



# Union County, NC Department of Public Works Wastewater System Performance Summary Fiscal Year 2015-2016

## Wastewater Plants

- Twelve Mile Creek WRF - NC0085359
- Crooked Creek WRF - NC0069841
- Olde Sycamore WRF - WQ0011928
- Tallwood WWTP - NC0069523
- Grassy Branch - NC0085812
- Hunley WWTP - NC0072508

## Collection System

WQCS00054

## BioSolids - Land Application

WQ0007486 - NCDEQ  
ND0089044 - SCDHEC





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## Dear Customer,

We are proud to share this year's Annual Wastewater System Performance Summary with you. This report outlines last year's water treatment efforts. Included are details about your treatment facilities, the elements found in your water, and how it compares to standards set by regulatory agencies.

Wastewater is all the water that leaves the inside of your home or business through sinks, toilets, washing machines, etc. and enters Union County's wastewater (sewage) collection system. Wastewater then flows through pipes into the County's regional sewage system, where it is treated to meet federal and state water quality standards.

We have a responsibility to manage our water resources in a sustainable manner to ensure there is sufficient water and its quality is protected. While we are committed to conserving resources and protecting the environment through wastewater treatment, this can only occur if it is done in a safe manner. Protection of public health and safety is, and must remain, our first priority. We are proud of our achievements to date, but we aim to constantly improve the way we manage the wastewater generated by our residents.

If you have any questions about this report or concerning your water, please contact me at 704-289-7044. If you want additional information, please visit our website at [www.co.union.nc.us](http://www.co.union.nc.us).

Sincerely,  
Junior Huneycutt  
Union County Public Works  
500 North Main Street  
Monroe, NC 28112



**Public Works' Mission Statement is as follows:**  
*Develop water, sewer and solid waste infrastructure that supports residential, commercial, industrial and agricultural needs while meeting Federal/State regulations and providing our customer base with acceptable levels of service at cost effective rates*

### **1.0 INTRODUCTION**

House Bill 1160, the Clean Water Act of 1999, was ratified by the North Carolina General Assembly on July 20, 1999 and signed into law by the Governor on July 21, 1999. This legislation placed significant reporting requirements on entities that own or operate wastewater systems. This Performance Summary is intended to establish compliance with this rule.

Union County Public Works (UCPW) is charged with the management, operation and maintenance of the County's sanitary sewer system. During the 2015-16 fiscal year the wastewater system was comprised of 5 active wastewater treatment plants (WWTP), 75 wastewater pumping stations, and over 650 miles of pipe with 33,853 connections. In addition to the 5 WWTPs which have a combined rated treatment capacity of 8.15 million gallons per day (MGD), the County, through contractual agreement, has 2.65 MGD and 3.0 MGD of purchased capacity at the City of Monroe WWTP and Charlotte's McAlpine Creek WWTP respectively.



## 2.0 DEFINITIONS

For the purposes of this Performance Report the following definitions apply:

- **Aerobic** – A condition in which atmospheric or dissolved molecular oxygen is present in the aquatic environment.
- **Automatic Telephone Dialer or ATD** – A device connected to the telephone system that will call programmed telephone numbers to alert people of equipment status.
- **Biological Nutrient removal** – The process of removing nitrogen and phosphorus from wastewater using biological processes as opposed to chemical means.
- **Biosolids** – A primarily organic solid product, produced by wastewater treatment processes that can be beneficially recycled. The word *biosolids* replaces the word *sludge*.
- **BOD – Biochemical Oxygen Demand** – The rate at which organisms use the oxygen in water or wastewater while stabilizing decomposable organic matter under aerobic conditions. The BOD Test is a procedure that measures the rate of oxygen use under controlled conditions of time and temperature. BOD is typically used to express the “strength” of wastewater.
- **CL<sub>2</sub> – Chlorine Residual** – The amount of chlorine present in the final effluent after disinfection. Typically measured in micrograms per liter or milligrams per liter.
- **D.O. – Dissolved Oxygen** – Molecular (atmospheric) oxygen dissolved in a liquid.
- **Effluent** – Treated wastewater flowing from the treatment system.
- **Extended Aeration** – A type of wastewater treatment facility in which the wastewater is retained and treated for a minimum of 24 hours at design flow before discharge occurs.
- **Impeller**- A rotating set of vanes in a pump designed to pump or lift water.
- **Inflow and Infiltration (I&I)** - Extraneous water that enters the sanitary sewer system through openings and/or defects in the collection system.
- **Fecal Coliform** – The coliform (bacteria) found in the feces of warm blooded animals. The presence of coliform-group bacteria is an indication of possible pathogenic bacterial contamination.
- **MGD – Million Gallons per Day** – Volumetric measurement of flow converted to millions. Example 150,000 gallons per day (gpd) / 1,000,000 = 0.150 MGD.
- **NH<sub>3</sub> – Nitrogen as Ammonia** – A compound found naturally in wastewater. The compound is produced by the deamination of organic nitrogen containing compounds
- **NPDES Permit – National Pollutant Discharge Elimination System - Permits**, required by the Federal Water Pollution Control Act Amendments of 1972, which regulate discharges to surface waters.
- **pH** – The expression of the intensity of the basic or acidic condition of a liquid.
- **Pump Station** – A holding tank with pumps that forces wastewater uphill when flow by gravity is not possible.
- **Reclaimed Water** – Highly treated wastewater that has undergone advanced treatment processes to remove solids, organics, and pathogens meeting the State’s Health and Safety Standards for Beneficial Reuse.
- **SCADA** – Acronym for “*supervisory control and data acquisition*”, a computer system for gathering and analyzing real-time data.
- **SBR – Sequencing Batch Reactor** – A type of wastewater treatment facility that treats and discharges water in batches as opposed to continuous flow.
- **SSO** – Acronym for “**sanitary sewer overflow**”
- **Telemetry** – A system by which information pertaining to remote equipment status is transmitted via radio waves to a central location.
- **TSS – Total Suspended Solids** – Particles suspended in a liquid.
- **Turbidity** – The measurement of the clearness or cloudiness of a liquid.

### **Wipes Clog Pipes**

Although some products are labeled and marketed as disposable, such as baby wipes, this does **NOT** mean they can be flushed in the toilet. Unlike toilet paper, these products do not break down once they are flushed. Save yourself and your sewer utility from costly repairs. Please place them in the trash, not the toilet.





### **3.0 SYNOPSIS OF WASTEWATER TREATMENT FACILITIES (Fiscal Year 2015-2016)**

During the 2015-16 fiscal year the Department of Public Works operated and maintained a total of five (5) active wastewater treatment facilities and maintained one (1) inactive facility. Although each Permit requires facility visitation daily, excluding weekends and holidays, Public Works' wastewater treatment facilities are checked 7 days per week, 365 days per year. All treatment facilities are equipped with emergency back-up power generators. In addition to SCADA, each facility has both audible and visual trouble alarms. Wastewater treatment plant staff rotate "call duty" for after hour situations that may arise.

A brief overview of each facility and a performance summary table for each facility is provided herein.

#### **3.1 Twelve Mile Creek Water Reclamation Facility**

Permit No. NC0085359. Twelve Mile Creek WRF is an extended aeration facility utilizing biological nutrient removal and tertiary filtration. Disinfection is accomplished via UV (ultraviolet light). Twelve Mile effluent is discharged into Twelve Mile Creek, which is part of the Catawba River Basin. The facility is permitted to discharge up to 6.0 MGD of treated wastewater. Twelve Mile Creek WWTP is located at 8299 Kensington Drive and serves Waxhaw as well as portions of Indian Trail, Stallings and Weddington. Please refer to Table 3-1.

#### **3.2 Crooked Creek Water Reclamation Facility**

Permit No. NC0069841. Crooked Creek WRF is an extended aeration facility utilizing tertiary filtration. Disinfection is accomplished via UV (ultraviolet light). Crooked Creek effluent is pumped over 17,000 feet to discharge into the North Fork Crooked Creek which lies in the Yadkin Pee Dee River Basin. This facility is permitted to discharge up to 1.9 MGD of treated wastewater. Crooked Creek is located at 4015 Sardis Church Road and serves the Indian Trail, Lake Park and Stallings areas. Please refer to Table 3-2.

#### **3.3 Hunley Creek Wastewater Treatment Plant**

Permit No. NC0072508. The facility was taken out of service May 10, 2006, via a flow diversion project and remains inactive. Hunley Creek is located at 6913 Stevens Mill Road. Due to "Inactive Status" of the Hunley Creek WWTP, there was no data to report to Table 3-3 for fiscal year 2014-15.

