

Appendix J

CMOM Questionnaire

CHECKLIST FOR CONDUCTING EVALUATIONS OF WASTEWATER COLLECTION SYSTEM CAPACITY, MANAGEMENT, OPERATION, AND MAINTENANCE (CMOM) PROGRAMS¹

Capacity Management, Operations, and Maintenance (CMOM) is a planning and management structure that was developed for use by wastewater utilities to analyze and assess their system's capacity, operations, and maintenance management programs. The checklist was developed by United States Environmental Protection Agency (USEPA) in 2005.

City of Lacey staff provided answers to the questions that pertained to Lacey's wastewater system and for which the necessary information was available.

Although conducting a CMOM program is not a regulatory requirement of the City, Lacey's Operations staff wanted to evaluate how their operation and programs compares with accepted practice. The checklist can be viewed as a list of best practices for sewer agencies. It is a very good tool for identifying areas of excellence and areas where improvements could be made.

Note that the checklist was not evaluated for Lacey's consistency with CMOM or any other agency's practice, rather it was prepared as a starting point, or benchmark against which staff can compare Lacey's capacity, operations, and maintenance management programs in the future.

The checklist consists of a series of questions organized by major categories and sub-categories. The major category is followed by a brief statement describing the category. Following the sub-category is a brief clarifying statement. References are then given.

Questions are provided in a table format that includes the question, response, and documentation available.

Response is completed by using information and data acquired from the data and information request, onsite interviews, and site reviews. An alternative to this process is to transmit the entire checklist to the collection system owner or operator to complete and return electronically.

¹ *Checklist for Conducting Evaluations of Wastewater Collection system Capacity, Management, Operation, and Maintenance (CMOM) Programs, USEPA, 2005*

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I. General Information - Collection System Description

Question	Response	Documentation Available	
		Yes	No
Size of service area (acres).	21,200 ac	X	
Population of service area.	75,600 people as of 2010	X	
Number of pump stations.	47	X	
Feet (or miles) of sewer.	211 miles	X	
Age of system (e.g., 30% over 30 years, 20% over 50 years, etc.).	0-10 Yrs 33% 10-20 Yrs 26% 20-30 Yrs 20% 30-40 Yrs 14% 40+ Yrs 6% Unknown 1%	X	

Comments:

II. Continuing Sewer Assessment Plan

Question	Response	Documentation Available	
		Yes	No
Does the collection system experience problems related to I/I? How do these problems manifest themselves? (Manhole overflows, basement flooding, structure, SSOs)	Very small amount of I&I primarily due to infiltration in limited areas of the collection system.	X	
How does the owner or operator prioritize investigation, repairs and rehabilitation related to I/I?	We address all Identified with a level of attention appropriate for the level of urgency as I&I is so minimal in our system we have the financial ability to correct as necessary.	X	
What methods are considered to remedy hydraulic deficiencies?	Hydraulic line cleaning or through construction to increase capacity if pipe sizes are inadequate.	X	
Does the plan include a schedule for investigative activities?	Gravity lines are inspected on a routine schedule.	X	
Is the plan regularly updated?	Sewer assessment programs are updated through the wastewater comprehensive plan	X	

Comments:

III. A. Collection System Management: Organizational Structure

Question	Response	Documentation Available	
		Yes	No
Is an organizational chart available that shows the overall personnel structure for the collection system, including operation and maintenance staff?		X	
Are there organizational charts that show functional groups and classifications?		X	
Are up to date job descriptions available that delineate responsibilities and authority for each position?		X	
Are the following items discussed in the job descriptions: G nature of work to be performed, G minimum requirements for the position, G necessary special qualifications or certifications, G examples of the types of work, G list of license's required for the position, G performance measures or promotional potential?	Performance measures or promotional potential is not described in job descriptions.	X	
Does the organizational chart indicate how many positions are budgeted as opposed to actually filled?		X	
On average, how long do positions remain vacant?	3 months up to one year	X	
Is collection system staff responsible for any other duties, (e.g., road repair or maintenance, O&M of the storm water collection system)?	Assistance occurs rarely usually only on an emergency basis.	X	

Comments:

III. B. Collection System Management: Training

Question	Response	Documentation Available	
		Yes	No
Is there a documented formal training program?		X	
Does the training program address the fundamental mission, goals, and policies of the collection system owner or operator?		X	
Does the owner or operator provide training in the following areas: safety, routine line maintenance, confined space entry, traffic control, record keeping, electrical and instrumentation, pipe repair, bursting CIPP, public relations, SSO/emergency response, pump station operations and maintenance, CCTV and trench/shoring, other?		X	
Which of these programs have formal curriculums?	All safety and technical related training.	X	
Does On-the-Job (OJT) training use Standard Operating and Standard Maintenance Procedures (SOPs & SMPs)?		X	
Is OJT progress and performance measured?	It is evaluated and documented first 6 mo. of employment	X	
Does the owner or operator have mandatory training requirements identified for key employees?		X	
What percentage of employees met or exceeded their annual training goals during the past year?	100%	X	
Which of the following methods are used to assess the effectiveness of the training: periodic testing, drills, demonstration, none?	Ongoing performance observation and evaluation. With the exception of safety and operator certification testing requirements, there is no formal process in place to measure Training effectiveness.		X
What percentage of the training offered by the owner or operator is in the form of the following: manufacturer training, on-the-job training, in-house classroom training, and industry-wide training?	100%	X	

Comments:

III. C. Collection System Management: Communication and Customer Service

Question	Response	Documentation Available	
		Yes	No
What type of public education/outreach programs does the owner or operator have about user rates?	Mail out, Website, news paper and public meetings	X	
Do these programs include communication with groups such as local governments, community groups, the media, schools, youth organizations, senior citizens? List applicable groups.	All listed.	X	
Is there a public relations program in place?		X	
Are the employees of the collection system trained in public relations?		X	
Are there sample correspondences or “scripts” to help guide staff through written or oral responses to customers?			X
What methods are used to notify the public of major construction or maintenance work: door hangers, newspaper, fliers, signs, other, none?	All that are listed	X	
Is the homeowner notified prior to construction that his/her property may be affected?		X	
Is information provided to residents on cleanup procedures following basement backups and overflows from manholes when they occur?		X	
Which of the following methods are used to communicate with system staff: regular meetings, bulletin boards, e-mail, other?	All Listed	X	
How often are staff meetings held (e.g., daily, weekly, monthly)?	Daily at the Senior Tech Level	X	
Are incentives offered to employees for performance improvements?			X
Does the owner or operator have an “Employee of the Month/Quarter/Year” program?			X

Question	Response	Documentation Available	
		Yes	No
How often are performance reviews conducted (e.g., semi-annually, annually, etc.)?	Once at 3 mo. and 6 mo.	X	
Does the owner or operator regularly communicate with other municipal departments?		X	
Does the owner or operator have a formal procedure in place to evaluate and respond to complaints?		X	
What are the common complaints received?	Complaints are rare. There are no routine complaints in any categories.	X	
Does the owner or operator have a process for customer evaluation of the services provided?			X
Do customer service records include the following information: personnel who received the complaint or request, nature of complaint or request, to whom the follow-up action was assigned, date of the complaint or request, date the complaint or request was resolved, customer contact information, location of the problem, date the follow-up action was assigned, cause of the problem, feedback to customer?		X	
Does the owner or operator have a goal for how quickly customer complaints (or emergency calls) are resolved?	Immediately for emergencies. The goal for non emergency is the same day before the end of the work day.	X	
What percentages of customer complaints (or emergency calls) are resolved within the timeline goals?	100%	X	
How are complaint records maintained? (i.e., computerized) Is this information used as the basis for other activities such as routine preventative maintenance?	Computerized	X	

