

Appendix D

McMinnville CMOM Assessment

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Introduction

As a part of the Existing Facilities Evaluation Task of the McMinnville Sanitary Sewer Master Plan Updates Project two workshops were conducted to introduce CMOM philosophy of collection system management and to complete and review results of the CH2M HILL CMOM checklist analysis tool. As described in the scope of work the workshops are to be followed by the development of the following document that highlights recommendations for:

- Modifications to existing practices or documents
- New practices or documents
- Linkages between CMOM philosophy and the master plans (collection and treatment)
- Data gathering or management

The checklist was completed by McMinnville Public Works staff and is noted as "Agency Comments". During a June 29, 2006, workshop, additional group comments were generated by City and consultant staff; these comments were also added to the checklist. The completed checklist is included as an appendix to this Technical Memorandum (TM).

The CMOM checklist represents the elements of the federal CMOM program that was developed in draft form in 2000 but not formally adopted by the US EPA. EPA Regional offices and states have continued to use the general tenets of the draft program as they continue to work with dischargers to address sanitary sewer overflows (SSOs). Because the program emphasizes improvements in practices that have efficiency as well as compliance benefits, many municipalities are voluntarily using similar checklists to meet internal process improvement goals.

The completed McMinnville checklist is not intended as an evaluation of the City's current compliance with any state or federal requirement; rather, it represents the outcome of a group exercise intending to find ways of improving the City's ability to meet its current commitment to good stewardship, cost-effective delivery of services, and customer satisfaction.

Any recommendations included in this TM reflect the group's acknowledgement of areas of improvement, not specific commitments to implement. During preparation of the final Master Plan, key elements of this TM may be included in the Implementation Plan.

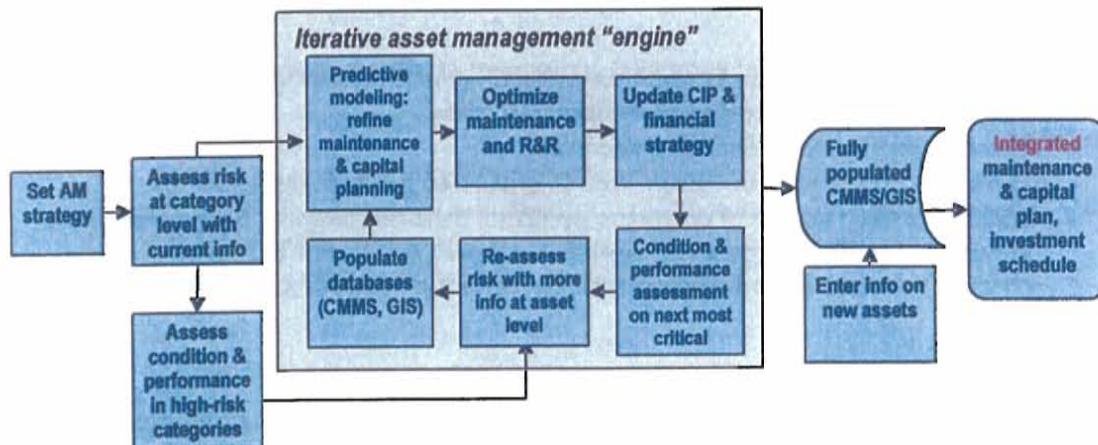
This TM is organized with a Summary of Recommendations provided first, followed by Modifications and Additions to Existing Practices Based on CMOM Checklist Review. This is followed by a table of action items proposed to address the recommendations. These actions are associated with McMinnville's current organizational structure.

Summary of Recommendations

Enterprise Planning

- Develop a 5-year Business Plan that establishes service goals and performance metrics to be achieved at the end of the 5th year.
- Establish subgroup goals and metrics and link to individual employee annual goals. Document roles and responsibilities.
- Incorporate principles of Asset Management (AM) into Business Plan.
- Augment data management tools to gather required data and extract required performance measurements. Figure 1 describes a possible process to produce an integrated plan for maintenance and capital investments.
- Establish capital/operational budgets based on desired performance levels.

Figure 1 Flow Chart for Developing Integrated Maintenance and Capital Plans



Operations

Review, update, and ensure Standard Operating Procedures (SOPs) are available for all critical system components.

Risk-based Maintenance

- Set target for split between proactive and reactive maintenance.
- Analyze past years' split and set realistic goal for future shift to new target split.
- Set intermediate goals and build into Business Plan.
- Identify constraints to meeting intermediate goals and implement short-term and long-term mechanisms to reduce
- Facilitate a workshop to determine criticality of all major system components, and systematically reset maintenance programs according to risk. High risk components are assigned highly proactive maintenance schedules, low risk components are left unscheduled ("run to failure") or assigned long duration maintenance cycles.
- Assess cleaning program as indicator of system problems that may be addressed through code enforcement or other means.

Life Cycle Costing Approach to Renewal vs. Replacement

- Determine cost-effective useful life (or define unit failure in terms of "fails to perform desired function cost-effectively") for each major component.
- Track all related costs for each component.
- Use life cycle cost approach to weigh continued maintenance against component replacement (has reached its useful life). Prioritize equipment replacement based on criticality.

Condition Assessment

- Prioritize inspections and condition assessment of all components based on an assessment of criticality and past inspection data.
- Reset inspection frequencies as necessary.
- Review need to outsource inspection to ensure target frequencies are met.
- Identify extent/impact of corrosion problem, then determine if design standards should be modified; repair and replacement program; modified inspection and cleaning; or chemical addition (inside) or cathodic protection (outside).

Emergency Operations

- Develop an Emergency Overflow Response Plan as a subset of the City's overall emergency planning.
- Train staff in its use, and post on intranet for rapid access and implementation.
- Review communication protocol between pump station and collection system operations teams during system upset/overflow conditions.

