

Annual Report #3

January 1, 2014 to December 31, 2014

Civil Action No. 1:10cv4039 - WSD

DeKalb County Department of Watershed Management



March 2, 2015

Table of Contents

INTRODUCTION	4
EXECUTIVE SUMMARY	4
PART I – CAPACITY, MANAGEMENT, OPERATIONS AND MAINTENANCE (CMOM) PROGRAMS’ IMPLEMENTATION ACTIVITIES COMPLETED	7
1. CONTINGENCY AND EMERGENCY RESPONSE PLAN – CERP (CD VI.B.I)	7
2. FATS, OILS, AND GREASE (FOG) MANAGEMENT PROGRAM (CD VI.B.II)	8
3. SEWER MAPPING PROGRAM (CD VI.B.III).....	9
4. MAINTENANCE MANAGEMENT SYSTEM PROGRAM (CD VI.B.IV)	13
5. COLLECTION AND TRANSMISSION SYSTEMS TRAINING PROGRAM (CD VI.B.V)	14
6. SYSTEM-WIDE FLOW AND RAINFALL MONITORING PROGRAM (CD VI.B.VI)	15
7. SYSTEM-WIDE HYDRAULIC MODEL (CD VI.B.VII).....	16
8. FINANCIAL ANALYSIS PROGRAM (CD VI.B.VIII)	17
9. INFRASTRUCTURE ACQUISITIONS PROGRAM (CD VI.B.IX)	18
10. PRIORITY AREAS SEWER ASSESSMENT AND REHAB PROGRAM (CD VI.B.X)	18
11. ON GOING SEWER ASSESSMENT AND REHABILITATION PROGRAM (CD X 38.)	21
SUPPLEMENTAL ENVIRONMENTAL PROJECT (CD VIII.).....	23
PART II – SANITARY SEWER OVERFLOW TRENDS ANALYSIS	24
TABLES	
TABLE ES-1 2014 MAJOR CONSENT DECREE MILESTONES AND ACCOMPLISHMENT SUMMARY	5
TABLE 10-1 PASARP KEY PERFORMANCE INDICATORS	20
TABLE 11-1 OSARP KEY PERFORMANCE INDICATORS	22
ATTACHMENTS	
ATTACHMENT A MAPS DISPLAYING RAIN GAUGE AND FLOW MONITORING PROGRAM COVERAGE.....	48
ATTACHMENT B CLEANING, MANHOLE CONDITION AND CCTV ASSESSMENT LOCATIONS FOR GENERAL AREA CONTRACTS	52
ATTACHMENT C PASARP/OSARP/MMS PROJECT STATUS TABLE	54

Acronyms

ARV	Air/Vacuum Release Valve
AWWTF	Advanced Wastewater Treatment Facility
C&M	Department of Watershed Management, Construction and Maintenance
CCTV	Closed Circuit Television
CD	Consent Decree
CDPMT	Consent Decree Program Management Team
CERP	Contingency and Emergency Response Plan
CIP	Capital Improvement Program
CMMS	Computerized Maintenance Management System
CMOM	Capacity, Management, Operations, and Maintenance
County	DeKalb County
DWM	DeKalb County, Department of Watershed Management
FOG	Fats, Oils, and Grease
FSE	Food Service Establishments
GAEPD	Georgia Environmental Protection Division
GIS	Geographic Information System
GPS	Global Positioning System
I/I	Infiltration and Inflow
ITB	Invitation to Bid
KPI	Key Performance Indicator
LF	Linear Feet
MMS	Maintenance Management System
NTP	Notice to Proceed
O&M	Operation and Maintenance
OSARP	Ongoing Sewer Assessment and Rehabilitation Program
PASARP	Priority Areas Sewer Assessment and Rehabilitation Program
PTT	Push-to-Talk
SEP	Supplemental Environmental Project
SSO	Sanitary Sewer Overflow
USEPA	U.S. Environmental Protection Agency
WAM	Work and Asset Management
WCTS	Wastewater Collection and Transmission System

Annual Report 3 – January 1, 2014 to December 31, 2014

Introduction

DeKalb County (the County), Department of Watershed Management (DWM) submits this third Annual Report in accordance with Section IX, Paragraph 58 of the Consent Decree (Civil Action 1:10cv4039-WSD):

- a. “A narrative summary of progress made, including key accomplishments and significant activities, under the Capacity, Management, Operations, and Maintenance (CMOM) programs implemented or modified pursuant to this Consent Decree for the most recent twelve (12) month period.”
- b. “A trends analysis of the number, volume, average duration, and cause of the County’s Sanitary Sewer Overflows (SSOs) for the previous twenty-four (24) month period.”

Executive Summary

During the period from January 1, 2014 to December 31, 2014, the following DWM CMOM implementation programs, reports, and deliverables were approved by or submitted to the United States Environmental Protection Agency (USEPA) and Georgia Environmental Protection Agency (GAEPD) as noted below.

1/30/2014	4 th Semi-Annual Report
1/31/2014	8 th Quarterly Report
3/3/2014	2 nd Annual Report
3/20/2014	Ongoing Sewer Assessment and Rehabilitation Program Approval
4/30/2014	9 th Quarterly Report
6/1/2014	Addendum to 2 nd Annual Report
6/5/2014	Maintenance Management System Program Approval
7/30/2014	10 th Quarterly Report
7/30/2014	5 th Semi-Annual Report
10/30/2014	11 th Quarterly Report
12/30/2014	Supplemental Environmental Project (SEP) Completion Report

Consistent with the requirements of the Consent Decree, this document details, in narrative form, the progress made in the 2014 timeframe as well as significant program accomplishments and a SSO trends analysis. Any revised milestones and the associated corrective implementation plans are noted in the previously submitted Semi-Annual Report. Table ES-1 provides a summary of the major activities and key milestone completed in 2014.

Table ES-1 2014 Major Consent Decree Milestones and Accomplishment Summary

Program or Project	Milestones and Accomplishments
Contingency and Emergency Response Plan	<ul style="list-style-type: none"> • Conducted a thorough review of the CERP document to confirm the program is up to date with current practices and activities. • Filled the CMOM Coordinator position, which has joint responsibilities for the management of the CERP as well as overall reporting and compliance. • Conducted spill reporting in accordance with the Consent Decree. • Conducted SSO Response meetings throughout the year to review spill events and coordinate activities across all departments. • Performed biannual training on the CERP.
Fats, Oils, and Grease (FOG) Program	<ul style="list-style-type: none"> • Continued implementation of the FOG Program that met its performance measures and operational requirements to reduce FOG impacts to the WCTS • Recognized, for the second year, as an Outstanding FOG Program by the FOG Alliance of Georgia. • Implemented a successful Public Outreach effort, including conducting surveys to gauge the effectiveness of the FOG Program. • Performed FOG inspections, evaluations, and tracked data.
Sewer Mapping Program	<ul style="list-style-type: none"> • Substantially completed the base mapping work. • An online mapping tool is now available to DWM Operations and Maintenance crews and Consent Decree Program staff for remote viewing.
Maintenance Management System (MMS) Program	<ul style="list-style-type: none"> • Implemented a new Push-To-Talk system. • Upgraded the landline telephone system. • Implemented a Global Positioning System (GPS) tracking system for DWM vehicles. • Completed a major upgrade of barcode scanners for inventory management. • Implemented the component tracking module within the enterprise asset management system. • Located and assessed air relief valves (ARVs) within the WCTS.
Collection and Transmission Systems Training Program	<ul style="list-style-type: none"> • Provided technical and skills training to DWM personnel related to their job responsibilities. • Completed 2,064 hours of training in 2014 in 38 different subjects for 600 different staff members.
System-Wide Flow and Rainfall Monitoring Program	<ul style="list-style-type: none"> • Completed the comprehensive flow and rainfall monitoring network which provides essential information integral to the development and calibration of the hydraulic model. • Field verified and inventoried 106 existing flow meters, 24 rain gauges, and 15 inter-jurisdictional flow meters. • Installed 94 new flow meters and 17 new rain gauges to provide full coverage of the County's WCTS. • Substantially completed Site Investigation Reports associated with the installation of new meters and gauges. • The County installed five (5) additional U.S. Geological Survey (USGS) rain gauges.
System-Wide Hydraulic Model	<ul style="list-style-type: none"> • Progressed with building the network by conducting a more in depth review of the attributions from the Sewer Mapping Program. This ongoing process will continue in phases over the next three years.

Table ES-1 2014 Major Consent Decree Milestones and Accomplishment Summary

Program or Project	Milestones and Accomplishments
	<ul style="list-style-type: none"> • Integrated the data from the Sewer Mapping Program and the System-Wide Flow and Rainfall Monitoring Program for the three existing sewersheds.
Financial Analysis Program	<ul style="list-style-type: none"> • Tracked expenditures for both the operations and maintenance (O&M) budgets and Capital Improvement Projects (CIP) budgets. • DWM is on track to meet its revenue target and is expected to fall within its expenditure budget.
Infrastructure Acquisitions Program	<ul style="list-style-type: none"> • Hired an Engineer Senior to implement the program and recommend enhancements.
Priority Areas Sewer Assessment and Rehabilitation Program (PASARP)	<ul style="list-style-type: none"> • Continue to delineate and prioritize areas or sewer segments for condition assessment and rehabilitation within the priority areas. • Made major progress to get the comprehensive rehabilitation contracts out for bid in early 2015. • A table showing major project milestones is provided in Attachment C.
Ongoing Sewer Assessment and Rehabilitation Program	<ul style="list-style-type: none"> • Continued to proactively identify, delineate, and prioritize areas or sewer segments for condition assessment and rehabilitation for OSARP areas.
Supplemental Environmental Project	<ul style="list-style-type: none"> • Submitted the finalized SEP Completion Report to USEPA/GAEPD ahead of schedule. • Removed approximately 1,375.5 cubic yards of debris as a result of three Stream Cleanup Projects. • Exceeded the minimum expenditure requirement. • Implemented a successful public outreach program. • Successfully completed six Community Cleanup Days (two along each of the three steams).
SSO Trend Analysis and Major Spill Trend Analysis	<ul style="list-style-type: none"> • Completed a detailed SSO trends analysis and major spill analysis.

Part I – Capacity, Management, Operations and Maintenance (CMOM) Programs’ Implementation Activities Completed

1. Contingency and Emergency Response Plan – CERP (CD VI.B.i)

Narrative Summary of 2014 Program Progress (Implementation and Modification)

The CERP Program was approved by EPA/EPD on 01/10/2013. DWM continued to fully implement the CERP in 2014 using the approved strategy to mobilize labor, materials, tools, and equipment to respond to and appropriately remedy any conditions which may cause or contribute to a SSO.

SSOs continue to receive the highest priority response within the DeKalb County DWM operations. Additionally, the County continues to meet the requirements of the CERP program as the County enters into the fourth year of the Consent Decree.

Key Accomplishments and Significant Activities:

1. Performed CERP training for 61 personnel in 2014.
2. Conducted 11 Monthly Meetings with all program area managers.
3. Conducted 8 Monthly review meetings with the Director.
4. Conducted 22 self-evaluation meetings with field personnel (based on the leadership team’s evaluation of the responses to existing spills) and identified improvements to the response process.
5. Properly responded to 136 reportable spill events.
6. Properly reported all events to EPD.
7. Properly published public notices for 12 major spill events.
8. Completed the following remedial and proactive activities related to SSOs:
 - a. Cleaning (Total 2,508,823 Feet)

i. First Response	32,633 Feet
ii. Additional Follow-up	39,516 Feet
iii. Contractor Cleaning	2,436,674 Feet
 - b. Manhole Inspections
 - c. Point Repairs
 - d. CCTV
9. In addition, as a result of SSO investigation, tracking, and trend analysis, the County has completed 807 follow-up service requests.
10. Updated and reviewed the CERP program document and provided updates to the response crews and managers.

2. Fats, Oils, and Grease (FOG) Management Program (CD VI.B.ii)

Narrative Summary of 2014 Program Progress (Implementation and Modification)

The DeKalb County FOG Program accomplished all measures and operational requirements for 2014 in an effort to reduce the amount of FOG that enters the WCTS. We have continued to engage the municipalities within the County to ensure the uniform enforcement of the FOG ordinance throughout the County. The County also engaged DeKalb County municipalities to enhance our educational program to better inform citizens about the importance of following the best management practices to dispose of FOG from both commercial operations and residential activities.

Key Accomplishments and Significant Activities:

1. Won the "Outstanding FOG Program of the Year 2014" award by the FOG Alliance of Georgia.
2. Continued improving the FOG permitting process to include all new and unpermitted Food Service Establishments (FSEs) from City incorporated establishments. Communicated with City of Dunwoody, Brookhaven, Doraville and Chamblee to establish the FOG evaluation and inspections as part of their permitting requirements before the customer obtains the business license.
3. Delivered 807 Warning Notices and 17 Court summons to non-compliant FSE customers.
4. Reviewed 928 plans of new establishments and remodeling to ensure compliance of the FOG codes.
5. Reviewed 4,488 pump-out manifests as part of the Hauler Company Assessment program.
6. Enhanced our ongoing public education program through development of consistent and clear message around the term "FOG", the distribution of education materials at multi-family apartment complexes and residential neighborhoods located near sewer spills, creation of an educational brochure for commercial establishments to explain the FOG permitting process and technical installation requirements, creation of a FOG educational brochure highlighting the best management practices for garbage disposal and toilets, and through engagement with other organizations that have similar water quality messages as part of the public education program (e.g. Metropolitan North Georgia Water Planning District).
7. Continued to communicate with County customers on a consistent basis through community and school events, homeowners association and other group meetings, the Office of Neighborhood Empowerment (ONE DeKalb) office, DCTV (DeKalb County Television - Comcast Channel 23), bill inserts, and the placement of FOG advertisements in four local newspapers from October thru December: *The Champion*, *CrossRoads News*, *On Common Ground*, and *Mundo Hispanico*. Expanded our communication efforts to include Constant Contact, an email messaging system.

8. Implemented a statistically relevant survey to gauge the effectiveness of messaging and public participation in both English and Spanish. The ongoing survey will allow DWM to determine the effectiveness of the educational efforts and the number of customers receiving information and practicing BMPs. This survey is open permanently online and cumulative data will be analyzed semi-annually.

Initial survey results are based on 64 respondents through end of December 2014 as follows:

- 98% of survey respondents recognized the term FOG and its acronym definition.
 - More than 98% of respondents understand the BMPs related to disposal of cooking oil and 86% of respondents are currently performing this BMP.
 - 96% of respondents were aware of sewer spills induced by FOG.
 - 67% of respondents said they adopted BMPs to dispose of their cooking oil after learning about FOG.
9. Designed the FOG invoice format and late payment invoice. FOG staff received training in the use of CPAK and data transfer between XC2 (FOG database) and CPAK. Planned future incorporation of online payments and kiosk payments with potential to add more mass media education about the BMP for FOG disposal.
10. Performance Measures:
 - a. Total number of FOG inspections = 6,719
 - b. Total number of FOG evaluations = 1,298
 - c. Average inspections per day = 5.12
 - d. Average permitted active FSEs = 2,389

3. Sewer Mapping Program (CD VI.B.iii)

Narrative Summary of 2014 Program Progress (Implementation and Modification)

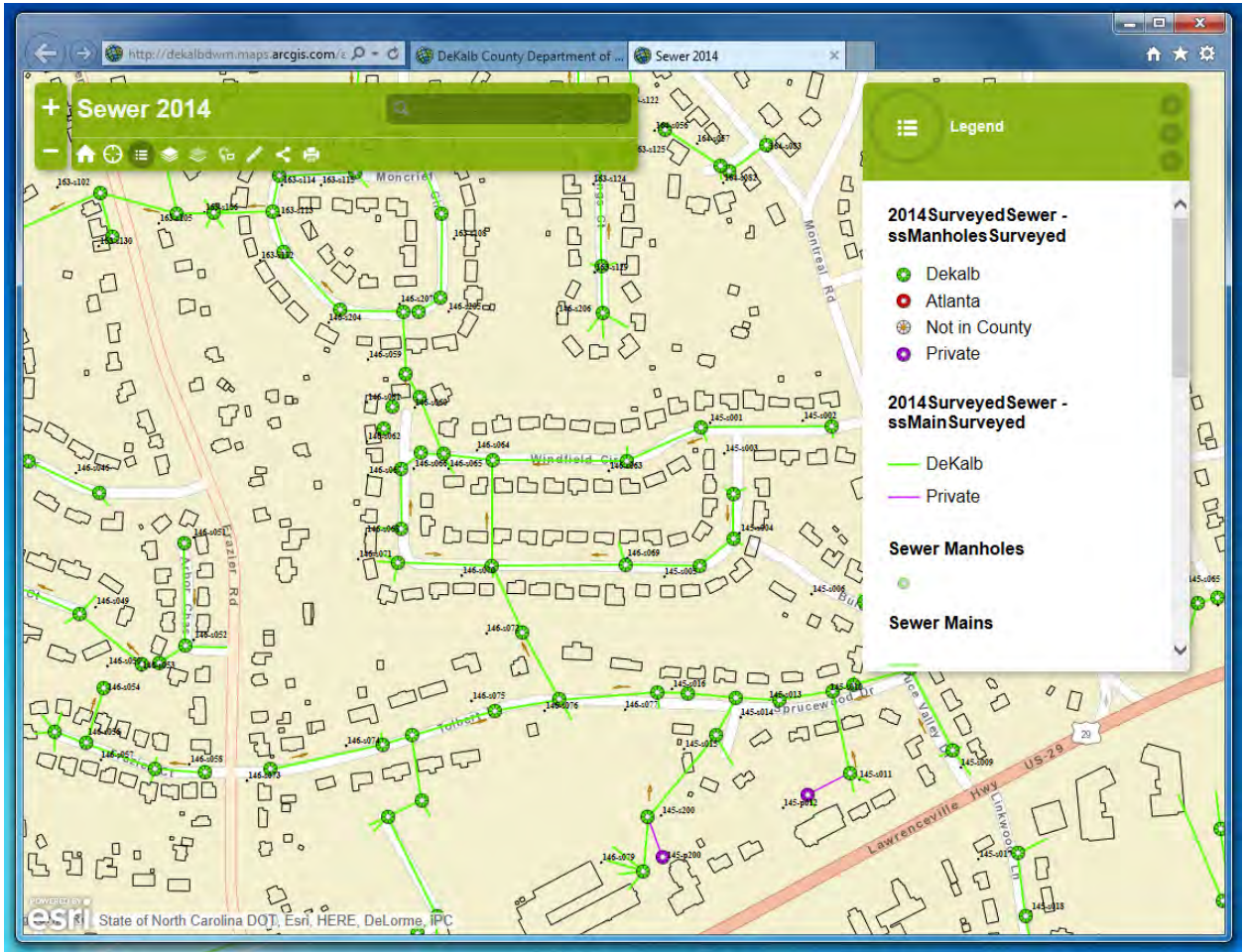
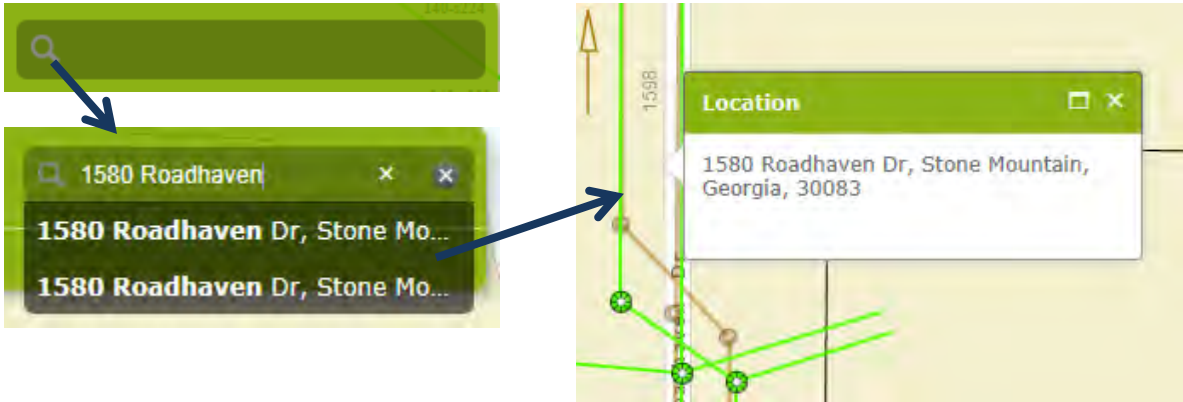
The purpose of the Sewer Mapping Program is to provide an integrated system to map, inventory, and depict system assets. The Sewer Mapping Program has a goal to provide an efficient means for data evaluation and record keeping and to provide and maintain a comprehensive inventory of system components and assets including relevant attributes and characteristics catalogued by service area or sewershed. These goals were advanced greatly in 2014 because the base mapping work was substantially completed and considered a major milestone accomplishment (See DeKalb County Sewer Mapping Status Map below). These goals are consistent with the County's overall goal of using the Geographic Information System (GIS), Computerized Maintenance Management System (CMMS), and modeling tools to provide real-time, visual information for planning and scheduling system maintenance and improvements. Moreover, in 2014, the innovative online mapping tool became available for use to the DWM Operations and Maintenance crews and Consent Decree Program staff.

