftstation : Harmony Hills Liftstation
Address: N63 W13595 Hummingbird way
Estimated time before damage or sewer backup will occur — Unknown

Bypass Steps

- Depth of wet well —25'
- Bring out appropriate portable pump
- Bring out appropriate length of suction hose
- If forcemain in service, hook-up portable pump to riser from forcemain
- If forcemain not in service, use sewer utility vactor and haul sewage to forcemain discharge manhole (25N108)

Liftstation: Ridgefield Liftstation
Address: W174 N4837 Thornapple Court
Estimated time before damage or sewer backup will occur – 55 minutes
Bypass Steps

- ONLY IN NON-FLOODING /HEAVY RAIN EVENTS
  - If bypassing to manhole (33S001) contact Brookfield (262-782-0199) prior to bypassing for permission
  - Open Valve to redirect flow

- IN FLOODING/HEAVY RAIN EVENTS
  - Bring out appropriate portable pump
  - Depth of wet well —24'
  - Bring out appropriate length of suction hose
  - Bring out appropriate length of discharge hose (approx. 250')
  - Pump to on-site catch basin that drains to nearby watercourse

- If sewage bypassed out of collection system to nearby catch basin, notify proper agencies and fill out proper permit.
  - WDNR, telephone, fax or e-mail within 24 hours, submit a written report within *5* days
  - Downstream drinking water system operators
  - Contact Brookfield when done by passing

Liftstation: Good Hope Rd. Liftstation (Owned by Village of Lannon)
Address N72 W20055 Good Hope Rd.
Estimated time before damage or sewer backup will occur — Unknown

Bypass Steps

- Depth of wetwell — 12.5'
- Bring out appropriate portable pump
- Bring out appropriate length of suction hose
- Pump into sewer utility vactor and haul sewage to forcemain discharge manhole (Lannon mh 13).

Liftstation : Main St. Liftstation (Owned by Village of Lannon)
Address N77 W19600 Main St.
Estimated time before damage or sewer backup will occur — Unknown

Bypass Steps

- Depth of wet well —20'
- Bring out appropriate portable pump
- Bring out appropriate length of suction hose
- Pump into sewer utility vactor and haul to forcemain discharge manhole (Lannon mh 112)

If sewage bypassed collection system notify proper agencies and fill out proper permit.

- WDNR, telephone, fax or e-mail within 24 hours, submit a written report within *5* days
- Down stream drinking water system operators

STANDARD OPERATING PROCEDURES

EQUIPMENT INSPECTION

Standard Operating Procedure
Standard Equipment Inspection for
High Pressure Sewer Cleaning Equipment

I. PURPOSE

The goal is to ensure the safe and efficient operation of sewer cleaning equipment.

II. SCOPE

The Village of Menomonee Falls intends to follow the recommended inspection and maintenance procedures as set forth by the Original Equipment Manufacturer (OEM) for each piece of cleaning equipment contained in the Village's fleet.

III. DEFINITIONS

Daily	Inspection/maintenance items to be performed each day the equipment is utilized
Weekly	Inspection/maintenance items to be performed every 5 work days
Monthly	Inspection/maintenance items to be performed once every 30 calendar days
Semi-Annual	Inspection/maintenance items to be performed once every six calendar months.
Annual	Inspection/maintenance items to be performed once every calendar year
Mechanic	An individual assigned to repair equipment by the Village
Operator	The individual assigned by the Village as the qualified individual to use the equipment on any specific workday
OEM	Original Equipment Manufacturer

IV. RESPONSIBILITIES

Inspection/maintenance requirements are typically broken down into four categories:

Daily
Weekly
Monthly
Semi-Annual
Annual

This section will address the responsible party for each level of maintenance. Typically, operators of the equipment will perform the daily inspection and maintenance. It may also be expedient for the operators to perform the weekly inspection and maintenance as well.

