

August 2006

UNION COUNTY, NORTH CAROLINA

DEPARTMENT OF PUBLIC WORKS



WASTEWATER SYSTEM PERFORMANCE SUMMARY

(FISCAL YEAR 2005-2006)

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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 said rule.

Union County Public Works (UCPW) is charged with the management, operation and maintenance of the County's sanitary sewer system. During the 2005-2006 fiscal year the wastewater system was comprised of 6 wastewater treatment plants (WWTP), approximately 60 wastewater pumping stations and approximately 450 miles of pipe with over 22,000 connections. In addition to the 6 WWTP's which have a combined rated treatment capacity of 4.9 million gallons per day (MGD), the County, through contractual agreement, has 2.65 MGD and 1.0 MGD of purchased capacity at the City of Monroe WWTP and Charlotte's McAlpine Creek WWTP respectively.

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

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 alert programmed telephone numbers 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* is replacing 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.

- **CL₂ – 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 MGD x 1,000,000 = 150,000 gallons per day (gpd).
- **NH₃ – 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.
- **SBR – Sequencing Batch Reactor** – A type of wastewater treatment facility that treats and discharges water in batches as opposed to continuous flow.
- **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.

3.0 SYNOPSIS OF WASTEWATER TREATMENT FACILITIES (Fiscal Year 2005-2006)

During the 2005-2006 fiscal year the Department of Public Works operated and maintained a total of six (6) wastewater treatment facilities. 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. Each treatment facility is equipped with an automated telephone dialer (ATD). In addition to an ATD, 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 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 2.5 MGD of treated wastewater. Numerous permit violations (depicted in Table 3.1) were experienced during the past fiscal year. A facility expansion (forecasted as a 28 month project) began February 2006. The expansion will increase reliability, performance and the treatment capacity to 6.0 MGD. Operational changes and capital improvements have been made in an effort to better control the amount of phosphorous discharged. Twelve Mile Creek WWTP is located at 3104 Providence Road South 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 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. Hunley Creek is a Sequencing Batch Reactor. Disinfection is accomplished via chlorination/dechlorination. Hunley Creek

effluent is discharged into Goose Creek, which lies in the Yadkin Pee Dee River Basin. This facility is permitted to discharge up to .231 MGD of treated wastewater. Discharge permit limits changed February 2005. The new limits are more stringent than the design capabilities of the Hunley Creek facility. The facility was taken off-line May 10, 2006 via flow diversion project. Hunley Creek is located at 6913 Stevens Mill Road and served the subdivisions of Shanamara, Hunley Creek and Stevens Mill. Please refer to Table 3-3.

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 .150 MGD of treated wastewater. Olde Sycamore serves the Olde Sycamore Golf Community located off Highway 218 and Rock Hill Church Road. Olde Sycamore effluent is discharged to a manmade impoundment where 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 .05 MGD of treated wastewater. Tallwood is located within and serves the Tallwood Subdivision off Brief Road. 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 of treated wastewater. Grassy Branch is located at 1629 Old Fish Road and currently serves the Unionville Elementary, Piedmont Middle and Piedmont High Schools as well as the Loxdale 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: 2005-2006 Effluent Limits and Performance**

