Winston-Salem Forsyth County Utility Commission
Wastewater Collection and Treatment System
Performance Report for FY 2004-2005

This report is published in accordance with the requirements of the North Carolina Clean Water Act of 1999 and provides information on the Publicly Operated Treatment Works (POTW) and Collection System operated by the Winston-Salem/Forsyth County Utility Commission. It covers the period from July 1, 2004 through June 30, 2005. This report is published and released to our customers annually.

The Winston-Salem/Forsyth County Utility Commission (Commission) operates two wastewater treatment plants (WWTPs) with a combined treatment capacity of 51 million gallons per day. During the period covered by this report a total of 12.62 billion gallons of wastewater was treated at these facilities. The collection and treatment system includes 1,439 miles of sewer lines and 50 pumping stations. The Utility Commission and its staff work hard to meet or exceed the requirements mandated by the North Carolina Clean Water Act and the requirements of the National Pollutant Discharge Elimination System (NPDES) permits that regulate the actual operation of the treatment plants and the disposal of our biosolids.

The Archie Elledge WWTP operates under NPDES Permit NC0037834 and the Muddy Creek WWTP operates under NPDES permit NC0050342. The treatment and disposal of residual biosolids produced by the plants is accomplished by anaerobic digestion followed by a combination of land application onto farm land or burial in a lined landfill. The land application of biosolids is regulated by the North Carolina Division of Water Quality under Permit WS0000094.

The treatment plants treated approximately 201 million gallons less flow during FY 2004-05 than they did during FY 2003-04. This decrease is a reflection of the Commission's on-going efforts to reduce the amount of surface water that enters the collection system. As noted in Appendix C, overflow events decreased in FY 2004-05 as was also the case in FY 2003-04.

The Commission's two treatment plants met all the requirements established by their NPDES or land application permits during the report period. On average, treated wastewater discharged by the plants met the minimum requirements imposed by the State of North Carolina by a **safety factor of 4.69**. The bar chart in Appendix B shows the performance of the wastewater treatment plants during this period. Approximately 30,110 tons of regulated pollutants were removed by the treatment processes during the period ending June 30, 2005. Our treatment facilities removed 96.8% of the regulated pollutants they received.

As in FY 2003-04, a reduction in the total volume of wastewater spilled from the collection system was achieved in FY 2004-05. The total volume of wastewater spilled (see Appendix C) in FY 2004-05 represents a 23.5% drop in spilled volume from that reported for FY 2003-04. Since the passage of the North Carolina Clean Water Act in 1999 and with the exception of FY 2002-03, the total volume of overflows has been reduced annually from the volume of overflow reported during the baseline year of FY 1998-99. The FY 2004-05 overflow volume is 84% less than that reported for the baseline year. Increased preventative maintenance efforts and attentiveness to response time by maintenance personnel continue to be major factors contributing to the reduction of overflow volume.

The majority of overflow occurrences were caused by sewer line blockages in FY 2004-05. Almost half, 46.04%, of all line blockages were attributed to the accumulation of fats, oils, and grease in the collection system. This percentage does however represent a reduction in the amount overflows attributed to fats, oils, and grease, down from 59% in FY 2003-04. This reduction is indicative of the effectiveness of the Commission's Grease Interceptor Ordinance (now in place for two years) and public education efforts. In addition, the reduction is attributable to our maintenance personnel's proactive approach to cleaning the publically maintained portion of sewer connections and keeping sewer main lines clean and free of grease as well as tree roots and debris, the other major contributors to line blockages.

In addition, in FY 2004-05 the Commission continued its proactive efforts toward the reduction of SSOs by spending in excess of $5.5 million on rehabilitation of 68,000 feet of gravity sewer mains and 1,800 vertical feet of manholes. The sewer mains rehabilitated ranged in size from 6" to 30". The mains were rehabilitated by means of pipe bursting, cured in place pipe, point repairs, or a combination of any of the three methods. The enhanced condition of these sewer mains and manholes provided by the rehabilitation projects not only contributes to the reduction of SSOs but, also aids in the reduction of infiltration and inflow by reducing and/or eliminating sewer system access points for storm water runoff and groundwater.

