



*Town of Liberty, NC
Wastewater Treatment Plant
and
Collection System
2018 Annual Report*

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I. General Information

Name of Regulated Facility

Town of Liberty

The Town of Liberty is permitted through the State of North Carolina to operate a spray irrigation wastewater treatment facility and operate the wastewater collection system.

Responsible Persons

Elix T. Fike is the treatment plant operator responsible in charge (ORC).

Kevin Coble is the collection system operator responsible in charge (ORC).

William Doerfer, Town Manager is the responsible person for the Town of Liberty facilities and can be contacted at (336) 622-4276.

Permit Number

Wastewater Treatment Facility Permit Number: WQ0003090

Wastewater Collection System Permit Number: WQCS00280.

The wastewater treatment facility is a spray irrigation system located at 7178 East Highfill Avenue. The treatment process consists of a manual bar screen, a lagoon, chemical treatment, and effluent pump station. The Town is permitted for 550,000 gallons per day of sewage. The sewage enters the plant and goes through the bar screen which removes all solids. The solids are removed and disposed of by Allied Waste. The flow then proceeds to a three (3) pump influent station that pumps the sewage to the lagoon. The lagoon is a natural occurrence system that separates the remaining solids from the liquid. The solids settle to the bottom of the lagoon with the water staying to the top. After a 45 day detention time, the water is then treated with chlorine to remove all fecal coliform bacteria. The next process is to spray the effluent onto the spray fields. We maintain one hundred eighty (180) acres of spray field. The spray fields are broken down into eight (8) zones. The Town of Liberty contracts the cutting and removal of the fields for hay.

The Town of Liberty collection system consists of approximately 25 miles of sewer lines. The size amounts vary in size from four (4") inch to twelve (12") inch in diameter. The collection system also consists of eight (8) lift stations that carry the wastewater to the treatment facility. Operators make daily checks on the outfall lines and lift stations. The public works crew along with contracted maintenance is responsible for the mowing and clearing of the outfall lines for easy access in case of any emergencies.

II. Performance

The Town had a Compliance Evaluation Inspection of the Wastewater Treatment Plant on August 6, 2018. The inspection mostly reflects compliance with Permit No. WQ0003090; however, the following items were noted to require attention:

1. The current permit is set to expire on April 30, 2019. Permit condition I. (2.) requires the Permittee to request renewal, on official Division forms, no later than six months prior to expiration. Please submit a permit renewal request no later than October 1, 2018.
 - a. The Town has submitted and is currently working with DWR permitting office to complete our application for renewal of our permit set to expire on April 30, 2019.
2. The well supplying water to the on-site restroom facilities is within the compliance boundary, and fails to meet setbacks to storage and treatment units as required by Permit Condition II. (11) (a.). Permit condition II (9.) states in accordance with 15A NCAC 02L .0107(d), no wells, excluding Division approved monitoring wells shall be constructed within the compliance boundary except as provided for in 15A NCAC 02L .0107(g). This office is in discussion with permit staff in Raleigh to determine what potential resolutions may be available related to these matters to achieve compliance with permit requirements.
 - a. The Town and Compliance staff have worked with the permitting office as part of the permit renewal to revise the compliance boundary in order to bring the well into compliance with all permit conditions and 15A NCAC 02L .0107(d).
3. The treatment units (specifically the bar screen & influent lift station) do not meet the setback of 50 feet to any property line as required in Permit Condition II. (11) (b.).
 - a. We are working with the Compliance and Permitting Staff on this issue.
4. Several overhanging tree branches were observed around the perimeter of the irrigation fields, increasing the potential that an evenly distributed spray pattern may be impeded. Permit Condition (III). (3.) states a suitable year-round vegetative cover shall be maintained at all times, such that crop health is optimized, allows for even distribution of effluent and inspection of the irrigation system. Also, Permit Condition III. (4.) states adequate measures shall be taken to prevent effluent ponding in or runoff from the irrigation site. Adequately maintain the surrounding vegetation, as well as the on-site vegetation to promote even distribution of effluent, and prevent ponding and/or runoff.
 - a. This issue has been resolved.
5. The 2017 Standard Soils Fertility Analysis (SSFA) results contained a lime recommendation of 0.5 tons/acre be applied to Field 23A. At the time of this inspection, the ORC stated that there had not been any lime amendments performed. Permit Condition III (3.) states a suitable year-round vegetative cover shall be maintained at all times, such that crop health is maintained. Adherence to recommended soil amendments, indicated by SSFA results, are integral in promoting optimum vegetative health.
 - a. The ORC has made arrangements for the application of lime in accordance with the SSFA results be applied as soon as possible.

