



**National Biosolids Partnership  
Audit Report**

**Camden County Municipal Utility Authority  
Camden, New Jersey**

**Biosolids EMS Verification Audit**

Audit Dates: June 14 to 18, 2010, September 9 – 10, 2010

Audit Conducted By:

KEMA-Registered Quality, Inc. (Chalfont, PA)

Auditors: Mr. Jon Shaver, Biosolids EMS Lead Auditor

Report Written By: Jon Shaver, Biosolids EMS Lead Auditor

Report Date: September 19, 2010

Technical Review By: Andy Kricun, Deputy Director, CCMUA

Approved By: Pierre Salle, President – KEMA Registered Quality, Inc.

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### 1. EXECUTIVE SUMMARY

KEMA-Registered Quality Inc. (KEMA) conducted an independent Verification Audit of the management system being used by Camden County Municipal Utilities Authority (CCMUA) in managing its biosolids program. The audit was performed at the request of the National Biosolids Partnership (NBP) as part of CCMUA's participation in the NBP EMS Program and included a review of CCMUA EMS documentation (reported 5/10/10) and an onsite audit at CCMUA facilities June 14 to 18, 2010 and a follow-up audit completed on September 11, 2010.

The purposes of this audit were to:

- Confirm that CCMUA is managing its biosolids program in a manner that meets NBP expectations, with practices and procedures being performed as documented.
- Verify that the management system being used by CCMUA in managing its biosolids activities meets requirements of the National Biosolids Partnership's EMS Program, particularly the 17 EMS Elements (audit criteria).
- Examine outcomes that CCMUA is achieving through the use of a systematic approach to managing their biosolids program.

The scope of this audit included CCMUA's full biosolids program, as defined in their audit application, and covered all activities within CCMUA's biosolids value chain. During the audit KEMA reviewed processes and practices used by CCMUA and assessed the conformance of these processes with NBP expectations and requirements of the NBP EMS Elements. The audit was performed consistent with the NBP Auditor Guidance (2007).

#### Conclusions

The audit determined that:

- The Camden County Municipal Utilities Authority biosolids management system is consistent with NBP expectations and meets requirements of the NBP EMS Elements.
- Use of a management system approach is generating positive outcomes for CCMUA's biosolids program in the areas of regulatory compliance, environmental performance, quality practices and relations with interested parties.
- CCMUA demonstrated during a follow-up audit that they have effectively corrected four major nonconformances and two minor nonconformances identified during the June audit.
- No major nonconformances and 3 minor nonconformances remain open upon completion of this audit.

Based on the results of this audit, KEMA verifies that the Camden County Municipal Utilities Authority biosolids management system meets NBP's expectations and requirements and recommends Certification of CCMUA's biosolids management system within NBP's Biosolids EMS Program.



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## **2. AUDIT DETAILS**

### **2A. Local Agency Details**

Agency Name, Location: Camden County Municipal Utilities Authority, Camden, NJ

Biosolids Production Location(s): Camden & Winslow NJ

Number of Employees (approximate): 135

Volume of Wastewater Treated (approximate): = average 80 MGD

Tons of Dewatered Sludge Produced (approximate): approx 160 wet tons per year

#### Biosolids Use / Disposition Sites Audited

Kyler Environmental / Fisher Mining Lycoming County PA (mine reclamation)

Gloucester County Municipal Utilities Authority (incineration)

McGill Environmental Services, Waverly VA (composting). Note – site was visited during other audits.

#### Contractors Participating in Audit

United Trucking

### **2B. Audit Team**

The National Biosolids Partnership assigned KEMA-Registered Quality Inc. to perform this audit on their behalf. The audit was performed by Mr. Jon Shaver. Mr. Shaver is qualified as a certified Biosolids EMS Lead Auditor and Biosolids Auditor by the National Biosolids Partnership. KEMA asserts that our firm and auditors have an independent relationship with CCMUA that meets criteria established by NBP for Third Party Audit Companies and Auditors.

### **2C. Audit Criteria**

Requirements stipulated in the National Biosolids Partnership EMS Elements (May 2002) and the NBP Biosolids EMS Program were used as criteria for this audit.

### **2D. Audit Timing**

This audit included a review of CCMUA's EMS documentation (EMS Manual) reported May 7, 2010 an onsite audit conducted June 14 to 18, 2010 and a follow-up audit conducted September 9 and 10, 2010.

