

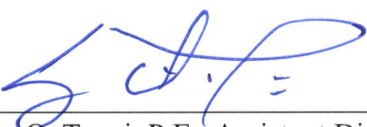


**Metropolitan Government of Nashville
and
Davidson County, Tennessee**

Department of Water and Sewerage Services

**Consent Decree
2009 Annual Report**

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.



Cyrus Q. Toosi, P.E., Assistant Director - Engineering

1/27/10
Date

As required by Section XIX.B., of the Consent Decree, the Metropolitan Government of Nashville and Davidson County, Tennessee (Metro) has prepared this Annual Report covering the period from January 1, 2009, through December 31, 2009. This report includes the following information:

1. Summary of the Capacity, Management, Operation, and Maintenance (CMOM) programs implemented
2. List of projects required by the Consent Decree
3. Trend analysis of Sanitary Sewer Overflows (SSOs) for 2008 and 2009
4. Trend analysis of dry weather Combined Sewer Overflows (CSOs) for 2008 and 2009

Table 1 provides the summary of the CMOM programs and includes those programs that were described in Metro's CMOM Self-Assessment. The status of each program, any performance measures established for each program and a review of the actual performance are included.

Table 2 provides the list of projects required by the Consent Decree. Also included in this table are the projects that had been previously identified in Metro's Overflow Abatement Program. Each project includes the design start and end dates and the construction start and end dates.

The trend analysis for SSOs includes three graphs, each with the average rainfall from all the Metro rain gauges included. **Figure 1** shows the monthly SSO Events/Causes in the Metro Nashville sewer system. This bar graph shows the number of overflows in the system as a result of the following causes:

- Excessive flow
- Blockage
- Repairs/Mechanical Problems
- Power Outage
- Rainfall Induced
- Other

The increase in overflows due to rainfall in March 2008, April 2008, and December 2008 and in January 2009, April 2009, May 2009, and September 2009, was the result of significant rainfall during those months; much of that rainfall occurring during back-to-back storm events (averaging between 6 and 9 inches/month, system wide). The majority of the other overflows were caused by blockages from roots, grease and debris or repairs/mechanical issues.

Figure 2 shows the monthly SSO Volumes within the system from 2008 through 2009 reported in million gallons (MG).

Figure 3 shows the monthly SSO Durations within the system from 2008 through 2009. The duration was a summation of the total length of time overflows were occurring within the system at all overflow locations. This data is provided in the units of overflow-equivalent-hours; meaning for each month the total number of hours could exceed the actual number of hours in a given month. When the summation of total hours was calculated for the total overflows within the system during that time period, the result was a duration that exceeds the actual number of hours in each month.

The data in **Figure 2 and 3** indicates large volumes and durations during several months as discussed previously. The excessive volumes and durations are due to exceptional wet weather events during these months. As shown in **Figure 1**, for the months of March 2008, April 2008 and December

2008, there were 58, 82 and 44 overflows, respectively, from rainfall; in January 2009, April 2009, May 2009, and September 2009, there were 46, 37, 51, and 75 overflows, respectively, from rainfall.

The average rainfall as measured within the Metro system is included on both graphs to show the relationship between rainfall and the overflow events.

There is not a trend analysis in this report for the dry weather CSOs as none occurred in 2008 or 2009.

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Table 1 - Summary of CMOM Programs

