

## **I. General Information**

### **Name of Regulated Entity and Responsible Person**

City of Charlotte  
Angela Lee, Director  
Charlotte Water (CLTWater)  
Administration Division  
4222 Westmont Drive  
Charlotte, NC 28217  
704-336-4407

### **Applicable Permits**

There are seven wastewater treatment plants (WWTP) owned and operated by Charlotte Water (CLTWater). Below is a list of these facilities and their applicable NPDES (National Pollutant Discharge Elimination System) permit number. Included with the list of facilities is the name of the Operator in Responsible Charge (ORC) at the facilities and the site telephone numbers.

<b>WWTP</b>	<b>NPDES Permit Number</b>	<b>ORC</b>	<b>Phone</b>
Irwin Creek WWTP	NC0024945	Michael Lingerfelt	704-336-2572
Mallard Creek WRF	NC0030210	Henry Eudy	704-336-1024
McAlpine Creek WWMF	NC0024970	Sandy Kim Neely	704-542-0736
McDowell Creek WWTP	NC0036277	Darrell DeWitt	704-875-6443
Sugar Creek WWTP	NC0024937	William Allen	704-432-2510
Ashe Plantation WWTP	NC0065749	Jeremy Nance	704-634-3389
Oxford Glen WWTP	NC0063584	Jeremy Nance	704-634-3389

In addition to those seven plants, CLTWater sends wastewater to the Rocky River Regional Wastewater Treatment Plant through an agreement with The Water and Sewer Authority of Cabarrus County (WSACC). CLTWater also accepts flow from Union County to McAlpine Creek WWMF.

<b>WW COLLECTION</b>	<b>NCDWQ Permit Number</b>	<b>ORC</b>	<b>Phone</b>
4100 W. Tyvola Rd.	WQCS00001	Steven Wroblewski	704-432-2748



# WASTEWATER PERFORMANCE REPORT



JULY 1, 2017 - JUNE 30, 2018

CHARLOTTE  
WATER



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4222 Westmont Drive Charlotte, NC 28217

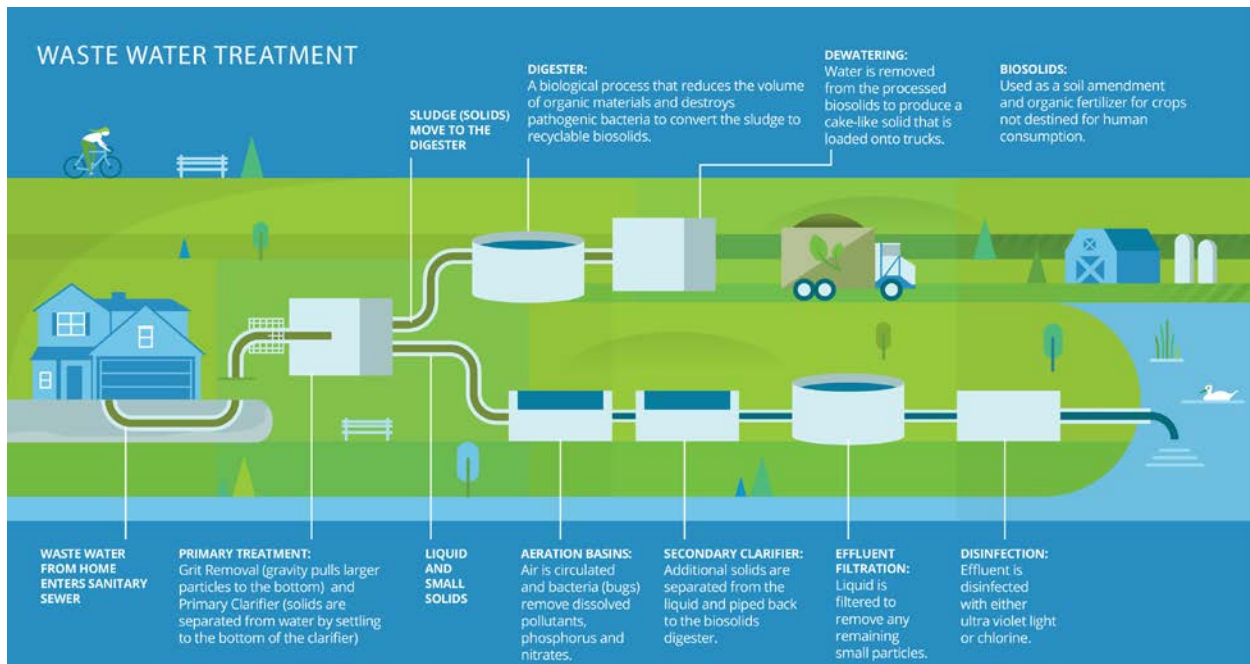
## **Description of collection and treatment systems**

Charlotte Water (CLTWater) collects wastewater from approximately 260,578 households and businesses throughout the county. Wastewater is collected and directed (via gravity flow supported by sewage lift stations) to one of seven CLTWater wastewater treatment plants or the Rocky River Regional Plant (owned and operated by the Water and Sewer Authority of Cabarrus County) where it is treated. An average of 78.1 million gallons of wastewater is treated and discharged each day from CLTWater plants. CLTWater contributes an average of 3.98 million gallons a day (MGD) to the Rocky River Plant. CLTWater also treats roughly 1.97 million gallons (part of the 79 mgd) from Union County at CLTWater's McAlpine Creek Plant.

More than 300 of CLTWater's 958 employees work to maintain 4,331 miles of collection pipelines and 81 wastewater lift stations throughout the county. The gravity wastewater pipes in this system range in size from 8 inches in diameter to 78 inches in diameter.

Each of CLTWater's wastewater treatment plants applies primary, secondary and advanced treatment to the waste stream. Large solid particles and inorganic materials are removed by screening and settling. The wastewater is treated biologically to remove dissolved pollutants. Disinfection reduces bacterial and pathogenic materials. Finally, the waste stream passes through granular filters to remove very small particles that may not have been removed through the settling process. The treated water is released to the nearby creek.





### 1. **Primary Treatment**

Solid particles & objects are captured by screens, grit chambers, and primary clarifiers.

### 2. **Aeration/Secondary Treatment**

Wastewater is aerated to support growth of microorganisms that remove harmful pollutants.

### 3. **Clarification**

Solids and microorganisms settle out in large basins.

### 4. **Advanced Treatment**

Wastewater flows through granular filters to remove fine particles. Nutrient levels are reduced at McDowell and McAlpine Creek Wastewater Treatment Plants.

