Winston-Salem • Forsyth County

City/County Utilities

Water • Sewer • Solid Waste Disposal

August 19, 2015

Utilities Administration

City of Winston-Salem
P. O. Box 2511
Winston-Salem, NC 27102
City Link 311 (336.727.8000)
Fax 336.727.8432
www.cityofws.org

Mr. Jeff Poupart, Supervisor
North Carolina Division of Water Quality
PERCS Unit
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

Re: 2014-2015 System Performance Report
Winston-Salem/Forsyth County Utility Commission

Dear Mr. Poupart:

Attached are the original and two copies of the annual performance report for the Winston-Salem/Forsyth County Utility Commission's wastewater collection and treatment system as mandated by the North Carolina Clean Water Act of 1999. This report covers the period from July 1, 2014 through June 30, 2015.

This report is being made available to the public by publishing a "notice of availability" in the Sunday, September 6, 2014 *Winston-Salem Journal* and a notice is being included in each of our water and sewer bills informing our customers as to how they can obtain a copy of the report. You will find a copy of the advertisement of the notice attached. In addition, the report is being posted on our website and a copy made available at the Forsyth County Public Library.

Please call me at (336) 727-8000 if you have any questions regarding this matter.

Sincerely,

Ron Hargrove
City/County Utilities Director

PC: Corey Basinger, WSRO
Damon Dequenne, Construction and Maintenance Engineer
Frank Crump, Wastewater Treatment Superintendent

CityLink311
Call 311 or 336-727-8000
citylink@cityofws.org

City Council: Mayor Allen Joines; Vivian H. Burke, Mayor Pro Tempore, Northeast Ward; Denise D. Adams, North Ward; Dan Besse, Southwest Ward; Robert C. Clark, West Ward; Molly Leight, South Ward; Jeff MacIntosh, Northwest Ward; Derwin L. Montgomery, East Ward; James Taylor, Jr., Southeast Ward; City Manager: Lee D. Garrity

Forsyth County Commissioners: David R. Plyler, Chairman; Don Martin, Vice Chair; Ted Kaplan; Richard V. Linville; Walter Marshall; Gloria D. Whisenhunt; Everette Witherspoon; County Manager: Dudley Watts, Jr.

City/County Utility Commission: David Neill, Chairman; Randall S. Tuttle, Vice-chair; Wesley Curtis, Jr.; Harold E. Day; Tom Griffin; Harold R. Holmes; Duane Long; Paul S. McGill; Chris Parker; Al H. Seymour

Winston-Salem Forsyth County Utility Commission
Wastewater Collection and Treatment System
Performance Report for FY2014-2015

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, 2014 through June 30, 2015. 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. The wastewater collection system includes approximately 1,771 miles of sewer lines, 50 pumping stations, and one chemical odor control station. During the period covered by this report a total of 10.664 billion gallons of wastewater was collected and treated at these facilities. The 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, the disposal of our biosolids, and the operation and maintenance of our collection system.

The wastewater collection system operates under NPDES permit WQCS00003. 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 processing in a biosolids drying facility at the Elledge WWTP under Permit WQ0029804. The biosolids dryer facility produced 5,411 dry tons of pelletized biosolids during FY2014-2015, which were beneficially applied to farmland.

The Commission's Archie Elledge WWTP, Muddy Creek WWTP, and the biosolids dryer facility reported two violations of their permit limits during the reporting period as shown in Appendix A. The Commission's two wastewater treatment plants met the minimum requirements imposed by the State of North Carolina's Division of Water Resources by a **safety factor of 3.90.** The bar chart in Appendix B shows the performance of the wastewater treatment plants during this period. Approximately 23,962.64 tons of regulated pollutants were removed by the treatment processes during the period ending June 30, 2015.

The remainder of 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, 2015.

The Commission's goal is to have zero sanitary sewer overflows (SSO) from the sewer collection system. However, during the last fiscal year, 86 events totaling 0.0011% of the wastewater collected was spilled/overflowed from the sanitary sewer system. Appendix A and D of this report lists a detailed summary of plant and collection system overflows reported in FY2014-2015.

Since the passage of the North Carolina Clean Water Act in 1999 the total annual SSOs has been tracked against the baseline year of FY1998-99 (Appendix C). The FY2014-2015 total volume of SSOs represents a 91.7% 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. In fact, FY2014-2015 has resulted in one of the lowest reported SSO years (86) since reporting began in 1999. Our success in reducing SSOs also 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. In 2013, key members of staff were trained to formally assess the condition of infrastructure through a universal standard of the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program. This certification will further our abilities to prioritize maintenance and rehabilitation/replacement of our aging infrastructure.

