



## City of Clinton: Wastewater Systems Annual Performance Report

January 2021 through December 2021

### I. General Information

Facility/System Name(s): City of Clinton Collection System and Norman H. Larkins Wastewater Treatment Plant

Responsible Entity: Michael Christopher Medlin, Public Works Director / ORC Collection System

Person(s) in Charge: Michael Christopher Medlin, Public Works Director  
Taylor Ray Johnson, Distribution and Collection System Supervisor / Back-Up ORC Collection System  
Blake Raynor, Wastewater Treatment Manager, ORC Wastewater Treatment Plant  
Lisa Osthues, Environmental Programs Manager

Applicable Permit(s): Collection System Permit      WQCS00079  
NPDES Discharge Permit      NC0020117

Clinton Public Works and Utilities Department  
200 W. John St.  
Clinton, NC 28328  
Telephone - (910) 299-4905  
Facsimile - (910) 592-3825

Norman H. Larkins Wastewater Treatment Plant  
123 Mill Branch Road  
Clinton, NC 28328  
Telephone - (910) 299-4908  
Facsimile - (910) 590-2387

## **II. Collection System and Treatment Process Description**

### **A. Collection System**

The City of Clinton maintains approximately 91 miles of wastewater collection lines with 14 major lift stations, 62 simplex lift stations, 1613 manholes, and approximately 3,608 connections. The Collection System is staffed by ten (10) full time personnel, led by the City's state certified Operator in Responsible Charge and the Utilities Supervisor / Back-Up Operator in Responsible Charge. The Collection System staff is responsible for the routine required inspection, maintenance, and cleaning, as well as repair and upgrading of the collection lines, manholes, connections, and simplex lift stations.

The Collection System is permitted by the state and must adhere to state permit requirements. The system's use is regulated by the City's Sewer Use Ordinance, Chapter 22, Article V. Sewers, of the City of Clinton Code of Ordinances. The ordinance includes provisions for domestic and industrial users, as well as restrictions and requirements for treating wastewater prior to disposal in the City's Collection System with devices such as grease traps, or sand filters.

### **B. Wastewater Treatment Plant**

The Collection System discharges to the Norman H. Larkins Wastewater Treatment Plant. The treatment plant is staffed by eleven (10) full time employees. The staff hold multiple state certifications in Wastewater Operations, Maintenance Technology, Collection Systems, and Land Application of Biosolids. The plant is operated and maintained by the Operations staff, including the Chief Wastewater Operator and the Operator in Responsible Charge / Wastewater Treatment Manager, as well as the Environmental Programs Manager / Laboratory Supervisor, an Environmental Programs Assistant / Backup Laboratory Analyst, and a full time Laboratory Analyst. The Operations staff are also responsible for the operation and maintenance of the City's fourteen (14) major duplex lift stations.

The plant is permitted by the state to treat five (5) million gallons of wastewater per day by tertiary biological methods. Following mechanical separation of solids and biological treatment, the treated wastewater is filtered, disinfected, and received by the Williams Old Mill Branch which enters the Great Coharie Creek of the Cape Fear River Basin. Wasted biosolids are aerobically digested and recycled through a contractual land application program which is managed per North Carolina and EPA regulations. The City utilizes a combination of the on-site Wastewater Laboratory and a contract laboratory to monitor the incoming wastewater (influent), in-process water (intermediate) and biosolids (activated sludge), and outgoing water (effluent) routinely to ensure the treatment processes are successful and that the water adheres to state and federal standards. Additionally, the City is a member of the Lower Cape Fear River Program, and up and downstream monitoring is conducted via this program on behalf of the City.

## **III. Pretreatment**

The Environmental Programs Manager and Environmental Programs Assistant administer a state approved Pretreatment Program, which is required for any Publicly Owned Treatment Works (POTW) to accept wastewater from any significant industrial user (SIU). The goals of the Pretreatment Program are to protect the waters of the state by preventing pollutant pass-through of the treatment facility, prevent interference with the wastewater treatment process, promote beneficial use of treated biosolids, and to protect the worker and the environmental and public health. These goals are accomplished through a program of cooperation between the POTW and the industrial users in which the industries maintain wastewater treatment operations on site to reduce the amount of pollution entering the City's collection system and the City's wastewater treatment facility. The POTW helps the industries maintain a state of compliance through the issuance of Industrial User Permits, enforcement response, regular communication, inspections, and sampling.

#### IV. Certifications

##### A. Collection System

For the calendar year of 2021, all current City of Clinton Collection System employees maintained existing certifications and the Utilities Supervisor / Back-Up Operator in Responsible Charge obtained his Collection System Grade II certification.

##### B. Wastewater Treatment

For the calendar year of 2021, current City of Clinton Wastewater Treatment Plant employees maintained existing certifications, and two staff members earned a Biological Wastewater Operator Grade III Certification.

