



Annual Sewage Collection and Wastewater Treatment Report for the Fiscal Year July 2021 – June 2022

On July 21, 1999, North Carolina Governor James Hunt signed a law that placed new reporting requirements on the owners or operators of wastewater treatment and wastewater collection facilities in North Carolina. Part of this legislation was a requirement to provide the users or customers of the system with an annual report of the past year's performance that includes a summary of wastewater spills.

The purpose of these reports is to provide an understandable and informative description of the wastewater treatment facilities and collection system, describe the regulations with which these facilities must comply, and promote a general awareness of these facilities and their role in protecting the environment.

GENERAL INFORMATION

The City of Burlington owns and operates two wastewater treatment plants and a sewage collection system that collects and transports the sewage to each of these two facilities. The two wastewater treatment plants, East Burlington and South Burlington Wastewater Treatment Plants, have a permitted capacity to treat 12 million gallons per day (MGD) of wastewater respectively. The names and permit information for these facilities are listed below as well as those professionals designated by the State of North Carolina as Operators in Responsible Charge (ORC).

East Burlington Wastewater Treatment Plant (EBWWTP)

225 Quarry Road, Burlington, NC

Phone: (336) 578-0515

NPDES Permit # NC0023868

Operator in Responsible Charge (ORC) – Darrin Allred

Sewage Collection System

1103 South Mebane Street, Burlington, NC

Phone: (336) 222-5140

Collection System Permit # NC0023868

Operator in Responsible Charge (ORC) – Donnie West

South Burlington Wastewater Treatment Plant (SBWWTP)

2471 Boywood Road, Graham, NC

Phone: (336) 227-6261

NPDES Permit # NC0023876

Operator in Responsible Charge (ORC) – Rick Asher

This report is being provided to meet the requirements of North Carolina G.S 143-215.1.C. Copies will be available at the East Burlington Wastewater Treatment Plant, the South Burlington Wastewater Treatment Plant, the Water and Sewer Pipe Maintenance facility, the Municipal office building (City Hall) at 425 Lexington Avenue, the May Memorial Public Library, the Public Works building at 234 E Summit Avenue, the Water Resources Office at 1302 Belmont Street and published on the City of Burlington website – www.burlingtonnc.gov.

THE IMPORTANCE OF WASTEWATER TREATMENT

Every living organism interacts with its environment. Pollution is the addition of impurities to the environment. For millennia, humans have put their sewage (and garbage) into streams, lakes, or oceans. This pollution did not cause significant environmental impact because natural processes could eliminate it faster than it would accumulate. However, as the human population increased, the volume of sewage increased so much that natural decomposition could no longer keep up with the wastes being generated. ***The purpose of a wastewater treatment plant is to facilitate the natural decomposition of sewage so that the water released back to the environment – typically into a stream or river – will have minimal or no negative impact on the environment.*** The City of Burlington owns and operates two wastewater treatment facilities that treat the sewage produced by approximately 80,000 people living in and around the

City. The wastewater received at EBWWTP originates from areas north and east of the railroad, including areas within Burlington's city limits and extraterritorial jurisdiction (ETJ), the Town of Green Level, the Town of Haw River, and portions of the Town of Gibsonville and the Town of Elon. The EBWWTP discharges its treated wastewater into the Haw River near the NC Highway 70, bypass near the Town of Haw River. The wastewater received at the SBWWTP originates from areas south and west of the railroad, including areas within Burlington's city limits and extraterritorial jurisdiction (ETJ), the Town of Swepsonville, the Village of Alamance, and portions of the City of Graham. The SBWWTP discharges its treated wastewater into the Big Alamance Creek near Boywood Road in Swepsonville. This treatment process ensures that water is constantly being recycled.