The major causes of SSO occurrences in FY2014-2015 were attributed to grease, root intrusion and debris accumulation. Because of this, the Commission approved additional funding in FY2016 to provide for more preventative cleaning of the collection system. Preventative cleaning of our collection system will reduce the occurrences of SSOs by preemptively targeting areas prone to the three major causes of SSOs. During the FY2014-2015, 48% or approximately 96 miles of sewer mains were proactively cleaned by in-house and contracted crews. For FY 2015-2016 the goal is to continue to be proactive in reducing the occurrence of SSOs by cleaning 200 miles of sewer mains.

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 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 866,210 linear feet of publicly owned/maintained sewer lines and $245,249.75 was spent on contracted mainline cleaning which provided for cleaning of approximately 190,062 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 FY2014-2015, the Commission continued its proactive efforts toward the reduction of SSOs by spending over $5.4 million on the rehabilitation of 9,373 feet of gravity sewer mains, 157 manholes, and 98 service laterals. The sewer mains rehabilitated primarily ranged in size from 6" to 60". The mains were rehabilitated by means of pipe bursting, cured-in-place lining of pipes, total 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 69,245 feet of sewer mains. Staff and contractors also improved the access to collection system through the inspection and mowing/clearing of approximately 54.4 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/departments/utilities/stats-reports*.

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.

Ron Hargrove Date 8/19/15

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

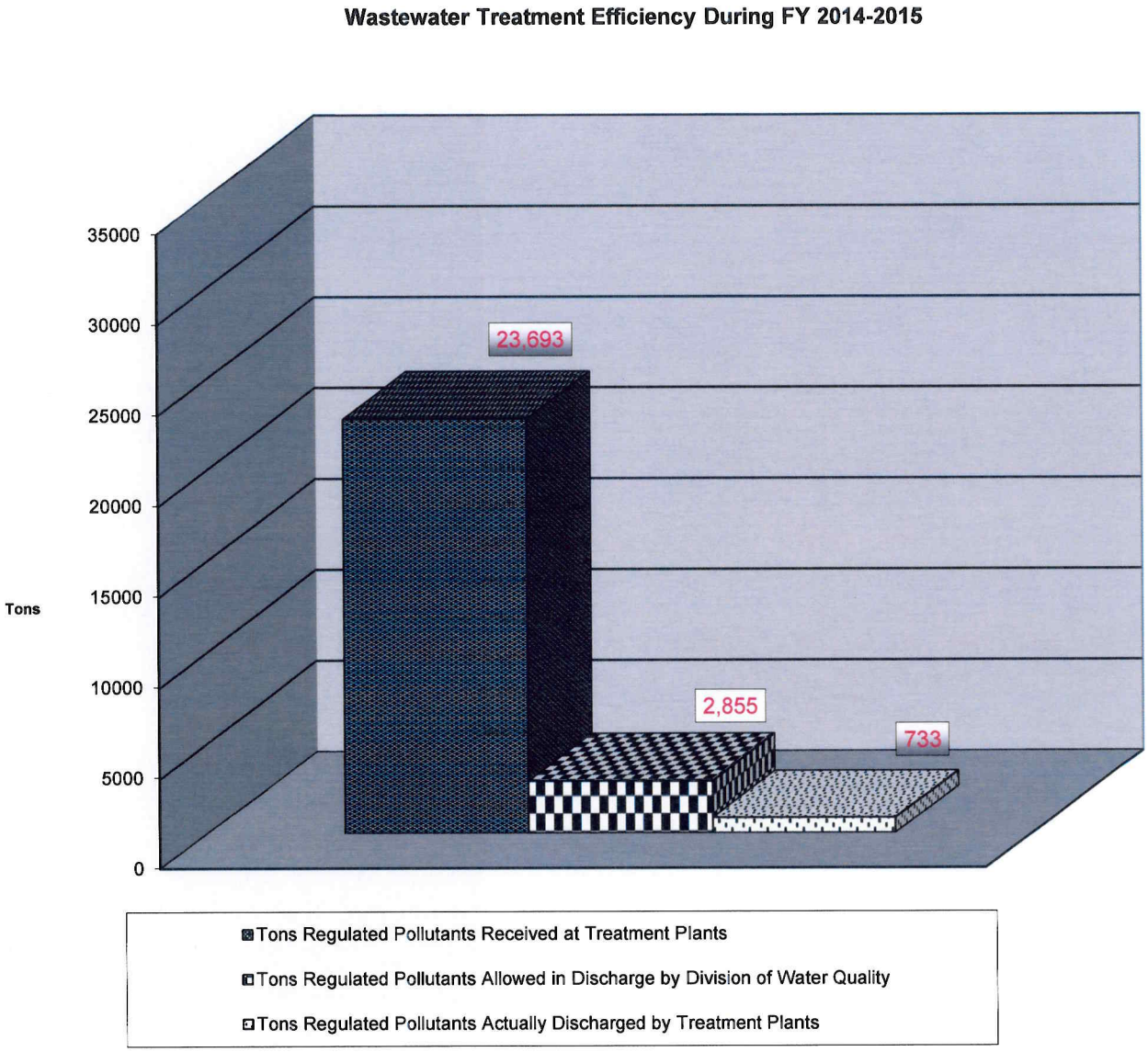
Appendix A: Wastewater Treatment Plant and Pump Station Overflow/Spill Information Fiscal Year 2014-2015