### 5. **Disinfection**

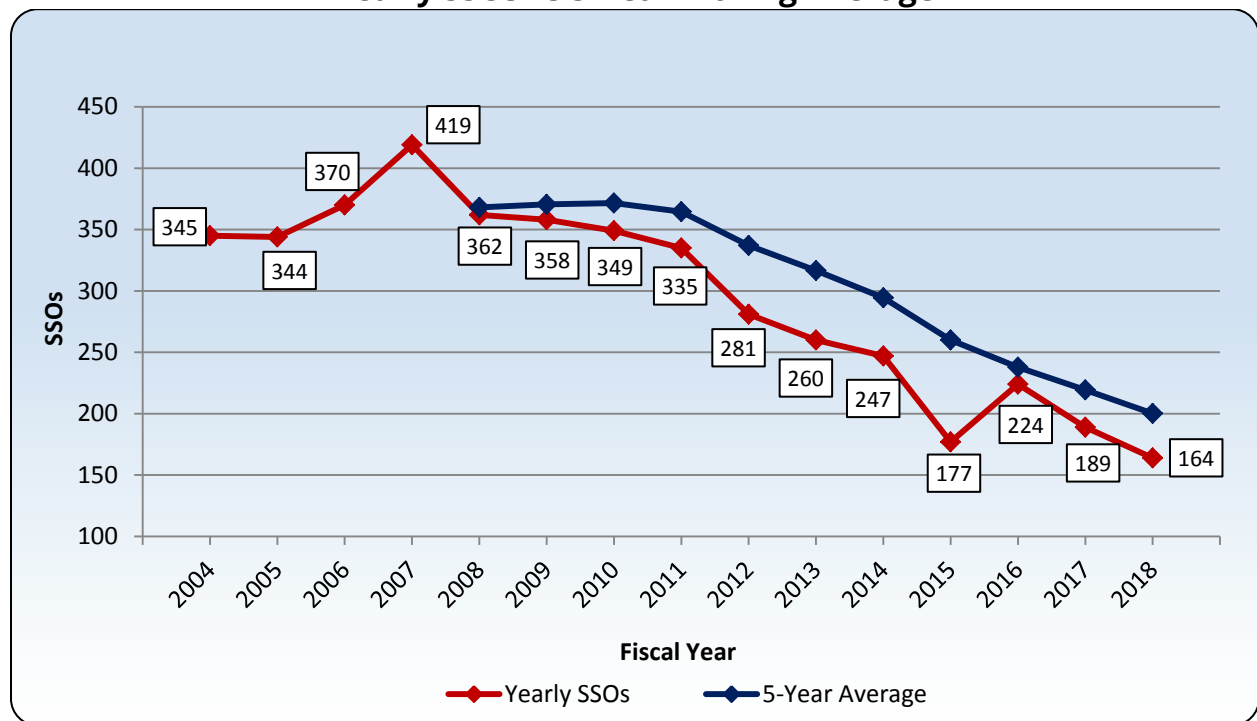
Water is disinfected to remove any remaining pathogens, and then the treated water is released into creeks.

## II. Summary of System Performance

### FY18 Performance

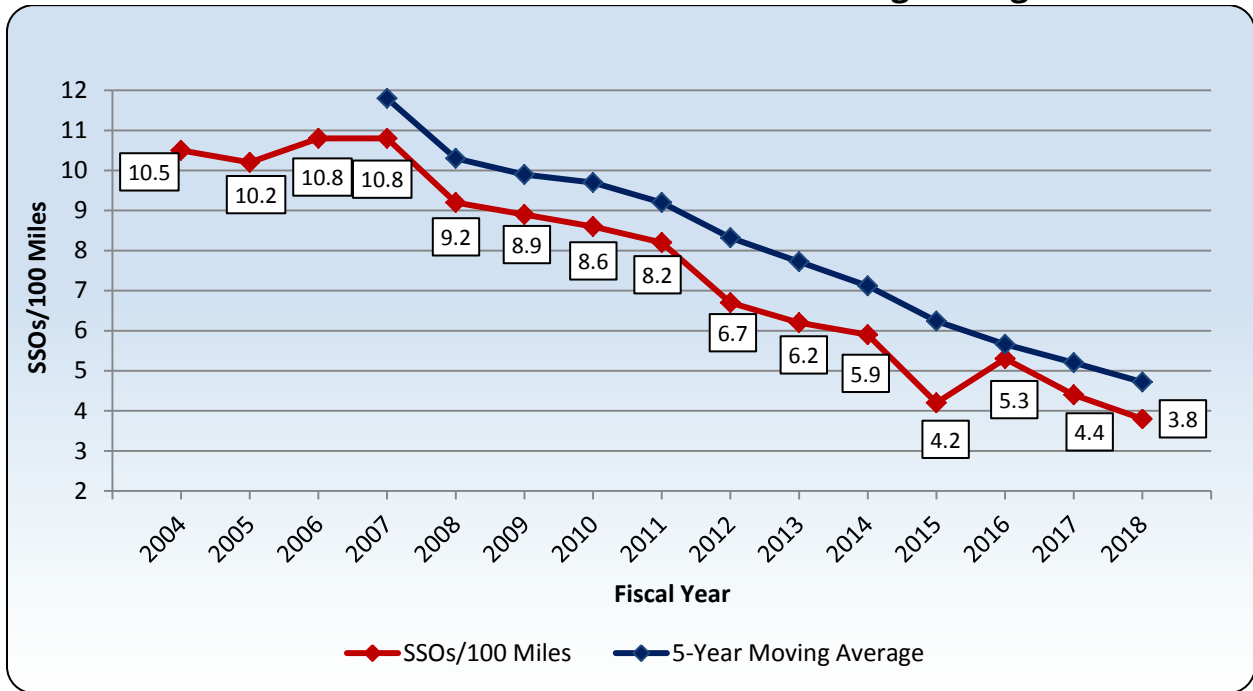
Charlotte Water successfully collected and treated 99.927 percent of the more than 28.4 billion gallons of wastewater the community produced in the past fiscal year. There were 164 sanitary sewer overflows (SSOs) in our community, a decrease of 25 spills compared to the year before. An estimated 20,670,684 gallons spilled with 97.87% (20,231,505 gallons) of the volume occurring during two historical spills caused by heavy rains / fallen trees.

**Yearly SSOs vs 5-Year Moving Average**



The number of spills per 100 miles of pipe continued to decline from 10.8 in 2007 to 3.8 spills in fiscal year 2018 as illustrated by the table on page 5.

**Number of SSOs/100 Miles vs 5-Year Moving Average**



Inspection crews and our customers find overflows. Overflows from the wastewater collection system are discovered during routine inspections of the system and also through reports from the public to 311. CLTWater notifies media any time a sanitary sewer overflow results in 1,000 gallons or more reaching surface waters or reaching recreational waters. A legal notice is posted in the Charlotte Observer when overflows of 15,000 gallons or more reach surface waters. Crews also use door hangers to notify customers when appropriate, which is a permit requirement.

This annual report includes all incidents where wastewater escaped out of a manhole or pipe before reaching proper treatment, including spills less than required reporting thresholds (i.e. less than 1,000 gallons or any amount reaching surface water). Private spills and sewer backups inside homes are not included. The report summarizes spills (both reportable to the State and those escaping the sewer) and other challenges at wastewater treatment plants.

CLTWater employees work 24 hours a day, 365 days per year, to prevent and respond to overflows. Crews prevent overflows by clearing pipes of tree roots and grease, as well as replacing broken and aging pipes. CLTWater has increased its

efforts to educate customers about properly disposing of fats, oils and grease (FOG).

