



## **Biosolids EMS Internal Audit Report**

Camden County Municipal Utilities Authority  
Camden, New Jersey

Audit Report Date: January 21, 2016

Audit Conducted by:

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Audit Date: December 10, 2015

Audit Report Prepared by: Douglas Burns and Scott Schreiber

## **SUMMARY**

The CCMUA conducted an internal audit of the Biosolids Management Program on December 10<sup>th</sup> 2015. The focus of the audit was Odor Control and the Odor Control SOP's. The purpose was to determine if the Authority is taking all necessary actions to minimize odors from the sewage treatment process. The Authority has already installed approximately \$20 million in new odor control equipment and has implemented institutional and operational controls since beginning the National Biosolids Partnership Program.

## **SUMMARY OF AUDIT FINDINGS**

The Authority has significant controls and procedures in place to limit odors from the sewer treatment process. All forms in the SOP Manual should be current and reflect the actual procedures as conducted by the Authority. The Odor Control SOP's need to be updated to include management review of the actions taken at the time an odor complaint is received and approve closing the complaint. The SOP's should require H2S readings to be taken at the time of each complaint, documented with the complaint and reviewed. The SOP's need to require significant increases in H2S readings are investigated to find the cause.

## **AUDIT DETAILS**

The Executive Director, Andrew Kricun, selected two individuals as Internal Auditors that are not directly involved in the day-to-day operation of the plant - two CCMUA staff members. The Auditors are qualified to conduct the audit since they are familiar with the facility and were approved by the Executive Director.

The internal audit consisted of both interviews and the review of records. CCMUA Management and the Synagro Site Manager were interviewed. The following is the list of the individuals interviewed:

Andrew Kricun, Executive Director, Chief Engineer  
Jack Connolly, Director of Operations and Maintenance  
Mark Kollman, Site Manager, Synagro  
Steve Lee, Chief Process Systems

The 2015 records reviewed included:

- Daily Report for Odor Control System
- Daily Report for Odor Control / Plant Parameters
- SOP Operational and/or Emissions Concentration Exceedance,
- SOP Handling Odor Complaints
- Odor Patrol Checklist
- SOP Community Notification System for Odor Complaints
- SOP Environmental Hotline
- Odor Complaint Records
- SOP Sunday Morning Operations
- Sunday Checklist
- Saturday Checklist

- SOP Scum Concentration Carbon Odor Control Unit
- SOP Junction Chamber Biofilter Odor Scrubber System
- SOP Manhole Biofilter for Dewatering Building Filtrate Line
- SOP Odor Scrubbers
- SOP Preliminary Treatment Facility - Odor Control System
- SOP Calvert Odor Scrubber for Sludge Storage Tanks and Dewatering Building
- SOP ERA Odor Scrubber for the Thickening and Dewatering Building
- SOP Quad Chemtact Odor Scrubbers
- SOP Biofilter Odor Control System
- Synagro Morning Numbers Report
- Synagro SOP Odor Control
- Synagro Dryer Data Logs
- Synagro H2S Readings
- 2015 Influent Biofilter H2S PACS Report
- 2015 Scum Concentration H2S PACS Report
- 2015 ERA Sludge Storage Tanks H2S PACS Report
- 2015 PTF Odor Scrubber H2S PACS Report
- 2015 B Stage Biofilter H2S PACS Report

The following operational controls were verified during the audit:

Every shift a CCMUA supervisor completes the Daily Report for Odor Control System. The appropriate H2S data is entered into the PACS System and the form is retained in a binder. An email "Daily Report for Odor Control / Plant Parameters" is sent to CCMUA and Synagro Management. Synagro staff takes five H2S readings each day and enters these into a database. The Synagro "Morning Numbers Report" is sent by email to CCMUA Management.