### **2E. Audit Scope and Methodology**

The scope of this audit included all parts of the CCMUA biosolids program, which encompasses pretreatment, wastewater treatment and solids generation, biosolids stabilization, storage and transportation and end use / disposition, with special attention to practices and management activities that directly support biosolids-related operations, processes and activities.

The audit included the following topics, consistent with NBP requirements and the Scope of Work agreed by NBP and KEMA dated April 23, 2010.

1. Review of documentation describing the biosolids management system and its use.

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2. Examination of outcomes being achieved in the areas of regulatory compliance, interested party relations, environmental performance and quality practices.
3. Interested party interviews
4. Process Audits (covering all applicable requirements of the EMS Elements)
  - Biosolids Use – Composting, Mine Reclamation, Landfill (+ related contractor control)
  - Biosolids Preparation (wastewater treatment, solids handling) (including Winslow and Camden plants)
  - Biosolids Storage & Transportation (+ related contractor control)
  - EMS Planning (incl Public Participation)
  - Communication Program
  - Competence, Awareness & Training
  - Compliance (with legal & other requirements)
  - Corrective and Preventive Action
  - Document Control & Recordkeeping
  - Emergency Preparedness & Response
  - Goals & Objectives (for improvement)
  - Identification of Critical Control Points & Operational Controls
  - Internal Audits
  - Maintenance (deferred)
  - Management Involvement (incl Biosolids Policy, Roles & Responsibilities, Mgmt Review)
  - Pretreatment & Collection

The audit was performed by a qualified auditor following guidelines stated in the NBP Auditor Guidance (August 2007). Using sampling techniques, the auditor observed practices in place, interviewed key persons and reviewed pertinent documents and records to assess the systematic performance of each process and the consistency of biosolids management practices with written procedures. Interested parties were interviewed and transaction tests were performed to verify the effectiveness of the management system. This audit was a management systems audit and is not a verification of compliance with any legal requirements applicable to practices performed by CCMUA or its contractors.

### 2F. Reference Materials

The following documents were used as references during this audit:

- CCMUA EMS Manual (current version)
- National Biosolids Partnership “EMS for Biosolids” standard (May 2002)
- National Biosolids Partnership Biosolids EMS Third Party Auditor Guidance (August 2007)
- National Biosolids Partnership Code of Good Practice
- National Biosolids Partnership Manual of Good Practice

### 2G. Definitions of Audit Findings & Required Corrective Action

Major Nonconformance – a serious omission from requirements and/or other departure that represents, or could cause, a systemic failure. Major nonconformances must be corrected within 90 days for verification to proceed.

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Minor Nonconformance – an isolated departure from requirements that does not represent a systemic failure. Minor nonconformances require timely and effective correction and verification by a Third Party Auditor.

Opportunity (for improvement) – possible improvement in the EMS based on auditor observations. There is no obligation for action in response to these observations.

### **2H. Appeals**

The NBP provides an appeals process for biosolids organizations and interested parties that disagree with the findings of a third party EMS audit. The verification appeals process involves an Appeals Board; representing a balance of biosolids management interested parties, including an environmental advocacy group, and wastewater industry professionals. An appeal must be submitted within 30 days of the official verification decision or interim audit decision by the Audit Company. Anyone who may need help in understanding the appeals process should contact the National Biosolids Partnership staff, Ms. Eileen O'Neill at 703-684-2438, or by e-mail: [eoconnell@wef.org](mailto:eoconnell@wef.org).

An appeal process is available to persons concerned about the methods and/or scope of this audit. Further information about this appeal process can be obtained from KEMA (contact Pierre Salle, [pierre.salle@kema.com](mailto:pierre.salle@kema.com)) or Jon Shaver [jon.shaver@kema.com](mailto:jon.shaver@kema.com)) or from NBP (contact Jim Cox at [jcox@wef.org](mailto:jcox@wef.org)).

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### **3. SUMMARY OF AUDIT RESULTS**

#### **3A. Strengths Observed**

During this audit KEMA noted the following strengths in the CCMUA biosolids management system.

- Personnel throughout the organization are well aware of the goals of the EMS (effluent quality, odor control, cost effectiveness) & have implemented O&M programs to help achieve these goals.
- Effective outreach activities are underway within the local Camden community. Interested parties are complimentary about external communication channels with CCMUA
- CCMUA has received recognition from external sources for the effectiveness of their biosolids management (e.g. NJDEP Environmental Stewardship Program, Delaware River Basin Commission).
- Emergency preparedness plans and procedures are well documented

#### **3B. Outcomes**

The CCMUA biosolids program is improving through the use of their biosolids management system. The following improvement outcomes within the past two years were confirmed.