### **Performance Highlights**

- CLTWater celebrated some important milestones in FY2018 even as it took numerous actions to prevent overflows and protect water quality through effective wastewater treatment.
- Our wastewater treatment plants met 99.92 percent of all permitted discharge limits.
- All seven wastewater treatment plants earned Peak Performance Awards from the National Association of Clean Water Agencies (NACWA) for the calendar year ending 2017. NACWA Peak Performance Awards recognize wastewater treatment professionals throughout the nation for protecting the environment and public health through outstanding treatment and discharge regulatory compliance. McAlpine Creek Wastewater Treatment Plant was awarded its sixth Platinum Award for ten consecutive years of perfect compliance. McDowell Creek Wastewater Treatment Plant also earned a Platinum Award, fifth out of last 10 years. Ashe Plantation, Oxford Glen, Irwin Creek, Mallard Creek, and Sugar Creek Wastewater Treatment Plants earned Gold Awards for zero permit violations in a one year period. Over 5,200 compliance tests were conducted during the 2017 calendar year.
- 15.75 miles of wastewater pipe and 374 manholes were rehabilitated or replaced.
- 392 miles of wastewater pipe were treated with root control chemicals.
- 1,051 miles of wastewater lines were cleaned (including some multiple cleanings in the same location) by CLTWater Field Operations Staff and an additional 117.5 miles of pipe were cleaned by contractors.
- 513 wastewater service connections were replaced.
- 50 miles of rights of way were cleared by contractors to maintain access to off-street sanitary wastewater pipes and to help prevent root intrusions. An additional 57.6 miles were cleared by CLTWater staff.
- 283 miles of pipe were closed circuit television recorded (CCTV) for inspection by CLTWater staff and contractors.
- There are 81 Wastewater Lift Stations serving the CLTWater service area. Staff performed 146 preventative maintenance/electrical tasks for a total of 2,676 work hours. This does not include daily/weekly station checks, wet well cleaning, emergency generator testing, or emergency/routine repairs. Westhall Lift Station was removed from service due to the installation of a gravity line.

- Charlotte Water continues to replace the Steele Creek Pump Station and force main that conveys community wastewater to the nearest wastewater treatment plant in Pineville. This is an investment of \$44 million. This project is 90% complete.
- Construction of the Briar Creek Relief Sewer Project (Phase Three) began in 2016 and is 90% complete.
- Ayrley Gravity Sewer Replacement Phase 2 started construction in August 2017 and is 97% complete. This is a \$2.5 million investment to serve the growing population in the South Tryon I-485 area.
- McAlpine Creek Wastewater Management Facility Plant and Potable/Non-Potable Water System Reliability Improvements started in fiscal year 2017 and is 65% complete. This is a \$6.5 million investment.
- McAlpine Creek Wastewater Treatment Plant captures and converts methane gas (a byproduct of wastewater treatment) into a fuel for electricity production and useful heat. The Combined Heat and Power (CHP) system was an investment of \$4.6 million. The project was financed by a 20-year, zero-interest loan from the state's Clean Water State Revolving Fund (a federal Clean Water Act program that's been in operation since the late 1980's). CLTWater is the first water/wastewater utility in North Carolina to build a CHP facility. Since reaching consistent operations in November 2017, the engine has had an average uptime of 90%, running about 21.5 hours out of every 24 hour day. The generator has created more than 7.4 billion kilowatt hours, resulting in a power credit of more than \$324,000. In the month of June, the unit surpassed the 8,176 hours of runtime mark, officially having run a full "year." Running at 1 megawatt (MW), the engine puts out the equivalent of about 5 acres of solar, around the clock and even on cloudy days.



- Charlotte Water started a fats, oil and grease reduction effort during the late 1990s to educate customers about food related clogs that lead to sanitary sewer overflows. In 2017, Charlotte Water rebranded to FlowFree to focus on other overflow contributors now that grease related spills continue to decline.
- City staff inspected grease-handling facilities at 4,440 food service establishments and restaurants (not including follow-up inspections) to ensure proper grease disposal.
- Staff issued 140 Notices of Deficiency (NOD) of which 106 returned to compliance and 34 are still under investigation.



- Staff issued four Notices of Violation (NOV).
- In total, 34 grease traps were installed by businesses to fulfill NOD requirements.
- The City continued its educational program to teach proper disposal of pipe-blocking materials.
- Inspectors mailed information to 1,236 customers near spill sites and handed out information to 2,107 customers in apartments / multi-family complexes.
- Staff conducted presentations to more than 5,783 children and adults. Multiple Earth Day events also provided opportunities to distribute FlowFree scrapers, pens and other items.
- CLTWater continues to use door-hangers specifically for maintenance personnel or property managers of apartment or multi-family complexes. This reinforces best management practices for prevention.
- Staff continues to provide bilingual door hangers and promotional items for property managers to give to new residents.
- Staff budgeted advertisement money for fiscal year 2019. During fiscal year 2018, staff completed the procurement and vendor selection process to create new advertising materials.
- Communications staff posted alerts on Nextdoor to inform residents of spills that exceeded 1,000 gallons in creeks or any amount that reached recreational water.

## **Continuing Challenges**

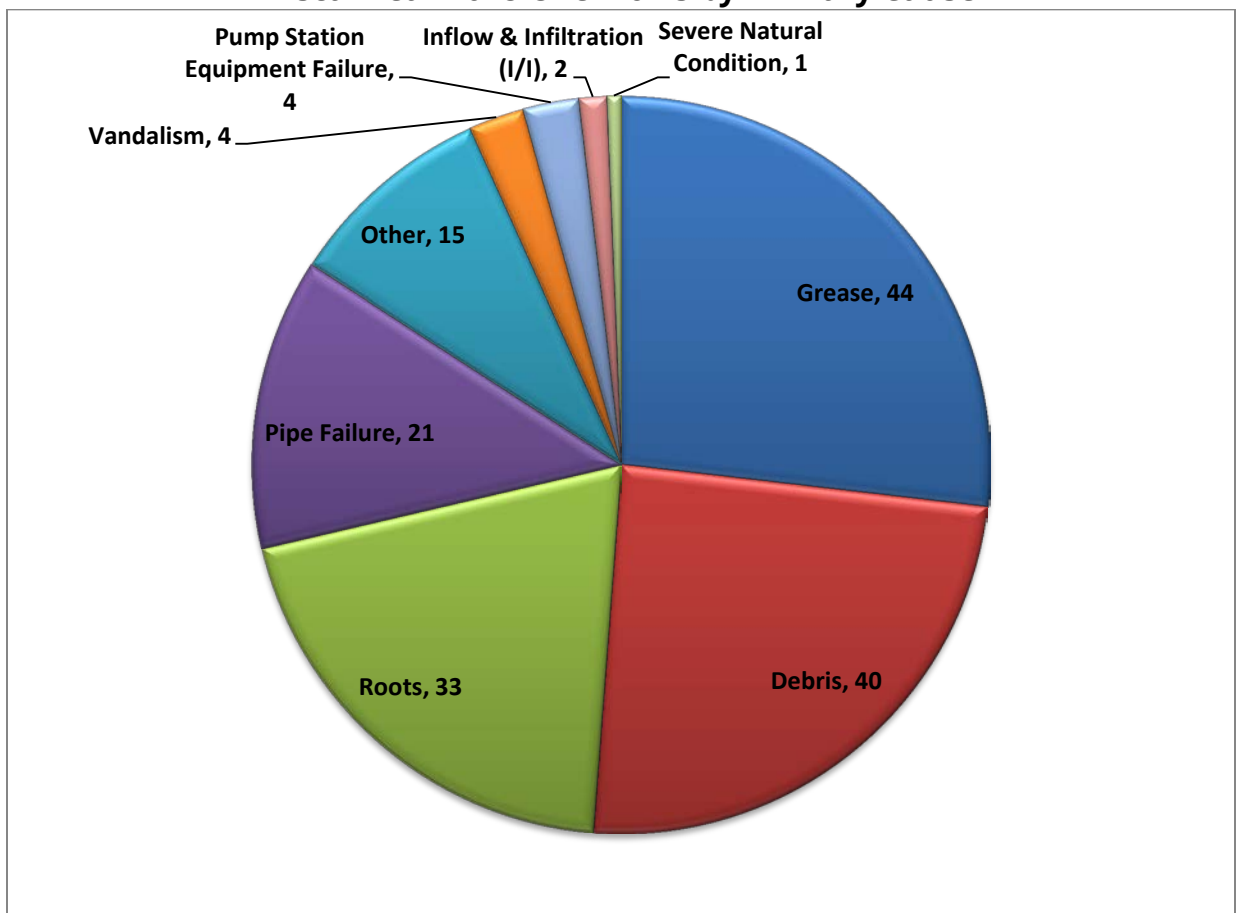
### ***Wastewater Collection Challenges***