Further, the staff continues to actively identify and plan for projects in an effort to reduce SSOs and infiltration and inflow into the sewer system. In addition to the benefits of reducing sanitary sewer overflow volume and the reduction of water getting into the system these projects have the added benefit of decreasing the amount of sewer to be treated, and thereby reducing overall operating costs.

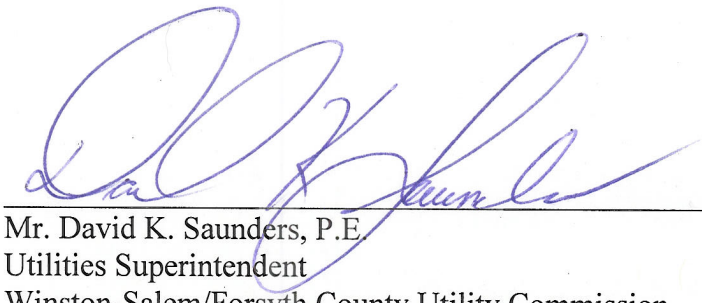
As always, customer involvement will also continue to be factor in the reduction of SSOs. All customers can do their part in helping to keep the sewer system free of materials that cause blockages by not dumping debris and fats, oils, or grease into the system.

To report a sewer spill, please contact the Commission's **Construction and Maintenance Office at (336) 650-7650** or, if after hours, call the **24-hour Emergency Number at (336) 727-2345.** If you have questions regarding the Commission's programs or need additional information regarding this report, please contact Mr. David Saunders at (336) 727-8418. Copies of this report may be obtained by calling the Utilities Administration Office at (336) 727-8418. This report is also available at all branches of the Forsyth County Public Library and it is posted on the City of Winston-Salem's website at *http://www.cityofws.org/utilities/documents.html*.

This document includes details about monitoring system discharges and overflows from our system, the preventative maintenance program the Commission has established to prevent potential problems and the degree to which we complied with State and Federal standards during the fiscal year ending June 30, 2005. During the fiscal year the percentage of wastewater spilled from the collection system to surface waters was 0.0020% of the total wastewater entering our collection system. The Commission's goal, however, is to have zero overflows from the sewer system. (See Appendix A and C and a detailed summary of collection system overflows in Appendix D)

Certification of Accuracy:

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 all persons or concerns using the publicly owned wastewater collection and treatment facilities under the direction of the Winston-Salem/Forsyth County Utility Commission and that those persons or concerns have been notified as to the availability of this report.



Date 8/26/05

Mr. David K. Saunders, P.E.
Utilities Superintendent
Winston-Salem/Forsyth County Utility Commission

APPENDIX A

Wastewater Treatment Plant and Pump Station Overflow/Spill Information
Fiscal Year 2004-2005

Month/Year	Flow Discharged From Treatment Plants, Gallons	Number of Overflow Events Reported	Volume of Overflows, gallons	Number of NPDES Permit Violations at Treatment Plants
July 2004	990,950,000	0	0	0
August 2004 [1]	1,048,100,000	3	1,735	0
September 2004 [2]	1,155,560,000	4	2,160	0
October 2004 [3]	1,042,150,000	1	200	0
November 2004	1,044,950,000	0	0	0
December 2004 [4]	1,105,420,000	1	10	0
January 2005 [5]	1,051,120,000	2	1,019	0
February 2005	967,210,000	0	0	0
March 2005	1,127,490,000	0	0	0
April 2005	1,062,450,000	0	0	0
May 2005	1,026,020,000	0	0	0
June 2005 [6]	1,000,030,000	1	1,800	0
ANNUAL TOTAL	**12,621,450,000**	**12**	**6,924**	**0**