6. Preliminary calibration measurements indicate application rates measured at the impact sprinkler heads (approximately 8.25 gpm) exceed design application rates (7.1 gpm). This discrepancy suggests the potential for runoff and/or over-application exists. Verify the total number of impact sprinklers in each zone and gallons per minute applied per impact sprinkler to determine the accuracy of the reported total gallons applied per event. Please perform the verification and complete calibration as soon as possible. Permit Condition III. (6.) states that all irrigation equipment shall be tested and calibrated at least once per permit cycle. Calibration of all irrigation equipment shall be performed no later than April 30, 2019.
 - a. This issue is being resolved and compliance will be achieved by the deadline.
7. It was discovered during this inspection, that water levels in the monitoring wells are being erroneously reported. To accurately report water levels for each monitoring well, the depth to water in each well, measured from the surveyed point on the top of the casing shall be reported per Attachment C. As currently explained, the depth of water in the monitoring well (water level minus total well depth) has been inaccurately reported as a water level.
 - a. This issue has been resolved.
8. Vegetation was observed growing on the liner of the facultative lagoon. If vegetation is allowed to continue to grow, roots could penetrate the liner compromising the liner's integrity. It is strongly recommended that the vegetative growth on the lagoon liner be prevented in order to reduce the possibility of adverse impact to the liner.
 - a. This issue has been resolved.
9. A significant amount of Johnson grass was observed growing in the irrigation fields. Because Johnson grass is considered a weed, it does not currently have an accepted realistic nitrogen rate in North Carolina. If Johnson grass is allowed to become the predominance crop in the irrigation fields, application rates will need to be re-evaluated to ensure appropriate application rates are utilized. This could result in the facility becoming nutrient limited as opposed to hydraulically limited, necessitating the need for additional irrigation area. The current accepted plant available nitrogen (PAN) rate is based on fescue being the target crop.
 - a. We have been taking measures to further limit the growth and spread of Johnson grass through various measures and will continue to work towards eradication.

All items continue to be monitored by the ORC.

It is our goal to continue to find ways to improve the operations of the Wastewater Treatment Facility and Collection System as we go forward.

Permit Limit Violations 2018

| Month | Violation |
|-----------------|------------------|
| January | NONE |
| February | NONE |
| March | NONE |
| April | NONE |
| May | NONE |

| | |
|------------------|------|
| June | NONE |
| July | NONE |
| August | NONE |
| September | NONE |
| October | NONE |
| November | NONE |
| December | NONE |

Monitoring and Reporting Violations

| | |
|------------------|---|
| Violation | Corrective Measures. All measures have been met. |
| None | N/A |
| None | N/A |

Overflows at the Wastewater Treatment Plant

| Date | Amount (gallon) | Cause |
|------------------|------------------------|--|
| 12/28-12/31/2018 | 516,000* | I/I due to rainfall of 1.6" in 1 day |
| 12/20-12/24/2018 | 837,000* | I/I due to rainfall of 2.3" in 1 day |
| 12/20/2018 | 10,800* | I/I due to rainfall of 1.8" in 1 day |
| 12/10-12/18/2018 | 1,212,000* | I/I due to rainfall of 0.7" and snow of 10" in 1 day |
| 12/10/2018 | unknown | I/I due to rainfall of 0.7" and snow of 10" in 1 day |
| 11/15-11/18/2018 | 1,222,650* | I/I due to rainfall of 1.7" in 1 day |
| 11/5/2018 | 36,000* | I/I due to rainfall of 2.5" in 1 day |
| 9/17/2018 | 342* | I/I due to rainfall of 6.5" in 1 day |
| 8/12/2018 | 300* | I/I due to rainfall of 3.5" in 1 day |
| 8/12/2018 | 600* | I/I due to rainfall of 3.5" in 1 day |
| 1/30/2018 | 400* | pump failure |

***This spill spanned 12/28/2018 - 01/07/2019 - estimated gallons spilled in 2018 only at 100 gallons per minute for 86 hours.**

Overflows in the Collection System

| Date | Amount (gallons) | Location | Cause |
|-------------|-------------------------|------------------------------------|------------------------------------|
| 1/28/2018 | 600 | Kinro Rd Manhole #500B | I/I |
| 2/4/2018 | 205 | Kinro Rd Manhole #500B | I/I |
| 8/6/2018 | 4,260 | Kinro Lift Station | Pipe Failure (Break) |
| 9/4/2018 | 600 | Newberry outfall Manhole #100 | Roots |
| 9/16/2018 | 10,500 | W. Kime Ave LS Manhole #400 | I/I and severe natural condition |
| 9/16/2018 | 10,500 | W. Kime Ave Manhole #401 | I/I and severe natural condition |
| 9/16/2018 | 28,560 | Johnson St LS Manhole #301 | I/I and severe natural condition |
| 9/16/2018 | 25,500 | Starmount Ave Outfall Manhole #601 | I/I and severe natural condition |
| 9/16/2018 | 21,600 | E. Lowe Ave Manhole #506A | I/I and severe natural condition |
| 9/16/2018 | 13,680 | Kinro Rd Manhole #500B | I/I and severe natural condition |
| 9/17/2018 | 1,800 | E. Butler Ave Manhole #23R | Roots and severe natural condition |
| 9/17/2018 | 2,400 | E. Brookwood Ave Manhole #12 | I/I and severe natural condition |
| 9/17/2018 | 2,400 | E. Brookwood Ave Manhole #15 | I/I and severe natural condition |
| 10/11/2018 | 900 | Kinro Rd Manhole #500B | I/I and severe natural condition |
| 11/5/2018 | 900 | E. Lowe Ave Manhole #506A | I/I |
| 11/5/2018 | 1,200 | Kinro Rd Manhole #500B | I/I |
| 11/5/2018 | 1,200 | W. Kime Ave Manhole #401 | I/I |
| 11/5/2018 | 1,200 | W. Kime Ave LS Manhole #400 | I/I |
| 11/5/2018 | 1,200 | Johnson St LS Manhole #300 | I/I |
| 11/5/2018 | 2,400 | Starmount Ave outfall Manhole #601 | I/I |
| 11/12/2018 | 8,400 | E. Lowe Ave Manhole #506A | I/I |
| 11/12/2018 | 4,800 | Kinro Rd Manhole #500B | I/I |
| 11/12/2018 | 4,800 | Starmount Ave outfall Manhole #601 | I/I |
| 11/12/2018 | 3,780 | W. Kime Ave Manhole #401 | I/I |