##### Regulatory Compliance

Effluent quality (tss, c/bod) has improved 50% in past 5 years and remains well below regulatory / permit limits.

##### Environmental Performance

The solids content in sludge product has increased from 21% to 28% (average) in past 5 years, leading to lower energy use and reduced disposal costs (\$1.5 million / year)

Proactive efforts to reduce energy use (e.g. new equipment, oxygen upgrade, belt filter press improvements) have reduced energy use by 10% (\$300K/year).

##### Quality Practices

Operating efficiencies have enabled user rates to hold without increase in the past 5 years (\$5MM / year cost avoidance).

Several odor control improvements have been added in response to public concerns about odors.

##### Interested Party Relations

Increased public education & mailings have improved public perception and long term relations within the community.

Proactive community service programs are underway, including truck traffic control, support for parks, involvement in community associations such as Waterfront South Environmental Network.

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CCMUA has received several awards for the performance of their wastewater (and biosolids) management system, including NJDEP Environmental Stewardship certification and EMS award from the Delaware River Basin.

### 3C. Open Nonconformances

The following nonconformances with respect to the audit criteria identified during this audit remain open at the conclusion of the audit. Verification of effective correction will occur during the next third party audit.

Minor Nonconformance JS/10-01/ 1 NBP EMS Element 1 requires an EMS Manual (or equivalent set) that describes policies, programs, plans, procedures, management practices in the EMS. The CCMUA “EMS Manual” is inconsistent with NBP requirements in the following areas:

- Several objectives are not measurable
- Records requiring control are not identified, except for monitoring & measurement activities.
- EMS Manual does not state or reference procedures for monitoring / measurement biosolids program performance at critical control points other than for compliance with regulations

Minor Nonconformance JS/10-12/ 13 NBP EMS Element 13 requires that progress toward achieving biosolids goals and objectives be tracked. Although progress is tracked on an as required basis, there is no specific record demonstrating that CCMUA is tracking progress towards some of the biosolids objectives.

Minor Nonconformance JS/10-14/ 5 NBP EMS Element 5 requires biosolids objectives to be specific and measurable. 3 of 11 biosolids objectives currently in place are not presented in a measurable way.

### 3D. Closed Nonconformances Identified During This Audit

During the onsite audit, KEMA identified the following major nonconformance with respect to requirements of the NBP EMS Elements. A follow-up audit conducted September 9 and 10, 2010 determined that corrective actions taken by CCMUA have effectively closed these nonconformances, as described below.

Minor Nonconformance JS/10-01/ 1 NBP EMS Element 1 requires an EMS Manual (or equivalent set) that describes policies, programs, plans, procedures, management practices in the EMS. The CCMUA “EMS Manual” is inconsistent with NBP requirements in the following areas:

- There is no procedure in Element 4 for identifying and tracking “other” requirements.
- Several objectives are not measurable
- Records requiring control are not identified, except for monitoring & measurement activities.
- EMS Manual does not state or reference procedures for monitoring / measurement biosolids program performance at critical control points other than for compliance with regulations

Corrective Action – CCMUA took action in response to this nonconformance, which was caused by a lack of clear understanding of requirements. The CCMUA EMS Manual was modified to



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address the bulleted points noted above. This effectively corrected those requirements, however some requirements were not fully addressed and that part of this nonconformance remains open.

**Major Nonconformance JS 10-02/2** NBP EMS Element 2 requires the Biosolids Management Policy to commit the organization to following the principles of conduct set forth in the National Biosolids Code of Good Practice. The CCMUA “Biosolids Policy” does not include a commitment to follow the principles of the NBP Code of Good Practice.

Corrective Action – CCMUA took action in response to this nonconformance, which was caused by a lack of clear understanding of requirements. The CCMUA Biosolids Policy was revised June 2010 to include written commitment to the Code of Good Practice. That commitment was already stated in other part of the manual. This nonconformance is now closed.

**Major Nonconformance JS 10-03/3** NBP EMS Element 3 requires that critical control points be defined for the entire biosolids value chain. Critical control points have not been defined for some biosolids use options being used.

Corrective Action – CCMUA took action in response to this nonconformance, which was caused by an oversight. The manual Table 3.1 was added to identify critical control points, including those for composting and incineration (the uses of CCMUA sludge material). This nonconformance is now closed.