The greatest continuing wastewater challenge in this community – and in others across the U.S. – is sewage overflows. Of the 164 sewer spills that occurred, grease (fats, oils, grease, and other food leftovers) accounted for most of the sanitary sewer overflows. While still the leading cause of overflows, grease was less than 50% for the sixth straight year. Grease has traditionally been the primary cause of 50-60% of spills.

Other spill causes included the intrusion of tree roots into pipes, broken pipes, debris, and vandalism. Of the 164 spills, 18 were caused by various construction activities either damaging pipes or manholes or causing debris to clog the pipe. These were documented in below itemized spill report as other, debris, or pipe failure to align with state spill cause categories. CLTWater works with contractors to prevent infrastructure damage.

CLTWater experienced one spill that was caused by severe natural condition (heavy rain event exceeding capacity of wastewater pipe or manhole) and two spills that were caused inflow and infiltration (I & I). The first I & I spill was caused by a broken water main that overflowed a wastewater manhole. The second I & I spill was caused by rain water exceeds capacity of pipe or manhole. Sanitary sewer pipes are not designed to collect and transport rain water but occasionally water will enter the pipe. CLTWater crews investigate and repair locations where water is able to enter the sanitary sewer pipe network.

**Fiscal Year 2018 Overflows by Primary Cause**



Grease and other blockages that lead to sewer overflows are cleared by CLTWater crews, using various cleaning methods, including mechanical rodders and truck-mounted water jets. If damaged pipe or other infrastructure is discovered it is repaired. The spilled wastewater can sometimes be captured and pumped back into the sewer system.

CLTWater Rapid Response Crews are quick to respond when notified of a possible spill. Crews responded to more than 92.1 percent of the spills within 60 minutes and 98.7 percent of the spills within 120 minutes. The average for all response was 31 minutes. The state standard for response is 120 minutes or less.

***Two Overflows Account For 97.87% of Gallons Spilled For The Year***

During this year CLTWater experienced two spills that exceeded previous spills. The two spills caused an estimated 20,231,505 gallons to reach creeks. This is 97.87 percent of the total amount spilled for the year. Both spills were caused by pipes breaking after large trees fell. Additional information is available below:

1. On October 24, 2017, CLTWater staff at the Mallard Creek Wastewater Treatment Plant observed lower than normal amounts of wastewater coming into the plant. Staff began checking manholes and pipes upstream to look for a cause of the lower flows. A broken pipe was discovered upstream of the plant in Mallard Creek. A fallen tree, likely caused by rain hours before, damaged a 36-inch wastewater pipe. The community's wastewater was diverted to temporary pumps and pipes while the tree, debris, and the pipe were removed. Charlotte Water staff and vendors monitored pumps around the clock. There was a second spill at the location due to the creek bank collapsing but staff was able to quickly contain and put wastewater back in the temporary pipes.
2. On Monday, April 23, CLTWater received information from Mecklenburg County regarding a sewer odor and fish kill. CLTWater crews discovered a broken 30-inch wastewater pipe at the confluence of McIntyre Creek and Long Creek. Recent storms caused trees to fall and erosion of the stream bank up to 50 feet in some places. The wastewater pipe, undermined by the debris, heavy flows and erosion, fell into Long Creek under its own weight. By Tuesday morning the spill was contained and crews began cleanup and pumping operations so that no further wastewater spilled. CLTWater staff suspects the break occurred during the very heavy storm the night of April 15-16. The Long Creek spill is the largest spill Charlotte Water has recorded at 15.4 million gallons.

Downstream customers were notified of both spills and additional information was posted on [cltwaterblog.org](http://cltwaterblog.org). CLTWater experienced four spills related to eroded creek banks and ask that customers keep an eye for stream blockages and erosion.

### ***Wastewater Treatment Plant Challenges***

Charlotte Water's wastewater treatment plants met 99.92 percent of all discharge limit tests set forth by our NPDES permits but our commitment is 100 percent compliance. Staff continues to improve maintenance capabilities and overall performance. Major rehabilitation and improvement projects help maintain compliance. Future upgrades and expansions are being added.

CLTWater had four permit violations in FY18. Three of these violations were ammonia violations that occurred at Ashe Plantation Wastewater Treatment Plant in January 2018. Ashe Plantation experienced severe cold weather that reduced the ability of the plant to convert ammonia to nitrate. The fourth violation was a CBOD violation that occurred at Irwin Creek WWTP in April of 2018. CLTWater is currently investigating the cause of this violation.

There were three (3) incidents where water was released into the creek due to two power outages and a valve failure. These were discharges of mostly treated wastewater that didn't complete full treatment. Though not considered violations, in each situation, operators quickly found and fixed the problem and notified North Carolina Department of Environmental Resources. After the initial response was complete, staff evaluated potential causes and solutions for each incident. Quick solutions were implemented and more in-depth / extensive solutions are identified as capital needs. No dead fish were found associated with these bypasses. The gallons that did not receive full treatment was significantly less than one percent (1%) of the 78.1 million gallons of water that is treated and safely returned to area creeks every day.

CLTWater System Protection operates within CLTWater's service area to enforce federal, state, and local regulations pertaining to discharges to the sanitary sewer, including protection of workers and treatment processes from pollutants harmful to people or the environment. System Protection includes the Industrial Pretreatment Program and the Commercial Source Program.

The Pretreatment Program identifies, permits, and regulates Industrial Users and others to keep unsuitable discharges out of the wastewater treatment plants. The Commercial Source Program, also referred to as Flow Free, inspects and regulates Commercial Users, such as food service establishments, to keep unsuitable discharges such as fats oils and grease out of the collection system and wastewater treatment plants.

While industrial and commercial compliance is extremely high, identifying sources of potentially harmful discharges is an ongoing challenge. In fiscal year 2018, the Trunkline Monitoring program-also continued, enabling CLTWater's System Protection and Water Quality staff to closely observe what industrial, institutional, and commercial customers discharge to the wastewater treatment plants, identify potential problem areas, and protect the collection system, wastewater line workers, treatment plants and the environment.