Key Accomplishments and Significant Activities:

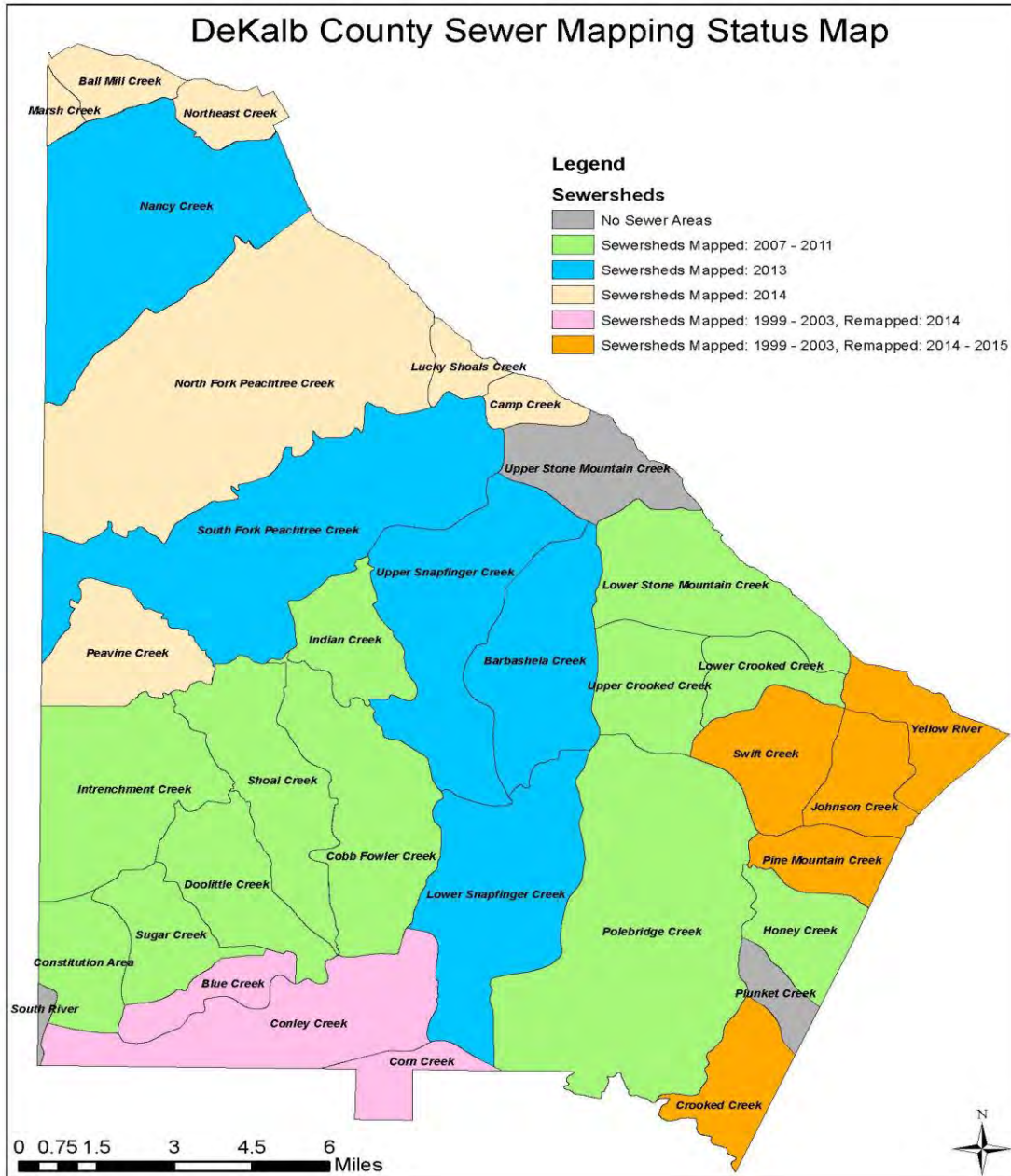
1. Substantially completed the sanitary sewer manhole surveying of the following sewersheds (note, some of these sewersheds have undergone development since the original mapping project and needed updating and reassessment as part of the ongoing program maintenance):

- a. Peavine Creek;
 - b. Ball Mill Creek;
 - c. Marsh Creek;
 - d. Northeast Creek;
 - e. Lucky Shoals Creek;
 - f. Camp Creek;
 - g. Upper Snapfinger Creek;
 - h. Barbashela Creek;
 - i. Blue Creek;
 - j. Corn Creek;
 - k. Constitution Area;
 - l. Swift Creek;
 - m. Yellow River;
 - n. Pine Mountain;
 - o. Johnson Creek;
 - p. Northfork Peachtree Creek; and
 - q. Crooked Creek.
2. Substantially completed the attribution for gravity mains, manholes, lift stations, and force mains against the designated Consent Decree data fields - size, material, estimated age or age range, slope, invert elevation, and rim elevation.
 3. Verified and / or revised the locations of lift stations, treatment facilities, force mains, and ARVs in the GIS.
 4. Performed quality analysis on the survey-collected data (any gaps identified, such as missing connectivity or attribution, have been flagged and are being addressed). Any duplicate or blank GIS identification numbers (IDs) have been addressed as a first step in priming the sewer network data for use with InfoMaster™ and InfoWorks®(the modeling software that uses GIS and which require a unique ID for each asset).
 5. Implemented the web-based mobile mapping solution. This online map is accessible to field crews and managers for viewing of the most recent version of the system, and details the sewer network along with streets, addresses, and water bodies. In addition to the online map, an internal map is available for viewing by DWM Dispatch and other administration personnel, displaying current and historical CMMS service requests in GIS, such as service interruptions and stoppages. Web-Based Mobile Mapping Solution screen shot is shown on the following page.

Screen Shot of Mobile Mapping App



- DWM replaced InfoNet™ with InfoMaster™ as a more robust product to track asset condition and risk scores and to develop appropriate corrective actions for structural and maintenance conditions. InfoMaster™ links directly with the DWM's GIS and has been installed on DWM computers and piloted using preliminary assessment data.



4. Maintenance Management System Program (CD VI.B.iv)

Narrative Summary of 2014 Program Progress (Implementation and Modification)

DWM made significant progress in MMS Program such that all of the enhancement projects are either finished or on schedule. The MMS planned lift station projects listed in Table 7-2 of the MMS are now tracked and reported as part of the existing work efforts under the PASARP and OSARP Programs. Only one of the 14 Lift Station projects was completed in 2014. The remaining 13 will be incorporated into the 2015 schedule. Support staff and contractors are slated to be in place in 2015 along with a revised schedule to keep the county moving forward with the MMS Lift Station Maintenance Schedule. The current status of the MMS Lift Station projects is shown in **Attachment C PASARP/ OSARP/MMS Project Status Table**.

Key Accomplishments and Significant Activities:

1. Completed implementation of a new Push-To-Talk system that has improved coverage and reliability to improve communication with and between field crews.
2. Completed the upgrade of the landline telephone system. DWM now tracks key performance indicators (KPIs) for customer calls which allow tracking of how many calls are missed or end before completion. This will allow customers, calling to report an SSO, to reach an operator in a timely fashion.
3. Implemented a GPS tracking system for DWM vehicles. This system allows DWM to identify the location of each crew vehicle with symbology and/or attributes to indicate the crew type. Once additional configuration / rollout to more staff is completed, DWM supervisors will be able to route crews in the vicinity of the SSO to respond more rapidly, thus potentially improving response time.
4. Completed major upgrade of barcode scanners for inventory management at the Central Warehouse, and Snapfinger and Pole Bridge Advanced Wastewater Treatment Facilities (AWWTF). In addition to the barcode scanners, DWM upgraded the associated wireless networks to provide greater bandwidth and extended range to cover each warehouse.
5. Completed implementation of the component tracking module within the enterprise asset management system for lift station maintenance and WCTS portable equipment. This allows parts that can be repaired and re-installed elsewhere to be tracked more effectively, thus improving reliability.
6. Initiated inspections of approximately 1,200 creek crossings through a contractor. These inspection results will be used to assess, prioritize, and establish a baseline condition in the development of a comprehensive Creek Crossing Inspection and Clearing Program.
7. Initiated inventory of easements along sanitary sewer lines to establish and prioritize an Easement Clearing Program. Completed the reconnaissance of all force main easements.
8. Located and assessed ARVs within the WCTS. ARVs found to be deficient were flushed, repaired, and/or replaced. Each ARV was located with GPS and uploaded to GIS. Re-inspections and maintenance activities are scheduled to occur on a three-year rotating cycle (with the exception of ARVs on large and high-risk force mains that will be inspected and cleaned annually).

9. Initiated development of a Force Main Performance Testing Program and protocol (using pressure loggers and flow meters). The protocol will be used when force main performance testing begins in 2015.
10. Conducted 20 MMS Meetings that included participation by the Director, Senior Managers, Lift Station Group, Warehouse Group, Creek Crossing Team, and Gravity System to work on MMS Implementation to meet program goals and milestones.

5. Collection and Transmission Systems Training Program (CD VI.B.v)

Narrative Summary of 2014 Program Progress (Implementation and Modification)

In 2014, the County continued to deliver technical and skills training to DWM personnel related to their job responsibilities. The long-term three-year training cycle, described in the Collection and Transmission Systems Training Program document, rotates DWM's employees through several training courses, including general training (for new employees), wastewater collection system training, wastewater transmission system training, safety training, and other certification training.

Key Accomplishments and Significant Activities:

1. Completed 2,064 hours of training in 2014 in 38 different subjects for 600 different staff members.
2. DWM training includes sessions which DWM participated in, hosted, planned, conducted in house, or contributed to such as:
 - a. Pump Maintenance
 - b. Safety
 - c. Purchasing and Ethics
 - d. CERP
 - e. Chlorine Safety
 - f. Certification
 - g. Boom Truck and Rigging
 - h. Defensive Driving
 - i. Human Relations courses
 - j. Management Training
 - k. Computer Software
 - l. First Aid
 - m. Forklift
 - n. Mapping and Modeling
 - o. Meter Installation
 - p. Trenching
 - q. Pipeline Condition Assessment
 - r. Georgia Association of Water Professionals
 - i. Annual, Spring, Fall and Industrial Conferences
 - ii. District Meetings
 - iii. Special Seminars such as Knowledge Pipeline, Utility Executive, Water Loss, Asset Management, Emergency Response, etc.
3. The County is in the process of hiring a Knowledge Retention Officer.

4. A three phased plan to fully implement the training program was developed and is described as follows (the County is currently executing Phase I):
 - a. Phase I –Determine if Compliance Suite software has additional modules that can be procured to enhance its capability and/or review other software for their capabilities. Adjust software based on review.
 - b. Phase II – Begin Individual Career Development Plans to document current state of employee training and career path so that training needs/gaps can be input in the appropriate software that will then take the data, show what training is needed and begin scheduling staff for the classes as they become available.
 - c. Phase III – Review the baseline survey to determine the extent of training and the courses required to follow the desired 3 year plan. Secure resources, including the Knowledge Retention Officer, to fully implement the training cycle. Issue final Career Development Plan for each staff member to follow.

6. System-Wide Flow and Rainfall Monitoring Program (CD VI.B.vi)

Narrative Summary of 2014 Program Progress (Implementation and Modification)

The Program's goal to provide an efficient and effective data monitoring network to assess capacity and infiltration/inflow (I/I) issues within the WCTS was fundamentally completed in 2014. This comprehensive flow and rainfall monitoring network will provide essential information through the life of the program and beyond.

Key Accomplishments and Significant Activities:

1. Completed field verifications and inventory for 106 existing flow meters, 24 rain gauges, and 15 inter-jurisdictional flow meters.
2. Determined the sufficient number and locations of permanent flow meters and rain gauges in each sewer basin to meet the System-Wide Hydraulic Modeling Program and other programs' needs. Completed field verifications for 94 new flow meters and 17 rain gauges. Substantially completed Site Investigation Reports (as described in item No. 1 above).
3. Completed installation of a total of 94 new permanent flow meters and 17 new rain gauges throughout the County to meet the hydraulic modeling needs. These included 20 temporary meters that were converted to permanent flow meters located in the City of Atlanta R.M. Clayton Water Reclamation Center (WRC) drainage basin. Completed the corresponding Site Investigation Reports including location maps, photos, field verified coordinates, pipe size, pipe material, manhole diameter, depth, and plan view, surcharge condition, flow characteristics, site conditions, and site comments].

Refer to **Attachment C: Figures C1 and C2** – DeKalb County Owned Rain Gauges and Location Maps – Pre and Post 2014 Installations; and **Figures C3 and C4** – DeKalb County Owned Flow Metes and Location Maps – Pre and Post 2014 Installations.
4. Relocated seven (7) existing rain gauges to newly identified locations to avoid the impact from trees and other obstacles for accurate rainfall data recording.

5. Selected and verified five additional (5) U.S. Geological Survey (USGS) rain gauge locations by coordinating with USGS and installed those rain gauges.
6. Revised CMOM program procedures for flow meter and rain gauge site inspection, installation, site test and acceptance, maintenance, data analysis, and reports.
7. Downloaded monthly flow meter and rain gauge data periodically and reviewed hydrographs and scattergraphs for anomalies.
8. Established flow meter relational schematic diagrams for existing and new flow meters.
9. Issued a New Invitation to Bid (ITB) for Flow Monitoring Program and new Flow Monitoring Contract is in the awarding process. Once the contract is awarded, the County will determine the needs and content of the training. Also this contract will require the contractor to review and download data for any temporary and for permanent flow meters, maintain and calibrate flow meters, conduct maintenance on rain gauges, collect real-time data and report in tabular format (including calibration sheets, field interrogation sheets, and volume data for billing sites).

7. System-Wide Hydraulic Model (CD VI.B.vii)

Narrative Summary of 2014 Program Progress (Implementation and Modification)

DWM is developing a computer-based dynamic hydraulic model (the Model) for the County's WCTS. The Model will integrate data from the Sewer Mapping Program and the System-Wide Flow and Rainfall Monitoring Program. The Model will be used to determine the system capacity under dry weather and wet weather conditions and to enable the County to identify, characterize, and address hydraulic deficiencies. By modeling the system, an understanding of the hydraulic behavior of the WCTS will assist DWM in making informed decisions concerning strategic planning and capital improvements required to meet the performance goals of the County and environmental regulations. In 2014 additional modeling resources were added to the team to better coordinate work and build effective basin-wide and sewershed models.

Key Accomplishments and Significant Activities:

1. Reviewed historical flow monitoring data at current existing flow meters and analyzed the data collected using USEPA Sanitary Sewer Overflow Analysis and Planning (SSOAP) tool including:
 - a. Dry weather flow data analysis
 - b. Flow volume balance check
2. Updated the existing models for the Pole Bridge, Shoal Creek, and Cobb Fowler sewersheds to enhance the model accuracy. Major updates include:
 - a. Improved model network based on the sewer mapping data provided and verified the flow meter locations, refined data interpolation, updated ID naming to be consistent with GIS, and identified questionable areas for additional field survey;
 - b. Updated dry weather flow loading in the models with the USEPA SSOAP dry weather flow data analysis results from recent year; and

- c. Validated the models for dry weather flow and compared the observed versus modeled flows at each flow monitoring site for the three existing sewersheds.
- 3. The modeling protocols are being continuously updated based on the findings from the existing model update and validation.
- 4. Data are being collected for model inputs including lift station attributes, historical flow monitoring data, historical flow, and operation records at lift stations and treatment plants, and water billing data, etc.
- 5. The DWM existing InfoWorks® CS software being used to model the system was upgraded to v15 from v11.5.

8. Financial Analysis Program (CD VI.B.viii)

Narrative Summary of 2014 Program Progress (Implementation and Modification)

DWM Financial Analysis Program incorporates aspects of revenue estimating, budgeting, costs analysis, and customer rate setting such that DWM provides the desired level of service to its customers while meeting its regulatory requirements. In 2014, DWM continued to implement the Financial Analysis Program and track operations and maintenance (O&M) budgets and costs and Capital Improvement Projects (CIP).

