Compliance Maintenance Annual Report

Madison City

Last Updated: 6/7/2018

Reporting For: 2017

Financial Management

1. Provider of Financial Information

Name: Steve Danner-Rivers

Telephone: (608) 261-9689 (XXX) XXX-XXXX

E-Mail Address (optional): sdannerrivers@cityofmadison.com

2. Treatment Works Operating Revenues

2.1 Are User Charges or other revenues sufficient to cover O&M expenses for your wastewater treatment plant AND/OR collection system ?

- ● Yes (0 points)
- ○ No (40 points)

If No, please explain:

2.2 When was the User Charge System or other revenue source(s) last reviewed and/or revised?

Year: 2017

- ● 0-2 years ago (0 points)
- ○ 3 or more years ago (20 points)
- ○ N/A (private facility)

2.3 Did you have a special account (e.g., CWFP required segregated Replacement Fund, etc.) or financial resources available for repairing or replacing equipment for your wastewater treatment plant and/or collection system?

- ● Yes (0 points)
- ○ No (40 points)

0

REPLACEMENT FUNDS [PUBLIC MUNICIPAL FACILITIES SHALL COMPLETE QUESTION 3]

3. Equipment Replacement Funds

3.1 When was the Equipment Replacement Fund last reviewed and/or revised?

Year: 2017

- ● 1-2 years ago (0 points)
- ○ 3 or more years ago (20 points)
- ○ N/A

If N/A, please explain:

3.2 Equipment Replacement Fund Activity

3.2.1 Ending Balance Reported on Last Year's CMAR		$ 56,000.00
3.2.2 Adjustments - if necessary (e.g. earned interest, audit correction, withdrawal of excess funds, increase making up previous shortfall, etc.)	+	$ 6,519.62
3.2.3 Adjusted January 1st Beginning Balance		$ 62,519.62
3.2.4 Additions to Fund (e.g. portion of User Fee, earned interest, etc.)	+	$ 459,000.00

3.2.5 Subtractions from Fund (e.g., equipment replacement, major repairs - use description box 3.2.6.1 below*) - $ 59,016.23

3.2.6 Ending Balance as of December 31st for CMAR Reporting Year $ 462,503.39

All Sources: This ending balance should include all Equipment Replacement Funds whether held in a bank account(s), certificate(s) of deposit, etc.

3.2.6.1 Indicate adjustments, equipment purchases, and/or major repairs from 3.2.5 above.

Telemetry at Diemer & Lowry; New Pump at Gettle

3.3 What amount should be in your Replacement Fund? $ 0.00

0

Please note: If you had a CWFP loan, this amount was originally based on the Financial Assistance Agreement (FAA) and should be regularly updated as needed. Further calculation instructions and an example can be found by clicking the SectionInstructions link under Info header in the left-side menu.

3.3.1 Is the December 31 Ending Balance in your Replacement Fund above, (#3.2.6) equal to, or greater than the amount that should be in it (#3.3)?

- ● Yes
- ○ No

If No, please explain.

4. Future Planning

4.1 During the next ten years, will you be involved in formal planning for upgrading, rehabilitating, or new construction of your treatment facility or collection system?

- ● Yes - If Yes, please provide major project information, if not already listed below.
- ○ No

Project #	Project Description	Estimated Cost	Approximate Construction Year
1	Sewer Impact Fee Districts: This program extends sanitary sewer service to developing areas of the City that require sewer infrastructure installation. These project locations and schedules are typically development driven and may come up with short notice. Review for planned projects is conducted annually. Amount shown is the estimate for 2018-2023.	8,150,000	
2	Sewer Reconstruction: This project involves the replacement of older, problematic sewers in coordination with the City's Street Reconstruction and Pavement Management Program or as 'stand alone' projects. Typically this provides for the replacement of clay sewers that are difficult to maintain, nearing the end of their service life, have a significant repair costs, or are undersized. Also, the Sewer Utility encourages residents to replace the portion of their sewer lateral that lies within the public right-of-way by offering to fund 75% of the cost. Six-inch mains under streets that are being reconstructed will be replaced because they do not meet current codes. Sewers beneath streets being resurfaced are evaluated for replacement on a case-by-case basis. Amount shown is the estimate for 2018-2023.	77,023,400	

