



NBP EMS 401 Workshop

Summary Report

Prepared by

UF | TREEO Center
UNIVERSITY of FLORIDA

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Seattle, Washington

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INTRODUCTION



The University of Florida Center for Training, Research and Education for Environmental Occupations (UF/TREEO), in conjunction with the National Biosolids Partnership (NBP), conducted a two-day workshop, January 23-24, 2007 in Seattle, Washington. This workshop is the auditing workshop, with a primary focus on conducting an Internal Audit. In addition, time is spent on the Status Review as well as the Verification Audit.

To improve the implementation and public acceptance of environmentally sound biosolids management practices, the NBP has developed a voluntary EMS certification program for the biosolids industry.

The 16 agencies that are currently certified include:*

- East Bay Municipal Utilities District, California
- Encina WW Authority, California
- Orange County Sanitation District, California
- City of Los Angeles Department of Public Works, California
- Metro WW Reclamation, Colorado
- Kent County Public Works Department, Delaware
- District of Columbia Water and Sewer Authority, Washington, DC
- Madison Metropolitan Sewerage District, Wisconsin
- Columbus Water Works, Georgia
- City of Lawrence Department of Utilities, Kansas
- City of Grand Rapids, Michigan
- City of Raleigh Public Utilities Department, North Carolina
- Butler County Department of Environmental Services, Ohio
- City of Albany, Oregon
- City of Fort Worth Water District, Texas
- King County Division of Wastewater Treatment, Washington

*see www.biosolids.org for details of each facility's EMS

This report is intended to highlight some key topics covered during the workshop and serve as a summary for those either unable to attend or interested in reviewing some of the workshop's key learning objectives. It is not intended to substitute for attending nor does it present all the material that was covered in the workshop.

There were 34 attendees representing 14 utilities. The list of attendees is shown in Appendix A, pages 12-13.

The instructional team consisted of Peter Machno, Project Manager, NBP EMS Project, Douglas Dean, Adjunct Instructor, UF/TREEO and William Engel, Director, UF/TREEO.

Prior to attending the workshop, students were given an assignment, which is shown in Appendix B, page 14. The completed sheets were collected by NBP.

The students were also asked to review the Minimum Conformance Requirements for each of the elements either from the latest NBP EMS Guidance Manual (March 2006) or from their NBP EMS 201 and 301 manuals.

The students were asked to introduce themselves and from the NBP EMS Workshop 401 Assignment Sheet, they were asked to give one question they would like to see answered at the workshop.

In an effort to answer these questions, the Instructional Team assembled the following panel:

Wendy Warren – Bangor, ME

Lisa Vogel – Seattle, Washington

Diane Gilbert – Los Angeles, CA

Leland Myers – Central Davis Utilities, UT

Tamara Adams – Lynden, WA

The questions the panel discussed and their responses are shown below:

1. How do we find the time?
 - Block out time for the EMS
 - Use staff meeting time
 - Use the time you have wisely
 - Go for the 'C' and not the 'A'
 - Depending on size of the plant, you may need to appoint an EMS Coordinator
 - Focus on EMS procedures and worry less about completing all SOP's before an audit. Completing SOP's can be a goal.
2. How can you deal with a change in administration?
 - At the beginning advise them that they need a succession plan
 - Document position descriptions for all positions
 - Be proactive rather than reactive
 - In your planning process look at sustainability
3. How do you bring the EMS to the plant level?
 - Use food and other motivational tools
 - Recognize that plant level should be included and actually participate in writing sections
4. How do you know when you are ready?
 - Stay in constant communication with your account executive
 - Status review is an excellent check on your status
 - Stay in touch with peers

5. How do we get buy-in?
 - Involve plant level and up through middle and top management in the development process
 - Use the other agencies who are in the program and even certified to assist in these efforts
6. Why should we raise the profile?
 - Be proactive and reactive
 - Use other certified agencies as a resource
7. How do we get contractor involvement?
 - Include EMS in the scope of the contract
 - Say what you do and do what you say

There are additional questions in Appendix C, page 16 that were answered during the course.

There is a diagram in Appendix D, page 17 that Doug generated in order to show the relationship between the elements and also clarify where they fall in the development process.

WORKSHOP STRUCTURE

The agenda for the workshop is shown in Appendix E, pages 18-19. The workshop was designed to maximize attendee participation. This was accomplished by having several hands-on exercises such as Transaction Testing, review of specific Key Outcomes and Element Checklists, analyzing Audit Evidence, conducting an Audit of Madison Wisconsin Goals and Objectives.

There were two case study presentations, the first, by Diane Gilbert from Los Angeles and the second by Leland Meyers from Utah. Diane gave a very comprehensive presentation on the Internal Audit Procedure. She provided examples and references. The students were encouraged to visit the Los Angeles website, which can be accessed through the NBP website.

Leland Meyers provided some comic relief as part of his presentation on the quality of the new NBP Small Agency Manual and templates. Both presentations drew questions and praise from the class.

OBJECTIVES AND EXPECTATIONS

The instructional team developed the following objectives for the workshop. The intent was for the participants to be able to accomplish these objectives over the two-day training period.

Attendees will be able to:

- Identify where their facility is on the EMS NBP Timeline
- Describe the difference between Status Review, Internal Audit and Verification Audit
- Describe why audits are important
- Identify the steps in preparing for an audit
- Identify steps in conducting an audit
- Identify the steps to perform after the audit
- Describe how to prepare for the Verification Audit

EMS WORKSHOP

The workshop started with a review of the EMS NBP timeline, which is shown on the following pages. The participants identified where they were on the timeline. A big picture overview was presented covering the Status Review, Internal Audit and Verification Audit.