CMOM Report Section	CMOM Program	Recommendation	Implementation Deadline	Status	Performance Measure	Actual Performance
Section 4, II.b.	Skills Training	MWS will conduct periodic testing, drills and demonstrations of competency of skills	7/08	Ongoing. Metro tracking all required training for skills needed to perform duties related to CMOM.	In 2009, targeted 36 employees for promotion if competencies demonstrated.	All 36 employees were promoted.
Section 4, IV.	Information Management System	MWS will develop and implement a process for reviewing all inspection, maintenance, operations and customer complaint records to identify recurring problems. A corrective action plan to address recurring problems that develop will be included.	1/08	All sewer service requests are compiled into a report each week and distributed to the team which meets every two weeks to assure all items are resolved. Repeat problems are identified and investigated as determined at monthly review meetings.	Number of service requests received and reviewed and number resolved.	100% received, reviewed, and resolved.
Section 4, V.d.	New Construction and Rehabilitation Inspection	MWS will develop standard operating procedures for conducting construction inspections that include methods for documenting inspections and maintaining the documentation. Include training requirements for all inspectors. Other means for managing data to closeout projects will be evaluated.	6/08	Handbook is developed and will be regularly updated.	No update necessary at this time.	Handbook in use.
Section 4, V.e.	Acquisition Considerations	MWS will develop and implement standard policy for acquisition of existing sewer systems. This policy will include a plan for bringing sewer systems to MWS's requirements and standards that must be met of the design of the existing sewer before acceptance by MWS and the criteria that will be used for the determination of the financial aspects of the acquisition.	1/08	Policy has been developed. Implementation pending acquisition activity.	N/A	No acquisition activities have occurred in 2009.
Section 4, V.f.vi.	Continuous Sewer System Assessment	MWS will develop and implement standard line condition codes (1 to 5) for use when televising sewer lines. These codes will be manually recorded on TV Inspection Reports.	11/06	Complete - GraniteXP software and PACP/MACP codes in use.	N/A	N/A
		MWS will implement modified data entry into CMMS to allow entry of the standard sewer line condition codes from the TV Inspection Reports.	1/07	Complete - GraniteXP software and PACP/MACP codes in use.	N/A	N/A
Section 4, V.f.x.	Continuous Sewer System Assessment	MWS will evaluate the software to enter standard defect codes from guidelines in to CMMS.	4/07	Complete - GraniteXP software and PACP/MACP codes in use.	N/A	N/A

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CMOM Report Section	CMOM Program	Recommendation	Implementation Deadline	Status	Performance Measure	Actual Performance
Section 4, V.f.x.	Continuous Sewer System Assessment	MWS will develop and implement standard operating procedures for all assessment practices including technical procedures for carrying out each practice and a means to ensure follow-up on information that is documented during any of the assessment practices. All current forms will be reviewed that are used to determine if the appropriate information is obtained and develop new forms as necessary. A written standard method of prioritization of all assessment practices will be developed.	1/08	Monthly meeting to discuss chronic or newly identified sewer defects has been established. Reporting form for overflows has been updated in December 2009.	Review SOP's annually.	2009 review complete.
Section 4, V.g.	Infrastructure Rehabilitation Program (OAP)	MWS will develop and implement a management plan to address wet weather conditions once the sewer model is completed.	12/08* *will be updated by CAP/ER	Program to be redefined through CAP/ER.	CAP/ER currently being developed and is due March 12, 2011.	Program on track to meet deadline.
Section 4, V.h.	System Capacity Assurance	MWS will review and update the Wastewater Capacity Management Plan following completion of the conversion of the sewer model.	12/08	Complete and adopted.	N/A	In use.
		MWS will complete the conversion of the sewer model into MIKE URBAN software .	4/07	Complete	Number of model runs since date of entry.	There were 66 model runs for capacity analysis from March 12, 2009 through December 31, 2009.
		The Master Sewer Growth Plan will be renewed and updated every five years.	12/08	Complete	Update every 5 years.	Next update concurrent with CAP/ER.
Section 5	Operations	MWS will develop and implement Standard Operating Procedures for critical operations programs. The SOPs shall include a means for follow-up on any items noted.	12/08	Complete	Review SOP's annually.	2009 review completed.
Section 5, I.a.i.	Pump Station Monitoring	The integration of HSQ and Intrac into a consolidated system will be completed.	10/07	Citect SCADA system in operation.	Receive 100% information on all data points.	All critical data points are being received.
Section 5, I.a.iii.	Operation and Maintenance Manuals	The feasibility of implementing electronic O & M manuals will be investigated. If it is determined that this is feasible, a new goal will be established for implementation.	12/07	All new facility O&M manuals will be electronic. Operating parameters and equipment at all facilities are updated as modifications are made electronically.	Require all new O&M manuals to be submitted in electronic format. All modifications to be updated electronically.	All new O&M manuals are received in electronic format. Modifications have been updated.
Section 5, I.b.i.	Reactive Operations	MWS will develop and implement an SOP for tracking the inventory of spare pumps for the smaller pump stations. It will be determined if tracking through CMMS is possible.	12/07	Complete	Review SOP's annually.	2009 review complete.
Section 5, IV.	Fats, Oils and Grease Control	A mailing system will be implemented to distribute a notification to all residential customers in a specific area where FOG interference has been a problem. An English/Spanish notification is being developed currently.	2/07	Use Integrated Voice Response outbound calling for notification in problem areas.	Notifications mailed and/or called out as needed.	775 outbound calls were made in 2009 due to grease blockages and/or overflows of the sanitary sewer. 1389 notifications mailed in 2009.