Comments:

III. D. Collection System Management: Management Information Systems

Question	Response	Documentation Available	
		Yes	No
What types of work reports are prepared by the O&M Staff?	Routine and emergency documentation before closing out work orders.	X	
Do the work reports include enough information? (See example report forms)	Yes they are very detailed	X	
How are records kept?	Computer files and hard copy log files	X	
Are records maintained for a period of at least three years?		X	
Are the records able to distinguish activities taken in response to an overflow event?		X	
Does the owner or operator use computer technology for its management information system? (Computer Based Maintenance Management Systems, spreadsheets, data bases, SCADA, etc). If so, what type of system(s) is used?	Our computer based maintenance mgt. system is called HTE and our SCADA software is Rockwell. We also have all of the common-current Microsoft windows software applications	X	
Are there written instructions for managing and tracking the following information: complaint work orders, scheduled work orders, customer service, scheduled preventative maintenance, scheduled inspections, sewer system inventory, safety incidents, scheduled monitoring/sampling, compliance/overflow tracking, equipment/tools tracking, parts inventory?		X	
Do the written instructions for tracking procedures include the following information: accessing data and information, instructions for using the tracking system, updating the MIS, developing and printing reports?		X	
How often is the management information system updated (immediately, within one week of the incident, monthly as time permits)?	Daily	X	

Comments:

III. E. Collection System Management: SSO Notification Program

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have standard procedures for notifying state agencies, health agencies, the regulatory authority, and the drinking water purveyor of overflow events?		X	
Are above notification procedures dependent on the size or location of the overflow? If so, describe this procedure.			X
Is there a Standard form for recording overflow events? Does it include location, type, receiving water, estimated volume, cause?		X	
Are chronic SSO locations posted?	We do not have chronic overflow locations	X	

Comments:

III. F. Collection System Management: Legal Authority

Question	Response	Documentation Available	
		Yes	No
Does the collection system receive flow from satellite communities?			
What is the total area from satellite communities that contribute flow to the collection system (acres or square miles)?	N/A		
Does the owner or operator require satellite communities to enter into an agreement?	N/A		
Does the agreement include the requirements listed in the sewer use ordinance (SUO)?	N/A		
Do the agreements have a date of termination and allow for renewal under different terms?	N/A		
Does the owner or operator maintain the legal authority to control the maximum flow introduced into the collection system from satellite communities?	N/A		
Are standards, inspections, and approval for new connections clearly documented in a SUO?	N/A		
Does the SUO require satellite communities to adopt the same industrial and commercial regulator discharge limits as the owner or operator?	N/A		
Does the SUO require satellite communities to adopt the same inspection and sampling schedules as required by the pretreatment ordinance?	N/A		
Does the SUO require the satellite communities or the owner or operator to issue control permits for significant industrial users?	N/A		
Does the SUO contain provisions for addressing over-strength wastewater from satellite communities?	N/A		
Does the SUO contain procedures for the following: inspection standards, pretreatment requirements, building/sewer permit issues?	N/A		

Does the SUO contain general prohibitions of the following materials: fire and explosion hazards, oils or petroleum, corrosive materials, materials which may cause interference at the wastewater treatment plant, obstructive materials?	N/A		
Does the SUO contain procedures and enforcement actions for the following: fats, oils, and grease (FOG); I/I; building structures over the sewer lines; storm water connections to sanitary lines; defects in service laterals located on private property; sump pumps, air conditioner?	N/A		

Comments:

IV. A. Collection System Operation: Budgeting

Question	Response	Documentation Available	
		Yes	No
Collection System only (does not include LOTT fees)			
What are the owner or operator's current rates?	\$16.48	X	
What is the average annual fee for residential users?	\$197.76	X	
How are user rates calculated?	Cost of service and budget needs	X	
How often are user charges evaluated and adjusted based on that evaluation?	6 Yrs	X	
How many rate changes have there been in the last 10 years and what were they?	9 out of 10 Average increase is \$0.25/month	X	
Does the owner or operator receive sufficient funding from its revenues?	Yes	X	
Are collection system enterprise funds used for non-enterprise fund activities?	No	X	
Is there a budget for annual operating costs?	Yes	X	
Does the budget provide sufficient line item detail for labor, materials and equipment?	Yes	X	
Are costs for collection system O&M separated from other utility services, i.e., water, storm water and treatment plants?	Yes	X	
Do O&M managers have current O&M budget data?	Yes	X	
What is the collection system's average annual O&M budget?	\$3.7M	X	
What percentage of the collection system's overall budget is allocated to maintenance of the collection system?	51%	X	
Does the owner or operator have a Capital Improvement Plan (CIP) That provides for system repair/replacement on a prioritized basis?	Yes	X	
What is the collection system's average annual CIP budget?	\$2.93M	X	

Question	Response	Documentation Available	
		Yes	No
What percentage of the maintenance budget is allotted to the following maintenance: Predictive maintenance (tracking design, life span, and scheduled parts replacement), preventative maintenance (identifying and fixing system weakness which, if left unaddressed, could lead to overflows), corrective maintenance (fixing system components that are functioning but not at 100% capacity/efficiency), emergency maintenance (reactive maintenance, overflows, equipment breakdowns).	We do not perform Predictive Maintenance. Our: Emergency maintenance = 13% Corrective Maintenance= 36% Preventative Maintenance = 51%	X	
Does the owner or operator have a budgeted program for the replacement of under-capacity pipes?	No		X
Does the owner or operator have a budgeted program for the replacement of over-capacity pipes?	No, some are in the CIP	X	
Are O&M staff involved in O&M budget preparation?		X	
How are priorities determined for budgeting for O&M during the budget process?	A structured process beginning with field staff moving up through the chain of command and the end result is Lacey Council member approval. Need, Risk and available funds are taken into consideration.	X	
Does the owner or operator maintain a fund for future equipment and infrastructure replacement?		X	
How is new work typically financed?	Cash or developer contribution	X	

Comments:

IV. B. Collection System Operation: Compliance

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have inter-jurisdictional or inter-municipal agreements?		X	
Is there a sewer-use and a grease ordinance?		X	
Is there a process in place for enforcing sewer and grease ordinances?		X	
Are all grease traps inspected regularly?			X
How does the owner or operator learn of new or existing unknown grease traps?	Construction plan review or customer change of use. No program in place for this.	X	
Who is responsible for enforcing the sewer ordinance and grease ordinance? Does this party communicate with the utility department on a regular basis?	LOTT and the City jointly provide enforcement.	X	
Are there any significant industrial dischargers to the system?		X	
Is there a pretreatment program in place? If so, please describe.	Yes, through LOTT	X	
Is there an ordinance dealing with private service laterals?		X	
Is there an ordinance dealing with storm water connections or requirements to remove storm water connections?		X	