Data Management and Support

- Perform a comprehensive review of current software systems (electronic facility maintenance programs, including both MP2 and Hansen; GIS; customer complaint

tracking; hydraulic modeling) and improve as needed to provide fully linked system—upgrade, replace, acquire, or activate unused components and develop custom reports, linkages, or user interfaces. Goal is to have centralized data base with system information (pipe data, pump data), work order system (generate and track all maintenance), and map-linked analysis and reporting.

- Design reporting functions to link to Business Plan, providing automatic and timely statistics on meeting specific service goal and performance metric targets.

Legal Framework

Review, improve, and enforce Fats, Oil and Grease (FOG) ordinance. Review, improve, and enforce private collection system design and maintenance requirements.

Modifications and Additions to Existing Practices Based on CMOM Checklist Review

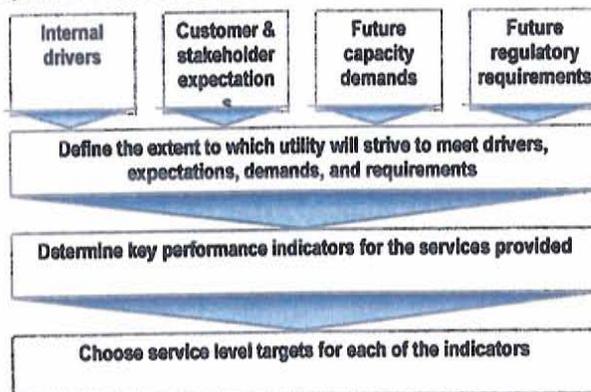
The sections below follow the format of the checklist which follows the itemization of the draft rule. Only comments on areas of improvement are noted within each subsection.

I. Management Programs

A 5-year Community Development Business Plan should be developed to summarize existing and planned management activities to improve Department operations. The Plan would list actions that would address the gaps identified in this TM, with responsible individuals and target milestones. Useful as an ongoing planning tool, the Business Plan would have sections for each Department subgroup, reflecting the subgroup's 1-year goals, objectives, and metrics to support the Departmental Plan, as well as responsible and contributing team members.

A major gap in the current management program is the lack of documentation on current activities. The City should review documentation of current programs and complete or prepare missing documents. Where missing, develop specific performance measures for all aspects of Departmental responsibilities and incorporate into the Departmental Business Plan. Figure 2 outlines a process to set service level targets.

Figure 2. Process to Establish Service Level Targets



A second major gap is the lack of established targets (service goals and performance metrics) that would allow an annual comparison of Departmental activities and accomplishments against targets. These should be developed, as part of the Business

Plan, at the organizational, group, and subgroup level.

A Table of Organization

- Expand existing Organization Chart (included as an Appendix A of this TM) to link job title and supervisory responsibilities to the actions required as part of utility routines. For instance, missing elements include responsibility for maintaining and tracking adherence to the Emergency Overflow Response Plan.
- A draft of understood Roles and Responsibilities are identified on the Organizational Chart developed through interviewing staff. This primarily addresses currently assigned responsibilities.
- Based on the recommendations included in this TM and further City evaluation, additional responsibilities should be added to the Organization Chart to supplement currently assigned responsibilities. McMinnville staff should discuss, finalize, and distribute.

B Training Program

- Review current training and certification programs and document Public Works Department's policies and procedures.
- Develop and implement an SSO prevention and mitigation training program that is linked to the Emergency Overflow Response Plan.

D Utility Information Management System

- CMOM encourages comprehensive and complete system data be available; these can be either paper maps or digital data base/GIS. Beyond knowing what the system components are, the management system should assist in rapid assessment of performance measures and identification of areas of improvement. Regular automatic reporting tools can help the Department measure investment of time and materials and track system performance through decreased equipment down time or repair frequencies.
- Staff has indicated that a review of function, responsibility, and platform of the Community Development Department's various data management systems (GIS, eFMS) would lead to improvements to efficiency and inter-department communication. In addition to identifying improvements to the eFMS, the Department will want to identify and automatically create weekly, monthly, quarterly and annual reports that gauge system performance.
- Review current reporting to ensure data is being summarized in a way that automatically and accurately compares activities against performance metrics and allows efficient tracking of how the Department meets its service goals. Reporting should also allow trending, so that progress in achieving goals can be tracked, and year-to-year consistency in performance can be noted.
- McMinnville currently has two electronic facilities management systems (eFMS)—MP2 for plant and pump stations and Hansen for collection system. MP2 is up-to-date and identifies maintenance activities that can be equated to the generation of work orders; Hansen contains pipe data and CCTV inspection data but no work order/maintenance tracking system. In addition, collection system inventory data

resides in AutoCAD. The overall system function is evolving and staff are aware of many areas requiring continuous improvement.

- Staff indicated that there is no formal Complaint Tracking Information Management System. Tracking customer complaints and responses is another key to demonstrating that overall Departmental goals are being met. A Customer Complaint Tracking System (that could be part of the eFMS work order system) would quickly summarize how well the Department meets its customer response performance metrics. In addition, staff can quickly review customer complaints to identify systematic problems and schedule predictive maintenance, thus reducing the likelihood of future complaints.

E Engineering Program

- Develop a Sewer Design Manual and consider posting on city website for developers to download. The benefit is to increase consistency of design and streamline city reviews.
- Review past problems (e.g., corrosion due to sediment accumulation related to design standards) and adjust design standards accordingly (e.g., increase low-flow velocities).
- Develop or clarify joint Engineering/Operations review process to ensure new development applications meet design requirements (Engineering Group standards) without contributing to system flow capacity problems (modeled or observed capacity constraints).
- Develop engineering procedure for confirming available capacity prior to authorizing new hookups, either as consistent with approved Master Plan, or by application of the hydraulic model to confirm capacity. In both cases, link to customer complaints or operational records to ensure pipe is performing as modeled prior to authorizing new connections.
- Monitor sewer flows as necessary to calibrate model and confirm both current flows and whether system's actual capacity matches the design capacity.
- Incorporate discrepancies into the inspection and I/I detection program described above.
- Coordinate findings when reviewing development applications for new service, described below.
- Keep hydraulic model current by updating system data to reflect new pipe construction, pipe rehabilitation and replacement, and modified land use densities.
- Review pump station data and use model to annually assess benefits of I/I reduction and pipe rehabilitation projects.
- Use model to prepare annual addenda to Master Plan, where warranted, to ensure new pipe connection review reflects current conditions. Also review model results annually to confirm list of prioritized remaining I/I projects.
- Update Master Plan every five years.
- Integrate into CIP planning.

