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DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION

City of Rutland
2022 Combined Sewer Overflow Control Project Report

Introduction

The City of Rutland's Wastewater Treatment Facility (WWTF) is a secondary conventional activated sludge treatment plant with phosphorus removal that serves the City's sanitary and combined sewer system. This collection system includes a total of four combined sewer overflow (CSO) outfalls that discharge into the Otter and East Creeks during significant wet weather events. Over the course of 2022 the City of Rutland experienced 20 separate rain events that resulted in a CSO.

This report outlines those events and compares the data to recent years. In addition, it will address the City's compliance with the Minimum Controls, the condition of the combined sewer system, and the status of the City's projects that are currently underway, which will contribute to the reduction of CSOs.

Required Content

(i) Compliance with Minimum Controls

(1) Proper operation and regular maintenance programs for collection systems and CSO outfalls:

The Wastewater Treatment and Wastewater Collection divisions operate and maintain the City's collection system, which includes all CSO outfalls, pump stations and sewer mains. One hundred percent of the system's catch basins, swirl separators, and sedimentation basins were inspected and cleaned. Problematic areas that are prone to the collection of grease were inspected and cleaned as needed. In addition, routine maintenance occurred with respect to the City's siphons.

(2) Maximum use of the collection system for storage without endangering public health or property, or causing solids deposition problems:

The City currently monitors four combined sewer overflow outfalls that incorporate weirs and/or flap gates. These outfall structures activate to relieve the combined sewer system during wet weather events. The weirs were designed and reconstructed over the years to improve storage capacity while preventing wastewater from backing up into streets and/or residential and commercial buildings.

During the 2022 construction season, the City hired Wind River Environmental to clean several of the most critical trunk sewer segments throughout the city. Approximately 60 cubic yards of accumulated grit and sediment was removed from approximately 9,600 LF of combined sewer main. This effort will increase storage capacity with the wastewater collection system and allow the city to inspect the integrity of these particular conduits more easily.

(3) Review and modification of pretreatment requirements to assure that CSO impacts are minimized:

The City monitors the wastewater of industrial/large commercial customers. A High Strength Surcharge is invoiced quarterly to these customers, based upon Total Suspended Solids (TSS) and Ultimate Oxygen Demand (UOD) standards.

There are numerous customers within the City of Rutland and Rutland Town that have pretreatment facilities on site. These customers include the following:

1. General Electric, Windcrest Road (Industrial Metals - Chem. Precipitation)
2. General Electric, Columbian Avenue (Industrial Metals - Chem. Precipitation)
3. Stowe Corporation (Industrial Metals - Chem. Precipitation)
4. Bodycote Surface Technologies (pH Adjustment)
5. Isovolta (Settling Lagoons)

(4) Maximization of flow to the treatment plant for treatment consistent with an evaluation of alternative treatment options:

The City of Rutland has a long-standing history of implementing projects that increase the flow of combined sewage to the wastewater treatment plant in conjunction with combined sewer separation projects. Currently, the wastewater treatment plant has the capacity to treat 29 million gallons per day (MGD). However, the River Street Pump Station, which conveys one hundred percent of the City's sewerage to the plant, has a capacity of 22 MGD.

The Long-Term Control Plan identifies projects that will increase the flow of wastewater to the treatment plant, as well as the plant's treatment capacity. As part of the LTCP, the City developed a 5-year Project Implementation Schedule. This schedule included the design of 8 CSO projects and the construction of 2 projects.

There are a few projects on this short-term list that will ultimately improve flow to the treatment plant. The CSO Check Valves project will prevent creek water from entering the combined sewer system via the CSO outfall during high water events. When creek water enters the system, it generates a significant bottleneck at critical location within the network. Eliminating this bottleneck will increase the volume of combined sewage that's treated during rain events.

The Connor Park Storage project is scheduled for design in 2023. This project proposes to A significant amount of CSO funding was made available to the City of Rutland in 2022, which increases the chance that this project will be constructed sooner than originally projected.

