

Winston-Salem Forsyth County Utility Commission Wastewater Collection and Treatment System Performance Report for FY 2012-2013

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, 2012 through June 30, 2013. This report is published and released to our customers annually.

The Winston-Salem/Forsyth County Utility 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 11.332 billion gallons of wastewater was treated at these facilities. The collection and treatment system includes approximately 1,724 miles of sewer lines, 49 operational pumping stations, and three chemical odor control 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 Thermal Biosolids Drying or disposal in a lined landfill. The North Carolina Division of Water Quality under Permit WS0000094 regulates the handling of biosolids. The Thermal Biosolids Dryer operates under DRS permit WQ0029804 and produced 6197.56 dry tons of pelletized biosolids during FY 2012-2013, which were beneficially applied to farmland.

The Commission's Archie Elledge WWTP, Muddy Creek WWTP, and the Thermal Biosolids Dryer facility reported no violations of their permit limits during the reporting period. The City/County Utility Commission's two wastewater treatment plants met the minimum requirements imposed by the State of North Carolina's Division of Water Quality by a **safety factor of 3.82**. The bar chart in Appendix B shows the performance of the wastewater treatment plants during this period. Approximately 23,943.02 tons of regulated pollutants were removed by the treatment processes during the period ending June 30, 2013.

The Commission's goal is to have zero sanitary sewer overflows (SSO) from the sewer collection system. However, during the last fiscal year, 0.0013% of the wastewater collected

was spilled/overflowed from the sanitary sewer system. Appendix A and D of this report lists a detailed summary of collection system and plant overflows reported in FY 2012-2013.

Since the passage of the North Carolina Clean Water Act in 1999 the total annual SSOs has been tracked against the baseline year of FY 1998-99. The FY 2012-2013 total volume of SSOs represents a 91% decrease from the total reported for the baseline year. Diligence by maintenance personnel toward preventative maintenance continued to be a major factor contributing to SSOs remaining at a lower level than that of the baseline year. This diligence includes the incorporative use of Geographic Information Systems (GIS) in our maintenance planning. The GIS application houses historical work order information which allows our crews to respond to areas where issues have repeatedly occurred. Our decision makers also use this same data to help develop future capital projects to alleviate the cause of repeat issues.

The majority of SSO occurrences in FY2012-2013 were attributed to grease accumulation. However, in recent history, this “major contributor” statistic has fluctuated between the causes of grease accumulation and root intrusion. For example, of all line blockages in the collection system since 2009, an average 47.17% were attributed to grease accumulation; where an average 33.3% were attributed to roots. From this statistic, it is evident that these two contributors make-up 75% of all SSOs. Because of this, the commission continues to be proactive in fighting the occurrence of both contributors.

In 2003, the commission adopted a Grease Interceptor Ordinance which regulated the operation and maintenance of residential, commercial and industrial grease trap interceptors. This ordinance alone has been effective in reducing the amount of grease related SSOs since its adoption. In 2003, the total number of SSOs spiked at 269; the following year that number dropped by nearly 30 SSOs (241) and the count of SSOs has made a steady decline since that time. While this ordinance has been effective, further assistance from the public is necessary to completely solve this problem. Over the past year, in-house personnel have reached out to the public via community events and other media opportunities in an effort to educate the public on the proper disposal of cooking grease, fats and other oils. In addition, maintenance personnel have been proactive by cleaning the publicly maintained portion of sewer connections and keeping sewer main lines clean and free of grease as well as tree roots and debris. This year, in-house personnel have cleaned 1,014,810 linear feet of publicly owned/maintained sewer lines and \$132,390 was spent on contracted mainline cleaning which provided for cleaning of approximately 143,684 linear feet of sewer lines, with an increasing focus on our large diameter sewer mains. Also, chemical root control contract is anticipated to treat approximately 110,000 linear feet of sewer main in the upcoming fiscal year.

During FY 2012-2013, the commission continued its proactive efforts toward the reduction of SSOs by spending over \$6.61 million on the rehabilitation of 80,256 feet of gravity sewer mains, 253 manholes, and 756 service laterals. The sewer mains rehabilitated primarily ranged in size from 6” to 18”. The mains were rehabilitated by means of pipe bursting, cured-in-place lining of pipes, point repairs, replacements, or a combination of any of these methods. The enhanced condition of these sewer mains and manholes provided by the rehabilitation projects not only

contributed to the reduction of SSOs but, also aided in the reduction of infiltration and inflow by reducing and/or eliminating sewer system access points for storm water runoff and groundwater. In addition, the Commission funded the closed circuit TV inspection of 173,459 feet of sewer mains. Staff and contractors also improved the access to collection system easements through the inspection and mowing/clearing of approximately 55 miles of easements.