#### **3.4 Olde Sycamore Water Reclamation Facility**

Permit No. WQ0011928. Olde Sycamore is an extended aeration facility with tertiary filtration. Disinfection is accomplished via UV (ultraviolet light). This facility is permitted to discharge up to 0.150 MGD (150,000 per gallons per day) of treated wastewater. Olde Sycamore was "up-fitted" in early 2012 to improve operating efficiency (reduced electrical consumption) by implementing usage of fine-bubble diffused aeration versus the former "coarse-bubble" aeration. Olde Sycamore serves the Olde Sycamore Golf Community located off Highway 218 and Rock Hill Church Road. Olde Sycamore effluent is discharged to a man-made impoundment from which it is then pumped onto the Olde Sycamore Golf Course as a source of irrigation. Please refer to Table 3-4.

#### **3.5 Tallwood Estates Wastewater Treatment Plant**

Permit No. NC0069523. Tallwood is an extended aeration facility with tertiary filtration. Disinfection is accomplished via UV (ultraviolet light). This facility is permitted to discharge up to 0.05 MGD (50,000 gallons per day) of treated wastewater. Tallwood plant was replaced in 2013 with a new facility. Tallwood is located within and serves the Tallwood Subdivision off Brief Road and Belk Boy Scout Camp. Tallwood effluent is discharged to Clear Creek, which lies in the Yadkin Pee Dee River Basin. Please refer to Table 3-5.

#### **3.6 Grassy Branch Wastewater Treatment Plant**

Permit No. NC0085812. Grassy Branch is an extended aeration facility with tertiary filtration. Disinfection is accomplished via UV (ultraviolet light). This facility is permitted to discharge up to .05 MGD (50,000 gallons per day) of treated wastewater. Grassy Branch is located at 1629 Old Fish Road and currently serves the Unionville Elementary, Piedmont Middle and Piedmont High School as well as one individual residence, Loxdale Farms Subdivision, and Smith Field Subdivision. Grassy Branch effluent is discharged to Crooked Creek which lies in the Yadkin Pee Dee River Basin. Please refer to Table 3-6.

TABLE 3-1

**Twelve Mile Creek Water Reclamation Facility  
NPDES Permit #: NC0085359  
Fiscal Year: 2015-2016 Effluent Limits and Performance**

PARAMETER	LIMIT	JUL '15	AUG '15	SEP '15	OCT '15	NOV '15	DEC '15	JAN '16	FEB '16	MAR '16	APR '16	MAY '16	JUN '16
FLOW	6.0 MGD	3.27	3.49	3.15	4.38	5.35	5.21	4.31	4.28	3.14	4.01	4.53	3.95
pH	6-9 SU	6.5 - 8.0	7.3-7.7	7.4-8.0	7.3-7.6	6.7-7.2	6.8-7.5	6.8-7.2	6.9-7.2	7.0-7.5	16.6-21.0	7.2-7.5	7.2-7.6
BOD <sub>5</sub> SUMMER (APR.1 - OCT.31)	5 mg/l	1.1	3.3	1.5	2.5	-	-	-	-	-	1.2	0.67	0.57
WINTER (NOV.1 - MAR.31)	10 mg/l	-	-	-	-	6.0	5.4	6.7	5.8	2.5	-	-	-
AMMONIA NITROGEN SUMMER	1 mg/l	0.0	0.4	0.0	0.3	-	-	-	-	-	0.4	0.2	0.2
WINTER	2 mg/l	-	-	-	-	0.6	0.9	0.2	0.5	0.0	-	-	-
TOTAL SUSPENDED RESIDUE	30 mg/l	4.3	6.7	4.7	6.0	10.0	11.6	12.9	10.3	7.1	1.3	0	0.59
FECAL COLIFORM	200/100 ml	21	162	13	17	105	41	309	185	29	1	1.6	3.34
DISSOLVED OXYGEN	≥ 6 mg/l	7.4	7.7	7.8	8.3	8.6	8.9	9.5	9.5	9.4	9.2	8.4	8.5
COPPER	13.2 ug/l	0.0	5.2	0.0	0.0	0.0	2.3	2.2	3.5	0.0	0.0	0.0	3.3
ZINC	175.0 ug/l	60.3	55.6	63.2	40.4	16.0	35.0	29.0	41.0	48.0	50.0	40	60
TOTAL PHOSPHOROUS	41.7 #/day	3.96	0.84	0.33	0.28	0.44	0.26	0.82	0.43	0.49	0.09	0.04	0.17

Permit Violations:

December 2015 BOD did not meet acceptance  
January 2016 BOD did not meet acceptance

**TABLE 3-2**

**Crooked Creek Water Reclamation Facility  
NPDES Permit #: NC0069841  
Fiscal Year: 2015-2016 Effluent Limits and Performance**

