Appendix A
EMS Sample Documentation

I.   Environmental Policy

II.   Legal & Other Requirements

III.   Environmental Aspects And Impacts

IV.   Objectives and Targets

V.   Environmental Management Programs

VI.   Training

VII.   Internal & External Communication

VIII.   Document Control And Record Management

IX.   Environmental Management System (EMS) Manual

X.   Operational Control

XI.   Emergency Preparedness

XII.   Monitoring And Measurement

XIII.   EMS Internal Audit

XIV.   Nonconformance And Corrective Action

XV.   Management Review

SAMPLE EMS DOCUMENTATION

ENVIRONMENTAL POLICY

Charleston CPW – Environmental Policy
City of San Diego WWC – Environmental Policy
Kent County DPW – Environmental/Biosolids Policy

Commissioners of Public Works

4.2 - Environmental Management System – Environmental Policy Statement

The Charleston Commissioners of Public Works (CPW) is committed to the improvement of the environment for present and future generations through:

- The treatment and delivery of safe potable water.
- The collection, treatment, and proper disposal of wastewater.
- The responsible impact of its activities, products and services on the environment.
- The continual environmental improvement and the prevention of pollution.
- Compliance with all applicable federal, state, and local laws, regulations, statutes and other environmentally related requirements to which the organization subscribes.
- The establishment of environmental objectives and targets that are periodically reviewed to ensure success.
- And communication of its Environmental Management System to CPW associates and to other interested parties.

CPW will establish and maintain an Environmental Management System (EMS) that corresponds to the ISO 14001 Standard and the mission, vision, strategic business plan and core values adopted by CPW.

_____   _____
William Koopman, Jr.,   John Cook, PE,
General Manager   Assistant General Manger

_____   _____
Kin Hill, PE,   Dorothy G. Harrison,
Director of Operations   Director of Administrative Services

METROPOLITAN WASTEWATER DEPARTMENT
WASTEWATER COLLECTION DIVISION

ENVIRONMENTAL POLICY

The Wastewater Collection (WWC) Division of the City of San Diego Metropolitan Wastewater Department is committed to providing safe and effective sewer maintenance services in a responsible and pro-active manner. A central mission of the WWC Division is to prevent discharges to waters of the U.S., protect local riverine and coastal resources and public health, support Departmental strategic goals and meet regulatory agency standards at the lowest possible cost.

In fulfilling this commitment, it is the policy of the WWC Division to:

- continually improve the Division's work processes and practices, communicate its efforts to protect environmental health and public safety to interested stakeholders, and effectively manage or minimize impacts to San Diego's urban and coastal environment;

- comply with legal and regulatory requirements applicable to the Division, as well as with other voluntary standards to which we subscribe; and,

- prevent environmental pollution that may be attributable to WWC Division operations, and otherwise seek to minimize waste and impacts to natural resources.

In keeping with this policy, the WWC Division will establish and maintain an Environmental Management System that provides a framework for setting, and periodically reviewing, the WWC Division's environmental objectives and targets for each of its processes, services and/or activities.

This policy is communicated regularly to all WWC Division staff and will be made available to regulatory agencies, the general public, or other interested parties upon request.

KENT COUNTY LEVY COURT POLICY

POLICY NUMBER: E-6	PAGE 1 OF 1 PAGE(S)

SUBJECT:	Environmental/Biosolids Policy
ADOPTION DATE:	December 9, 2003
EFFECTIVE DATE:	December 9, 2003
SUPERCEDES:	N/A
SUPPLEMENTS:	N/A

The Kent County Levy Court commits to reduce the impact of its operations on the environment, by adopting the International Organization for Standardizations ((ISO) 14001 Environmental Management Systems standards, and the National Biosolids Partnership (NBP) Code of Good Practice for the wastewater collection and treatment facility operations directed by the Department of Public Works. In addition, the Levy Court requires all Public Works contractors employed at the covered facilities to abide by this policy.

The Levy Court commits to:

• Comply with all applicable environmental laws and regulatory requirements, to the NBP Code of Good Practice and any other requirements to which the organization subscribes;
• Have an environmental and biosolids vision and mission, then develop/achieve the objectives and targets to implement this mission;
• Improve continuously, through the EMS, management of our environment, our wastewater effluent and our biosolids product;
• Readily share our wastewater operations and biosolids information with interested stakeholders; and
• Practice daily pollution prevention activities.

This policy is communicated to all Kent County employees and the general public.

DRAFTED BY:	Kent County Department of Public Works Environmental Management Systems Core Team
REVIEWED BY:	Global Environmental and Technology Foundation for the US EPA and the Sewer Advisory Board
DATE SUBMITTED:	December 9, 2003

SAMPLE EMS DOCUMENTATION

LEGAL AND OTHER REQUIREMENTS

Charleston CPW – Handling of Legal Requirements Procedure
City of Gastonia WWTP – EMS/Legal and Other Requirements Review
Standard Operating Procedure
City of San Diego WWC – Regulatory Tracking and Analysis Procedure

CPW ENVIRONMENTAL MANAGEMENT SYSTEM PROCEDURE

The on-line version and secured hardcopy are the controlled documents. The secured hardcopy will be identified by an "Official Document" stamp giving date of distribution. Any and all other documents are uncontrolled. Contact the EMS Program Manager for revision level status.

Effective Date:	**October 1, 2000**	**Page 1 of 3**
Revision: 2	**Identification Number: EMS – 4.3.2**	
Title:	**Handling of Legal Requirements Procedure**	
Prepared By:	**EMS Procedures Subcommittee**	
Reviewed By:	**EMS Management Steering Committee**	
Approved By:	**William E. Koopman, Jr., General Manager**	
	John Cook PE, Assistant General Manager	
Date Approved:	**August 25, 2000**	

0.0 Requirement   ISO 14001; Sub Clause 4.3.2

1.0 Purpose

This document describes the procedure to be followed for accessing and tracking regulatory and other legal requirements.

2.0 Scope

This procedure is used to facilitate tracking of legal requirements and to assist departments in the maintenance of regulatory compliance applicable to ISO 14001 Environmental Management System activities, products, or services.

3.0 Responsibility & Authority

3.1 Sections heads and departments heads are responsible to identify and analyze environmental regulations and other legal requirements relevant to their activities, products or services and communicating this information to the associates within their section or department.

3.2 It is the responsibility of all associates to comply with the regulations.

4.0 Procedure

4.1 Determination of the Type of Regulatory Requirement to be Identified
Each department shall identify the relevant environmental laws, regulations and industry standards CPW adheres to. This may include international, federal, state, regional and local regulations. Types of regulatory requirements to be identified include environmental legislation that covers the protection of air, water, land, natural resources and humans.

4.2 Impacts
A listing of major areas of the environment impacted by the department operation; that is, air, water, soil, flora, fauna, and human (such as Risk Management) will be made. The list will also include major types of wastes or products that the operation generates or utilizes such as domestic waste, chemical waste, waste oils, hazardous waste, paper, metals, glass, and so forth.

4.3 Agency Lists
A check of agency lists will be made. If the departmental operation impacts a component of the environment or generates waste, the corresponding agency should be consulted for regulatory requirements that may apply.

4.4 Regulatory Services
A regulatory service, library, or regulatory contact (such as South Carolina Department of Health and Environmental Control) will be made to get a copy of relevant environmental regulations. All levels of government will be checked to see if there are regulatory requirements impacting departmental operations.