Further, Commission staff continued 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 SSO 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 thereby reducing overall operating costs.

As always, customer involvement will continue to be a 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 **City of Winston-Salem 24-hour customer service line (CityLink) at (336) 727-8000**. For questions regarding the Commission's programs or additional information regarding this report, please contact Ron Hargrove, Utilities Director at (336) 747-7312. Copies of this report may be obtained by calling CityLink at (336) 727-8000 and requesting a copy. This report is also available at all branches of the Forsyth County Public Library and it is posted on the Utilities Division'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, 2013.

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 _____
Ron Hargrove, Utilities Director
Winston-Salem/Forsyth County Utility Commission

**Appendix A: Wastewater Treatment Plant and Pump Station Overflow/Spill Information
Fiscal Year 2012-13**

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 2012	872,860,000	1	400	0
August 2012	934,550,000	0	0	0
Sept. 2012	918,900,000	0	0	0
October 2012	929,540,000	0	0	0
Nov. 2012	843,790,000	1	1,500	0
Dec. 2012	890,750,000	0	0	0
January 2013	1,108,650,000	0	0	0
February 2013	950,260,000	0	0	0
March 2013	986,360,000	0	0	0
April 2013	977,800,000	0	0	0
May 2013	969,940,000	0	0	0
June 2013	948,470,000	0	0	0
ANNUAL TOTAL	11,331,870,000	2	1,900	0

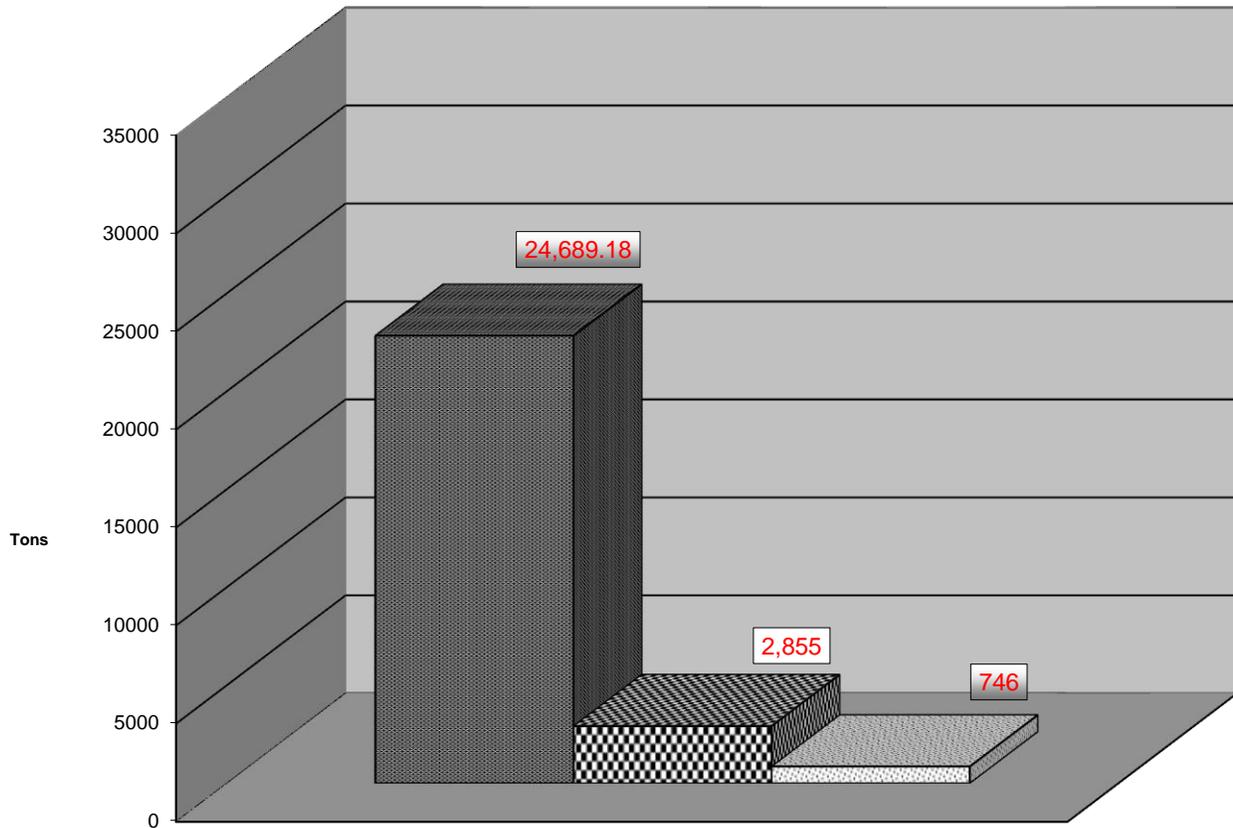
Notes:

July 12, 2012 – 400 gallons of Non Potable Water flowed into Salem Creek due to air relief valve failure.