PARAMETER	LIMIT	JUL '15	AUG '15	SEP '15	OCT '15	NOV '15	DEC '15	JAN '16	FEB '16	MAR '16	APR '16	MAY '16	JUN '16
FLOW	1.900 MGD	1.01	1.19	1.07	1.35	1.59	1.71	1.45	1.43	1.09	1.06	1.37	
pH	6-9 SU	6.9-8.0	7.1-7.9	7.1-7.9	7.1-7.7	6.9-7.6	6.8-7.6	7.0-7.5	6.6-7.5	7.0-7.5	6.4-7.3	6.3-7.1	
Cl <sub>2</sub>	17 ug/l	-	-	-	-	-	-	-	-	-	-	-	
BOD <sub>5</sub>	SUMMER (APR.1 - OCT.31)	5 mg/l	1.2	1.0	0.0	0.0	-	-	-	-	.08	2.3	
	WINTER (NOV.1 - MAR.31)	10 mg/l	-	-	-	0.6	3.20	1.8	31.9	0.8	-	-	
AMMONIA NITROGEN	SUMMER	2 mg/l	0.06	0.0	0.03	0.0	-	-	-	-	0.06	0.05	
	WINTER	4 mg/l	-	-	-	0.03	0.5	1.2	2.0	0.2	-	-	
TOTAL SUSPENDED RESIDUE	30 mg/l	8.7	3.8	0.0	0.0	0.3	19.1	2.5	48.3	0.4	2.1	4.8	
FECAL COLIFORM	200/100 ml	176	32	4	37	8	3	1	2	1	2	6	
DISSOLVED OXYGEN	≥ 6 mg/l	7.4	7.8	7.9	8.6	9.2	9.2	9.7	9.9	9.5	9.2	8.8	

Permit Violations:  
 July 2015 – Weekly geometric mean fecal coliform exceeded permit limit  
 December 2015 – Weekly TSS and BOD violations  
 February 2016 – Weekly violations for BOD (2) and TSS; Monthly violations for BOD & TSS

TABLE 3-3

Hunley Creek Wastewater Treatment Plant  
 NPDES Permit #: NC0072508  
 Fiscal Year: 2015-2016 Effluent Limits and Performance

PARAMETER	LIMIT	JUL '15	AUG '15	SEP '15	OCT '15	NOV '15	DEC '15	JAN '16	FEB '16	MAR '16	APR '16	MAY '16	JUN '16
FLOW	0.231 MGD	<p><b>Hunley Creek WWTP            is currently not in service.            This facility was listed as inactive as of May 2006;            therefore, there is no data reported for this fiscal year</b></p>											
pH	6-9 SU												
Cl <sub>2</sub>	20 ug/l												
BOD <sub>5</sub> SUMMER (APR.1 - OCT.31)	5 mg/l												
WINTER (NOV.1 - MAR.31)	10 mg/l												
AMMONIA NITROGEN SUMMER	2 mg/l												
WINTER	4 mg/l												
TOTAL SUSPENDED RESIDUE	30 mg/l												
FECAL COLIFORM	200/100 ml												
DISSOLVED OXYGEN	≥ 5 mg/l												
No violations for fiscal year													



**TABLE 3-4**

**Olde Sycamore Water Reclamation Facility  
NPDES Permit #: WQ0011928  
Fiscal Year: 2015-2016 Effluent Limits and Performance**

PARAMETER	LIMIT	JUL '15	AUG '15	SEP '15	OCT '15	NOV '15	DEC '15	JAN '16	FEB '16	MAR '16	APR '16	MAY '16	JUN '16
FLOW	0.150 MGD	0.055	0.046	0.044	0.052	0.074	0.081	0.081	0.084	0.067	0.066	0.080	0.048
pH	6-9 SU	7.3-7.5	6.9-7.4	6.8-7.4	6.9-7.6	6.9-7.4	6.9-7.3	6.7-7.4	6.8-7.2	6.7-7.2	6.7-7.3	6.8-7.3	6.6-7.5
BOD <sub>5</sub>	10 mg/l	1.2	1.2	2.6	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0
AMMONIA NITROGEN	4 mg/l	0.10	0.10	0.00	0.10	0.10	0.11	0.00	0.00	0.00	0.00	0.00	0.0
TOTAL SUSPENDED RESIDUE	5 mg/l	0.0	2.6	0.0	2.5	2.5	0.0	2.5	0.0	1.8	0.0	0.0	0.0
FECAL COLIFORM	14/100 ml	7	3	1	1	1	1	1	1	1	1	1	1
TURBIDITY	≤ 10 NTU	0.3	0.4	0.6	0.9	1.8	1.7	1.3	0.9	1.5	0.8	0.9	0.4