**Major Nonconformance JS 10-04/3** CCMUA’s definition of “control points” and “operational controls” states that they address legal, quality and public acceptance requirements. Identification of control points and operational controls by CCMUA does not clearly reference legal, quality or public acceptance requirements.

Corrective Action – CCMUA took action in response to this nonconformance, which was caused by an oversight. The manual Table 3.1 was added to identify critical control points and included reference to key, legal and other requirements, quality requirements and requirements for relations with interested parties and related operational controls. This nonconformance is now closed.

**Minor Nonconformance JS 10-05/4** NBP EMS Element 4 requires that records of applicable legal and other requirements be maintained. POSHA and NJ Environmental Stewardship Program are not included in CCMUA’s list of applicable legal and other requirements.

Corrective Action – CCMUA took action in response to this nonconformance, which was caused by an oversight. POSHA and NJ Environmental Stewardship Program were added to the identification and control of applicable legal and other requirements and related operational controls. This nonconformance is now closed.

**Major Nonconformance JS/10-06/ 5** NBP EMS Element 5 requires biosolids objectives to be specific and measurable. Most Biosolids objectives noted in the EMS Manual are not presented in a measurable way.

Corrective Action – CCMUA took action in response to this nonconformance, which was caused by a lack of understanding. Of the 11 biosolids objectives in place, 7 were modified to include

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measurable targets. This nonconformance is now closed. See also nonconformance JS/10-14/5.

Major Nonconformance JS/10-07/ 5 NBP EMS Element 5 requires action plans be established describing how biosolids objectives will be achieved. No action plans are in place for achieving CCMUA's biosolids objectives.

Corrective Action – CCMUA took action in response to this nonconformance, which was caused by a lack of understanding. Plans for achieving each biosolids objective, including action steps, responsibilities and timing have now been prepared and discussed with personnel. This nonconformance is now closed.

Major Nonconformance JS 10-08/7 NBP EMS Element 7 requires that contractor roles & responsibilities within the biosolids program be defined in Service Agreements. Agreements with contractors R&D and United Trucking do not reference the contractors' requirements within the EMS.

Corrective Action – CCMUA took action in response to this nonconformance, which was caused by a lack of understanding. A "letter of understanding" has been sent to each transportation contractor and discussed with that contractor. That letter includes contractor requirements within the EMS. This nonconformance is now closed.

Major Nonconformance JS 10-09/8 NBP EMS Element 8 requires that a training program(s) be established to provide general awareness of the EMS and how each employee's roles & responsibilities relate to the biosolids value chain and that records be kept of that training. There are no records available to demonstrate that employees have received training in their EMS responsibilities.

Corrective Action – CCMUA took action in response to this nonconformance, which was caused by a lack of records control. Records are now available to demonstrate that individual employees have received training in general awareness of the EMS and their biosolids roles and responsibilities. This nonconformance is now closed.

Minor Nonconformance JS 10-10/9 NBP EMS Element 9 requires that information about the EMS Elements be communicated to employees and contractors consistent with their biosolids roles & responsibilities. Some operations personnel were not aware of basic requirements of the EMS such as critical control points.

Corrective Action – CCMUA took action in response to this nonconformance, which was caused by a lack of understanding. An open letter from the Deputy Director has been sent to each employee describing the purpose, content and responsibilities within the CCMUA biosolids EMS. That letter includes contractor requirements within the EMS. This nonconformance is now closed.

Minor Nonconformance JS 10-11/11 NBP EMS Element 11 requires that emergency plans and procedures be established to ensure effective response to biosolids accidents and emergency situations. Trucks carrying CCMUA biosolids do not have Biosolids Spill Control / Response procedures readily available.

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Corrective Action – CCMUA took action in response to this nonconformance, which was caused by a contractor error. Contractors are now required to carry a copy of the CCMUA Biosolids Spill Response Plan in each truck while hauling CCMUA sludge. Trucks are inspected by CCMUA personnel to ensure this occurs. This nonconformance is now closed.

Major Nonconformance JS 10-13/16 NBP EMS Element 16 requires that the internal audit program include assessment of whether the biosolids management policy is being effectively met and that internal audits cover biosolids activities performed by contractors. No assessment of performance in meeting commitments in the Biosolids Policy (e.g. Code of Good Practice) have occurred and internal assessments have not been conducted at composting facilities, the Gloucester incineration plant, the Fisher Mining reclamation site or at transportation contractors.