November 30, 2012 – 1,500 gallons of Non Potable Water flowed into Salem Creek due to air relief valve failure.

Appendix B

Wastewater Treatment Efficiency During FY 2012-13



- 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 2012-2013 Performance Summary of Sewer Collection System

Month/Year	Total No. of SSO's	Reporting Violations	SSO w/> 1000 gal. in Surface waters*	SSO w/> 15,000 gal. in Surface waters	Total SSO Volume (gal)	Total Sewer Collected** (gal.)	SSO Percentage of Total
July-12	5	0	1	0	1,985	872,860,000	0.0002%
August-12	9	0	2	0	2,395	934,550,000	0.0002%
September-12	5	0	2	0	9,317	918,900,000	0.0005%
October-12	4	0	1	0	4,250	929,540,000	0.0006%
November-12	11	0	0	0	3,937	843,790,000	0.0004%
December-12	12	0	1	0	11,858	890,750,000	0.0005%
January-13	12	0	2	0	9,499	1,108,650,000	0.0009%
February-13	7	0	0	0	3,471	950,260,000	0.0005%
March-13	14	0	0	0	1,165	986,360,000	0.0012%
April-13	13	0	2	0	9,003	977,800,000	0.0004%
May-13	10	0	0	0	1,619	969,940,000	0.0011%
June-13	9	0	2	0	6,060	948,470,000	0.0004%
2012-2013 Annual TOTAL	111	0	11	0	144,549	11,331,870,000	0.0013%
2011-2012 Annual Total	117	0	10	0	65,273	11,289,980,000	0.0006%
2010-2011 Annual TOTAL	109	0	15	0	95,342	11,328,410,000	0.0008%
2009-2010 Annual TOTAL	106	0	16	3	1,840,134	12,291,330,000	0.0150%
2008-2009 Annual TOTAL	117	0	20	0	85,433	11,607,400,000	0.0007%
2007-2008 Annual TOTAL	129	0	31	1	142,412	11,473,040,000	0.0012%
2006-2007 Annual TOTAL	161	0	40	8	571,946	12,475,820,000	0.0046%
2005-2006 Annual TOTAL	159	0	46	3	317,585	12,182,250,000	0.0026%
2004-2005 Annual TOTAL	211	0	49	3	246,290	12,621,450,000	0.0020%
2003-2004 Annual TOTAL	241	0	69	2	322,050	12,822,200,000	0.0025%
2002-2003 Annual TOTAL	269	0	116	16	2,305,175	13,408,980,000	0.0172%
2001-2002 Annual TOTAL	228	0	70	1	338,806	11,467,900,000	0.0030%
2000-2001 Annual TOTAL	193	0	84	4	533,108	11,930,700,000	0.0045%
1999-2000 Annual TOTAL	189	3	119	9	1,154,350	12,289,000,000	0.0094%
1998-1999 Annual TOTAL	194	0	118	21	1,541,054	11,804,100,000	0.0131%

SSO Occurrences attributable to:	For FY 2012 - 2013	Percentage	Quantity total
Grease	54	48.6%	36,769
Roots	36	32.4%	11,808
Debris	7	6.3%	52,812
Inflow & Infiltration	1	0.9%	22,500
Vandalism	0	0.0%	0
Pipe Failure	10	9.0%	18,248
Pump Station Equipment. Failure	0	0.0%	0
Severe Natural Conditions	0	0.0%	0
Other	3	2.7%	2,412
TOTAL	111	100.0%	144,249

*See Appendix D (attached) for a complete listing of locations, SSO (Sanitary Sewer Overflow) Totals and SSO "Volume in Surface Water" for all spills during this fiscal year.