F Sanitary Sewer Overflow Reporting and Notification Program

- Review procedures and documentation of Emergency Overflow Response Plan (what actions the department takes) in addition to the reporting and notification components of that plan.
- Consider adding notification of public health authorities and the public via signage, newspaper or radio.

G Financing and Cost Analysis Program

- Develop a systematic approach to life cycle analysis of major components (such as a cost-benefit analysis) and use to ensure cost-effective Operations and Maintenance (O&M) (life cycle analysis compares continuing to repair component vs component replacement). This requires a more accurate measurement of true O&M cost by major system element. Consider implementing the cost accounting features of eFMS to identify total cost of Repair and Renewal (R&R) (staff time, materials, contractors, vehicles/equipment).
- Establish metrics that evaluate entire operations budget to track percentage reactive, corrective, proactive maintenance and evaluate return on maintenance investment. Set goals for the desired percentages (e.g., 35 percent reactive, 65 percent proactive) and track progress in achieving.
- Review internal reporting and communication system to eliminate double-reporting.
- Appropriately integrate the prioritization of capital improvements and of operational needs (R&R, data mgt tools) to ensure enterprise goals are met.

H Equipment and Tools Management Program

- Continue to improve spare parts inventory system to ensure key items are in inventory.
- Establish categories according to risk (e.g., a) must have spares on hand, b) can get spare in a day, c) can get in a few days) and ensure high-risk items are budgeted for and obtained.
- Collaborate with other area utilities to establish mechanism for emergency inventory and equipment sharing.

I Customer Service Program

- Review current system and determine if City should implement a computerized system for tracking complaints and responses (could be part of improved eFMS).
- Set performance goals and track total responses and metrics for meeting goals.
- Link complaints to future (predictive) maintenance scheduling.
- Summarize performance statistics and publish.

J Legal Support Programs

- Develop or revise, and then enforce consistent policy with regard to non-performance of private systems contributing to the city system.
- Anticipate and budget for O&M for those activities within city purview and identify and enforce repairs for those problems within private purview.

L Contingency Plan for Sewer & Treatment System

- Review all existing SOPs, update as needed, identify gaps and prepare new SOPs (e.g. for pump station outages). Store in one location (consider online system that can be more easily updated).
- Assign responsibility for development, maintenance, updating, training, and enforcement of an Emergency Overflow Response Plan (this can be part of a larger Emergency Response Plan). Consider an online system, that is more easily updated and accessible remotely through employee-accessible website.

II. Operations Programs

A Pump Station Operations Program

- Complete SOP and emergency procedures documentation.
- Review system-wide communications (WWTP and collection system) during pump station outages to minimize overflows.

B Pretreatment Programs (Sewer and Plant Protection)

- Review DEQ audit requirements and adjust program accordingly.

C Corrosion Control Program

- Some odor-related corrosion control has been completed but no system-wide assessment performed. Using the structural condition assessment performed as a part of the Master Plan as a basis, identify the need for supplemental internal inspections that would contribute to better mapping of internal pipe and manhole corrosion, leading to an early-action repair program. Using the hydraulic system model, review modeled velocities during dry season, dry weather flows and screen for low velocities that would result in solids deposition, contributing to gas formation. Review data from past pipe repair projects that exposed pipe exteriors and from soils mapping to estimate where external pipe corrosion might occur. If warranted, perform further testing (e.g., core sampling).

D Grease Trap Inspection and Enforcement Programs

- Reinstate program and actively enforce FOG ordinance.
- Review inspection records and map commercial accounts to identify potential problem areas; prioritize enforcement.
- Publish/distribute Best Management Practices (BMPs) to business owners.
- Document maintenance requirements and penalties.
- Track performance (reduction of cleaning needed and number of stoppages reported).

E New Connection Tap-in Program

- Verify downstream capacity and operational performance as described in Section IE.

F Flow Monitoring Field Operation Programs

- Coordinate program with recommendations of Master Plan to ensure long-term accuracy of model, infiltration/inflow identification and elimination, and verification of pump station operations.
- Consider permanent monitor locations.

III. Maintenance Programs

- Set performance measures and develop tools to measure and track achievement. Use to prioritize work activities.
- Perform system component risk assessment for pump stations and for collection system, assigning consequence of failure levels in each of several categories as shown in Figure 3. This enables a focused approach to maintenance. It is recommended that the assignment of consequences be accomplished in a workshop setting with representatives from Wastewater Services, Engineering and Public Works.

Figure 3. Risk Assessment for System Components

Risk is a function of:

| Consequence = | X | Likelihood = |
|--|----------|---|
| <ul style="list-style-type: none"> ◆ Loss of service ◆ Environmental impact ◆ Health implications ◆ Community disruption ◆ Damage to property ◆ Loss of revenue ◆ Rehabilitation/replacement ◆ Regulatory compliance ◆ Service Agreement obligations ◆ Public image impact | X | <ul style="list-style-type: none"> ◆ Condition of asset ◆ Effective O&M protocols ◆ Reliability ◆ Capacity & utilization ◆ Technology & obsolescence |

- Review current program of maintenance to ensure frequency of maintenance for high-consequence components is sufficient to achieve desired performance metrics (i.e., low to no emergency maintenance). Similarly, low-consequence components would continue to be fixed as needed (un-scheduled). This risk assessment then forms the framework for a reprioritized maintenance program, where un-scheduled maintenance is acceptable for low-risk elements and indication of resource limitation if it continues to occur for high-risk elements. Figure 4 shows how the consequence of failure for a system component can be calculated.