##### C. Laboratory

For the calendar year of 2021, the City of Clinton Wastewater Treatment Plant Laboratory maintained 100% acceptable data during annual proficiency testing and maintained certification for eight pollutant test methods.

#### V. System Maintenance and Improvements

##### A. Collection System

During the 2021 calendar year, Collection System personnel performed routine cleaning of 58,500 ft. of collection lines. The crew has continued to utilize a camera system and a smoke machine which allow for better assessment of conditions within the Collection System. In addition to routine maintenance the following repairs and/or upgrades were made to the system in 2021:

Collection System Repairs/Upgrades in 2021
Manholes: 26 manhole rings and covers replaced
Cleanouts: 12 new cleanouts installed
Connections: 14 new connections added
Camera Assessment: 11,375 feet of sewer lines performed
Duplex (major) Lift Stations Annual Cleaning: All lift stations cleaned and jet-vacuumed
Deer Run, Country Club, and Carter Street Lift Stations: Replaced the dialup alarm system with a web-accessible supervisory control and data acquisition system (SCADA)
Carter Street Lift Station: Replaced float switches; Installed new exhaust fan motor; Replaced thermostat
Sir Clinton Lift Station and Country Club Lift Station: Replaced floats
High School Lift Station: Replaced float and alternating relay

## B. Wastewater Treatment Plant

During the calendar year of 2021, in addition to routine maintenance of the plant and effluent outfall receiving waterways, the following major repairs, replacements or upgrades were made to the WWTP:

Wastewater Treatment Plant Repairs/Upgrades in 2021
Stormwater Station: Elevated all stormwater pump controls on platform for access during flooding
Headworks: Continued rehab of barscreen including full resurfacing; Replaced 90% of existing conduit
Jet Aeration Basin: Repaired four pumps; Installed A/C units on all blowers
Disinfection System: Installed smart valves for chlorine and sulfur dioxide feeds
Tertiary Filters: Replaced anthracite in tertiary filters; Replaced mud well pump; Rebuilt filter #3
Aerobic Digesters: Replaced one aerator with new aerator
Effluent: New auto sampler purchased and installed

## VI. Performance: Summary of Performance for Reporting Period

### A. Collection System Performance

- The City's state issued Collection Systems permit (WQCS00079) was renewed in 2015 and remains effective through October 31, 2023.
- The City of Clinton is routinely working to maintain and improve the efficiency of our Collection System by increasing routine maintenance of lines and lift stations and participating in an ongoing education program in which citizens are instructed in the importance of proper disposal of household waste, including fats, oils, and grease. The City is encouraging its citizens and system users to recycle used cooking oil, avoid the use of 'flushable' wipes, and limit garbage disposal usage. Water/sewer bill inserts were distributed to system users in May of 2021 and flyers were distributed to customers in the City in late 2021. 'Can the Grease' collection cans are available to citizens upon request. Additional information is available on the City's website at [www.cityofclintonnc.com](http://www.cityofclintonnc.com), and multiple informational postings were placed on the City's Facebook page.
- **Sanitary Sewer Overflows (SSOs):** Sanitary sewer overflows may result from a variety of causes: inflow and infiltration due to high water levels; blocked pipes from wipes, rags, roots, and grease accumulation; broken lines from corrosion or construction activity; power or equipment failures at pump and lift stations within the system. Spills/overflows are required to be reported to NCDEQ if the volume is equal to or greater than 1000 gallons on land, or any volume to surface water. The City of Clinton Collection System suffered no reportable SSOs for the calendar year of 2021.

### B. Wastewater Treatment Plant Performance

During the calendar year of 2021, the City of Clinton Norman H. Larkins WWTP treated approximately 1.18 billion gallons of wastewater.

#### Norman H. Larkins Wastewater Treatment Plant Effluent Analyses

The following table summarizes plant performance for the calendar year 2021 in comparison with National Pollutant Discharge Elimination System (NPDES) permitted limits:

Parameter	Limit Interval	Spring / Summer (April 1 to October 31)		Fall / Winter (Jan 1 to March 31 and November 1 to December 31)	
		NPDES Limits	Measured Values; Range or Mean	NPDES Limits	Measured Values; Range or Mean
<b>Flow</b>	Mean Monthly	5.0 MGD	<b>2.6 to 3.6 MGD</b>	5.0 MGD	<b>2.5 to 5.0 MGD</b>
<b>pH</b>	Daily	6.0 to 9.0 S.U.	<b>6.7 to 7.8 S.U.</b>	6.0 to 9.0 S.U.	<b>6.5 to 7.7 S.U.</b>
<b>Residual Chlorine</b>	Daily Maximum	17/50 µg/L	<b>&lt; 15 to 18 µg/L</b>	17/50 µg/L	<b>&lt; 15 to 37.7 µg/L</b>
<b>BOD<sub>5</sub></b>	Mean Monthly	5.0 mg/L	<b>&lt;2.0 to 2.4 mg/L</b>	10.0 mg/L	<b>&lt;2.0 to 4.6 mg/L</b>
<b>BOD<sub>5</sub></b>	Mean Weekly	7.5 mg/L	<b>&lt;2.0 to 6.0 mg/L</b>	15.0 mg/L	<b>&lt;2.0 to 6.0</b>
<b>Ammonia Nitrogen</b>	Mean Monthly	1.0 mg/L	<b>&lt; 1.0 mg/L</b>	2.0 mg/L	<b>&lt; 1.0 to 2.5 mg/L</b>
<b>Ammonia Nitrogen</b>	Mean Weekly	3.0 mg/L	<b>&lt;1 to 1.3 mg/L</b>	6.0 mg/L	<b>&lt;1.0 to 5.4</b>
<b>Total Suspended Residue</b>	Mean Monthly	30.0 mg/L	<b>&lt;2.5 to 7.6 mg/L</b>	30.0 mg/L	<b>3.4 to 8.4 mg/L</b>
<b>Total Suspended Residue</b>	Mean Weekly	45 mg/L	<b>&lt;2.5 to 11.9 mg/L</b>	45 mg/L	<b>&lt;2.5 to 18.4 mg/L</b>
<b>Fecal Coliform</b>	Geometric Mean Monthly	200 mpn/100 mL	<b>18 to 69 mpn/100mL</b>	200 mpn/100 mL	<b>11 to 38 mpn/100mL</b>
<b>Fecal Coliform</b>	Geometric Mean Weekly	400 mpn/100 mL	<b>7 to 144 mpn/100mL</b>	400 mpn/100 mL	<b>5 to 70 mpn/100mL</b>
<b>Dissolved Oxygen</b>	Daily Minimum	6.0 mg/L min.	<b>6.0 to 11.0 mg/L</b>	6.0 mg/L min.	<b>6.1 to 11.4 mg/L</b>
<b>Temperature</b>	Daily	Monitor	<b>18 to 32 °C</b>	Monitor	<b>15 to 24 °C</b>
<b>Conductivity</b>	Daily	Monitor	<b>617 to 1757 µmhos/cm</b>	Monitor	<b>566 to 1733 µmhos/cm</b>
<b>Total Hardness</b>	Quarterly	Monitor	<b>104 to 126 mg/L</b>	Monitor	<b>98 to 124 mg/L</b>
<b>Total Nitrogen</b>	Monthly	Monitor	<b>12.4 to 40.1 mg/L</b>	Monitor	<b>1.0 to 34.4 mg/L</b>
<b>Total Phosphorus</b>	Monthly	Monitor	<b>8.2 to 14.4 mg/L</b>	Monitor	<b>0.6 to 13.7 mg/L</b>
<b>Total Copper</b>	Quarterly	Monitor	<b>0.009 to 0.013 mg/L</b>	Monitor	<b>&lt;0.002 to 0.018 mg/L</b>
<b>Aluminum</b>	Quarterly	Monitor	<b>0.027 to 0.053 mg/L</b>	Monitor	<b>0.011 to 0.019 mg/L</b>
<b>Total Silver</b>	Quarterly	Monitor	<b>&lt; 0.001 mg/L</b>	Monitor	<b>&lt;0.001 mg/L</b>
<b>Total Chloride</b>	Monthly	Monitor	<b>157 to 291 mg/L</b>	Monitor	<b>115 to 381 mg/L</b>
<b>Total Fluoride</b>	Monthly	1800 µg/L	<b>200 to 700 µg/L</b>	1800 µg/L	<b>200 to 500 µg/L</b>

### Norman H. Larkins Wastewater Treatment Plant Non-Compliance Events

The Norman H. Larkins Wastewater Treatment Plant had one non-compliance event for NPDES discharge limits during the 2021 reporting period:

The monthly average for ammonia was exceeded for February of 2021. This was due to heavy rains washing out the microfauna that are required to remove the ammonia from the wastewater. This was reported to the North Carolina Department of Environmental Quality (NCDEQ) as required and the City received a notice of violation and civil penalty.

#### V. Notification

This report has been published to the City of Clinton website's Document Center link at:

[http://www.cityofclintonnc.com/document\\_center/](http://www.cityofclintonnc.com/document_center/)

Paper copies may be obtained by calling the City of Clinton Public Works Department Environmental Programs Manager, Monday-Friday, 7:00 AM to 3:30 PM at (910) 299-4912.

#### VI. Certification

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 system and that those users have been notified of its availability.

Michael Christopher Medlin	Date
Public Works and Utilities Director / ORC Collection System	2/18/22
<u>Signature on file</u>	
Taylor Ray Johnson	Date
Distribution and Collection System Supervisor	2/18/22
<u>Signature on file</u>	
Blake Raynor	Date
Wastewater Treatment Manager / ORC Wastewater Treatment Plant	2/18/22
<u>Signature on file</u>	
Lisa Osthues	Date
Environmental Programs Manager	2/18/22
<u>Signature on file</u>	