- There were over 200 industrial inspections and site visits in the past fiscal year.
- As part of the Commercial Source program, food service establishments and other grease producing businesses are identified and inspected on an annual basis.
- CLTWater honored 29 local companies with Environmental Excellence Awards in fiscal year 2018 including:
  - 4 Platinum recipients for at least five consecutive years of Gold level compliance and reporting
  - 13 Gold recipients for 100% compliance with permit limits and reporting, and
  - 10 Silver recipients for 90% compliance with permit limits and 100% compliance with reporting
- CLTWater recorded 261 industrial permit limit violations for samples collected to Significant Industrial Users (SIU) during the past fiscal year, resulting in a Notice of Violation, Notice of Non-Compliance, Administrative Order, or similar assessment.
- 44 Notices of Violation with Civil penalties were assessed to users during the fiscal year for permit limit exceedances and other violations.

### **Union County Wastewater Treatment Agreement**

Charlotte Water successfully completed an inter-local agreement with Union County that began in 2014 to provide contracted operation and maintenance of five Union County wastewater plants. Union County continued to own the wastewater treatment plants, own and operate the wastewater collection system (separate from the wastewater treatment plants), set rates, and collect user fees for their customers during this agreement. The agreement with Union County ended on July 1, 2018. During the time the agreement was in place, the treatment plants met all regulatory requirements with satisfactory performance.



## **Wastewater Capacity Needs**

In 2007 a study of the McAlpine, Irwin and Sugar creek basins was completed to help identify our community's future wastewater treatment capacity needs through the year 2030. Recommendations from the study have resulted in the implementation of extensive reliability improvements projects at the Irwin, Sugar, and McAlpine Wastewater Treatment Plants.

Major studies of the Mallard and McDowell sewer basins are nearing completion and provide recommendations to address existing collection system capacity issues and provide capacity for future growth in these areas. The Mallard basin study includes an engineering alternatives analysis of optional projects allowing sewer to be more effectively conveyed between the treatment plants in order for CLTWater to meet Inter-Basin Transfer requirements. Both studies include detailed sewer hydraulic models and populations projections up to 2040 (for the McDowell study) and 2070 (for the Mallard study).

In recent years CLTWater, Mount Holly, and Belmont entered into Memorandums of Understanding to create the partnership needed for a new, regional wastewater plant. CLTWater purchased 180 acres of land at a former Clariant industrial plant site along with the phosphorus and nitrogen discharge permit allocation associated with the industrial plant. The agreements and nutrient allocation purchase will facilitate compliance with the Lake Wylie nutrient TMDL while planning and construction of the regional plant progresses. An Environmental Impact Statement was completed with N.C. DEQ in March 2015 and a preliminary engineering report completed in 2017. CLTWater submitted the NPDES permit application for the new regional facility, which will treat about 12 mgd with a possible expansion to 25 mgd at a future date if necessary.

A Central Business District (CBD) Sanitary Sewer Modeling and Evaluation project was completed that included the CBD and surrounding areas and their projected growth out to 2040. This project provided an updated sanitary sewer model for assessing future development and their associated service connections. The evaluation portion identified improvement alternatives to meet future capacity of the CBD and developed a phased implementation plan considering capacity improvement triggers. Currently, there were two immediate pipeline needs identified, and those projects are moving toward design and installation.

CLTWater's Capacity Assurance Program (CAP) was implemented on January 1, 2009. CAP helps CLTWater prevent sanitary sewer overflows (SSOs) that could be caused by adding too many customers' wastewater flow to an existing pipe. Developers are encouraged to apply for a CAP review during the early stages of requesting building permits or rezoning. This review process is performed at no cost to the applicant. Engineers analyze hydraulic models, past spills in the area and other field data to verify that there is adequate capacity in the pipes downstream. If no major sewer capacity limitations are found during the review, applications are generally approved in 30 days. Some reviews lead to identification of capital pipeline projects to improve the service level to our current customers as well as accommodate projected development.

Some project examples identified from the CAP reviews include:

- Ayrley Gravity Sewer Replacement Phase 2 began construction in 2017. This is a \$2.5 million investment to serve the growing population in the South Tryon I-485 area.
- Doby Creek Sanitary Sewer Improvements is anticipated to be an \$11 million project with a completion in early 2019. These improvements are in the University City Blvd / I-85 area.
- Wilmore Drive / Park Avenue Sanitary Sewer Replacement began construction in January 2018. These projects are expected to finish by end of 3<sup>rd</sup> quarter 2019 at an estimated cost of \$5M.
- Irvins Creek Tributary Trunk Line (Lawyers Rd area) is estimated at \$2.25 million with a notice to proceed in January 2018 and an anticipated completion of 2<sup>nd</sup> quarter 2019.
- Little Sugar Creek Tributary Trunk Sewer (North Tryon area) began in January 2018 at an estimated cost of \$6 million. Anticipated completion of end of 3<sup>rd</sup> quarter 2019.
- Stevens Creek Lift Station, Force Main & Gravity Sewer will serve the Goose Creek and Stevens Creek drainage basins, which includes the Town of Mint Hill. The project is the first step in providing public sewer service to an area that is predominantly on septic systems. This project will also facilitate the removal of a nearby package wastewater plant. The construction cost is \$12.1M and is anticipated to begin construction in late summer 2018 and be completed by the end of 2019.

### **III. Notification**


Sanitary sewer overflow and wastewater treatment plant details are included in Sections V and VI.

This report is available to the users or customers of this system by visiting <http://charlottewater.org>. Printed copies are available at the Charlotte-Mecklenburg Government Center at 600 E. Fourth Street, Charlotte, NC 28202, Charlotte Water buildings at 4222 Westmont Drive, Charlotte, NC 28217 and at 5100 Brookshire Boulevard, Charlotte, NC 28216. Customers of this system will receive a summary version of this report and will be notified of the availability of this comprehensive version via a bill insert in the September water bill. A news release will be issued to local media outlets. In addition, the summary version will be translated into Spanish and advertised during the month of September in a regional Spanish-speaking newspaper. The Spanish version will also be on the Charlotte Water website.

### **IV. 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.

  
\_\_\_\_\_  
Angela Lee, Director  
Charlotte Water

  
\_\_\_\_\_  
Date

## V. Listing of Sewer Spills

The following is a list of spills (in gallons) from the public wastewater system that occurred between July 1, 2017 and June 30, 2018.