| | | | |
|------------|--------|------------------------------------|-----|
| 11/12/2018 | 4,830 | W. Kime Ave LS Manhole #400 | I/I |
| 11/12/2018 | 1,350 | Johnson St LS Manhole #300 | I/I |
| 11/15/2018 | 1,560 | Kinro Rd Manhole #500B | I/I |
| 11/15/2018 | 3,600 | Starmount Ave outfall Manhole #601 | I/I |
| 11/15/2018 | 720 | E.Lowe Ave Manhole #506A | I/I |
| 12/14/2018 | 4,200 | Kinro Rd Manhole #500B | I/I |
| 12/20/2018 | 7,500 | E.Lowe Ave Manhole #506A | I/I |
| 12/20/2018 | 12,000 | Kinro Rd Manhole #500B | I/I |
| 12/20/2018 | 2,160 | W.Kime Ave Manhole #401 | I/I |
| 12/20/2018 | 4,050 | W.Kime Ave LS Manhole #400 | I/I |
| 12/28/2018 | 2,880 | Kinro Rd Manhole #500B | I/I |
| 12/28/2018 | 975 | E.Lowe Ave Manhole #506A | I/I |
| 12/28/2018 | 600 | W.Kime Ave LS Manhole #400 | I/I |
| 12/28/2018 | 600 | W.Kime Ave Manhole #401 | I/I |

Description of Corrective Measures

The Town of Liberty has worked hard to resolve the wastewater spills at the treatment plant and in the collection system. The Kinro Lift Station and the Kime Street grids have been the focus of smoke testing in previous years due to the significant overflows at these locations.

The Town has experienced significant problems this past year related to Hurricane Florence and Tropical Storm Michael that hit us within one month of each other. In addition, this past year has seen more than twice the amount of rainfall we normally see on an annual basis.

We have submitted a very competitive grant application for \$2M in funding from the Division of Water Infrastructure through the CDBG-I program. In addition, we have been awarded a \$100,000 grant from the Golden LEAF Foundation to complete a comprehensive inflow and infiltration study throughout our collection system in order to identify the worst affected lines.

We have been working with the Environmental Finance Center (EFCN) through the UNC School of Government to evaluate the financial health of the Liberty Enterprise funds, as well as conduct a comprehensive rate analysis. The Water and Sewer funds are in great shape. We have the capacity and ability to fund small repairs, as well as the capacity to seek grant and low-interest loan funding to complete larger projects.

Over the next year the Town will be rehabilitating and / or replacing as much sewer line as possible and we will continue to seek funding sources that will not burden the ratepayers.

The Town of Liberty is committed to providing sustainable and affordable wastewater collection and treatment services that contribute to the enhancement and livability of the Town residents and water and sewer ratepayers. The service we provide will continue to support the mission.

Liberty: A Great Place to Live

III. Notification

The Town of Liberty will add a notation on the next water bill about the availability of this report. The report will be at Liberty Town Hall for viewing at 239 South Fayetteville St.

The report will also be posted on the Town Website at <http://www.liberty-nc.com>, under Departments, Public Works, Wastewater Department.

IV. Certification

2018 Annual Report Certification Form

System Name: Town of Liberty

Wastewater Permit # WQ0003090 **Collection Permit #** WQCS00280

Report Year: 2018 **Population Served:** 2,665

The wastewater system operator named above hereby confirms that all provisions under the House Bill 1160 requiring the development of, distribution of, and notification of an annual report have been executed. Further, the system operator certifies the information contained in the report is correct and consistent with the compliance monitoring data previously submitted to the primacy agency by their NC certified laboratory.

Certified by: **Name:** William Doerfer **Title:** Town Manager

Signature:  _____

Phone #: (336) 622-4276 **Date:** February 26, 2019