An approach to auditing was presented. It covered:

- Key areas of focus and interpretation
- Process
- Scope
- Schedule
- Team selection
- Methodology

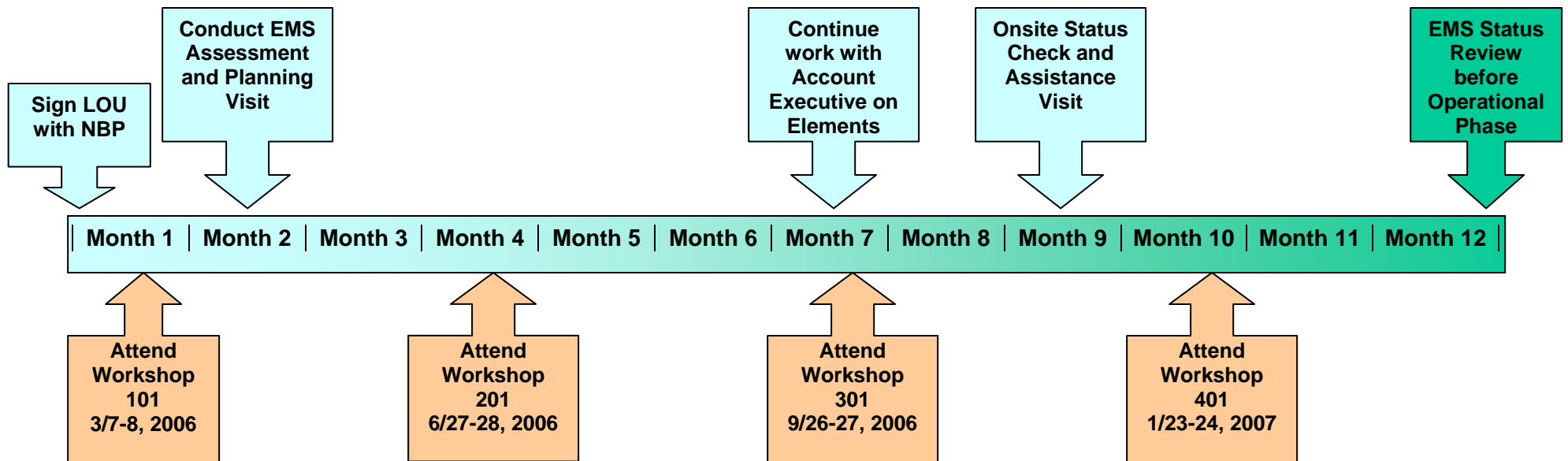
Following this was an exercise on Transaction Testing. Please see Appendix F pages 20-25 for specifics on this exercise and the results of the five triggering events.

Key Areas of Evaluation

- Policy
- Quality Management Practices
- Continual Improvement
- Compliance
- Public Participation and Communication
- Roles and Responsibilities
- Documentation, Document Control and Record Keeping
- Management Review