3	Trenchless Sewer Rehabilitations: This program rehabilitates failing sewers that meet certain criteria but do not necessitate the need for a complete replacement by means of open cutting. New technology allows the lining of existing sewer mains using cameras and remote controlled tools. Some are also rehabilitated (or lined) to address inflow and infiltration problems, where clear water flow enters the sewer system, reducing pipe capacity and increasing treatment costs. The amount budgeted will repair approximately seven miles of sewer main at a number of strategically selected locations, based on citywide need. This item may also include replacement of inaccessible sewers by a 'direct bore' method, which is a relatively new technology for replacement of gravity sewer mains. Backyard sewer mains are a focus. Amount shown is the estimate for 2018-2023.	10,240,000	
4	Citywide Pumping Stations-Emergency Power Stationary Generators: This program funds the installation of emergency power stationary generators at the City's pumping stations. The goal of the program is to ensure continuous service in the event of a power loss. Amount shown is for 2018-2023.	345,000	

5. Financial Management General Comments

Annually the City of Madison adopts a Capital Budget which funds equipment replacement and infrastructure improvements, listed in a project format. Each project is reviewed and the funding amount for the next budget year is determined. In addition, the budget details future year estimates for the five subsequent years for each project.

ENERGY EFFICIENCY AND USE

6. Collection System

6.1 Energy Usage

6.1.1 Enter the monthly energy usage from the different energy sources:

COLLECTION SYSTEM PUMPAGE: Total Power Consumed

Number of Municipally Owned Pump/Lift Stations: 30

	Electricity Consumed (kWh)	Natural Gas Consumed (therms)
January	44,007	123
February	40,197	79
March	44,904	81
April	37,082	1
May	38,346	0
June	38,858	0
July	41,484	3
August	39,534	3
September	34,593	3
October	34,868	1
November	38,232	5
December	47,786	116
Total	479,891	415
Average	39,991	42

6.1.2 Comments:

6.2 Energy Related Processes and Equipment

6.2.1 Indicate equipment and practices utilized at your pump/lift stations (Check all that apply):

- ☒ Comminution or Screening
- ☐ Extended Shaft Pumps
- ☐ Flow Metering and Recording
- ☒ Pneumatic Pumping
- ☒ SCADA System
- ☐ Self-Priming Pumps
- ☒ Submersible Pumps
- ☐ Variable Speed Drives
- ☐ Other:

6.2.2 Comments:

6.3 Has an Energy Study been performed for your pump/lift stations?

- ● No
- ○ Yes

Year:

By Whom:

Describe and Comment:

6.4 Future Energy Related Equipment

6.4.1 What energy efficient equipment or practices do you have planned for the future for your pump/lift stations?

More efficient pumps will be installed as pumps need to be replaced.

Total Points Generated	0
Score (100 - Total Points Generated)	100
Section Grade	A

Compliance Maintenance Annual Report

Madison City

Last Updated: 6/7/2018

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Sanitary Sewer Collection Systems

1. Capacity, Management, Operation, and Maintenance (CMOM) Program

1.1 Do you have a CMOM program that is being implemented?

- ● Yes
- ○ No

If No, explain:

1.2 Do you have a CMOM program that contains all the applicable components and items according to Wisc. Adm Code NR 210.23 (4)?

- ● Yes
- ○ No (30 points)
- ○ N/A

If No or N/A, explain:

1.3 Does your CMOM program contain the following components and items? (check the components and items that apply)

☐ Goals [NR 210.23 (4)(a)]

Describe the major goals you had for your collection system last year:

II. Goals & Objectives

A. DNR Required

The City of Madison's CMOM program is designed to ensure that the following general standards as articulated in NR 210.23 are met:

1. The sewage collection system is properly managed, operated, and maintained at all times.
2. The sewage collection system provides adequate capacity to convey all peak design flows.
3. All feasible steps are taken to eliminate excessive infiltration and inflow as defined in s. NR 110.03 (13c), cease sanitary sewer overflows and sewage treatment facility overflows and mitigate the impact of such overflows on waters of the state, the environment, and public health.
4. A process is in place to notify the public and other directly affected parties of any incidents of overflows from the sewerage system.
5. Annual reports are submitted in accordance with the provisions of ch. NR 208.

B. MSU Specific

The City of Madison's goals for the operation and maintenance of its wastewater collection system are:

• Convey wastewater to the Nine Springs Wastewater Treatment Plant with minimum inflow, infiltration and exfiltration.
• Prevent public health hazards.
• Reduce inconvenience and damage by responsibly handling service interruptions.
• Eliminate claims and legal fees related to backup by providing immediate, concerned and efficient service to all emergency calls.
• Protect municipal investment by increasing the useful life and capacities of the system and parts.
• Use operating funds efficiently.
• Perform all activities safely and avoid injury.

Did you accomplish them?