Figure 4 Example Consequence Matrix

| Level of Service Category | Weight | Consequence | | | Sub total |
|--|--------|-------------------------------------|---------|----------------------------|-------------|
| | | Low=1 (Desired Level of Service) | Minor=4 | Moderate=7 High Risk=10 | |
| Health & safety of employees and public | 1 | | | 7 | 7 |
| Compliance with regulations and permits | 0.9 | 1 | | | 0.9 |
| Service reliability | 0.8 | | | 10 | 8 |
| Disruption to the community / public image | 0.7 | | | 10 | 7.0 |
| Ability to return asset to level of service | 0.7 | | 4 | | 2.8 |
| Financial impact (repair / replace, private property damages, loss of revenue) | 0.7 | | | 7 | 4.9 |
| Total for system component #1 | | | | | 30.6 |

- Identify and fill specific knowledge gaps on system component condition (e.g., for pump stations: pump/motor condition, pump performance, vibration, structural condition).
- Complete structural assessment of collection system.
- Develop and follow a prioritized plan for periodic inspection, using trends from previous inspections to re-set inspection cycles, as appropriate. A routine procedure could be established regarding pipeline improvements to document installation cost/difficulties; monitor pre- and post-installation performance; and summarize lessons learned, thereby linking (R&R) to performance.
- Review manufacturers' recommended preventive maintenance program. Determine if, based on installed conditions, demand, and repair history, PM schedule should be adjusted to stay proactive and avoid reactive maintenance.
- Review pattern of delaying Preventive Maintenance (PM) due to emergency demands. If backlog of unperformed PM is high, determine if a) frequency can be set lower, or b) staffing shortages are reducing ability to perform PM.

A Pump Station Preventive Maintenance

Complete formal assessment of pump station structural, pumping capacity and efficiency, electrical, and I&C and input into prioritization program for pump station maintenance.

B Force Main Preventive Maintenance

Establish and execute formal air release valve/valve assessment program. Add forms to MP2 program.

C Gravity Line Preventive Maintenance

- Assess cleaning program. Where cleaning patterns are linked to FOG, link findings to improved FOG program enforcement.
- Link findings as appropriate to new pipe design standards, or other policies and procedures. Review the current split of resources (cleaning/inspection vs. repair/renewal) and consider program adjustments as needed to meet performance metrics.

D Maintenance of Right of Way

Perform a review of current program to ensure maintenance of ROW and coordination with paving.

E Un-Scheduled Maintenance

- After grouping system components by criticality/risk category, characterize City's past maintenance activities by category of risk and formally assess percentage of past activities (planned, corrective, emergency) and compare against performance metrics.
- For corrective and emergency maintenance, determine classes of causes, type, and frequency of problems, and if activities could have been avoided by accelerating planned maintenance.
- Reevaluate planned maintenance cycles accordingly (e.g., deviate from manufacturers' recommendations to match demonstrated local conditions).
- Link to FOG and other ordinances, design standards, and routine maintenance cycles to reduce unplanned maintenance high risk units.
- As a result of review, establish revised planned maintenance cycles and reflect in work order system (in MP2 now). In future, add collection system work order system (Hansen or replacement CMMS).

Based on the assessment performed, Recommended Action Items have been developed. At this time these are not assigned to a specific group within the Community Development Department but ultimately would be based on the existing and/or expanded responsibilities of the organizational groups within the Department.