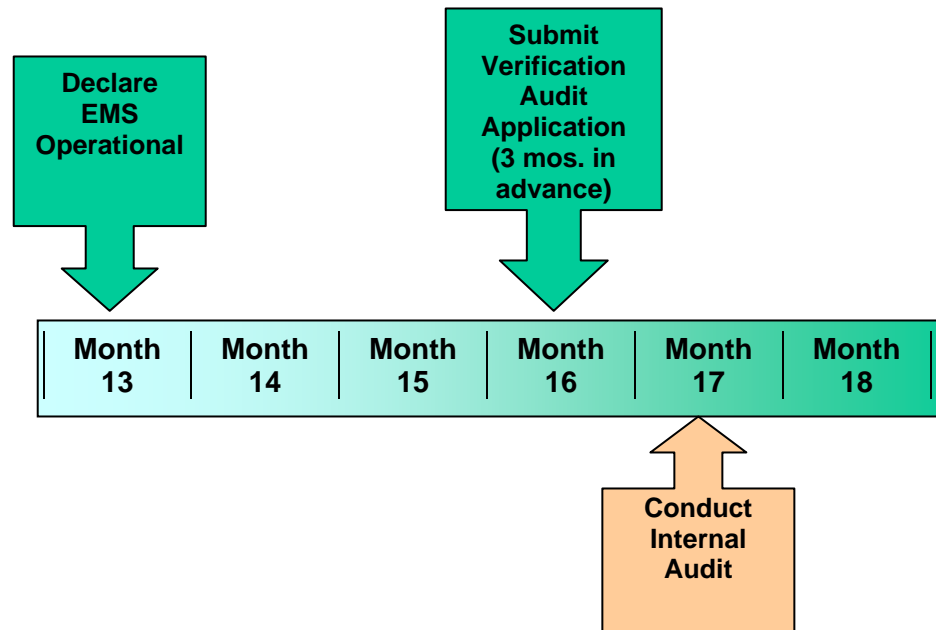


NBP EMS Development Steps (12 Months) Tier 1

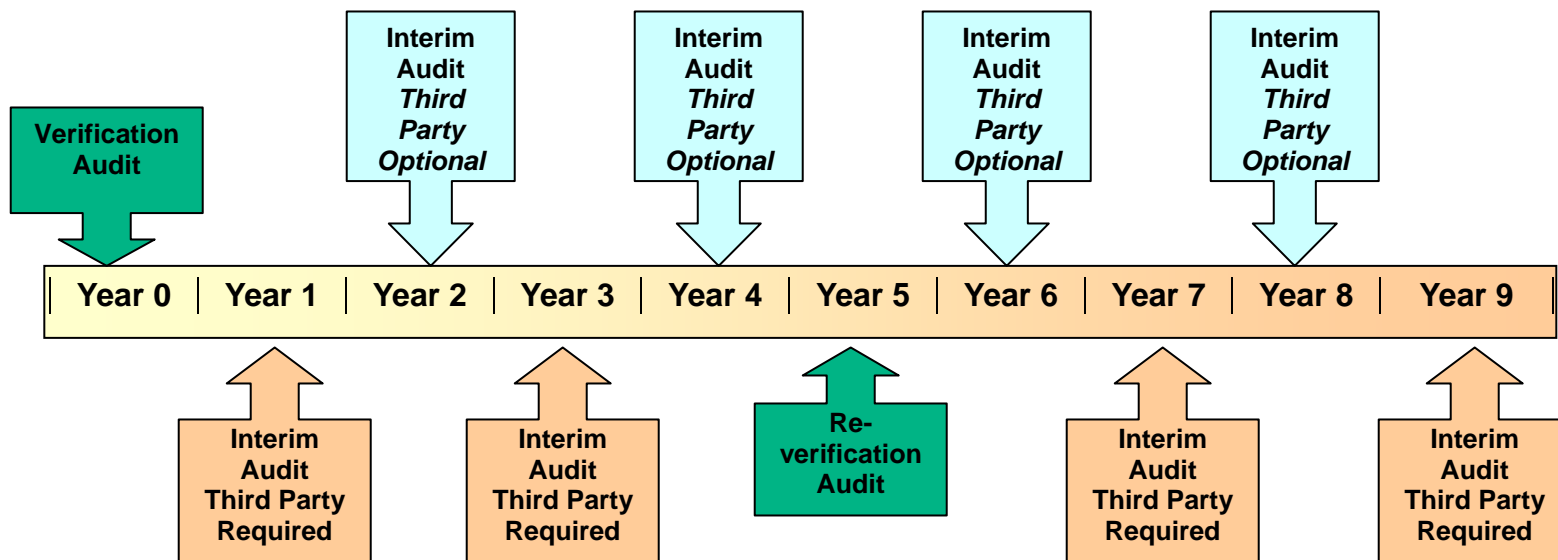




NBP EMS Operational Phase (Approx. 6 Months) Tier 2



Verification and Interim Audit Schedule Steps – Tiers 3 and 4



Check-lists for each of the Key Areas of Evaluation covering specific questions, scenarios, records needed etc. were prepared and included in their course manual

An example of the Policy and Quality Management Practices check-lists are shown as Appendix G pages 26-30.

The students reviewed the checklist and related them to their own facilities and commented on the types of questions they would use.

EMS Auditor Qualifications

There was extensive discussion on the roles and responsibilities of the auditor and auditee. There were also examples provided of analyzing audit evidence. Please see Appendix H, pages 31-32 for the exercise in analyzing audit evidence (i.e. spotting EMS deficiencies). The class results follow the description.

Audit Planning

The three stages of the audit, planning, conducting and post-audit activities were covered in detail. The design of an auditor checklist was covered. To support this discussion an exercise utilizing the Madison, Wisconsin Element 5 – Goals and Objectives was used. The students were asked to find a statement/requirement to test. Next they wrote evidence to look for on-site to document or verify that they are doing what they say in the procedure. See Appendix I page 33.

3rd Party EMS Audit

Pete Machno provided the details of where the agencies go from here. All the specifics regarding the 3rd Party Audit, the relationship of the NBP to the auditor as well as the relationship of NBP to the agencies was covered.

Congratulations to all agencies and best of luck as they pursue certification.

SUMMARY AND RECOMMENDATIONS

Participants are invited to share their thoughts and comments both during and after the workshop. This feedback is part of the continual improvement process of presenting training courses. The instructional team makes every effort to incorporate suggestions in future training courses.

Input was received in an open forum after day one, Appendix J, page 34. At the conclusion of the class, written evaluations were collected and summarized. (Appendix K, pages 35-36)

As a result of review of the evaluations, having discussions with NBP personnel and the instructional team, the following recommendations are being made.

- Continue to have Certified utilities make presentations
- Consider reviewing NBP EMS 101-401 courses in light of the number of courses that have been offered. This is part of the continual improvement process.

Appendix A: Attendees list

NBP EMS 401 - Seattle, WA - January 23 – 24th

Julie Adams
King County Wastewater Division
201 S. Jackson
MS-KSC-DNR-0512
Seattle, WA 98104

Tamara Adams
City of Lynden
325 Front Street
Lynden, WA 98264

Debbie Allen
City of Sedro Woolley
720 Murdock Street
Sedro Woolley, WA 98284

Greg Bradley
Olympus Terrace Sewer District
P.O. Box 91
Mukilteo, WA 98275

Gil Bridges
Olympus Terrace Sewer District
P.O. Box 91
Mukilteo, WA 98275

Alice Canella
City of Chattanooga
485 Moccasin Bend Road
Chattanooga, TN 37405

Mike Coster
City of Spokane
4401 A.L. White Parkway
Spokane, WA 98205

Chris Davies
City of Lewiston
1132 F. Street
Lewiston, ID 83501

Mark Fitzwater
City of Helena
2108 Custer Avenue
Helena, MT 59602

Andy Kricun
Camden County
Municipal Utilities Authority
1645 Ferry Avenue
Camden, NJ 08104

Katherine McKee
King County, MS-KSC-NR-0505
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Seattle, WA 98104

Leland Myers
Central Davis Sewer District
2200 South Sunset Drive
Kaysville, UT 84037

Jim Oja
Larch Correction Center
18601 NE Lucia Falls Road
Yacolt, WA 98675

Peggy Rice
King County
130 Nickerson Street, STE 200
Seattle, WA 98109

Jack Sellman
Upper Occoquan Sewage Authority
14631 Compton Road
Centreville, VA 20121

Katherine Willis
City of Lynden
325 Front Street
Lynden, WA 98264

Scott Drennen
King County
1200 Monster Road
Renton, VA 98058

Lisa Vogel
King County Wastewater Treatment
District
201 South Jackson Street
KSC-NR-0512
Seattle, WA 98104