PARAMETER	LIMIT	JUL '05	AUG '05	SEP '05	OCT '05	NOV '05	DEC '05	JAN '06	FEB '06	MAR '06	APR '06	MAY '06	JUN '06
FLOW	2.500 MGD	2.250	2.130	1.820	2.020	1.980	2.650 ⁷	2.560 ¹²	2.100	2.060	1.950	2.010	2.200
pH	6-9 SU	7.11-7.35	7.17-7.33	7.21-7.36	7.18-7.42	7.09-7.34	6.93-7.36	7.11-7.60	7.09-7.45	7.04-7.43	7.10-7.36	7.12-7.46	7.16-7.48
BOD5	5 mg/l	2.93	4.28	3.77	1.39						9.22 ²¹	5.76 ²³	3.40
	10 mg/l					0.26	7.58 ⁸	6.01	10.23 ¹⁵	11.01 ¹⁸			
AMMONIA NITROGEN	2 mg/l	0.1	0.9	0.0	0.0						0.1	0.4	1.1
	4 mg/l					0.0	5.2 ⁹	3.8	2.7	2.5			
TOTAL SUSPENDED RESIDUE	30 mg/l	5.2	4.6	5.5	1.9	0.6	7.5	1.3	5.1	4.4	9.0	7.5	1.3
FECAL COLIFORM	200/100 ml	17 ¹	16	22	9	9	44 ¹⁰	4 ¹³	9 ¹⁶	52 ¹⁹	26	13	48
DISSOLVED OXYGEN	≥ 6 mg/l	7.25	6.70	7.01	7.39	7.84	8.92	9.07	9.28	8.91	8.42	7.95	7.88
TOTAL PHOSPHOROUS	41.7 #/day	68.62 ²	42.32 ³	44.80 ⁴	37.03 ⁵	51.07 ⁶	44.12 ¹¹	4.83 ¹⁴	48.76 ¹⁷	9.59 ²⁰	25.96 ²²	36.14 ²⁴	14.13 ²⁵

¹ Fecal Coliform daily violation on 07/07/05 due to power outage; Monthly Fecal Coliform compliant
² Phosphorous monthly and annual average non-compliant; seeking methods to identify phosphorous source(s) & subsequent treatment
³ Phosphorous monthly and annual average non-compliant; seeking methods to identify phosphorous source(s) & subsequent treatment
⁴ Phosphorous monthly and annual average non-compliant; seeking methods to identify phosphorous source(s) & subsequent treatment
⁵ Phosphorus had no monthly violation; but had annual mass loading violation
⁶ Phosphorous monthly and annual average non-compliant; Phosphorous treatment study & modeling being commissioned to identify effective treatment methods
⁷ Monthly average flow exceeded permitted limit due to 11 of 31 days high flows caused by rain events
⁸ BOD ₅ parameter exceeded Weeks of 12-19 & 12-27 due to high flows; Monthly BOD ₅ compliant
⁹ Ammonia Nitrogen parameter exceeded for month due to high levels discharged last two weeks of month; High flow contributing factor
¹⁰ Fecal Coliform daily violation on 12-16, 19, 21, & 27 due to high flows/turbidity; Monthly Fecal Coliform compliant
¹¹ Phosphorous monthly and annual average non-compliant; Phosphorous treatment study and modeling being initiated to achieve short & long term parameter limits
¹² Monthly average flow exceeded permitted limit due to 18 of 31 days high flows caused by rain events
¹³ Fecal Coliform daily violation on 01-31 due to power failure; Monthly Fecal Coliform compliant
¹⁴ Phosphorous monthly compliant; annual avg. non-compliant; Phosphorous BioWin modeling underway to ID measures to achieve short & long term parameter limits
¹⁵ BOD ₅ parameter exceeded Week of 02-23 due to low temperature; Monthly BOD ₅ non-compliant by 0.23 mg/l for same reason

**Twelve Mile Creek Water Reclamation Facility
 NPDES Permit #: NC0085359
 Fiscal Year: 2005-2006 Effluent Limits and Performance
 continued**

¹⁶	Fecal Coliform daily violation on 02-27 due to power failure; Monthly Fecal Coliform compliant
¹⁷	Phosphorous monthly and annual average non-compliant; Phosphorous BioWin modeling underway to ID measures to achieve short & long term parameter limits
¹⁸	BOD ₅ parameter exceeded 1 st Week of March due to last 2 days of Feb; Monthly BOD ₅ non-compliant by 1.01 mg/l for same reason
¹⁹	Fecal Coliform daily violation on 03-13 & 14 due to power failure; Monthly Fecal Coliform compliant
²⁰	Phosphorus had no monthly violation ; but had annual mass loading violation
²¹	BOD ₅ parameter exceeded Weeks of April 10 & 24 due to filters blinding; Monthly BOD ₅ non-compliant by 4.22 mg/l for same reason
²²	Phosphorus had no monthly violation ; but had annual mass loading violation
²³	BOD ₅ parameter exceeded Week of May 22 due to filters blinding; Monthly BOD ₅ non-compliant by 0.76 mg/l for same reason
²⁴	Phosphorus had no monthly violation ; but had annual mass loading violation
²⁵	Phosphorus had no monthly violation ; but had annual mass loading violation