Monthly and Yearly inspections and maintenance are usually performed by a mechanic since the time it takes to service the equipment means it will be out of service for a period of time.

A. DAILY INSPECTION

Before taking any vehicle or piece of cleaning equipment on the road, the operator should perform a circle of safety inspection which includes, at a minimum, the following:

1. Daily inspection items for all vehicles:
   - Engine Oil Level
   - Radiator Coolant Level
   - Hood Latch (Secure)
   - Tires
   - Back up alarms, if applicable
   - Brakes
   - Wipers and Washer Fluid Level
   - Windshield (Clear)
   - Lights (Head lights, tail lights, turn signal, brake lights, mars light and 4-way flashers)
   - Fuel Supply
   - Horn
   - Door Locks
   - Seat Belts and Shoulder Harnesses
   - Glove Box Kit (Accident report forms, vehicle registration card, trailer registration card, proof of insurance card, disposable camera)

2. If the vehicle fits the standard of a commercial motor vehicle, additional items need to be inspected on a “pre-trip” inspection:

   A. ENGINE COMPARTMENT AREA
   - Alternator, Air Compressor Water Pump and Associated Belts
   - Alternator
   - Air Compressor
   - Water Pump
   - Oil, Power Steering, and Transmission Fluid Levels
   - Coolant Level
   - Hoses
   - Wiring

   B. FRONT AXLE AREA
   - Steering Box
   - Steering Linkage
   - Springs
   - Spring Mounts
   - Shock Absorber
   - Slack Adjuster
   - Brake Chamber
   - Brake Hose
   - Brake Drum
   - Tire
   - Rim
   - Lug Nuts

- Hub Oil Seal

C. VEHICLE SIDE AREA
- Door
- Grab Bar and Steps
- Mirror and Mirror Mounts
- Fuel Tank
- Frame
- Exhaust System:
- Drive Shaft
- Clearance Lights and Reflectors

D. REAR AXLE AREA
- Springs
- Spring Mounts
- Slack Adjuster
- Brake Chamber
- Brake Hoses
- Brake Drum
- Tires
- Rims
- Lug Nuts
- Hub Oil Seal

E. VEHICLE REAR AREA
- Door or Gate
- Cargo
- Splash Guards
- Reflectors and Lights

F. LIGHTS

On the rear:
- Left and Right Directional
- Tail Lights
- Brake Lights
- 4-Way Flashers

On the front:
- Left and Right Directional
- Headlights - High and Low Beams
- Clearance Lights
- 4-Way Flashers

G. IN CAB INSPECTION (ENGINE NOT RUNNING)
- Gear Shift
- Steering Wheel
- Steering wheel should not have play greater than 10 degrees. (Approximately 2” on a 30” steering wheel)
- Seat
- Windshield
- Mirrors
- Safety and Emergency Equipment

Make sure that the transmission is in neutral and start the engine
- Gauges: Oil pressure, Voltmeter, Air, Water Temperature and Tachometer.

- Light Indicators
- Horns
- Wipers
- Heater and Defroster

H. AIR BRAKE SYSTEM CHECK (LAB)

Allow air pressure to reach 120 psi. Turn off the engine. Make sure wheel is chocked, parking brake is released and the key is in the ON position.

- L - Check for Leaks: Hold foot on the service brake for one minute, after the initial loss of air there should not be a loss of greater than 3 pounds of air pressure.
- A - Check Low Air Warning Device: Pump service brake until indicator light and/or buzzer goes on. Warning of air pressure loss must come on before pressure drops to below 60 psi.
- B - Check Spring Brakes: Continue to pump service brake until the button for the parking brake pops out. (Spring brake should activate between 20-40 psi depending on manufacturer.)