**This is the total volume of treated waste discharged from the plant but is assumed to be equal to what is collected.

APPENDIX D:

Month/Year	Probable Cause of SSO	Total SSO Volume (gal.)	SSO Volume in Surface waters	Location of SSO
JULY 2012				
7/6/2012	ROOTS	15	15	4996 INDIANA AVE
7/18/2012	ROOTS	168	168	216 MELROSE ST
7/18/2012	ROOTS	300	185	3700 BROOKDALE DR
7/19/2012	OTHER	2	2	190 PARK PLAZA DR
7/29/2012	GREASE	1,500	1,500	1639 LINCOLN AVE
Total for July	5	1,985	1,870	
AUGUST 2012				
8/1/2012	ROOTS	100	100	4009 LOFTER CT
8/3/2012	PIPE FAILURE	7,200	7,200	5351 SILAS CREEK PKWY
8/5/2012	OTHER	810	810	5351 SILAS CREEK PKWY
8/5/2012	ROOTS	400	400	CARVER SCHOOL RD & LANSING DR
8/15/2012	GREASE	50	50	828 WALNUT ST
8/17/2012	PIPE FAILURE	2,400	2,400	221 CATHI LN
8/23/2012	ROOTS	200	200	4415 PROVIDENCE LN
8/24/2012	GREASE	600	600	455 QUAIL HAVEN LN
8/29/2012	GREASE	635	635	4870 COUNTRY CLUB RD
Total for August	9	12,395	12,395	
SEPTEMBER 2012				
9/10/2012	GREASE	3,340	3,340	2656 GOLDEN OAKS DR
9/11/2012	GREASE	200	200	945 NORTHWEST BLVD
9/16/2012	DEBRIS	835	835	601 ACADEMY ST
9/24/2012	ROOTS	2,505	2,505	2617 RALEIGH AVE
9/20/2012	PIPE FAILURE	2,437	0	310 FOXCROFT DR
Total for September	5	9,317	6,880	
OCTOBER 2012				
10/7/2012	GREASE	3600	3,600	4404 ROCKLANE DR
10/20/2012	ROOTS	225	225	3233 PADDINGTON LN
10/21/2012	GREASE	25	25	406 SPRAGUE ST
10/25/2012	ROOTS	400	400	1155 HUBERT CT
Total for October	4	4,250	4,250	

NOVEMBER 2012				
11/2/2012	GREASE	800	800	3320 SILAS CREEK PKWY
11/2/2012	ROOTS	100	100	314 HAVERHILL ST
11/7/2012	GREASE	400	400	N TRADE ST
11/9/2012	GREASE	50	50	2000 EAST 1ST ST
11/17/2012	ROOTS	400	400	1686 STONEWOOD DR
11/19/2012	GREASE	952	952	INTERSECTION OF NORTH POINT BLVD & UNIVERSITY PKWY
11/22/2012	GREASE	50	50	2800 PATTERSON AVE
11/26/2012	GREASE	400	400	549 ARBOR HILL RD
11/27/2012	ROOTS	460	460	HIGHWAY 52 AT GERMANTON RD
11/27/2012	GREASE	200	200	309 CENTURY BLVD
11/27/2012	GREASE	125	125	522 STRATFORD RD
Total for November	11	3,937	3,937	
DECEMBER 2011				
12/1/2012	GREASE	400	400	3320 SILAS CREEK PKWY
12/2/2012	GREASE	200	200	500 KINARD DR
12/5/2012	GREASE	1270	381	4153 PATTERSON AVE
12/6/2012	DEBRIS	200	200	1212 DUNLEITH AVE
12/14/2012	GREASE	113	113	2508 RALEIGH AVE
12/14/2012	OTHER	1,600	1,600	1219 CORNELIUS ST
12/18/2012	ROOTS	15	15	803 CHARTWELL CIR
12/22/2012	GREASE	635	635	665 CLEMSON CIR
12/23/2012	GREASE	100	100	940 E THIRD ST
12/23/2012	GREASE	7200	0	101 E WALL STQ
12/25/2012	GREASE	100	100	909 E DEVONSHIRE ST
12/27/2012	DEBRIS	15	15	915 SHUMAN ST
Total for December	12	11,848	3,759	
JANUARY 2013				
1/2/2013	PIPE FAILURE	2,200	2,200	4890 THALES RD
1/7/2013	ROOTS	100	25	3908 YARBROUGH AVE
1/13/2013	GREASE	800	400	520 NORTHRIDGE PARK DR
1/16/2013	PIPE FAILURE	3,600	3,600	0 OLD GREENSBORO RD
1/20/2013	GREASE	225	113	1613 EAST 5TH ST
1/22/2013	ROOTS	100	100	1600 HYDE AVE
1/24/2013	GREASE	75	75	1557 ARGONNE RD
1/27/2013	GREASE	835	835	837 LEICHESTER SQUARE CT
1/26/2013	ROOTS	125	125	INTERSECTION OF FREE ST & WILLOW
1/27/2013	GREASE	839	839	3575 BROOKDALE DR
1/29/2013	GREASE	400	400	942 MAR-DON HILL RD
1/31/2013	DEBRIS	200	200	1474 W NORTHWEST BLVD
Total for Jan.	12	9,499	8,912	