Diane Gilbert Jones
City of LA
1200 Vista del Mar
Playa de Ray, CA 90293

Derrick Lee
City of LA
1200 Vista del Mar
Playa de Ray, CA 90293

Susan Holmes
Central Davis
2200 South Sunset Drive
Kaysville, UT 84037

Jill Houston
Central Davis
2200 South Sunset Drive
Kaysville, UT 84037

Steven Huizinga
City of Sedro Woolley
720 Murdock Street
Sedro Woolley, WA 98284

Barbara Jackson
City of Richmond
11100 Brender Street
Richmond, VA 23223

Nahide Gulensoy
CH2M Hill
1100 112th Avenue, NE
Suite 200
Bellevue, WA 98004

Roberta King
King County Wastewater Treatment
District
201 South Jackson Street
KSC-NR-0512
Seattle, WA 98104

Wendy Warren & Brad Moore
City of Bangor Maine
73 Harlow Street
Bangor, ME 04401

WA Regulators
Marietta Sharp, EPA Regulator
State of Washington
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Bellevue, WA 98008

Dick Hetherington
EPA Region 10
1200 6th Avenue
OWW130 (Oscar WW13 ZERO)
Seattle, WA 98101

Staff

Dr. Bill Engel
Doug Dean
Paul Burnet
Dr. Pete Machno
Nick Bardis



Appendix B:

NBP EMS Workshop 401 - Assignment

Instructions

In preparation for the 401 workshop please complete the following assignment. If you have any questions please contact your account executive, Peter Machno (petem@prodigy.net) or Lori Stone (lori.stone@adelphia.net).

Assignment

EMS Status/Progress

1. Which elements have you completed so far? _____
2. What seems to be your most difficult challenge to EMS development progress? _____

3. **When** was the last time you worked/interacted with your Account Executive? Was it helpful? Do you have any recommendations for improvement? _____

4. **When** is your projected date for EMS completion? Once you complete your draft manual, your Account Executive will schedule your EMS Status Review, after which you can begin your operational phase. _____

Biosolids Quality/Critical Control Points

5. Have you had any difficulties with producing consistent quality biosolids, and managing your process/critical control points? If yes, please explain. _____

Relations with Interested Parties

6. **Who** is your state regulator responsible for your biosolids management operations? **When** was the last time you spoke with him/her? _____

Workshop 401 Preparation

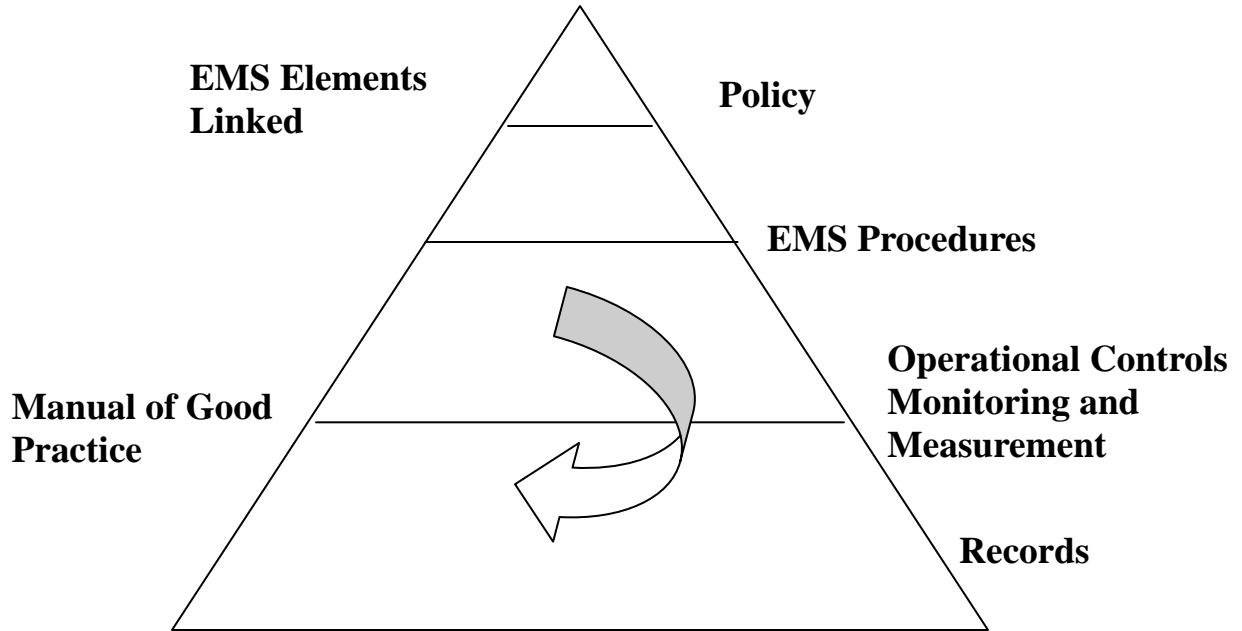
7. Since you are getting ready for your status review, please download the NBP EMS Status Review Protocol from the NBP website. Review this protocol prior to the workshop. Also, since the 401 workshop places heavy emphasis on internal auditing, it would benefit you if you reviewed the Minimum Conformance Requirements for each of the elements either from the latest NBP EMS Guidance Manual (March 2006) or from your NBP EMS 201 and 301 manuals. List 3 specific questions that you would like answered at Workshop 401. _____

Appendix C:

Additional Panel Discussion Questions

- How do you get contractor involved? *
- How do you find time? IIIIII
- How do you maintain administrative continuity? III
- Learn about audit program ?
- Learn about EMS in general? II *
- Can we have reasonable auditors?
- How to bring home to plant level? *
- Why do we need so many audits?
- When do you know you are ready? *
- CH2M Hill- How can we help best over 2 months?
- How do we get BUY-IN? *
- Why should we raise profile? *