Before the vehicle goes out on the road, make sure that these items work:

- Parking Brake
- Service Brake
- Speedometer

3. Component Inspections: While the exact components may vary by manufacturer, most jet-vac machines are basically alike. The following items should be inspected prior to taking the machine out on a regular (daily) basis:
   - Transport pins engaged
   - All components are shut down (disengaged)
   - Hose reel controls off (closed)
   - Hose reel support leg in retracted position
   - Vacuum boom tied down and/or clamped
   - Water tank drains closed
   - Check for ice if cold weather
   - Check all hoses for condition
   - Check all hose connections
   - Check drive belts
   - Check position of debris box, make sure door is in locked position
   - Check water pump oil level and strainer basket
   - Clean and flush debris tank regularly

4. Hose Inspections: Since high velocity cleaning systems are designed to use high pressure hose to convey the water to the hose nozzle, it is necessary and important to inspect these hoses daily. Hoses should be inspected for:
   - Any coupling movement at the hose fitting
   - Damaged cover exposing the fabric reinforcement
   - Blisters or bubbles — can be covered
   - Kinking or severe flattening
   - Mender fitting cuffing into hose at the edge of connections — replace hose

Hoses should be replaced by a qualified technician.

B. MONTHLY, SEMI-ANNUAL, & ANNUAL INSPECTIONS

Monthly, semi-annual, and annual equipment inspections are generally performed by qualified technicians

C. SAFE OPERATION

Most high pressure sewer cleaning equipment comes with an operations manual. Employees who are operating the piece of equipment should familiarize themselves with the manual and any safety precautions prescribed by the manufacturer prior to operating the equipment.

STANDARD OPERATING PROCEDURES

ASSET MAINTENANCE

Cleaning, Repair, Maintenance SOP

CCTV — Television crew:

- Check structure and integrity of sewer prior to street paving or relay.
- Examine sewer at request of other departments (public works, engineering etc.)
- Routine sewer examination schedule
- Special requests
- New construction

Examining crews set up on upstream manholes. The camera is lowered into the manhole, attached to a Kevlar strengthened video cable and set in the flow line of the sewer to be televised. The camera is motorized with a rotating head in order to maintain a 180-degree panning view of the sewer. The camera is set on a crawler cam skid system with tracks or wheels that rotate to move through the sewer.

The examination begins by resetting all tape counters so exact footage can be measured while televising the sewer. A jet or Jet-vac may be called to pre-clean or assist the examiners before and during televising. As the camera moves through the sewer, the examiner controls the camera and views the picture on a monitor inside of a van to which the camera is connected. These controls and the live picture prevent the camera from hitting any obstructions while moving through the sewer. The examiner video records, writes and types descriptive details of the sewer for future reviewing. Once the camera reaches its footage destination or downstream manhole, the examination is ended, the recording stopped, and the cable is rewound. The camera is placed in reverse and backed up to its starting manhole and removed.

These exams show actual video recorded data about sewer structures and their integrity. They are essential in cleaning and maintenance. They give correct footages of sewer stretches to be cleaned and areas to be dug up for repair. Attention to detail is important.

Sanitary Sewer Main/Manhole Cleaning

- The entire sanitary sewer system is cleaned on a seven year cycle
- Special areas with high debris or sediment build up such as grease, calcium, or roots are placed on a three month (quarterly) cycle.
- Assist in CCTV inspection
- Emergency methods established and set up for sanitary sewer clog, and manhole surcharge.
- Manhole inspection is done during cleaning process

Storm Sewer/Culvert Cleaning

- Storm sewers and culverts are cleaned on an as needed basis by the Dept. of Public Works

Structure Cleaning (Storm Water)

Catch Basins

- Catch basins are cleaned on an as need basis by the Dept. of Public Works

Storm Inlets

- Storm inlets are cleaned on an as need basis by the Dept. of Public Works

Liftstation Wetwells

- Liftstation wetwells are inspected weekly
- Liftstation wetwells are cleaned on a quarterly or as needed basis

Normal daily cleaning operation: Sewer jet/vac crews set up on various system down stream manholes water is pressured through this hose and through the nozzle on the end. This force shoots the nozzle through a sewer pipe.