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 2014	872,340,000	0	0	0
August 2014	886,290,000	0	0	0
Sept. 2014	841,500,000	0	0	0
October 2014	863,970,000	0	0	2
November 2014	858,600,000	0	0	0
December 2014	885,360,000	0	0	0
January 2015	929,690,000	0	0	0
February 2015	868,560,000	0	0	0
March 2015	1,002,540,000	0	0	0
April 2015	941,400,000	0	0	0
May 2015	865,580,000	0	0	0
June 2015	827,820,000	0	0	0
ANNUAL TOTAL	**10,643,650,000**	**0**	**0**	**2**

Notes:

October 2014 Muddy Creek had a weekly and monthly effluent suspended solids violations.

Appendix B


Wastewater Treatment Efficiency During FY 2014-2015
Tons
35000
30000
25000
20000
15000
10000
5000
0
23,693
2,855
733
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 2014-2015 Performance Summary of Sewer Collection System						
Month/Year	Total No. of SSO's	Notice of 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-14	8	3	1	0	4,622	872,520,000	0.0005%
August-14	4	2	1	0	9,920	886,510,000	0.0011%
September-14	8	6	1	0	9,275	841,640,000	0.0011%
October-14	5	3	0	0	1,300	863,940,000	0.0002%
November-14	5	2	0	1	53,333	858,470,000	0.0062%
December-14	9	5	1	0	7,925	885,240,000	0.0009%
January-15	11	8	2	0	8,910	929,810,000	0.0010%
February-15	8	5	1	0	11,300	868,680,000	0.0013%
March-15	11	8	2	0	11,035	1,002,460,000	0.0011%
April-15	8	4	0	0	4,435	941,450,000	0.0005%
May-15	4	2	1	0	2,750	885,730,000	0.0003%
June-15	5	1	1	0	2,600	827,820,000	0.0003%
2014-2015 Annual Total	**86**	**49**	**12**	**1**	**127,405**	**10,753,560,000**	**0.0012%**
2013-2014 Annual TOTAL	82	30	15	0	106,384	11,840,630,000	0.0009%
2012-2013 Annual TOTAL	111	38	13	2	144,549	11,331,870,000	0.0013%
2011-2012 Annual TOTAL	117	61	10	0	65,273	11,289,980,000	0.0006%
2010-2011 Annual TOTAL	109	76	15	0	95,342	11,328,410,000	0.0008%
2009-2010 Annual TOTAL	106	77	16	3	1,840,134	12,291,330,000	0.0150%
2008-2009 Annual TOTAL	117	88	20	0	85,433	11,607,400,000	0.0007%
2007-2008 Annual TOTAL	129	N/A	31	1	142,412	11,473,040,000	0.0012%
2006-2007 Annual TOTAL	161	N/A	40	8	571,946	12,475,820,000	0.0046%
2005-2006 Annual TOTAL	159	N/A	46	3	317,585	12,182,250,000	0.0026%
2004-2005 Annual TOTAL	211	N/A	49	3	246,290	12,621,450,000	0.0020%
2003-2004 Annual TOTAL	241	N/A	69	2	322,050	12,822,200,000	0.0025%
2002-2003 Annual TOTAL	269	N/A	116	16	2,305,175	13,408,980,000	0.0172%
2001-2002 Annual TOTAL	228	N/A	70	1	338,806	11,467,900,000	0.0030%
2000-2001 Annual TOTAL	193	N/A	84	4	533,108	11,930,700,000	0.0045%
1999-2000 Annual TOTAL	189	N/A	119	9	1,154,350	12,289,000,000	0.0094%
1998-1999 Annual TOTAL	194	N/A	118	21	1,541,054	11,804,100,000	0.0131%