Comments:

IV. C. Collection System Operation: Water Quality Monitoring

Question	Response	Documentation Available	
		Yes	No
Is there a water quality monitoring program in the service areas?	Yes	X	
If so, who performs the monitoring?	Lacey/Thurston County	X	
How many locations are monitored?	4	X	
What parameters are monitored and how often?	General chemistry/nitrate/fecal coliform-monthly	X	
Is water quality monitored after an SSO event?	No		X
Are there written standard sampling procedures available?	Yes	X	
Is analysis performed in-house or by a contract laboratory?	Both	X	
Are chain-of-custody forms used?	No		X

Comments:

IV. E. Collection System Operation: Safety

Question	Response	Documentation Available	
		Yes	No
Are odors a frequent source of complaints? How many?	Our odor control treatment process virtually eliminates odor and corrosion form occurring however, equipment failures or process issues have cause rare occurrences of odor complaints	X	
Are the locations of the frequent odor complaints documented?	All odor complaints are documented however there are no frequent odor complaints.	X	
What is the typical sewer slope? Does the owner or operator take hydrogen sulfide corrosion into consideration when designing sewers?	Typical slopes follow the 10 states standards. Corrosion is taken into consideration.	X	
Does the collection system owner or operator have a hydrogen sulfide problem, and if so, does it have in place corrosion control programs? What are the major elements of the program?	The major element of our odor control/treatment program is odor control product injection and monitoring of sulfides.	X	
Does the owner or operator have written procedures for the application of chemical dosages?		X	
Are chemical dosages, dates, and locations documented?		X	
Does the owner or operator have a program in place for renewing or replacing severely corroded sewer lines to prevent collapse?		X	
Are the following methods used for hydrogen sulfide control: aeration, iron salts, enzymes, activated charcoal canisters, chlorine, sodium hydroxide, hydrogen peroxide, potassium permanganate, biofiltration, others?	Bi-Oxide Injection, aeration, charcoal canisters, bio-filtration	X	
Does the system contain air relief valves at the high points of the force main system?		X	
How often are the valves maintained and inspected (weekly, monthly, etc.)?	Dry Well Lift Stations are occur monthly and submersible Stations occur annually	X	
Does the owner or operator enforce pretreatment requirements?	Yes, based on input from LOTT	X	

IV. E. Collection System Operation: Safety

Comments:

Question	Response	Documentation Available	
		Yes	No
Is there a documented safety program supported by the top administration official?		X	
Is there a Safety Department that provides training, equipment, and an evaluation of procedures?	Human Resources and Operations staff act as T.T.T.	X	
If not, who provides safety training?			
Does the owner or operator have written procedures for the following: lockout/tagout, MSDS, chemical handling, confined spaces permit program, trenching and excavations, biological hazards in wastewater, traffic control and work site safety, electrical and mechanical systems, pneumatic and hydraulic systems safety?		X	
What is the agency's lost-time injury rate(percent or in hours)?	Current experience factor W/L&I 0.9442	X	
Is there a permit required confined space entry procedure for manholes, wetwells, etc.? Are confined spaces clearly marked?		X	
Are the following equipment items available and in adequate supply: rubber/disposable gloves; confined space ventilation equipment; hard hats, safety glasses, rubber boots; antibacterial soap and first aid kit; tripods or non-entry rescue equipment; fire extinguishers; equipment to enter manholes; portable crane/hoist; atmospheric testing equipment and gas detectors; oxygen sensors; H ₂ S monitors; full body harness; protective clothing; traffic/public access control equipment; 5-minute escape breathing devices; life preservers for lagoons; safety buoy at activated sludge plants; fiberglass or wooden ladders for electrical work; respirators and/or self-contained breathing apparatus; methane gas or OVA analyzer; LEL metering?		X	
Are safety monitors clearly identified?		X	
How often are safety procedures reviewed and revised?	Annually	X	

Question	Response	Documentation Available	
		Yes	No
Are workplace accidents investigated?		X	
How does the Administration communicate with field personnel on safety procedures; memo, direct communication, video, etc.?	Memo/Email, direct communication		
Is there a Safety Committee with participation by O&M staff? How often does it meet?	Monthly	X	
Is there a formal Safety Training Program? Are records of training maintained?		X	

Comments:

IV. F. Collection System Operation: Emergency Preparedness and Response

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have an emergency response plan? A contingency plan?		X	
How often is the plan reviewed and updated? What was the date it was last updated?	Annually is the goal it was last updated in 2012	X	
Does the plan take into consideration vulnerable points in the system, severe natural events, failure of critical system components, vandalism or other third party events, and a root cause analysis protocol?		X	
Are staff trained and drilled to respond to emergency situations? Are responsibilities detailed for all personnel who respond to emergencies?		X	
Are there emergency operation procedures for equipment and processes?		X	
Does the owner or operator have standard procedures for notifying state agencies, local health departments, the regulatory authority, and drinking water authorities of significant overflow events?		X	
Does the procedure include an up-to-date list of the names, titles, phone numbers, and responsibilities of all personnel involved?		X	
Do work crews have immediate access to tools and equipment during emergencies?		X	
Is there a public notification plan? If so, does it cover both regular business hours and off-hours?	No		
Does the owner or operator have procedures to limit public access to and contact with areas affected with SSOs?	No		
Does the owner or operator use containment techniques to protect the storm drainage systems?	No		

Do the overflow records include the following information: date and time, cause(s), names of affected receiving water(s), location, how it was stopped, any remediation efforts, estimated flow/volume discharged, duration of overflow?		X	
Does the owner or operator have signage to keep public from affected area?		X	
Is there a hazard classification system? Where is it located?		X	
Does the owner or operator conduct vulnerability analyses?		X	
Are risk assessments performed? How often?	No		

Comments:

IV. L. 1. Collection System Operation: Pump Stations - Inspection

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have a hydraulic model of the collection system including pump stations? What model is used?	InfoSWMM	X	
What uses does the model serve (predicting flow capacity, peak flows, force main pressures, etc.)?	Estimating capacity, infrastructure sizing, troubleshooting		
Does the model produce results consistent with observed conditions?	Yes	X	
Is the model kept up to date with respect to new construction and repairs that may affect hydraulic capacity?	Yes		

Comments:

IV. H. Collection System Operation: Engineering - System Mapping and As-built Plans (Record Drawings)

Question	Response	Documentation Available	
		Yes	No
What type of mapping/inventory system is used?	AutoCAD/Arc GIS	X	
Is the mapping tied to a GPS system?	No		
Are "as-built" plans (record drawings) or maps available for use by field crews in the office and in the field?		X	
Do field crews record changes or inaccuracies and is there a process in place to update "as built" plans (record drawings)?		X	
Do the maps show the date the map was drafted and the date of the last revision?		X	

