City of Mebane Wastewater Collection and Treatment Facility

For the Fiscal Year July 1, 2021 – June 30, 2022

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Introduction

This report is produced in compliance with House Bill 1160 passed by the General Assembly of the State of North Carolina requiring that all entities that own or operate wastewater collection and treatment systems make an Annual Report available to their customers. This report must include information regarding how well the system operated, what violations occurred, and other pertinent information. This report complies with these requirements.

The City of Mebane operates a wastewater treatment facility and a sewage collection system that collects and transports the sewage to the facility.

Following are the professionals designated by the state as the "Operator in Responsible Charge" (ORC) of the respective systems and permits for the systems:

City of Mebane Wastewater Treatment Facility
635 Corregidor Road
Phone (919) 563-6141
NPDES Permit No. NC0021474
Operator in Responsible Charge (ORC) – Dennis J. Hodge

Mebane Public Utilities
Sewage Collection System
636 Corregidor Road
Phone (919) 563-3401
Collection System Permit No. WQCS00081
Operator in Responsible Charge (ORC) – Greg Barts

We certify under penalty of law that this report is complete and accurate to the best of our knowledge. Copies will be available at the Wastewater Treatment Plant, the Public Works Building, the Glendel Stephenson Municipal Building, and on the City of Mebane website at https://cityofmebanenc.gov/departments/water-resource-recovery-facility/.

System Overview

Every day an average of over 1.6 million gallons of sewage is generated in our homes, commercial establishments, and industries that must be collected, transported, and treated to very stringent standards before it is released back into our environment through our waterways. This service is provided by the City and is funded almost entirely from the user charges that are paid monthly by our customers.

The sewage collection and wastewater treatment facility of the City of Mebane begins with over 6,002 connections that serve homes, commercial establishments, and industries. Nearly all of the sewage or wastewater that is generated by customers flows by gravity through sewers that range from 6 to 16 inches in diameter. Mebane operates 123.64 miles of these gravity sewer lines. During this reporting period, approximately 12.62 miles of these lines were cleaned.

As the lines leave neighborhoods, they increase in size to accommodate the flows that are collected from the many areas that are served. These sewers generally follow terrain to take advantage of gravity flow but at certain points pumping stations are used to transfer the flow to different basins. The City currently operates 21 pumping stations that range in capacity from 13 to 2000 gallons per minute.

The purpose of the collection system is to transport the wastewater to the wastewater treatment facility so it can be processed and returned to our waterways with minimal environmental impact. The wastewater treatment facility is permitted to process up to 2.5 million gallons of wastewater per day.

The wastewater treatment facility is complex, using physical, chemical, and biological processes to treat the wastewater. The wastewater is screened to remove large, suspended materials, but the heart of the plant is a biological process that uses bacterial cultures to remove most of the suspended and dissolved wastes that are produced within the City. This biological, activated sludge process is sensitive to temperature, high flows produced by rainfall leaking into sewers, and toxic discharges that can be produced by industries or even homes. This sensitivity makes the wastewater facility susceptible to process upsets that can result in exceeding limitations permitted by regulatory authorities.

The permitting of treated wastewater discharges is based on a “7Q10” stream flow, or the lowest seven-day stream flow expected every ten years. However, permit limits that are issued to protect the stream at low flow (less assimilation), apply 24 hours per day and 365 days per year. Since Mebane’s limits are calculated for discharging to a small stream, our limitations are extremely stringent. North Carolina has some of the most stringent stream standards in the country. Mebane WWTP discharge constitutes over 90% of the stream at the lowest stream-flows. However, when periods of rain create high stream flows and make treatment plant operations difficult, the treatment facility must continue to be compliant with dry weather limitations.

The City of Mebane’s treatment plant operates under a National Pollutant Discharge Elimination System (NPDES) permit. The NPDES permit includes monitoring requirements and discharge limitations, some of which vary with seasons and have different maximums for daily values, weekly averages, monthly averages, and quarterly averages. Some limitations protect streams from oxygen depletion, such as biochemical oxygen demand (BOD) and ammonia-nitrogen (which exerts oxygen demand over a delayed yet prolonged basis). Some standards/limitations are to protect aquatic life in the receiving stream, such as metals like cadmium or mercury or other pollutants like fluoride or chlorine. Since aquatic life is more sensitive than humans to some pollutants, some standards are as low as 12 parts per trillion* and, in many cases, are lower than drinking water standards.

** To help comprehend how small one part per trillion is: One part per trillion corresponds to one minute in 2,000,000 years, or a single penny in $10,000,000,000.*

Compliance with the permit requires that our laboratory conduct over 4,000 tests per year all of which must meet the NPDES permit requirements. To accidentally drop a sample or not analyze it within a specified period can result in a violation. There are some pollutants such as fluoride, mercury, and cadmium that the operators of the wastewater treatment facility have no control over and can only be regulated through controlling the discharges of industries and households. There are also times that maintenance on major equipment needs to be performed and that can cause exceedances as well.