Permit Violations:  
August 2015-fecal coliform violation

**TABLE 3-5**

**Tallwood Estates Wastewater Treatment Plant  
NPDES Permit #: NC0069523  
Fiscal Year: 2015-2016 Effluent Limits and Performance**

PARAMETER	LIMIT	JUL '15	AUG '15	SEP '15	OCT '15	NOV '15	DEC '15	JAN '16	FEB '16	MAR '16	APR '16	MAY '16	JUN '16
<b>FLOW</b>	<b>0.050 MGD</b>	0.019	0.018	0.018	0.032	0.051	0.053	0.034	0.032	0.021	0.021	0.03	0.05
<b>pH</b>	<b>6-9 SU</b>	6.9-7.7	7.0-7.4	6.9-7.4	6.9-7.4	6.7-7.4	6.4-7.5	6.6-7.1	6.5-7.2	6.3-7.5	6.3-7.5	6.6-7.9	6.7-7.44
<b>BOD<sub>5</sub></b>	<b>SUMMER(APR 1-OCT 31)</b>	<b>5 mg/l</b>	0.4	0.6	1.4	0.0	-	-	-	-	0.0	1.65	1.3
	<b>WINTER (NOV.1 - MAR.31)</b>	<b>10 mg/l</b>	-	-	-	-	0.7	0.8	0.0	0.0	0.0	-	-
<b>AMMONIA NITROGEN</b>	<b>SUMMER</b>	<b>2 mg/l</b>	0.02	0.10	0.10	0.24	-	-	-	-	0.0	0.0	0
	<b>WINTER</b>	<b>4 mg/l</b>	-	-	-	-	0.14	0.24	0.03	0.8	0.2	-	-
<b>TOTAL SUSPENDED RESIDUE</b>	<b>30 mg/l</b>	0.6	0.7	0.0	0.0	0.0	2.7	0.0	0.0	0.0	0.7	3.8	8.52
<b>FECAL COLIFORM</b>	<b>200/100 ml</b>	4	2	5	54	15	4	1	1	1	1	2.2	2.1
<b>DISSOLVED OXYGEN</b>	<b>≥ 6 mg/l</b>	7.3	7.8	7.7	8.3	9.0	8.6	9.6	8.8	8.1	8.0	7.7	6.99

Permit Violations:  
 September 2015-fecal coliform violation  
 November 2015-monthly flow violation  
 December 2015-BOD violation  
 January 2016-BOD didn't meet acceptance weekly

**TABLE 3-6**

**Grassy Branch Wastewater Treatment Plant  
NPDES Permit #: NC0085812  
Fiscal Year: 2015-2016 Effluent Limits and Performance**

PARAMETER	LIMIT	JUL '15	AUG '15	SEP '15	OCT '15	NOV '15	DEC '15	JAN '16	FEB '16	MAR '16	APR '16	MAY '16	JUN '16
FLOW	0.050 MGD	0.017	0.030	0.028	0.059	0.074	0.082	0.061	0.059	0.035	0.031	0.05	0.05
pH	6-9 SU	7.2-8.0	6.5-7.7	6.7-7.7	6.6-7.8	6.6-7.5	6.7-7.5	6.8-7.7	6.7-7.8	6.5-7.6	6.4-7.6	6-7.3	6.64-8.01
Cl <sub>2</sub>	17 ug/l	-	-	-	-	-	-	-	-	-	-	-	-
BOD <sub>5</sub> SUMMER (APR.1 - OCT.31)	5 mg/l	0.8	0.7	7.2	4.7	-	-	-	-	-	5.7	2.375	5
WINTER (NOV.1 - MAR.31)	10 mg/l	-	-	-	-	6.8	4.8	4.0	7.9	3.3	-	-	-
AMMONIA NITROGEN SUMMER	2 mg/l	0.00	0.22	1.43	1.41	-	-	-	-	-	1.74	1.28	2
WINTER	4 mg/l	-	-	-	-	5.16	1.70	8.09	3.69	2.79	-	-	-
TOTAL SUSPENDED RESIDUE	30 mg/l	0.0	1.0	1.8	10.4	8.5	13.8	5.0	2.1	0.5	2.2	2.7	2.52
FECAL COLIFORM	200/100 ml	18	4	10	8	51	56	56	223	3	2	41.31	3.96
DISSOLVED OXYGEN	≥ 6 mg/l	7.5	7.7	7.3	8.2	8.3	8.4	9.2	9.0	8.5	8.1	7.6	7.6