- ● Yes
- ○ No

If No, explain:

☒ Organization [NR 210.23 (4) (b)]

Does this chapter of your CMOM include:

☒ Organizational structure and positions (eg. organizational chart and position descriptions)

☒ Internal and external lines of communication responsibilities

☒ Person(s) responsible for reporting overflow events to the department and the public

☒ Legal Authority [NR 210.23 (4) (c)]

What is the legally binding document that regulates the use of your sewer system?

Chapter 35 of the Madison General Ordinances - The Public Sewage System

If you have a Sewer Use Ordinance or other similar document, when was it last reviewed and revised? (MM/DD/YYYY) 06/28/2017

Does your sewer use ordinance or other legally binding document address the following:

☒ Private property inflow and infiltration

☒ New sewer and building sewer design, construction, installation, testing and inspection

☒ Rehabilitated sewer and lift station installation, testing and inspection

☐ Sewage flows satellite system and large private users are monitored and controlled, as necessary

☒ Fat, oil and grease control

☒ Enforcement procedures for sewer use non-compliance

☒ Operation and Maintenance [NR 210.23 (4) (d)]

Does your operation and maintenance program and equipment include the following:

☒ Equipment and replacement part inventories

☒ Up-to-date sewer system map

☒ A management system (computer database and/or file system) for collection system information for O&M activities, investigation and rehabilitation

☒ A description of routine operation and maintenance activities (see question 2 below)

☒ Capacity assessment program

☒ Basement back assessment and correction

☒ Regular O&M training

☒ Design and Performance Provisions [NR 210.23 (4) (e)]

What standards and procedures are established for the design, construction, and inspection of the sewer collection system, including building sewers and interceptor sewers on private property?

☒ State Plumbing Code, DNR NR 110 Standards and/or local Municipal Code Requirements

☒ Construction, Inspection, and Testing

☒ Others:

City of Madison Standard Specifications for Public Works Construction

☒ Overflow Emergency Response Plan [NR 210.23 (4) (f)]

Does your emergency response capability include:

☒ Responsible personnel communication procedures

☒ Response order, timing and clean-up

☒ Public notification protocols

☒ Training

☒ Emergency operation protocols and implementation procedures

☒ Annual Self-Auditing of your CMOM Program [NR 210.23 (5)]

☒ Special Studies Last Year (check only those that apply):

☒ Infiltration/Inflow (I/I) Analysis

☐ Sewer System Evaluation Survey (SSES)

Compliance Maintenance Annual Report

Madison City

Last Updated: 6/7/2018

Reporting For: 2017

- ☐ Sewer Evaluation and Capacity Managment Plan (SECAP)
- ☐ Lift Station Evaluation Report
- ☒ Others:

I/I Analysis- The City has 3 areas where we have been focusing our efforts to reduce I/I due to observing high pump run times at the pumping stations that serve the basins. These 3 areas are the Hargrove/Johns Street area, the Truax Airport area and the Midtown Pumping Station area. With the Johns Street/ Hargrove Area, the City studied the area in 2012 utilizing pump run time data and flow monitors.

We studied the Truax Airport Lift Station Basin also utilizing flow monitoring equipment and pump run time data in 2004 and again in 2015. This basin has cured-in-place liners that were installed in 2008 as a result of recommendations from the 2004 Brown and Caldwell I/I study and some of these liners have since failed due to an inadequate amount of resin in the pipe liner. The 2015 Truax study done by City staff included reviewing the condition of the sewer mains with and without liners, reviewing flow monitoring data and evaluating pump flow data. Because of a lack of large rainfall events while we had our sewer flow monitors in place, we decided to continue our flow monitoring of the Truax Basin in 2016 when we did have rainfall. We found a significant amount of work needing to be done to reduce I/I.

The Mid-Town basin is a very new area where we experienced a casting being dislodged by farm equipment in September of 2014. We have since raised the problem casting and installed a bolted locking lid but we are still observing I/I in this basin with spikes in pump run times during rain events. The I/I problem in the basin was not believed to be an issue with the sewer mains but rather the manholes. In 2017 the City has adjusted 10 of the manholes to the estimated 100 year flood elevations, installed bolted castings and sealed the manhole barrel joints. We still are experiencing high I/I in this basin. We have now televised the sewer mains, lifted casting using additional barrel sections, and wrapped the manhole joints. We believe that the problem is that foundation floor drains are exposed while the numerous homes in this area are under construction. We will continue to monitor pump run times in this area.

0

SSES- On average, the City televises 85 Miles of sewer per year to evaluate how the sewers are performing and how we plan to improve the collection system based upon pipe defects(broken, fractured pipe, root obstructions, sags) or capacity concerns (pipe appears to be running at high levels).