Key Accomplishments and Significant Activities:

- 1. Commenced the separation of drinking water and wastewater O&M budget and costs in 2014. The review and analysis of active operations cost centers for personnel costs is on schedule. Active and vacant positions were identified and are scheduled to be transferred into their appropriate cost centers in the first half of 2015.
- 2. DWM is on track to meet its revenue target and is expected to fall within its expenditure budget. Debt service ratio continues to exceed the Department’s internal target of 1.50 or better (the bond covenant requirement is 1.20).
- 3. The 2015 Operating and Capital budgets were submitted to Finance on October 6th, 2014, the required submission date.
- 4. Pending the automated implementation and integration of the systems to track preventive, corrective, and emergency maintenance costs, DWM will continue to use an alternative methodology to approximate these costs. The chart below provides cost estimates through the 4th quarter (Q4) of 2014:

Cost Category	Total through Q4
Corrective	\$ 668,801
Preventive	\$ 749,216
Emergency	\$ 10,177,402
Total	\$ 11,595,419

- 5. A notice to proceed was issued on November 30th, 2014 engaging a consulting firm to conduct a water and sewer rate sufficiency study and update.

6. Conducted budget classes for “elected” Department personnel in 2014.
7. Assisted with reporting and providing operating and financial data for the Water & Sewer Refunding Bonds.
8. Continue to monitor, analyze, and report on the Department’s overall financial performance.

9. Infrastructure Acquisitions Program (CD VI.B.ix)

Narrative Summary of 2014 Program Progress (Implementation and Modification)

The goals of the Infrastructure Acquisitions Program are to acquire infrastructure that meets County standards for design, construction, capacity, and efficiency and to maintain a program that properly monitors the acquisition process, encourages input, and is efficient for contractors/ developers/ property owners/County. The County continued to monitor its Infrastructure Acquisition Program and hired an Engineer Senior to facilitate its implementation and plan and permit reviews.

Key Accomplishments and Significant Activities:

1. Evaluated and acquired 23,770 linear feet of pipe under the Infrastructure Acquisition program in 2014.
2. No lift stations were acquired in 2014
3. Met daily with DWM inspectors to avoid/address any field issues, to streamline the process for review/approval/acceptance of new infrastructure.

10. Priority Areas Sewer Assessment and Rehab Program (CD VI.B.x)

Narrative Summary of 2014 Program Progress (Implementation and Modification)

The main purpose of the PASARP is to provide for the identification, delineation, assessment, prioritization, and rehabilitation of Priority Areas (both Initial Priority Areas and Additional Priority Areas as explained in the Consent Decree) within the County WCTS. The Initial and Additional Priority Areas total approximately 776 miles of sewers (approximately 29.5 % of the WCTS). In implementing the PASARP, the County is undertaking certain condition, structural, and hydraulic assessments within the Priority Areas, in order to identify, prioritize, and complete appropriate rehabilitation measures within those areas. As part of the implementation process, the County is tracking rehabilitation measures completed within the Priority Areas and will determine the effectiveness of those measures, using selected KPIs. The County will complete implementation of the PASARP within eight and one-half (8½) years from the Date of Entry of the Consent Decree. The County has contracted a Consent Decree Program Manager that is experienced in managing the implementation of Consent Decree sewer system improvement programs to assist it in the implementation of the PASARP. Major progress was made in 2014 to get the comprehensive rehabilitation contracts out for bid in early 2015.

Attachment C provides a table showing major milestones and is titled - PASARP/OSARP/MMS Project Status.

Key Accomplishments and Significant Activities:

1. Continued to implement, track, and verify status of ongoing PASARP assessment and rehabilitation projects.
2. Verified the spatial boundaries of the Priority Areas, which is 95% complete with field verification and quality analysis.
3. Developed public outreach materials for various assessment and rehabilitation projects.
4. Optimized location of existing and additional flow monitors to be installed for PASARP.
5. Field delineated the physical boundaries of the Priority Areas.
6. Confirmed and enhanced decision logic for assessment prioritization. Prioritized assessment activities within initial and additional Priority Areas.
7. Continued field assessments defined for specific Priority Areas while developing tools and procedures for full program implementation as described in the PASARP CMOM document.
8. Continued reviewing and editing master technical specifications for sanitary sewer and assessment and rehabilitation-related project contracts.
9. Established the PASARP contracting strategy for future program implementation and commenced development of associated assessment and rehabilitation contract document sections required for procurement.

Assessment and Rehabilitation Production Achieved in 2014

1. The following summarizes approximate completed sewer assessment, engineering studies and design, and rehabilitation related to PASARP implementation in 2014.
 - a. 288,286 linear feet (LF) of CCTV
 - b. 267,786 LF of sewer main cleaning
 - c. 1,125 sewer manhole condition assessments
 - d. 6,600 LF gravity sewer /force main replacement and/or relocation
 - e. 354 sewer manhole rehabilitation

Additional work that was done in 2014 includes gravity sewer installation and point repairs, gravity sewer relining(CIPP), gravity sewer lift station improvements, and engineering studies planning future work. All data not currently available but will be reported in future reports.

2. Key Performance Indicators (KPIs): Table 10-1 presents the KPIs selected by the County to determine the effectiveness of completed assessment and rehabilitation measures within PASARP. KPIs are presented for 2013 and 2014 to draw comparison from year to year.

Table 10-1 PASARP Key Performance Indicators

KPI	2013 Performance	2014 Performance
SSOs per 100 miles of WCTS within the Priority Areas per year	10.69 per 100 miles within the Priority Areas per year	11.69 per 100 miles within the Priority Areas per year
SSOs per 100 miles of WCTS within the Priority Areas per year per inch of rain within the Priority Areas	0.16 per 100 miles per year per inch of rain within the Priority Areas	0.25 per 100 miles per year per inch of rain within the Priority Areas
Total volume of spills per 100 miles of WCTS within the Priority Areas	74,954 gallons per 100 miles within the Priority Areas	35,136 gallons per 100 miles within the Priority Areas
Total volume of spills per 100 miles per inch of rain within the Priority Areas	1,135 gallons per 100 miles per inch of rain within the Priority Areas	738 gallons per 100 miles per inch of rain within the Priority Areas
Number of dry weather SSOs* within the Priority Areas	79 dry weather SSOs* within the Priority Areas	88 dry weather SSOs* within the Priority Areas
Annual average Treatment Plant Flow per inch of rain per year	1.0 million gallons average daily flow per inch of rain per year	1.4 million gallons average daily flow per inch of rain per year

** Dry weather SSO KPI, removed the SSOs with cause listed as STORM (assumed others were dry weather SSOs).*

11. On Going Sewer Assessment and Rehabilitation Program (CD X 38.)

Narrative Summary of 2014 Program Progress (Implementation and Modification)

The main purpose of the OSARP is to ensure continuous assessment and rehabilitation of the County's WCTS. The OSARP governs assessment and rehabilitation of those areas outside the Priority Areas while the Consent Decree is in effect, and will continue to exist after the Consent Decree expires. It is enabling the County to continuously and proactively identify, delineate, and prioritize areas or sewer segments within the WCTS for condition assessment and rehabilitation, as appropriate, starting with areas not being addressed under the PASARP. The implementation of the OSARP takes into consideration data obtained through other ongoing County programs and operations including the:

- CMOM programs, information obtained from customers and the general public
- Assessment and rehabilitation work performed under the PASARP
- Knowledge and experience of County personnel
- Best engineering practices and/or best management practices

OSARP approval by EPA in 2014 has allowed the program to progress and move to full implementation as provided in the approved program.

Based on the review of CERP SSO data, DWM has determined that additional preventive efforts will be beneficial. Therefore, sewer cleaning and CCTV contract documents were developed for 15 areas that include approximately 800,000 linear feet of sewer and 5,000 manholes. These contract documents are in the process of advertisement with a target implementation start period of the second quarter of 2015. The inspections in these areas would be evaluated using the same analysis tools and procedures as those for PASARP.

Attachment B provides a map depicting the Cleaning, Manhole Condition and CCTV Assessment Locations for General Area Contracts. This figure shows several current and proposed program activity locations. The cross-hatched areas represent the fifteen areas where the advanced condition assessment and cleaning work would be accomplished.

Key Accomplishments and Significant Activities:

1. 03/20/2014 – The OSARP was approved by EPA/EPD.
2. Continued to implement, track, and verify status of ongoing PASARP assessment and rehabilitation projects.
3. Confirmed and enhanced decision logic for assessment prioritization. Prioritized assessment activities around SSO locations in OSARP.
4. Continued reviewing and editing master technical specifications for sanitary sewer assessment and rehabilitation-related project contract documents.
5. Established the OSARP implementation and contracting strategy. Commenced development of annual assessment and rehabilitation contract documents.

Assessment and Rehabilitation Production Achieved in 2014

6. The following summarizes approximate completed sewer assessment, engineering studies and design, and rehabilitation related to OSARP implementation in 2014.
 - a. 160,462 linear feet (LF) of CCTV
 - b. 139,362 LF of sewer main cleaning
 - c. 2,197 sewer manhole condition assessments
 - d. 2,200 LF gravity sewer /force main replacement and/or relocation
 - e. 145 sewer manhole rehabilitation
 - f. Design for replacement or rehabilitation of 3,454 LF of sewer main.

Additional work that was done in 2014 includes gravity sewer installation and point repairs, gravity sewer relining(CIPP), gravity sewer lift station improvements, and engineering studies planning future work. All data not currently available but will be reported in future reports.

7. Key Performance Indicators (KPIs)

The following table presents the KPIs selected by the County to determine the effectiveness of completed assessment and rehabilitation measures within OSARP. KPIs are presented for 2013 and 2014 to draw comparison year to year.

Table 11-1 OSARP Key Performance Indicators

KPI	2013 Performance	2014 Performance
SSO per 100 miles of WCTS per year	10.06 per 100 miles per year	9.34 per 100 miles per year
SSO per 100 miles of WCTS per year per inch of rain	0.15 per 100 miles per year per inch of rain	0.20 per 100 miles per year per inch of rain
Total volume of spills per 100 miles of WCTS	55,916 gallons per 100 miles	35,819 gallons per 100 miles
Total volume of spills per 100 mile per inch of rain	847 gallons per 100 mile per inch of rain	752 gallons per 100 mile per inch of rain
Number of dry weather SSOs	234 dry weather SSOs	222 dry weather SSOs
Annual average Treatment Plant Flow per inch of rain per year	1.0 million gallons average daily flow per inch of rain per year	1.4 million gallons average daily flow per inch of rain per year

** Dry weather SSO KPI, removed the SSOs with cause listed as STORM (assumed others were dry weather SSOs).*

Supplemental Environmental Project (CD VIII.)

Narrative Summary of 2014 Program Progress (Implementation and Modification)

DWM completed the Supplemental Environmental Project (SEP) in 2014 pursuant to criteria set forth in the Consent Decree. The SEP involved stream cleanup projects and public involvement component performed in accordance to the Stream Cleanup Plan (2013) as approved by the USEPA and the GAEPD.

Key Accomplishments and Significant Activities:

1. DWM finalized the SEP Completion Report and submitted it to USEPA/GAEPD on December 31, 2014.
2. Approximately 1,375.5 cubic yards of trash and debris were removed. This major accomplishment acknowledges the completion of three Stream Cleanup Projects within the County, including:
 - Snapfinger Creek: 45 sites completed May 2014 removing total of 370 cubic yards
 - 951 tires/191 cubic yards
 - 67 cubic yards of trash/debris
 - 112 cubic yards of woody debris
 - South Fork Peachtree Creek: 65 sites completed June 2014 removing a total of 350 cubic yards
 - 186 tires/40 cubic yards
 - 177 cubic yards of trash/debris
 - 133 cubic yards of woody debris
 - South River: 31 sites completed September 2014 removing a total of 655.5 cubic yards
 - 4,124 tires/320 cubic yards
 - 2.5 cubic yards of trash/debris
 - 333 cubic yards of woody debris

Metal (i.e. shopping carts) and tire debris were recycled and non-recyclables were disposed in a landfill.
3. The County completed the project on schedule and committed to an expenditure (approximately \$1,009 million) significantly exceeding the minimum expenditure requirement of the Consent Decree, in order to complete the 141 sites identified.
4. The County, through a successful public outreach program, engaged the community and general public in the planning and stream cleanup process. The County initiatives implemented included media announcements, letters to residents, door hangers, special "live" media days, public services announcements, and direct citizen communication. Several Press Release Statements were published reporting the status of each cleanup project. Six Community Cleanup Days (two along each of the three streams) were successfully completed in 2013 and 2014.

Part II – Sanitary Sewer Overflow Trends Analysis

Review of Sanitary Sewer Overflows Trends For the Period 2013 and 2014 in DeKalb County

As required by the Consent Decree, IX. Reporting Requirements 58(b), the following trend analysis is submitted for the 24 month period to include calendar year 2013 and 2014. Earlier data is also included for reference in various sections. The report addresses the three specific spill types (Spills, Building Back-ups, and Overflows) as they apply to the various data and trends.

SPILLS

Consent Decree Totals		2011	2012	2013	2014
CD Spills to date	409	5	141	127	136
CD Major #	41	1	15	13	12
CD Major Volume gallons, to date	1,742,504	116,080	308,772	834,207	483,445
CD Minor #	368	4	126	114	124
CD Minor Volume gallons, to date	1,273,556	18,700	444,330	447,633	362,893
CD Volume Total gallons, to date	3,016,060	134,780	753,102	1,281,840	846,338
		(Dec 20, 2011)		Update Thru	12/31/14

Figure 1 Consent Decree Data Summary Table

As noted in **Figure 1**, the detailed number and volumes by category for reportable spills is presented for review. The 2014 period saw a slight reduction in the number of major spills but an uptick in the number of non-major spills. However, a review of the spill volumes shows a significant decrease in total gallons from 2013 to 2014 and highlights the annual variability in the volume per spill especially in the major spill category. The primary driver for the gallon volume appears to be the line size. For example, a single 30 inch line in 2013 produced a 337,000 gallons spill whereas in 2014, the highest volume for an individual event was 80,900 gallons.

The median volume for the Consent Decree period Major category is 23,120 with the average being 42,500 gallons. The average spill in the Minor category is 3,460. The overall median for the Consent Decree is 3,300 gallons with an average spill volume of 7,382 gallons.



Figure 2 Spills per 100 Miles of Sewer Line

In **Figure 2** the reportable spills per 100 miles of line indicate a decreasing linear trend from 2007 to the present. It should also be noted that the overall annual variance is not extreme in either a dry year such as 2009 or a wet year in 2011.

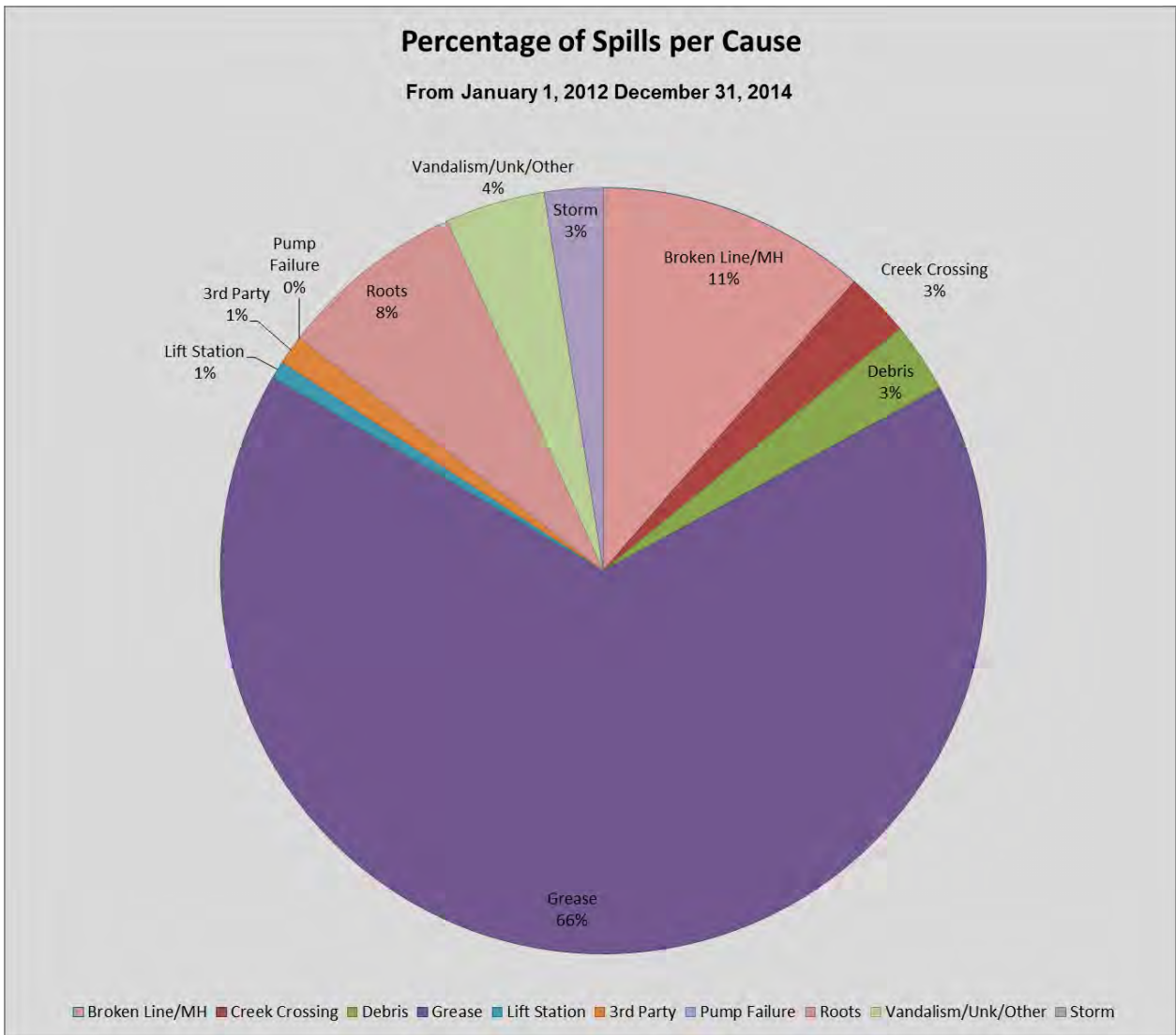


Figure 3 Spill Cause Breakdown

Spill Cause - Overview

As shown in **Figure 3**, that the majority (66%) of reportable spills are still grease related. The percentage remained consistent for 2013 (67%) and 2014 (66%). The next highest areas are broken lines and structures at 11% (down from 2013 with 13%) and roots at 8% (down from 2013 with 9%).

At this time there is no data showing a large difference in the changes in the spill types. What is interesting to note is the spill locations are still variable as noted in **Map 1** in the Map Section of this report.

Spill Cause – Grease

Through the cleaning effort in 2013 and 2014 with (1) two on call contractors doing follow-up after spills, (2) a specific area cleaning contractor, and (3) County forces, 30% of the system has been cleaned as noted in **Figures 4 and 5**. There are no findings of large contiguous areas of grease, large amounts of debris, or major issues with the system in the spill or specific areas that have been cleaned throughout the County. During this year’s mapping effort (associated with the Sewer

Mapping Program), the three contracted firms working on the mapping have reported a very limited (<10) number of spills and appearance of spill evidence for follow-up cleaning.