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CMOM Report Section	CMOM Program	Recommendation	Implementation Deadline	Status	Performance Measure	Actual Performance
Section 5, V.	Service Connection/Disconnection	MWS will review current procedures for new service connections and for service disconnections to determine if the procedures need to be updated.	5/07	Process/procedures in place	N/A	N/A
Section 6, II.a.	Gravity Line Preventative Maintenance	MWS will develop a method to track the actual footage cleaned from manhole to manhole that does not include footage from multiple passes. This will provide a more accurate measure of the actual footage of the system being cleaned each year.	10/07	Performance measures updated to reflect a change in method of measurement to reflect new goals (see below). Performance measures no longer include footage for multiple passes.	16,250 LF/month and 750 LF/day (actual footage)	FY 2009 - 13,760 LF/month (actual footage) 635 LF/day (actual footage)
Section 6, II.a.	Gravity Line Preventative Maintenance	MWS will develop goals of the actual footage to be cleaned that reflect an analysis of past CMMS cleaning data to determine the actual footage of sewers cleaned.	11/07	New goals established to emphasis quality and investigative cleaning and de-emphasis non-directed cleaning.	See above for performance measure under first recommendation for this program.	See above for actual performance under first recommendation for this program.
		MWS will evaluate daily goals based on 210 working days per year or 17.5 days/month, which includes estimates for the many reasons crew members would not be available. Goals will be reviewed to reflect potential improvements in planning, scheduling and record keeping, along with fundamentals of continuous improvement. Also, goals will consider that there are certain segments that require more frequent cleaning.	1/08	New goals established to optimize use of resources.	See above for performance measure under first recommendation for this program.	See above for actual performance under first recommendation for this program.
		MWS will evaluate ways to set priority on how often various groupings of sewer categories should be inspected with television. Examples, new PVC or recently lined sewers may not be inspected for another 5 to 10 years. However, clay or sewers older than 20 years or large diameter brick sewers would have priority to inspect them within the next five years.	12/07	Investigations are directed based on priorities for directing cleaning (restricted flow due to nonstructural issues), complaints, NPDES needs, flow monitoring irregularities, etc. Large diameter sewer inspection contract established. Issued two assignments in 2009.	Complete inspection of large diameter sewers in the next 5 years.	25,745 LF - large diameter sewer inspected in 2009.
Section 6, II.a.	Gravity Line Preventative Maintenance	MWS will purchase software for TV units that will allow priorities to be entered into the CMMS.	6/07	Complete	N/A	N/A
		MWS has recently purchased three new CCTV cameras to inspect and to televise the 224 miles of CSO lines and the other large diameter sewers. Three crews began using the cameras in August 2006. As experience is gained and the process refined of using these cameras, MWS will develop a plan and standard operating procedures (SOP) to inspect a certain amount of large diameter sewers over a projected period of time. The CSO and large diameter sewer televising will be incorporated into the goals for sewer televising for the entire system.	1/08	Large diameter sewer inspection contract established. Issued two assignments in 2009. Finalizing SOP for sewers larger than 60" diameter.	Complete inspection of large diameter sewers in the next 5 years.	25,745 LF - large diameter sewer inspected in 2009.