The crews start with smaller diameter (8") mains and shoot upstream against flow, turning up the water pressure when dragging back as to clean the sewer main with the water flow. Dirt and sediment debris is pulled into the set up manhole, turning off pressure so the dirt can be physically removed from the manhole. When completed the crew sets up on the next manhole downstream and repeats the process. After all sections in a block are completed manhole to manhole, the crew sets up on larger diameter sewers. These methods ensure clean sewer mains throughout the system to the Outfalls or lower level Interceptor sewer mains maintained by MMSD.

If there is a sewer main with a heavy concentration of sediment or debris, it (the debris) is vacuumed from line while jetting so the dirt and debris will not be dumped into MMSD systems.

Collected debris is stored in a holding tank located on sewer utility grounds. When tank is full, debris is removed from tank, dried on beds and taken to landfill.
Amount of debris removed is logged for annual reports.

Root/Grease Cutting

- Root and grease cutting with root cutter unit attached to jetter hose
- Cleaning schedule adapted from CCTV inspection, and areas where roots, grease, and calcium are constant and to heavy for other cleaning methods.
- Cleaning in conjunction with CCTV.

Root cutting operation: Vactor with root cuffing attachment set up at downstream manhole. The CCTV truck set up at upstream manhole. Using two way radios CCTV operator instructs vactor operator on location of roots and if roots have been adequately cut. A debris catching device is inserted in downstream manhole to catch any debris. Storm sewer blockages are cleaned in the same manor.

Manhole Repair Crew

Equipment: Crane truck, 1 ton dump truck, back hoe, vactor, masonry tools

The crew repairs defective chimneys found through the manhole inspection program. Each location is hot lined and if in pavement, the pavement has been cut. When arriving on a job site, barricading and signage is set up to protect the crew while working in traffic. Once the site is barricaded, the crew sets up and the structure is excavated. The entire surface is removed from around the structure, and the internal seal, casting and deteriorating chimney pieces are removed. The chimney is restored to village specs using pre-cast rings. The chimney is back plastered, coated with a butyl membrane and wrapped in plastic to prevent water infiltration. The casting is set to grade and the site is backfilled and paved.

Manhole Grouting Crew

Equipment: Safety glasses, boots, gloves, rain suit, grout gun, screw driver, extension cord, oakum, flashlight, rags, 5 gallon bucket & rope, air monitor, hard hat, tripod & harness, 920 prime flex grout & tips, hammer drill & ¼"drill bit, hydraulic mortar & water, confined entry permit, board to cover flow line so grout does not go in flow line, board for standing on.

The crew grouts leaks found through the manhole inspection program. When arriving on job site, signage is set up to protect the crew while working in traffic. Check atmosphere of manhole and fill out confined space entry permit. Enter manhole using proper safety equipment. Drill hole hear leaking joint (approx 2"). If water comes out of drilled hole, push oakum into hole using screw driver. Reason for oakum is to slow the flow of water coming out of hole so you can pump in grout. If no water comes out pump grout into hole. (Hint, pump grout slowly into hole). Watch for water travelling around barrel. Slowly keep squeezing gun until water stops running out of joint and is replaced with foam. Look for other leaks. Drill hole about 2" from leak. If no water comes out of drilled hole start grouting, if water comes out of hole fill with oakum and then grout. Keep following leak. Depending on size of leak a combination of hydro cement, wooden dowels and grout might be needed to stop leak. Due to nature of grout (expands when mixed with water) do not let grout fall into flow line. Fill out paperwork.

Forcemain Maintenance

The sewer utility does a forcemain route inspection to ensure normal functioning and to identify potential problems. Special attention is given to the integrity of the force main surface and pipeline connections, unusual noise, vibration, pipe and pipe joint leakage and displacement. The sewer utility monitors pump discharge rates, pump speed and pump suction and discharge pressures, and pump hours. If there is a significant decrease in lift station performance and the decrease is caused by grease build- up the forcemain will be pigged.