4.5 New Project or Change to Existing Operation
Each department shall review environmental requirements prior to the initiation of a new project or modification of an existing operation. The department head will check and coordinate with Design and Construction to ensure applicable city and county codes are identified and met.

4.6 Consulting Engineers and Contractors working on site shall be made aware of this procedure to ensure regulatory requirements are identified and met.

4.7 Organization and Tracking
A listing of regulatory summary sheets, or the regulations themselves, shall be maintained, by paper file or electronically, and updated as necessary.

Effective Date: October 1, 2000   **Page 3 of 3**
Revision: 2   **Identification Number: EMS – 4.3.2**
Title: **Handling of Legal Requirements Procedure**

4.8 Each department shall maintain a listing of regulatory requirements, including detailed summary sheets, or the regulations themselves. This listing may be maintained, by paper file or electronically or both and updated as necessary and at least annually. Regulatory listings or summaries should be posted electronically or made easily accessible to other departments.

5.0   Related Documentation

     5.1   Regulations
     5.2   Laws and Acts
     5.3   Regulatory Self Assessment Reports
     5.4   Permits and Permit Applications

EMS/Legal and Other Requirements Review
Standard Operating Procedure

1.0 Purpose

1.1 The following procedure covers various requirements for reviewing areas of the Environmental Management System (EMS). This procedure also provides a process for identifying, reviewing, and maintaining the legal and other requirements documents. Designated levels of management for each area of the EMS will complete the reviews.

2.0 Associated Equipment

2.1 None

3.0 Associated Reference Material

3.1 *ANSI/ISO 14001-1996 Environmental Management Systems – specifications with guidance for use.*

3.2 *City of Gastonia – Environmental Management System Manual (EMS-0100.000)*

3.3 *Legal and Other Requirements document (EMS-0102.001)*

3.4 *National Biosolids Partnership (NBP) EMS Guidance Manual March,2001*

4.0 Procedure

4.1 <u>EMS Manual</u>

4.1.1 The EMS Team will review the EMS Manual, which includes a review of the EMS policy, annually. See EMS Legal and Other Requirements document (EMS-0102.001) reporting section for more specific scheduling. Any required revisions will be reported to the POTW Director for approval and the EMS Coordinator, or designee, will make the appropriate changes.

4.1.2 Any proposed changes to the EMS policy will be reviewed and approved by the City Council as deemed necessary by the Management Review Board (MRB).

4.2 <u>Aspects and Impacts</u>

4.2.1 A review of the aspects and impacts and significance will be conducted annually for existing and new operations. Also, at any time during the year that a process is added or modified. See EMS Legal and Other Requirements document (EMS-0102.001) reporting section for more specific scheduling. Any changes to the current significance list will be updated by the EMS Coordinator, or designee.

4.3 Emergency response plans

4.3.1 A review of the emergency response plans will be conducted semi-annually. See EMS Legal and Other Requirements document (EMS-0102.001) reporting section for more specific scheduling. Any changes will be reported to Division Supervisor for approval. The Division Safety Supervisor will make the approved changes to the plans and forward to the EMS Coordinator, or designee. The EMS Coordinator, or designee, will update the computer network and issue controlled copies using the appropriate distribution lists.

4.4 Quarterly MRB report review

4.4.1 At least quarterly, the MRB will review compliance reports, EMS Improvement Program progress reports, EMS audit results, and any documented corrective actions reports. Any changes to the EMS as a result of these reviews will be approved by the EMS Coordinator.

4.4.2 The MRB will review monthly compliance with existing regulations and the suitability and adequacy of the EMS.

4.4.3 The legal and other requirements for the current quarter being reviewed and the up-coming quarter will be discussed at the quarterly MRB meeting.

4.5 Legal and Other Requirements

4.5.1 At least quarterly, persons listed in the Legal and Other Requirements document (EMS-0102.001) as the responsible party will review the existing legal and other requirements for their area and identify any new or modified items. They are responsible for reporting this information to the EMS Coordinator, or designee, for updating the Legal and Other Requirements document (EMS-0102.001).

4.5.2 This information shall include, but is not limited to, new permit dates, inspection dates, contractor information, regulatory reporting requirements, and review dates of any identified legal and other requirements currently listed.

4.5.3 After the information is updated in the Legal and Other Requirements document, designated supervision in each area will review and approve the changes and send them to the EMS Coordinator, or designee. The EMS Coordinator, or designee, will update the ISO directory and distribute controlled documents as directed by the document control matrix (EMS-0101.000).

4.6 Objectives and Targets

4.6.1 Annually, designated supervisors in each area will review the current list of significant aspects and impacts along with the current objectives and targets and establish a revised list of objectives and targets for the coming year. See EMS Legal and Other Requirements document (EMS-0102.001) reporting section for more specific scheduling.

4.6.2 Any new objectives and targets and/or revisions will be submitted to the designated supervisor in each area for review and approval. The EMS Coordinator, or designee, after receiving approved objectives and targets will enter the revisions onto ISO directory and update the EMS improvement programs.

5.0 Revision History

| Revision | | C/PAR # | Reason for Revision | Description of Revision |
Date	#			
3/17/03	5	EMS-0084	C/PAR	Added a modification history section
3/17/03	5	EMS-0116	C/PAR	Added NBP requirements as a part of the WWTD's participation in the NBP demonstration group.
3/17/03	5	Clarification of procedure and expansion		Reorganized procedure for clarification purposes and expanded it for the department.

DD-SEOP 4.3.2

REGULATORY TRACKING AND ANALYSIS

1.0   PURPOSE AND SCOPE

The purpose of this procedure is to ensure that the Wastewater Collection Division (WWC) of the Metropolitan Wastewater Department (MWWD) has access to laws, and regulations that apply to its operations.

This procedure covers laws, regulations, and other requirements established at the federal, state and local levels that apply to the operations of WWC Division sections. The WWC Division takes these requirements into consideration when setting its environmental objectives and targets (Reference to DD SEOP 4.3.3, Establishment of Environmental Objectives and Targets).

2.0   DEFINITIONS

Reserved

3.0   RESPONSIBILITY AND AUTHORITY

3.1   The MWWD Environmental Monitoring and Technical Service Division (EMTSD) and Environmental Program Management Division (EPM) are two of several service providers to the WWC Division, as outlined in the Service Level Agreements (SLA). The EMTSD and EPM bear primary responsibility within the overall MWWD for tracking and maintaining updated records and reference documents for environmental laws and regulations as well as environmental permitting requirements.

3.2   WWC Division personnel, including the Deputy Director or each Section Manager will be delegated to disseminate information regarding any changes in regulations that could affect operations or administration.

4.0   PROCEDURE

General

The permitting and other legal requirements applicable to WWC Division operations are determined and routinely monitored by the numerous city organizations, including but not limited to the Metropolitan Wastewater Department Environmental Monitoring and Technical Service Division (EMTSD) Permits and Compliance Division and the Engineering and Program Management (EPM) Division.   Additional regulatory support is provided by other City Departments, regional water enforcement agencies and the U.S. EPA. Such requirements are documented in Section-specific operating permit inspection checklists prepared by the EMTSD Permits and Compliance Section Head, which are distributed to the EMR.

The EMR is responsible for coordinating the update of this information with EMTSD and EPM or in liaison with other appropriate City Departmental or resource agency staff at least once per year or whenever:

- an existing applicable environmental rule or regulation is modified;
- an existing activity, product or service is to be modified; or
- a new activity, product or service is considered.