SECAP- While the City is not required to have a formal SECAP plan, we have been closely monitoring the downtown redevelopment monitoring our capacity needs and upsizing sewer interceptors where it is needed. The City did do a study in 2015 of the sewer capacity needs in the near east side and the campus area where there has been a significant high density residential growth. Based upon the flow level observations and pending number of proposed dwelling units, the City upsized 719’ of sewer on Bassett (2017) between University Ave to Dayton Street from a 12” diameter sewer to and 18” diameter sewer. The City also plans to upsize the sanitary sewer on Frances Street from Dayton Street north of University Ave., 1,158’ of sewer to a 27” diameter sewer within the next 5 years. In 2018, the City intends to install 3 flow monitors downtown in the UW campus area on Frances St. and on John Nolen Drive to monitor the performance of the Frances Street sewer now that the sewer on N. Bassett Street has been installed. We plan to keep the monitors installed for 2-3 months. The next area where we plan to install the monitors will be the area east of capital between the capital and the Yahara River (Thornton Ave.)

Lift Station Evaluation Report- The City’s Lift Stations are maintained and operated by the Madison Metropolitan Sewerage District. MMSD provides the City updates if there are pump run time spikes and or if there are problems with operation of the stations. The City also meets annually with MMSD to identify which stations have been problematic through the year. They also notify the City which stations are in need of upgrades whether it being upgrading pumps, electrical upgrades or complete pumping station renovation.

Compliance Maintenance Annual Report

Madison City

Last Updated: 6/7/2018 Reporting For: 2017

2. Operation and Maintenance

2.1 Did your sanitary sewer collection system maintenance program include the following maintenance activities? Complete all that apply and indicate the amount maintained.

Cleaning	56.22	% of system/year
Root removal	1.08	% of system/year
Flow monitoring	3	% of system/year
Smoke testing	0	% of system/year
Sewer line televising	5.86	% of system/year
Manhole inspections	3.21	% of system/year
Lift station O&M	66	# per L.S./year
Manhole rehabilitation	1.29	% of manholes rehabbed
Mainline rehabilitation	1.06	% of sewer lines rehabbed
Private sewer inspections	0	% of system/year
Private sewer I/I removal	0	% of private services
River or water crossings	57.67	% of pipe crossings evaluated or maintained

Please include additional comments about your sanitary sewer collection system below:

3. Performance Indicators

3.1 Provide the following collection system and flow information for the past year.

38.28	Total actual amount of precipitation last year in inches
34.44	Annual average precipitation (for your location)
788.26	Miles of sanitary sewer
30	Number of lift stations
0	Number of lift station failures
17	Number of sewer pipe failures
13	Number of basement backup occurrences
19	Number of complaints
27.3	Average daily flow in MGD (if available)
	Peak monthly flow in MGD (if available)
	Peak hourly flow in MGD (if available)

3.2 Performance ratios for the past year:

0.00	Lift station failures (failures/year)
0.02	Sewer pipe failures (pipe failures/sewer mile/yr)
0.00	Sanitary sewer overflows (number/sewer mile/yr)
0.02	Basement backups (number/sewer mile)
0.02	Complaints (number/sewer mile)
0.0	Peaking factor ratio (Peak Monthly:Annual Daily Avg)

0.0 Peaking factor ratio (Peak Hourly:Annual Daily Avg)

4. Overflows

LIST OF SANITARY SEWER (SSO) AND TREATMENT FACILITY (TFO) OFERFLOWS REPORTED **

	Date	Location	Cause	Estimated Volume (MG)
0	8/1/2017 1:45:00 PM - 8/1/2017 1:50:00 PM	Contractor temporary bypass pumping operation, 209 Ramsey Ct., Madison, WI	Broken Sewer, Broken Sewer	0 - 0.0001

** If there were any SSOs or TFOs that are not listed above, please contact the DNR and stop work on this section until corrected.

What actions were taken, or are underway, to reduce or eliminate SSO or TFO occurences in the future?

Post-SSO Standard Operating Procedure:
After resolving issues causing SSO our standard operating procedure is to televise impacted line. The inspection is reviewed to determine if a structural deficiency is present that needs to be remedied, if a different preventive maintenance cleaning schedule or process is required, and/or if a sewer system user needs to be contacted to address discharge issues.

5. Infiltration / Inflow (I/I)

5.1 Was infiltration/inflow (I/I) significant in your community last year?

○ Yes

● No

If Yes, please describe:

5.2 Has infiltration/inflow and resultant high flows affected performance or created problems in your collection system, lift stations, or treatment plant at any time in the past year?