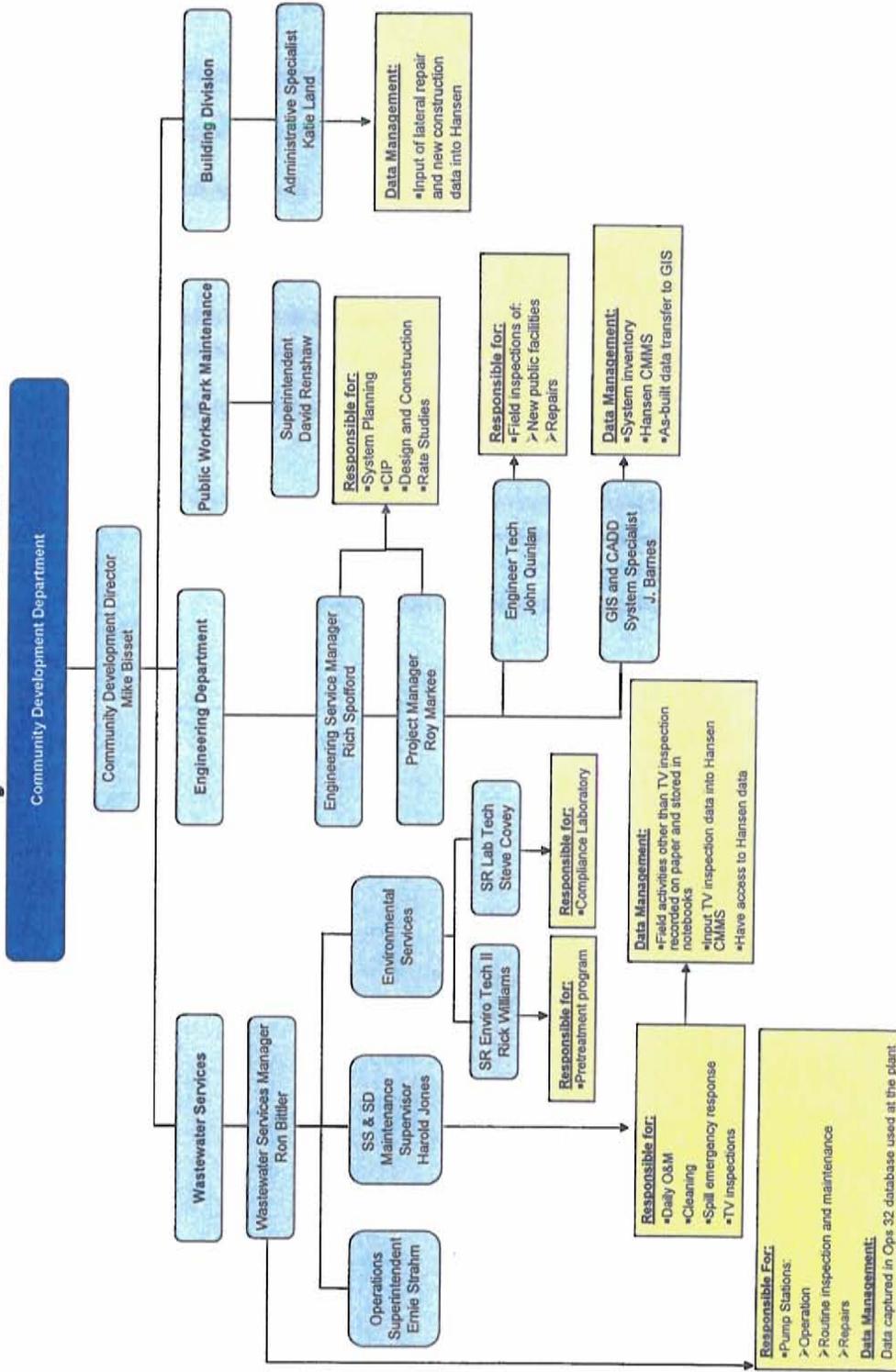
Recommended Departmental Action Items

-
- Start business planning process (I.A.):
 - Service goals, performance metrics.
 - Define roles and responsibilities. Related to eFMS (I.D.)
 - Develop customer complaint tracking.
 - Review and utilize collection system work order management.
 - Review reporting to ensure linkage to performance metrics.
 - Review/develop asset management capabilities within extg. eFMS. (costs include maintenance, ops, R&R, etc.)
 - Define criticality of assets(s). (III.E.)

- Ensure that chronic problems are able to be captured within the eFMS. (III.E.) Related to eFMS (I.D.)
- Structural assessment within eFMS; complete assessment.
- Develop/train staff on use of Emergency Overflow Response Plan (I.B. and I.F.)
- Develop life cycle analysis tool (I.G.)
- Review annual maintenance costs versus established metrics. (“are you spending too much on specific system components?”)(I.G.)
- Review eFMS (purpose: documentation, prioritization, organization, common platform, accessible) (MP2, Hansen) (I.D.)
- Review annual maintenance costs versus established metrics. (“are you spending too much on specific system components?”)(I.G.)
- Establish capital/operational budgets based on desired performance levels. (I.G.)
- Develop policy for private systems. (I.J.)
- Review, update, and ensure SOPs are available for all critical aspects of the system. (I.L.)
- Review communication protocol between ops and maintenance during system upset/overflow conditions. (II.A.)
- Identify extent/impact of corrosion problem, then determine the desired response. *This would be a subset of the eFMS.* (II.C.)
- Reinstate FOG program and enforce. (II.D.)
- Develop PS preventive maintenance program (e.g., standard review forms, etc.). (III.A.)
- Annual FM condition assessment (“are there problems in the system?”). (III.B.)
- Assess cleaning program. (III.C.)
- Adjust maintenance program to minimize affects of high-risk items. (III.E.)

APPENDIX A: ORGANIZATION CHART WITH KNOWN ROLES AND RESPONSIBILITIES

City of McMinnville



| A. <input type="checkbox"/> Program 1. <input type="checkbox"/> Activities a. <input type="checkbox"/> Tasks | Does your agency have the Program and Activity? | | Is the Program or Activity documented in writing? | | Does the Program include the Activity Tasks? | | Rate your Program (only Program) according to how well you think it completes Activities and Tasks listed. | Agency Comments | Public Health & Community Impact | Env. Health | System Reliability | Operational Efficiency / Effectiveness | Safety | Enhancements | Comments |
|--|---|----|---|----|--|----|--|--|----------------------------------|-------------|--------------------|--|--------|--------------|--|
| | YES | NO | YES | NO | YES | NO | | | | | | | | | |
| I. Management Programs | | | | | | | | | | | | | | | |
| A. Table of Organization | | | | | | | | | | | | | | | |
| 1. Organizational Chart | X | | X | | | | 7 | | | | | | | | |
| 2. Relation to Other Departments | | | | | | | 10 | | | | | | | | |
| B. Training Programs | | | | | | | | | | | | | | | |
| 1. Technical Training Programs | | | | | | | 8 | | | | | | | | |
| 2. Skills Training Program (Equipment, Tasks) | X | | X | | X | | 7 | No formal written program that covers all items listed. (RB) | | | | | | | |
| 3. Safety Training Program | X | | X | | X | | 10 | | | | | | | | |
| C. Safety Programs | | | | | | | | | | | | | | | |
| 1. Safety Department or Committee | X | | X | | X | | 8 | | | | | | | | |
| 2. Confined Space Entry | X | | X | | X | | 9 | | | | | | | | |
| 3. General Safety Procedures | X | | X | | X | | 9 | | | | | | | | |
| 4. Traffic Management | X | | X | | X | | 7 | | | | | | | | |
| 5. Lock Out/Tag Out | X | | X | | X | | 9 | | | | | | | | |
| 6. Safety Equipment | X | | X | | X | | 10 | | | | | | | | |
| 7. Performance Measures | X | | X | | X | | 5 | City has no formal program for addressing performance measures, although WWS does review and track for WWS employees. (RB) | | | | | X | | don't have specific measures for measuring effectiveness of our safety program. Have training records, competency checks, no formal written evaluation of program. |
| D. Utility Information Management System(s) (IMS) | | | | | | | | | | | | | | | |
| 1. Management Programs Information Management Systems | | | | | | | 2 | Hansen System (RB) | | | | | | | |
| 2. Operations Programs Information Management Systems | | | | | | | 2 | | | | | | | | |
| 3. Maintenance Programs Information Management System(s) | | | | | | | 2 | | | | | | | | |
| 4. Complaint Management and Tracking Information Management Systems | X | | X | | | | 2 | | | | | | | | |
| 5. Performance Indicators Computation Program | | | | | | | 1 | | | | | | | | |
| E. Engineering Programs | | | | | | | | | | | | | | | |