Compliance with the requirements identified in each section-specific list is verified by or at the direction of the EMR or DD at least annually, as described in Chapter 5, Section 5.1. The EMR maintains access to copies of relevant legislation through contacts with appropriate regulatory agency representatives, libraries, information services, and/or the City Attorney's office.

As detailed in DD SEOP 4.5.4, "Environmental Management System Audits and Compliance Verification", the WWC is responsible for auditing the regulatory compliance status of the Division on a based upon a pre-determined schedule, and providing copies of appropriate inspection check sheets to the EMR, EMTSD or EPM as applicable, with comments.

Follow-up evaluations of regulated status will occur on a bi-annual basis, or will occur sooner if changes in the applicable laws and regulations are identified or significant changes in the operations of WWC Division occur.

4.1   Within MWWD, the EMTSD and EPM share specific responsibilities for tracking applicable environmental laws and regulations and identifying those related to the operations of the WWC Division. The Divisions employ a variety of techniques and information sources to regularly track, identify and evaluate applicable laws and regulations. These include, but are not limited to:

- Federal Government's Federal Register;
- commercial services and databases;
- Internet and WWC Division Intranet web sites;
- the City Attorney's office;
- information made available and provided by trade associations and membership organizations; and
- communications with federal, state and local regulatory agencies and authorities.

4.2   The EMTSD and EPM monitor these information sources on a regular basis i.e. quarterly to ensure that new regulations and issues are identified and managed in coordination with the WWC in a timely manner.

4.3   As necessary, "off-site" resources (e.g., consultants and attorneys) may be called upon to assist in evaluating applicable laws and regulations or in developing programs in response to applicable laws and regulations. Where off-site resources are used for this purpose, the EMTSD and/or EPM is responsible for coordinating the effort with appropriate WWC Division staff.

4.4   The EMTSD, EPM and Section Managers disseminate information on applicable laws and regulations (and the adherent potential impacts of the activities, processes, operations conducted by the WWC Division) to appropriate personnel. The determination of which personnel must be informed and the method for providing the information is at discretion, based on the circumstances of each situation.

4.5   The EMTSD and EPM compile and maintain copies of significant applicable environmental laws and regulations. Where copies of such laws and regulations are not maintained at the Section Head's offices, EMR will ensure that ready access is available from other sources (i.e., the other sources listed in Item 2 above).

4.6   If periodic site audits (i.e., planned environmental inspections, general environmental compliance audits, ISO 14001 environmental management system audits, etc.) or management reviews indicate or identify additional laws and regulations must be tracked and evaluated, the EMR ensures that these activities take place.

4.7   The EMR will ensure that appropriate changes are developed and implemented in cases where new environmental regulations, Division environmental policies and/or industry standards could affect the continued performance of the ISO 14001 environmental management system.)

5.0   REFERENCES

WWC Division Environmental Management Plan
        Section 3.1, Environmental Aspects
        Section 3.2, Legal Requirements
        Section 3.3, Objectives and Targets

DD-SEOP 4.3.1, Environmental Aspects and Impacts Identification

DD-SEOP 4.3.3, Establishment of Environmental Objectives, Targets and Programs

DD-SEOP 4.5.4, Environmental Management System Audits and Compliance Verification

SAMPLE EMS DOCUMENTATION

ENVIRONMENTAL ASPECTS AND IMPACTS

Kent County DPW – Determination of Significant Aspects
Kent County DPW – Significant Aspect List
Rivanna Sewer and Water Authority – Significant Aspect List

CONTENTS

1.0   PURPOSE

1.1   The purpose of this procedure is to establish the general requirements for the work process of determining the significant environmental aspects that are applicable to the Kent County Dept. of Public Works Regional Wastewater Treatment Facility.

1.2   The purpose of this work process is to establish the Kent County Dept. of Public Works specification for determining the significant environmental aspects that apply to the facility to facilitate compliance with the applicable requirements.

2.0   SCOPE

2.1   This procedure addresses the determination of significant environmental aspects applicable to the Kent County Dept. of Public Works Environmental Program.

3.0   DEFINITIONS

3.1   *Activity* – Something that occurs at the wastewater facility in order to transport wastewater, or produce clean wastewater or Kentorganite.

3.2   *Critical Control Point* – An environmental aspect that is considered critical to ensuring a quality biosolids product as required under the National Biosolids Partnership (NBP) EMS program.

3.3   *Environmental Aspect* – The element of any activity, as defined above, that interacts with the environment. An aspect is the element that causes the impact to the environment from any activity that occurs at the wastewater facility, examples, include burning fuel, used oil recycling, etc.

3.4 *Environmental Impact* – Any change to the environment, either positive or negative, wholly or partially resulting from the wastewater facility's activities. An impact is the effect of any aspect with respect to the environment. Examples include degradation of air or water quality, depletion or conservation of natural resources, etc.

3.5 *Frequency/Probability* – The number of times an environmental aspect occurs (e.g., daily, monthly, yearly, infrequently, etc.) or the likelihood of the aspect occurring (very, not very).

3.6 *Input/Output (I/O) Charts* – Diagrams used to describe activities that occur at the waste-water facility. Each diagram presents the activity, key resources needed by the activity, products and byproducts of the activity, and wastes generated by the activity.

3.7 *Significant Environmental Aspect* – An environmental aspect that the Core Team has determined to be serious enough to be included in the EMS program's objectives and targets in order to ensure that it is properly controlled.

4.0 <u>REFERENCES</u>

4.1 Kent County Dept. of Public Works Environmental Management System Program Manual

5.0 <u>REQUIREMENTS</u>

5.1 *Identifying Activities*

Each activity that occurs at the Kent County Regional Wastewater Treatment Facility shall be identified to its smallest or most manageable component in order to ensure that all potential environmental impacts are considered. The activity shall be a subset of the main activities presented in the I/O chart presented as Attachment A.

5.1.1 Each area manager shall identify all activities that occur under his/her direction. The list shall be maintained as Appendix A to this procedure.

5.1.2 Each area manager shall present the activity as a completed I/O chart and submit them to the EMS Core Team for review. All completed charts shall be presented as Appendix B to this procedure.

5.1.3 Area managers shall use operations personnel to assist in the preparation of the I/O charts for their area. As an option, each area manager shall ask all operations personnel to list five (5) activities that they routinely perform. The list shall be prepared and consolidated by the Core Team

5.2 Identifying Aspects

The EHS Core Team shall conduct a review of the I/O charts for each area and determine with consultation of the area managers and operations personnel the aspects associated with the each chart. The aspects shall be listed on the aspect table presented as Attachment C. All completed aspect tables shall be presented as Appendix C to this procedure.

5.3   Identifying Impacts

For each aspect presented on the Table included as Attachment C, an environmental impact shall be assigned. This shall be based on impacts in one of the following areas:
- Changes in air quality
- Changes in water quality
- Direct exposure to agent
- Changes in habitat
- Nuisance (including odor)
- Conserves/depletes resources
- Frequency/Probability
- Is it regulated
- Is it a critical control point

5.4   *Determining Significance*

The EMS Core team shall determine the significance of each environmental aspect by using best professional judgment with respect to the impacts associated with each aspect, assigning a value from 0-5 for each aspect (with 0 being no impact, and 5 being major impact). The value assigned for the aspect shall be the value that represents the average of all of the values determined by the Core Team for that aspect. A regulated activity will receive a rating of 5 and an unregulated activity will receive a rating of 0. A critical control point (CCP) will receive a rating of 3, while an activity that is not a CCP will receive a rating of 0. A ranking shall be prepared and presented to the Core Team by the Environmental Program Manager for all aspects evaluated in this manner. The Core Team shall meet to evaluate the final rankings of all environmental aspects, and determine which of these shall be designated "significant." The prioritized list shall be maintained as Appendix D to this procedure.