Appendix D:



Appendix E:

National Biosolids Partnership
Environmental Management System (EMS) Workshop
EMS 401, January 23-24, 2007
Seattle, Washington

AGENDA

Tuesday January 23, 2007

7:00 – 8:00 am	Breakfast – Networking Opportunity
8:00 – 8:15 am	Welcome and Introduction (Machno, Engel)
8:15 – 10:00 am	EMS 401 Workshop Objectives (Engel& Machno) Section 1 Where are we now? Workshop Overview EMS Status Review EMS Internal Audit EMS Verification Audit
10:00 – 10:15 am	Break
10:15 – 11:30 am	Audit Guidance Manual Auditing Approach, Framework and Methodology, Key areas of Focus and Interpretation, Process, Scope, Schedule, Team, Methodology (re: Transaction Testing) (Dean) Section 2
11:30 – 1:00 pm	Lunch
1:00 – 1:30 pm	Exercise – Transaction Testing
1:30 – 2:00 pm	Relationship of NBP Four Key Outcomes to The EMS Elements (Engel) Section 3
2:00 – 3:00 pm	Elements 1-10 Minimum Conformance Requirements Key Areas of Interpretation (Dean) Section 4

3:00 – 3:15 pm	Break
3:15 – 4:15 pm	Elements 11-17 Minimum Conformance Requirements Key Areas of Interpretation (Dean) Section 5
4:15 – 4:30 pm	Review of Day 1 (Engel and Machno)

Wednesday January 24, 2007

7:00 – 8:00 am	Breakfast – Networking opportunity
8:00 – 10:00 am	EMS Auditor Qualifications Auditor/Auditee Roles and Responsibilities Analyzing Audit Evidence (Dean) Section 6
10:00 – 10:15 am	Break
10:15 – 11:00 am	An Internal Audit Case Study – Diane Gilbert, Los Angeles
11:00 – 11:30 am	NBP Small Agency Documents – Leland Myers, Central Davis, Utah
11:30 – 1:00 pm	Lunch
1:00 – 2:15 pm	Audit Planning, Creating an Audit Checklist, Conducting the Audit (Dean) Section 7
2:15 – 3:00 pm	3 rd Party EMS Audit (Machno) Section 8
3:00 – 3:15 pm	Break
3:15 – 4:00 pm	Post Audit Activities (Dean) Section 9
4:00 pm	Adjourn

Appendix F:

TRANSACTION TESTING--EXERCISE					
<i>Pick one of the “triggering” changes listed in the shaded areas. Then check off what NBP EMS elements you think might require action based on the change, and describe the actions that need to be taken as a result of the change.</i>					
TRIGGERING EVENTS					
1. Personnel Change	The Plant Supervisor who had supported the EMS leaves. A new Supervisor is hired that has very little EMS background.				
2. Contractor Change	A new Contractor is hired. Your service agreement specifies that the Contractor is required to have EMS awareness training, an emergency response program, and public participation program. You have no knowledge of what they are doing.				
3. New Regulation	Your County has passed a new law restricting routes of transport and areas in County where biosolids can be applied.				
4. Equipment/Process Change	A new drying process and new equipment has been added to produce Class AA biosolids.				
5. Spill/Accidental Release	A biosolids spill occurs along a public highway, resulting in a traffic delay of three hours and negative press in the newspaper.				
NBP EMS ELEMENT		ACTIONS TAKEN/DOCUMENTATION PRODUCED			
<i>EMS Manual</i>	✓				
<i>Policy</i>					
<i>Critical Control Points</i>		✓	✓	✓	✓
<i>Legal/Other Requirements</i>			✓	✓	✓
<i>Goals and Objectives</i>			✓	✓	✓
<i>Public Participation/Planning</i>		✓	✓	✓	
<i>Roles and Responsibilities</i>	✓	✓		✓	
<i>Training</i>	✓	✓	✓	✓	✓
<i>Communication</i>	✓		✓	✓	✓
<i>Operational Controls</i>			✓	✓	
<i>Emergency Preparedness</i>		✓	✓		✓
<i>Documentation/Control</i>	✓	✓	✓	✓	
<i>Monitoring/Measurement</i>		✓	✓	✓	✓
<i>Corrective/Preventive Action</i>			✓		✓
<i>Biosolids Management Report</i>				✓	
<i>EMS Audit</i>					
<i>Management Review</i>					
	1	2	3	4	5

Triggering Event	Personnel Change
Changes to Elements	
EMS Manual	
Policy	Communicated. If signature, obtain.
Critical Control Points	
Legal/Other	Communicated
Goals/Objectives	Communicated
Public Participation/Planning	
Roles/Responsibilities	Communicated; change names as appropriate.
Training	Training required; awareness; Policy communicated. Record of training.
Communication	
Operational Controls	Communicated; assigned.
Emergency Response	Communicated; assigned.
Documentation/Control	Communicated; assigned.
Monitoring/Measurement	
Corrective/Preventive Action	
Biosolids Management Report	
EMS Audit	Given auditor responsibility; trained; record.
Management Review	Made aware of review.

