Compliance Maintenance Annual Report

Madison Sewage Collection System

Last Updated: 5/29/2024 Reporting For: **2023**

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: 2024

- ● 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: 2023

- ● 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		$ 2,822,067.92
3.2.2 Adjustments - if necessary (e.g. earned interest, audit correction, withdrawal of excess funds, increase making up previous shortfall, etc.)		$ 0.00
3.2.3 Adjusted January 1st Beginning Balance		$ 2,822,067.92
3.2.4 Additions to Fund (e.g. portion of User Fee, earned interest, etc.)	+	$ 274,000.00

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3.2.5 Subtractions from Fund (e.g., equipment replacement, major repairs - use description box 3.2.6.1 below*) - $ 1,645,341.67

3.2.6 Ending Balance as of December 31st for CMAR Reporting Year $ 1,450,726.25

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.

$47,790 Controls Upgrades at American Family & Cherokee 2
$45,050 Pump Upgrades at Carroll & Midtown
$696,040 Harper Lift Station Replacement
$849,615 Thurber Lift Station Replacement

0

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

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 is for the extension of sanitary sewer service to developing areas. This program also includes sanitary sewer infrastructure upgrades related to density increased within the Transit-Oriented Development Overlay Zoning corridor. The program is funded primarily by Impact Fees, and review for planned projects is conducted annually as dictated by demand for development. Amount shown is the estimate for 2025-2028.	$2,540,000	2026
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 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 2024-2029.	$70,382,000	2024

3	Trenchless Sewer Rehabilitations: This program funds the rehabilitation of failing sewers by lining the existing sewer mains using cameras and remote controlled tools. Some sewer mains are rehabilitated (or lined) to address inflow and infiltration problems. The goal of this program is to repair nine miles of sewer mains at selected locations based upon need; backyard sewer mains are prioritized. Amount shown is the estimate for 2024-2029.	$11,847,000	2024
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 sanitary sewer service in the event of power loss. Amount shown is for 2024-2029.	$392,000	2024

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: 33

	Electricity Consumed (kWh)	Natural Gas Consumed (therms)
January	62,624	60
February	60,472	65
March	65,678	61
April	53,087	51
May	44,902	59
June	40,410	74
July	40,483	107
August	41,862	73
September	41,338	74
October	40,019	63
November	46,290	115
December	54,571	284
Total	**591,736**	**1,086**
Average	**49,311**	**91**

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?

The City replaced one and rehabbed one City lift station in 2023. A third lift station will be finished being replaced in 2024. In 2024, the City will be contracting out the design for the first of three lift stations that the City acquired from the Town of Madison. On October 31, 2022, with the Town attachment to the City, the City took over the Town's sewer infrastructure. The new pumps and equipment will be more energy efficient than the old equipment.

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

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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:

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. NR 210.23(3)(c)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. NR 210.23(3)(d)A process is in place to notify the public and other directly affected parties of any incidents of overflows from the sewerage system.
5. NR 210.23(3)(e) 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)]☐☐

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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) 2020-04-14

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

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I/I Analysis- The City has 3 areas (Hargrove/Johns Street, Truax Airport, and Midtown Pumping Station) where we have historically observed high pump run times during wet weather events. Pump run time and flow monitoring data combined CCTV inspection have been used to identify issues in these areas and develop strategies for reducing I/I. Point repairs, open-cut and trenchless are used to remedy isolated defects. Replacement and manhole-to-manhole lining are used to address mains with numerous defects.

Since the initial 2012 study 49,135 LF of mains have been replaced or lined in the Hargrove/Johns area (28,985 ft replaced, 20,150 ft lined). Private sewer laterals are replaced as part of the street reconstruction projects.

Studies were conducted in the Truax Airport Lift Station in 2004 and 2015. Since then 14,385 of sewer main has been replaced or lined. In addition, 19 structures were lined.

The Mid-Town basin which is less than 20 years old continues to experience higher pump run times during rain events. We have raised, wrapped manholes, grouted holes showing signs of I/I in manholes located off pavement. CCTV has not identified the source of I/I in the main. In 2024, 12 structures in the low lying main greenway adjacent to the ponds will be exposed and wrapped. Flow monitoring is planned going forward.