Corrective Action – CCMUA took action in response to this nonconformance, which was caused by a lack of understanding. An assessment of how well CCMUA is meeting obligations within the Code of Good Practice (including rating and evidence for conclusions) has been completed by the Deputy Director and discussed at a management team meeting. This nonconformance is now closed.

### 3E. Opportunities for Improvement

The following opportunities for improvement in the CCMUA biosolids program were noted during the audit.

#### Management Direction

- Measures of performance could be developed to address how well commitments in the biosolids policy are incorporated into the biosolids program.
- The Management Policy within the CCMUA EMS could be simplified for easier reference and understanding of related commitments
- A “management of change” procedure could be helpful in planning the implementation of significant changes affecting the biosolids program.

#### Biosolids Quality

- The various solids storage locations (primary, secondary, WAS, thickened sludge) could be separate critical control points for clearer understanding of controls needed.
- Pretreatment incident investigations could be tracked and analyzed using a corrective action database.

#### Environmental Performance

- When determining environmental impacts that require control, a risk analysis could be helpful for identifying those that are significant.

#### Relations with Interested Parties

- All complaints received and handled could be recorded in a corrective action database for tracking and trend analysis.

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- Comments / concerns from regulators could be recorded and tracked using a Corrective Action database (e.g. VA DEQ question about “digestion”)

### Regulatory Compliance

- Formal Corrective and Preventive Action could be used to address incidents, complaints and near-misses in addition to noncompliances and nonconformances.
- Causes of events that require formal corrective could be analyzed to determine the cause of causes and subsequent preventive action.

### **3F. Verification Conclusion**

Based on results of this audit, KEMA is able to issue the following Verification Statement concerning the CCMUA’s biosolids management system:

*“Camden County Municipal Utilities Authority has been independently verified by KEMA-Registered Quality Inc. as having an effective biosolids environmental management system that supports continual improvement in environmental performance, meeting regulatory compliance obligations, utilizing good management practices and creating meaningful opportunities for public participation and is in conformance with requirements of the National Biosolids Partnership Biosolids EMS Program.”*

### **3G. Requests / Agreements**

CCMUA has developed written plans for correcting all nonconformances found during this audit that remain open. KEMA’s Lead Auditor has reviewed those corrective action plans and determined that effective implementation of the planned action will correct the respective nonconformances. CCMUA will implement the approved plans in a timely manner and review the corrections internally within 6 months. The effectiveness of actions taken to correct nonconformances will be verified during the next assigned third party audit.

An Interim Audits Program will be developed with agreement by CCMUA and KEMA to cover the 4 interim years between verification and re-verification. CCMUA would like KEMA to conduct a full system audit in years 1 and 3 (i.e. 2011, 2013) and partial audits in years 2 and 4. Reverification is due before September, 2015.

CCMUA will advise KEMA when the sludge drying process is in place and material from that process is being used. KEMA will perform an audit of that change (for consistency with CCMUA EMS requirements). The first Interim Audit (see above) may be planned to occur at the same time.

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### 4. AUDIT OBSERVATIONS + RESULTS

The following describes the results of KEMA's audit of each management system process and the level of conformance of the process with all applicable requirements of the EMS Elements. CCMUA has prepared Corrective Action Plans for all nonconformances and KEMA's Lead Auditor has approved those plans. Nonconformances remaining open are noted.

#### 4A. EMS Documentation

CCMUA's EMS Manual and supporting documents describe the management system being used in managing activities throughout the wastewater treatment plant, including biosolids activities. The manual is organized following the NBP EMS Elements sequentially.

##### Audit Results

The process described above was found to meet NBP expectations and conform to applicable requirements of the EMS Elements, except as noted below:

Minor Nonconformance JS/10-01/ 1 NBP EMS Element 1 requires an EMS Manual (or equivalent set) that describes policies, programs, plans, procedures, management practices in the EMS. The CCMUA "EMS Manual" is inconsistent with NBP requirements in the following areas:

- Several objectives are not measurable
- Records requiring control are not identified, except for monitoring & measurement activities.
- EMS Manual does not state or reference procedures for monitoring / measurement biosolids program performance at critical control points other than for compliance with regulations

In addition, the following opportunities were noted:

- The Biosolids EMS Manual could be further simplified by describing the management system processes and practices in place.