Permit Violations:  
 September 2015-BOD violation  
 October 2015-BOD, TSS, and fecal violations  
 November 2015-fecal coliform violation  
 December 2015-monthly flow violation, fecal coliform violation, TSS violation  
 January 2016-2 weekly ammonia violations and BOD violations  
 February 2016-monthly flow violations and fecal coliform violations  
 April 2016 BOD exceeded permit level  
 May 2016 BOD exceeded permit level



#### 4.0 BIOSOLIDS MANAGEMENT (Fiscal Year 2015-2016)

Biosolids are managed and disposed of in accordance with Permit No's. WQ0007486 issued by the North Carolina Department of Environmental Quality and ND0089044 issued by South Carolina Department of Health and Environmental Control. Biosolids are stored at both the Crooked Creek and Twelve Mile Creek WRFs. The solids are aerobically digested and then applied as "fertilizer" to permitted sites. The solids are considered stabilized and thus suitable for land application when the volatile solids content is reduced by 38%. If this 38% volatile solids reduction can not be achieved, then alkaline stabilization, injection or incorporation is employed to insure permit compliance. Union County Public Works, through its biosolids contractor, land applied approximately 5.97 million gallons of biosolids, which equates to 946 dry tons.



**What Are Biosolids?**  
Biosolids are the nutrient-rich, organic by-product of the wastewater treatment process. When treated and managed appropriately, they can be beneficially used for a number of purposes, such as a fertilizer to improve and maintain productive soils and stimulate plant growth. Biosolids are one of the most studied materials that have ever been regulated by the U.S. Environmental Protection Agency (USEPA).

#### 5.0 SYNOPSIS OF WASTEWATER COLLECTION SYSTEM (Fiscal Year 2015-2016)

Permit No. WQCS00054. UCPW currently operates and maintains over 663 linear miles of sewer mains, including force mains, and 75 wastewater pumping stations providing service to population of approximately 95,172 customers. All pump stations are equipped with both audible and visual alarms as well as either automated telephone dialers (ATD) or telemetry which alert staff when alarm conditions are present. Inspections of all pump stations meet or exceed State requirements. Emergency auxiliary power is provided to all stations via portable or permanent mounted generators. Union County personnel are on call rotation and available 24 hours a day, 7 days a week, and 365 days a year.

Public Works is required by State permit to clean a minimum of 10% of the collection system annually to prevent and/or reduce backups and overflows. Staff has consistently surpassed that requirement, cleaning more than the required 10%. UCPW cleaned approximately 12.6% (74 miles of 590 total gravity miles) of the collection system last year. Staff also conducts inspections of the collection system with the utilization of underground closed-circuit television (CCTV) inspection equipment. These cleaning and inspection efforts allow staff to determine areas in the system that require repairs or increased maintenance to provide the proper service to our customers.

FOG (Fats, Oils, and Grease) program is aimed at reducing grease-related back-ups and overflows by educating the public of the hazards associated with the disposal of grease and grease related by-products into the wastewater system. Union County Public Works, in conjunction with Union County Environmental Health, has developed a comprehensive list of food service establishments (FSE) and commercial establishments. This effort will assist in development and enforcement of a grease trap inspection program ensuring that restaurants and other food preparation facilities properly maintain grease traps and interceptors.



This fiscal year, approximately 103 FSEs have been visited, along with 34 schools.

LINE MAINTENANCE (min. 10%)		
	FEET	MILES
SEWER LINES CLEANED	390,720	74
CCTV MAIN LINE	9,007	1.71
SMOKE TESTING	37,678	7.14

## Don't Clog With FOG

When FOG (Fat, Oil and Grease) enters our sewer system, it cools and hardens, clinging to pipe walls. Over time it builds up and leads to blockages in the system lines. These blockages prevent the normal flow of waste water and eventually cause overflows, resulting in damage to homes, businesses and the environment. We need your help in disposing of FOG in safer, more environmentally-friendly methods.

### FOG Is Found In

Meat Fats, Fried Foods, Scraps, Cooking Oil, Baked Goods, Butter, Margarine, Dairy Products



### FOG DOs



Do keep grease out of the wash water. Scrape excess out or wipe with a paper towel.



Do place food scraps in the garbage.



Do put oil and grease in collection containers and dispose of in the trash.

### FOG DON'Ts



Don't use the drain as a means of disposing of food scraps.