(5) Prohibition of CSOs during dry weather:

There were no dry weather combined sewer overflow events in 2022.

(6) Control of solid and floatable materials in CSOs:

The City limits solid and floatable materials within CSO's through the maintenance of the collection system and streets.

In 2022, every catch basin in both the combined and sanitary systems was cleaned at least once. The City's downtown had its streets swept weekly. The remaining City streets were swept at least 3 times from May to October.

(7) *Establishment of pollution prevention programs to minimize contaminants in CSOs*:

The City maintains a stormwater web page (www.rutlandcity.org/stormwater) that educates residents on the adverse impacts of stormwater pollution and what they can do to mitigate it.

(8) *Public notification*:

In 2022, the City notified the public of CSOs through the Department of Environmental Conservation's "Combined Sewer Overflows and Untreated Discharges" reporting web page.

(9) *Monitoring*

(A)(i) *Precipitation monitoring system*:

The City operates two tipping bucket rain gauges, one at the WWTF and another at the Streets Department located on Spruce Street. The first records data for later download and the second transmits data for near real-time monitoring through a web-based platform. Both devices comply with the specification in the CSO Rule and the 1272 Order.

(A)(ii) *Flow monitoring system*:

The City has installed ultrasonic level sensors with telemetry devices at all CSO overflow structures. With this equipment the City is able to estimate the duration and magnitude of the overflow. The City has been in contact with the company that supplies the telemetry equipment. Pending pricing, the City may upgrade the data collection software, which would improve internal reporting procedures.

The City also owns an additional 8 sets of flow metering equipment that are available throughout the course of the season to evaluate portions of the system if/when needed.

(ii) *The condition and operation of the CSS*:

The City is continuously inspecting the condition of the combined sewer system to ensure that it's functioning efficiently and effectively.

The mapping of the system is continuously being evaluated, particularly when preparing for the construction season. Projects typically include the rehabilitation of existing manholes and the installation of new structures that allow personal to better inspect and maintain combined sewer mains. The City has a robotic sewer camera that is capable of inspecting the majority of these mains. Private contractors are hired on an annual basis to inspect the larger truck lines. From these inspections, new construction and rehabilitation projects are developed and executed.

Based on these inspections, the City identified 5 segments of trunk sewers that required cleaning. Additional segments of the combined sewer system are scheduled for cleaning and inspection this coming construction season.

(iii) The frequency, duration and magnitude of precipitation events leading to CSOs:

In 2022 the City experienced 20 rain events that resulted in CSOs from one or more of the four outfall locations. Table 1 summarizes the duration, overall magnitude, and maximum rain fall rates associated with these events. This information was derived from rain data that is collected on five-minute intervals.

RAINFALL DATA			
Event #	**Date**	**Total Rainfall (Inches)**	**Max Rainfall Rate (in/hr)**
1	18-Feb	0.49	0.58
2	23-Feb	0.82	0.28
3	8-Mar	0.61	2.08
4	19-Mar	0.60	0.68
5	8-Apr	0.58	0.68
6	14-Apr	0.33	1.47
7	19-Apr	0.74	0.40
8	14-May to 15-May	4.15	5.59
9	16-May	0.92	2.95
10	27-Jun	0.83	1.89
11	18-Jul	0.88	5.76
12	8-Aug	0.46	7.11
13	11-Aug	0.46	3.69
14	23-Aug	0.84	2.52
15	30-Aug	0.99	7.11
16	19-Sep	1.01	2.64
17	13-Oct	1.46	1.21
18	12-Nov	0.56	2.65
19	30-Nov	0.93	1.99
20	23-Dec	0.59	0.57

TABLE 1 – CSO Event Rainfall Data

(iv) *The frequency, duration and magnitude of all CSOs from the system in the past year and comparison to prior years*:

Table 2 outlines the total CSO duration, magnitude, and rainfall associated with each storm event. Table 3 is a summary of this data for the entire year. Table 4 compares the frequency and magnitude of CSOs from 2022 to previous years.