6.0   <u>RESPONSIBILITIES</u>

6.1 Determining the activities, preparing the I/O charts, and completing the environmental aspect tables shall be the responsibility of the area managers for the facility with the EMS Core Team providing quality control.

6.2 The EMS Core Team shall develop the significance criteria for all identified environmental aspects under the direction of the Environmental Program Manager, and assign the final rankings for all environmental aspects. The criteria shall be set such that no more than 6-8 aspects shall be given the ranking of "significant".

6.3 The Environmental Program Manager will publish the prioritized list of significant aspects as an appendix to this procedure and ensure that it is current.

6.4 The significant aspect list will be reevaluated yearly and compared against the list of objectives and targets to determine if new objectives and targets are required and whether the current list of significant aspects supports the current objectives and targets.

7.0 DOCUMENTS

7.1 *Related Documents*

None

8.0 RECORDS

8.1 *Required Records*

The list of activities; the list of aspects, and the priority list of aspects shall all be maintained as appendices to this procedure.

8.2 *Records Control*

All records, if required, pertaining to this procedure shall be controlled in accordance with the Environmental Management System Procedures 2-11-P02, Controlling Records, and 2-10-P02, Confidentiality.

9.0 ATTACHMENTS

9.1 *Attachment A* - Diagram of major activities associated with the wastewater facility.

9.2 *Attachment B* - Blank I/O diagram

9.3 *Attachment C* - Blank aspect table

10.0 APPENDICES

10.1 Appendix A – List of all identified activities associated with the Kent County regional wastewater treatment facility.

10.2 Appendix B – Completed I/O charts associated with the activities listed in Appendix A.

10.3 Appendix C – Aspect tables provided for each of the activities listed in Appendix A.

10.4 Appendix D – Prioritized list of aspects as determined following the significance criteria presented in Section 5.4.

11.0 <u>REVISION HISTORY</u>

Revision No.	Effective Date	Responsible Person	Description of Revision	Appv. By
0		Jim Newton	Initial Issue	

Org/Operation:
Aspects and Impacts Worksheet

Operation:

Dept/Area/Operation	Activity	Environmental Aspects	Changes Air Quality	Changes Water Quality	Direct exposure to agent	Changes Habitat	Nuisance (odor, etc.)	Depletes Natural Resource	Regulated?	Critical Control Point?	Frequency/Probability	Total Environmental Score	Significant?	Operational Control(s)
Ag Ops - Applying Kentorganite	Spreading of Kentorganite	Dust, odor, fuel, air pollution	3	1	3	2	4	3	5	3	4	28	Y	
Biosolids - Drying	Run scrubber	Air pollution, electricity, spills, leaks	4	2	1	1	3	2	5	3	5	26	Y	
Biosolids - Drying	Run boilers	Electricity, fuel, air pollution	4	1	1	1	2	3	5	3	5	25	Y	
Ag Ops - Applying Kentorganite	Spills of Kentorganite	Lime usage, fuel, solid waste, oils	4	1	5	0	5	0	5	3	1	24	Y	
Maintenance - Force Mains	Spill mitigation	Lime usage, fuel	2	3	4	3	3	3	5	0	1	24	Y	
Biosolids - Drying	Run dryers	Electricity, Dowtherm, spills, drums, leaks	4	1	2	1	1	2	5	3	5	24	Y	
Operations - Chlorine Addition	Connecting chlorine containers	Chlorine leak,	5	2	5	2	4	3	0	0	3	24	Y	
Maintenance - Pump Station	Spill mitigation	Lime usage, fuel	3	4	4	2	3	2	5	0	1	24	Y	
Operations - Air Compressors	Operating blowers	Electricity, air pollution, noise, fuel	4	4	1	1	3	5	0	0	5	23		
Operations - Laboratory	Sample Analysis	Electricity, fuel, chemicals, air pollution, solid and hazardous waste, water, paper, spills	2	3	4	0	2	3	0	3	5	22		
Maintenance - Pump Station	Emergency generator maintenance	Fuel, electricity, air pollution	4	1	1	1	3	2	5	0	3	20		
Biosolids - Dewatering	Preventive maintenance	Fuel, electricity, rags	2	1	3	2	4	2	0	3	3	20		
Maintenance - Safety	Confined Space entry	Electricity, air pollution, rags, fuel usage	3	2	4	1	4	3	0	0	3	20		
Operations - Aeration Basins	Air diffusing	Electricity, air, air pollution	4	2	0	0	2	4	0	3	5	20		
Ag Ops - Applying Kentorganite	Loading of Kentorganite	Fuel, dust, air pollution, odors, spills	3	1	2	0	4	3	0	3	4	20		
Ag Ops - Applying Kentorganite	Off loading Kentorganite	Dust, fuel, spills, air pollution	3	1	2	1	4	1	0	3	4	19		
Operations - Clarifiers	Emergency generator operations	Electricity, fuel, noise air pollution	3	1	0	0	1	1	5	3	5	19		
Operations - Sulfur Dioxide Addition	Connecting sulfur dioxide containers	Sulfur dioxide leak	3	1	4	2	3	3	0	0	3	19		

Operation:

Dept/Area/Operation	Activity	Environmental Aspects	Env. Impacts						Regulated?	Critical Control Point?	Frequency/Probability	Sig.		Operational Control(s)
			Changes Air Quality	Changes Water Quality	Direct exposure to agent	Changes Habitat	Nuisance (odor, etc.)	Depletes Natural Resource				Total Environmental Score	Significant?	
Operations - Chlorine Addition	Monitoring/controlling chlorine addition	Chlorine leak,	4	1	4	1	2	2	0	0	5	19		
Operations - Chlorine Addition	Repairing chlorine equipment	Chlorine leak,	4	1	4	2	4	2	0	0	2	19		
Maintenance - Pump Station	Pump/Motor maintenance	Electricity, spills, rags	2	1	3	0	4	2	5	0	2	19		
Operations - Inflow	Odor scrubbing	Solid waste, electricity, water, chemicals	3	0	2	0	3	1	5	0	5	19		
Operations - Sulfur Dioxide Addition	Preventive maintenance	Sulfur dioxide leak	3	1	4	2	3	2	0	0	3	18		
Operations - Sulfur Dioxide Addition	Monitoring/controlling sulfur dioxide addition	Sulfur dioxide leak	3	1	4	1	2	2	0	0	5	18		
Maintenance - Pump Station	Bar screen maintenance	Electricity, fuel, landfill of waste grease and rags, air pollution	3	1	4	1	5	1	0	0	3	18		
Biosolids - Drying	Run scrubbers	Electricity, air pollution, spills, water	3	2	0	0	1	2	5	0	5	18		
Operations - Air Compressors	Emergency generator operation	Fuel, electricity, noise	2	2	0	0	1	2	5	3	2	17		
Operations - Air Compressors	Preventive maintenance	Electricity, solid waste	1	2	0	0	1	2	5	3	3	17		
Maintenance - Force Mains	Force main cleaning	Pig material, fuel, electricity, solid waste	2	2	4	2	3	2	0	0	2	17		
Operations - Chlorine Addition	Receiving chlorine containers	Leaking chlorine,	3	1	4	2	3	2	0	0	2	17		
Maintenance - Pump Station	Wetwell maintenance	Fuel usage, grease, landfill of rags, chemical usage, air pollution	3	2	4	1	4	1	0	0	2	17		
Operations - Chlorine Addition	Cleaning chlorine contact chamber	Chlorine, solid waste, skin contact	2	1	4	1	2	1	5	0	1	17		
Maintenance - Force Mains	Hydrogen peroxide operation	Chemical usage, air pollution, spills	1	1	2	1	1	3	5	0	3	17		
Operations - Clarifiers	RAS Pumping	Water, electricity	1	4	0	0	1	2	0	3	5	16		
Maintenance - Force Mains	Gravity/lateral inspection repair	Wastewater, spills, air pollution, fuel	1	2	4	2	3	2	0	0	2	16		
Operations - Sulfur Dioxide Addition	Receiving sulfur dioxide containers	Sulfur dioxide leak	3	1	3	2	3	2	0	0	2	16		
Maintenance - Force Mains	Sewer/ vacuum truck operation	Wastewater, spills, air pollution, fuel	3	2	3	1	3	2	0	0	2	16		
Maintenance - Force Mains	Air relief valves inspection and repairs	Fuel, air pollution, grease, rags, chemicals, lime	2	1	3	1	4	2	0	0	3	16		
Maintenance - Pump Station	Air scrubber maintenance	Electricity, carbon, spills	1	1	2	1	2	1	5	0	3	16		