NPDES PERMIT

The treatment of sewage and its return to the environment can be a delicate and complex balancing act. State agencies assure that stringent standards are met before the treated wastewater can be released into a receiving stream. These standards are summarized in a **National Pollutant Discharge Elimination System (NPDES) permit**. Each facility, whether public or private, that releases treated wastewater into any surface water – a stream for example – must apply for and possess one of these permits. These permits regulate the type and amounts of pollutants that a facility can discharge. The discharge limits in these permits are based on a particular stream's ability to withstand the addition of pollutants without having a negative impact on the stream's water quality. In other words, small streams have more stringent requirements than a large river while wastewater plants that discharge into waters classified as a source of drinking water must meet more stringent requirements than wastewater plants that discharge into non-drinking water supply sources. These permits are different from one wastewater plant to another and even from one season to another. To protect the stream, a facility's NPDES permit assumes that the stream is ALWAYS flowing at its lowest flow. This is called the "7Q10" flow. The 7Q10 flow is meant to represent the lowest flow that the stream will experience in 7 consecutive days once every 10 years. Even when a stream or river is experiencing a high flow – perhaps due to a heavy rain – a wastewater plant must continue to discharge as if the stream were experiencing an unusually low flow. These strict standards provide wastewater plants with a margin of safety when it comes to protecting the environment.

WHERE DOES IT ALL END UP?

Burlington is home to a number of mills and manufacturing plants. These plants use large amounts of water every day. Once used, this water is discharged into the sewer system. Wastewater treatment facilities are primarily designed to treat domestic waste, waste that comes from houses – and sometimes have difficulty treating industrial waste. The various pollutants from many different sources often makes the NPDES permit regulations more difficult to meet. It is a misconception that when something is flushed "down the drain", it is gone, never to be seen or worried about again. People who use the sewer system should be aware of the other end of the drain. When something goes into the sewer on one end, it will arrive - and must be treated - at the other end. When wastewater arrives at the treatment facility, it must go through the entire treatment process. Anything and everything that arrives at the plant must somehow be handled – and the treatment facility must still meet the NPDES permit requirements. This makes the operation of a wastewater plant vulnerable to chemicals or pollutants that might upset the biological treatment process. To help prevent unwanted pollutants from entering the sewage treatment process, the City of Burlington laboratory personnel monitor the industrial discharges. Industries that discharge into the Burlington sewer system are inspected and must comply with discharge permits of their own to help protect the sewer collection system, the treatment facility, employees of the City's Water Resources Department, and the environment. Large industries are routinely monitored and, in many instances, are required to provide treatment of their wastewater before discharging it into the city sewer system. This is often referred to as 'pretreatment' or 'industrial pretreatment'.

COLLECTION SYSTEM OVERVIEW

Burlington's wastewater collection system consists of approximately 21,756¹ connections serving homes, businesses and industry¹, 442 miles of gravity sewer line, 9,478 manholes², 4 sewer lift stations and approximately 3.54 miles of pressurized force main that is active and maintained by the City. In fiscal 2021-22, an estimated of 10.414 million gallons³ of sewage was transported daily from our homes and businesses through this collection system to the East Burlington and South Burlington Wastewater Treatment Facilities. The collection system has both gravity lines and force mains. Sewage discharged in neighborhoods flows by gravity into the collection system. As more and more sewage is collected from different service areas, the size of the sewer lines must increase to handle the larger volumes of wastewater. Eventually, these gravity lines reach low points in the collection system where the sewage must be lifted or forced uphill. Currently, the City of Burlington utilizes four lift stations with a maximum capacity of about 4 million gallons per day and an average flow of about 454,187 gallons per day in 2021-2022⁴. These lift stations pump sewage up and over ridges where the sewage can once again flow by gravity the remainder of the distance to the treatment facilities. The City of Burlington has an ongoing program to clean and monitor the collection system. High-pressure washing, chemical treatment for root growth, a Fats, Oils and Grease (FOG) program, and closed-circuit television monitoring program are a few of the tools we use to maintain your collection system and prevent sewer overflows. In the last fiscal year, the City of Burlington sewer collection system transported a total of 3.801 Billion Gallons*⁵ of wastewater (see Table 1). During that same period, the City experienced a total of eight (8) sewer overflows of which only one (1) was reportable and the others seven (7) were not. The reportable sewer overflow occurred on Monday, May 2, 2022, when debris blocked a main line causing flow to back up and out of a manhole, allowing about 400 gallons of untreated wastewater to flow into a tributary of the Little Alamance Creek.

A summary of all sanitary sewer overflows (SSO) can be found in Table 3 on page 4 of this report. A reportable instance is one in which untreated sewage enters a stream or river or enters a ditch or waterway that leads to a stream or river regardless of the quantity, OR any spill that is greater than 1,000 gallons regardless of whether or not it reaches a waterbody. High flows at the treatment plants are sometimes caused by heavy rains or long periods of rainy weather. These high flows are caused by water infiltrating the sewer system. The City is engaged in a continual program to reduce the amount of overflows that result from the infiltration of rainwater. The City also pays close attention to those areas where falling debris (such as a fallen tree or tree limb) could damage above-ground sewer lines and result in a sewage release.