TABLE 3-2

**Crooked Creek Water Reclamation Facility
NPDES Permit #: NC0069841
Fiscal Year: 2005-2006 Effluent Limits and Performance**

PARAMETER	LIMIT	JUL '05	AUG '05	SEP '05	OCT '05	NOV '05	DEC '05	JAN '06	FEB '06	MAR '06	APR '06	MAY '06	JUN '06
FLOW	1.900 MGD	1.111	1.187	1.116	1.369	1.210	1.638	1.470	1.466	1.323	1.256	1.301	1.410
pH	6-9 SU	6.35-7.82	6.12-7.76	6.28-7.63	6.22-7.59	6.67-7.69	6.89-7.41	6.68-7.56	6.83-7.26	6.80-7.80	6.30-7.45	6.07-7.75	6.21-7.75
Cl₂	17 ug/l	-	-	-	-	-	-	-	-	-	-	-	-
BOD₅	5 mg/l	2.35	2.03	1.91	2.63						3.87	3.97	2.97
	10 mg/l					2.06	1.57	3.10	3.94	3.93			
AMMONIA NITROGEN	2 mg/l	0.1	0.0	0.2	0.4						0.1	0.0	0.2
	4 mg/l					0.0	0.0	0.0	0.0	0.0			
TOTAL SUSPENDED RESIDUE	30 mg/l	2.0	3.6	3.1	4.3	1.3	1.0	1.5	2.4	2.4	3.3	6.0	1.9
FECAL COLIFORM	200/100 ml	17	3	22	34	30	13	13	12	10	7	18	10
DISSOLVED OXYGEN	≥ 6 mg/l	7.70	7.61	8.16	8.59	9.18	10.37	10.30	10.93	10.67	9.49	8.81	7.89

No violations for fiscal year

TABLE 3-3

**Hunley Creek Wastewater Treatment Plant
NPDES Permit #: NC0072508
Fiscal Year: 2005-2006 Effluent Limits and Performance**

PARAMETER	LIMIT	JUL '05	AUG '05	SEP '05	OCT '05	NOV '05	DEC '05	JAN '06	FEB '06	MAR '06	APR '06	MAY '06	JUN '06
FLOW	0.231 MGD	0.196	0.198	0.184	0.207	0.199	0.240 ⁷	0.227	0.211	0.205	0.195	0.223	NO
pH	6-9 SU	6.80-6.93	6.90-7.00	7.00-7.10	6.60-7.30	6.80-7.03	6.50-6.94	6.54-6.71	6.61-6.81	6.49-6.91	6.71-7.12	7.04-7.13	
Cl ₂	20 ug/l	2.8	6.4	2.3	8.3	3.7	1.3	9.8	5.5	11.1	13.3	7.0	
BOD ₅	SUMMER (APR.1 - OCT.31)	5 mg/l	18.35 ¹	12.10 ³	12.26 ⁴	11.23 ⁵					22.11 ¹²	21.09 ¹³	LONGER
	WINTER (NOV.1 - MAR.31)	10 mg/l					15.95 ⁶	17.00 ⁸	21.44 ⁹	18.1 ¹⁰	17.28 ¹¹		
AMMONIA NITROGEN	SUMMER	2 mg/l	1.8	0.0	0.6	0.0					1.3	1.0	
	WINTER	4 mg/l					2.3	1.2	1.5	12.7	1.6		IN
TOTAL SUSPENDED RESIDUE	30 mg/l	15.0	10.1	9.9	17.5	12.5	4.6	14.1	12.5	16.2	15.9	13.0	
FECAL COLIFORM	200/100 ml	254 ²	2	1	4	6	22	9	9	4	1	10	
DISSOLVED OXYGEN	≥ 5 mg/l	5.52	5.79	5.85	5.83	5.47	5.56	5.41	5.59	5.60	5.63	5.26	SERVICE

