



City of Clinton: Wastewater Systems Annual Performance Report

January 2017 through December 2017

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 Manager / Utilities Superintendent / ORC Collection System

Person(s) in Charge: Neil D. Carroll, Wastewater Treatment Manager, ORC Wastewater Treatment Plant
Michael Christopher Medlin, Public Works Manager / Utilities Superintendent / ORC Collection System
Russell Byrd, City Engineer / Department Head Water and Wastewater Treatment Plants
Lisa Osthues, Environmental Programs Manager

Applicable Permit(s): Collection System Permit WQCS00079
NPDES Discharge Permit NC0020117
Land Application Permit (through July 1, 2017) WQ0002890

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 lift major stations, 61 simplex lift stations, 1613 manholes, and approximately 3,568 connections. The Collection System is staffed by ten (10) full time personnel, led by the City's state certified Utilities Superintendent and 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 ten (10) full time employees: four (4) certified full time Wastewater Operators, a Certified Maintenance Technologist, an Environmental Programs Assistant / Backup Laboratory Analyst, a Certified Laboratory Analyst, the Chief Wastewater Operator, the Environmental Programs Manager / Laboratory Supervisor, and the Operator in Responsible Charge / Wastewater Treatment Manager. The Operator staff and the Utility Maintenance Tech 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 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. In July of 2017, the City began utilizing a permitted land application contractor for management of the biosolids. 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 POTW to accept wastewater from any significant industrial user. 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 in situ to reduce the amount of pollution in the influent of the 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 2017, the City of Clinton Collection System employees maintained all existing certifications.

B. Wastewater Treatment

For the calendar year of 2017, the City of Clinton Wastewater Treatment Plant employees maintained existing certifications or earned the following: Two staff members earned Collections Systems Operator Grade IV Certifications.

C. Laboratory

For the calendar year of 2017, the City of Clinton Wastewater Treatment Plant Laboratory successfully passed all annual proficiency testing and maintained certification for thirteen (13) pollutant test methods. The WWTP Laboratory was recognized by Environmental Research Associates during the 2017 calendar year as a Laboratory of Excellence for achieving 100% acceptable data in proficiency testing.

V. System Maintenance and Improvements**A. Collection System**

During the 2017 calendar year, Collection System personnel performed routine cleaning of 64,267 ft. of collection lines. The crew has continued to utilize a camera system which allows 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 2017:

Collection System Repairs/Upgrades in 2017
Collection Line Replacement: 160 feet
Simplex Pump Stations: 3 pumps replaced; upgraded to E-One grinder pumps
Manholes: 3 manhole rings and covers replaced
Cleanouts: 18 new cleanouts installed
Connections: 10 new connections added
Camera Assessment: > 1000 feet of main performed
Duplex (major) Lift Stations Annual Cleaning: All lift stations cleaned and jet-vacuumed
Auto-dialer Alarms: Replaced at Ellis Street, Eliza Lane, Pugh Road, Jefferson Street and Fontana Street Lift Stations
Floats: Repaired or replaced for the High School and Fox Lake Lift Stations
Electrical Repairs: Performed for Jefferson Street, Pugh Road, Eliza Lane and Carter Street Lift Stations
Generator Repairs: Performed for Eliza Lane at Carter Street Lift Stations
Odor Control: Purchased and installed one additional collection line vent scrubber; purchased 4 manhole insert odor scrubbers

B. Wastewater Treatment Plant

During the calendar year of 2017, 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 2017
Jet Aeration Basin Pumps and Blowers: Rebuilt 2 pumps; rebuilt impeller on 1 pump; repaired 2 pumps, repaired blower #4, installed new 6" flanged plug valve
Mudwell: Repaired 2 pumps
SCADA System Additions: Jet Aeration Basin blower control panel and lime tower controls
Aerated Grit Chamber: Installed 1 new blower
Trickle Filter: Installed 2 new 16" plug valves
Primary Clarifier A: Replaced 480V 3-phase contactor; installed control box pedestal
Power Supply for Influent and Aerobic Digestors: Installed new 600 amp disconnect
Tertiary Filters: Repaired washwater pump motor; replaced limit switches
Aerobic Digester: Repaired valve extension; replaced PVC conduit around aerator wall
Sludge Drying Beds: Installed 4 new 8" Eccentric plug valves
Lime Tower: Installed 1 new feed pump
Portable Sump Pumps: Purchased 8 new portable pumps for use throughout the plant
Bypass Pump: Purchased portable 6" Dri-Prime diesel pump and hoses for use in emergency response
Warranty Services: Extended 6-year warranty for new drives for Influent and Intermediate flows

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, in particular. Flyers were distributed to areas throughout the City in 2017, and additional information is available on the City's website at www.cityofclintonnc.com.

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 rags, roots, and grease accumulation; broken lines from corrosion or construction activity; power failures at pump and lift stations within the system. The City of Clinton Collection System suffered no reportable SSOs for the calendar year of 2017.