During the 2021-2022 fiscal year, the Water Resources Department treated over 643 million gallons and returned it to our streams. We are proud of the outstanding performance of the facility that was made possible by the dedicated efforts of the professionals who operate, maintain, and conduct tests for the facility. Wastewater flow amounts are summarized in Table 1.

Table 1: Wastewater Flows

Summary of Wastewater Flows MG (Million Gallons) July1, 2021 – June 30, 2022		
	Average MG per day	**Total MG**
July 2021	1.625	50.384
August 2021	1.517	47.019
September 2021	1.526	45.794
October 2021	1.475	45.711
November 2021	1.444	43.331
December 2021	1.445	44.808
January 2022	1.702	52.771
February 2022	1.630	45.649
March 2022	2.010	62.323
April 2022	1.652	49.570
May 2022	1.594	49.399
June 2022	1.441	43.237
Total Year (MG)		**579.996**
Average Day (MG)	**1.588**	

During this reporting period, the wastewater treatment facility experienced no non-compliances. If there were any non-compliances they would be summarized in Table 2. To reduce the impacts of rainfall on the City's collection system and wastewater treatment facility, the Public Utilities Department continually monitors the condition of manholes and piping, address problems as quickly as possible to minimize inflow and infiltration. Major I/I are a priority and are budgeted for and repaired as funds allow.

Table 2: Wastewater Treatment Facility

Date	Parameter	Number of Exceedances	Exceedance Type

Collection System Performance

The City of Mebane operates a sewage collection system comprised of 123.64 miles of gravity line, 2,814 manholes, 21 pump stations, and 27.78 miles of pressurized sewage force main. If sewage escapes from the collection system, for whatever reason, and reaches a surface water body in an amount exceeding 1,000 gallons, it must be reported to the news media. In addition, all spills of any volume reaching a water body must be reported to the State. There were 3 sewage spills (overflows) to report for the 2021-2022 Annual Report timeframe and are listed below.

Table 3: Collection System Sewage Spills

Date	Location	Approximate Gallons	Probable Cause
03.04.2022	Intersection North 9th St & Hunters run Rd	675	Grease & Roots
03.04.2022	1812 York Loop	300	Grease & Roots
03.03.2022	400 Blue Lake Dr	5,250	Grease & Rags

Collection system sewage spills, known as sanitary sewer overflows (SSO) can occur for many reasons. Tree roots can enter sewer lines or foreign objects can be dropped into manholes or sewers causing obstructions. Rainwater can also find its way into sewers, overloading lines and pump stations. In addition, pump stations can fail for mechanical or electrical reasons.

Disposable Does Not Mean Flushable – Flushing garbage down the toilet can result in messy and costly back-ups for property owners and can also lead to sewer blockages that result in SSOs. Even items labeled "flushable" are best disposed of in the trash rather than flushing them down the toilet.

Garbage such as paper towels, baby wipes and diapers, cotton swabs, syringes, cleaning sponges and disposable toilet brushes, candy wrappers and other food wrappers, sanitary napkins, toys, plastic items of any kind, rubber items such as condoms and latex gloves, cigarette butts, hair, and kitty litter should not be flushed down the toilet. These items should be placed in the trash.

Fats, Oils, and Grease (FOG) from households, restaurants, and commercial establishments can also cause obstructions in the sewer system resulting in SSOs. A byproduct of cooking, FOG comes from meat, fats, lard, oil, shortening, butter, margarine, food scraps, sauces, and dairy products. When washed down the drain, FOG sticks to the insides of sewer pipes. Over time, FOG can build-up, block entire pipes, and lead to serious problems. To prevent any undue introduction of FOG into the wastewater collection system of the City.

Mebane implements a FOG Policy designed to educate and enforce the proper disposal of FOG within the City. The FOG policy is intended for all customers (residents, restaurants, and commercial establishments) that discharge wastewater into the City's sanitary sewer with the aim of preventing grease related SSOs. Within the FOG Policy, food service establishments are required to install and properly maintain an appropriately sized grease trap or interceptor.

While food service establishments typically deal with larger volumes of FOG than residents, everyone must do their part to prevent the introduction of FOG into the sewer system. To learn more about FOG, its impacts on the sewer system, and its proper disposal, please visit the City's website at https://cityofmebanenc.gov/fats-oils-greases-fog/.

Summary

The City of Mebane is proud that, given the age of our treatment facility and collection system, our permit exceedances have been minimal. Circumstances, such as weather and vandalism, are beyond the control of collection system and wastewater treatment facility staff. Therefore, despite the dedicated efforts of these individuals, it can often be difficult to avoid spills and exceedances of the NPDES permit. The City's ultimate goal is to have no permit exceedances or sewage spills. We want to provide the best possible service to our customers while being fiscally responsible and good stewards of our environment. If more information is desired, please contact our staff at 919-304-9215.

City of Mebane
Wastewater Collection and Treatment Facility

For the Fiscal Year July 1, 2021 – June 30, 2022

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I certify, under penalty of law, that this report is complete and accurate to the best of my knowledge. I further certify that this report has been made available to the users or customers of the named systems and that those users have been notified of its availability.

Dennis Hodge

Dennis J. Hodge
Water Resources Director
City of Mebane

8-30-2022

Date