Triggering Event	Contractor Change: Have little knowledge of what they are doing with EMS; meet requirements.
Changes to Elements	
EMS Manual	
Policy	Communicate; require them to conform.
Critical Control Points	Update CCP if needed; notify NBP of changes.
Legal/Other	Review legal.
Goals/Objectives	Assign them if any apply to Contractors.
Public Participation/Planning	Communicate to public routes, if pertinent.
Roles/Responsibilities	
Training	Training required for all elements; record.
Communication	Make aware of communication requirements.
Operational Controls	
Emergency Response	Training; require adherence of SOP.
Documentation/Control	
Monitoring/Measurement	Verify SOPs followed.
Corrective/Preventive Action	
Biosolids Management Report	
EMS Audit	Eventually audit.
Management Review	

Triggering Event	New Regulation
Changes to Elements	
EMS Manual	Changes to meet new rules.
Policy	
Critical Control Points	Change CCPs.
Legal/Other	Incorporate new rule.
Goals/Objectives	Might be required to change or new ones.
Public Participation/Planning	Make public aware of new law; communicate along routes.
Roles/Responsibilities	Some changes may be required.
Training	Train haulers and others in new rules.
Communication	Communicate internally/externally.
Operational Controls	Change OCs to meet new CCPs. Might change site selection criteria OC. Also review SOPs for locational changes (maps, etc.).
Emergency Response	May change due to new routes.
Documentation/Control	May change to reflect new EMS changes.
Monitoring/Measurement	Compliance review.
Corrective/Preventive Action	Perhaps.
Biosolids Management Report	
EMS Audit	
Management Review	Report changes to management.

Triggering Event	Equipment Change
Changes to Elements	
EMS Manual	Review/change process description.
Policy	
Critical Control Points	Change.
Legal/Other	Improve to Class A requirements.
Goals/Objectives	Update to reflect process change.
Public Participation/Planning	Report improvements to public.
Roles/Responsibilities	New assignments, educate; delegate new roles.
Training	Training in new process; SOPs.
Communication	Update internal networks; external awareness.
Operational Controls	Change to address CCP changes.
Emergency Response	Review hazards; SOPs as needed.
Documentation/Control	New documents; revisions; new records.
Monitoring/Measurement	MSDS; safety items; review linked process controls.
Corrective/Preventive Action	
Biosolids Management Report	
EMS Audit	
Management Review	

Triggering Event	Spill/Release
Changes to Elements	
EMS Manual	Review all manual elements pertaining to spill.
Policy	
Critical Control Points	
Legal/Other	Was it handled correctly?
Goals/Objectives	
Public Participation/Planning	
Roles/Responsibilities	Review how they were carried out—done right?
Training	Did training support incident? Adequate?
Communication	Were contacts/notifications adequate?
Operational Controls	SOP to handle spill adequate?
Emergency Response	Review Plan after spill.
Documentation/Control	
Monitoring/Measurement	
Corrective/Preventive Action	How to prevent in the future
Biosolids Management Report	
EMS Audit	
Management Review	Reported to management

Appendix G:
Policy and Outcomes

Function	Big Picture	Specific Questions / Scenarios	Document reviews	Interviewees	Interview Questions	Observations
Policy	<p>Organization is committed to principles of conduct consistent with the NBP Code of Good Practice</p> <p>EMS supports the organization in improving performance in the four key outcome areas</p> <ul style="list-style-type: none"> Quality Management Practices 	<p>Does the agency have a policy that explicitly or by reference commits the organization to following the principles of conduct of the NBP Code of Good Practice?</p> <p>Is the biosolids policy approved by sufficient level of authority in the organization?</p>	EMS policy statement	<p>Management</p> <p>EMS coordinator</p>	What policy does your agency have regarding its EMS? How does it compare with the NBP code of good practice?	
	<ul style="list-style-type: none"> Relations with Interested Parties Regulatory Compliance Environmental Performance <p>Policy is communicated to employees, contractors, and all interested parties</p>	<p>Does the EMS support improvement in the four outcome areas</p> <ul style="list-style-type: none"> Quality Management Practices Relations with Interested Parties Regulatory Compliance Environmental Performance 		<p>Management</p> <p>EMS Coordinator</p>	<p>How is the EMS supporting performance improvement in the following areas? Are there any specific examples?</p> <ul style="list-style-type: none"> Quality Management Practices Relations with Interested Parties Regulatory Compliance Environmental Performance 	
	<p>Policy is incorporated into biosolids</p>	<p>Communicated to employees, contractors, and interested parties</p>	<p>Records of meeting notes, emails, other communications showing policy was communicated</p>	EMS coordinator	How was the policy communicated?	<p>Posters with code, postings on bulletin boards, other</p>

programs, procedures, and practices Policy objectives are supported by the EMS	What is the general level of awareness of the EMS and the principles of conduct as defined in the policy		Top Management Staff with relevant responsibilities throughout the Biosolids Value Chain Operators	What are some of the issues addressed by the policy? Describe your role in helping the organization operate according to the principle of conduct as stated in the policy.	
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Function	Big Picture	Specific Questions / Scenarios	Document reviews	Interviewees	Interview Questions	Observations
		Are the principles of conduct in the policy apparent in and incorporated into the organizations biosolids program, procedures, and practices? Example – is the organization committed to 100% beneficial reuse? If so, is this commitment reflected in day-to-day operations?	List of EMS goals and objectives – is it possible to link goals and objectives back to specific principles in the policy?	EMS coordinator Management Staff	How is the policy carried out through the EMS: how are the principles of conduct reflected in your biosolids operation?	Observations confirming day-to-day operations are consistent with the principles of conduct as stated in the policy. Beneficial reuse example – is the organization doing what it needs to do to meet that commitment?
Contractors	Contractor is aware of EMS policy, understands principles of conduct, and applies practices consistent with the Code of Good Practice in its operations	Assess contractor awareness of the EMS and the policy Are contractor operations consistent with the principles as defined in the organizations policy?	Contract/service agreements Records, other evidence suggesting policy was communicated to contractor		Describe your role in helping the organization operate according to the principle of conduct as stated in the policy?	Assess whether contractor operations are consistent with principles of conduct as stated in the policy. Example – does policy statement commit organization to engaging all interested parties? If so does contractor support/ enable the organization in meeting this commitment?