Year	First Response	Additional Follow-up	Contractor	Routine Work	Total Feet	Total Miles	Total System Cleaning %
2013	31,136	52,702	102,501	613,341	799,680	151	6%
2014	32,633	39,516	2,364,525	709,096	3,145,770	596	24%
Totals	63,769	92,218	2,467,026	1,322,437	3,945,450	747	30%

Figure 4 System Cleaning Data Related to Spills

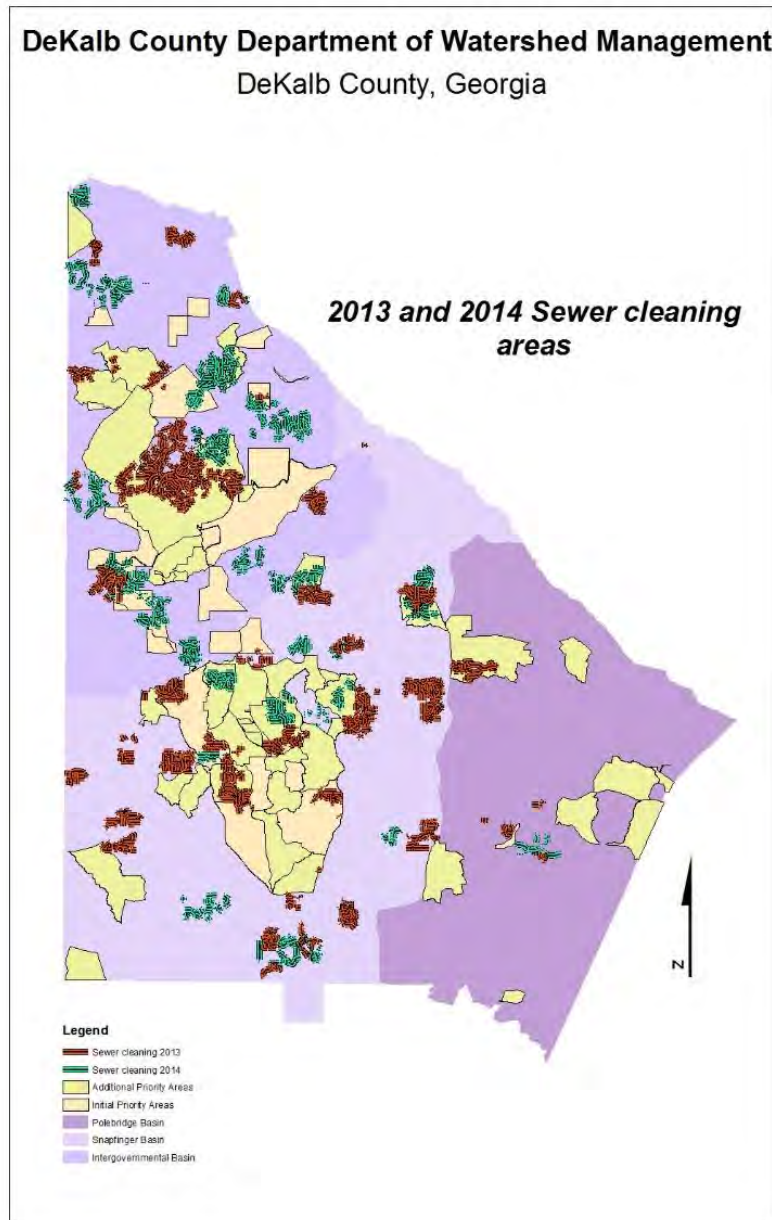


Figure 5 Cleaning Areas 2013 and 2014

Spill Cause – Vandalism/Human Factors

The investigations are continuing to find instances of human interference with the system. For example, there have been an instance where large rocks were placed in a manhole and four instances of large amounts of paper towels, trash, and medical related items were located in the sewer system as noted on our spill tabulation sheets. The FOG program enforcement and investigation has not found a significant number of FSE's (<5) that are contributing to spills.

A review of the debris found in the blockage is also showing the effects of water conservation and the rapidly increasing use of wipes. These are occurring in many areas that require some additional educational efforts. Day cares are particularly problematic with the high number of wipes and low volume from the flow of water saving devices. Our public information group and program manager will be developing an educational brochure for this and some other common problems encountered in the spill evaluation.

It has also been noted on some occasions that the larger medical wipes are being flushed from both medical and dental facilities. In these cases the County is contacting the health department for assistance in enforcement from the medical waste aspects.

On several occasions the evaluation has shown items such as mop heads and similar cleaning items being the cause of or contributing to spills. If this is related to a FSE our FOG group is asked to educate the FSE related to floor drains and best practices. The County has noted some schools (public and private) have had the same issue and are working with the school to advise them of the issue and best practices to follow.

Reviewing the mapping of the spills and description of the actions taken to control the spill has yielded a growing amount of data that has influenced a change in our response protocol. The distance of the blockage from the spilling manhole is less than twenty feet in many cases and easily removed by the gooseneck or minimal rodding. Where the crew is able to access the spilling manhole they have been instructed to insert the gooseneck and rods to see if that corrects the spill. If not then the standard practice of rodding/pressure washing from a dry manhole upstream is initiated.

Spill Cause - Manholes

Technology changes have been developed and are being researched by the County as a result of the stolen manhole cover problem. Through the partnership with Oldcastle Cement a specially designed insert has been developed that has a plug type bottom that fits in the ring and a larger top that can fit over the cone of the manhole to secure the manhole. The device has inserts for lifting eyes that are removed when it is installed. The weight is such that it cannot be lifted without a back-hoe so that the manhole is protected from vandalism. This has worked well except in the one case noted in 2014 where the area was frequented by off road vehicles. A simple design modification is being made for a thicker insert in the ring and more weight on top for this and similar areas. The County has also been reviewing traffic rated, non-metallic lids for those areas that are capable of accepting such a device. An order is in the process now to test these in areas in the County to determine effectiveness. These lids also lock on the ring and seal the manhole.

Type	Spills 2014	Spills 2013	Spills 2012	Percentage	Building Backups 2014	Building Backups 2013	Building Backups 2012	Percentage	Overflows 2014	Overflows 2013	Overflows 2012	Percentage	Total	Percentage
Broken Line	10	11	21	11%	1	0	1	3%	7	5	11	12%	67	9%
Creek Crossing	5	4	2	3%	0	0	0	0%	1	0	1	1%	13	2%
Debris	5	2	5	4%	4	5	1	8%	1	4	0	1%	27	4%
Grease	64	63	59	44%	2	14	7	15%	27	28	32	39%	296	40%
Manhole Issue	2	2	0	1%	0	0	0	0%	2	1	2	3%	9	1%
Grease-Debris	17	15	21	14%	1	2	2	5%	8	7	5	9%	78	11%
Grease-Roots	8	6	11	7%	6	3	3	15%	2	8	4	4%	51	7%
Lift Station	2	1	0	1%	0	0	0	0%	1	0	3	3%	7	1%
Outside Contractor	3	1	1	1%	1	0	0	2%	2	4	3	3%	15	2%
Pump Failure	0	0	0	0%	0	0	0	0%	0	0	0	0%	0	0%
Roots	7	8	6	5%	12	7	10	35%	6	14	4	7%	74	10%
Roots-Debris	2	4	5	3%	1	0	1	3%	2	3	0	1%	18	2%
Vandalism	0	2	3	1%	0	0	0	0%	1	1	1	1%	8	1%
Storm	6	2	2	3%	1	2	0	2%	2	4	0	1%	19	3%
Grease-Roots-Debris	1	1	2	1%	1	1	0	2%	0	0	0	0%	6	1%
Other	3	3	3	2%	4	4	1	8%	0	0	2	1%	20	3%
Unknown	1	2	0	0%	1	1	1	3%	2	2	18	13%	28	4%
Total	136	127	141		35	39	27		64	81	86		736	

Figure 6 Spill Breakdown by type

Figure 6 shows the spill type category, number of spills of that category by year and a total. This total is then calculated as a percentage of all spill types by category and then overall for the period.

In the spill category grease is still predominant and as discussed above. There is no significant difference per year. There was a minor trend in 2013 to having more grease related spills which was influenced by more broken lines. This did not carry through in 2014.

In the building back-up category in 2013 the two primary causes were grease and root related issues. 2014 saw these same two causes as primary concerns with grease-related incidents decreasing and root related incidents increasing. When the years are combined the two predominant causes of the building back-ups are grease and roots accounting for more than 60% over the 2013-2014 period. Primarily the roots were involved in issues surrounding the lateral. These issues are being evaluated in 2015 as part of a root control plan.

The overflows category shows more grease related spills by percentage than other causes. The next three types are broken lines, roots, and unknown cause. It appears that the cleaning effort have impacted the number of overflows in this category by 21% to 24%. For example, the surcharged manholes in 2013 numbered 187 and in 2014 they numbered 150. See Map 5 for a comparison of distribution.

Grease Related	Roots	Mechanical	Outside	Debris	Type
		9%			Broken Line
		2%			Creek Crossing
				4%	Debris
40%					Grease
		1%			Manhole Issue
11%				11%	Grease-Debris
7%	7%				Grease-Roots
		1%			Lift Station
		2%	2%		Outside Contractor
		0%			Pump Failure
	10%				Roots
	2%			2%	Roots-Debris
			1%		Vandalism
			3%		Storm
1%	1%			1%	Grease-Roots-Debris
			3%		Other
			4%		Unknown
59%	20%	15%	13%	18%	Sub-Totals

Figure 7 Overall Summary of Causes

The data derived from the total spill percentages in **Figure 6** is combined in such a manner as to group the spill types in categories of similar characteristics in **Figure 7**. Grease remains the predominant cause across the board at 59% of all SSOs.

Roots are the second highest category. As noted in the paragraphs above, a review of the mapping data of the spill locations is underway and will determine the areas needing root treatment in 2015.

Debris has moved up in percentage this period with 18% of the cause related to debris. It appears that a resurgence in construction (economic development) may have led to more debris in the lines associated with construction activity. Our construction inspectors were apprised of this issue and have been asked to increase their vigilance.

Mechanical issues (broken lines, creek crossing, manhole issue, lift station) are the next highest cause of SSOs at 15% and have decreased during this reporting period. In review of the empirical data, it appears that more issues are located in the smaller lines connecting just a few homes to the sewer mains. These lines are typically older lines. We have also noted a number of very small incidents near creek crossing on lines that are barely leaking due to cracks from joint stress or minor corrosion issues. We have seen a few more incidents close to creek crossings where the transition point, from one material to another, has gotten out of alignment. In some cases trees falling near the creeks have taken out the sewer line rather than the creek crossing. With just 14 total incidents, 1.9 % of the total SSO's, the SSOs data related to creek crossing in the mechanical category is not conclusive and will continue to be monitored.

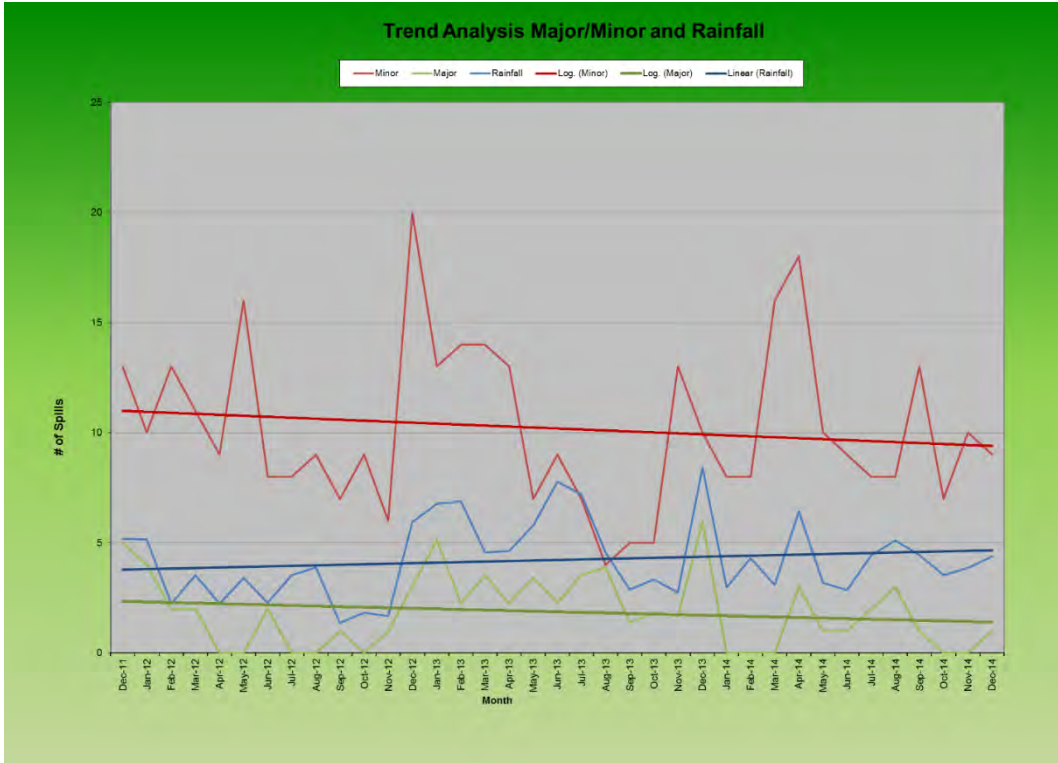


Figure 8 Rain and Spill Numbers

Figure 8 the comparison of rain to spill numbers is reviewed. As noted in the chart there is no conclusive correlation to spills and rainfall amounts. This conclusion is also present in the 6 previous years to this period.

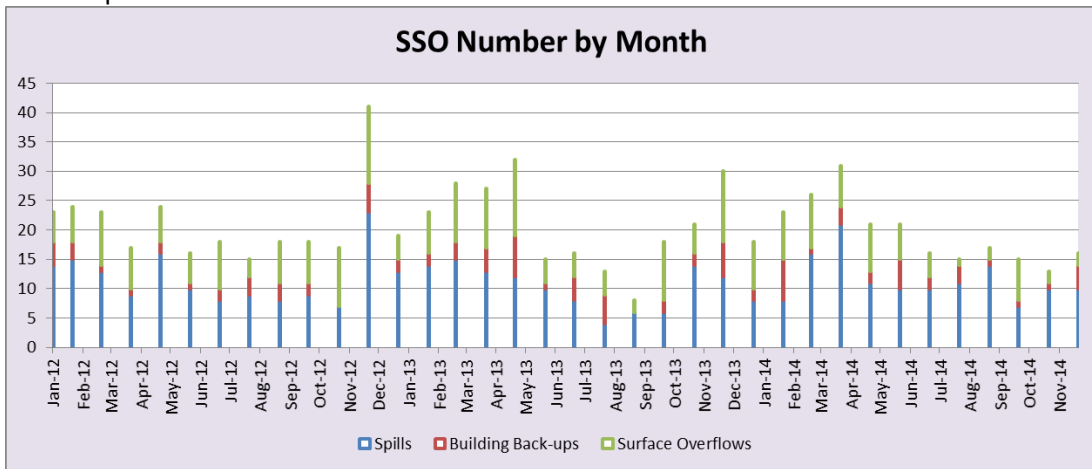


Figure 9 SSO Events by Month and Type

Figure 9 lays out SSOs by month. The trend from 2013 and 2014 seem to show that SSOs increase during the first half of the year and then decline during the summer months.

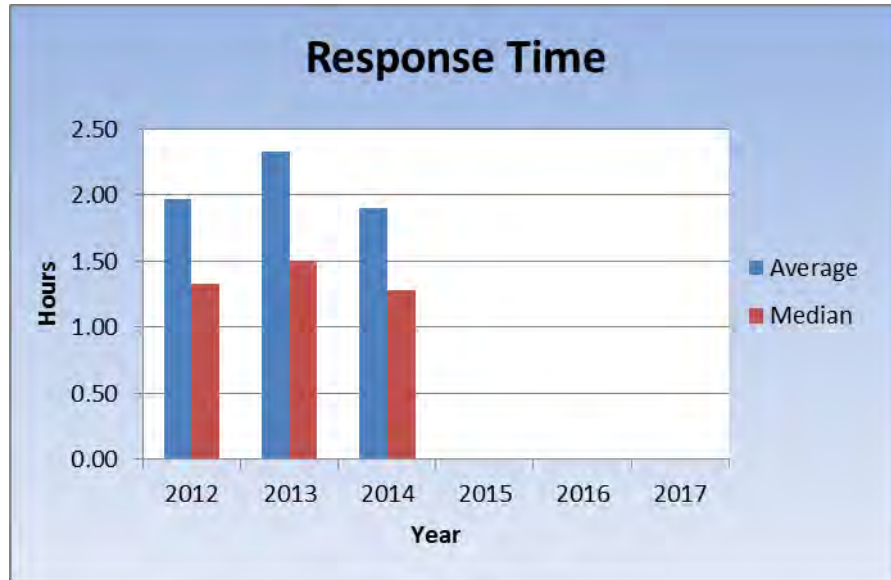


Figure 10 Annual Median and Average Response Time

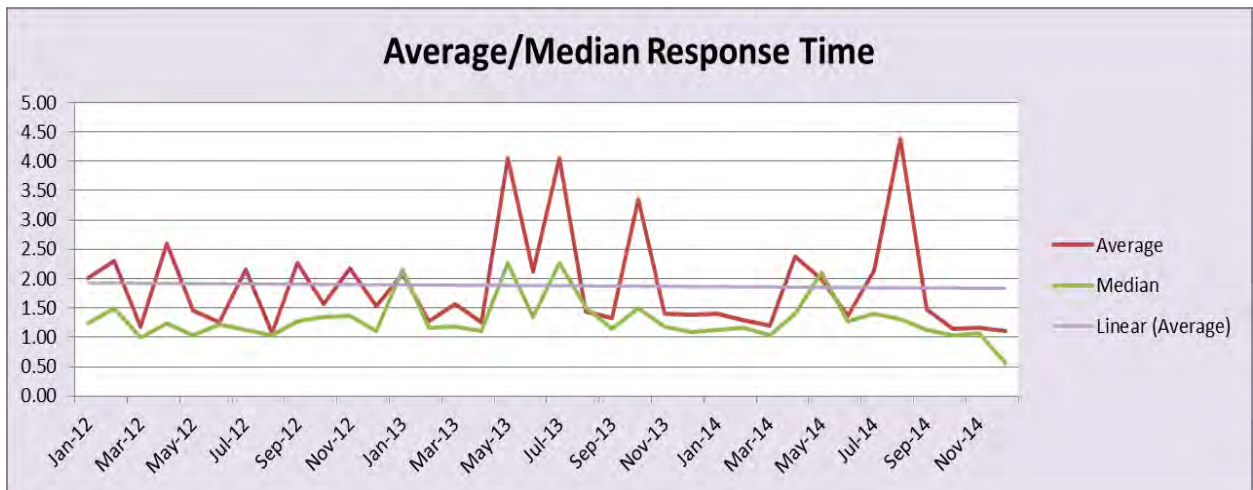


Figure 11 Response Time Call to Cessation of Spill

The response time from the initial notification to the County and the restoration of flow is shown in **Figure 10** for each year. The overall trend remains very good at the 2 hour mark or less from call to cessation of the spill.