Don't put oily, greasy foods down the garbage disposal.



Don't pour fat, oil and grease down the drain. Flushing it with hot water doesn't help.



Utility easements and right-of-ways are maintained by UCPW staff to ensure access for staff and equipment to conduct routine maintenance as well as respond to emergencies, such as sanitary sewer overflows. The easements require round-the-clock access and should not be impeded by structures such as pools (above or below ground), buildings, etc. as well as gardens, trees, shrubs, plantings, etc. Public Works staff inspects and conducts necessary maintenance, including mowing, to these easements and right-of-ways once a year, at a minimum.

High priority lines such as aerial creek crossings, lines subject to erosion and/or problematic areas are visually inspected at a minimum semi-annually. High priority lines are inspected more frequently after periods of heavy rain and flooding.

UCPW maintains emergency response equipment in a ready state at all times. This emergency equipment varies in nature from spare electrical parts and plumbing supplies, to vacuum trucks, pumps, and backhoes. Workers safety is of utmost importance. Safety equipment such as night lighting, gas monitors, trenching and shoring equipment, and reflective cones/signs are always readily available.

UCPW has Capital Improvement Projects (CIP) to identify and correct deficiencies associated within the wastewater collection system. Below is a sample of projects:

**Grassy Branch and Twelve Mile Creek Manhole Rehabilitation** project was completed in December 2015. The project benefit was to reduce storm water entry (inflow & infiltration – “I&I”) into the sanitary sewer system, reducing treatment and maintenance costs. This project is a part of a comprehensive “rehabilitation and repair” program in the Public Works’ CIP plan to conduct necessary repairs to the collection system on an annual basis. Approximately \$487,800 was spent on rehabilitation efforts to over 400 manholes.

**East Fork 12 Mile Interceptor** project was completed in April 2016. This project increased capacity in the 12 Mile trunk sewer system resolving capacity concerns regarding current wastewater flows, while allowing for future growth. Approximately 37,000 LF of interceptors were replaced.

**Davis Mine Creek Interceptor** project was completed in October 2015. This project also increased capacity in the Davis Mine trunk sewer to handle current wastewater flows, as well as future growth. Approximately 4,500 LF of interceptors were replaced.

**Crooked Creek WWTP Headworks Improvements** project completed its design phase in January 2016. The anticipated start date for construction is June 2016. This project consist of constructing a flow equalization tank and improvements to the influent pumping station result in greater operational control and reduce the risk of sanitary sewer overflows during wet weather events. A new screening and grit removal facility will also be constructed.

**12 Mile Creek WWTP Filter Replacement** project began construction in September 2015 and is anticipated to be complete by June 2016. This project will replace the existing effluent filter system with new cloth disk filters which will result in improvement of the plant operational efficiency and increases effluent quality.

**12 Mile Creek WWTP Expansion** completed design in April 2016 and is anticipated to begin construction in August 2016. The project will expand the plant’s treatment capacity from 6.0 MGD to 7.5 MGD which will ensure that demand will be met under projected growth scenarios.

**Ongoing sanitary sewer evaluation studies (SSES)** throughout the collection system to identify problems, conduct flow monitoring, and need for rehabilitation.

During the Fiscal Year 2015-2016, Union County’s wastewater system collected and conveyed approximately 3.38 billion gallons of wastewater. There were thirty nine (39) sanitary sewer overflows with a combined estimated volume of 131,980 gallons that occurred within the collection system. Union County Public Works conveyed 99.998% of the total volume of wastewater without incident.

The annual rainfall for Union County is 46 inches per year. Over the months of late September to December 2015, some areas of the County received in excess of 31 inches of rain, which was at times very intense. This equates to getting more than 65% of the annual rainfall during 30% of the year.