IV. L. 1. Collection System Operation: Pump Stations - Inspection

Do the sewer line maps include the following: scale; north arrow; date the map was drafted; date of the last revision; service area boundaries; property lines; other landmarks; manhole and other access points; location of building laterals; street names; SSOs/CSOs; flow monitors; force mains; pump stations; lined sewers; main, trunk, and interceptor sewers; easement lines and dimensions; pipe material; pipe diameter; pipe diameter; installation date; slope; manhole rim elevation; manhole coordinates; manhole invert elevation; distance between manholes?		X	
Are the following sewer attributes recorded: size, shape, invert elevation, material, separate/combined sewer, installation date?		X	
Are the following manhole attributes recorded: shape, type, depth, age, material?		X	
Is there a systematic numbering and identification method/system established to identify sewer system manhole, sewer lines, and other items (pump stations, etc.)?		X	

Comments:

Question	Response	Documentation Available	
		Yes	No
Is there a document which details design criteria and standard construction details?		X	
Is life cycle cost analysis performed as part of the design process?		X	
Is there a document that describes the procedures that the owner or operator follows in conducting design review? Are there any standard forms that are used as a guide?		X	
Are O&M staff involved in the design review process?		X	
Does the owner or operator have documentation on private service lateral design and inspection standards?		X	
Does the owner or operator attempt to standardize equipment and sewer system components?		X	

IV. L. 1. Collection System Operation: Pump Stations - Inspection

Comments:

Question	Response	Documentation Available	
		Yes	No
What procedures are used in determining whether the capacity of existing gravity sewer system, pump stations and force mains are adequate for new connections?	Engineering calculations/Field verification		
Is any metering of flow performed prior to allowing new connections?	Occasionally		
Is there a hydraulic model of the system used to predict the effects of new connections?	Yes		
Is there any certification as to the adequacy of the sewer system to carry additional flow from new connections required?	No		

Comments:

Question	Response	Documentation Available	
		Yes	No
Who constructs new sewers? If other than the owner or operator, does the owner or operator review and approve the design?	City reviews and inspects, developer constructs		
Is there a document that describes the procedures that the owner or operator follows in conducting their construction inspection and testing program?	Yes	X	
Are there any standard forms that guide the owner or operator in conducting their construction inspection and testing program?	Yes	X	
Is new construction inspected by the owner or operator or others?		X	
What are the qualifications of the inspector(s)?	None		
What percentage of time is a construction inspector on site?	75%		

IV. L. 1. Collection System Operation: Pump Stations - Inspection

Is inspection supervision provided by a registered professional engineer?	Yes		
How is the new gravity sewer construction tested? (Air, water, weirs, etc.)	Air	X	
Are new manholes tested for inflow and infiltration?	Yes	X	
Are new gravity sewers televised?		X	
What tests are performed on pump stations?	Water, operational, electrical	X	
What tests are performed on force mains?	Pressure	X	
Is new construction built to standard specifications established by the owner or operator and/or the State?	Yes	X	
Is there a warranty for new construction? If so, is there a warranty inspection done at the end of this period?	Yes	X	

Comments:

Question	Response	Documentation Available	
		Yes	No
How many pump stations are in the system? How many have backup power sources?	42 of which 14 do not have auxiliary generators on site. We have portable generators for response to outages for those stations without onsite generators.	X	
Are enough trained personnel assigned to properly maintain pump stations?	416 hours	X	
Are these personnel assigned full-time or part-time to pump station duties?	Full-time	X	
Are there manned and un-manned pump stations in the system? How many of each?	All are un-manned	X	
Is there a procedure for manipulating pump operations (manually or automatically during wet weather to increase in-line storage of wet weather flows?	Not necessary		

IV. L. 1. Collection System Operation: Pump Stations - Inspection

Are well-operating levels set to limit pump start/stops?		X	
Are the lead, lag, and backup pumps rotated regularly?		X	

Comments:

Question	Response	Documentation Available	
		Yes	No
How often are pump stations inspected?	Once /Week	X	
What work is accomplished during inspections?	Site clean- up	X	
Is there a checklist?		X	
Are records maintained for each inspection?		X	
What are the average annual labor hours spent on pump station inspections?	416	X	
Are there Standard Operating Procedures (SOPs) and Standard Maintenance Procedures (SMPs) for each station?		X	
What are the critical operating characteristics maintained for each station? Are the stations maintained within these criteria?	We have all this information	X	

Comments:

IV. L. 2. Collection System Operation: Pump Stations - Emergencies

Question	Response	Documentation Available	
		Yes	No
Is there an Emergency Operating Procedure for each pump station?		X	
Is there sufficient redundancy of equipment in all pump stations?	All except stations without onsite auxiliary generators	X	
Who responds to lift station failures and overflows? How are they notified?	After Hour stand-by personnel. They are notified by SCADA alarm or central dispatch if alarms malfunction and Overflow actually occurs	X	
How is loss of power at a station dealt with? (i.e. on-site electrical generators, alternate power source, portable electric generator(s))	Onsite and portable generators	X	
What equipment is available for pump station bypass?	Each pump station has a by-pass port connection assembly and we have a by-pass pump	X	
What process is used to investigate the cause of pump station failure and take necessary action to prevent future failures?	Assess and determine the cause and implement necessary action.	X	

Comments:

IV. L. 3. Collection System Operation: Pump Stations - Emergency Response and Monitoring

Question	Response	Documentation Available	
		Yes	No
How is lift stations monitored?	By SCADA	X	
If a SCADA system is used, what parameters are monitored?	High level, low level, intrusion, pump runs, smoke & fire, water in the drywell, phase loss, communication loss and power failure.	X	

Comments:

IV. L. 4. Collection System Operation: Pump Stations - Recordkeeping

Question	Response	Documentation Available	
		Yes	No
		X	
Are operations logs maintained for all pump stations?		X	
Are manufacturer's specifications and equipment manuals available for all equipment?		X	
Are pump run times maintained for all pumps?		X	
Are elapsed time meters used to assess performance?		X	

Comments:

IV. L. 5. Collection System Operation: Pump Stations - Force Mains and Air/Vacuum Valves

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator regularly inspect the route of force mains?			X
Does the owner or operator have a program to regularly assess force main condition?			X
Is there a process in place to investigate the cause of force main failures?	We have never experienced a force main failure		X
Does the owner or operator have a regular maintenance/inspection program for air/vacuum valves?	Our air relief valves are maintenance free	X	
Have force main failures been caused by water hammer?			X

Comments:

V. A. Equipment and Collection System Maintenance: Maintenance Budgeting

Question	Response	Documentation Available	
		Yes	No
How does the collection system owner or operator track yearly maintenance costs?	Through our computerized financial management System HTE	X	
Is there a maintenance cost control system?		X	
Are maintenance costs developed from past cost records?		X	
How does the owner or operator categorize costs? Preventive? Corrective? Projected Costs? Projected Repair?	Yes there are detailed budget line items for all pertinent categories	X	
How does the owner or operator control expenditures?	Through careful planning and expenditure approval procedures	X	

Comments:

V. B. Equipment and Collection System Maintenance: Planned Maintenance

Question	Response	Documentation Available	
		Yes	No
Are preventive maintenance tasks and frequencies established for all pump stations and equipment?		X	
How were preventive maintenance frequencies established?	Manufacturers recommended frequencies and historical information	X	
What percentage of the operator's time is devoted to planned as opposed to unplanned maintenance?	90% Planned	X	
What predictive maintenance techniques are used as part of PM Program?	We do not perform predictive maintenance		X
Is there a formal procedure to repair or replace pump stations and equipment when useful life is reached?		X	
Has an energy audit been performed on pump station electrical usage?			X
Is an adequate parts inventory maintained for all equipment?		X	
Is there a sufficient number of trained personnel to properly maintain all stations?		X	
Who performs mechanical and electrical maintenance?	Control Technicians	X	
Are there Standard Maintenance Procedures (SMPs) for each station?		X	

Comments:

V. C. Equipment and Collection System Maintenance: Maintenance Scheduling

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator plan and schedule preventive and corrective maintenance activities?		X	
Is there an established priority system? Who sets priorities for maintenance?	Supervisor and senior Technicians	X	
Is a maintenance card or record kept for each piece of mechanical equipment within the collection system?	All Computerized	X	
Do equipment maintenance records include the following information: maintenance recommendations, instructions on conducting the specific maintenance activity, other observations on the equipment, maintenance schedule, a record of maintenance on the equipment to date.		X	
Are dated tags used to show out-of-service equipment?		X	
Is maintenance backlog tracked?		X	
How is O&M performance tracked and measured?	Maintenance Management System	X	
What percent of repair finds are spent on emergency repairs?	13%		
Are corrective repair work orders backlogged more than six months?			X
Is maintenance performed for other public works divisions?			X
How are priorities determined for this work?	From least critical to most	X	
How is this work funded?	Through Sewer Rates	X	
Are maintenance logs maintained for all pump stations?		X	

Comments:

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator perform scheduled maintenance on Rights-of-Way and Easements?		X	
Does the owner or operator monitor street paving projects?		X	
Does the owner or operator have a program to locate and raise manholes (air valves, etc) as needed?		X	
How are priorities determined?	From least critical to most	X	
How is the effectiveness of the maintenance schedule measured?	Through maintenance Management system HTE	X	

Comments:

Question	Response	Documentation Available	
		Yes	No
Is there a routine schedule for cleaning sewer lines on a system wide basis, e.g., at the rate of once every seven to twelve years or a rate of between 8% and 14% per year?		X	
What is the owner or operator's goals for annual system cleaning?	Clean 20% of the system	X	
What percent of the sewer lines are cleaned, even high/repeat cleaning trouble spots, during the past year?	35%	X	
Is there a program to identify sewer line segments that have chronic problems and should be cleaned on a more frequent schedule?		X	
What is the average number of stoppages experienced per mile of sewer pipe per year?	0.00	X	
Has the number of stoppages increased, decreased, or stayed the same over the past five years?	Stayed the same	X	
Are stoppages diagnosed to determine the cause?		X	

Are stoppages plotted on maps and correlated with other data such as pipe size and material, or location?		X	
Do the sewer cleaning records include the following information: date and time, cause of stoppage, method of cleaning, location of stoppage or routine cleaning activity, identity of cleaning crew, further actions necessary/initiated?		X	
If sewer cleaning is done by a contractor are videos taken of before and after cleaning?		X	

Comments:

V. E. 1. Equipment and Collection System Maintenance: Sewer Cleaning - Cleaning Equipment

Question	Response	Documentation Available	
		Yes	No
What type of cleaning equipment does the owner or operator use?	Combination Cleaners	X	
How many cleaning units of each type does the owner or operator have? What is the age of each?	One	X	
How many cleaning crews and shifts does the owner or operator employ?	One	X	
How many cleaning crews are dedicated to preventive maintenance cleaning?	One	X	
How many cleaning crews are dedicated to corrective maintenance cleaning?	One	X	
What has the owner or operator's experience been regarding pipe damage caused by mechanical equipment?	None	X	
Where is the equipment stationed?	Operations Center	X	

Comments:

VIII. A. Rehabilitation: Manhole Repairs

V. E. 2. Equipment and Collection System Maintenance: Sewer Cleaning - Chemical Cleaning and Root Removal

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have a root control program?		X	
Does the owner or operator have a FOG program?		X	
Are chemical cleaners used?		X	
What types of chemical cleaners are used?	Rotox	X	
How often are they applied?	Only when a problem is identified every 15 years	X	
How are the chemical cleaners applied?	Injector equipment and pipe plugs	X	
What results are achieved through the use of chemical cleaners?	Roots are eliminated	X	

Comments:

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have a central location for the storage of spare parts?		X	
Have critical spare parts been identified?		X	
Are adequate supplies on hand to allow for two point repairs in any part if the system?		X	
Is there a parts standardization policy in place?	Philosophy practiced but not written.		X
Does the owner or operator maintain a stock of spare parts on its maintenance vehicles?		X	

VIII. A. Rehabilitation: Manhole Repairs

What method(s) does the owner or operator employ to keep track of the location, usage, and ordering of spare parts? Are parts logged out when taken by maintenance personnel for use?	Replaced as needed. Not logged.		X
Does the owner or operator salvage specific equipment parts when equipment is placed out-of-service and not replaced?		X	
How often does the owner or operator conduct a check of the inventory of parts to ensure that their tracking system is working?	There is no formal tracking system in place. Parts are replaced as needed on an ongoing basis.		X
Who has the responsibility of tracking the inventory?	Senior Technicians	X	
For those parts which are not kept in inventory, does the owner or operator have a readily available source or supplier?		X	

Comments:

Question	Response	Documentation Available	
		Yes	No
Is there a list of equipment and tools used for operation and maintenance?		X	
Do personnel feel they have access to the necessary equipment and tools to do all aspects of operation and maintenance of the collection system?		X	
Is there access to suitable equipment if the owner or operator's equipment is down for repair?		X	
Does the owner or operator own or have access to portable generators?		X	
Where does the owner or operator store its equipment?	Operations Center	X	
Is a detailed equipment maintenance log kept?		X	
Are written equipment maintenance procedures available?		X	
What is the procedure for equipment replacement?	Depreciation Policy		
Are the services of an in-house vehicle and equipment maintenance services used?		X	

VIII. A. Rehabilitation: Manhole Repairs

What is the typical turnaround time for equipment and vehicle maintenance?	One to three days	X	
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Comments:

Question	Response	Documentation Available	
		Yes	No
How many sanitary sewer overflows (SSOs) have occurred in the last 5 years? How many less than 1,000 gallons?	This information is not tracked by our organization		X
Does the owner or operator document and report all SSOs regardless of size?		X	
Does the owner or operator document basement backups?		X	
Are there areas that experience basement or street flooding?			X
How many SSOs have reached "Waters of the US"? Is there a record?	None		
Approximately, what percent of SSOs discharge were from each of the following in the last 5 years: manholes, pump stations, main and trunk sewers, lateral and branch sewers, structural bypasses?	STEP System: 50% Lift/Pump Station: 50%	X	
What is the per capita wastewater flow for the maximum month and maximum week or day?	Max Month ~ 81 gpd Max Day ~105 gpd	X	
What is average annual influent BOD?	~ 0.135 lb/day/capita, ~ 3M lb/year for LOTT	X	
What is the ratio of maximum wet weather flow to average dry weather flow?	~ 1.56	X	
Approximately, what percent of SSO discharge were caused by the following in the last 5 years: debris buildup, collapsed pipe, root intrusion, capacity limitations, excessive infiltration and inflow, FOG, vandalism?	None	X	
What percent of SSOs were released to: soil; surface water; basements; paved areas; coastal, ocean, or beach areas; rivers, lakes or streams?	All soil or paved areas	X	

