



November 17, 2015

Tisha Calabrese-Benton  
TDEC  
Director, Division of Water Resources  
TDEC, Division of Water Resources  
William R. Snodgrass Tennessee Tower  
312 Rosa L. Parks Avenue, 11th Floor  
Nashville, TN 37243

FedEx:  
email: tisha.calabrese@tn.gov

Brad Ammons  
USEPA  
Chief, Clean Water Enforcement Branch  
Water Protection Division  
61 Forsyth Street, S.W.  
Atlanta, GA 30303

FedEx:  
email: ammons.brad@epamail.epa.gov

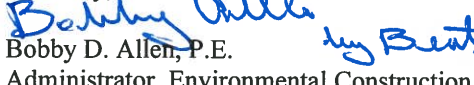
**RE: Consent Decree for City of Memphis WCTS  
Civil Action No. 2:10-cv-02083-SHM-dvk  
Annual Report for October 1, 2014 through  
September 30, 2015**

Ms. Calabrese-Benton and Mr. Ammons,

Enclosed please find disc and paper copies of the Annual Report for the time period of October 1, 2014 – September 30, 2015 for the referenced project. Also, a copy is being forwarded to each of you via email today. A copy of each report will be posted on the City's CD website by Friday, November 20<sup>th</sup>.

If you have any questions, please contact me at 901-636-7131.

Sincerely,

  
Bobby D. Allen, P.E.  
Administrator, Environmental Construction  
Public Works  
City of Memphis

Enclosure


Cc: Paul Patterson  
C.C. Drayton  
Gary Cohen  
Bently Green  
Scott McAmis

# City of Memphis

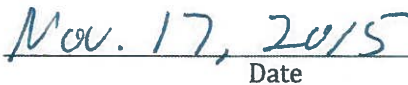
## Annual Report

October 1, 2014 through September 30, 2015

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Bobby D. Allen, P.E.



Date

# Annual Report

## October 1, 2014 through September 30, 2015

On September 20, 2012, the United States District Court for the Western District of Tennessee entered a Consent Decree between the City of Memphis (the City) and the United States, the State of Tennessee, and the Tennessee Clean Water Network.

To fulfill the reporting requirements defined in Paragraph VIII.26. of the Consent Decree, the City has prepared this Annual Report, which includes the following information:

- A summary of Management, Operations, and Maintenance (MOM) programs implemented or modified pursuant to the Consent Decree, including a comparison of actual performance with any performance measures that have been established.
- A trend analysis of the number, volume, duration, and cause of sanitary sewer overflow (SSO) events for the previous twenty-four month period.

### 1. Summary of MOM Programs

The Consent Decree, as shown in Paragraph V.10, describes the following MOM Programs that are required to be developed and/or implemented by the City. These include the following:

- Sewer Overflow Response Plan (SORP)
  - Approved by EPA on March 11, 2011, and implemented for the full reporting period.
- Fats, Oil, and Grease (FOG) Management Program
  - Approved by EPA on April 22, 2014, and implemented for the full reporting period.
  - Performance measures described in the FOG Management Program are presented below, along with the actual performance over the reporting period for those items.
    - Number of Notice of Violations (NOVs) issued to failure to comply with Food Establishment Wastewater Discharge permits: 251, 340
    - Number of NOVs per 100 food establishments: 4
    - Number of FOG and “Can the Grease” door hangers distributed: 24,134
    - Number of can lids distributed as part of the “Can the Grease” program: 22,884
    - Number of food establishment grease removal equipment inspections: 6,632
    - Number of follow-up inspections: 688
    - Number of grease-related SSOs: 280

- Note that grease-related SSOs are those identified at the time of the SSO as related to grease, although additional causes, such as roots or an offset joint, may also have contributed to the overflow.
- Lift Station and Force Main Operations and Maintenance (O&M) Program
  - Revised version submitted to EPA on April 8, 2015, and awaiting further action.
- Gravity Sewer System O&M Program
  - Revised version submitted to EPA on April 8, 2015, and awaiting further action.
- Inter-Jurisdictional Agreement Program
  - Revised version submitted to EPA on April 8, 2015, and awaiting further action.
- Continuing Sewer Assessment Program
  - Approved on September 10, 2014, and implementation began.
  - As described in Paragraph V.10.f of the Consent Decree, the City is required to assess approximately 10 percent of the wastewater collection and transmission system (WCTS) on average per year following the approval of the CSAP. Also as stipulated in the Consent Decree, the City may include any assessment activity that is conducted after April 1, 2011, as part of the calculation. Through the end of September 2015 the City has completed assessment of approximately 1.75 million linear feet of gravity sewer and associated manholes. This represents assessment of more than 10% of the system.
  - The CSAP outlines priority areas to be completed within the first year of implementation. The Year 1 area was completed by the CSAP deadline, September 9, 2015.
- Infrastructure Rehabilitation Program
  - Submitted the IRP to EPA on February 25, 2015, and awaiting further comments.