Date	Volume (Gallons)	Volume to Surface Water	Surface Water Name	Fish Kill?	Address	Primary Cause
7/1/2017	81	0	Lake Norman	No	17720 Largo Pl , Cornelius	Pipe Failure
7/1/2017	720	720	Little Sugar Creek	No	6626 Candlewood Dr	Severe Natural Condition
7/2/2017	98	0	Steele Creek	No	17730 Youngblood Rd	Pump Station Equipment Failure
7/4/2017	1370	1370	Little Hope Creek	No	4801 South Bv	Pipe Failure
7/5/2017	1260	1260	Walker Branch	No	13005 Asheford Woods Ln	Roots
7/6/2017	2400	2400	Stevens Creek	No	11826 Lawyers Rd, Mint Hill	Other
7/9/2017	488	488	Fourmile Creek	No	3136 Shallowood Ln	Roots
7/14/2017	201,850	201,850	King Branch	No	700 Farmhurst Dr	Pipe Failure
7/15/2017	498	498	Briar Creek	No	5906 Ferndale Pl.	Pipe Failure
7/23/2017	680	680	Little Sugar Creek	No	6620 Candlewood Dr	Pipe Failure
7/27/2017	1575	1181	Irwin Creek	No	2804 McCombs St	Grease
7/28/2017	3450	3450	Sugar Creek	No	5275 Parkway Plaza Bv	Roots
8/1/2017	490	490	Taggart Creek	No	3112 Markland Dr	Grease
8/4/2017	90	0	Doby Creek	No	2835 West Sugar Creek Rd	Other
8/4/2017	825	825	Little Sugar Creek	No	1225 Central Av	Grease
8/4/2017	1380	690	Mc Alpine Creek	No	14215 Ballantyne Corporate Pl	Debris In Line

<b>Date</b>	<b>Volume (Gallons)</b>	<b>Volume to Surface Water</b>	<b>Surface Water Name</b>	<b>Fish Kill?</b>	<b>Address</b>	<b>Primary Cause</b>
8/16/2017	455	455	Little Hope Creek	No	4111 South Bv	Other
8/18/2017	570	570	Campbell Creek	No	5827 Idlebrook Dr	Debris In Line
8/19/2017	324	0	Toby Creek	No	8650 University City Bv	Roots
8/22/2017	90	0	Four Mile Creek	No	10205 Rougemont Ln	Debris In Line
8/22/2017	4500	4500	Taggart Creek	No	4611 Denver Av	Grease
8/22/2017	230	230	Lower Little Sugar Creek	No	6411 Rosecrest Dr	Debris In Line
8/25/2017	94	0	Clarks Creek	No	4700 Lone Tree Ct	Grease
8/28/2017	155	0	Lake Norman	No	17320 Courtside Landing Dr, Cornelius	Pipe Failure
8/28/2017	350	0	Lake Norman	No	18948 Casual Cay Ln, Cornelius	Pipe Failure
8/29/2017	624	200	Lake Norman	No	18803 Harbor Light Bv, Cornelius	Pipe Failure
8/30/2017	815	815	Stewart Creek	No	522 Lakewood Av	Other
8/30/2017	243	0	McAlpine Creek	No	4506 Inlet Pointe Ct	Other
9/7/2017	43	0	Mallard Creek	No	325 Caprington Av	Debris In Line
9/14/2017	1500	1500	McAlpine Creek	No	6118 Fair Valley Dr	Pipe Failure
9/19/2017	1270	635	Little Sugar Creek	No	7800 Antlers Ln	Debris In Line
9/20/2017	555	0	Irwin Creek	No	1417 Tinnin Av	Other
9/22/2017	68	68	McMullen Creek Tributary	No	3735 Litchfield Rd	Roots
9/25/2017	48	0	Paw Creek	No	8524 Moores Chapel Rd	Roots
9/28/2017	2400	2400	Paw Creek	No	6508 War Eagle Ln	Roots



<b>Date</b>	<b>Volume (Gallons)</b>	<b>Volume to Surface Water</b>	<b>Surface Water Name</b>	<b>Fish Kill?</b>	<b>Address</b>	<b>Primary Cause</b>
10/2/2017	1450	0	McAlpine Creek	No	5938 Meadow Hill Dr	Grease
10/6/2017	66	0	Mallard Creek	No	8700 Senator Royall Dr	Other
10/6/2017	300	0	Campbell Creek	No	6055 Sunrise Ct	Debris In Line
10/10/201	144	0	Upper Little Sugar	No	325 Hawthorne Ln	Debris In Line
10/19/201	800	800	Six Mile Creek	No	11030 Golf Links Dr	Debris In Line
10/21/2017	250	250	Briar Creek Tributary	No	1017 North Wendover Rd	Roots
10/23/2017	130	130	Long Creek	No	9825 Northwoods Forest Dr	Roots
10/24/2017	4,800,000	4,800,000	Mallard Creek	No	210 E Mallard Creek Church Rd	Other
10/29/2017	1180	1180	Toby Creek Tributary	No	6431 Dougherty Dr	Roots
10/30/2017	140	100	McAlpine Creek	No	9120 East W T Harris Bv	Debris In Line
10/30/2017	75	0	Mallard Creek	No	5420 Groveton Ct	Roots
10/31/2017	87	0	Toby Creek	No	701 Neal Dr	Roots
11/2/2017	105	0	Briar Creek	No	6555 Morrison Bv	Debris In Line
11/2/2017	514	514	McAlpine Creek	No	7624 Swans Run Rd	Grease
11/3/2017	1500	1500	Stewart Creek	No	3110 Southwest Blvd	Pipe Failure
11/9/2017	300	0	Lake Norman	No	16211 Lakeside Loop Ln, Cornelius	Pipe Failure
11/12/2017	54	0	Little Hope Tributary	No	511 Ebb Pl	Debris In Line
11/15/2017	50	0	Little Sugar Creek	No	400 North Davidson St	Grease

<b>Date</b>	<b>Volume (Gallons)</b>	<b>Volume to Surface Water</b>	<b>Surface Water Name</b>	<b>Fish Kill?</b>	<b>Address</b>	<b>Primary Cause</b>
11/18/2017	1570	0	Four Mile Creek	No	4345 Rosecliff Dr	Other
11/20/2017	104	104	McAlpine Creek	No	6730 Olde Savannah Rd	Roots
11/22/2017	595	595	Fourmile Creek	No	1400 Ashley Creek Dr, Matthews	Debris In Line
11/24/2017	730	730	Irwin Creek	No	3128 Allen Rd South	Roots
11/25/2017	1970	1200	Steele Creek	No	2817 O'Hara Dr	Grease
11/25/2017	151	0	Clark Creek	No	9416 Meadowmont View Dr	Grease
11/29/2017	1010	1010	Irwin Creek	No	2520 South Bv	Debris In Line
11/30/2017	810	810	Little Sugar Creek	No	923 South Kings Dr	Grease
11/30/2017	230	115	Steele Creek	No	9301 Forsyth Park Dr	Roots
12/2/2017	2460	2220	Paw Creek	No	8924 Old Dowd Rd	Grease
12/3/2017	78	0	Torrence Creek	No	9200 Stratton Farm Rd, Huntersville	Debris In Line
12/3/2017	22	0	Irwin Creek	No	3443 Wilkinson Bv	Debris In Line
12/4/2017	5325	3994	Clear Creek	No	10506 Clear Creek Commerce Dr, Mint Hill	Debris In Line
12/5/2017	380	380	Stewart Creek	No	4701 Wildwood Av	Grease
12/11/2017	630	315	Little Hope Creek	No	4514 Halstead Dr	Debris In Line
12/11/2017	67	0	Clarks Creek Tributary	No	4928 Benthaven Ln	Grease
12/18/2017	1660	1660	Kennedy Branch	No	2100 Slater Rd	Grease
12/18/2017	740	740	Briar Creek	No	2204 Olde Chantilly Ct	Grease
12/21/2017	98	0	Fourmile Creek	No	11100 Monroe Rd, Matthews	Grease