Figure 11 shows the monthly variations over time for both the average and median responses. The larger peaks, influenced by a single complex spill, have tended to be large lines or complicated spills where by-pass pumps were difficult to put in place.

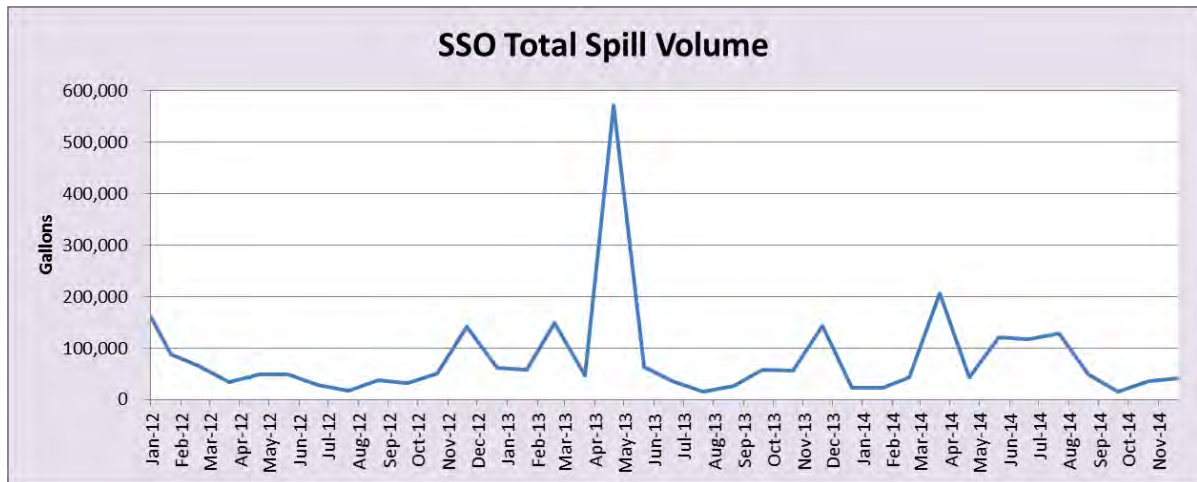


Figure 12 SSO Volume by Month

In **Figure 12** the monthly spill volume is indicated above. Through 2014 the amount remained relatively stable with the exception of the large volume spills in 2013.

Volumes by Cause			
Cause	2012	2013	2014
Grease-Roots-Debris	3,925	4,640	2,565
Broken Line/Structural	104,155	468,517	72,619
Creek Crossing Break	4,366	186,775	1,949
Debris	23,862	15,050	24,825
Grease	267,456	281,130	196,820
Grease/Broken Line	-	-	-
Grease and Debris	89,553	114,648	235,965
Grease and Roots	44,940	24,015	19,115
Lift Station Failure	-	4,500	8,000
3rd Party	1,760	42,660	3,580
Pump Failure	-	-	-
Roots	43,410	25,925	32,130
Roots and Debris	19,580	18,905	8,380
Manhole		18,205	1,066
Vandalism	62,920	6,420	-
Other	4,175	54,500	46,864
Storm	83,000	8,400	191,925
Unknown	-	7,550	535
Total	753,102	1,281,840	846,338

Figure 13 Spill Volumes by Cause

Figure 13 is indicative of the volumes by cause for each 12 month period. The volumes show the variability in the type of spill and in some instances the number of spills in a category. Again, grease

and grease related categories represent the predominant cause for SSOs. In 2013 a single event with 337,000 gallons impacted that year's numbers related to mechanical failure (broken line/structural). Single large events have to be considered separately in determining the strategy for reducing SSOs.

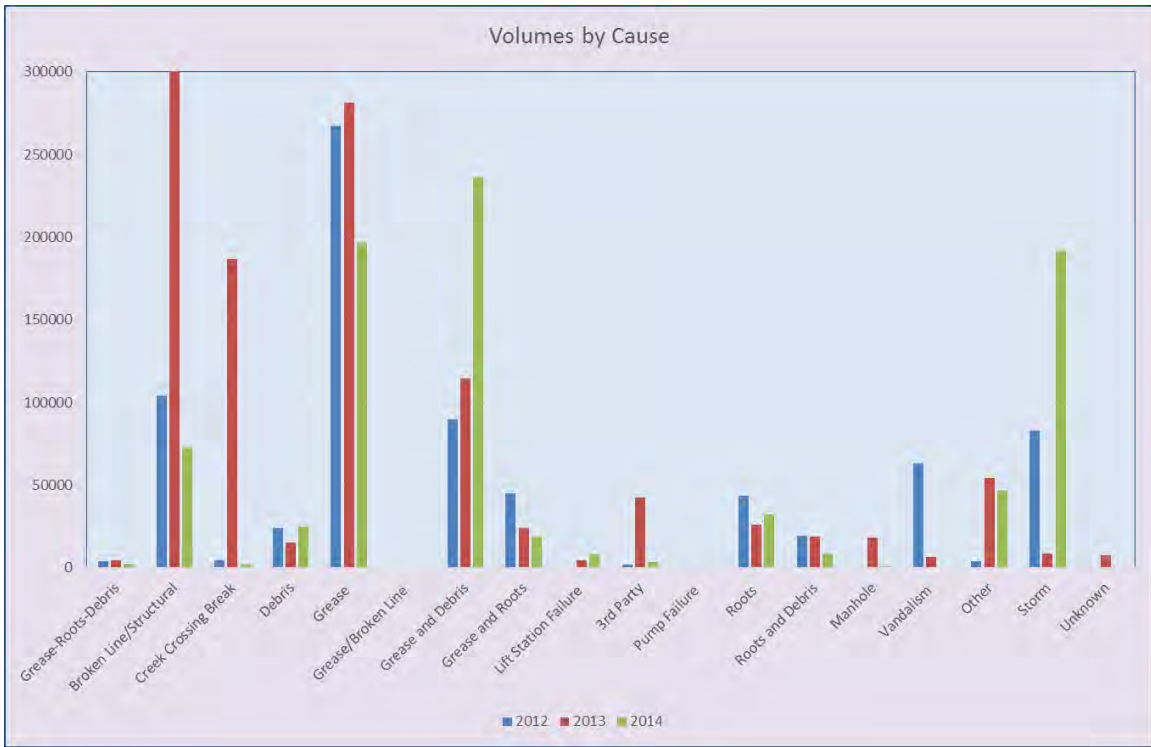


Figure 14 shows a graphical representation of volumes and causes. The graph seems to confirm grease related issues as again the primary cause of the volume of SSOs (after taking into consideration the single structural failure on a 30 inch line in 2013 that skewed the analysis of the data).

		Spills		Sanitary Sewer Overflows Surface		Building Backups		Total	Percent
		2013	2014	2013	2014	2013	2014		
Total		127	136	81	64	39	39	486	
Priority Area		36	49	30	27	13	10	165	34%
Non-Priority		91	90	51	37	26	25	320	66%

Basin		Spills		Sanitary Sewer Overflows Surface		Building Backups		Total	Percent Priority Area
		2013	2014	2013	2014	2013	2014		
Inter-governmental	Priority Area	16	28	13	13	5	6	81	25%
	Non-Priority	70	77	32	30	15	24	248	
Snapfinger	Priority Area	15	18	11	8	7	4	63	25%
	Non-Priority	45	45	40	27	19	10	186	
Pole Bridge	Priority Area	5	6	6	4	1	0	22	31%
	Non-Priority	12	14	9	7	5	1	48	

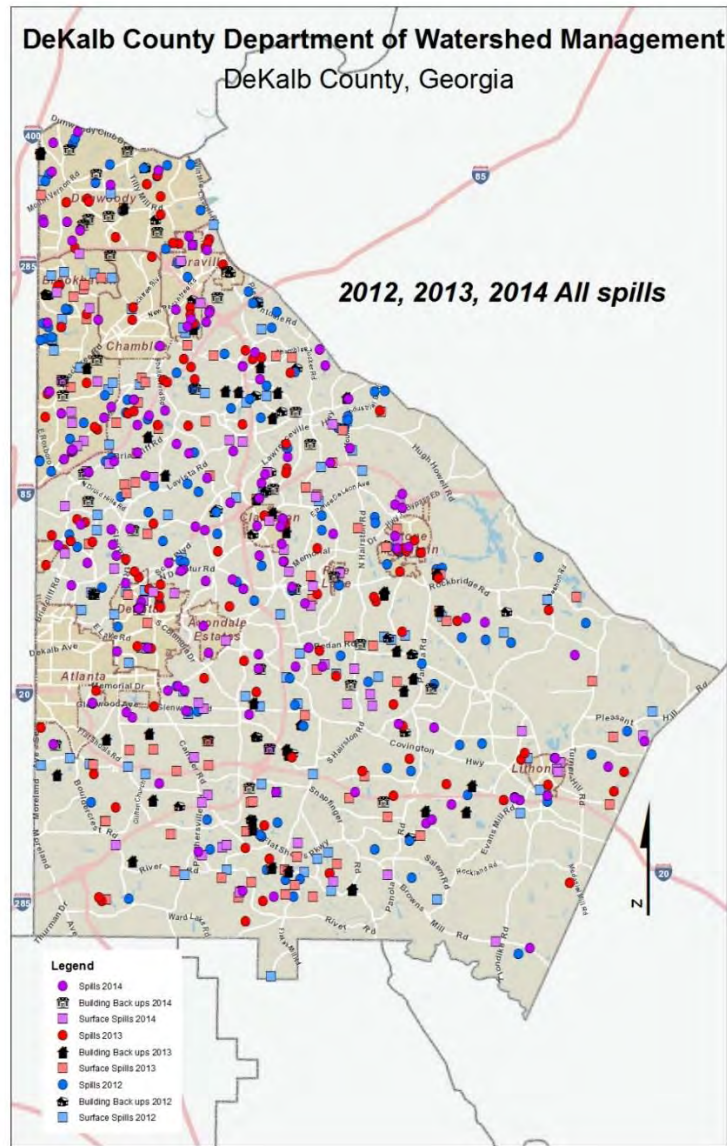
Figure 15 SSO Data for Priority Area and Basins

Figure 15 shows the SSO data separated by Priority Areas in the top table and by Basin/Priority Area in the bottom table.

The basin data and priority area reflects equal percentages of spills in both the Intergovernmental and Snapfinger basins. In Pole Bridge the percentage is higher at 31% which is indicative of a smaller population with the priority areas being at the limited population areas.

Overall the spill data reflects the population density of the area with the North being more populated than the Southeast and Southwest.

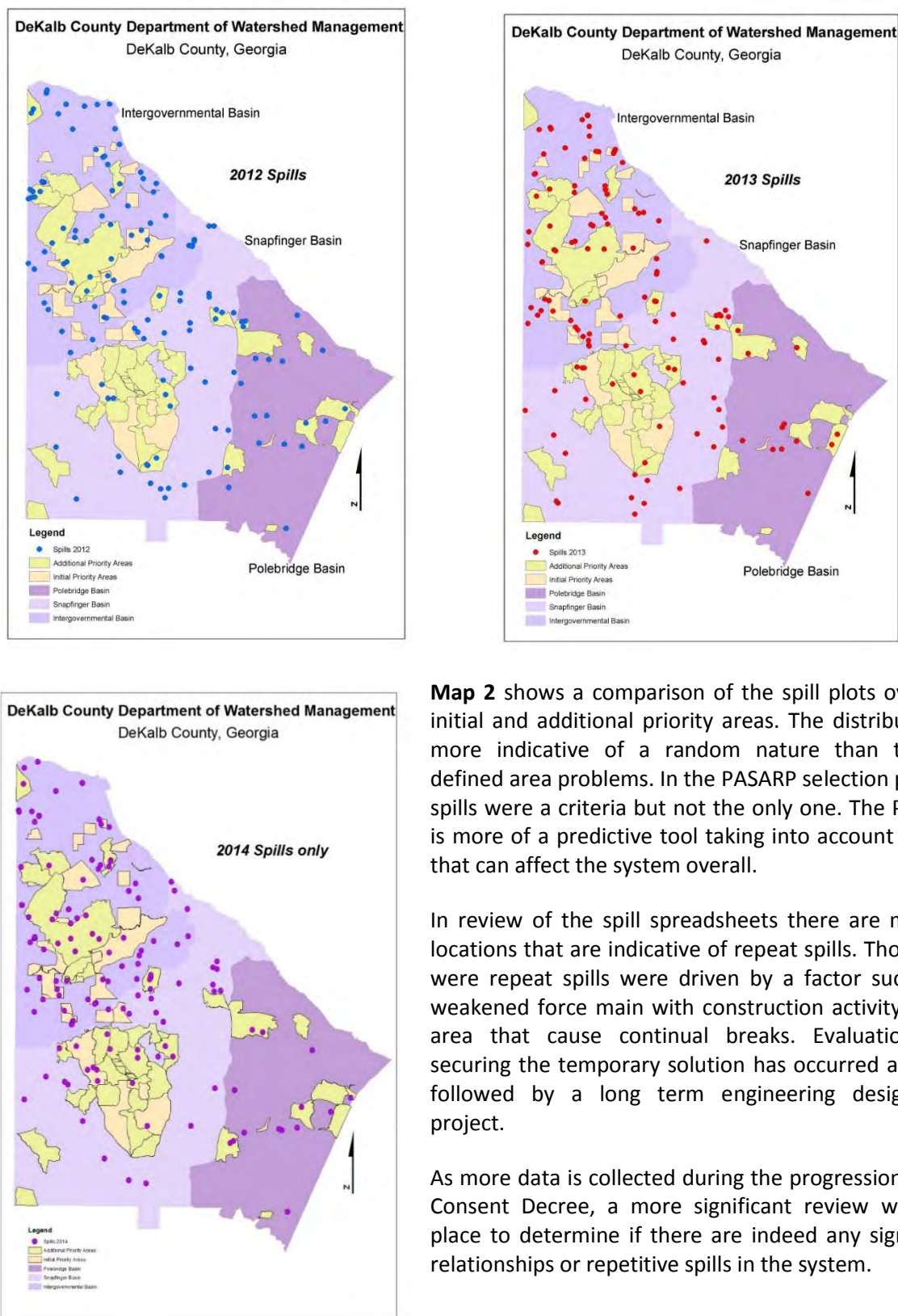
MAP SECTION



Map 1 All SSO Locations

Map 1 shows all SSO types continue to be scattered throughout the County with very little patterning evident at any location or type of event.

Map 2 Annual Spills Overlaid on Basins and Priority Areas

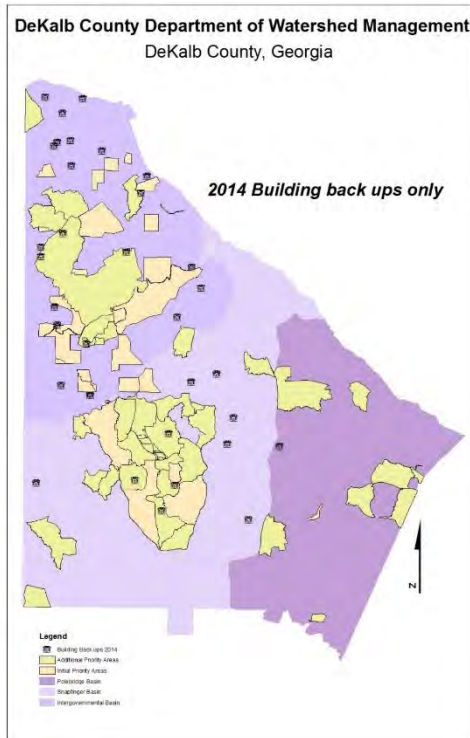
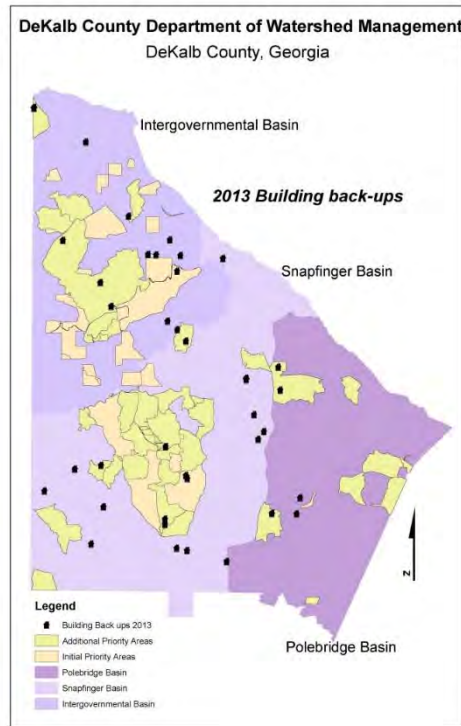
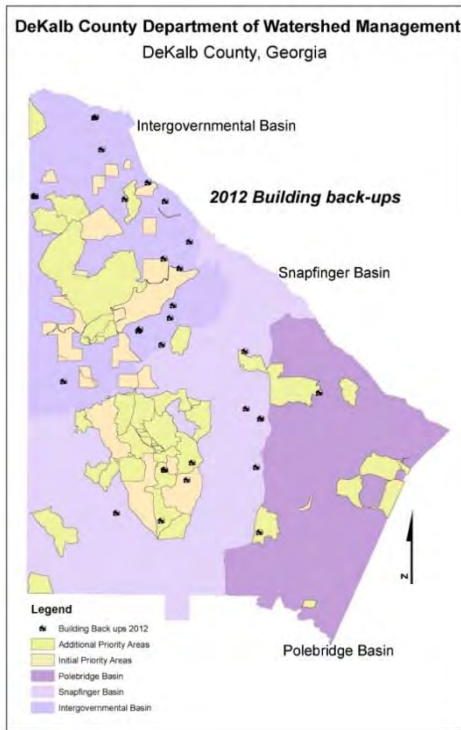


Map 2 shows a comparison of the spill plots over the initial and additional priority areas. The distribution is more indicative of a random nature than that of defined area problems. In the PASARP selection process spills were a criteria but not the only one. The PASARP is more of a predictive tool taking into account factors that can affect the system overall.

In review of the spill spreadsheets there are minimal locations that are indicative of repeat spills. Those that were repeat spills were driven by a factor such as a weakened force main with construction activity in the area that cause continual breaks. Evaluation and securing the temporary solution has occurred and was followed by a long term engineering design and project.