Operation:

Dept/Area/Operation	Activity	Environmental Aspects	Changes Air Quality	Changes Water Quality	Direct exposure to agent	Changes Habitat	Nuisance (odor, etc.)	Depletes Natural Resource	Regulated?	Critical Control Point?	Frequency/Probability	Total Environmental Score	Significant?	Operational Control(s)
Ag Ops - Building and Grounds	Herbicide application	Fuel, chemical, solid/hazardous waste, water, spills	2	2	2	3	0	1	5	0	1	16		
Operations - Aeration Basins	Preventive maintenance	Electricity, solid waste, fuel	1	1	5	0	1	1	0	3	3	15		
Maintenance - Pump Station	Process controls/SCADA	Electricity, water, rags	1	1	2	0	3	1	0	3	4	15		
Operations - Clarifiers	WAS Pumping	Water, electricity	1	3	0	0	1	2	0	3	5	15		
Pretreatment	Take samples	Spills of samples, waste paper due to chain of custody forms	0	1	1	0	0	0	5	3	5	15		
Maintenance - Pump Station	Bypass/Godwin Tanking	Spills, fuel usage, water transportation, electricity, air pollution	2	3	3	0	3	2	0	0	2	15		
Maintenance - Safety	Trench digging	Electricity, air pollution, rags, fuel usage, spills, contaminated water	2	1	4	2	3	1	0	0	2	15		
Operations - Clarifiers	Tank cleaning	Wastewater, fuel, electricity	3	3	4	0	2	2	0	0	1	15		
Biosolids - Dewatering	Run belt presses, conveyors	Electricity, water, spills, trash, belts	3	1	1	0	1	0	0	3	5	14		
Operations - Inflow	Filter screening	Solid waste, electricity, water	1	3	1	0	3	1	0	0	5	14		
Operations - Aeration Basins	Skimming floatable	Solid waste, fuel	0	3	2	0	3	1	0	0	5	14		
Pretreatment	Review Camera and Card Key Results	Fuel related to transportation to pump station sites, air pollution from vehicles	2	1	1	0	0	0	5	0	5	14		
Biosolids - Drying	Move Kentorganite	Fuel, air pollution, oil	2	1	1	1	0	1	0	3	4	13		
Biosolids - Dewatering	Dose ferric chloride	Electricity, spills, waste ferric chloride	1	1	3	0	0	0	0	3	5	13		
Biosolids - Dewatering	Convey cake to dryers	Electricity, wash down water, spills	2	1	1	0	1	0	0	3	5	13		
Operations - Grit Removal	Removal of grit	Solid waste, electricity, fuel	1	2	1	0	3	1	0	0	5	13		
Ag Ops - Fueling Operations	Filling fuel tanks	Air pollution, spills, electricity	2	1	2	1	2	2	0	0	3	13		
Pretreatment	Transport Sample	Fuel related to transportation, potential spills, air pollution from vehicles	2	1	1	0	0	0	0	3	5	12		
Biosolids - Drying	Run conveyors	Electricity, wash down water, spills	1	2	0	0	1	0	0	3	5	12		
Biosolids - Dewatering	Mix polymer and Dose biosolids	Electricity, spills, trash, waste chemicals	1	1	2	0	0	0	0	3	5	12		
Pretreatment	Issue SIU Permits	Generate paper and waste paper, electricity and ink for computers	1	0	0	1	0	1	5	3	1	12		
Operations - Grit Removal	Preventive maintenance	Solid waste, electricity	0	1	1	0	0	1	0	3	5	11		
Maintenance - Safety	Outside contractors	Electricity, fuel, spills, air pollution	1	1	2	1	3	1	0	0	2	11		
Ag Ops - Vehicle Maintenance	Service vehicles	Air pollution, rags, paper, electricity, spills, solid waste	1	1	1	0	1	3	0	0	4	11		
Ag Ops - Building and Grounds	Pesticide application	Fuel, chemicals, water, solid/hazardous waste, spills	2	2	2	3	0	1	0	0	1	11		
Operations - Inflow	Preventive maintenance	Solid waste, electricity	0	2	1	0	0	1	0	3	3	10		
Maintenance - Force Mains	Preventive maintenance	Electricity, oil and grease rags, fuel	1	1	1	1	1	1	0	0	4	10		
Operations - Inflow	Scum removal	Solid waste, electricity, water, chemicals	1	1	1	0	1	1	0	0	5	10		
Operations - Clarifiers	Flow balancing	Electricity, air pollution	1	2	0	0	1	1	0	0	5	10		
Operations - Laboratory	Sampling	Fuel, electricity	0	0	3	0	1	1	0	0	5	10		
Ag Ops - Fueling Operations	Fueling vehicles	Air pollution, spills, electricity, paper	2	1	1	0	1	2	0	0	3	10		

11/25/2003

Org/Operation:
Aspects and Impacts Worksheet

Operation:

Dept/Area/Operation	Activity	Environmental Aspects	Changes Air Quality	Changes Water Quality	Direct exposure to agent	Changes Habitat	Nuisance (odor, etc.)	Depletes Natural Resource	Regulated?	Critical Control Point?	Frequency/Probability	Total Environmental Score	Significant?	Operational Control(s)
Operations - Chlorine Addition	Preventive maintenance	Chlorine	2	0	1	1	1	1	0	0	3	9		
Administration	HVAC of Buildings	Fuel, electricity	3	1	0	0	0	2	0	0	3	9		
Operations - Sulfur Dioxide Addition	Repairing sulfur dioxide equipment	Sulfur dioxide leak	2	0	1	1	1	1	0	0	2	8		
Pretreatment	Conduct public relations	Fuel related to transportation to sites, air pollution from vehicles, waste paper, electricity and ink for computers	2	0	1	1	0	1	0	0	3	8		
Pretreatment	Sample Haulers	Fuel related to transportation, potential spills, air pollution from vehicles	2	1	1	0	0	0	0	0	4	8		
Pretreatment	Analyze Samples	Waste paper, electricity and ink for computers	1	0	0	1	0	1	0	0	5	8		
Ag Ops - Applying Kentorganite	Delivering Kentorganite	Fuel, air pollution, spills, dust	2	1	0	0	1	0	0	0	4	8		
Biosolids - Drying	Preventive maintenance	Fuel, electricity, rags	1	1	0	0	1	1	0	0	3	7		
Pretreatment	Administer Program	Waste paper, electricity and ink for computers	1	0	0	1	0	1	0	0	4	7		
Ag Ops - Applying Kentorganite	Public relations	Fuel, paper	2	0	1	0	0	0	0	0	4	7		
Ag Ops - Vehicle Maintenance	Heat shop	Air pollution, electricity, LP gas	1	0	0	0	1	2	0	0	3	7		
Pretreatment	Set up samples	Wash jars and samplers, add preservatives, potential spills of preservatives	1	2	1	0	1	0	0	0	1	6		
Maintenance - Safety	Rigging and Bracing Operations	Electricity, spills, grease, oil, rags	1	0	2	0	0	1	0	0	2	6		
Operations - Clarifiers	Preventive maintenance	Electricity, fuel, solid waste	0	2	1	0	0	1	0	0	2	6		
Maintenance - Pump Station	Preventive maintenance	Electricity, fuel, oil, grease, chemical usage, air pollution	0	0	1	0	1	1	0	0	3	6		
Ag Ops - Building and Grounds	Yard work	Fuel, solid waste, spills	0	0	0	2	0	1	0	0	3	6		
Biosolids - Dewatering	Monitoring of flow/pH	Paper	0	0	0	0	0	1	0	0	5	6		
Ag Ops - Applying Kentorganite	Weighing of Kentorganite	Fuel, air pollution, paper	1	0	0	0	1	0	0	0	4	6		
Pretreatment	Permit Haulers	Waste paper, electricity and ink for computers	1	0	0	1	0	1	0	0	2	5		
Operations - Laboratory	Preventive maintenance	Chemical usage, air pollution, spills, solid waste	0	0	1	0	0	1	0	0	3	5		
Administration	Maintaining files, etc.	Paper, electricity	0	0	0	0	0	2	0	0	3	5		
Ag Ops - Building and Grounds	Building maintenance	Fuel, electricity, solid waste, chemical usage	0	0	0	0	0	1	0	0	4	5		
Ag Ops - Fueling Operations	Spill cleanup	Air pollution, rags, paper, absorbent	1	1	1	0	1	0	0	0	1	5		
Ag Ops - Vehicle Maintenance	Change parts	Electricity, rags, paper	0	0	1	0	0	1	0	0	3	5		
Ag Ops - Building and Grounds	Snow removal	Fuel, salt/sand mixtures, spills	0	0	0	0	0	3	0	0	1	4		

RIVANNA SEWER AND WATER AUTHORITY – CHARLOTTESVILLE, VA

8.3   Sample of Environmental Aspect, Impact Identification, and Ranking

Operation: Compost Yard	Activity	Aspect	Env. Impact	Regulated?	Severity of Impact	Duration of Impact	Release to Environment (Air, Worker Exposure	Public Perception	Total	Significant?	Operational Control(s)
	Drying w/ blowers	Fuel/electricity consumption, air emissions, solid waste generation	Depletion of natural resources, degradation of air quality, landfill space	N	1	3	1	1	1	7	N	

8.4   Significant Environmental Aspects (Currently for Moores Creek Wastewater Treatment Plant)

Activity	Aspect	Environmental Impact	Operational Control(s)
Wastewater Treatment (Digestion/Flares, Thickening; Screening/grit removal, Primary treatment, clarification, grease removal; Filter press); Compost; Septage Receiving; Rivanna Pump Station Use & Maintenance	Odors	Nuisance	Odor Control Plan (Under Development)
Septage Receiving	Potential spills/Runoff/ Release	Degradation of water quality	VPDES Permit; SPCC Plan; Stormwater Discharge Permit and Pollution Prevention Plan
Pretreatment	Chemical addition	Degradation of water quality	
Chemical handling (receiving)	Potential spills	Water, soil degradation	SPCC Plan; Stormwater Discharge Permit and Pollution Prevention Plan
Wastewater Treatment/Effluent	Water release	Modification of water quality	VPDES Permit
Wastewater collection, transport, and pump (within Plant)	Possible overflows	Degradation of water and soil quality, natural resource depletion, nuisance	
Office Administration--Paper & office supplies use; Recycling; Contract management; Procurement	energy consumption, Solid waste	Landfill use, natural resource depletion	Standard contract language; Recycling Plan; Procurement Policy (all under development)

Title and Location: J:\Programs\EMS Projects\PEER Center\EMS Wastewater Handbook\WW EMS Handbook\Responses to Part 5.2\Participan Files\Sample Documents\Aspects & Impacts\RIVANNAsiglist.doc

SAMPLE EMS DOCUMENTATION

OBJECTIVES AND TARGETS

City of Gastonia WWTP Objectives and Target Procedure
City of Charleston CPW – Objectives and Targets
City of Eugene WWTP – Objectives and Targets
City of Gastonia WWTP – Objectives and Targets
Kent County DPW – Objectives and Targets
Buncombe County MSD – Objectives and Targets

Objectives and Targets
Standard Operating Procedure

1.0 Purpose

1.1 The following procedure provides guidance for the development and review of objectives and targets, and associated improvement programs for the Wastewater Treatment Division.

2.0 Associated Equipment

2.1 None

3.0 Associated Reference Material

3.1 *City of Gastonia – Environmental Management System Manual (EMS-0100.000)*

3.2 *ISO 14001 Standard: ANSI/ISO 14001-1996 Environmental Management Systems – specifications with guidance for use.*

3.3 *National Biosolids Partnership (NBP)– Elements of an Environmental Management System for Biosolids*

3.4 *Objective and Targets Improvement Plan Summary – EMS-0102.007*

3.5 *Improvement Program – EMS-0101.007A-Program ID#*

3.6 *Significant Environmental Aspects – EMS-0101.003D-year-revision#*

4.0 Procedure

4.1 The WWTD will establish and/or revise an objectives and targets list annually, by April 1st of each year, by considering at least the following information:

4.1.1 Legal and other requirements

4.1.2 Significant environmental aspects and impacts and critical control points for the current year – *EMS-0101.003D-year-revision#*

4.1.3 Prevention of pollution

4.1.4 Product Quality

4.1.5 Technological options

4.1.6 Financial, operational, and business requirements

4.1.7 NBP – Code of Good Practice

4.1.8 Good Neighbor Policy

4.1.9 Authoritative information sources on relevant topics (i.e. WEF Manuals of Practice)

4.1.10 WWTD environmental policy

4.1.11 Views of interested parties – Management Review Board quarterly reports and External communication log books

4.1.12 Progress reports on the previous years objectives and targets

4.2 Objectives and targets may also be amended at other times during the year as a result of new or revised operations, activities, and/or regulations.

4.3 When there are projects that relate to new developments and new or modified activities, products or services; the program shall be amended where relevant to ensure that environmental management applies to such projects.

4.4 Objectives and Targets may be removed from a current list by the Management Review Board (MRB) if circumstances surrounding an objective and target change during the year.

4.4.1 This removal shall take place following a review of its technological and/or economical feasibility by the Division Manager WWT and/or either of the two Assistant Managers. This change shall be documented and explained in a C/PAR.

4.5 Each Objective and Target will be assigned a unique program ID # and an Improvement Plan (EMS-0101.007A – Program ID#) will be developed.