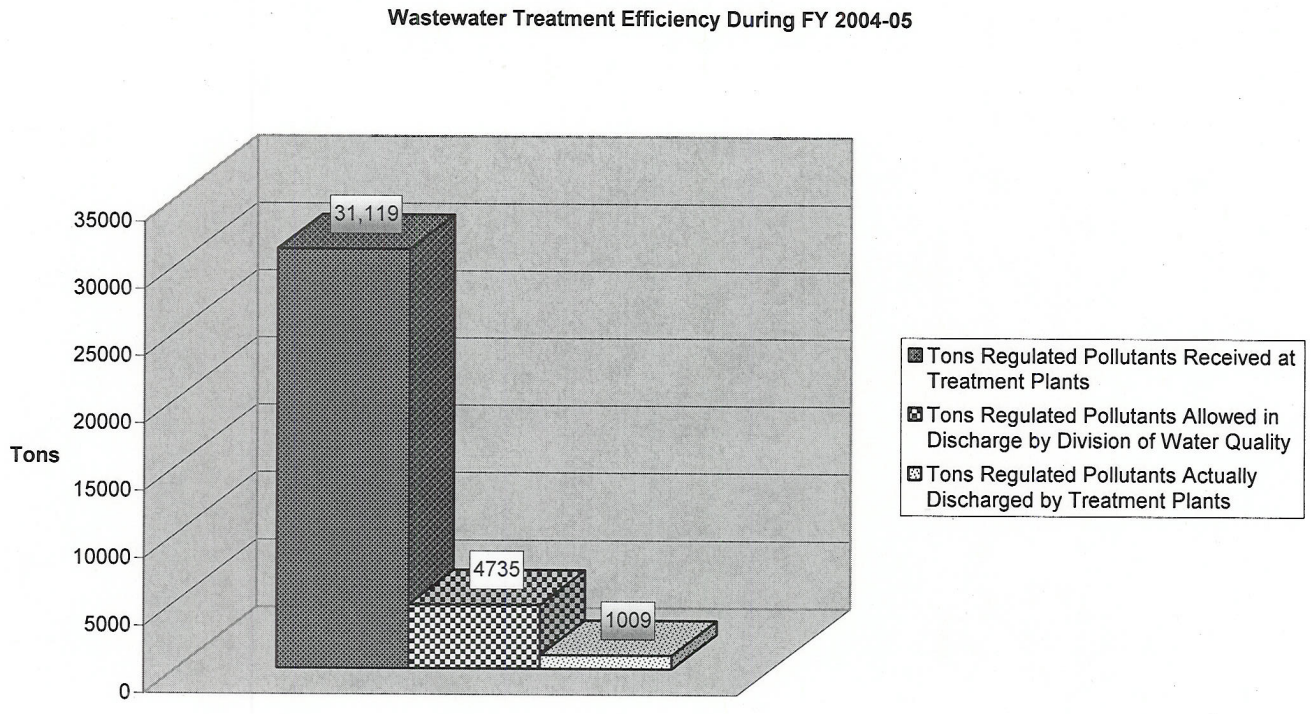
Notes:

1. Three overflow events occurred during **August 2004**. On August 11, 2004 an estimated 75 gallons of wastewater was spilled into a storm drain at the Archie Elledge WWTP, located at 2801 Griffith Road in Winston-Salem, when a contractor mistakenly turned off the bar screens at the plant's headworks. On August 12, 2004 an estimated 900 gallons of dilute wastewater was spilled at the Tanglewood Park Pumping Station, located at 4205 Clubhouse Drive in Clemmons, when the pump station was inundated with flood waters associated with a tropical storm that passed through the piedmont. On August 15, 2004 an estimated 760 gallons of unchlorinated plant effluent was spilled into a storm drain at the Archie Elledge WWTP after an underground process water line ruptured. The water spilled had passed through the plant's treatment process but had not been chlorinated to kill fecal coliform bacteria.
2. Four overflow events occurred during **September 2004**. On September 8, 2004 an estimated 800 gallons of dilute wastewater was spilled at the Reedy Fork Pumping Station located at 833 Crosscreek Road in Kernersville. An estimated 500 gallons of dilute wastewater was also spilled on this date at the Deep River Pumping Station located at 1199 Highway 66 South in Kernersville. Both of these two pumping stations were inundated with flood water due to torrential rains associated with a hurricane that passed through the area. On September 17, 2004 flash flooding associated with another hurricane that passed through the area flooded the Deep River Pumping Station again causing the station to spill an estimated 560 gallons of dilute wastewater. The last spill event that occurred in September 2004 happened at the Broad Street Pumping Station located at 7391 Broad Street in Rural Hall. Approximately 300 gallons of untreated wastewater was spilled when the station's pump control system failed. The station's alarm system automatically notified our "on-call" crew but our personnel were unable to reach the station in time to prevent an overflow.
3. One overflow event occurred during **October 2004.** On October 21, 2004 an estimated 200 gallons of untreated wastewater was spilled into a storm drain at the Muddy Creek WWTP located at 4561 Cooper Road in Winston-Salem. The spill occurred when a temporary pipeline being used by a contractor broke free and began discharging onto the ground. The majority of the spill was collected and pumped back into the plant but ~200 gallons entered a storm drain.
4. One overflow event occurred during **December 2004.** On December 9, 2004 approximately 10 gallons of untreated wastewater was spilled into a storm drain at the Archie Elledge WWTP located at 2801 Griffith Road in Winston-Salem when an operator mistakenly started a submersible pump that was not equipped with a discharge line.
5. Two overflow events occurred during **January 2005.** On January 1, 2005, twenty gallons of untreated wastewater was spilled into a storm drain at the Archie Elledge WWTP located at 2801 Griffith Road in