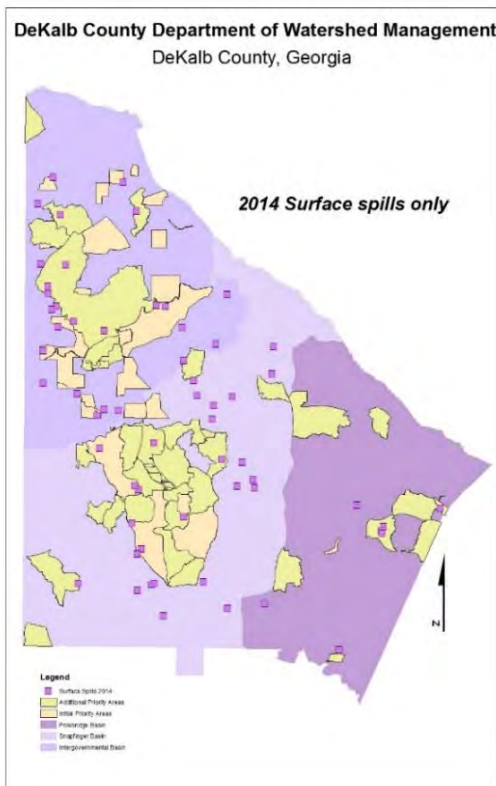
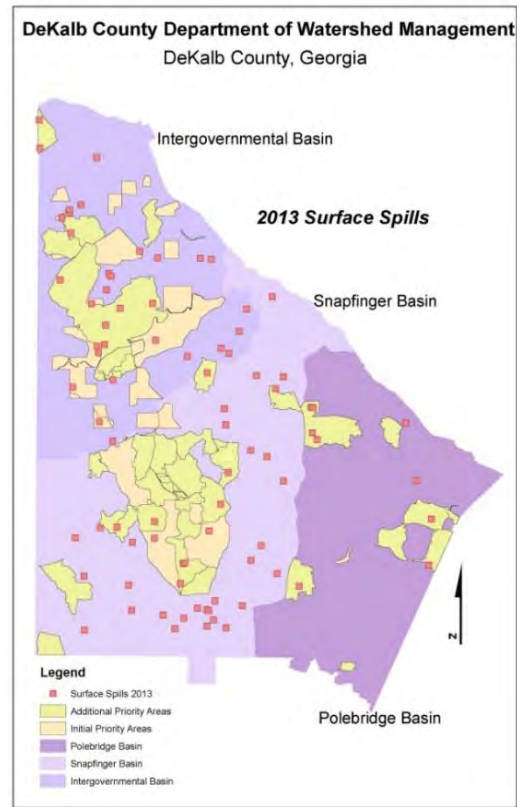
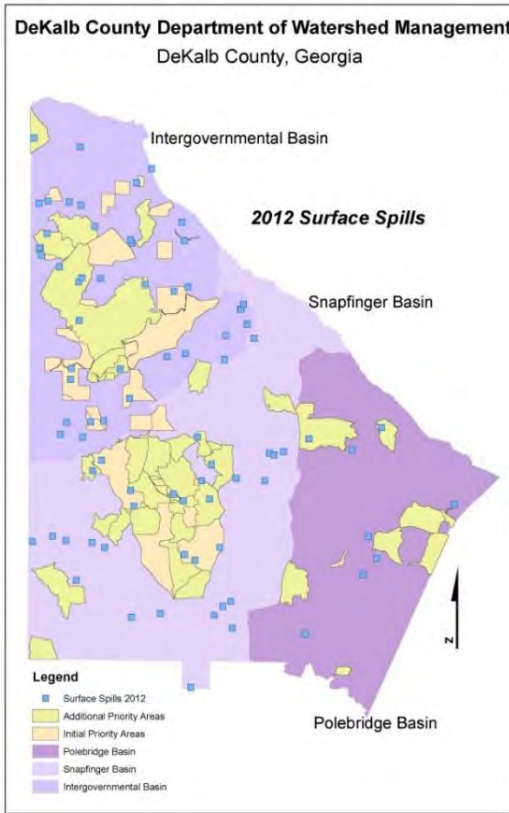
As more data is collected during the progression of the Consent Decree, a more significant review will take place to determine if there are indeed any significant relationships or repetitive spills in the system.

Map 3 Building Back-up Distribution



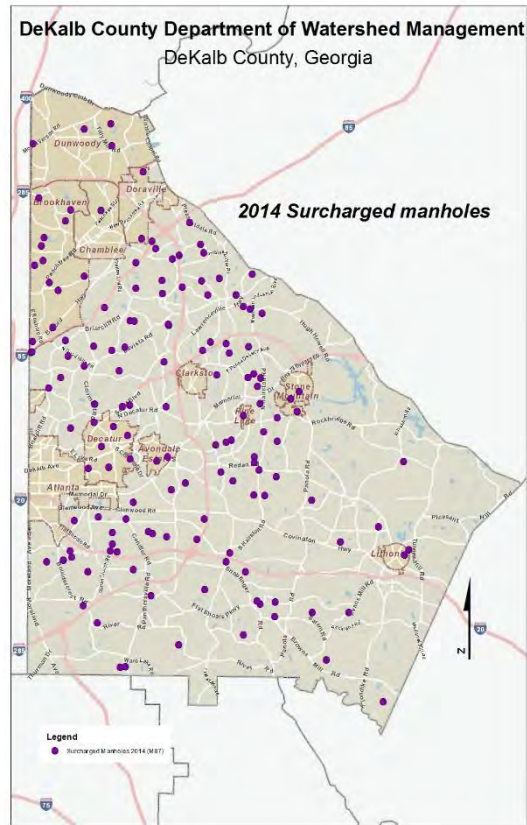
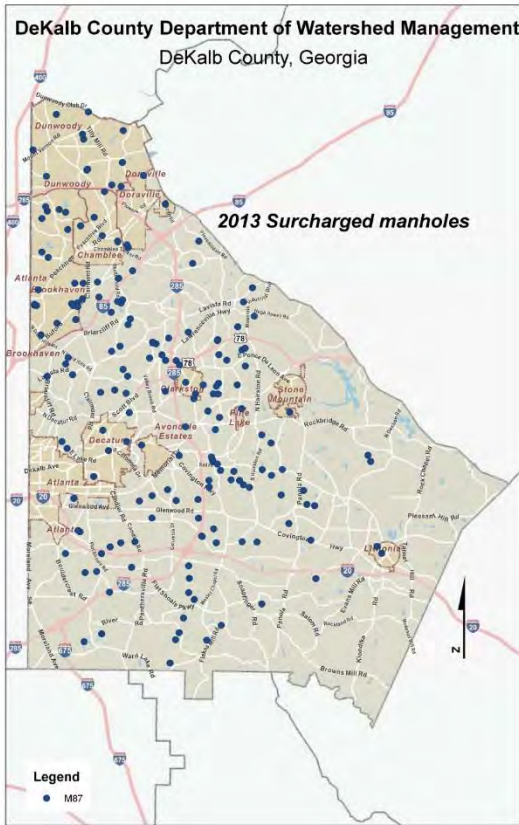
In review of **Map 3** of the building back-ups for the period the distribution appears to be somewhat random in nature. Investigative results indicated many issues with plumbing codes that caused more interior damage than should have occurred. The owners were notified of such deficiencies. It was also noted that some of the building back-ups were caused when the County, using cleaning equipment in some cases, conducts a follow-up to either a SSO or some type of system surcharge and discovers where the homeowner did not have the appropriate backwater device in place, had removed fixtures, and had other non-compliant plumbing systems such as gaps between the floor and lines, vents out the side of the house at 4 foot high or similar issues.

Map 4 Overflow Distribution



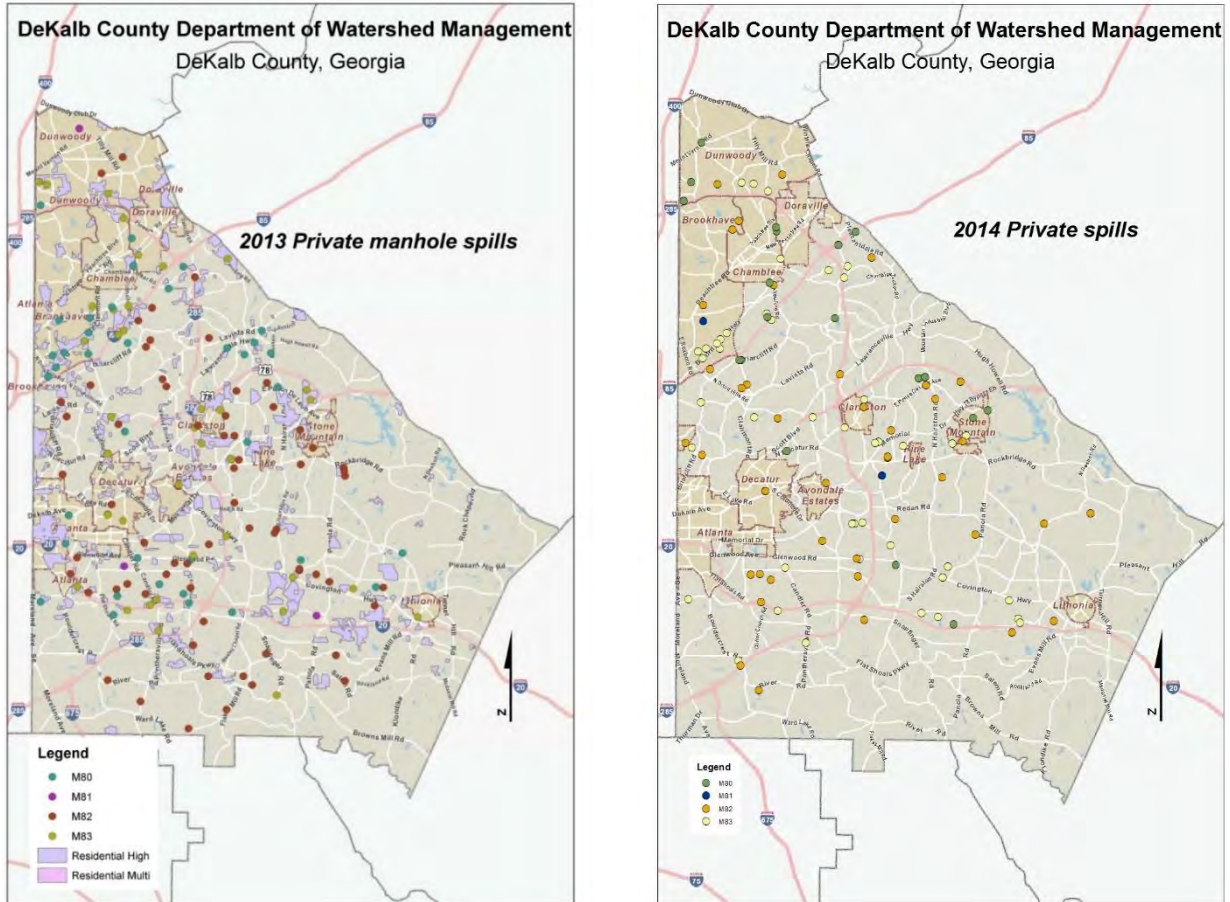
Map 4 demonstrates the distribution of overflows throughout the County for each of the years. As with spills, overflows are not correlated with any type of priority area and are random in nature. Further study is underway on a comparison of SSO locations to those locations that have surcharged manholes.

Map 5 Surcharged Manholes



Map 5 shows the data related to surcharged manholes in the County system. The initial 2013 review shows some linearity to the locations of the surcharges. In 2014 these areas did not reappear with the likely factor being the cleaning in the areas to remove the contributing factors. Any surcharged manholes are addressed by a thorough cleaning of the connected lines and inspection to see if there is a reason for the issue that can be corrected.

Map 6 Private Manhole Spills



As part of the continuous review process the County expanded the data collection of private issues in 2013 to further enable better predictions of sites that could potentially spill. **Map 6** shows the data related to private spills. The map includes the multi-family and high density populations in the County which are strongly associated with various SSO events. The initial data does not justify nor disprove this theory and will be further reviewed. When these maps are overlapped with the grease related spills there are the beginnings of a residential grease issue in some neighborhoods. It is not clear yet if this is related to system age, cleaning frequency or other factors.

Major Spill Trend Analysis 2014

Basic Data

Major spills number 41 from the inception of the Consent Decree (CD) until the end of 2014. The Volumes and Counts are shown in **Table 1**. As noted in the table there appears to be a downward trend in the major spills

Table 1 Consent Decree Data

Consent Decree Totals		2011	2012	2013	2014
CD Spills to date	409	5	141	127	136
CD Major #	41	1	15	13	12
CD Major Volume gallons, to date	1,742,504	116,080	308,772	834,207	483,445
CD Minor #	368	4	126	114	124
CD Minor Volume gallons, to date	1,273,556	18,700	444,330	447,633	362,893
CD Volume Total gallons, to date	3,016,060	134,780	753,102	1,281,840	846,338
		(Dec 20, 2011)		Update Thru	12/31/14

Spill Cause and Volume

Volume Data		Cause Data		
Percent Volume	Volume	Percent	Cause	Events
31%	534,637	17%	Broken Line	7
10%	178,495	5%	Creek Crossing	2
28%	482,930	41%	Grease	17
1%	17,580	2%	Manhole	1
6%	100,737	7%	Other	3
2%	42,660	2%	Outside Contractor	1
3%	53,535	7%	Roots	3
15%	256,900	10%	Storm	4
3%	57,880	5%	Vandalism	2
1%	17,150	2%	Debris	1

Table 2 Spill Volume and Cause Data

The initial review looked at the overall causes of spills while considering the nature of a Major Spill. The data in **Table 2** is not unreasonable for the minimal number of events and the period covered. Grease related events (17) still drive this category of Spills. The structural issues are next with six (9) events. Broken Lines and Grease accounted for 58% of the spills and 59% of the volume again in 2014 and overall. Average major spill volume per event is 42,500 gallons over the whole period.

Review of the causes as noted in **Figure 1** does not show any patterning or significant differences from the spill causes in the Minor category other than grease has a lower percentage.

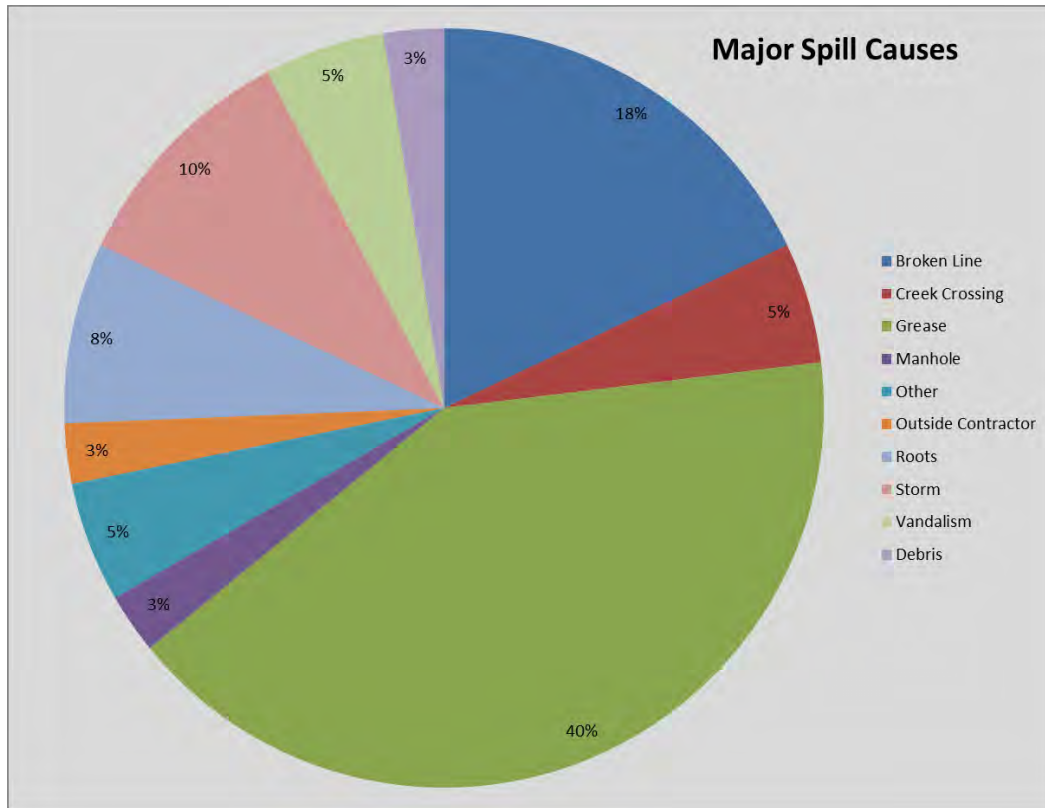


Figure 1 Major Spill Causes

A review of the major spill events by line size as shown in **Table 3** does not show any trend other than that based on the composition of line sizes in the system with 8 inch being the predominant line size. There is no trend to larger lines being directly associated with a major event. There may be a slight change in the 8 and 10 inch line sizes as the 8 inch lines are decreasing and the 10 inch increasing in relation to spills. These two line sizes accounted for 58% of the spills and 59% of the volume. The events labeled NA did not involve a line in the spill however the volume is considered in the evaluation. **Figure 2** is a graphical representation of the line size and number of events per line size.