## 2. Sanitary Sewer Overflow Trend Analysis

As required in the Consent Decree, a trend analysis of the number, volume, duration and cause of SSO events was performed which includes four graphs (all located at the end of this report). **Figure 1** shows monthly SSO events for the previous twenty-four months as a result of the following causes:

- Blockage
  - Related to grease
  - Not related to grease
- Break
- Flooded
- Force Main Failure
- Pump Station Failure
- Other / Unknown

As shown in the figure, the majority of SSOs were the result of blockages within the system. These blockages have been broken down by those blockages caused by grease and those caused primarily by another factor such as roots, debris, mud, sand, rocks, or other foreign material obstructing the pipe. The SSOs caused by grease are reflected as one of the FOG performance indicators. This year, 280 SSOs were related to grease which is an improvement over the 340 from the same time period a year ago by 21%. SSOs were also compared to rainfall data over the given time frame and an  $R^2$  value of 0.15 was calculated which shows no statistical correlation between rainfall and the occurrence of an SSO.

**Figure 2** presents a rolling annual average of SSOs per month for a given 12 month period. The first bar begins with the average number of SSOs per month for the twelve months from October 2012 (the first full month the Consent Decree was in effect) through September 2013. As each successive month is added to the annual average, the first month is dropped, creating the rolling 12 month average. This graph better demonstrates a trend in SSO reduction by eliminating the inconsistent pattern of SSOs throughout the year.

**Figure 3** shows the monthly SSO volumes for the previous twenty-four months, reported in million gallons. Where estimated volumes were unknown, the median volume of the remaining SSOs, 1,020 gallons, was assumed for the purposes of this analysis.

**Figure 4** shows the monthly SSO duration during the previous twenty-four month period. The durations shown are a summation of the total amount of time overflows were occurring within the system at all overflow locations. This data is provided in the units of overflow equivalent hours. For instance, if two overflows related to blockages occur concurrently for two hours each, the overflow duration for that day is four overflow equivalent hours.