| A. <input type="checkbox"/> Programs 1. <input type="checkbox"/> Activities a. <input type="checkbox"/> Tasks | Does your agency have the listed Program and Activity? | | Is the Program or Activity documented in writing? | | Does the Program include the Activity Tasks? | | Rate your Program (only Program) according to how well you think it complies or includes the Activities and Tasks listed. | Agency Comments | Public Health & Community Impacts | Regulatory Compliance / Env. Health | System Reliability | Operational Efficiency / Effectiveness | Safety | Enhancements | Comments |
|---|--|----|---|----|--|----|---|--|-----------------------------------|-------------------------------------|--------------------|--|--------|--------------|---|
| | YES | NO | YES | NO | YES | NO | | | | | | | | | |
| 1. Collection and Transmission System Plans Program | X | | X | | X | | 8 | Program not documented | | | | | | | |
| 2. System Inventory Program | X | | X | | X | | 8 | Program not documented | | | | | | | |
| 3. Mapping Program | X | | X | | X | | 8 | Program not documented | | | | | | | |
| 4. Sewer System Design Program | X | | X | | X | | 6 | Program not documented | | | X | X | | | |
| 5. Sewer Construction Program | X | | X | | X | | 10 | We use Construction Permit Agreements with developers | | | | | | | |
| 6. Construction Inspection Program | X | | X | | X | | 8 | Program not documented | | | | | | | |
| 7. Acquisition Considerations Program | X | | X | | X | | 7 | | | | | | | | Do inspect but little documentation. No inspection procedures |
| 8. Continuing Sewer System Assessment Program | | | | | | | 4 | | | | X | X | | | Some structural assessment remains to be done. Crews know where the problems are, where to react to but no prioritized system for where city should spend money first. Couldn't quantify work we did on maintenance or whether that work resulted in improved system performance. The cleaning keeps things flowing, and CCTV which is much improved over 12 years ago determines where defects are. We've allocated capital \$ for lift removal and it's paid off. But in between aren't do much more than the lift removal project. We know we had problems with lifts and the program John Kennedy started focused on that source. We were spending money on repair of lifts to take out lift. Still have the downtown area to deal with. Engineering assessment—watch terminology as the activities described in this section of the checklist aren't necessarily handled by M&M's Engineering Dept. Facilities are owned by the operators, they come to Eng for assistance in solving problems. Sequence is assess, ID gap, score, set up program, and prioritize funding. |
| 9. Infrastructure Rehabilitation Program | | | X | | | | 4 | City has no formal program, repairs are made based on some planned maintenance and responding to system failures. (RB) | | X | X | X | | | gap—scheduling maintenance and repair of defects we know exist |

| A. Programs 1. Activities a. Tasks | CHESTER-ILL | | Does your agency have the listed Program and Activity? | | Is the Program or Activity documented in writing? | | Does the Program include the Activity Tasks? | | Rate your Program (only Program) according to how well you think it complies or includes the Activities and Tasks listed. Use a rating scale of 1-10, with 10 being the best. | Agency Comments | Public Health & Community Impacts / Regulatory Compliance / Env. Health | System Reliability | Operational Efficiency / Safety | Enhancements | Comments |
|---|-------------|----|--|----|---|----|--|----|---|---|---|--------------------|---------------------------------|--|--|
| | YES | NO | YES | NO | YES | NO | YES | NO | | | | | | | |
| 1. Budget and Customer Rate Setting Analysis | X | | X | | | | | | 10 | 2004 Rate Equity study | | | | | |
| 1. Spare Parts Inventory Management Program (Spare Parts Includes Spare Pipe) | X | | | X | | | | | 7 | Test for the treatment plant and pump stations, less test for the collection system. (RB) | | | | | |
| 2. Equipment and Tools Repair Management Program | X | | | X | | | | | 6 | | | | | | |
| 3. Vehicle Repair Management Program | X | | | X | | | | | 7 | | | | | | |
| 4. Supplies Management Program | X | | | X | | | | | 6 | | | | | | |
| 1. Complaint Management Program | X | | X | | | | | | 2 (H) 5 (RB) | Paper only (RI) | | | X | | Responding but no benchmarks to go against. Data not issues, can't benchmark on response time. We know we respond to complaints but no WFO tracking so don't know elapsed time, frequency, etc. Just know "we're there within 30 minutes." |
| 2. Public Information Program | X | | | X | | | | | 2 | | | | X | | |
| 3. Public Education Program | X | | | X | | | | | 2 | | | | X | | |
| 1. Inter-jurisdictional Agreement Program | | | X | | | | | | 4 | No suitable users? | | | | Enforcement issues? Further internal discussion needed | Have private systems within city w/OFs, no formal agreements/IOAs. Not sure which are customers and which are satellites. Should be able to enforce OF abatement if caused within a customer's system (left complex). This is a huge headache; the private systems don't want to be responsive, drag feet, so Harold has to do maintenance, eventually we're the first responder for OFs, then city bills them for repairs. Building codes/ordinances should be sufficient to force change, we just need to enforce. |
| 2. Ordinances | X | | X | | | | | | 10 | Chapter 13 updated in 2002 | | | | | |
| 3. Pretreatment Legal Support Program | X | | | X | | | | | 8 | Legal support available from City Attorney or outside law firm supported by the professional service budget. (RB) | | | | | |
| 4. Grease Central Legal Support Program | X | | | X | | | | | 8 | Some comment as of (RB) | | | | | |
| 5. Service Lateral Legal Support Program | X | | | X | | | | | 7 | | | | | | |
| 6. Septic Tank Haulers Legal Support Program | X | | | X | | | | | 8 | We have state-wide call before you dig rules...are local rules needed? | | | | | |
| 7. "Call Before You Dig" Legal Support Program | X | | X | | | | | | | | | | | | |