B. Wastewater Treatment Plant Performance

During the calendar year of 2017, the City of Clinton Norman H. Larkins WWTP treated approximately 0.949 billion gallons of wastewater.

NORMAN H. LARKINS WASTEWATER TREATMENT PLANT EFFLUENT ANALYSIS

The following table summarizes plant performance for the calendar year 2017 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
Flow	Mean Monthly	5.0 MGD	2.5 MGD	5.0 MGD	2.7 MGD
pH	Daily	6.0 to 9.0 S.U.	6.9 to 7.7 S.U.	6.0 to 9.0 S.U.	6.8 to 7.7 S.U.
Residual Chlorine	Daily Maximum	17.0/50.0 µg/L	29.3 µg/L	17.0/50.0 µg/L	24.9 µg/L
BOD₅	Mean Monthly	5.0 mg/L	3.78 mg/L	10.0 mg/L	4.53 mg/L
Ammonia Nitrogen	Mean Monthly	1.0 mg/L	<1.0 mg/L	2.0 mg/L	<1.0 mg/L
Total Suspended Residue	Mean Monthly	30.0 mg/L	8.17 mg/L	30.0 mg/L	3.7 mg/L
Fecal Coliform	Geometric Mean Monthly	200 cfu/ 100 mL	79.7 cfu/100 mL	200 cfu/ 100 mL	26.45 cfu/100 mL
Dissolved Oxygen	Daily Minimum	6.0 mg/L min.	6.9 to 7.7 mg/L	6.0 mg/L min.	6.0 to 9.9 mg/L
Temperature	Daily	Monitor	19.5 to 31.5°C	Monitor	14.7 to 25.4 °C
Conductivity	Daily	Monitor	900 to 1787 µmhos/cm	Monitor	1034 to 1959 µmhos/cm
Total Cyanide	Quarterly	Monitor	< 5 µg/L	Monitor	<5 µg/L
Total Nitrogen	Monthly	Monitor	19.6 to 26.5 mg/L	Monitor	16.7 to 35.5 mg/L
Total Phosphorus	Monthly	Monitor	9.9 to 15.4 mg/L	Monitor	10.5 to 22.2 mg/L
Total Copper	Quarterly	Monitor	5 µg/L	Monitor	5 to 7 µg/L
Total Zinc	Quarterly	Monitor	27 to 49 µg/L	Monitor	3 to 3.8 µg/L
Total Mercury(LL)	Quarterly	Monitor	0.741 to 0.876 ng/L	Monitor	<0.5 to 1.21 ng/L
Total Lead	Monthly	Monitor	<10 µg/L	Monitor	<10 µg/L

The Norman H. Larkins Wastewater Treatment Plant had five (5) non-compliance events for the 2017 reporting period. All were effluent exceedances. These events were reported to the North Carolina Department of Environmental Quality (NCDEQ) as required. The POTW received one (1) notice of violations and a monetary penalty for the non-compliance events occurring in the month of April 2017.

Week of April 16 th – 20 th 2017: Due to heavy rains and severe weather, the weekly limit for Biochemical Oxygen Demand was exceeded.
Week of April 23 rd – 27 th 2017: The POTW experienced an excessive amount of rain during the third and fourth week in April and the Total Suspended Solids limit for the week was exceeded.
Week of August 14 th -19 th 2017: During the 3 rd week of August, 2017, the Clinton WWTP experienced high fecal coliform values due to a malfunctioning Chlorine regulator valve feeding insufficient disinfectant. The regulator was disassembled, cleaned, and put back into operation. Following the service to the valve, fecal coliform growth returned to compliance.
Week of September 11 th – 15 th 2017: The City was non-compliant for fecal coliform for the week of September 11 th . This was due to a malfunctioning Chlorine regulator valve feeding insufficient disinfectant. The regulator was disassembled and repaired. Following the repair, fecal coliform growth returned to compliance.
Week of December 25 th – 30 th 2017: Due to a failure of a Chlorine cylinder to deliver adequate treatment chemical, the City of Clinton WWTP exceeded the weekly geometric mean limit for effluent fecal coliform growth. The cylinder was replaced and fecal coliform growth returned to compliance.

V. Notification

This report has been published to the City of Clinton website’s Document Center link at: http://www.cityofclintonnc.com/document_center/index.php#revize_document_center_rz104

Paper copies may be obtained by visiting the City of Clinton Public Works Department, at 200 John Street, Clinton, NC, Monday-Friday, 7:00 AM to 3:30 PM, or by calling (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.

Russell Byrd

Date

City Engineer / Department Head Water and Wastewater Treatment Plants

City of Clinton



3/8/17

Neil Carroll

Date

Wastewater Treatment Manager / ORC Wastewater Treatment Plant

City of Clinton




3/7/2018

Michael Christopher Medlin

Date

Public Works Manager / Utilities Superintendent / ORC Collection System

City of Clinton



3/7/18

Lisa Osthues

Date

Environmental Programs Manager

City of Clinton



3/7/18