<b>Date</b>	<b>Volume (Gallons)</b>	<b>Volume to Surface Water</b>	<b>Surface Water Name</b>	<b>Fish Kill?</b>	<b>Address</b>	<b>Primary Cause</b>
12/27/2017	1810	1810	Irvins Creek	No	3609 Matthews-Mint Hill Rd, Mint Hill	Grease
12/31/2017	800	800	Paw Creek	No	6727 Glenmoor Dr	Roots
01/02/2018	141	0	Little Sugar Creek	No	5200 Park Rd	Debris In Line
01/02/2018	2700	1350	McMullen Creek	No	4012 Quail Forest Dr	Grease
01/06/2018	290	280	Little Sugar Creek	No	6425 Rosecrest Dr	Debris In Line
01/07/2018	10160	8128	Clems Branch	No	16790 Lancaster Highway	Pipe Failure
01/08/2018	900	0	Little Sugar Creek	No	900 East Stonewall St	Debris In Line
01/09/2018	1600	800	Little Sugar Creek	No	425 Towne Centre Bv, Pineville	Grease
01/10/2018	180	0	Briar Creek	No	1600 Park Dr	Debris In Line
01/10/2018	30	0	Little Sugar Creek	No	1249 Echo Glen Rd	Debris In Line
01/14/2018	250	250	Little Sugar Creek	No	9105 Essen Ln	Debris In Line
01/21/2018	600	570	Briar Creek	No	3514 Enfield Rd	Pipe Failure
01/23/2018	1425	1425	Briar Creek	No	3500 East Independence Bv	Grease
01/24/2018	385	385	McAlpine Creek	No	14704 Ballantyne Glen Wy	Grease
01/27/2018	820	820	Briar Creek	No	1426 Carolyn Dr	Debris In Line
01/30/2018	180	0	Lake Norman	No	19932 Sandysedge Dr, Cornelius	Pipe Failure
01/31/2018	660	100	Toby Creek	No	7401 Feathers Place	Vandalism

<b>Date</b>	<b>Volume (Gallons)</b>	<b>Volume to Surface Water</b>	<b>Surface Water Name</b>	<b>Fish Kill?</b>	<b>Address</b>	<b>Primary Cause</b>
02/04/2018	2005	2005	Irvin's Creek	No	5321 Fowler Farm Rd, Mint Hill	Roots
02/07/2018	118	118	McMullen Creek Tributary	No	7601 Red Oak Ln	Roots
02/08/2018	65	0	Lake Norman	No	16933 Jetton Rd, Cornelius	Other
02/09/2018	142	71	Four Mile Creek	No	4717 Piper Glen Dr	Debris In Line
02/13/2018	2020	1010	Irwin Creek	No	1412 Oaklawn Ave	Pipe Failure
02/13/2018	294	270	Irwin Creek	No	3923 Atlas Dr	Grease
02/13/2018	200	0	Clems Branch	No	16790 Lancaster Highway	Pump Station Equipment Failure
02/14/2018	5880	5880	Clems Branch	No	16790 Lancaster Highway	Pump Station Equipment Failure
02/14/2018	1500	0	McAlpine Creek	No	7801 Ballantyne Commons Py	Grease
02/14/2018	680	510	McAlpine Creek Tributary	No	7942 Oratorio Pl	Grease
02/16/2018	1485	1485	Stewart Creek	No	2725 Seabrook Dr	Pipe Failure
02/18/2018	291	291	Little Sugar Creek Tributary	No	4117 Ashton Dr	Roots
02/21/2018	1505	752.5	Lower Little Sugar Creek	No	7820 Forest Pine Dr	Grease
02/21/2018	595	0	Upper Little Sugar Creek	No	230 Alpha Mill Ln	Debris In Line
02/23/2018	50	0	McAlpine Creek	No	2746 Quailrush Rd	Roots
02/23/2018	430	0	Campbell Creek	No	5760 Albemarle Rd	Grease

<b>Date</b>	<b>Volume (Gallons)</b>	<b>Volume to Surface Water</b>	<b>Surface Water Name</b>	<b>Fish Kill?</b>	<b>Address</b>	<b>Primary Cause</b>
02/28/2018	260	260	Little Sugar Creek	No	550 S Caldwell St	Grease
03/02/2018	428	200	Clems Branch	No	11630 Clems Branch Dr	Roots
03/04/2018	360	300	Paw Creek	No	720 Claremont Rd	Roots
03/06/2018	1240	0	Reedy Creek	No	8735 Woodhill Manor Ct	Grease
03/08/2018	295	0	Briar Creek	No	1167 Phil Oneil Dr	Grease
03/08/2018	590	590	Four Mile Creek	No	4525 Old Course Dr	Roots
03/10/2018	150	0	McDowell Creek	No	6833 Tanners Creek Dr, Huntersville	Grease
03/10/2018	126	126	Briar Creek	No	2135 Brookwood Rd	Roots
03/13/2018	141	141	Little Sugar Creek	No	7820 Forest Pine Dr	Grease
03/18/2018	360	360	Edwards Branch	No	2700 East Independence Bv	Grease
03/19/2018	20	0	McMullen Creek	No	11501 Park Rd	Grease
03/24/2018	400	0	Coffey Creek	No	2607 West Arrowood Rd	Debris In Line
03/28/2018	100	0	Irwin Creek	No	4937 Sunset Rd	Grease
03/28/2018	300	300	Sugar Creek	No	6108 Coolbrook Ct	Debris In Line
03/28/2018	200	0	Mallard Creek	No	3800 Prosperity Church Rd	Debris In Line
03/29/2018	540	540	Irvins Creek	No	10530 Northeast Py, Matthews	Vandalism
03/31/2018	54000	30000	Big Sugar Creek	No	427 Main St, Pineville	Other
04/02/2018	600	570	Paw Creek	No	5205 Windy Valley Dr	Debris In Line
04/04/2018	170	0	McAlpine Creek	No	4508 Parview Dr North	Debris In Line
04/06/2018	106	50	Four Mile Creek	No	204 Demaree Ln, Matthews	Debris In Line
04/09/2018	30	0	McAlpine Creek	No	6601 Bevington Brook Ln	Roots



<b>Date</b>	<b>Volume (Gallons)</b>	<b>Volume to Surface Water</b>	<b>Surface Water Name</b>	<b>Fish Kill?</b>	<b>Address</b>	<b>Primary Cause</b>
04/11/2018	110	110	McAlpine Creek	No	5101 Gorham Dr	Roots
04/16/2018	460	230	McAlpine Creek	No	6725 Old Providence Rd	Pipe Failure
04/20/2018	830	830	Little Sugar Creek	No	1116 S Kings Dr	Grease
04/23/2018	15,431,505	15,431,505	Long Creek	Yes	4100 Oakdale Rd.	Pipe Failure
04/24/2018	290	290	Irwin Creek	No	1223 Badger Ct	Debris In Line
04/25/2018	1060	1060	Little Sugar Creek	No	1019 N Brevard St	Debris In Line
04/26/2018	20	0	McMullen Creek	No	3639 Quail View Rd	Roots
04/29/2018	27000	20250	Long Creek	No	4100 Oakdale Rd	Other
05/03/2018	16420	8210	Steele Creek	No	13001 General Dr	Vandalism
05/03/2018	16500	16500	Little Sugar Creek	No	500 North Davidson St	Inflow and Infiltration
05/04/2018	60	0	Flat Branch	No	7413 Seton House Ln	Other
05/09/2018	30	0	Briar	No	7300 Linda Lake Dr	Roots
05/11/2018	290	290	Four Mile Creek	No	10308 Four Mile Creek Rd	Debris In Line
05/18/2018	900	0	Irwin Creek Tributary	No	2425 Westhampton Dr	Debris In Line
05/20/2018	300	300	Little Sugar Creek	No	6620 Candlewood Dr	Inflow and Infiltration
05/21/2018	1420	1420	Edwards Branch	No	3100 Winterfield Pl	Vandalism
05/22/2018	850	850	Steele Creek	No	3935 Westinghouse Bv	Roots
05/27/2018	185	0	Upper Little Sugar Creek	No	1400 E 3rd St	Debris In Line