¹ Donnie West provided the number of service connections in 2022

² Donnie West – Collection System ORC updated in 2022

³ Sum of combined DMR flows for fiscal year

⁴ Plants Maintenance Supervisor Report

⁵* To help understand how large one billion is: 1 billion seconds equals 32 years

⁶ Engineering Department provided the data

SUMMARY

In fiscal year 2021-2022 the City of Burlington constructed 10,594⁶ feet of sewer lines. In addition to the recurring annual expenses to maintain the collection system and the wastewater treatment plants, the City completed an upgrade of both treatment plants in 2014. These upgrades included a 3-stage biological nutrient removal (BNR) process at both plants (\$16.6 Million). The BNR process aimed to enhance the removal of total nitrogen and total phosphorus from wastewater using microorganisms under different environmental conditions in the treatment process. Total phosphorus and total nitrogen are the primary causes of cultural eutrophication of surface waters. New tertiary filters at the South Burlington Plant (\$5.6 Million), a new 30" force main at the East Burlington Plant (\$1.1 Million), and 8,350 feet of a new 42" outfall to convey sewage to the East Burlington WWTP (\$5.7 Million) were constructed as well. These modifications help the facilities comply with new nutrient regulations to help protect water quality in Jordan Lake that were scheduled to go into effect in 2019. The Water Resources Department is proud of the performance of our collection system and treatment plants for the past year.

Despite the dedicated efforts of our collection system and wastewater treatment plants staff, it is sometimes difficult to avoid violations of the NPDES permit. Violations or spills are often a result of conditions that are beyond the reasonable control of the operators. Weather and vandalism are two examples that may cause a violation. Our goal is to have no spills or permit violations.

Neither wastewater treatment plant experienced any violation in fiscal year 2021-2022.

We strive to provide the best possible service to our customers and continue to be responsible stewards of our environment and of our financial resources. We also want the public to understand the importance of protecting our precious water resources. We believe providing information is one of the most effective tools to ensure the support needed to meet our goals to protect our environment – now and into the future.

For more information, please contact the Department of Water Resources at (336) 222-5133.

Table 1: Summary of Treated Wastewater Discharges (July 1, 2021 – June 30, 2022)

Month / Year	EBWWTP (Million gallons)	SBWWT (Million gallons)	Combined Total (Million gallons)
Jul - 2021	113.727	200.566	314.293
Aug - 2021	114.484	198.412	312.896
Sep - 2021	106.687	180.056	286.743
Oct - 2021	103.559	179.050	282.609
Nov - 2021	94.536	161.498	256.034
Dec - 2021	96.265	168.339	264.604
Jan - 2022	130.683	217.398	348.081
Feb - 2022	126.962	199.390	326.352
Mar - 2022	161.491	276.630	438.121
Apr - 2022	128.736	207.390	336.126
May - 2022	138.798	215.397	354.195
Jun - 2022	108.225	172.683	280.908
Total	1,424.153	2,376.809	3,800.962
Monthly Average	118.679	198.067	316.747
Daily Average	3.902	6.512	10.414

This table is based on a 365-day fiscal year beginning July 1, 2021 and ending June 30, 2022.

Table 2: Summary of NPDES Permit Violations for both Wastewater Treatment Plants (July 1, 2021– June 30, 2022)

Facilities/NPDES Permit #	Type of Violations	Date	Causes	Enforcement Action	Corrective Action
EBWWTP/NC0023868	No violation	NA	NA	NA	NA
SBWWTP/NC0023876	No violation	NA	NA	NA	NA

Table 3: List of Reportable Sanitary Sewer Overflows (SSO), (July 1, 2020 – June 30, 2022)

Date	Volume Gallons	Location of overflow	Caused by	Environmental Impacts	Actions Taken
5/02/2022	400	Beside 1902 E. Webb Ave.	Debris in line	SSO to tributary of the Little Alamance Creek	Line cleaned with jetter Limed area Followed up with CCTV

The total estimated reportable Sanitary Sewer Overflows for fiscal year 2021-2022 was 400 gallons.