Winston-Salem. The spill occurred when an underground line began leaking. Most of the spill was collected and pumped back into the plant but a small amount actually entered a storm drain. On January 15, 2005 approximately 1,000 gallons of dilute wastewater was spilled at the Fair Oaks Drive Pumping Station located at 7760 Fair Oaks Drive in Clemmons. The Yadkin River was at flood stage due to heavy rainfall in the foothills and mountains. The river overtopped the pumping station and the pumps could not keep up with the flood waters.

6. One overflow event occurred during **June 2005.** On June 7, 2005 the Deep River Pumping Station, located at 1199 Highway 66 South in Kernersville, spilled approximately 1800 gallons of wastewater into Deep River after the station was overtopped by flood waters caused by a line of severe thunderstorms that passed through the Kernersville area on the afternoon of June 7, 2005.

Appendix B


Wastewater Treatment Efficiency During FY 2004-05
Tons
35000
30000
25000
20000
15000
10000
5000
0
31,119
4735
1009
Tons Regulated Pollutants Received at Treatment Plants
Tons Regulated Pollutants Allowed in Discharge by Division of Water Quality
Tons Regulated Pollutants Actually Discharged by Treatment Plants

Appendix C: Fiscal Year 2004-2005 Performance Summary of Sewer Collection System

Month	Year	Total No. of SSOs	Reporting Violations	SSO w/ > 1000 gallons in water*	SSO w/ > 15,000 gallons in water	Total SSO Volume (gallons)	Total Sewer Collected** (mg)	SSO Percentage of Total
July	'04	17	0	5	0	16,800	990.95	0.0017%
August	'04	11	0	1	0	8,770	1,048.1	0.0008%
September	'04	20	0	4	0	17,438	1,155.56	0.0015%
October	'04	10	0	3	0	8,862	1,042.15	0.0009%
November	'04	16	0	1	0	8,219	1,044.95	0.0008%
December	'04	27	0	7	1	51,991	1,105.42	0.0047%
January	'05	16	0	2	0	9,128	1,051.12	0.0009%
February	'05	21	0	6	1	42,925	967.21	0.0044%
March	'05	20	0	4	0	15,358	1,127.49	0.0014%
April	'05	19	0	7	1	35,629	1,062.45	0.0034%
May	'05	16	0	5	0	10,764	1,026.02	0.0010%
June	'05	18	0	4	0	20,406	1,000.03	0.0020%
2004-2005 ANNUAL TOTAL		**211**	**0**	**49**	**3**	**246,290**	**12,621.45**	**0.0020%**
2003-2004 ANNUAL TOTAL		241	0	69	2	322,050	12,822.2	0.0025%
2002-2003 ANNUAL TOTAL		269	0	116	16	2,305,175	13,408.98	0.0172%
2001-2002 ANNUAL TOTAL		228	0	70	1	338,806	11,467.9	0.0030%
2000-2001 ANNUAL TOTAL		193	0	84	4	533,108	11,930.7	0.0045%
1999-2000 ANNUAL TOTAL		189	3	119	9	1,154,350	12,289.0	0.0094%
1998-1999 ANNUAL TOTAL		194	0	118	21	1,541,054	11,804.1	0.0131%

*See Appendix D (attached) for a complete listing of location, SSO (Sanitary Sewer Overflow) Total, and SSO volume in Water for all spills during this fiscal year in which wastewater in excess of 1000 gallons reached the surface waters of the state.