In 2023, the City experienced 1 major rain events on the west side (7/29–3.04 inches). The Midtown lift station flow reached 127% of normal flow (average flow 340,065 gpd, 431,117 gpd during rain event). 2/27/23 had highest run time spike 175%(594,444 gpd). While the east side did not experience the same rain event((7/28 +7/29= 1.54 inches) resulting in a spike in the Truax lift station of 148%(7/28) and 184%(7/29) (766,146 gpd and 949,968 vs. 517,381 gpd). The Hargrove/Johns area lift station reached 2.20 MGD on 2/27 (155% over average flow). The 7/28/23 storm did not result in high volumes of wastewater (1.29 MGD) 91% average flow.

SSES – The City regularly televises sanitary sewer mains to evaluate performance and plan for improvements to 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 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. In 2016, as a result of development, the City installed a diversion sewer on Bassett Street to take flow off of the Frances Street sewer. In 2018-2023, the City installed 2 flow monitors downtown in the UW campus area: one Frances St. and one on Langdon/ Lake Street. As a result of the sewer flow diversion, the Frances Street sewer continues to appear to have residual capacity (4.43 cfs residual of the total 6.15 cfs capacity (2023)).

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. The City replaced the Harper L.S. and rehabilitated the Thurber Lift Station in 2023. Replacement of the Truax Lift Station is underway (2024). Badger L.S. will be under design in 2024.

0

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 54.53 % of system/year

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Root removal	0.35	% of system/year
Flow monitoring	1.5	% of system/year
Smoke testing	0	% of system/year
Sewer line televising	8.10	% of system/year
Manhole inspections	0.12	% of system/year
Lift station O&M	72.7	# per L.S./year
Manhole rehabilitation	0.60	% of manholes rehabbed
Mainline rehabilitation	1.29	% of sewer lines rehabbed
Private sewer inspections	0	% of system/year
Private sewer I/I removal	0	% of private services
River or water crossings	53.31	% 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.

29.75	Total actual amount of precipitation last year in inches
37.13	Annual average precipitation (for your location)
808.79	Miles of sanitary sewer
35	Number of lift stations
0	Number of lift station failures
3	Number of sewer pipe failures
8	Number of basement backup occurrences
48	Number of complaints
23.372	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)
0.00	Sewer pipe failures (pipe failures/sewer mile/yr)
0.00	Sanitary sewer overflows (number/sewer mile/yr)
0.01	Basement backups (number/sewer mile)
0.06	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

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LIST OF SANITARY SEWER (SSO) AND TREATMENT FACILITY (TFO) OVERFLOWS REPORTED **				
	Date	Location	Cause	Estimated Volume
0	9/9/2023 6:00:00 AM - 9/9/2023 7:15:00 AM	3925 Regent Street. Madison, WI	Other causes	150

** 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.

This SSO was the result of the lift station being unable to keep up with the extra flow resulting from a constantly running toilet at a park shelter. The water at the shelter was turned off the lift station returned to normal operation. The toilet was repaired prior to turning the shelter water supply back on.

The City plans to replace the Regent lift station and include controls and telemetry with the new lift station so that it can be monitored by MMSD via its SCADA system.

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 2023, the City of Madison did not experience significant I/I where we had impacts to properties. The 2023 largest storm event 3.04 inches, 7/29 was isolated to the west side did not result in a spike at the lift station (Mid Town). Mid Town did experience high pump run times on 2/27/2023 (1.43 inches of rain). Otherwise, 2023 did not have significant storm events as we have had in the recent past. On the East Side (airport) (1.99 inches on 8/14 was the largest event but 7/28-7/29(1.54 inches had the greatest impact). We do continue to observe increase in pump run times in the 3 basins during rain events. Truax has the greatest increased pumping volumes as a result of rainfall 184%(July event). The additional wastewater flow was not a problem for the City’s collection system. We did not experience sewer backups or SSOs as a result of the 2023 rain events.

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

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The City continues to monitor problem areas in the collection system where we have observed Infiltration/ Inflow (I/I). The primary method to correct I/I has been the City's aggressive Cured in Place Lining program (approximately 9 miles of pipe lined per year). The other method to address I/I has been replacing sewer mains and laterals with street reconstruction projects.

Manholes installed in high groundwater areas with construction projects are wrapped at the joints to prevent seepage of groundwater into the sanitary sewer. All sanitary manholes installed near street low points include internal chimney seals to prevent water from entering the sanitary sewer through the manhole's adjustment rings.
Beyond construction projects, clearwater sources such as roof drain and sump pump connections are eliminated as they are discovered with our studies, smoke testing, basement inspections, and through televising.

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

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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)

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Resolution or Owner's Statement

Name of Governing Body or Owner:

Date of Resolution or Action Taken:

Resolution Number:

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)

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