4.5.1 This program shall include:

4.5.1.1 Designation of responsibility for achieving the objectives and targets at each relevant function and level of organization;

4.5.1.2 Means and time-frame by which they are to be achieved.

4.6 The Objective and Target Improvement Summary (EMS-0102.007) and each Improvement Plan must be approved by the Division Manager WWT and budgeting provisions made, where necessary, to accomplish the stated objectives and targets.

4.7 The EMS Coordinator, or designee, is responsible for their maintenance and facilitating their reporting to the Management Review Board (MRB).

5.0 Revision History:

Revision Date	#	C/PAR #	Reason for Revision	Description of Revision
5/20/02	1	EMS-0074	External Auditor	Removal of Deviations statement from Level II procedures
5/20/02	1	EMS-0084	C/PAR	Added a modification history section
8/7/02	2	EMS-0116	C/PAR	Incorporated in NBP requirements for element 5 and the NBP element reference for document control linkage as required in revision 5 of the document control procedure
2-13-03	3			Converted Form #: EMS-0101.007 to Reference Chart #: EMS-0102.007. **NO TRAINING REQUIRED**

**Environmental Management System
Summary of Objectives and Targets**

Prepared by: WWCD EMS Progress Team / Senior Supervisors   **Approved by/Date:** A. Williams / **Feb. 9, 2004**

Purpose/Scope: To identify and communicate environmental objectives and targets based upon consideration of CPW's analysis of operational requirements, significant environmental impacts, regulatory standards and compliance, technological options, financial resources, the views of interested parties and the strategic business plan.

Instructions: Each CPW department and/or group having been identified by the P2 Team, as having significant environmental impacts (and/or impacts which management requires departments to track), shall complete this form. This form is to be updated annually (and retained as a departmental record) and updated thereafter when modifications and/or changes occur in CPW activities, products, and/or services. Results of the activities listed below are to be reported as they occur in the departments Monthly Operating Report (MOR). **Note:** This form may be replicated on a computer or duplicated on a photocopier. The computer copy must look similar to this document and contain the same information.

Aspect Item	Specific Negative Impact *(Enter a brief description.)*	Objective & Target ID/No.	Objective	Target/Performance Indicator	Performance Record
Sewer System Overflows (Significant Aspect)	Contamination of environment	IP-2004.01 (System Cleaning Program)	Reduce the number of sewer system overflows by systematically cleaning designated mainlines.	Clean 556,200' (46,350' monthly ave.) of wastewater collection mainlines on problem and high-risk areas through the 2004-CY. (Ronald Inabinet)	WWCD Monthly Operating Report; Work Orders
Inflow & Infiltration (I & I) (Significant Aspect)	Loss of natural resources through energy use	IP-2004.02 (Closed-circuit Television Inspection Program)	Acquire system condition and critical data for proper asset management.	Perform CCTV inspections on 288,000' (24,000' monthly ave.) on the collection system through the 2004-CY. (Franklin Yates)	WWCD Monthly Operating Report; Inspection reports
Inflow & Infiltration (I & I) (Significant Aspect)	Loss of natural resources through energy use	IP-2004.03 (Mainline Rehab Program)	Rehabilitate existing mainlines to prolong their life and increase efficiency.	Rehab 8000' of wastewater collection mainlines by October 31, 2004. (Franklin Yates)	WWCD Monthly Operating Report
Inflow & Infiltration (I & I) (Significant Aspect)	Loss of natural resources through energy use	IP-2004.04 (Lateral Lining Process)	Rehabilitate laterals utilizing the Cured in Place Process (CIPP).	Rehabilitate 65 laterals using the CIPP process. Complete by Oct. 31, 2004. (Tony Coker)	WWCD Monthly Operating Report; Work orders
Inflow & Infiltration (I & I) (Significant Aspect)	Loss of natural resources through energy use	IP-2004.05 (Infrastructure Repair Program)	Repair defects in the collection system possibly contributing to inflow & infiltration (I & I).	Perform 540 (45 ave. per month) various point and service repairs for 2004-CY. (Tony Coker)	WWCD Monthly Operating Report; Work orders

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Objectives and Targets - Continuation Sheet

This sheet may be used as an attachment to the EMS Objectives and Targets form when additional space is required.
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Aspect Item	Specific Negative Impact *(Enter a brief description.)*	Objective & Target ID/No.	Objective	Target/Performance Indicator	Performance Record
Preventive Maintenance	Potential problems with equipment operation resulting in backups and SSOs	IP-2004.06 (Valve Exercising Program)	Ensure all critical valves are in good operation should an emergency occur.	Develop a valve-exercising program. Include drawings delineating valves to operate, SOI(s) & schedule(s). Establish program by May 1, 2004. (Harry McGee)	WWCD Monthly Operating Report; Associated drawings (GIS); Standard Operating Instruction(s); CityWorks scheduling via work orders
Exfiltration	Contamination of waterways	IP-2004.07 (Water Quality Assurance Program)	Identify leaks in collection system resulting in the potential contamination of waterways.	Identify locations where wastewater mains cross waterways and create a GIS map of those locations. Complete by May 1, 2004. Develop an inspection schedule and create work orders in the CMMS by October 31, 2004. (Gregory Daniels)	WWCD Monthly Operating Report; Standard Operating Instruction(s); Work Orders
Emergency Preparedness/ Response	Increased potential for damage to infrastructure, equipment and environment	IP-2004.09 (Flow Control Program)	Develop procedures for redirecting flows during emergency situations.	Develop a flow control program involving valves associated with force mains. Include drawings delineating valves to operate during specified emergencies. Finalize by July 1, 2004. (Harry McGee)	WWCD Monthly Operating Report; Associated drawings (GIS); Standard Operating Instruction(s)
Computerized Maintenance Management System (CMMS)	Potential for maintenance activities to be incomplete; loss of permanent records	IP-2004.10 (Asset Management and Evaluation Program)	Develop a system for evaluating the infrastructure for prioritizing rehabilitation initiatives.	Develop an asset management/evaluation program to include the production of reports identifying system rehabilitation priorities. Accomplish by July 1, 2004. (Chris Hendricks)	WWCD Monthly Operating Report; Standard Operating Instruction(s); Associated standard reports
Training	Lack of intellectual capitol with regard to environmental and	IP-2004.11 (Skills-based Training	Establish improved controls regarding training	Establish procedures & reports for managing the SBT Training database. Accomplish by July 1,	WWCD Monthly Operating Report; Standard Operating

Form No.: P2-4.3.3-001A (2/4/2003)
Page 1 of 1

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- Record Schedule No./Retention Period:

- Page 3 of 3

Aspect Item	Specific Negative Impact *(Enter a brief description.)*	Objective & Target ID/No.	Objective	Target/Performance Indicator	Performance Record
	operational effectiveness	Improvement Program)	management.	2004. (Susan Roberts)	Instruction(s); Standard training management reports
Operational Evaluations	Improper evaluations resulting in unqualified rehabilitation planning	IP-2004.12 (Pump Station Operational Evaluation Program)	Develop methodologies & criteria for establishing pump station rehabilitation priorities.	Develop formal, logical criteria for determining schedules for pump station rehabilitation. Complete by Aug. 1, 2004. (Harry McGee)	WWCD Monthly Operating Report; Grading Criteria Worksheet; Schedules (if needed)
Air Release Valve PM	Loss of operational & design effectiveness of force mains & pump stations; exfiltration	IP-2004.13 (Air Release Valve PM Program)	Ensure air release valves are working properly.	Establish an air release valve inspection and maintenance program. Complete by Aug. 1, 2004. (Ronald Inabinet)	WWCD Monthly Operating Report; Standard Operating Instruction(s); Inspection and PM schedule
Inflow & Infiltration (I & I) (Significant Aspect)	Loss of natural resources through energy use	IP-2004.14 (I & I Reduction Plan)	Establish a standard methodology for mitigating I & I	Develop a manual and/or SOI(s) for I & I reductions. Include a structured, comprehensive approach to I&I reduction within the document(s), and complete by Sept. 1, 2004. (Franklin Yates)	WWCD Monthly Operating Report; Standard Operating Instruction(s); I & I Manual (if necessary)
Computerized Maintenance Management System (CMMS)	Potential for maintenance activities to be incomplete; loss of permanent records	IP-2004.15 (CMMS Phase-in Project)	Encompass all aspects of operations within CMMS.	Phase-in all Technical Section operations into CityWorks CMMS program by Oct. 1, 2004. (Chris Hendricks)	WWCD Monthly Operating Report; CityWorks technical work orders

Note: Identification number IP-2004.08 was purposely not used to maintain numbering consistency with the Departmental Incentives.