Percent	Volume	Line Size	Events
7%	45,265	6	3
37%	490,550	8	15
22%	229,830	10	9
7%	145,345	12	3
2%	60,750	15	1
2%	51,050	16	1
7%	93,870	18	3
5%	178,495	24	2
2%	337,902	30	1
2%	17,580	36	1
5%	91,867	NA	2

Table 3 Line Size Event Related Data

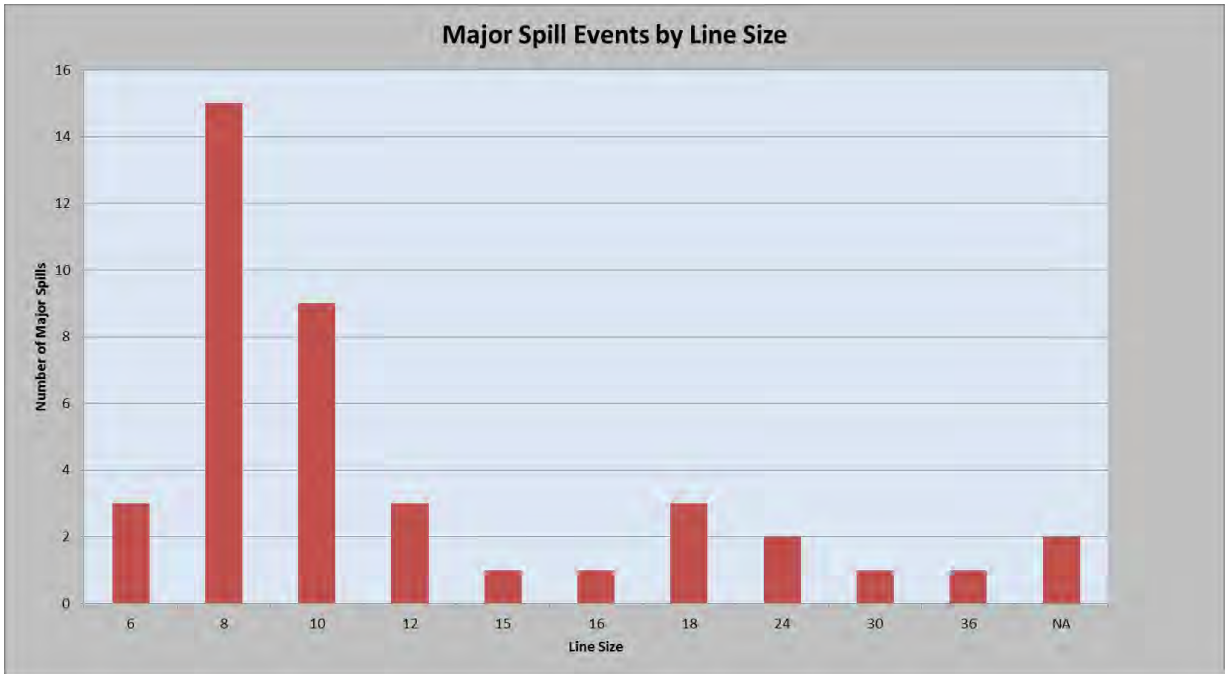


Figure 2 Major Spill Events by Line Size

The next review in **Figure 3** was a comparison of volume to line size which continued to show proportionality to the line size distribution overall. The 30 inch event skewed the results however it was not an unexpected change based on the cause and required time to control the event.

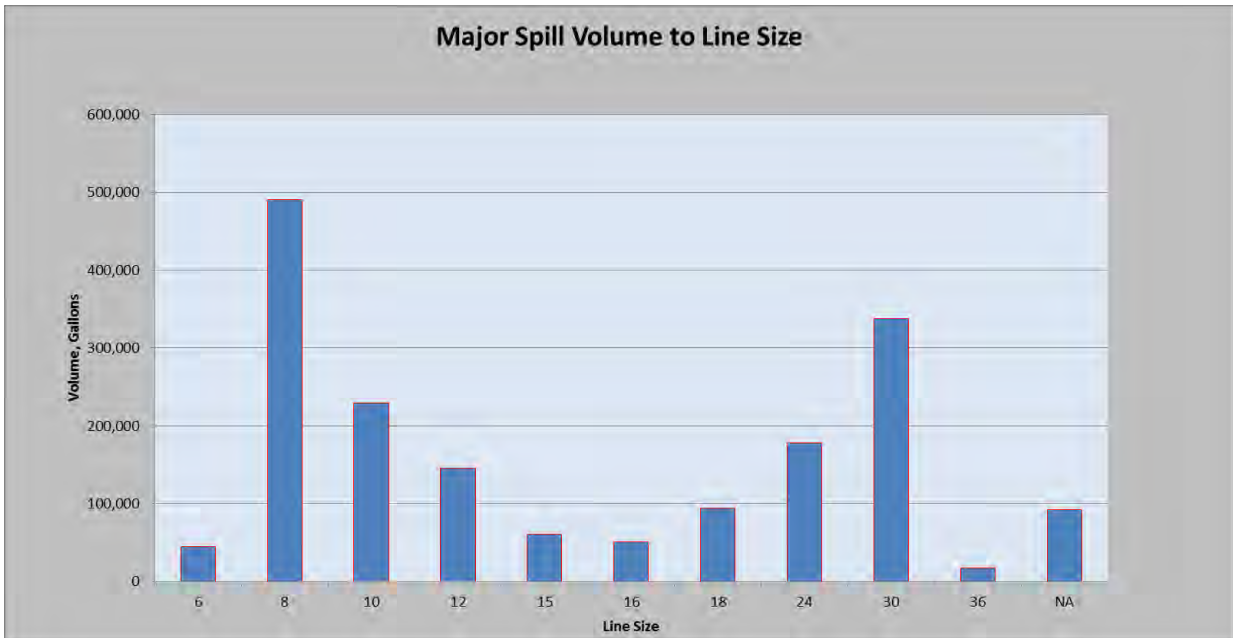


Figure 3 Major Spill Volume to Line Size

As shown in **Figure 4** the Major Spill Volume by Cause is similar to the overall spill volumes by cause with the major driver being Grease after accounting for the one 30 inch event that skewed the data in **Figure 3 and 4**. It is noted that 27% (9) mechanical break events account for 58% of the total

volume with the 30 inch event accounting for 337,902 gallons. Using the data in **Table 1** we see that 10% of our total spills are major and they account for 58% of the total volume spilled.

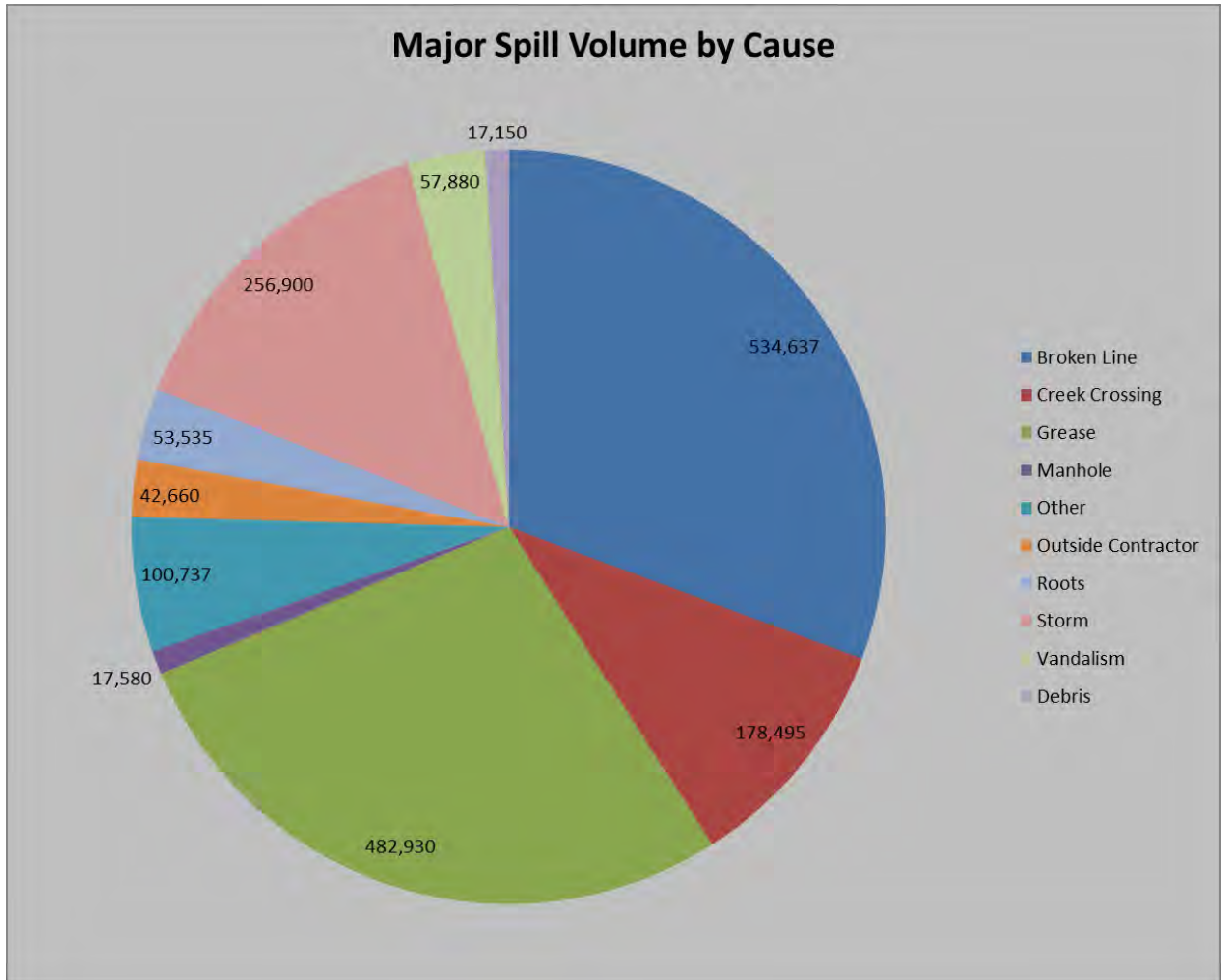


Figure 4 Major Spill Volume by Cause

Waterbodies

As noted in **Figure 5** the major spill events are distributed proportionally to the water bodies in the County with more events being in the larger streams as would be expected in a random distribution pattern.

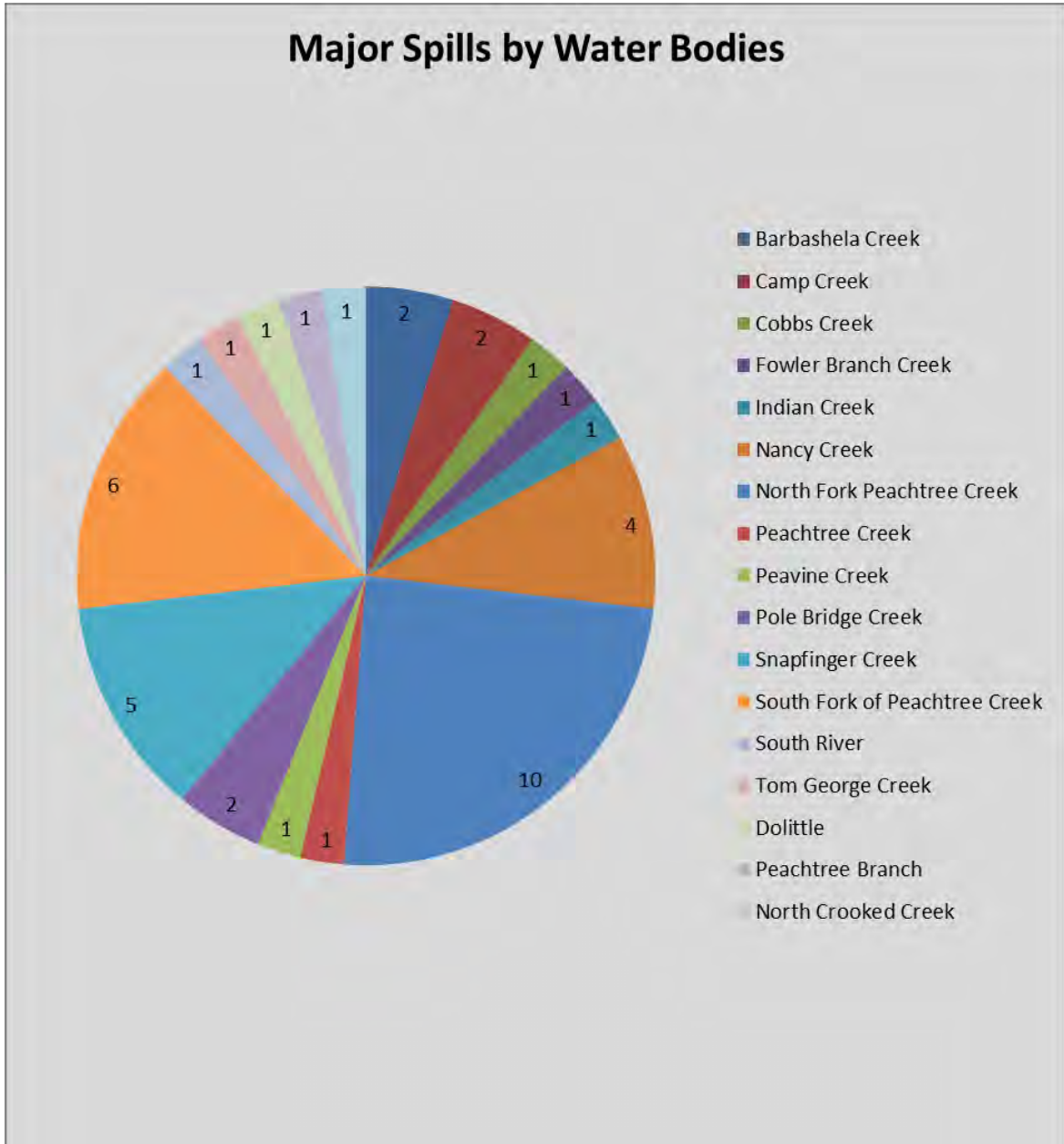


Figure 5 Major Spill Events by Water Body

Rainfall

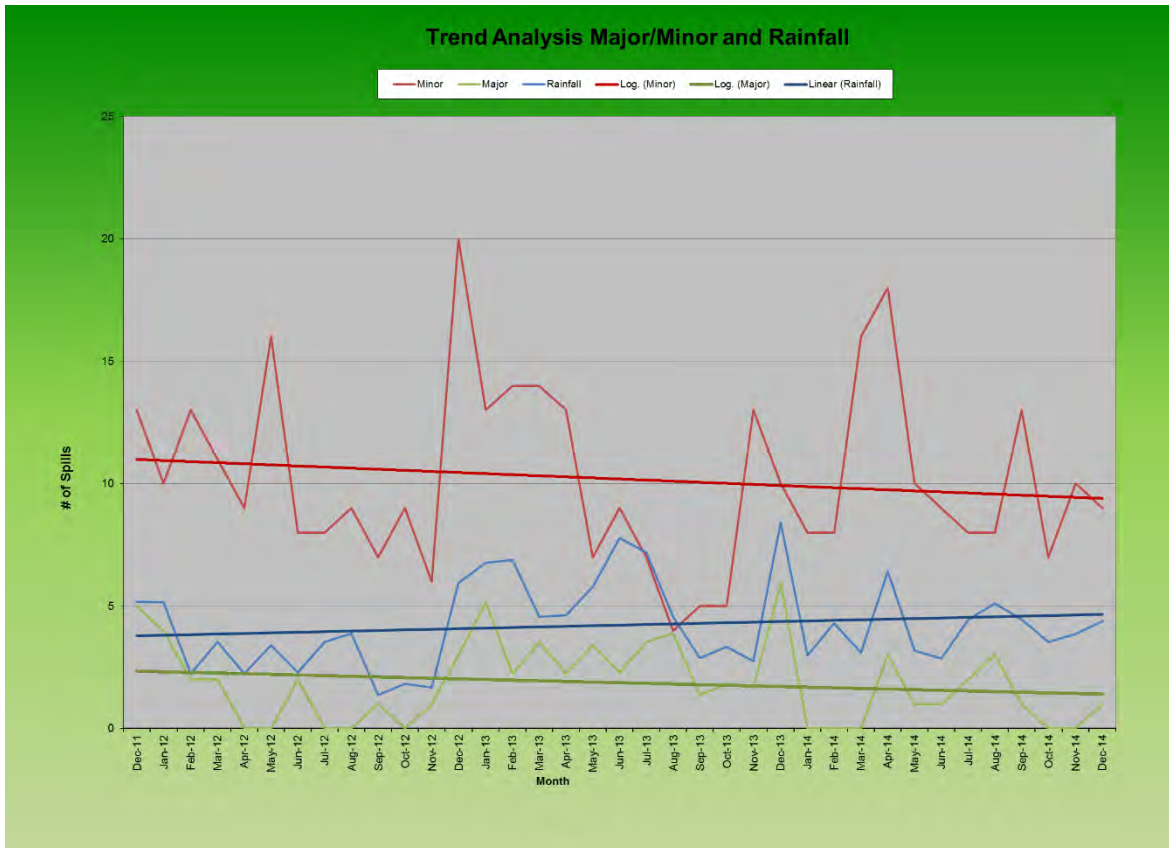


Figure 6 Rain and Spill Numbers

As noted in **Figure 6** the logarithmic trend lines show progress over time in decreasing the number of both major and minor spills that have any small relationship to rain events. Those few major spills that are directly connected to rain events are part of three very large studies underway on 3 large trunk lines. A few events, where a very limited area of the County has received a micro-burst rain event of sometimes 6 inches of rain in less than 2 hours, created some weather related spill events. However, no direct cause of rainfall infiltration was found during the follow-up investigations along with no repeat spills on the same line occurring.

Major Spills in Priority and Additional Priority Areas

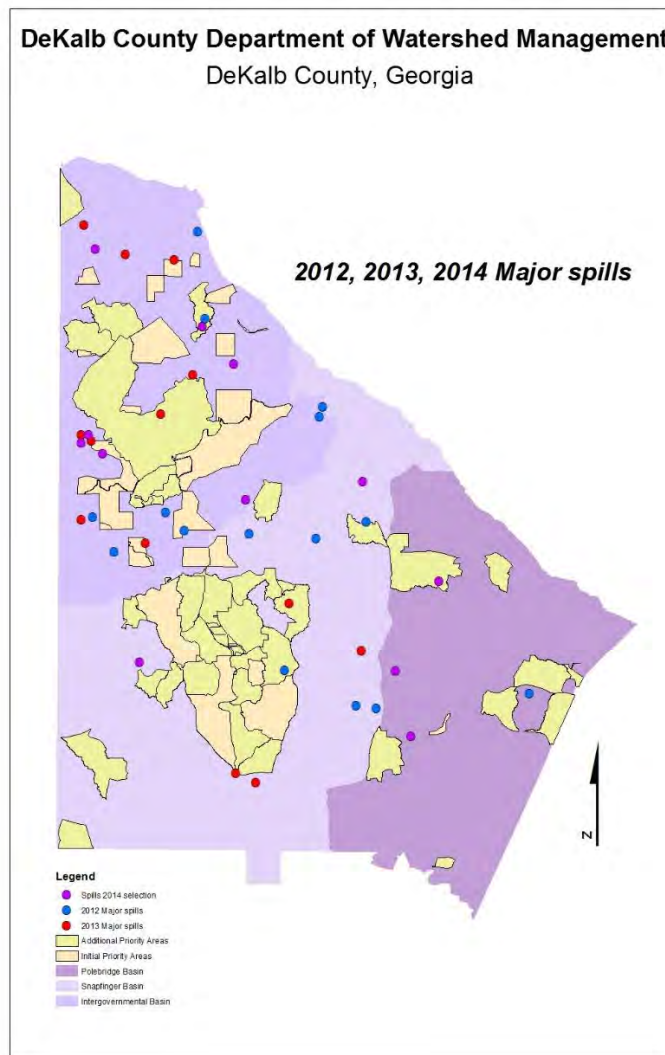


Figure 7 Major Spills and Priority Areas

As depicted in **Figure 7** only 10 (24%) of our 41 major spills occurred in a priority or additional priority area for the consent decree period.