In addition to the equipment readings the CCMUA staff, check for odors on a regular basis. Part of the check is to make sure doors are closed, spills are cleaned up, trucks are covered with a tarp and vehicles are cleaned. The Senior Plant Operator conducts a Odor Patrol twice a shift during weekdays. The Odor Patrol Check list is then completed and retained. On weekends, a different form, the "Saturday Checklist" and the "Sunday Checklist" is completed several times during the day shift.

### Synagro SOP's

Mark Kollman, the onsite Synagro Manager, was interviewed. Synagro has one SOP concerning Odor Control. The Synagro SOP Odor Control, data from the H2S readings and the dryer for 2015 were all examined. The H2S readings indicate no measurable odors were released from the facility during 2015. After the discussions during the audit, a revised SOP was sent in to replace the prior version.

### Authority SOP's

A copy of the CCMUA Standard Operating Policies and Procedures was obtained. The section "Odor Control" was examined. These SOP were all discussed during the audit. The majority of the SOP's were dated June, 2010. Three of the listed SOP's are no longer valid, since the corresponding equipment had been removed. These are listed under "REMOVED" on the attached summary of the SOP's.

Several SOP's are forms. Most of the forms have been updated. One SOP has been updated. The attached summary list has "C" on the forms that have changed.

The Authority SOP's were written and maintained by a consulting engineer. It was observed during the audit that the Authority has only received printed and PDF documents of the SOP's. The consulting engineer was then asked to send the original files to the Authority. These files were subsequently received by the Authority and retained for future use as needed.

## Odor Complaints

A telephone hotline has been established for odor complaints received from the community. The 2015 Odor Complaint records were reviewed. Seven were received concerning the treatment plant. Six were received concerning an odor from the pipeline or pump station. The log book for a 10/7/2015 Odor Complaint has: "Received an odor complaint from Jack Connolly who was called by Andrew Kricun, he smelled at the Administration. Checked out all doors and tanks, could not detect a source of odors. Wind direction at this time was NNW @ 8 mph. We had an Aggiano sludge hauler come in at 11:23 and left at 11:51 & Clean Harbor's vactor truck working at Synagro dump in storage building & hose out his truck at septage unloading station around 11:00. They left plant at 11:15, could be possible source."

The five H2S PACS reports containing the 2015 readings were examined. The H2S readings were all below the reportable limit. A sample of the data was compared from the worksheet data to the PACS log. The sample data matched.

Next, the H2S readings at the time of the Community Odor Hotline Complaints were reviewed. High H2S readings were found on the day of the 10/7/15 Odor Complaint. The 10/7/15, 2nd shift readings were at the limit for both the A&B Stage Biofilter and the ERA Sludge Storage Biofilter readings. These reports indicated a significant increase on the day of the odor complaint. The ERA rose from .005 PPM, 1<sup>st</sup> shift to .18 and .2 PPM for the 2<sup>nd</sup> shift, which is at the limit. The A&B Biofilter rose from .02 PPM, 1<sup>st</sup> shift to .10 for the 2<sup>nd</sup> shift, which is at the limit. The 10/7/15 and the 10/15/15 Odor Complaints do not have H2S readings entered into the log. The other five entries have H2S readings written.

## Conclusion

**SOP's:** SOP's on Odor Complaints need to be modified to reflect the following: When equipment is taken out of service, the corresponding SOP should be removed from the SOP Manuals. The forms in the SOP Manual should be current and reflect the actual procedures as conducted. A Corrective Action Plan will be written to update the SOP's.

**Odor Complaints:** The 10/7/15 Odor Complaint, most likely, had the wrong conclusion for the odor source. The significant elevation of three measures of H2S, up to the permit limit, were not realized or reported. It is likely that the H2S readings were very high at the time of the complaint. The levels of H2S released probably stayed high or even declined until the 2<sup>nd</sup> shift readings were taken. A Corrective Action Plan will be written to modify SOP's to require additional H2S readings to be taken of all odor control equipment at the time of every odor complaint. The SOP's will also require the H2S readings to be monitored until the readings return to normal. H2S readings at the time of the odor complaint and again after the complaint need to be reviewed by management before the complaint is closed.