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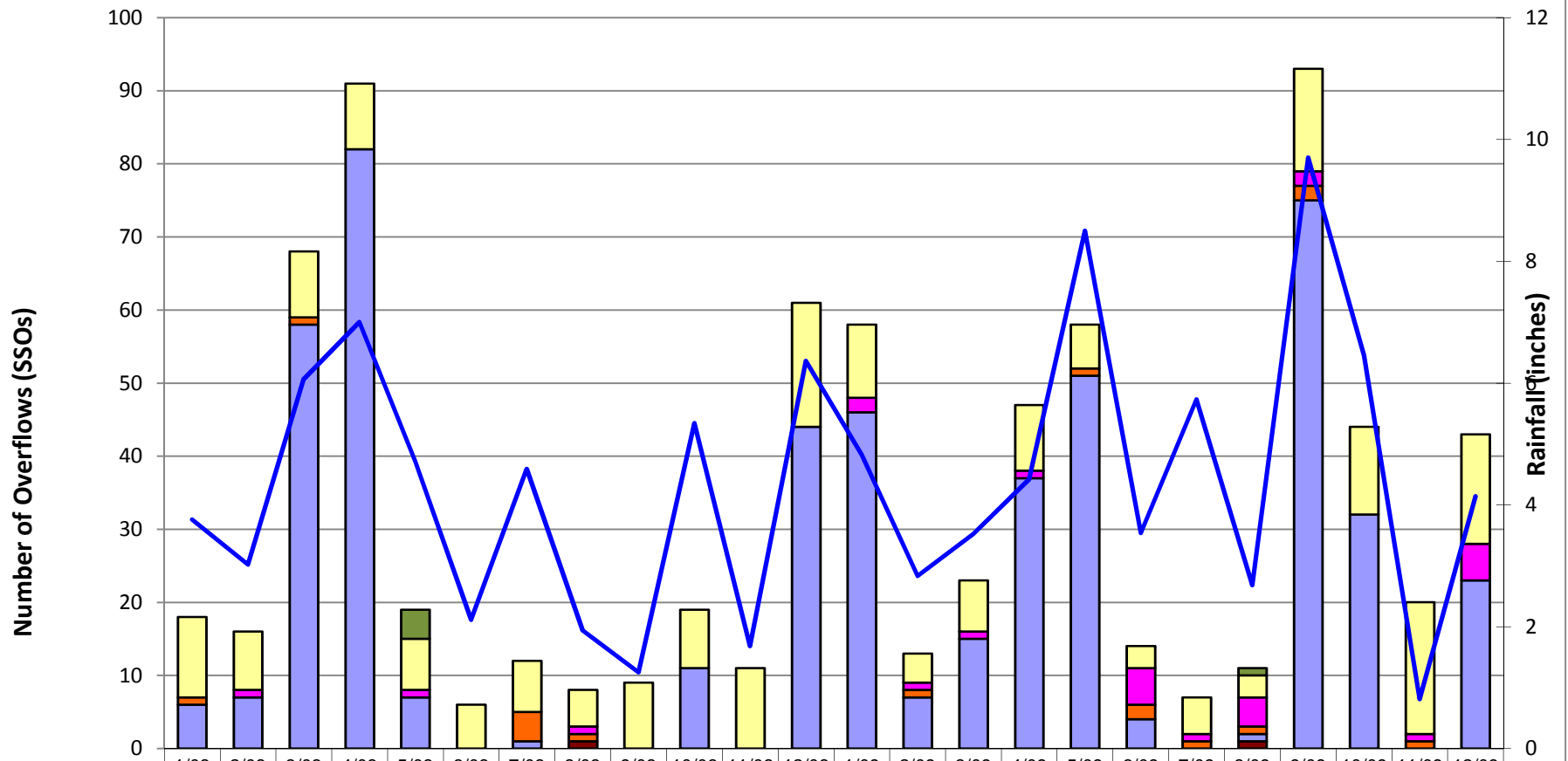
CMOM Report Section	CMOM Program	Recommendation	Implementation Deadline	Status	Performance Measure	Actual Performance
Section 6, II.b.	Root Control	MWS will consider development of a policy for resolving root intrusion in service lines with a customer	10/07	Updated in SORP. Submitted on May 27, 2009 to TDEC/EPA. Approved on August 18, 2009.	N/A	N/A
Section 6, III.	Air Valve Preventative Maintenance	MWS will develop standard operating procedures for inspection and replacement of air/vacuum valves.	12/07	Complete	Review SOPs annually.	2009 review complete.
Section 7, II.	Long-Term Control Plan	MWS will update the Long Term Control Plan on an as needed basis.	As needed.	In progress.	LTCP must be completed by March 12, 2011.	On track to complete by deadline.
General	All	MWS will develop performance measures for all programs that do not have current measures in place.	12/07	Ongoing; pertinent items developed for all items above.	N/A	No new performance measures implemented in 2009.