Easement right – of – way – Maintenance

On a quarterly basis sewer utility personnel

- Inspect the right-of-way for landscaping needs, for proper access to manholes.
- Exercise bolts on bolt down covers
- Inspect manholes
- Prior to winter certain manholes in easements are identified with stakes to aid in location

Easement widths

Village ordinance require a minimum 20' easement width (ten feet on either side of main) but the Village engineering staff when reviewing plans, as a rule of thumb requires a width of two times the depth of the deepest manhole with a maximum of 30' and a minimum of 20'.

Emergency Response Plan

Emergency Phone numbers

System Name: Village of Menomonee Falls Utilities
Town/City/Village: Menomonee Falls
System Contact: Randy Hager
System Telephone: 262-532-4807
System Fax: 262-532-4859
Email: rhager@menomonee-falls.org
Evening/Weekend Telephone: Police Department Dispatch 262-532-1700

Notification/Contact Information (Local)

Organization	Contact Name/Title	Contact # Day	Contact # Night
Fire Department	Station 3	262-532-8823	262-532-8853
Police Department	Police Dispatcher	262-532-1700	262-532-1700
Waukesha County Public Health Center	Public Health Center	262-896-8430	
Community Memorial Hospital	24 Hour Emergency Services	262-251-1010	262-251-1010
Waukesha County Emergency Management Committee	Richard Tuma or Kathy Shwei	262-548-7580	Waukesha Sheriff 262-548-7117
Local Hazmat Team	Fire Station 3	262-532-8823	262-532-8853
Utility Superintendent	Randy Hager	262-532-4807	262-424-0111 (Cell)

Neighboring Wastewater System Operators

Germantown	Tim Zimmerman	262-253-7765	Police Dept. 262-253-7780
Sussex	Dennis Wolf	262-820-3129	262-224-7518
Brookfield	Ron Gillenardo	262-782-0199	Police Dept. 262-993-4082
MMSD	Veolia Water Milwaukee, LLC	414-482-2040	414-482-2040

Downstream Drinking Water System Operators

Cudahy Water Works	Frank Miller millerf@CI.CUDAHY.WI.US	414-769-2234 or 414-769-2235	
Menomonee Falls Water Utility	Randal L. Hager, Superintendent	262-532-4800 or 414-424-0111	Police Dispatcher 262-532-1700

Milwaukee Water Works	Carrie Lewis clewis@mpw.net	414-277-6384 or 414-587-0583	24 Hr Emergency 414-286-8282
North Shore Water Commission	Eric Kiefer, Info@northshorewc.com	414-963-0160	
Oak Creek Water Works	Patrick Francis pfrancis@water.oak-creek.wi.us	414-570-8210	414-768-7060
South Milwaukee Water	Doug Fischer wisniews@ci.south-milwaukee.wi.us	414-768-8070	24 Hr Emergency 414-286-8282

Service/Repair Notification List

Electrician	Tom Minor, Water Dept. Electrician	262-532-4800	
	Hilgendorf Electric	262-251-7120	262-251-1447 or Cell 262-844-5457
Electric Utility Company		1-800-662-4797	
Gas Utility Company		1-800-261-5325	
Telephone Utility Company		1-800-727-2273	
Diggers Hotline		1-800-242-8511	
Equipment Operator	Water Utility	262-532-4808 (Dimoff)	Police Dispatcher 262-532-1700

Pump Specialists

Fairbanks Morse	Fairbanks Morse	913-748-4277	
	L. W. Allen	1-800-362-7266	
	USEMCO	608-372-5911	
Smith & Loveless	Smith & Loveless	1-800-922-9048	
	Energenecs	262-377-6360	
Barnes	Energenecs	262-377-6360	
Flygt	Flygt Inc Pewaukee	262-544-1922	
KSB	Roeder, Dalessandro, Mason & Assoc.	262-781-3152	