CSO DATA					
Event #	**Date**	**Start**	**Stop**	**CSO Duration**	**CSO Volume**
1	18-Feb	2:02 AM	8:57 AM	6:55	1,220,334
2	23-Feb	5:14 PM	12:08 AM	6:54	939,785
3	8-Mar	7:57 PM	9:20 PM	1:23	63,687
4	19-Mar	8:08 PM	11:45 PM	7:17	233,552
5	8-Apr	1:51 AM	4:14 AM	2:23	145,921
6	14-Apr	6:05 PM	9:44 PM	3:39	44,358
7	19-Apr	4:37 AM	6:29 AM	1:52	248,081
8	14-May to 15-May	4:14 PM 12:00 AM	12:00 AM 7:24 AM	15:10	3,100,748
9	16-May	5:40 PM	9:53 PM	4:13	633,459
10	27-Jun	7:33 AM	9:37 AM	2:04	318,239
11	18-Jul	3:27 PM	4:41 PM	1:14	137,465
12	8-Aug	7:43 PM	8:53 PM	1:10	164,140
13	11-Aug	5:33 PM	6:13 PM	0:40	30,120
14	23-Aug	1:44 PM	3:44 PM	2:00	245,075
15	30-Aug	7:33 PM	10:04 PM	2:31	200,787
16	19-Sep	3:58 PM	8:06 PM	4:08	426,585
17	13-Oct	5:46 PM	11:55 PM	6:09	255,432
18	12-Nov	5:27 AM	7:43 AM	2:16	217,923
19	30-Nov	4:31 PM	7:23 PM	2:52	334,088
20	23-Dec	7:37 AM	10:31 AM	2:54	501,201

T***ABLE 2 – 2022 Storm Event CSO Summary***

2022 CSO Summary				
	CSO Duration	**CSO Volume**	**Rainfall Total**	**Rainfall Rate**
TOTAL	77:44	9,460,980	18.25	
AVG	3:53	473,049	0.91	2.59
MAX	15:10	3,100,748	4.15	7.11
MIN	0:40	30,120	0.33	0.28

TABLE 3 – 2022 CSO Summary

YEAR	Number of Storms Leading To a CSO	VOLUME (Gallons)	Total Duration (H:M)	Average Volume Per Storm (Gallons)
2018	35	30,519,740	78:23	871,993
2019	34	37,729,781	132:44	1,109,699
2020	22	5,928,241	52:36	269,466
2021	25	9,117,133	69:08	364,385
2022	20	9,460,980	77:44	473,049

TABLE 4 – CSO Comparison to Previous Years

(v) The overall status of the Long-Term Control Plan (LTCP)

The City's consultant, Weston & Sampson Consulting Engineers, completed the final draft of the CSO LTCP in 2022.

(vi) Key CSO control accomplishments, highlighting those that reduced the frequency and magnitude of CSOs; projects under design; and construction that occurred in the previous year.

The most recent CSO construction project was the Northwest Neighborhood Sewer Separation Phase 1A project, reached final complete during the spring of 2021.

In April, 2022, the City issued a Request for Qualifications for Design Engineering Services for two projects; the Meadow Street Stormwater Separation and Connor Park Combined Sewer Storage. The City reviewed the Statements of Qualifications, conducted interviews, and ultimately ranked the top 3 consultants. The City attempted to negotiate a contracted with the #1 ranked consultant, Wright-Pierce., however, these efforts were unsuccessful. As a result, the City contacted to #2 ranked consultant, Aldrich & Elliott and began negotiations for both projects. The City expects to sign an Engineering Services Agreement with Aldrich & Elliott in early 2023.

Lastly, in early 2023, the City also plans to negotiate a contract with Weston & Sampson, for the design of the CSO Check Valves project.