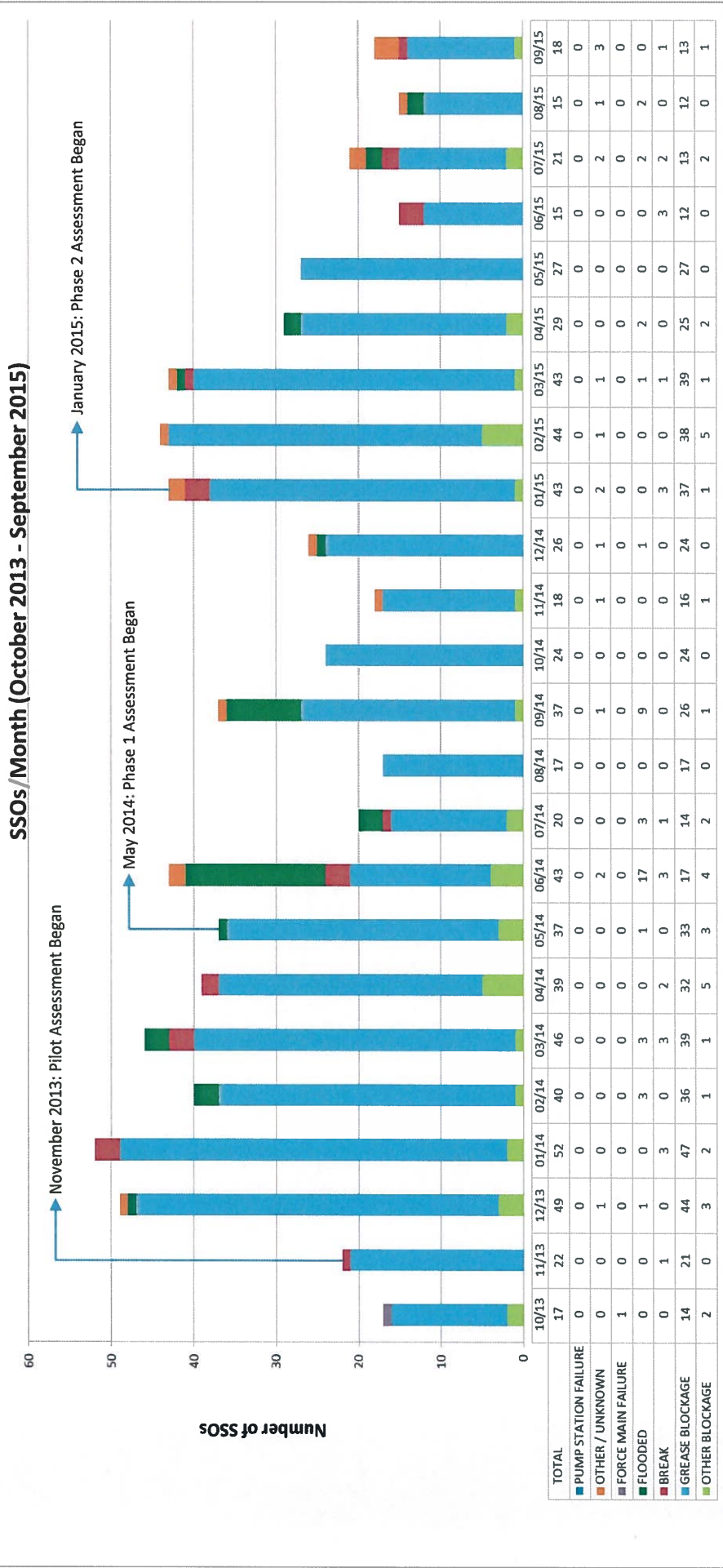


Figure 1 – SSOs by Cause