SSO Occurrences attributable to:	For FY 2014 - 2015	Percentage	Quantity Total
Grease	33	38.4%	39,935
Roots	25	29.1%	17,968
Debris	14	16.3%	6,370
Inflow & Infiltration	0	0.0%	0
Vandalism	1	1.2%	1,650
Pipe Failure	10	11.6%	61,028
Pump Station Equipment. Failure	0	0.0%	0
Severe Natural Conditions	0	0.0%	0
Other	3	3.5%	454
TOTAL	**86**	100.0%	**127,405**

*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 2014				
7/2/2014	PIPE FAILURE	50	50	110 N CHESTNUT ST
7/5/2014	ROOTS	5	5	4904 TIFFANY AVE
7/6/2014	GREASE	13	13	119 N CLIFFDALE DR
7/16/2014	OTHER	394	394	2860 MARGUERITE PARK DR
7/20/2014	ROOTS	50	50	4085 MORNINGSIDE DR
7/23/2014	GREASE	10	10	921 E. FOURTH ST
7/24/2014	GREASE	4,050	2,025	914 TULANE DR
7/25/2014	ROOTS	50	50	2800 FRONTIS PLAZA BLVD
Total for July	8	4,622	2,597	
AUGUST 2014				
8/7/2014	PIPE FAILURE	20	20	427 S MAIN STREET
8/21/2014	GREASE	8,775	8,775	CHATHAM & BUXTON
8/26/2014	ROOTS	450	125	7742 NORTH POINT BLVD
8/28/2014	PIPE FAILURE	675	675	1212 DUNLEITH AVE
Total for August	4	9,920	9,595	
SEPTEMBER 2014				
9/3/2014	GREASE	112	112	3900 OLD VINEYARD RD
9/5/2014	GREASE	75	37	944 FERNDALE AVE
9/9/2014	PIPE FAILURE	625	625	642 CHERRY ST
9/14/2014	GREASE	450	450	1776 JANITA DR
9/17/2014	GREASE	675	338	1155 HUBERT CT
9/20/2014	PIPE FAILURE	6,600	6,600	2700 RALEIGH AVE
9/22/2014	DEBRIS	400	400	PARKVIEW ST AND PRICE ST
9/25/2014	PIPE FAILURE	338	338	127 KING ST
Total for September	8	9,275	8,900	
OCTOBER 2014				
10/4/2014	ROOTS	300	300	341 TINELY PARK DR
10/6/2014	ROOTS	300	300	2905 WINDY CROSSING DR
10/8/2014	GREASE	150	50	1524 N CLEVELAND AVE
10/10/2014	GREASE	100	100	1605 N PATTERSON AVE
10/21/2014	GREASE	450	450	2541 DILWORTH DR
Total for October	5	1,300	1,200	
NOVEMBER 2014				
11/3/2014	DEBRIS	270	135	1069 KENT RD
11/4/2014	DEBRIS	900	450	2732 BASSWOOD CT
11/18/2014	GREASE	38	38	945 CLEVELAND AVE
11/21/2014	PIPE FAILURE	51,300	25,650	600 GOLDFLOSS ST
11/29/2014	GREASE	825	100	153 STONEY BROOK CIRCLE
Total for November	5	53,333	26,373	