¹ BOD₅ parameter not achievable with current process; plant is scheduled to be removed from service via diverted flow

² Fecal Coliform exceeded last week of month; suspected high chlorine demand in chlorine contact chamber; thoroughly cleaned

³ BOD₅ parameter not achievable with current process; plant is scheduled to be removed from service via diverted flow

⁴ BOD₅ parameter not achievable with current process; plant is scheduled to be removed from service via diverted flow

⁵ BOD₅ parameter not achievable with current process; plant is scheduled to be removed from service via diverted flow

⁶ BOD₅ parameter not achievable with current process; plant is scheduled to be removed from service via diverted flow

⁷ Monthly average flow parameter exceeded due to infiltration from rain events

⁸ BOD₅ parameter not achievable with current process; plant is scheduled to be removed from service via diverted flow

⁹ BOD₅ parameter not achievable with current process; plant is scheduled to be removed from service via diverted flow

¹⁰ BOD₅ parameter not achievable with current process; plant is scheduled to be removed from service via diverted flow

¹¹ BOD₅ parameter not achievable with current process; plant is scheduled to be removed from service via diverted flow

¹² BOD₅ parameter not achievable with current process; plant is scheduled to be removed from service via diverted flow

¹³ BOD₅ parameter not achievable with current process; plant is scheduled to be removed from service via diverted flow

Permitted limit for BOD₅ changed as of February 1, 2005 to 5mg/l for summer and 10 mg/l winter. Diversion of Hunley Creek WWTP flow began May 10, 2006

See text in section 3.3 regarding permit changes.

TABLE 3-4

Olde Sycamore Water Reclamation Facility
NPDES Permit #: WQ0011928
Fiscal Year: 2005-2006 Effluent Limits and Performance

PARAMETER	LIMIT	JUL '05	AUG '05	SEP '05	OCT '05	NOV '05	DEC '05	JAN '06	FEB '06	MAR '06	APR '06	MAY '06	JUN '06
FLOW	0.150 MGD	0.064	0.077	0.066	0.077	0.071	0.092	0.079	0.075	0.074	0.062	0.062	0.062
pH	6-9 SU	6.83-7.80	6.33-7.53	6.62-7.70	6.19-7.70	6.36-7.35	6.15-7.80	6.24-7.48	6.13-7.42	6.63-7.52	6.82-7.51	6.75-7.34	6.57-7.22
BOD₅	10 mg/l	1.00	0.0	0.00	0.00	0.00	0.00	0.00	1.20	2.44	0.00	1.58	0.00
AMMONIA NITROGEN	4 mg/l	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL SUSPENDED RESIDUE	5 mg/l	0.2	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.50	0.0
FECAL COLIFORM	14/100 ml	4	1	1	1	1	1	3	1	1	1	1	1
TURBIDITY	≤ 10 NTU	0.4	0.7	0.3	0.4	1.2	1.5	1.6	1.4	2.5	0.4	0.5	0.3

No violations for fiscal year

TABLE 3-5

**Tallwood Estates Wastewater Treatment Plant
NPDES Permit #: NC0069523
Fiscal Year: 2005-2006 Effluent Limits and Performance**