FEBRUARY 2013				
2/15/2013	GREASE	835	835	2100 SILAS CREEK PARKWAY
2/21/2013	PIPE FAILURE	1	1	811 CONWAY COURT
2/22/2013	PIPE FAILURE	345	345	624 BRENTWOOD COURT
2/24/2013	ROOTS	20	20	316 LAKESIDE DR
2/25/2013	GREASE	1,670	835	5022 N CHERRY STREET
2/25/2013	GREASE	400	400	385 SILVER CREEK TRAIL
2/27/2013	ROOTS	200	200	100 ANITA DRIVE
Total for February	7	3,471	2,636	
MARCH 2013				
3/1/2013	ROOTS	20	20	1965 DEW STREET
3/1/2013	PIPE FAILURE	25	25	1490 BROAD STREET
3/2/2013	GREASE	225	225	805 BOYER DRIVE
3/3/2013	GREASE	50	50	2001 PITTSBURG AVENUE
3/11/2013	ROOTS	400	400	2856 LOCH DR
3/15/2013	ROOTS	5	5	426 CREWS ST
3/16/2013	ROOTS	20	20	117 CHELTENHAM DR
3/19/2013	GREASE	90	90	711 SALEM AVE
3/20/2013	ROOTS	10	10	5918 EDGEWATER DR
3/20/2013	ROOTS	50	50	1008 LEONA ST
3/20/2013	PIPE FAILURE	20	20	711 E SALEM AVE
3/21/2013	PIPE FAILURE	20	20	711 E SALEM AVE
3/21/2013	GREASE	225	225	701 MLK JR DR
3/22/2013	GREASE	5	5	2864 WYNFIELD CROSSING LN
Total for March	14	1,165	1,165	
APRIL 2013				
4/1/2013	GREASE	200	200	3596 HIGH POINT RD
4/2/2013	ROOTS	300	150	1668 ASHERTON DR
4/5/2013	ROOTS	300	300	2864 FAIRMONT RD
4/7/2013	ROOTS	540	540	WILLARD RD
4/8/2013	ROOTS	450	450	572 HUTCHINS ST
4/12/2013	GREASE	2,063	1,031	2855 BARTRAM RD
4/12/2013	GREASE	900	500	ELMS DR & MAYFAIR DR
4/13/2013	ROOTS	1,350	675	270 MOTSINGER RD
4/14/2013	ROOTS	150	150	531 STAFFORSHIRE RD
4/15/2013	ROOTS	75	75	HARMON & DAVIS ST
4/18/2013	ROOTS	2,000	1,000	415 THOMBURY CT
4/25/2013	ROOTS	150	150	135 CARTER CIRCLE
4/26/2013	GREASE	525	525	PETERS CREEK AND SOUTH PARK RD
Total for April	13	9,003	5,746	

MAY 2013				
5/2/2013	GREASE	50	20	372 TAYLOR ST
5/3/2013	GREASE	75	35	270 FORREST ACRES DR
5/6/2013	ROOTS	75	75	164 OAK FOREST DR
5/9/2013	GREASE	150	150	213 FOXCROFT DR
5/11/2013	GREASE	502	25	3031 WALSH ST
5/16/2013	GREASE	112	56	2895 SHOREFAIR DR
5/22/2013	GREASE	125	125	222 JACKSON AVE
5/24/2013	DEBRIS	450	450	4145 LEXWIN DR
5/29/2013	ROOTS	75	75	604 BRIGHTSFIELD CT
5/30/2013	ROOTS	5	5	202 AUTUM VIEW DR
Total for May	10	1,619	1,016	
JUNE 2013				
6/3/2013	DEBRIS	150	150	253 CREEK BEND DR
6/10/2013	GREASE	150	150	3200 RENON RD
6/6/2013	I&I	22,500	22,500	5640 SHATTALON DR
6/12/2013	GREASE	3	3	404 HARVEY ST
6/16/2013	GREASE	450	450	3233 PADDINGTON LN
6/18/2013	GREASE	1,175	117	1256 TERRY ROAD
6/18/2013	GREASE	662	166	2701 GREENWAY AVE
6/20/2013	GREASE	8	8	5220 SILAS CREEK PKWY
6/22/2013	DEBRIS	50,962	50,962	219 RIDGEHAVEN DR
Total for June	9	75,760	74,206	
2013	111	144,249	126,772	