Month/Year	Probable Cause of SSO	Total SSO Volume (gal.)	SSO Volume in Surface waters	Location of SSO
DECEMBER 2014				
12/1/2014	GREASE	337	337	2748 WEST MOUNTAIN ST
12/6/2014	GREASE	700	700	390 GLENDARE CT
12/9/2014	DEBRIS	675	337	1148 TOWER ST
12/9/2014	GREASE	25	25	913 MAR DON HILL CIR
12/10/2014	ROOTS	600	600	0 WALL ST
12/12/2014	ROOTS	338	338	500 CHESTNUT ST
12/18/2014	GREASE	225	225	411 MANSON ST
12/25/2014	ROOTS	75	75	145 BILLIE SUE DR
12/31/2014	GREASE	4950	2970	151 STONEYBROOK BLVD
Total for December	9	7,925	5,607	
JANUARY 2015				
1/6/2015	GREASE	675	675	2816 IVY AVE
1/7/2015	ROOTS	825	825	220 BARLOW CR
1/8/2015	GREASE	675	338	103 ECHO GLEN DR
1/9/2015	DEBRIS	675	675	500 N CHESTNUT ST
1/14/2015	GREASE	300	300	3288 ROBINHOOD RD
1/17/2015	GREASE	1,350	1,350	708 N MARTIN LUTHER KING JR DR
1/18/2015	ROOTS	1,050	1,050	2701 URBAN ST
1/20/2015	ROOTS	300	150	1900 ALLEN ST
1/26/2015	PIPE FAILURE	10	10	400 FAIRFAX DR
1/28/2015	OTHER	50	50	25TH ST AND IVY AVE
1/31/2015	GREASE	3,000	800	2501 WOOD VALLEY RD
Total for January	11	8,910	6,223	
FEBRUARY 2015				
2/1/2015	DEBRIS	700	350	4203 ORCHID PLACE
2/3/2015	ROOTS	1,350	675	1409 S BROAD ST
2/4/2015	GREASE	1,650	1,650	301 GREGORY ST
2/12/2015	ROOTS	6,500	650	0 PERTH RD
2/15/2015	GREASE	225	25	130 CHARLESTON CT
2/16/2015	ROOTS	675	337	700 WEST MOUNTAIN ST
2/21/2015	ROOTS	100	10	274 CREPE MYRTLE CIRCLE
2/23/2015	DEBRIS	100	100	8TH STREET & RICH AVE
Total for February	7	8,975	5,641	
MARCH 2015				
3/5/2015	ROOTS	450	450	1406 MILLER ST
3/6/2015	ROOTS	825	825	820 W. 8TH ST
3/13/2015	GREASE	100	100	1713 HARRISON AVE
3/13/2015	VANDALISM	1,650	825	920 DELMONTE DR
3/15/2015	GREASE	3,975	3,975	3435 ROBINHOOD RD
3/23/2015	GREASE	300	225	5008 PINEWOOD CRT

Month/Year	Probable Cause of SSO	Total SSO Volume (gal.)	SSO Volume in Surface waters	Location of SSO
MARCH 2015				
3/23/2015	ROOTS	900	900	750 FERRELL CT
3/24/2015	GREASE	1,800	1,800	1003 WILLIAM DR
3/25/2015	DEBRIS	150	150	559 DARKBRIDGE RD
3/29/2015	DEBRIS	875	875	301 N CHESTNUT ST
3/31/2015	OTHER	10	10	170 TRADE ST
Total for March	11	11,035	10,135	
APRIL 2015				
4/1/2015	DEBRIS	225	112	115 WEST FIRST ST
4/6/2015	DEBRIS	450	113	O WATERWORKS & OLD GREENSBORO
4/17/2015	ROOTS	825	825	0 SALEM LAKE TRAIL
4/20/2015	GREASE	825	825	SMITH ST AND BURKE ST
4/24/2015	ROOTS	825	825	301 CEDAR TRL
4/27/2015	PIPE FAILURE	10	10	350 FRIENDSHIP CIRCLE
4/28/2015	ROOTS	825	825	1737 THOMPSON ST
4/29/2015	DEBRIS	450	113	504 MISSION RD
Total for April	8	4,435	3,648	
MAY 2015				
5/2/2015	DEBRIS	50	25	230 EAST MOUNTAIN ST
5/22/2015	ROOTS	100	100	900 BRITONIAL WY
5/26/2015	GREASE	1,200	600	1092 S SUNSET DR
5/31/2015	PIPE FAILURE	1,400	1,400	1433 HUTTON ST
Total for May	4	2,750	2,125	
JUNE 2015				
6/3/2015	ROOTS	150	75	641 LIMERICK LN
6/11/2015	GREASE	1,675	1,675	1001 SALEM LAKE RD
6/22/2015	DEBRIS	450	113	1523 WEST FIRST ST
6/25/2015	ROOTS	100	25	2240 SALLIES LN
6/29/2015	GREASE	225	10	4394 LOCKHURST DR
Total for June	5	2,600	1,898	
2015	86	127,405	82,098	