PARAMETER	LIMIT	JUL '05	AUG '05	SEP '05	OCT '05	NOV '05	DEC '05	JAN '06	FEB '06	MAR '06	APR '06	MAY '06	JUN '06
FLOW	0.050 MGD	0.025	0.026	0.022	0.031	0.023	0.036	0.035	0.029	0.028	0.032	0.026	0.026
pH	6-9 SU	6.32-7.50	6.70-7.78	6.88-7.70	6.50-7.98	6.51-8.67	6.55-7.80	6.42-7.44	6.13-7.78	6.22-7.57	6.55-7.69	6.31-7.45	6.71-7.61
BOD₅	5 mg/l	4.27	5.05 ¹	3.49	1.71						10.08 ²	4.80	5.19 ³
	10 mg/l					1.76	0.00	3.24	5.38	5.45			
AMMONIA NITROGEN	2 mg/l	0.0	0.6	0.0	0.0						0.0	0.0	0.0
	4 mg/l					0.0	0.0	0.0	0.0	0.5			
TOTAL SUSPENDED RESIDUE	30 mg/l	1.5	1.2	1.8	1.32	2.60	1.90	6.04	4.88	2.00	0.00	0.00	0.00
FECAL COLIFORM	200/100 ml	1	1	1	4	6	1	2	1	1	1	1	1
DISSOLVED OXYGEN	≥ 6 mg/l	7.53	7.94	7.49	8.52	8.82	10.21	9.21	9.97	9.92	8.79	8.46	7.55

¹ BOD₅ weekly parameter violated second week of month leading to monthly BOD₅ violation by 0.05 mg/l. Compromise of structure integrity was fault. Operational changes implemented to adapt

² BOD₅ parameter violated 1st, 2nd, & 3rd weeks of month resulting in monthly BOD₅ violation. Abnormally high BOD₅ & suspended solids in influent during this time period (2-3 X normal)

³ BOD₅ monthly average parameter exceeded by 0.19 mg/l due to severe electrical storm which damaged some electrical equipment impairing treatment capacity. Equipment repaired/replaced.

TABLE 3-6

**Grassy Branch Wastewater Treatment Plant
NPDES Permit #: NC0085812
Fiscal Year: 2005-2006 Effluent Limits and Performance**

PARAMETER	LIMIT	JUL '05	AUG '05	SEP '05	OCT '05	NOV '05	DEC '05	JAN '06	FEB '06	MAR '06	APR '06	MAY '06	JUN '06
FLOW	0.050 MGD	0.003	0.005	0.006	0.009	0.006	0.013	0.012	0.011	0.010	0.009	0.009	0.009
pH	6-9 SU	8.00-8.40	7.70-8.30	7.50-7.70	7.10-7.70	7.30-7.90	7.40-7.60	7.20-7.50	7.20-7.70	7.61-7.72	6.53-7.65	7.25-7.58	7.68-7.93
Cl₂	17 ug/l	-	-	-	-	-	-	-	-	-	-	-	-
BOD₅	5 mg/l	1.74	1.40	2.34	1.26						2.17	2.16	1.29
	10 mg/l					2.61	0.00	1.45	3.35	1.43			
AMMONIA NITROGEN	2 mg/l	0.0	0.0	1.1	1.0						0.0	0.3	0.0
	4 mg/l					1.0	0.0	0.0	0.0	0.0			
TOTAL SUSPENDED RESIDUE	30 mg/l	1.0	0.2	0.8	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0
FECAL COLIFORM	200/100 ml	3	3	1	4	1	2	12	2	1	11	6	1
DISSOLVED OXYGEN	≥ 6 mg/l	7.41	7.58	6.60	6.85	7.76	9.58	12.21	10.09	9.38	8.31	7.94	7.58

No violations for fiscal year

4.0 BIOSOLIDS MANAGEMENT

Biosolids are managed and disposed of in accordance with Permit No. WQ0007486 issued by the North Carolina Department of Environment and Natural Resources. Biosolids are stored at both the Crooked Creek and Twelve Mile Creek WWTP's. 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 ensure Permit compliance.

5.0 SYNOPSIS OF WASTEWATER COLLECTION SYSTEM (Fiscal Year 2005-2006)

UCPW currently operates and maintains approximately 60 wastewater pump stations and approximately 450 miles of sewer lines with approximately 22,000 connections.

Wastewater pump stations are equipped with audible and visual alarms as well as an automated telephone dialer or telemetry that alert staff when predetermined alarm conditions exist. All pump stations are checked a minimum of twice weekly and many are checked daily to ensure proper maintenance and operation. Emergency back up power is provided to all stations via portable or permanent generators. Wastewater personnel are on call rotation and are available 24 hours per day, 7 days per week.