<b>Date</b>	<b>Volume (Gallons)</b>	<b>Volume to Surface Water</b>	<b>Surface Water Name</b>	<b>Fish Kill?</b>	<b>Address</b>	<b>Primary Cause</b>
06/1/2018	315	0	Lake Norman	No	17903 Peninsula Club Dr North, Cornelius	Pump Station Equipment Failure
06/2/2018	925	700	Briar Creek Tributary	No	3500 Shamrock Dr	Grease
06/3/2018	420	0	Paw Creek	No	5905 Natick Dr	Grease
06/4/2018	164	0	Sugar Creek	No	9140 Arrowpoint Bv	Roots
06/4/2018	725	725	Dairy Branch	No	414 Iverson Wy	Debris In Line
06/5/2018	630	630	Clarke Creek	No	6444 Prosperity Church Rd	Grease
06/7/2018	445	0	Lake Norman	No	17821 Spinnakers Reach Dr, Cornelius	Other
06/14/2018	71	0	Torrence Branch	No	18318 McKee Rd	Other
06/15/2018	2575	2575	Little Sugar Creek	No	1314 S College St	Pipe Failure
06/18/2018	85	0	Gum Branch	No	628 Fielding Rd	Roots

<b>Date</b>	<b>Volume (Gallons)</b>	<b>Volume to Surface Water</b>	<b>Surface Water Name</b>	<b>Fish Kill?</b>	<b>Address</b>	<b>Primary Cause</b>
06/20/2018	115	115	Little Sugar Creek	No	5217 Buckingham Dr	Pipe Failure
06/22/2018	480	480	Little Sugar Creek Tributary	No	2825 Eastburn Rd	Grease
06/28/2018	510	255	Irwin Creek	No	3527 Durham Ln	Grease
06/28/2018	1785	1785	Little Sugar Creek	No	6510 Candlewood Dr	Grease

**TOTAL NUMBER OF FY2018 COLLECTION SYSTEM SPILLS:**

**164**

Volume Safely Collected, Treated & Discharged During Fiscal Year 2018: 28,485,000,000 Gallons (99.927%)

Volume Spilled: 20,670,684 Gallons

## **VI. Permit Compliance and Reporting Violations, by plant**

### **Ashe Plantation WWTP -- NPDES Permit #NC0065749**

<b>MONTH</b>	<b>PERMIT LIMIT VIOLATIONS</b>	<b>REPORTING REQUIREMENT VIOLATIONS</b>
July, 2017	NA	NA
August, 2017	NA	NA
September, 2017	NA	NA
October, 2017	NA	NA
November, 2017	NA	NA
December, 2017	NA	NA
January, 2018	3 Total - 2 Daily Max Ammonia and 1 Monthly Average Ammonia Violations	NA
February, 2018	NA	NA
March, 2018	NA	NA
April, 2018	NA	NA
May, 2018	NA	NA
June, 2018	NA	NA

### **Irwin Creek WWTP -- NPDES Permit #NC0024945**

<b>MONTH</b>	<b>PERMIT LIMIT VIOLATIONS</b>	<b>REPORTING REQUIREMENT VIOLATIONS</b>
July, 2017	NA	NA
August, 2017	NA	NA
September, 2017	NA	NA
October, 2017	NA	NA
November, 2017	NA	NA
December, 2017	NA	NA
January, 2018	NA	NA
February, 2018	NA	NA
March, 2018	NA	NA

April, 2018	CBOD Weekly Average Violation	NA
May, 2018	NA	NA
June, 2018	NA	NA

**Mallard Creek WRF -- NPDES Permit #NC0030210**

<b>MONTH</b>	<b>PERMIT LIMIT VIOLATIONS</b>	<b>REPORTING REQUIREMENT VIOLATIONS</b>
July, 2017	NA	NA
August, 2017	NA	NA
September, 2017	NA	NA
October, 2017	NA	NA
November, 2017	NA	NA
December, 2017	NA	NA
January, 2018	NA	NA
February, 2018	NA	NA
March, 2018	NA	NA
April, 2018	NA	NA
May, 2018	NA	NA
June, 2018	NA	NA

**McAlpine Creek WWTF -- NPDES Permit #NC0024970**

<b>MONTH</b>	<b>PERMIT LIMIT VIOLATIONS</b>	<b>REPORTING REQUIREMENT VIOLATIONS</b>
July, 2017	NA	NA
August, 2017	NA	NA
September, 2017	NA	NA
October, 2017	NA	NA
November, 2017	NA	NA
December, 2017	NA	NA
January, 2018	NA	NA
February, 2018	NA	NA

March, 2018	NA	NA
April, 2018	NA	NA
May, 2018	NA	NA
June, 2018	NA	NA

**McDowell Creek WWTP -- NPDES Permit #NC0036277**

<b>MONTH</b>	<b>PERMIT LIMIT VIOLATIONS</b>	<b>REPORTING REQUIREMENT VIOLATIONS</b>
July, 2017	NA	NA
August, 2017	NA	NA
September, 2017	NA	NA
October, 2017	NA	NA
November, 2017	NA	NA
December, 2017	NA	NA
January, 2018	NA	NA
February, 2018	NA	NA
March, 2018	NA	NA
April, 2018	NA	NA
May, 2018	NA	NA
June, 2018	NA	NA

**Oxford Glen Plantation WWTP -- NPDES Permit #NC0065384**

<b>MONTH</b>	<b>PERMIT LIMIT VIOLATIONS</b>	<b>REPORTING REQUIREMENT VIOLATIONS</b>
July, 2017	NA	NA
August, 2017	NA	NA
September, 2017	NA	NA
October, 2017	NA	NA
November, 2017	NA	NA
December, 2017	NA	NA
January, 2018	NA	NA

February, 2018	NA	NA
March, 2018	NA	NA
April, 2018	NA	NA
May, 2018	NA	NA
June, 2018	NA	NA

**Sugar Creek WWTP -- NPDES Permit #NC0024937**

<b>MONTH</b>	<b>PERMIT LIMIT VIOLATIONS</b>	<b>REPORTING REQUIREMENT VIOLATIONS</b>
July, 2017	NA	NA
August, 2017	NA	NA
September, 2017	NA	NA
October, 2017	NA	NA
November, 2017	NA	NA
December, 2017	NA	NA
January, 2018	NA	NA
February, 2018	NA	NA
March, 2018	NA	NA
April, 2018	NA	NA
May, 2018	NA	NA
June, 2018	NA	NA