



## City of Clinton: Wastewater Systems Annual Performance Report

January 2020 through December 2020

### I. General Information

Facility/System Name: 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 3,594 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) 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 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 the influent of 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 2020, all current City of Clinton Collection System employees maintained existing certifications.

##### B. Wastewater Treatment

For the calendar year of 2020, current City of Clinton Wastewater Treatment Plant employees maintained existing certifications, and two staff members earned a Biological Wastewater Operator Grade II Certification.

##### C. Laboratory

For the calendar year of 2020, 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 2020 calendar year, Collection System personnel performed routine cleaning of 74,752 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 2020:

Collection System Repairs/Upgrades in 2020
Manholes: 1 manhole replaced; 1 ring and 1 cover replaced
Cleanouts: 18 new cleanouts installed
Connections: 9 new connections added
Camera Assessment: 9,722 feet of sewer lines performed
Simplex Lift Stations: 1 new simplex lift station; 5 simplex pumps repaired; 8 simplex pumps replaced
Duplex (major) Lift Stations Annual Cleaning: All lift stations cleaned and jet-vacuumed
Fontana Street Lift Station: Replaced auger motor; Serviced the reducer assembly; Replaced level probe
Carter Street Lift Station: Replaced breakers and starters
Pugh Road Lift Station: Installed phase motor
Country Club Dr. Lift Station: Replaced starters and floats; Rebuilt/repared 1 pump; Replaced 1 pump
Fox Lake Lift Station: Replaced 1 relay; Rebuilt/repared 1 pump
Jefferson Street Lift Station: Rebuilt/repared 1 pump; Replaced 1 pump
Deer Run Lift Station: Replaced capacitors; Breakers replaced; Replaced 1 pump; Installed new basket and chain
High School Lift Station: Replaced hour counter; Replaced alternating relay; Replaced block heater on generator

## B. Wastewater Treatment Plant

During the calendar year of 2020, 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 2020
Acquired new bypass pump for WWTP for use during repairs and extreme weather events
Replaced main circuit breaker for the WWTP
Main Generator: Connected the WWTP main building and laboratory to back-up generator power
Ground Fault Lighting: Repaired faulty ground fault lighting
Headworks: Repaired influent bar screen; Replaced influent bar screen motor; Upgraded bypass bar screen at 'Smithfield Line' to correct flow issues; Repaired/rehabbed influent pump #3; Replaced faulty influent flow meter; Replaced influent pump station transducer
Trickling Filter: Repaired/rehabbed Trickling Filter Pump #2
Intermediate: Repaired/rehabbed 2 pumps;
Jet Aeration Basin: Repaired/rehabbed JAB Pump #13
Disinfection System: Replaced cylinder scales and gas detectors
Tertiary Filters: Installed new air relief valves on both filter backwash pumps; Replaced Anthracite in tertiary filters
Aerobic Digesters: Repaired/rehabbed Aerator A
Final Clarifiers: Rebuilt scrapes on Final Clarifier B
Effluent: Repaired/rehabbed aerator

## 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. Flyers were distributed to areas throughout the City in 2020, and informational pamphlets as well as over 50 'Can the Grease' collection cans were passed out to citizens upon request. The City's Call-Out system was used to notify citizens of problems resulting from the flushing of wipes. 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. The City of Clinton Collection System suffered the following reportable SSOs for the calendar year of 2020:

<i>May 21, 2020</i>
<i>The City of Clinton Collection System suffered an SSO at 609 Northeast Blvd. The cause of the spill was grease in the line as well as torrential rains and flooding throughout the City that overwhelmed our collection system. Over 6.5 inches of rain fell in a short period of time. The SSO was estimated to be 7,500 gallons, with 10% of the discharge entering the Royal Mill Branch. The City responded to the spill with its vacuum truck and removed the grease clog for disposal at the landfill. The area around the manhole was treated with lime. The City distributed fats, oil and grease information to homes and businesses in the area, and the incident was reported to the North Carolina Division of Water Resources as required.</i>
<i>May 28, 2020</i>
<i>The City of Clinton Collection System suffered two SSOs from manholes located at or near 900 College Street and 609 Northeast Blvd. Both overflows resulted in discharges of approximately 114,000 gallons of stormwater and wastewater to the Cat Tail Branch and the Royal Mill Branch in the Cape Fear River Basin. These spills were due to torrential rains and flooding throughout the City that overwhelmed our collection system. The City responded immediately to the spills with its vacuum truck. The areas around the manholes were treated with lime. The incidents were reported to the North Carolina Division of Water Resources as required, and a press release and public notice were issued.</i>
<i>May 29, 2020</i>
<i>A spill occurred at Manhole #546 near 210 Fisher Drive. The volume was approximately 16,000 gallons of wastewater and stormwater, with approximately 800 gallons reaching the Cat Tail Branch. The spill was due to torrential rains and flooding throughout the City that overwhelmed our collection system. The City responded immediately to the spill with its vacuum truck. The area around the manhole was treated with lime. The incidents were reported to the North Carolina Division of Water Resources as required.</i>
<i>August 28, 2020</i>
<i>A spill occurred at the Clinton Country Club lift station. The volume was approximately 8,500 gallons of wastewater, with none of the spill reaching surface waters. The spill was due to multiple pump failures and a hose failure. The City replaced one pump and repaired the other. The incident was reported to the North Carolina Division of Water Resources as required.</i>

## B. Wastewater Treatment Plant Performance

During the calendar year of 2020, the City of Clinton Norman H. Larkins WWTP treated approximately 1.208 billion gallons of wastewater.