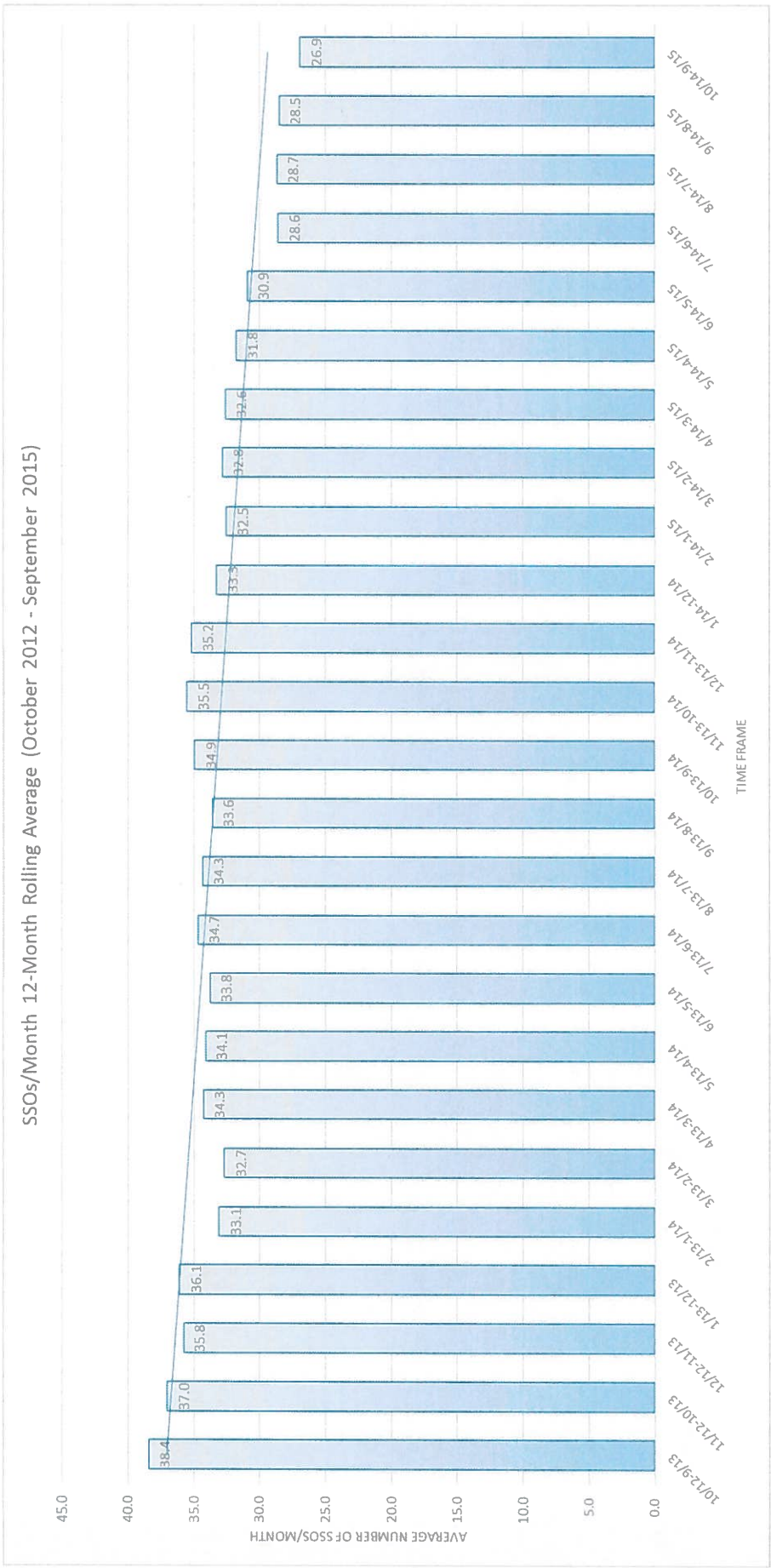
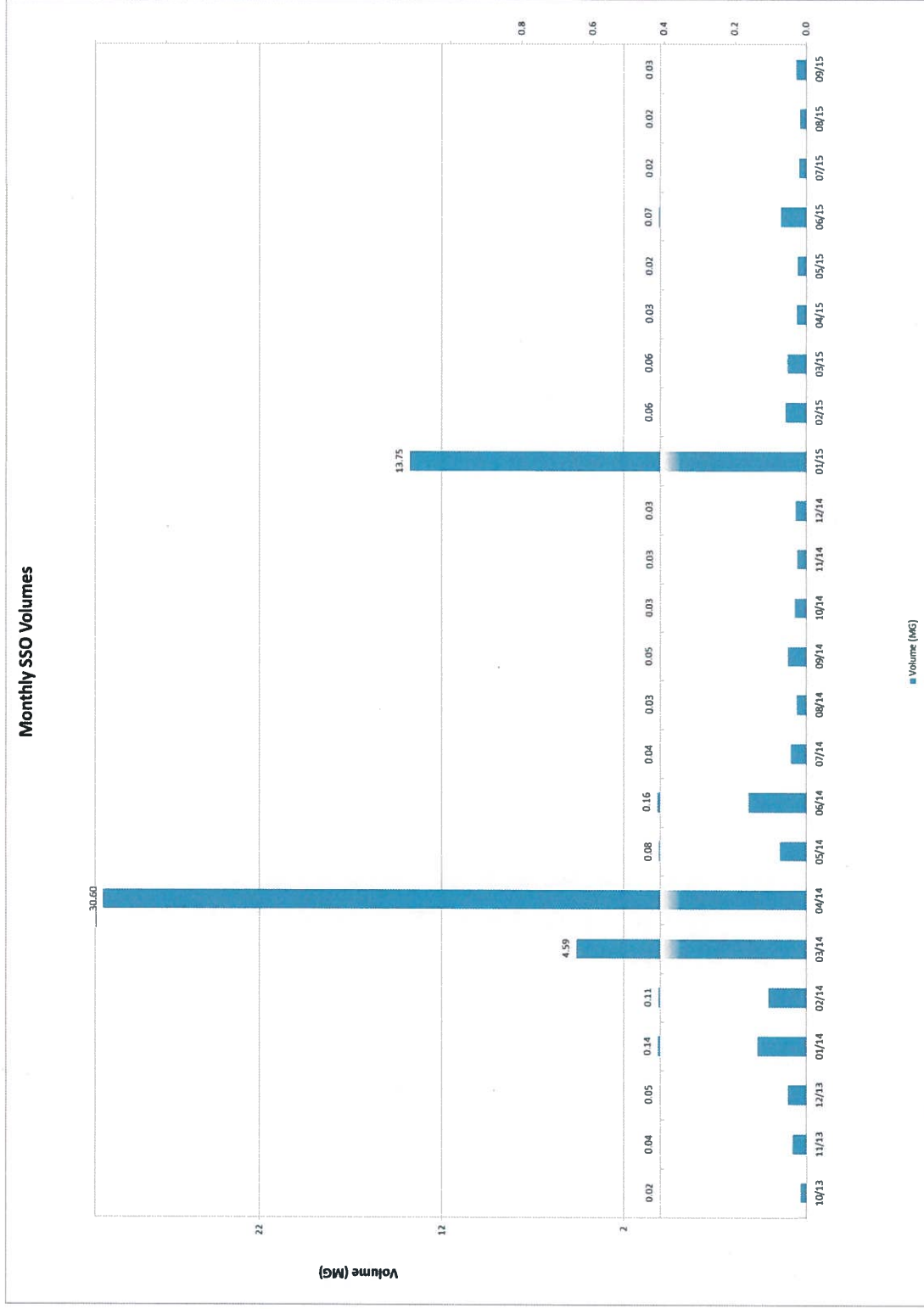