#### 4B. Biosolids Preparation Operations

##### Pretreatment & Collection

The Camden plant receives combined sewer flow (80MGD) from residential, commercial and industrial users in 3 townships in and around Camden. The Winslow plant receives flow (2.5 MGD) from Winslow Township. CCMUA's pretreatment program is delegated from NJDEP and includes permits for significant industrial users and inspections of those sites. Incoming flow is analyzed by a State Certified laboratory. The Winslow plant receives combined sewer flow from residential, commercial and industrial users in Winslow Township.

##### Wastewater Treatment & Solids Generation and Solids Stabilization, Conditioning & Handling

Incoming flow passes through a bar screen and grit removal chamber to primary and secondary treatment units. Primary treatment is done through settling and secondary treatment is done by aeration with oxygen. Effluent is disinfected using sodium hypochlorite. Primary solids are dewatered using a belt filter press. Secondary solids are dewatered using a gravity belt thickener and both are collected in a "thickened waste" storage tank and further thickened using a belt filter press.

##### Biosolids Storage & Transportation

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Thickened solids are stored in a building (fully enclosed with negative pressure) and loaded onto trucks inside that building for transport offsite. Trucks are tarped and follow prescribed routes and times.

### Audit Results

The processes described above were found to be performing effectively, meet NBP expectations and conform to applicable requirements of the EMS Elements.

In addition, the following opportunities were noted:

- The various solids storage locations (primary, secondary, WAS, thickened sludge) could be separate critical control points for clearer understanding of controls needed.
- Pretreatment incident investigations could be tracked and analyzed using a corrective action database.

### **4C. Biosolids Use / Disposition**

#### Composting

CCMUA dewatered sludge is transported by contract haulers to offsite composting locations, including Burlington County and McGill Environmental Services (Waverly VA). The Auditor assessed the McGill operation during a previous audit (DCWASA) and no problems were identified.

#### Mine Reclamation

CCMUA dewatered sludge is transported by contract haulers to offsite mine reclamation sites in Pennsylvania. A visit to a site was conducted as part of this audit and no problems were identified.

#### Incineration

CCMUA dewatered sludge is transported by CCMUA trucks to Gloucester County MUA plant for incineration. A visit to that site during this audit demonstrated no problems.

#### Landfill

CCMUA dewatered sludge is transported by contract haulers to offsite landfill sites. Discussions with a representative trucking company during this audit found no problems. The Trucking Company (United Trucking) representative demonstrated a responsible attitude about environmental stewardship.

### Audit Results

The process described above was found to meet NBP expectations and conform to applicable requirements of the EMS Elements.

### **4D. Audit - Communication Program**

Internal communications about the EMS occurs through regular staff meetings, an internal newsletter and training. The biosolids program and EMS practices and results are communicated externally in various communications, including participation in various community associations (such as Waterfront South Environmental Network), the Camden County website and presentations given by the Deputy Director. The public is invited to offer comments / suggestions for improvement in these interactive communications. Complaints and comments received at the plant and by the Deputy



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Director are responded to quickly by the person(s) receiving the complaint and recorded. State Regulators and other interested parties were complimentary about CCMUA's external communication channels.

### Audit Results

The process described above was found to meet NBP expectations and conform to applicable requirements of the EMS Elements.

In addition, the following opportunities were noted:

- Comments / concerns from regulators could be recorded and tracked using a Corrective Action database (e.g. VA DEQ question about “digestion”)
- All complaints received and handled could be recorded in a corrective action database for tracking and trend analysis.

### **4E. Audit - Competency, Awareness & Training Process**

Extensive cross training of operators is done, so each Operator knows all treatment and processing areas. State licenses are used to qualify operators, with Senior Operators requiring Level 3 minimum. Operators are required to complete specific CEUs and records are kept. Defined “Safety Training” is done. Other training occurs as needed. Vendors provide training for CCMUA personnel operating and maintaining equipment.

### Audit Results

The process described above was found to meet NBP expectations and conform to applicable requirements of the EMS Elements.

### **4F. Audit - Compliance Process (with legal & other requirements)**

The Regulatory Compliance Chief keeps track of regulatory and permit requirements that apply to CCMUA through subscriptions to authoritative sources and discussions with Regulators. Inquiries from State Regulators are responded to quickly. A transaction test related to concerns from VADEQ about the use of the term “digester” demonstrated rapid corrective action by CCMUA.

### Audit Results

The process described above was found to meet NBP expectations and conform to applicable requirements of the EMS Elements.