VIII. A. Rehabilitation: Manhole Repairs

For surface water releases, what percent are to surface waters that could affect: contact recreation, shellfish growing areas, drinking water sources?	None	X	
How many chronic SSO locations are in the collection system?	N/A		
Are pipes with chronic SSOs being monitored for sufficient capacity and/or structural condition?	N/A		
Prior to collapse, are structurally deteriorating pipelines being monitored for renewal or replacement?	N/A		
What is the annual number of mainline sewer cave-ins? What was the cause (i.e. pipe corrosion, leaks, etc.)	N/A		
What other types of performance indicators does the owner or operator use?	None	X	

Comments:

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator use internal T.V. inspection? If so please describe the program.	Daily TV inspection program with goal of televising all lines every three years	X	
Do the internal TV record logs include the following: pipe size, type, length, and joint spacing; distance recorded by internal TV; results of the internal TV inspection; internal TV operator name; cleanliness of the line; location and identification of line being televised by manholes?		X	
Is a rating system used to determine the severity of the defects found during the inspection process?		X	
Is there documentation explaining the codes used for internal TV results reporting?		X	
Approximately what percent of the total defects determined by TV inspection during the past 5 years were the following:	N/A		
Are main line and lateral repairs checked by internal TV inspection after the repair(s) have been made?		X	

VIII. A. Rehabilitation: Manhole Repairs

Comments:

Question	Response	Documentation Available	
		Yes	No
Have SSES's been performed in the past? If so, is documentation available?			X
Has any sewer rehabilitation work been done in the past 15 years? If so, please describe?	Sleater Kinney – slip line and manhole rehab	X	
Does the owner or operator have standard procedures for performing SSES work?	N/A		
Do the SSES reports include recommendations for rehabilitation, replacement, and repair?	N/A		
Were defects identified in the SSES repaired?	N/A		
Does the owner or operator have a multi-year Capital Improvements Program that includes rehabilitation, replacement, and repair?	Yes	X	
How are priorities established for rehabilitation, replacement, and repair?	Severity/Risk of failure/Potential impact	X	
Has the owner or operator established schedules for performing recommended rehabilitation, both short term and long term?	N/A		
Has funding been approved for the recommended rehabilitation?		X	
Is post rehabilitation flow monitoring used to assess the success of the rehabilitation?	N/A		

VIII. A. Rehabilitation: Manhole Repairs

Comments:

Question	Response	Documentation Available	
		Yes	No
Are sewers cleaned prior to flow monitoring?		X	
Are sewers cleaned prior to internal T.V. inspection?		X	
When cleaning, is debris removed from the system?		X	

Comments:

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have a flow monitoring program? If so, please describe.	Monitoring is provided by LOTT for the gravity system, the City monitors select pump stations		
Does the owner or operator have a comprehensive capacity assessment and planning program?	The wastewater comprehensive plan includes capacity assessment and planning	X	
Are flows measured prior to allowing new connections?			X
Number of permanent meters? Number of temporary meters?	5	X	
What type(s) of meters are used?	Mag Meters		
Number of rain gauges?	N/A		
How frequently are flow meters checked?	Meters are monitored through our SCADA system. They are physically read on a weekly basis and serviced on an annual basis	X	
Do the flow meter checks include: independent water level, checking the desiccant, velocity reading, cleaning away debris, downloading data, battery condition?			X
Are records maintained for each inspection?		X	

VIII. A. Rehabilitation: Manhole Repairs

Do the flow monitoring records include: descriptive location of flow meter, type of flow meter, frequency of flow meter inspection, frequency of flow meter calibration?		X	
Are flow data used for billing, capacity analysis, and/or I/I investigations?			X
What is the ratio of peak wet weather flow to average dry weather flow at the wastewater treatment plant?	~ 4.45 peak day/dry ave @LOTT		
Does the owner or operator have any wet weather capacity problems?			X
Are low points or flood-plain areas monitored during rain events?			X
Does the owner or operator have any dry weather capacity problems?			X
Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have a smoke testing program to identify sources of inflow and infiltration into the system including private service laterals and illegal connections? If so please describe.	Only on suspect areas	X	
Are there written procedures for the frequency and schedule of smoke testing?		X	
Is there a documented procedure for isolating line segments?		X	
Is there a documented procedure for notifying local residents that smoke testing will be conducted in the area?		X	
What is the guideline for the maximum amount of line to be tested at one time?	400'	X	
Are there guidelines for the weather conditions under which smoke testing should be conducted?	No	X	
Do the written records contain location, address, and description of the smoking element that produced a positive result?		X	
What follow-up occurs as a result of positive results for smoke or dye testing?	Correct deficiencies		

VIII. A. Rehabilitation: Manhole Repairs

Is there a goal for the percent of the system smoke tested each year?			X
What percent of the system has been smoke tested over the past year?	N/A		
Does the owner or operator have a dyed water flooding program If so please describe.			X
Is there a goal for the percent of the system dye tested each year?			X
What percent of the system has been dye tested over the past year?	N/A		
Does the owner or operator share smoke and dye testing equipment with another owner or operator?			X

Comments:

Question	Response	Documentation Available	
		Yes	No
Does the owner or operator have a routine manhole inspection and assessment program?		X	
What is the purpose of the inspection program?	To prevent sewer back-ups	X	
Does the owner or operator have a goal for the number of manholes inspected annually?		X	
How many manholes were inspected during the past year?	3,500	X	
Do the records for manhole/pipe inspection include the following: conditions of the frame and cover; evidence of surcharge; offsets or misalignments; atmospheric hazards measurements; details on the root cause of cracks or breaks in the manhole or pipe including blockages; recording conditions of corbel, walls, bench, trough, and pipe seals; presence of corrosion, if repair is necessary; manhole identifying number/location; wastewater flow characteristics; accumulations of grease, debris, or grit; presence of infiltration, location, and estimated quantity; inflow from manhole covers?		X	
Are manholes susceptible to inflow identified and inspected on a regular frequency?		X	

VIII. A. Rehabilitation: Manhole Repairs

Is there a data management system for tracking manhole inspection activities?		X	
What triggers whether a manhole needs rehabilitation?	I&I or level of corrosion	X	
Does the owner or operator have a multi-year Capital Improvements Program that includes rehabilitation, replacement, and repair of manholes?			X
How are priorities established for rehabilitation, replacement, and repair of manholes?	CCTV Inspection and evaluation	X	
Has the owner or operator established schedules for performing rehabilitation, both short term and long term of manholes?		X	

Question	Response	Documentation Available	
		Yes	No
Has funding been approved for the rehabilitation of manholes?		X	
Does the owner or operator have a grouting program?		X	

Comments:

Question	Response	Documentation Available	
		Yes	No
What rehabilitation techniques are used for manhole repairs?	Grouting and coatings	X	
How are priorities determined for manhole repairs?	Inspection /evaluation	X	
What type of documentation is kept?	Computer records	X	
Does the owner or operator use manhole inserts?			X
Are they used system wide or only on low lying manholes?	N/A		

Comments:

VIII. B. Rehabilitation: Mainline Sewers

Question	Response	Documentation Available	
		Yes	No
What type of main line repairs has the owner or operator used in the past?	In situ -form/cured in place pipe liner's, slip- lining	X	
Does the owner or operator currently use any of above techniques for main line repairs? What other techniques is the owner or operator presently using?		X	
How are priorities established for main line repairs?	CCTV evaluation	X	
What type of follow-up is performed after the repair (e.g., CCTV)?	CCTV	X	

Comments:

Appendix A

EXAMPLE COLLECTION SYSTEM PERFORMANCE INDICATOR DATA COLLECTION FORM

EXAMPLE COLLECTION SYSTEM PERFORMANCE INDICATOR DATA COLLECTION FORM

I. General Information

- A. Agency Name City of Lacey
- B. Agency Address
Street 1200 College Street
City Lacey State WA Zip 98503-3400
- C. Contact Person
- D. Telephone: Voice _____ Fax _____ Email _____
- E. Data provided for latest fiscal/calendar year, 2012

II. Collection System Description

- A. Service Area 33 Square miles
- B. Population Served 44,000
- C. System Inventory

Miles of gravity sewer	Miles of force main	Number of maintenance access structures	Number of pump stations	Number of siphons	Number of air, vacuum, or air/vacuum relief valves
141	67	4,000	47	1	139

- D. Number of Service Connections:
Residential 15,424 Commercial 721 Industrial 3 Total 16,148
- E. Lateral Responsibility (check one)
1. At main line connection only
 2. From main line to property line or easement/cleanout _____
 3. Beyond property line/cleanout _____
 4. Other _____
- F. System combined (storm and sanitary)? Yes ___ No If yes, % combined _____
- G. Average Annual Precipitation 50 inches
- H. System Flow Characteristics (total for service area)

Peak Dry Weather Flow (MGD)	Peak Wet Weather Flow (MGD)	Average Daily Flow (MGD)
3.247	5.053	3.407

III. Special Conditions

A. Indicate local conditions that are accounted for during design, construction, operation, and maintenance of the collection system.

1. Precipitation: Yes No If yes, provide brief explanation _____

2. Terrain: Yes No If yes, provide brief explanation Pressure collection systems may be used depending on terrain
3. Soils: Yes No If yes, provide brief explanation _____

4. Temperature: Yes No If yes, provide brief explanation _____

5. Groundwater: Yes No If yes, provide brief explanation Dewatering, Buoyancy
6. Geology: Yes No If yes, provide brief explanation _____

7. Other: _____

- B. Is corrosion a significant problem? Yes No
 • Is there a corrosion control program in place? Yes No
- C. Is odor a significant problem? Yes No
 • Is there an odor control program in place? Yes No
- D. Is grease a significant problem? Yes No
 • Is there a grease control program in place? Yes No
- E. Are roots a significant problem? Yes No
 • Is there a root control program in place? Yes No

IV. Age Distribution of Collection System

Age	Gravity Sewer, miles	Force Mains, miles	Number of Pump Stations
0 - 25 years	97	63	36
26 - 50 years	45	6	11
51 - 75 years	-	-	-
> 76 years	-	-	-

V. Size Distribution of Collection System

Diameter in inches	Gravity Sewer, miles	Force Mains, miles
8 inches or less	108	60
9 - 18 inches	27	8
19 - 36 inches	7	
> 36 inches		

VI. Distribution of Gravity Sewer By Material

- A. Vitrified Clay Pipe (VCP) _____ Miles
- B. Reinforced Concrete Pipe (RCP) _____ Miles
- C. Unreinforced Concrete Pipe (CP) _____ Miles
- D. Plastic (all types) 140 Miles
- E. Brick _____ Miles
- F. Other 2 Miles
- G. Other _____ Miles
- H. Other _____ Miles

VII. Distribution of Force Mains By Material

- A. Reinforced Concrete Pipe (RCP) _____ (circle one) miles or feet
- B. Prestressed Concrete Cylinder Pipe (PCCP) _____ miles or feet
- C. Asbestos Cement Pipe (ACP) _____ miles or feet
- D. Polyvinyl Chloride (PVC) 54 miles or feet
- E. Steel _____ miles or feet
- F. Ductile Iron _____ miles or feet
- G. Cast Iron _____ miles or feet
- H. Techite (RPMP) _____ miles or feet
- I. High Density Polyethylene (HDPE) 15 miles or feet
- J. Fiberglass Reinforced Plastic (FRP) _____ miles or feet
- K. Other _____ miles or feet

VIII. Preventive Maintenance of System

A. Physical Inspection of Collection System, Preventive Maintenance

Inspection Activity	Total Annual Labor Hours Expended for This Activity	Total Completed (Miles of Pipe or Manholes Inspected Annually)	Crew Size (s)
CCTV	2,317	62.3	2
Visual Manhole Inspection, Surface Only	—		
Visual Manhole Inspection, Remove Cover	All inspected & recorded through CCTV. Quantity Unknown.		
Visual Gravity Line Inspection, Surface Only	—		
Visual Force Main Inspection, Surface Only	—		
Other (Sonar, etc.)			

B. Mechanical and Hydraulic Cleaning, Preventive Maintenance

Cleaning Activity	Total Annual Labor Hours Expended for This Activity	Total Annual Labor Hours Expended for Scheduled PM	Total Miles Cleaned Annually	Crew Size (s)	Range of Pipe Diameters Cleaned
Hydraulic Jet					
Bails, Kites, Scooters					
Combination Machines	17,772		70.72	2	8" through 27"
Rod Machines					
Hand Rodding					
Bucket Machines					
Chemical Root Control					
Chemical or Biological Grease Control					

IX. Dry Weather Stoppages

- A. Number of stoppages, annually 0
- B. Average time to clear stoppage
- C. Number of stoppages resulting in overflows and/or backups annually 0
- D. Total quantity of overflow(s) 0
- E. Is there an established procedure for problem diagnosis? Yes No
- F. Are future preventive measures initiated based on diagnosis? Yes No
- G. What equipment is available for emergency response? Combination cleaners and CCTV equip

X. Repairs and Rehabilitation, Proactive

- A. Number of annual spot repairs identified
- B. Number of annual spot repairs completed
- C. Percent of spot repairs contracted 0
- D. Number of manholes identified for rehabilitation _____
- E. Number of manholes rehabilitated annually _____
- F. Percent of manhole repairs contracted _____
- G. Feet of main line needing rehabilitation _____
- H. Feet of main line rehabilitated _____
- I. Percent of main line rehabilitation contracted _____
- J. Number of manholes scheduled for rehabilitation under Capital Improvement Program (s) 0
- K. Feet of main line scheduled for rehabilitation under Capital Improvement Program (s) _____