Equipment Rental

Generators	Lincoln Contractors Inc.	414-541-1327	
Submersible Pumps	Flygt Inc. Pewaukee	1-800-236-9750	

Equipment Repair

Generators

Engine Services, Inc,		414-353-7340	
Cummins Great Lakes Inc.		1-800-236-9750	

Radio/Telemetry Repair Service

Energenecs (Kamp Synergy)	Warren Carter	414-491-9517	414-491-9517
Ruekert-Mielke	Dave Beyer	262-542-5733	

Sewage Haulers

AAA Environmental		414-761-9421	
Kons Septic		262-251-1704	

Emergency Manager/Supervisor Phone List

Managers	**Extension**	**Cell Phone**
Mark Fitzgerald –Village Manager	4241	
Mike Morse – Village Attorney	4251	
Adam Koenings – Assistant Village Attorney	4254	
Anna Ruzinski – Protective Services Director	8701	
Arlyn Johnson – Public Works	4701	262-424-0137
Jeff Nettesheim – Utilities	4848	262-424-0123
Matt Carran – Community Development	4274	
Tom Hoffman – Engineering	4415	262-424-9197
Scott Steinert – Information Services	4355	262-424-0090
Jason Kaczmarek – Financial Services	4235	
Janice Moyer – Clerk Services	4210	
Karol Kennedy – Library	8931	
Louis Thon – Buildings and Grounds	4710	262-424-0105
Superintendents		
Jim Schneider – Streets and Parks	4755	262-424-0115
Randy Hager – Utilities	4807	262-424-0111
Supervisors		
Joan Hintze – Clerk Services	4211	
Carol Knope – Police Business Office	8760	
J.J. Berger – Library	8932	
Kifflie Scott – Library	8910	
Pam Kosanke – Library	8909	
Fire Command Staff		
Assistant Fire Chief James Mollet	8801	262-424-0101
Deputy Chief Don Umhoefer – Operations	8803	262-424-0087
Battalion Chief Jim Taylor– Training Division	8820	
Battalion Chief Kevin Rokenbrodt	8820	
Battalion Chief Aaron Harvey	8820	
Cpt. Mark Franzowiak – Station # 1	8821	
Lt. Ross Lautenbach – Station # 2	8822	
Vacant - Station # 3	8823	
Lt. Dan Madsen – Station #4	8824	
Mark Fitzgerald –Village Manager	4241	
Mike Morse – Village Attorney	4251	
Adam Koenings – Assistant Village Attorney	4254	

Anna Ruzinski – Protective Services Director	8701	
Arlyn Johnson – Public Works	4701	262-424-0137
Jeff Nettesheim – Utilities	4848	262-424-0123
Matt Carran – Community Development	4274	
Police Command Staff		
Assistant Police Chief Mark Waters	8702	
Cpt. Terry Hansen – Protective Services	8703	262-424-0063
Lt. Kevin Von Bank – Special Investigations	8705	
Lt. Jeffrey Knop – Patrol (AM)	8707	
Lt. Mike Brasch – Patrol (PM)	8706	
Lt. Eugene Neyhart – Services Bureau	8710	
Sgt. Matt Lewek – Services Unit	8740	
Sgt. Mike Douglas – Patrol (Day Shift)	8713	
Sgt. John Thomae – Patrol (Day Shift)	8719	
Sgt. Steven Sanders – Patrol (Early Shift)	8716	
Sgt. Stephen McKinnon– Patrol (Early Shift)	8711	
Sgt. Chad Tuszkiewicz – Patrol (Late Shift)	8712	
Sgt. Steven Rudie - Patrol (Late Shift)	8714	
Sgt. Andrew Birler – Patrol Support Unit	8770	

Revised June 2016 **P = Personal Cell Phone**