In addition, the following opportunities were noted:

- Comments / concerns from regulators could be recorded and tracked using a Corrective Action database (e.g. VA DEQ question about “digestion”)

### **4G. Audit - Contractor Control**

CCMUA has written contracts with transportation companies who haul dewatered sludge to various use sites and with other Authorities (e.g. Gloucester, Burlington) who incinerate their material. Those contractors make arrangements with their subcontractors and communicate those arrangements to CCMUA.

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### Audit Results

The process described above was found to meet NBP expectations and conform to applicable requirements of the EMS Elements.

#### **4H. Audit - Corrective and Preventive Action Process**

Formal corrective action is required and recorded within the CCMUA biosolids program for regulatory noncompliances, contractor noncompliances, lack of progress towards biosolids goals and objectives, not following SOPs and audit findings.

### Audit Results

The process described above was found to meet NBP expectations and conform to applicable requirements of the EMS Elements.

In addition, the following opportunities were noted:

- Formal Corrective and Preventive Action could be used to address incidents, complaints and near-misses in addition to noncompliances and nonconformances
- Causes of events that require formal corrective could be analyzed to determine the cause of causes and subsequent preventive action.

#### **4I. Audit - Critical Control Points & Operational Controls (Identification)**

Critical control points within the CCMUA biosolids value chain are documented in a list as part of the EMS Manual. The list also includes operational controls and environmental impacts within each value chain stage. Operations and Maintenance personnel prepared the list and review it annually.

### Audit Results

The process described above was found to meet NBP expectations and conform to applicable requirements of the EMS Elements.

In addition, the following opportunities were noted:

- The various solids storage locations (primary, secondary, WAS, thickened sludge) could be separate critical control points for clearer understanding of controls needed.
- When determining environmental impacts that require control, a risk analysis could be helpful for identifying those that are significant.

#### **4J. Audit - Document Control & Recordkeeping Process**

Documents and records requiring control are identified in the EMS Manual (listed in Section 12). Specific documents are reviewed approved by a person designated with that responsibility. O&M records are maintained on a SCADA system and other records demonstrating performance (e.g. training, corrective action requests) are maintained in individual files.

### Audit Results

The process described above was found to meet NBP expectations and conform to applicable requirements of the EMS Elements.



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### 4K. Audit - Emergency Preparedness Process

Written “Emergency Response Plan”, “Discharge Prevention Plan” and “Sludge Spill Response Plan” are used to present emergency plans and procedures, including response to situations that could present a biosolids emergency. A Hazmat Specialist (40 hour Hazwoper) is trained and all O&M personnel receive 8 hour Hazwoper training. Emergency equipment is available, including shovels on trucks and spill kits in each control room. The emergency preparedness of contracted haulers is verified through insurance coverage.

#### Audit Results

The process described above was found to meet NBP expectations and conform to applicable requirements of the EMS Elements.

### 4L. Audit - EMS Planning

The CCMUA Environmental Management System (EMS) is used to manage activities throughout the wastewater Authority, including biosolids activities. It is coordinated by the Deputy Director and managed by an EMS Team that includes representative Operations and Maintenance personnel and invited guests. The Deputy Director has extensive communications with regulators and the public and brings perspective gained to planning the EMS. That person is also the Chief Engineer and is therefore well aware of significant changes that could impact biosolids activities, such as the planned solids drying upgrades and changes in contractors. Transaction tests during the audit confirmed EMS response to plans for Dryer upgrades and to a recent change in hauling contractor.

#### Audit Results

The process described above was found to meet NBP expectations and conform to applicable requirements of the EMS Elements.

In addition, the following opportunities were noted:

- A “management of change” procedure could be helpful in planning the implementation of significant changes affecting the biosolids program

### 4M. Audit - Goals & Objectives Process

Three primary goals for the wastewater treatment Authority are stated in a Management Policy that is available on the website and communicated to employees. Objectives are developed by the EMS Management Team, with progress reportedly checked during monthly meetings. Examples of 2010 objectives include (partial list) “full compliance with regulatory requirements”, “minimize adverse impacts from odors”, “minimize cost impacts to ratepayers”, “follow NBP Code of Good Practice”.

#### Audit Results

The process described above was found to meet NBP expectations and conform to applicable requirements of the EMS Elements, except as noted below.