| A. Programs 1. on Activities a. on Tasks | Does your agency have the listed Program and Activity? | | Is the Program or Activity documented in writing? | | Does the Program include the Activity Tasks? | | Rate your Program (only Program) according to how well you think it completes or includes the Activities and Tasks listed. | Agency Comments | Public Health & Community Impacts | Env. Health | System Reliability | Operational Efficiency / Effectiveness | Safety | Enhancements | Comments |
|---|--|----|---|----|--|----|--|--|-----------------------------------|-------------|--------------------|--|--------|--------------|---|
| | YES | NO | YES | NO | YES | NO | | | | | | | | | |
| 1. Routine Water Quality Monitoring Program | X | | X | | | | 9 | My answers to this section are really referring to our NFDDES permit required laboratory WQ program. (RB) | | | | | | | |
| 2. Investigative Water Quality Monitoring Program | X | | | X | | | 7 | | | | | | | | |
| 3. Water Quality Monitoring for Spill Impact | X | | X | | X | | 8 | Have done bacteria sampling in past years during SSO's caused by Inflow & Infiltration. (RB) | | | | | | | monitoring bacteria in receiving water after spill formerly was a permit requirement and we did it for many years, have lots of data. Then new permit didn't require so we stopped. Really feel we have characterized the problem, shifted focus to eliminating it. Monitoring wouldn't tell us anything new. Issue is now really about duration, response time, and notification (public and agency). |
| 4. Contingency Plan for Sewer & Treatment System | | | | | | | | | X | X | | | X | | Bits and pieces that need to be accumulated. Don't have paper documentation, but do have SOPs within each group for power outages, flow interruptions. Folks have call lists, know what to do. But no documentation to tie all those SOPs together into a cohesive emergency response plan. Have those SOPs for downed trees, novaloc, know how to handle backup power, mechanics know to call in. Also crews know which points overflow first. Caddys has nothing except emergency callout structure. Don't have broad sense of system response. Do know where to take backup pumps. Would like a cohesive plan. List of emergency, who does what, what equipment needs to go where, who to notify. Big gap. |
| 1. Contingency Planning Process | X | | X | | | | 2 | There is a written City-wide Emergency Operations Plan, not real specific for Wastewater Services Division. No document written to address specific WWS contingency planning process. (RB) | | | | | | | |
| 2. Response Flow Diagram | X | | X | | | | 0 | | | | | | | | |
| 3. Public Notification Plan | X | | X | | | | 8 | | | | | | | | |
| 4. Agency Notification Plan | X | | X | | | | 0 | | | | | | | | |
| 5. Emergency Flow Control Plan | X | | X | | | | 0 | | | | | | | | |
| 6. Emergency Operations and Maintenance Plan | X | | X | | | | 5 | This answer may need additional clarification as some of the ratings apply only to the WRF operation and not collection system. (RB) | | | | | | | |
| 7. Preparedness Training Program | X | | X | | | | 0 | | | | | | | | |
| 8. Water Quality Monitoring Plan | | | | | | | | | | | | | | | |
| III. Operation Programs | | | | | | | | | | | | | | | |
| A. Pump Station Operation Programs | | | | | | | | | | | | | | | |

APPENDIX B - COMPLETED QUESTIONNAIRE

Wastewater Collection System Management, Operations and Maintenance Checklist

| A. PROGRAMS 1. Activities a. Tasks | Does your agency have the listed Program and Activity? | | Is the Program or Activity documented in writing? | | Does the Program include the Activity Tasks? | | Rate your Program (only Program) according to how well you think it compares or includes the Activities and Tasks listed. Use a rating scale of 1-10, with 10 being the best. | Agency Comments | Public Health & Community Impacts | Regulatory Compliance / EPH, Health | System Reliability | Operational Efficiency / Effectiveness | Safety | Enhancements | Comments |
|--|--|----|---|----|--|----|--|---|-----------------------------------|-------------------------------------|--------------------|--|--------|--------------|--|
| | YES | NO | YES | NO | YES | NO | | | | | | | | | |
| 1. Routine Operating Programs | X | | | | X | | 5 | | X | | | X | | | There are SOPs, performance measures. Is a program in place, is effective. 13 pump stations. Can give a report card for each of these, 10 year program for rehabilitation, only the left to do. |
| 2. Emergency Operating Programs | X | | | | X | | 1 | | X | | | X | | | |
| 1. Industrial User Permitting Program | X | | X | | | | 8 | Other permits remain to be ID'd. DEQ audit requirement (LM) | | | | | | | |
| 2. Inspection and Sampling Program | X | | X | | | | 10 | | | | | | | | |
| 3. Enforcement Program | X | | X | | | | 6 | Revision of ERG is a DEQ audit requirement (LM) | | | | | | | |
| 4. Other Programs | X | | X | | | | 7 | Manage 1200-2 sewerage permit for WRF and Airport (LM) | | | | | | | corrosion: had some concerns at WWTP. Anti-corrosion work at PS was motivated by odor control. 3 PS have H2S systems to deal w/odor. Was a corrosion problem in pipe downstream of crematory in years past, this is scheduled for replacement and pretreatment program has dealt w/acid release. |
| 1. Inspection Program | X | | | | X | | | | | | X | | | | |
| 2. Control Measures Program | X | | | | | | | | | | | | | | |
| 3. Monitoring Program | X | | | | | | | Some points of concern have been measured for corrosion potential and positive measures installed. (ES) | | | | | | | Some PSs have H2S monitors. |
| 4. Performance Measures | X | | | | | | | | | | | | | | |
| 5. Other Programs | X | | | | X | | 2 | Have installed, tested and replaced some cathodic protection at pipe locations in the WRF and lift stations. (ES) | | | | | | | |
| 1. Permitting Program | X | | | | X | | | | | | | X | | | Plan to rehabilitate. Have local FOG ordinance (in local limits), had done more enforcement previously, haven't done much in last 3 years. Want to rehabilitate their FOG program enforcement—this is a gap—need staff assigned. Look for this as part of inspection. |
| 2. Inspection Program | X | | | | X | | | | | | | | | | |
| 3. Enforcement Program | X | | | | X | | | Inspections are conducted as problems are found (LM) | | | | | | | |
| 4. Performance Measures | X | | | | X | | | Maintenance requirements & penalties need to be documented LM | | | | | | | |
| 5. Other Programs | X | | | | X | | | BMPs need to be documented & distributed (LM) | | | | | | | |
| 1. Installation of New Service Taps | X | | X | | | | 7 | Standard detail DWG 824 825 | | | | | | | |
| 2. Inspection Program | X | | X | | | | 7 | Taps are witnessed the first time for certification | | | | | | | |

