



# City of Mebane

## Sewage Collection and Wastewater Treatment Facility

For the Fiscal Year July 1, 2006 – June 30, 2007

### 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 # - NC0021474  
Residuals Land Application permit # - WQ0004033  
Operator in Responsible Charge (ORC) – Linda Holt

Mebane Public Works  
Sewage Collection System  
636 Corregidor Road  
Phone (919) 563-3401  
Collection System Permit # - WQC500081  
Operator in Responsible Charge (ORC) – James Jobe

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, Public Works Building, City Hall, and on the City of Mebane website, [www.cityofmebane.com/](http://www.cityofmebane.com/).

## System Overview

The sewage collection and wastewater treatment facility of the City of Mebane begins with over 3000 connections that serve homes, commercial establishments, and industries. Every day an average of one million gallons of sewage is generated in our homes and industries that must be collected, transported, and treated to very stringent standards before it is released back into our environment (in our streams). This service is provided by the city and is funded almost entirely from the user charges that are paid monthly by our customers. 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 over 76 miles of these gravity sewer lines. Last year over 3 ½ miles of this line was cleaned and inspected. 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 16 pumping stations that range in capacity from 13 to 1000 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 streams 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; uses physical, chemical, and biological processes to clean the wastewater. It 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 process, called activated sludge, 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 plants susceptible to process upsets that can result in exceeding limitations permitted by regulating authorities.

The permitting of treated wastewater discharges is based on a "7 Q 10" 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 dilution), apply 24 hours per day, 7 days per week, 365 days per year. Since Mebane's limits are calculated for discharging to a small stream, our limits are very low. North Carolina has some of the most stringent stream standards in the country. Mebane WWTP discharge constitutes over 90% of the stream only at the lowest stream-flows. However, when periods of rain create high stream flows and make treatment plant operations difficult, the treatment plant still meet dry weather limits.

The City of Mebane's treatment plant operates under a NPDES permit, or National Pollutant Discharge Elimination System permit. The NPDES permit includes monitoring requirements and discharge limits, some of which vary with seasons and have different maximums for daily values, weekly averages, monthly averages, and quarterly averages. Some limits 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 limits are to protect aquatic life in the receiving stream, such as metals like cadmium or mercury or other pollutants like fluoride or chlorine. Some limits are as low as 12 parts per trillion\* and in many cases are lower than drinking water standards, because aquatic life is more sensitive than humans to these pollutants.

\* To help comprehend how small one 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 must conduct over 4,500 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. Some pollutants such as fluoride, mercury, and cadmium can only be controlled through the industrial pretreatment program.

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. The treatment facility had three violations of the NPDES permit during this reporting period. A summary of these can be found in Table 1.

Table 1: Wastewater Treatment Plant

Date	Parameter	Measured Concentration	Sampling Frequency
August 14, 2006	Influent BOD	No sample	Daily
August 14, 2006	Influent TSS	No sample	Daily
June 20, 2007	Effluent Cond	No Sample	Daily

Biochemical Oxygen Demand (BOD) Total Suspended Solids (TSS) Conductivity (Cond)  
 On August 14 the influent automatic sampler did not operate properly and did not collect a sample. On June 20 the collection bottle was accidentally dropped.

During 2006-2007 reporting period, the wastewater treatment facility treated over 374 million gallons of wastewater and returned it to our streams. See table 2.

Table 2: Wastewater Flows

<b>Summary of Wastewater Flows</b> <b>MG (Million Gallons )</b> July1, 2006 – June 30, 2007		
	Average MG per day	Total MG
July	0.985	30.536
August	0.903	27.985
September	0.918	27.534
October	0.919	28.490
November	1.221	36.639
December	1.019	31.593
January	1.151	35.682
February	1.143	32.001
March	1.127	34.951
April	1.120	33.599
May	0.898	27.833
June	0.932	27.953
<b>Total Year (MG)</b>		<b>374.796</b>
<b>Average Day (MG)</b>	<b>1.028</b>	

## Collection System Performance

The City of Mebane operates a sewage collection system comprised of 76 miles of gravity line, over 700 manholes, 16 pump stations, and over 12 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.

Rainwater can find its way into sewers overloading lines and pump stations. Pump stations can fail for mechanical or electrical reasons. Mebane, like most cities, has experienced heavy rains causing incidents of discharge of wastewater from our collection system included in Table 3. There were no detected environmental impacts from any of these incidents.

Table 3: Collection System Overflows

Month	Location	Approximate Gallons	Cause
July 6, 2006	Fifth Street PS	4500	Heavy Rain
July 15, 2006	Wal Mart PS	180	Force Main Leak
July 16, 2006	Wal Mart PS	300	Force Main Leak
August 30, 2006	McPherson Street PS	300	Heavy Rain
November 21, 2006	Wal Mart Parking Lot	420	Debris in Line
November 21-22, 2006	McPherson Street PS	810	Heavy Rain
December 25, 2006	Mebane WWTP	600	Heavy Rain
April 15, 2007	McPherson Street PS	100	Heavy Rain
April 15, 2007	Third Street PS	90	Heavy Rain

PS – Pumping Station

## Summary

Mebane is proud of the performance of our wastewater treatment facility and collection system for the past year. Despite the dedicated efforts of the wastewater treatment staff, it is often difficult to avoid violations of its NPDES permit. Violations or spills are often beyond the control of the operator. Weather and vandalism are two examples that may cause a violation.