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DATE	MH ID#	ADDRESS	WATER BODY	VOUME DATA		TOTAL VOLUME (GALS)	PRIMARY CAUSE OF SSO
				GALLONS TO SURFACE WATERS	GALLONS ON GROUND		
07/27/15	2105	8311 Prince Valiant Dr	Trib to 12-Mile Crk	300	0	300	Grease
07/31/15	3066	220 MAYWOOD PATH	None	0	100	100	PS Equip Failure
08/12/15		511 Union West Blvd	Crooked Creek	200	550	750	FM break
08/19/15	14092	Hunley Creek PS	Hunley Creek	1,500	0	1,500	Severe Natural Conditions
08/19/15	2724	Grassy Branch WWTP	Grassy Branch	4,500	0	4,500	Severe Natural Conditions
09/13/15		Mayflower Trail	East Fork 12Mile Creek	6,000	0	6,000	Severe Natural Conditions
10/03/15	2646	Eastside PS#3	Salem Creek	500	0	500	Severe Natural Conditions
10/18/15		1019 Blue Stream Ln	Fieldstone Farms	0	540	540	Debris
11/02/15	1548, 1547	East Fork 12mile outfall	East Fork 12Mile Creek	12,000	0	12,000	Severe Natural Conditions
11/02/15	5231	4015 Sardis Church Rd	N Fork Crooked Creek	1,500	0	1,500	Severe Natural Conditions
11/02/15	2725	1619 Old Fish Rd	Grassy Branch	1,315	0	1,315	Severe Natural Conditions
11/02/15	7214	Rone Branch PS	Rone Branch	2,100	0	2,100	Severe Natural Conditions
11/07/15	2645	1001 NC Hwy 205	Rays Fork	3,500	0	3,500	Severe Natural Conditions
11/09/15	35991	3400 Brookstone Trail	Crooked Creek	500	0	500	Severe Natural Conditions
11/30/15	2729	1619 Old Fish Rd	Grassy Branch	4,800	0	4,800	Severe Natural Conditions
12/14/15	1559	7109 Plain View Rd	12mile Creek	800	1,200	2,000	Severe Natural Conditions
12/17/15	2724	1619 Old Fish Rd	Grassy Branch	2,400	0	2,400	Severe Natural Conditions
12/17/15	5231, 5225	4015 Sardis Church Rd	Crooked Creek	2,320	0	2,320	Severe Natural Conditions
12/22/15	2724	1619 Old Fish Rd	Grassy Branch	23,625	0	23,625	Severe Natural Conditions
12/29/15	600	1619 Old Fish Rd	Grassy Branch	600	0	600	Severe Natural Conditions
12/30/15	5231	4015 Sardis Church Rd	Crooked Creek	8,000	0	8,000	Severe Natural Conditions
12/30/15	7214	912 Sharon Dr	Rone Branch	12,000	0	12,000	Severe Natural Conditions
12/30/15	2724	1619 Old Fish Rd	Grassy Branch	12,000	0	12,000	Severe Natural Conditions
01/01/16	2820	1852 Rock Hill Church Rd	Crooked Creek	25	0	25	Rain
01/05/16	12162	116 Springhill Dr		0	225	225	Debris
02/01/16	Force Main	1900 Rock Hill Rd	Crooked Creek	600		600	Severe Natural Conditions
02/04/16	7050	701 Penny Ln		0	270	270	Pump Station Failure
02/03/16	2724	1619 Old Fish Rd	Grassy Branch	3,900	0	3,900	Severe Natural Conditions
03/03/16	4558	2609 Bobwhite Cir		0	10	10	Debris
03/04/16	6389	4008 Houndscroft Dr		0	20	20	Debris
03/17/16	5372	608 S Indian Trail Rd	Crooked Creek	0	20	20	Grease
04/16/16		Stallings Rd	Crooked Creek	11,180	0	11,180	Debris
04/15/16	Force Main	Porter Ridge	Crooked Creek	350	0	350	Contractor hit line
04/20/16	14,445,222,322,255,000	2345 Stallings Rd	Crooked Creek	0	300	300	Debris
04/16/16	14,445,222,322,255,000	2345 Stallings Rd	Crooked Creek	11,180	0	11,180	Debris
04/23/16	5372	608 S Indian Trail Rd	Crooked Creek	0	300	300	Debris
05/01/16	4271	1713 Crestgate Dr	East Fork 12-Mile Crk.	75	0	75	Debris
05/06/16	10818	1108 Aringill Ln	West Fork 12-Mile Crk	550	0	550	
06/04/16	7214	910 Sharon Rd	Rone Branch	125	0	125	Severe Natural Conditions
39	<b>TOTAL SPILLS</b>		<b>TOTAL ANNUAL VOLUME</b>	<b>101,945</b>	<b>3,535</b>	<b>131,980</b>	
			<b>MILES OF PIPE IN SYSTEM</b>	635.00			
			<b>SSO's PER 100 MILES</b>	6.14			





For questions concerning this Wastewater System Performance Summary or additional information please contact UCPW:

(704) 296-4210

Or write to:

Union County Public Works  
500 North Main Street, Suite 600  
Monroe, NC 28112-4730

This document can also be viewed at:

<http://www.co.union.nc.us/LivingHere/PublicWorks.aspx>