XI. Repairs and Rehabilitation, Reactive

- A. Number of annual line features 0
- B. Number of line repairs 0

XII. Pump Stations

- A. Number of pump stations inspected 47
 - Frequency of inspections Once weekly(daily, every other day, weekly)
- B. Number of inspection crews One
- C. Crew size 5
- D. Number of pump stations with pump capacity redundancy 47
- E. Number of pump stations with backup power sources 33
- F. Number of pump stations with dry weather capacity limitations
- G. Number of pump stations with wet weather capacity limitations
- H. Number of pump stations calibrated annually 1
- I. Number of pump stations with permanent flow meters 6
- J. Number of pump stations with remote status monitoring 47
- K. Number of pump stations with running time meters 47
- L. Number of mechanical maintenance staff assigned to mechanical maintenance 3
- M. Number of electrical maintenance staff assigned to electrical maintenance 2
- N. Total labor hours scheduled annually for electrical and mechanical PM tasks
- O. Total labor hours expended annually for electrical and mechanical PM tasks _____

XIII. Pump Station Failures, Dry Weather

- A. Number of failures resulting in overflows/bypass or backup, annually One
- B. Total quantity of overflow/bypass _____ Gallons or MG
- C. Average time to restore operational capability 0.5 hours
- D. Total labor hours expended for electrical and mechanical corrective maintenance tasks _____
- E. Is failure mode and effect diagnosed? Yes No
- F. Are future preventive measures initiated based on diagnosis? Yes No
- G. What equipment is available for emergency response? By-pass pumping and Tanker Trucks

XIV. Force Mains

- A. Force mains inspected annually 0 miles or feet (visual surface inspection of alignment)
- B. Force mains monitored annually 0 miles or feet (pressure profile, capacity)
- C. Number of force main failures annually 0
- D. Cause(s) of force main failures _____

XV. Air Relief/Vacuum Valves

- A. What is frequency of valve inspections? N/A
- B. What is frequency of PM (backflushing, etc)? 0
- C. Number of annual valve failures 0
- D. Cause(s) of valve failures _____

XVI. System Operation and Maintenance Efficiency

- A. Total full time or full time equivalent staff assigned to O & M (excluding administration staff but including line managers, supervisors) 16.5
- B. Total estimated labor hours actually expended for active O & M tasks (this is the total above less hours for sick, vacation, holidays, training, breaks, etc., not directly related to performing O & M tasks) _____

XVII. Level of Service

- A. Average annual rate for residential users \$197.76 (not including LOTT)
- B. Rate based on: water consumption _____ Flat rate X Other _____
- C. Number of complaints annually _____
- D. Number of complaints that are agency responsibility _____
- E. Number of public health or other warnings issued annually 0
- F. Number of claims for damages due to backups annually _____
- G. Total cost of claims settled annually _____

XVIII. Financial

- A. Total annual revenue received from wastewater \$13.4M
 - 1. % of revenue for long-term debt 0%
 - 2. % of revenue for treatment and disposal 62%
 - 3. % of revenue for collection and conveyance 28%
- B. Current value of collection system assets \$66.7M
- C. Annual O & M expenditure \$3.7M
- D. Annual CIP expenditure for repair, replacement, or rehabilitation \$1.9M
- E. Annual O & M training budget _____
- F. Total number of O & M personnel (including administrative in O & M department) _____
- G. Number of personnel with collection system certification _____
- H. Number of personnel qualified for collection system certification _____
- I. Amount of O & M budget allocated for contracted services _____
- J. Hydroflush cost per foot _____
- K. Rodding cost per foot _____
- L. Bucketing cost per foot _____
- M. CCTV cost per foot _____
- N. Spot repairs, cost each _____

XIX. Safety

- A. Total labor hours assigned to O & M _____
- B. Number of lost time injuries _____
- C. Total lost time days _____
- D. Total cost of lost time injuries _____

XX. Regulatory

- A. Total number of violations issued annually _____
- B. Total cost of fines paid annually _____
- C. What is minimum reportable quantity in gallons? All that overflows
- D. What is time reporting requirement? 24 hours
- E. Number of annual WWTP upsets due to wet weather flow N/A

XXI. General

- A. Has SSES been performed on system? Yes _____ No _____
- B. Total O & M positions currently budgeted 15
- C. Total O & M positions currently filled 15
- D. Is computerized maintenance management system (s) used for O & M managing? Yes X No _____
- E. Is GIS system used for O & M managing? Yes _____ No X

XXII. Procedures or Other Documentation Available

- A. Overflow, bypass and containment Yes X No _____
- B. Problem evaluation and solution Yes X No _____
- C. Cleanup procedure Yes X No _____
- D. Failure mode and effect procedure Yes _____ No _____
- E. O & M budget process Yes X No _____
- F. O & M budget with line item detail Yes X No _____
- G. Long-range CIP planning for system expansion, rehabilitation, and replacement Yes X No _____
- H. Is there a written procedure for cleanup to mitigate effect of overflow? Yes X No _____
- I. Is there a written procedure for containing overflows and bypasses? Yes X No _____
- J. Is there an established procedure for containing overflows and bypasses? Yes X No _____
- K. Is there an established procedure for problem evaluation and solution? Yes _____ No X
- L. Is there an established procedure for cleanup to mitigate effect of overflow? Yes X No _____
- M. Is there a grease control program? Yes X No _____
- N. Is there a pretreatment program? Yes X No _____
- O. Is there a private source I/I reduction program? Yes _____ No X
- P. Do you have chronic O & M problems that are designed into your system? Yes X No _____
If yes, provide brief description Community STEP debris tanks
- Q. Do you have chronic O & M problems that are constructed into your system? Yes _____ No _____
If yes, provide brief description _____
- R. How would you rate your construction inspection program?
Very effective _____ Needs improvement _____ Poor _____

XXIII. Definitions/Clarifications

- A. Maintenance access structures, most commonly manholes, in your system that are incorporated into your O & M program.
- B. Pump capacity redundancy is the ability to maintain pumping at design capacity with the largest pump out of service.
- C. Remote status monitoring is any remote monitoring system such as alarm telemetry or SCADA that provides remote pump station status information.
- D. You will notice that in the section on stoppages and pump station failures, we are asking for dry weather incidents only. Dry weather system performance is a good indicator or effectiveness of O & M program. If you have wet weather information that you wish to provide also, please do.
- E. Under the Special Conditions sections we are identifying conditions that are present in your system that require consideration during design, construction, and O & M of your system.

- F. Any of the questions dealing with labor hours are designed to determine total labor hours irrespective of crew size or crews that are only assigned to cleaning, for example, less than full time.
- G. Our goal is to obtain data that can be or are standardized and that are accurate. We also realize that some data may not be available; however, data can be accurately estimated. If you estimate data please follow with an (E).
- H. If data is not available please indicate "NA." If data does not apply to your system, please indicate by "DNA."
- I. Failure mode and effect refers to any established procedure you have to diagnose system failures to determine the cause and effect of the failure. This can apply to crews clearing stoppages or to pump station failures.
- J. Pump station inspection (XII) means scheduled inspection by operators to verify station operation and perform PM. It excludes electrical or mechanical craft maintenance.
- K. Stoppage in section IX refers only to stoppages other than pump stations. Pump stations are covered in Section XIII. Backup in this case refers to a basement or other structure backup as opposed to main line sewer backup.

XXIV. Additional Comments