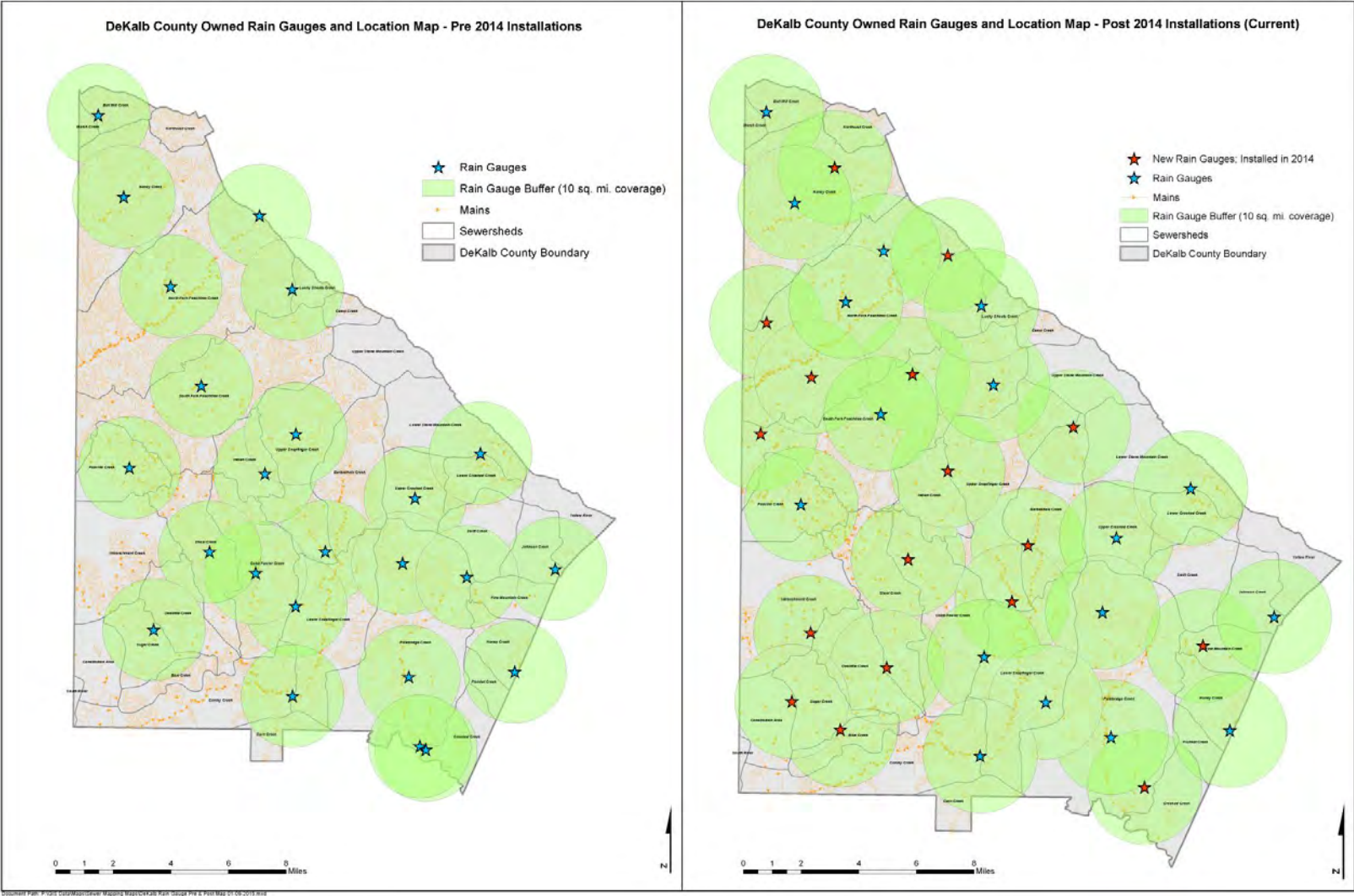
Summary

In conclusion there is no apparent trending surfacing at this time for our major spill events. They appear to be proportional to the overall events in the County. With the small number of events, though statistically significant for the analysis, are not conclusive enough to form any firm opinions as to trends due to the variability of causes and effects on the whole data set for spills. As the County makes progress on further system evaluations and maintenance the evaluation of Major Spills will continue both as an individual component upon occurrence and an overall member of the spill data set.

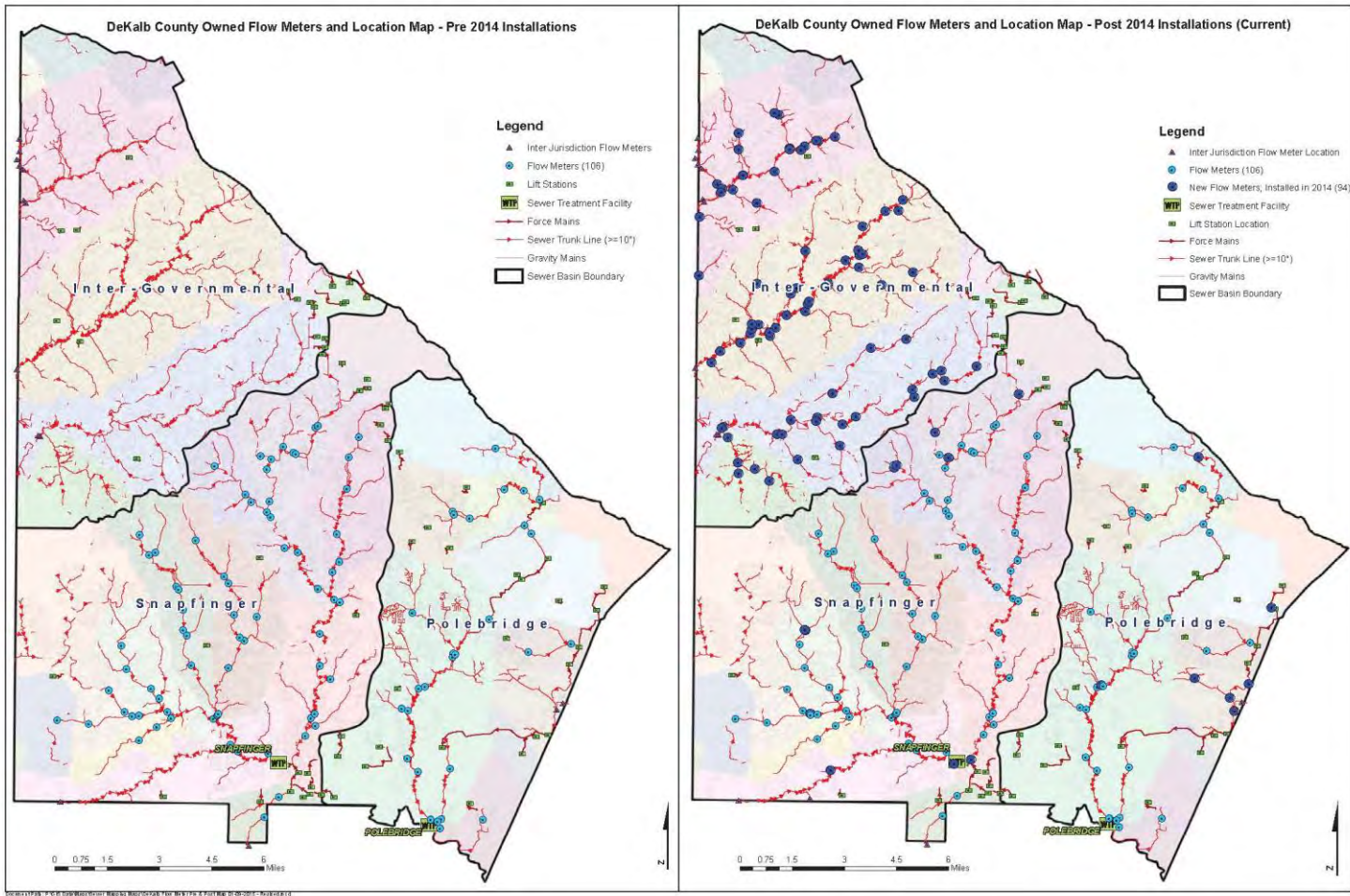
Attachment A

Maps Displaying Rain Gauge and Flow Monitoring Program Coverage

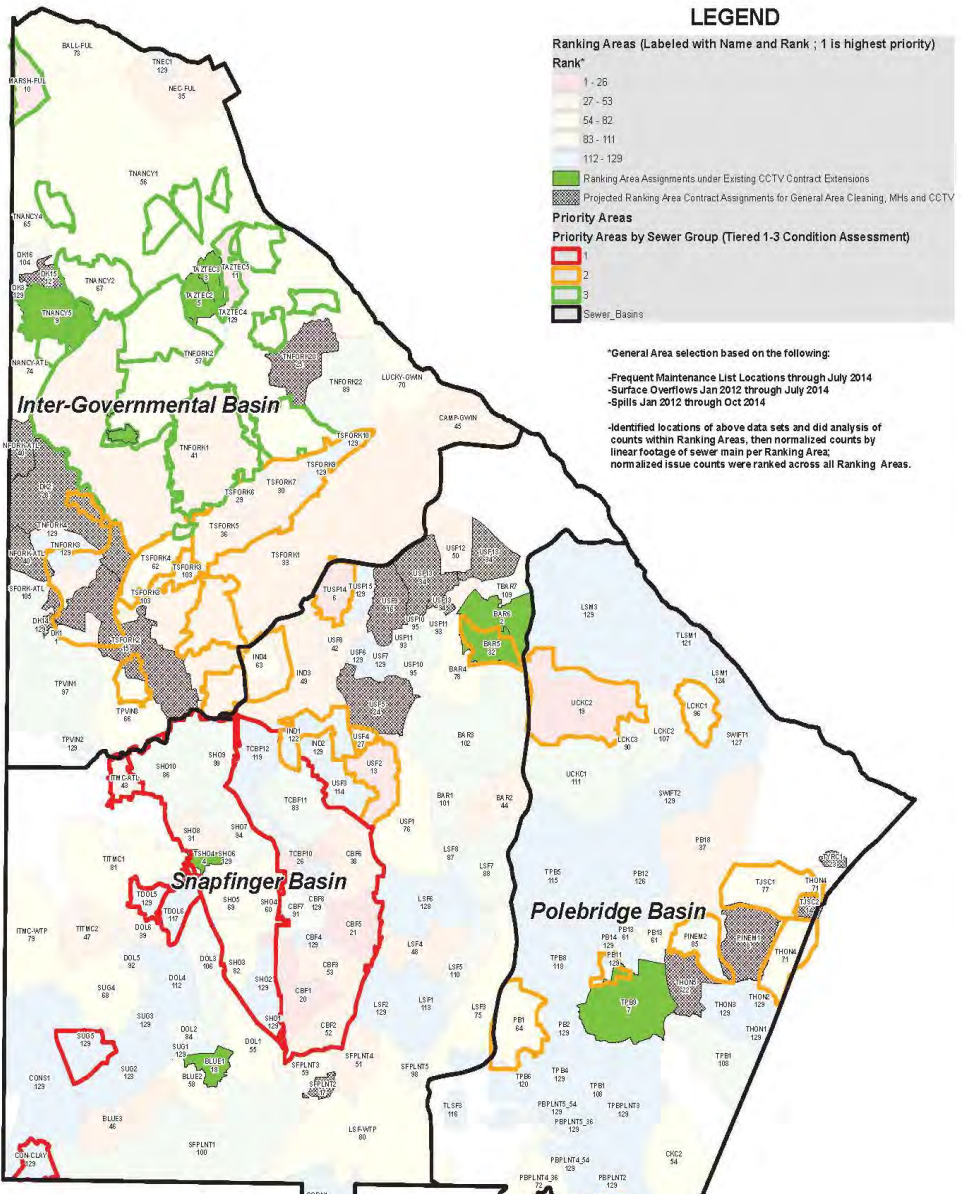
Figures A1 and A2 – DeKalb County Owned Rain Gauges and Location Maps – Pre and Post 2014 Installations



Figures A3 and A4 – DeKalb County Owned Flow Meters and Location Maps – Pre and Post 2014 Installations



**Attachment B
Cleaning, Manhole Condition and CCTV
Assessment Locations for General Area
Contracts**



Attachment C PASARP/OSARP/MMS Project Status Table

PASARP/OSARP/MMS PROJECT STATUS TABLE

Item No.	CMOM Program Document	Description	Priority Area(s)	Status	Notes
1	PASARP/OSARP	SSES Northfork Peachtree Creek Basin	A-IG5, I-IG6, I-IG10, I-IG11, I-IG14	Assessment	Ongoing CCTV for Northfork Peachtree Creek Basin.
2	PASARP	Lower Crooked Creek Lift Station Improvements	A-PB4	Complete	Completed construction with Lower Crooked Creek project (pump station and pipeline improvements)
3	PASARP/OSARP	Manhole Rehabilitation Services (Lining)	A-IG3, I-IG17, A-PB1, A-PB2, A-PB6, A-SF2, A-SF7, A-SF10	Construction	Manhole rehabilitation currently ongoing
4	PASARP/OSARP	South Fork Peachtree Creek Sanitary Sewer Replacement	I-IG17, A-IG6, A-IG7	Design	
5	PASARP	BAR 5 Ranking Area CCTV	A-SF2	Assessment	
6	PASARP	TNANCY 5 Ranking Area CCTV	A-IG4	Assessment	
7	PASARP	Johnson Ferry CCTV & Cleaning	A-IG3	Complete	
8	PASARP	Frazier Road CCTV & Cleaning	I-IG13	Complete	
9	PASARP/MMS	Columbia Drive Lift Station Rehabilitation	I-SF2	Design	Awaiting advertisement. All design /easement acquisition complete. Milestone in compliance with Addendum to Annual Report No. 2.
10	PASARP/MMS	Fairington Lift Station Rehabilitation	A-PB6	Design	Design complete. Easement acquisition process ongoing. To be eliminated through installation of a connection to gravity sanitary sewer. Milestone in compliance with Addendum to Annual Report No. 2.

PASARP/OSARP/MMS PROJECT STATUS TABLE

Item No.	CMOM Program Document	Description	Priority Area(s)	Status	Notes
11	PASARP	I-85/Oakcliff Road Sanitary Sewer Improvements	I-IG5	Design	Design complete. Easement acquisition process ongoing.
12	PASARP	Kensington Road Sewer Relocation	A-SF3	Design	Currently in design phase.
13	PASARP	Scottdale Mill Sanitary Sewer Upgrade	I-IG19	Design	
14	PASARP/MMS	Lithonia 2 Lift Stations (Lithonia I and II) (associated w/ Stonecrest Sanitary Sewer/Lift Station)	A-PB4	Future	Demolish existing Lithonia I & II lift stations. The construction duration is expected to be two years. Milestone in compliance with Addendum to Annual Report No. 2.
15	PASARP/MMS	Johnson Creek Lift Station	A-PB3	Future	
16	PASARP	Stonecrest Sanitary Sewer and Force Main Replacement (associated with Lithonia 2)	A-PB4	Construction	
17	OSARP	Buford Highway CCTV & Cleaning		Complete	
18	OSARP	Holly Lane CCTV & Cleaning		Complete	
19	OSARP	TAZTEC 3 Ranking Area CCTV		Complete	
20	OSARP	BAR 6 Ranking Area CCTV		Complete	
21	OSARP	Superior Avenue Phase 2		Construction	Milestone missed - Bid opening held in 2014; awaiting contract award.
22	OSARP/MMS	Scarborough Lift Station – rehabilitation and update.		Design complete	Milestone missed - Construction management services contract approved in 2014. In purchasing and contracting awaiting advertising.

PASARP/OSARP/MMS PROJECT STATUS TABLE

Item No.	CMOM Program Document	Description	Priority Area(s)	Status	Notes
23	OSARP/MMS	Pepperwood Lift Station		Construction	Milestone missed - Awaiting Notice to Proceed for new contract to complete the work remaining.
24	OSARP/MMS	Hammer Mill 1 Lift Station		Design	Milestone missed - Under design and construction to be initiated once easements in place.
25	OSARP/MMS	Hammer Mill 3 Lift Station		Design	Milestone missed – In purchasing and contracting awaiting advertising.
26	OSARP/MMS	Royal Atlanta 1 Lift Station – rehabilitate and upgrade.		Construction	Milestone missed - Awaiting Notice to Proceed for new contract to complete the work remaining.
27	OSARP/MMS	Camp Creek Lift Station Rehabilitation		Design	Milestone missed - Design complete and construction bid to commence once easement and stream buffer issues resolved.
28	OSARP/MMS	Mountain Industrial Lift Station and Force Main		Construction	Milestone partially missed – Station rehabilitated in 2012. Force main portion status: Notice of Award and Notice to Proceed issued. Pre-construction meeting scheduled.
29	OSARP/MMS	Perimeter Park Lift Station		Construction	Milestone missed - Awaiting Notice to Proceed to complete construction work.
30	OSARP/MMS	Lewis Way Lift Station		Design	
31	OSARP/MMS	Stone Mill 1 Lift Station Rehab		Design	
32	OSARP/MMS	Stone Mill 2 Lift Station Rehab		Design	
33	OSARP/MMS	Penny Brook Lift Station Rehab		Design	

PASARP/OSARP/MMS PROJECT STATUS TABLE

Item No.	CMOM Program Document	Description	Priority Area(s)	Status	Notes
34	OSARP/MMS	Fourth St Lift Station Rehabilitation		Design	
35	OSARP	Heritage Heights Sewer Crossing		Design	Continue design phase. Easement and permit issues in progress
36	OSARP	Valley View Road Sewer Replacement		Design	Continue design phase. Easement and permit issues in progress
37	OSARP	Snapfinger Woods Drive		Design	
38	OSARP/MMS	Royal Atlanta 3 Lift Station and Force Main Improvements		Design	
39	OSARP	Forest Spring Court		Future	Relining of sewer to occur in future.
40	OSARP	2860 Buford Highway		Future	Relining of sewer to occur in future.
41	OSARP	2650 Mill Court		Future	Relining sewer to occur in future.
42	OSARP	2112 Glenwood Avenue		Future	Relining sewer to occur in future.
43	OSARP	4367 Buford Highway		Future	Relining sewer to occur in future.
44	OSARP	410 W. Ponce de Leon		Future	Relining sewer to occur in future.
45	OSARP	108 E. Ponce de Leon		Future	Relining sewer to occur in future.
46	OSARP	1736 Jericho Court		Future	
47	OSARP/MMS	New Gibraltar Lift Station		Future	
48	OSARP/MMS	Leeshire Lift Station		Future	
49	OSARP/MMS	Kings Way Lift Station		Future	
50	OSARP/MMS	Honey Creek Lift Station Rehabilitation		Future	
51	OSARP/MMS	American Fare Lift Station		Future	
52	OSARP/MMS	Hearn Road Lift Station		Future	
53	OSARP	Propose cleaning and CCTV at 3261 Buford Highway due to spill		Completed	