Public Works 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 and backhoes. Worker safety is of utmost importance. Safety equipment such as night lighting, gas monitors, and reflective cones/signs are also readily available.

Public Works has ongoing programs to identify and correct problems associated with the Inflow and Infiltration (I&I) of stormwater into the sanitary sewer system. During the fiscal year 2005-2006 the following measures were taken to reduce the amount of extraneous water entering the sanitary sewer system:

- ✓ Approximately 1,600 linear feet of sewer line was smoke tested and inspected in an effort to identify sources of I&I.
 - ✓ Approximately 6,420 linear feet of sewer line was videotaped via CCTV in an effort to identify sources of I&I.
 - ✓ Over 3,660 manholes were inspected. Repair needs were prioritized and then conducted as appropriate. 1,750 repairs were completed.
- Major system improvements during fiscal year 2005-2006 include:

- ✓ Approximately 120 manholes serving UCPW customers in the Crooked Creek basin were refurbished.
- ✓ A 1,700 linear ft sewer diversion line was installed on the Poplin Rd lift station force main to facilitate flow balance between the Twelve Mile Creek WWTP and the Crooked Creek WWTP.
- ✓ A project consisting of 2500 feet of gravity line, a wastewater pump station and 11,000 linear feet of force main was installed along Stevens Mill Rd to enable the de-commissioning of the Hunley Creek WWTP.
- ✓ 22 sewer lift stations were upgraded with remote telemetry enabling UCPW personnel to monitor station activity, equipment status and flow remotely.

During the 2005-2006 fiscal year, the County's wastewater system collected and conveyed approximately 1.4 billion gallons of flow for treatment. There were fourteen wastewater spills, with a combined volume of approximately 242,000 gallons that occurred system-wide during the fiscal year. A brief description of each spill is presented below.

<u>DATE</u>	<u>LOCATION</u>	<u>CAUSE</u>	<u>SURFACE WATER</u>	<u>VOLUME (GALLONS)</u>
07/31/2005	HWY 205	I & I	SALEM CREEK	900
08/09/2005	McINTYRE RD	I & I	MEADOWS BRANCH	900
09/03/2005	THOMAS HELMS RD	AIR RELEASE VALVE	NONE	900
11/08/2005	KING GEORGE DR	SEWER PLUG	NONE	169,368
11/23/2005	3344 PRESSON RD	LIFT STATION	NONE	300
12/05/2005	MONROE ANSONVILLE RD	I & I	MEADOWS BRANCH	44,000
12/06/2005	HWY 16	I & I	TWELVE MILE CREEK	960
12/15/2005	MONROE ANSONVILLE RD	I & I	MEADOWS BRANCH	3,500
12/16/2005	3344 PRESSON RD	FORCE MAIN	NONE	300
02/23/2006	3100 McCLENDON RD	BLOCKAGE	DAVIS MINE CREEK	350
04/05/2006	HWY 16	LIFT STATION	TWELVE MILE CREEK	4,000
06/07/2006	SARDIS BUSINESS PARK	BLOCKAGE	CROOKED CREEK	1,800
06/07/2006	DELAMERE CT	BLOCKAGE	TWELVE MILE CREEK	300
06/14/2006	McINTYRE RD	I & I	MEADOWS BRANCH	14,400

In order to combat sanitary sewer overflows associated with miscellaneous debris accumulation and/or grease buildup, UCPW cleaned approximately 43 linear miles of sewer lines during this report period. A minimum of 10 percent of all sewer lines (excluding lines that are less than 5 years old) are cleaned annually. All lines are visually inspected on a regular basis in an effort to detect deficiencies.

For questions concerning this Wastewater System Performance Summary or additional information please contact the Public Works Department at (704) 296-4210 or write to:

Union County Public Works Department
400 North Church Street
Monroe, NC 28112-4804

This document can be viewed at <http://UCPW.co.union.nc.us>.