Minor Nonconformance JS/10-14/ 5 NBP EMS Element 5 requires biosolids objectives to be specific and measurable. 3 of 11 biosolids objectives currently in place are not presented in a measureable way.

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Minor Nonconformance JS/10-12/ 13 NBP EMS Element 13 requires that progress toward achieving biosolids goals and objectives be tracked. There is no specific record demonstrating that CCMUA is tracking progress towards some of the biosolids objectives.

### **4N. Audit - Internal Audits Process**

A plan for internal audits of the EMS is described in the CCMUA EMS Manual. An internal audit of the full EMS was completed in September 2009 and an Odor Study (audit) was conducted by an external consultant in June 2009. Action was taken in response to findings from both.

#### Audit Results

The process described above was found to meet NBP expectations and conform to applicable requirements of the EMS Elements.

### **4O. Audit - Management Involvement (incl Policy, Management Review)**

The CCMUA biosolids program is managed by the Deputy Executive Director, who also coordinates EMS activities through the management team. The main goals of the program are to maximize effluent quality, social justice (good relations with neighbors) and cost effectiveness. A Board of Commissioners Resolution (10/19/09) commits to the Code of Good Practice. Management reviews include weekly Department Head meetings and monthly EMS Team meetings.

#### Audit Results

The process described above was found to meet NBP expectations and conform to applicable requirements of the EMS Elements.

In addition, the following opportunities were noted:

- The “Management Policy” within the CCMUA EMS could be simplified for easier reference and understanding of related commitments
- Measures of performance could be developed to address how well commitments in the biosolids policy are incorporated into the biosolids program

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## APPENDICES

### Appendix 1 List of Participants

The following persons participated in this audit. Other persons provided additional explanations, as necessary.

#### CCMUA Personnel

Robert Cornforth	Director of Operations
Jack Connolly	Asst Director of Operations
Andy Kricun	Deputy Executive Director
Steve Lee	Chief Operator
Mark Lonetto	Executive Director
Tom Mount	Asst Chief Operator
Bob Murray	Asst Chief Operator
Gayle Pagano	Chief of Division of Regulatory Compliance
Laurence Rosoff	Solicitor
Jay Wilson	Truck Driver
Jeff Wilson	Coordinator of Motor Vehicles
KK Woo	Commissioner

#### Other

Stephen Boyer	Principal Environmental Specialist, NJDEP
Jim Horne	USEPA, Office of Wastewater Management
Pete Machno	National Biosolids Partnership
Helene Pierson	Executive Director, Heart of Camden
Gail Rosati	President, United Trucking
Tom Sholders	Manager of Operations, Gloucester County MUA
Phillip Will	Vice President, Kyler Environmental Services Ltd
Nancy Wittenberg	Asst Commissioner, Climate & Environmental Management, NJDEP
Oleg Zonis	DB/Guiarino Project Engineer

### Appendix 2 Documentation / Objective Evidence Reviewed

Action plans for biosolids objectives  
Budget review report April 2010  
CA response to internal audit  
Calibration records (various)  
CCMUA / Gloucester County Sludge Disposal Agreement 212/09  
CCMUA Audit application 103-22-10  
CCMUA EMS Manual  
CCMUA Pipeline Newsletter 4/22/10  
Compliance evaluation summary  
Contract CCMUA / R&D 5/17/10  
Corrective Action Forms (various) Discharge prevention plan 3/2009  
Emergency Response Plan 6/2010  
EMS reports (May, June 2010)  
EMS Sept 2009 report

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Gloucester – Control Room instructions  
Gloucester – Operational Directives (various)  
Kyler Env'l / Fisher Mine site records (various)  
Laboratory test records (various)  
Letter of Understanding – R&B Debris, United Trucking (Sept 8, 2010)  
Maintenance work orders (various)  
Memo to all employees re EMS Sept 8, 2010  
MSDS (various)  
NJDEP case 10-02-07 2/12/10  
NJDEP letter – Environmental Stewardship Program  
Odor study audit June 2009  
Organization Chart 5/10  
Primary sludge pumping SOP  
Resolution / Specification – R&B Debris 4/19/10  
Resolution R0910-126 Oct 19 09  
SOPs (various)  
Truck driver spill response plan 6/4/10  
Utility Executive Newsletter March / April 2010  
Weekly staff mtg records 5/27, 6/10/10  
Winslow – report to NJDEP 5/28/09  
Winslow effluent records  
Winslow lab logbook  
Winslow O&M Manual 1995

**END OF REPORT**