○ Yes

● No

If Yes, please describe:

5.3 Explain any infiltration/inflow (I/I) changes this year from previous years:

In 2017, the City experienced three rain events on the west side exceeding 2 inches but the rain events were highly isolated with the West side and the East side not coinciding. The largest rainfall event was 2.74” on 7/10/17. According to the City’s Pump data (Midtown), we experience a 458% of normal flow spike during rain event over normal flows (average flow 134,694 gpd, 617,760 gpd during rain event).

On the East side, we had our largest rain events on 7/21/2017 (1.66”) and 8/16/2017 (1.68”). We observed flow spikes in the Johns Street basin MMSD Pump Station #6(2.48 MGD Average, 3.35 MGD Peak, 135% of average flow) and on 7/22/2017, we had 4.78 MGD of flow (193% over average flow). This pump station appears to have a lag with flow increases a day after the event. The same was true for the 8/16/2017 storm event when the pump station was operating at normal flow on the day of the event (2.50 MGD vs 2.48 MGD average) and 3.08 MGD on the following day.

In the Truax basin on 7/21 the storm event, we experienced 828,000 gallon vs 539,786 gallon average flow (153% average flow) and on the 8/16/2017 event, we experienced 606,000 gallons of flow vs 539,786 gallon average flow(112%). The peak flow observed in Truax was 1,170,00 gallons/ day of flow (6/23/2017) when we had a 0.83” rainfall. It should be noted that we had the same rainfall total on the previous day(6/22/2017).

5.4 What is being done to address infiltration/inflow in your collection system?

Compliance Maintenance Annual Report

Madison City

Last Updated: 6/7/2018

Reporting For: 2017

We continue to replace/ line defective sewers in the Hargrove/Johns Street area and monitor our end results by observing pump run time data at the pumping station. In 2017 we replaced 144' of 18" diameter, 753' of 15" diameter, 46' of 12" diameter sewer, and 2,459 ft of 10" diameter sewer on Richard Street (Johns Street/ Hargrove Area (MMSD Pump Station #6) along with all of the laterals within the project limits. In 2018, we intend to install on 1028' of 15", 1972' of 10" and 580' of 8" sewer main on Richard and Schenk.

We intend to pipe burst 350' of 24" diameter sewer, open cut replace 422' of 8" diameter, and cured in place line 10,677 ft of sewer main varying in size from 8" diameter to 18" diameter in the studied the Truax Airport Lift Station Basin. In 2017, we CIPP lined 2,756 ft of sewer mains in this basin. In 2018 we intend to line 29 manholes in this basin.

We believe that the Mid-Town basin problem due to exposed foundation floor drains while homes in this area are under construction. We will continue to monitor pump run times in this area.

We are also proactively replacing old pin-type castings throughout the City with gasketed castings.

Total Points Generated	0
Score (100 - Total Points Generated)	100
Section Grade	A

Compliance Maintenance Annual Report

Madison City

Last Updated: 6/7/2018

Reporting For: 2017

Grading Summary

WPDES No: 0047341

SECTIONS	LETTER GRADE	GRADE POINTS	WEIGHTING FACTORS	SECTION POINTS
Financial	A	4	1	4
Collection	A	4	3	12
TOTALS			4	16
GRADE POINT AVERAGE (GPA) = 4.00				

Notes:

A = Voluntary Range (Response Optional)

B = Voluntary Range (Response Optional)

C = Recommendation Range (Response Required)

D = Action Range (Response Required)

F = Action Range (Response Required)

Compliance Maintenance Annual Report

Madison City

Last Updated: 6/7/2018

Reporting For: 2017

Resolution or Owner's Statement

Name of Governing Body or Owner: City of Madison Common Council

Date of Resolution or Action Taken: 6/5/2018

Resolution Number: RES-18-00426

Date of Submittal:

ACTIONS SET FORTH BY THE GOVERNING BODY OR OWNER RELATING TO SPECIFIC CMAR SECTIONS (Optional for grade A or B. Required for grade C, D, or F):

Financial Management: Grade = A

Collection Systems: Grade = A

(Regardless of grade, response required for Collection Systems if SSOs were reported)

Post-SSO Standard Operating Procedure:
After resolving issues causing SSO our standard operating procedure is to televise impacted line as soon as possible, typically within 24 hours. The inspection is reviewed to determine if a structural deficiency is present that needs to be remedied, if a different preventive maintenance cleaning schedule or process is required, and/or if a sewer system user needs to be contacted to address discharge issues.

ACTIONS SET FORTH BY THE GOVERNING BODY OR OWNER RELATING TO THE OVERALL GRADE POINT AVERAGE AND ANY GENERAL COMMENTS

(Optional for G.P.A. greater than or equal to 3.00, required for G.P.A. less than 3.00)

G.P.A. = 4.00