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Table 2 – Design/Construction Projects

Projects required by draft Consent Decree						
Project Number	Project Name	Project Description	Design Start Date	Design End Date	Construction Start Date	Construction End Date
97-SG-8-2&3	Dry Creek Facilities Improvements	Improvements to existing WWTP for optimization of wet weather flows, solids handling, and odor mitigation	3-1-2004	11-19-2004	7-5-2005	12-4-2008
03-SC-136A	Barker Road / Omohundro EQ Basin	Construction of a 15 MG EQ Basin and Wastewater Pump Station (WWPS) for the Separate Sanitary Sewer System	2-23-2006	10-2008	2-2-2009	12-21-2009 (operational)
Continuation Projects from Current OAP Program						
94-SG-5F-1	Boscobel CSO – Village Court	Upsized CSS trunk sewer, rehabilitation of sanitary sewer, solids and floatable controls, and appurtenances	10-4-2005	7-1-2007	1-16-2008	10-27-2008
91-SC-36B	28 th Avenue North Sewer Rehabilitation Phases 1 & 2	Rehabilitation of sanitary sewer system	4-6-2006	8-30-2007	3-15-2008	3-12-2009
90-SC-75A	Hurricane Creek WPS Improvements	Replacement of pumps, controllers, and grinders at existing WWPS to improve reliability	12-1-2005	10-23-2006	11-12-2007	9-1-2008
05-SC-33	Basswood / West Park EQ Basin	Construction of a 10 MG EQ Basin and WWPS for the Separate Sanitary Sewer System	6-21-2006	10-2008	2-18-2009	6-2-2010 (estimated)
94-SC-5B	Washington CSO Regulator	Construction of new replacement CSO Regulator to incorporate solids & floatables control and in system storage to reduce CSOs	12-18-2006	3-1-2010 (peer review modification)	8-1-2010 (estimated)	8-1-2012 (estimated)
90-SC-150H	Inglewood Sewer Rehabilitation Phase 4	Rehabilitation of sanitary sewer system	2-7-2006	10-30-2006	7/13/2009	2/7/2010 (estimated)
99-SG-9C	Hermitage Area Sewer Rehabilitation	Rehabilitation of sanitary sewer system	8-2-2006	11-10-2006	7/13/2009	2/7/2010 (estimated)
06-SC-188	Whites Creek WWPS Disinfection / Optimization	Improvements to existing WWTP for optimization of wet weather flows and increased capacity of disinfection system	12-12-2008	4-1-2010 (estimated)	8-1-2010 (estimated)	TBD
93-SC-34T	Whites Creek WWPS Design	Improvements to the Whites Creek WWPS, including a new WWPS and Force Main	11-15-2009	7-1-2010 (estimated)	3 rd quarter 2010	TBD
06-SC-185	Mill Creek 36" Trunk Sewer Repair	Repair / Rehabilitation of Separated Sewer System	7-6-2007	10-6-2007	Calendar Year 2010	TBD
			Design Revisions			
			9-1-2009	4-1-2010		

Figure 1 - Monthly SSO Events / Causes



	1/08	2/08	3/08	4/08	5/08	6/08	7/08	8/08	9/08	10/08	11/08	12/08	1/09	2/09	3/09	4/09	5/09	6/09	7/09	8/09	9/09	10/09	11/09	12/09
Total Causes / SSOs	18	16	68	91	19	6	12	8	9	19	11	61	58	13	23	47	58	14	7	11	93	44	20	43
Excessive Flow	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Blockage	11	8	9	9	7	6	7	5	9	8	11	17	10	4	7	9	6	3	5	3	14	12	18	15
Repairs / Mechanical	0	1	0	0	1	0	0	1	0	0	0	0	2	1	1	1	0	5	1	4	2	0	1	5
Power Outage	1	0	1	0	0	0	4	1	0	0	0	0	0	1	0	0	1	2	1	1	2	0	1	0
Rainfall Induced	6	7	58	82	7	0	1	0	0	11	0	44	46	7	15	37	51	4	0	1	75	32	0	23
Other	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
Rain (inches)	3.76	3.02	6.06	7.00	4.71	2.11	4.59	1.94	1.25	5.34	1.68	6.36	4.82	2.83	3.52	4.42	8.50	3.54	5.73	2.68	9.70	6.45	0.81	4.14