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

The following table summarizes plant performance for the calendar year 2020 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>3.2 MGD</b>	5.0 MGD	<b>3.5 MGD</b>
<b>pH</b>	Daily	6.0 to 9.0 S.U.	<b>6.5 to 7.7 S.U.</b>	6.0 to 9.0 S.U.	<b>6.5 to 7.6 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 33.3 µg/L</b>
<b>BOD<sub>5</sub></b>	Mean Monthly	5.0 mg/L	<b>4.1 mg/L</b>	10.0 mg/L	<b>5.1 mg/L</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 mg/L</b>
<b>Total Suspended Residue</b>	Mean Monthly	30.0 mg/L	<b>8.2 mg/L</b>	30.0 mg/L	<b>9.2 mg/L</b>
<b>Fecal Coliform</b>	Geometric Mean Monthly	200 mpn/ 100 mL	<b>22 to 100 mpn/100mL</b>	200 mpn/ 100 mL	<b>16 to 89 mpn/100mL</b>
<b>Dissolved Oxygen</b>	Daily Minimum	6.0 mg/L min.	<b>6.0 to 11.8 mg/L</b>	6.0 mg/L min.	<b>6.1 to 11.4 mg/L</b>
<b>Temperature</b>	Daily	Monitor	<b>22 to 32 °C</b>	Monitor	<b>7 to 27 °C</b>
<b>Conductivity</b>	Daily	Monitor	<b>737 to 1915 µmhos/cm</b>	Monitor	<b>695 to 1653 µmhos/cm</b>
<b>Total Hardness</b>	Quarterly	Monitor	<b>70 to 84 mg/L</b>	Monitor	<b>68 to 125 mg/L</b>
<b>Total Nitrogen</b>	Monthly	Monitor	<b>0.7 to 29.6 mg/L</b>	Monitor	<b>&lt; 0.5 to 28.4 mg/L</b>
<b>Total Phosphorus</b>	Monthly	Monitor	<b>4.9 to 15.5 mg/L</b>	Monitor	<b>1.4 to 12.2 mg/L</b>
<b>Total Copper</b>	Quarterly	Monitor	<b>0.013 mg/L</b>	Monitor	<b>0.011 mg/L</b>
<b>Aluminum</b>	Quarterly	Monitor	<b>0.014 mg/L</b>	Monitor	<b>0.015 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>135 to 421 mg/L</b>	Monitor	<b>189 to 235 mg/L</b>
<b>Total Fluoride</b>	Monthly	1800 µg/L	<b>300 µg/L</b>	1800 µg/L	<b>500 µg/L</b>

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

The Norman H. Larkins Wastewater Treatment Plant had four non-compliance events for NPDES discharge limits during the 2020 reporting period:

For the week of January 25, 2020, the plant was out of compliance for total suspended solids (TSS). This occurred during a maintenance event and was reported to the North Carolina Department of Environmental Quality (NCDEQ) as required and the City received a notice of violation and civil penalty.

For the first week of May 2020, the limits for TSS and biochemical oxygen demand (BOD<sub>5</sub>) were exceeded. The elevated BOD<sub>5</sub> during the first week of May 2020, also resulted in the exceedance of the monthly average limit for BOD<sub>5</sub>. The limit violations occurred due to one of the plant's two final clarifiers being offline for repairs when a severe weather event occurred. The exceedances were reported to the North Carolina Department of Environmental Quality (NCDEQ) as required, and the City received a notice of violation and civil penalty.

The wastewater plant suffered two spills in 2020. The following table summarizes those events:

<i>May 28, 2020</i>
<i>Due to torrential rains and flooding during tropical storms, The Norman H. Larkins Water Pollution Control Facility suffered an uncontrolled discharge of approximately 30,000 gallons of untreated wastewater from one of the three influent (incoming) lines of the plant. The discharge entered the Williams Old Mill Branch in the Cape Fear River Basin. City staff were onsite during and after the storm, continuously responding to the situation. The system returned to normal operations by 11:00 PM the same evening. The incident was reported to the North Carolina Division of Water Resources as required, and a press release and public notice were issued.</i>
<i>August 28, 2020</i>
<i>Due to torrential rains and flooding, the Norman H. Larkins Water Pollution Control Facility suffered an uncontrolled discharge of approximately 8,000 gallons of partially treated wastewater from the secondary treatment portion of the plant. The discharge entered the Williams Old Mill Branch in the Cape Fear River Basin. City staff were onsite during and after the storm, continuously responding to the situation. Every effort was made to contain the spill waters and reduce any impact to the receiving stream. The system returned to normal operations by 5:30 PM the same evening. The incident was reported to the North Carolina Division of Water Resources as required, and a press release was issued.</i>

## 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

2/24/21

City of Clinton

Signature on File

Taylor Ray Johnson

Date

Distribution and Collection System Supervisor

2/24/21

City of Clinton

Signature on File

Blake Raynor

Date

Wastewater Treatment Manager / ORC Wastewater Treatment Plant

3/1/21

City of Clinton

Signature on File

Lisa Osthues

Date

Environmental Programs Manager

3/1/21

City of Clinton

Signature on File