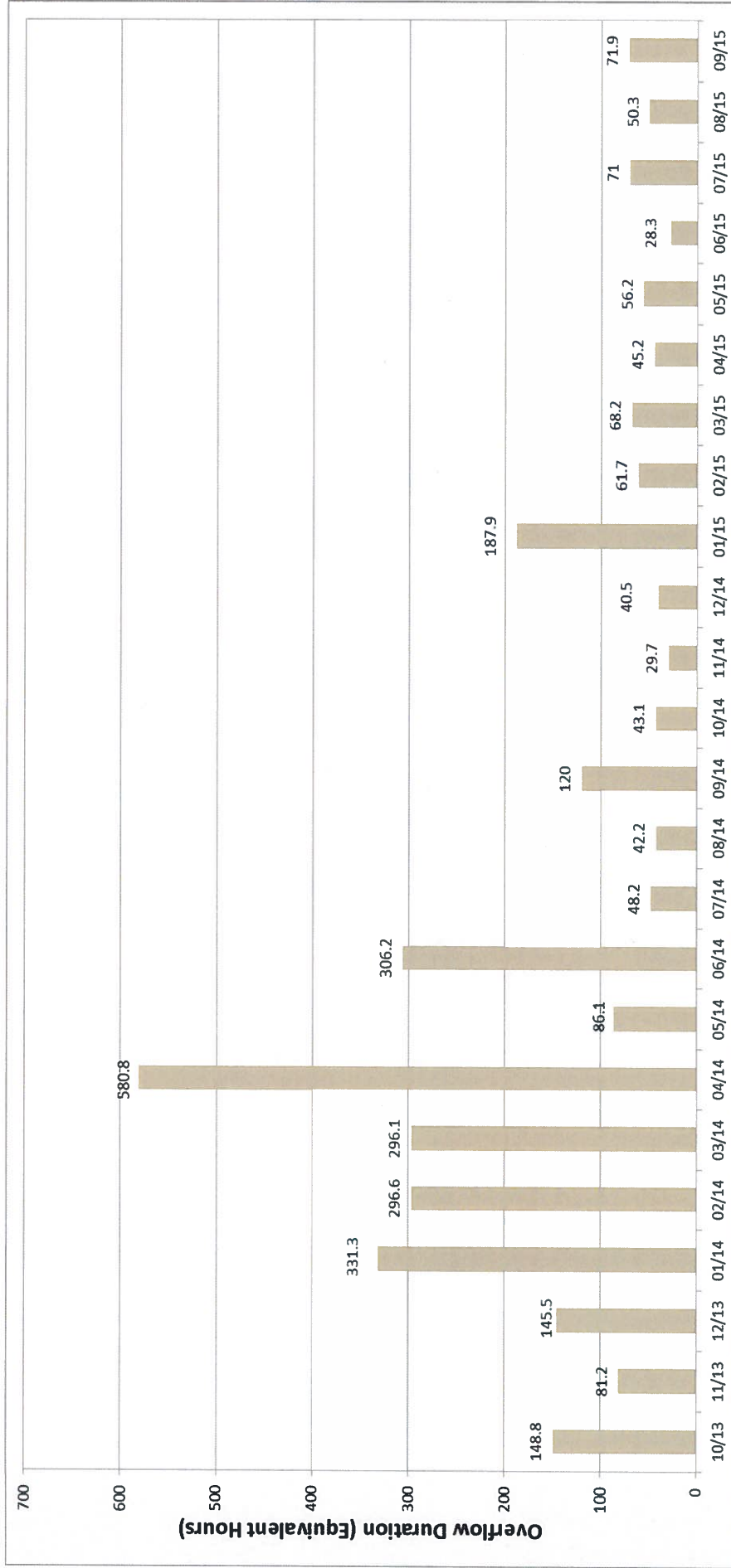
Figure 2 – Rolling Average of SSOs/Month



**Figure 3 – Monthly SSO Volume**

Note: The overflow of 13.7 MG on 1/8/2015 was caused by a collapse on the Old Loosahatchie Interceptor which has subsequently been repaired.





**Figure 4 – Monthly SSO Duration**

Note: The overflow of 13.7 MG on 1/8/2015 was caused by a collapse on the Old Loosahatchie Interceptor which has subsequently been repaired.