Quality Management Practices

Function	Big Picture	Specific Questions / Scenarios	Document & Records Review	Interviewees	Interview Questions	Observations
Quality Management Practices	<p>Effective management of critical control points minimizes environmental impacts and ensures product quality and compliance</p> <p>Organization is committed to implementing best management practices</p> <p>Good housekeeping is evident</p> <p>Sustainable and accepted biosolids management practices are used or being developed</p>	<p>Has the agency identified critical control points? Are they consistent with the NMGP, throughout the biosolids value chain?</p> <p>If they aren't consistent with the NMGP, are they adequate to ensure that biosolids management activities meet legal, quality and public acceptance requirements and do not have undesirable environmental impacts?</p> <p>Are they up-to-date?</p>	<p>Document listing CCPs throughout biosolids value chain - cross referenced to operational controls and environmental impacts</p> <p>Compare list of CCPs vs NMGP – Appendix F</p>	<p>EMS Coordinator,</p> <p>Biosolids manager</p> <p>Other staff with key biosolids management roles</p>	<p>How often are CCPs reviewed? When are CCPs revised? If changes are made, what is the process used for making changes?</p> <p>Why are the identified CCPs different than those in the NMGP (if they are different)?</p> <p>If they are different, how are the identified CCPs adequate to ensure that biosolids management activities meet legal, quality and public acceptance requirements and do not have undesirable environmental impacts?</p> <p>How do you manage CCPs to ensure that the 4 outcomes are achieved?</p>	<p>Match identified CCPs with on-site operations.</p> <p>Judge whether identified CCPs are indeed sufficient to meeting four outcomes.</p> <p>Are there any activities or processes that should be identified as CCPs that aren't currently?</p>
		<p>Are environmental impacts identified?</p>	<p>Document listing CCPs throughout biosolids value chain - cross referenced to operational controls and environmental impacts</p>	<p>EMS Coordinator</p>	<p>How were impacts identified? Where are impacts documented? How often are they reviewed? Who is responsible for reviewing them?</p>	<p>Visit each CCP and assess evidence of environmental impacts</p>

Function	Big Picture	Specific Questions / Scenarios	Document & Records Review	Interviewees	Interview Questions	Observations
		Has the agency developed and implemented SOPs or other appropriate methods at all critical control points to effectively manage environmental impacts?	Document Review - OCs, SOPs	Staff and contractor staff responsible for specific CCPs	What SOPs do you have for CCPs to manage environmental impacts? - Where are they?	Practices are consistent with SOPs
		Are Operational Controls consistent with NMGP? If not, why not?	List of OCs	EMS Coordinator, Biosolids manager	Why are the identified OCs different than those in the NMGP (if they are different)?	
		Are staff procedures/work practices consistent with documented operational controls?	Document Review – OCs, SOPs	Supervisors	When changes are made in work practices or operational controls, what process is used to make sure the Ocs and SOPs stay consistent?	Compare staff or contractor work practice to documented OC at each CCP
		Are appropriate systems in place for monitoring and measurement of biosolids management activities to ensure compliance, measure performance and track progress?	Documents listing monitoring and measurement SOPs. Records of monitoring and measurement at CCPs.	Biosolids manager	How do you measure for compliance, environmental impacts or progress toward goals? How are results recorded?	Observe staff performing monitoring and measurement procedures
		Are effective preventive maintenance procedures in place at each critical control point?	Document referencing SOPs for preventive maintenance. Maintenance logs and records.	Operators Maintenance	How often do you perform maintenance on the equipment associated with this CCP? How do changes or problems with the CCP impact your preventive maintenance process?	

Function	Big Picture	Specific Questions / Scenarios	Document & Records Review	Interviewees	Interview Questions	Observations
Contractors	Contractor procedures and practices are consistent with those of agency EMS and support the agency in efforts to improve in the four key outcome areas.	Are the CCPs and operational controls that are managed by contractors clearly identified and followed?	Contracts, operating agreements, SOPs	Contractors	Do you have documentation of that identifies CCPs that contractors control? Do you have a QA/QC process related to your contractors?	
		Are contractor procedures/work practices consistent with their documented operational controls?	SOPs for contractors and subcontractors	Contractors		Contractor staff and Subcontractors
		Do contractors measure and monitor activities to assure compliance with applicable legal and other requirements, as defined by service agreements?	Contracts, operating agreements, SOPs	Contractors and subcontractors	What type of measurements or monitoring do you conduct? How is it recorded?	

Appendix H:

EXERCISE: ANALYZING AUDIT EVIDENCE (I.E., SPOTTING EMS DEFICIENCIES)

You have been asked to conduct an EMS audit of the biosolids value chain at the City of Paradise Municipal Plant. Indicate which element(s) of the NBP EMS might apply in each of the situations described below:

1. While touring the Paradise treatment facilities, you notice a sandblasting operation to remove old paint from metal railings being refurbished. The spent sandblast grit is lying on the ground and storm water from the grit pile is draining into the chlorine contact chamber. When asked, the Plant Supervisor is not aware of this situation.
2. In discussions with the Plant Supervisor, it is discovered that operators are trained in the operation of the digesters and sludge drying equipment through on-the-job training. There are no records documenting the date of training or topics covered. The basis of the training is reportedly the Plant Operation and Maintenance manuals delivered when the plant was first constructed in 1975, kept in the Plant's library.
3. Inspection of the plant's emergency response plan identifies the Public Works Director as the Emergency Coordinator responsible for implementing response measures in the event of a release. During an interview, the Director indicates that he is mainly a "figurehead" and that the lead operator of the wastewater treatment facility is actually the person who will provide "hands-on" response to a gaseous chlorine release. During an interview, the lead operator replied that he was transferred to the position about two months ago and was not aware of this assignment.
4. You are unable to identify any procedure that enables the Municipal managers to identify applicable environmental laws and regulations. The EMS Coordinator assures you that she reviews several publications and the internet each month to ensure that the Plant personnel are always aware of their legal requirements.
5. While examining a complaints file you notice several requests for information from the environmentalists concerned about the land application of biosolids. You are not able to find any correspondence or method to respond to these requests. The EMS Coordinator and Plant Supervisor are not aware of whether the utility has responded.
6. In the biosolids loading area, you notice what seems to be a good procedure to require the signature of the drivers receiving the load, as well as acknowledging the receipt of the utility's spill reporting procedures. The loading operator states that the procedure has a few "bugs" in it and is being ignored until it is revised by the EMS Coordinator.
7. A review of a folder containing corrective actions resulting from previous audits revealed several corrective actions that did not appear to be closed out. The EMS Coordinator reported that they had been closed but the forms were not signed off.