**This is the total volume of treated waste discharged from the plant but is assumed to be equal to what is collected. This measurement is in Million Gallons per Day (mgd).

SSO occurrences attributable to:

Grease	46.04%
Roots	23.72%
Debris in line	11.16%
Surcharging	0.47%
Vandalism	3.26%
Other	15.35%

Appendix D

Month/Year	Location of SSO	Total SSO Volume (gal)	SSO Volume in Water
July 04	816 Goldfloss Street	2,075	2,075
	220 Southern Street	4,275	4,275
	1519 Martin Luther King Jr., Drive	1,500	1,500
	140 Weatherwood Court	3,340	3,340
	1900 Dacian Street	1,200	1,200
Total for July 04		**12,390**	**12,390**
Aug 04	1001 Reynolda Road	3,900	3,900
Totals for August 04		**3,900**	**3,900**
Sept 04	200 Southern Street/Kernersville	4,929	4,929
	200 Southern Street/Kernersville	2,850	2,850
	1209 Bucklebury Court	2,000	2,000
	1556 Sharon Road	1,600	1,600
Totals for September 04		**11,379**	**11,379**
Oct 04	1105 McConnell Road	2,925	2,925
	Pine Valley Road	2,200	2,200
	3017 Corry Circle	1,227	1,227
Totals for October 04		**6,352**	**6,352**
November 04	1800 Runnymeade Road	2,250	2,250
Totals for November 04		**2,250**	**2,250**
December 04	2124 New Walkertown Road	9,600	9,600
	7200 Lasater Road	3,800	3,800
	1821 Runnymeade Road	1,270	1,270
	1255 Trade Street North	16,875	16,875
	Luzelle Drive	8,000	8,000
	2722 Edwards Street	1,670	1,670
	3720 Will Scarlett Road	3,340	3,340
Totals for December 04		**44,555**	**44,555**
January 05	1918 Alyssum Place	1,670	1,670
	618 Goldfloss Street	2,800	2,800
Totals for January 05		**4,470**	**4,470**
February 05	1765 Janita Drive	1,600	1,600
	27th & Gilmer Avenue	2,540	2,540
	27th & Gilmer Avenue	2,540	2,540
	440 Lake Crest	2,000	2,000
	1300 Block Cloister Drive	25,650	25,650
	340 Motor Road	3,250	3,250
Totals for February 05			

Month/Year	Location of SSO	Total SSO Volume (gal)	SSO Volume in Water
March 05	3647 Yale Avenue	1,270	1,270
	3994 Dalton Street	1,270	1,270
	1239 22nd Street	3,900	3,900
	332 Broken Saddle Lane	2,087	2,087
Totals for March 05		**8,527**	**8,527**
April 05	1316 West Sedgefield Drive	1,780	1,780
	420 Forest Hills Avenue	20,962	20,962
	4801 Gladwyn Drive	2,222	2,222
	4825 Commercial Plaza Drive	1,270	1,270
	27 Kensington Place	1,200	1,200
	1001 Reynolda Road	1,905	1,905
	316 Gregory Street	2,750	2,750
Totals for April 05		**32,089**	**32,089**
May 05	223 Oak Hurst Street	1,300	1,300
	1656 Leight Street	2,432	2,432
	2905 Kinnamon Road	2,107	2,107
	221 North Glenn Avenue	1,270	1,270
	702 West Mountain Street	1,200	1,200
Totals for May 05		**8,309**	**8,309**
June 05	1375 Old Town Drive	1,950	1,950
	2560 Willard Road	4,950	4,950
	5711 Indiana Avenue	1,270	1,270
	1848 Runnymeade Road	3,562	3,562
Totals for June 05		**11,732**	**11,732**