Figure 2 - Monthly SSO Volumes

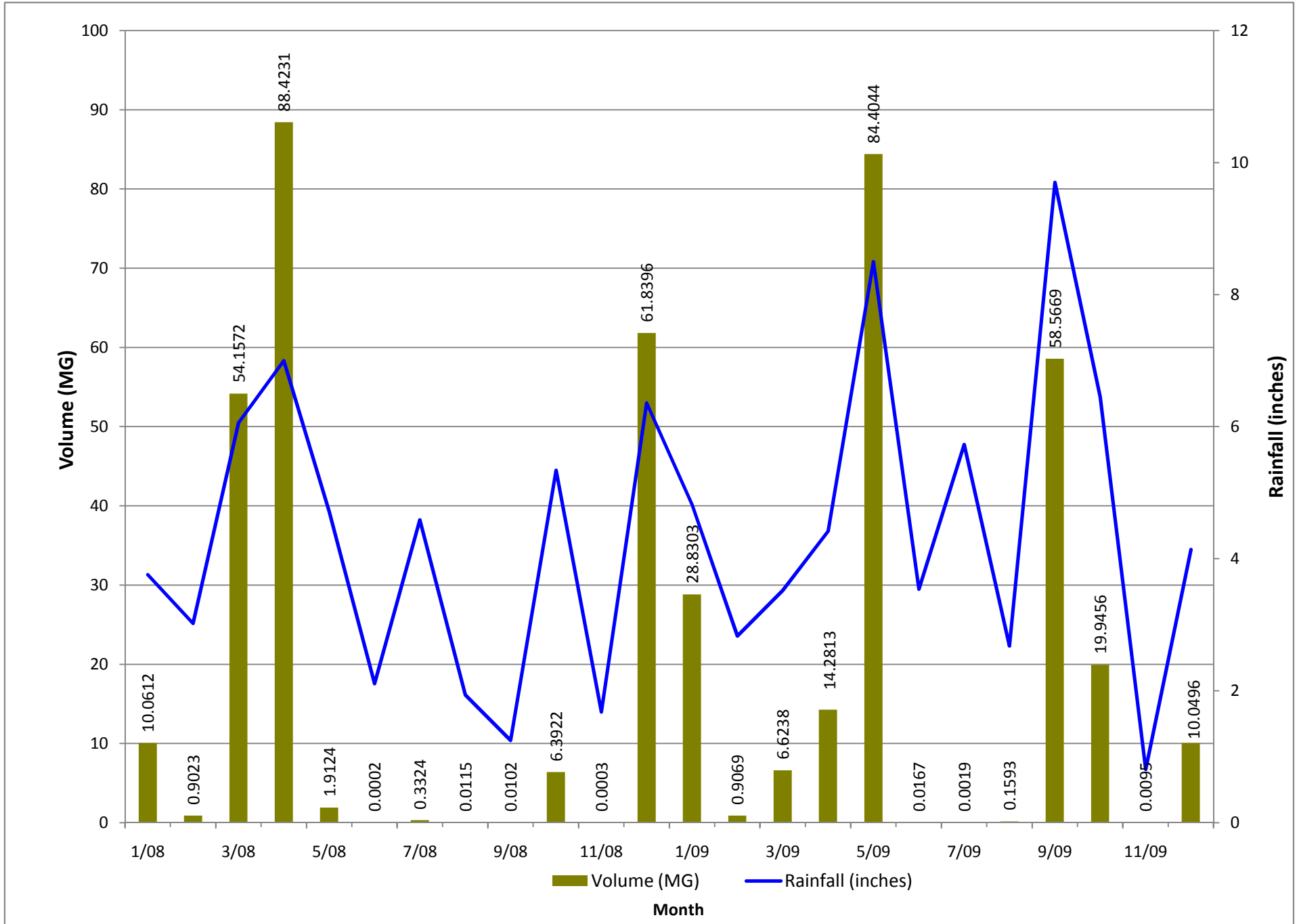


Figure 3 - Monthly SSO Durations