| A. <input type="checkbox"/> Programs 1. <input type="checkbox"/> Activities 2. <input type="checkbox"/> Tables | Does your agency have the listed Program and Activity? | | Is the Program or Activity documented in writing? | | Does the Program include the Activity Tasks? | | Rate your Program (only Program) according to how well you think it complies or includes the Activities and Tasks listed. Use a rating scale of 1-10, with 10 being the best. | Agency Comments | Public Health & Community Impacts | Regulatory Compliance / Env. Health | System Reliability | Operational Efficiency / Effectiveness | Safety | Enhancements | Comments |
|--|--|----|---|----|--|----|--|--|-----------------------------------|-------------------------------------|--------------------|--|--------|--------------|--|
| | YES | NO | YES | NO | YES | NO | | | | | | | | | |
| 3. Enforcement Program | X | | X | | | | | | | | | | | | |
| 4. Performance Measures | X | | X | | | | | | | | | | | | |
| 5. Other Programs | | | | | | | | | | | | | | | |
| F. Flow Monitoring Field Operation Programs | | | | | | | | | | | | | | | |
| 1. Permanent Stations | X | | X | | X | | 7 | Temporary stations only - contractors (RE) | | | | | | | More analysis of PS flows needed, good job monitoring but need to take next analysis step. |
| 2. Temporary Stations | X | | X | | X | | 7 | | | | | | | | Annual budget for flow monitoring but do not spend on monitoring |
| G. Septic Tank Haulers Program | | | | | | | | | | | | | | | |
| 1. Permitting Program | X | | X | | | | 10 | | | | | | | | |
| 2. Inspection Program | X | | X | | | | 10 | | | | | | | | |
| 3. Enforcement Program | X | | X | | | | 9 | | | | | | | | |
| 4. Performance Measures | X | | X | | | | 8 | Compliance monitoring done by random pH analysis only (LM) | | | | | | | |
| 5. Other Programs | | | | | | | | | | | | | | | |
| H. "Call Before You Dig" Program | | | | | | | | | | | | | | | |
| 1. Permitting Program | X | | X | | X | | 8 | Permit required for activity in ROW - separate Program. | | | | | | | |
| 2. Inspection Program | X | | X | | X | | 8 | | | | | | | | |
| 3. Enforcement Program | X | | X | | X | | 1 | | | | | | | | Not viewed as a problem |
| 4. Performance Measures | X | | X | | X | | 1 | | | | | | | | Not viewed as a problem |
| 5. Other Programs | | | | | | | | | | | | | | | |
| III. Maintenance Programs | | | | | | | | | | | | | | | |
| A. Pump Station Preventive Maintenance | | | | | | | | | | | | | | | |
| 1. Electrical Maintenance | X | | X | | X | | 5 | | | | | X | | | For normal process (regular contractor, etc.) to perform maintenance on the PSC. Should be included further. |
| 2. Mechanical Maintenance | X | | X | | X | | 7 | | | | | | | | |
| 3. Physical Maintenance | X | | X | | X | | 7 | | | | | | | | |
| B. Force Main Preventive Maintenance | | | | | | | | | | | | | | | |

|  1. <input type="checkbox"/> Programs 2. <input type="checkbox"/> Activities 3. <input type="checkbox"/> Tests | Does your agency have the Program and Activity? | | Is the Program or Activity documented in writing? | | Does the Program include the Activity Tests? | | Rate your Program (only Program) according to how well you think it complies or includes the Activities and Tests | Agency Comments | Public Health & Community Impacts | Regulatory Compliance / Environmental Health | System Reliability | Operational Efficiency / Safety | Enhancements | Comments |
|--|---|----|---|----|--|----|---|---|-----------------------------------|--|--------------------|---------------------------------|--------------|---|
| | YES | NO | YES | NO | YES | NO | | | | | | | | |
| 1. Air Release Valves | X | | X | | | | 1 | Force Main from Raw Sewage FS to the WSG contains air relief valves that have been serviced, but not on a scheduled / regular basis. (BS) | | | X | | | Add the forms/records, etc. to MP2 or collection system maintenance activities. |
| 2. Valve Exercise Program | X | | | X | | | 2 | Not a formal program, some exercise of valves occurs to ensure movement. (BS) | | | X | | | Add the forms/records, etc. to MP2 or collection system maintenance activities. |
| 3. Routine Hydraulic Cleaning | X | | X | | | | 8 | | | | | | | |
| 4. Routine Mechanical Cleaning | X | | X | | | | 8 | | | | | | | |
| 5. Root Control Program | X | | X | | | | 10 | Contract (RI) | | | | | | |
| 6. Manhole Preventive Maintenance | X | | X | | | | 7 | | | | | | | |
| 7. Maintenance of Right-of-Way and Easements | X | | | X | | | 6 | | | | | | | |
| 8. Monitoring of Street Paving | X | | | | | | 3 | | | | | | | Need to attain the 5-year paving schedule. Regular integration and attainment of paving schedule. |
| 9. Line Location for Third Parties | X | | | | | | 10 | One call location handled by Engineering | | | | | | |
| 10. Response to Complaints | X | | | X | | | 5 | | | | | | | Documentation |