EXERCISE: ANALYZING AUDIT EVIDENCE (I.E., SPOTTING EMS DEFICIENCIES)

1. EMS awareness training, internal communication, legal and other requirements
(Although this event may not be auditable since it is outside the Value Chain. It is, however, an indicator)
2. Training, documents/records, critical control points, operational controls, roles and responsibilities
3. Communication, ERP – needs to be changed, training, roles/responsibilities
4. Legal and other requirements, roles and responsibilities, documents and document control, goals and objectives
5. Public participation, roles and responsibilities, documentation, communication, goals and objectives
6. Training, corrective action, communication, document control, roles and responsibilities
7. Internal EMS audit, roles and responsibilities, training, non-conformance and corrective action

Appendix I:

Audit Planning Exercise

Reference	Requirement:	Look For/Evidence:	Auditor Notes:
Madison Element 5 Procedure, Goals and Objectives	Page 2, says goals and strategies are supposed to be finalized by February 15 th of each year	Ask the EMS Coordinator for goals/strategies from last year. Check date (finalized by February 15). Ask how goals/strategies have been used to set existing goals and objectives.	

1. Examine website to see final goals.
 - a. Is list on website most current?
 - b. Are goals included in Biosolids Management Report ?
2. Verify computer cost accounting.
3. Where does the Metrogro manager interface for goals ?
 - a. How has employee input been documented ?
4. See action plans – Deadlines set?
 - a. How are appropriate intervals set ?
 - b. How is progress tracked ?
5. Documentation of public input ?
 - a. When, where and how.
 - b. How was this used to set goals and objectives ?
6. Ask representative employees about their knowledge of job as it relates to goals.

Appendix J:

Day 1 Comments

- Overwhelmed
- Better sense of bigger picture
- Good panel discussion
- Aware of more documents needed
- Good questions
- Good checklists

Appendix K: Course Evaluation

COURSE EVALUATION

National Biosolids Partnership

Biosolids Environmental Management System Workshop

January 2007

EMS 401

PROGRAM

1. Course content met expectations	4.50
2. Level of content was appropriate	4.55
3. Course was relevant to job needs	4.55
4. Time allocated for coverage of topics	4.05
5. Effectiveness of audio visuals	4.40
6. Usefulness of course materials/handouts	4.65
7. Accomplishment of learning objectives	4.65

PRESENTATIONS

1. Interesting	4.35
2. Responses to questions	4.80
3. Emphasis on important topics	4.87
4. Clarity of presentation	4.65
5. Enthusiasm and energy	4.80
6. Knowledge of the subject	4.90
7. Group Discussions	4.47
8. Breakout Sessions	4.29

OVERALL RATING OF COURSE

1. Course	4.65
2. Instructor(s)	4.90
3. Organization of program	4.60
4. Facility used/meeting room	4.25
5. Break functions/lunch functions	4.00
6. Hotel Accommodations	4.41

General Comments

- A. Works better when workshop is in same location
- B. Workshop provided excellent relevant information. Was very informative for this stage of the EMS program.
- C. Another good workshop that should help me progress toward NBP certification.
- D. The course was excellent. The combination of the presentation and the handbook gives the municipality all the tools needed to prepare & implement an EMS. Mr. Dean and Mr. Engel did a great job.
- E. Overwhelming
- F. Good program – well structured, patiently presented. Very good presenters.
- G. The course helped me to gain a stronger understanding of the process and expectations
- H. The training was extremely valuable. Seems that there are several different checklists that could be combined & condensed to for ease of use for internal audits.

Written Comments

Describe the most valuable portion of the course.

- A. Re: explanation of EMS; it's yours not someone else's, don't get lost in weeds.
- B. Discussion of other agencies' experiences, checklists, auditor guidance manual, other handouts.
- C. The first day round table plus the speaker giving us first hand accounts.
- D. Doug did a good job describing the audit process. Leiland's presentation was good in reinforcing the small agency template.
- E. The fold-outs that describe what the auditors will/might look for.
- F. The handbook, the sample EMS and then the clear expostulation of the concepts were excellent.
- G. Networking with others, hearing stories from certified agencies.
- H. The instructors were very helpful in moving us forward. I appreciate all their advice and encouragement.
- I. All valuable equally
- J. Certified agency discussion
- K. I feel the open discussion period was very valuable
- L. Review of elements was valuable. Reviewing Audit procedures, examples, etc.; all information valuable for EMS in other areas too!

Describe the least valuable portion of the course.

- A. Never is any
- B. All of it was valuable.
- C. None
- D. Not enough time for going over compliance checklists, it did make it confusing for determining when you are ready for an audit.
- E. Perhaps less time could have been spent on the qualifications for a 3rd party auditor as most of the attendees will be audited by such an auditor but not doing one themselves (except in the possible case of a reciprocal exchange between two agencies) This is a very minor point, the presentation was so good that it is hard to identify any potential areas for improvement. This was all I could think of.
- F. Frustration with our parent organization to provide resources to proceed with EMS involvement in a timely fashion.
- G. Listening to the continuing annoying naysayer's.