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City of Eugene – Wastewater Division
Environmental Management System

2004 Objectives and Targets

Objective	Target
Reduce Consumption of Natural Resources	Improve the fuel efficiency of the Division's fleet (gasoline and diesel vehicles)
	Increase the amount of non-petroleum-based fuels by the Division's fleet
Reduce Power Consumption	Reduce annual electrical power consumption of WPCF by 5% (Baseline 2000)
	Improve the electrical efficiency of the Division's pump stations
	Reduce annual electrical power consumption of BMF (measured as kwh/dry ton biosolids produced) by 5% (Baseline 2002)
Reduce Solid Waste	Minimize quantities of non-recyclable wastes (Excluding grit truck waste and dewatering press screenings)
	Minimize recyclable wastes from solid waste disposal sent to landfill
	Reduce total solid waste (tons) by 15% based on cubic yards taken to landfill (Baseline 2002)
Improve Quality of Treated Wastewater Effluent	Reduce wastewater facility influent mercury loading by 10% (Baseline summer 2001)
Reduce use of Toxic Chemicals	Perform chemical assessment and prioritization for reduction
Reduce Air Pollution	Reduce sulfur dioxide emissions (lbs) from the engine generator by 85% (Baseline 2002)
Reduce Potable Water Use	Reduce potable water use (gallons) by 10% (Baseline 2002)

City of Gastonia — Wastewater Treatment		2003 Environmental Objectives & Targets — Improvement Plan Summary			
Corresponding Requirements: **EMS Manual:** 4.3.3 and 4.3.4 **ISO Standard:** 4.3.3 Objectives and Targets and 4.3.4 Environmental Management Programs **NBP Element:** 5 **Corresponding procedures:** EMS-0100.007 & Individual improvement programs listed below		**Document No: EMS-0102.007** **Purpose**: To establish a summary of objectives and targets for prevention of pollution and for continual environmental improvement through specific programs.	Revision#: 2 Revision Date: 10/21/03	Revised By: David Shellenbarger, Asst. Div. Manager - Compliance Approved By: Larry Cummings, Division Manager WWT Signature:	Page 1 of 1

Program # & Name	Policy / Aspect Item	Specific Negative Impacts	Objective	Target	Performance Indicator
EMS-2001-001 **Electrical Usage**	Pollution Prevention - More efficient use of electrical resources	drain on natural resources	Make incremental improvements in the efficient use of electrical energy.	Reduce electrical usage/gallon treated by 5% at each WWTP by 12/31/03	Quarterly review electrical costs at each plant during MRB.
PRE-2001-001 **Oil & Grease**	Pollution Prevention	surface water quality; public relations	Develop and implement an improved oil and grease program for the City of Gastonia	Complete public education and implement fat, oil & grease program and inspect all identified restaurants by December 2004.	Quarterly review of progress with Management during the MRB.
WWEMS-2002-001 **Biosolids Management Study**	Continual Improvement	ground water quality, legal requirements.	To perform thorough evaluation and assessment both intermediate and long term plans for the City's residuals management needs, by performing a system wide master plan study, adopting a National Biosolids Partnership EMS, and contracting professional services consultants to evaluate any remaining needs identified by first two steps.	Complete thorough evaluation and assessment of biosolids area by July 2004.	Quarterly review of progress with Management during the MRB.
WWEMS-2002-002 **Augmented Training Program**	Continual Improvement	surface water quality; ground water quality, air quality, natural resource use, state regulations	To modify current training processes to better ensure extensive knowledge of the trainers, comprehensiveness of topics trained upon and thorough review of effectiveness of training.	Identify areas for improving training in Division and provide sufficient training in identified areas to employees by June 2006.	Quarterly review of progress with Management during the MRB.
WWEMS-2002-004 **National Biosolids Partnership EMS**	Continual Improvement	ground water quality, legal requirements.	To successfully implement the National Biosolids Partnership program into our existing environmental management system and achieve certification for NBP EMS while maintaining ISO 14001 certification.	Receive outside certification of NBP EMS by February 2005.	Quarterly review of progress with Management during the MRB.
WWEMS-2002-005 **Master Plan Study**	Continual Improvement	surface water quality; ground water quality, air quality, natural resource use, state regulations	To perform a broad and thorough evaluation of the wastewater collection and treatment systems and determine what overall direction should be pursued and where improvements should be made.	Complete master plan study of wastewater system by December 2003.	Quarterly review of progress with Management during the MRB.
WWEMS-2003-003 **Disposal of Water Plant Residuals**	Polution Prevention, Improved Biosolids Quality	soil & ground water quality, state regulations	Improve the quality of biosolids generated in Gastonia's program and limit their effect on the environment through landfill disposal of water treatment plant residuals.	Arrange for dewatering and land application of water plant residuals. Begin disposal by December 31,2003	Quarterly review of progress with Management during the MRB.

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Kent County Dept. of Public Works Dover, Delaware	Title: Setting and Tracking Objectives and Targets		
	Document No.:	Date Effective:	Page:
Environmental Procedures Manual	2-04-P01	11-01-2003	1 of 6
	Prepared By:	Approved By:	Revisions No.:
Objectives and Targets	Jim Newton		0

CONTENT**S**

1.0   PURPOSE

1.1   The purpose of this procedure is to establish the general requirements for the work process of setting and tracking EMS objectives and targets based upon significant environmental aspects that are applicable to the Kent County Dept. of Public Works Regional Wastewater Treatment Facility.

1.2   The purpose of this work process is to establish the Kent County Dept. of Public Works specification for setting and tracking EMS objectives and targets that apply to the facility to facilitate compliance with the applicable requirements.

2.0   SCOPE

2.1   This procedure addresses the setting and tracking of EMS objectives and targets applicable to the Kent County Dept. of Public Works Environmental Program.

3.0   DEFINITIONS

3.1   *Activity* – Something that occurs at the wastewater facility in order to transport wastewater, produce clean wastewater or produce quality biosolids (Kentorganite).

3.2   Baseline – The starting point from which the meeting of an objective is to be measured, such as the number of kilowatt hours of electricity used to run the basin blowers for 2002.

3.3   *Objective* – An overall goal, arising from the environmental policy and the list of significant environmental aspects and critical control points, that an organization sets itself to achieve. An example would be to reduce energy consumption across the facility.

3.4   *Target* – a measurable performance requirement that arises from an objective. An example would be to reduce energy consumed by the biosolids dryers by 10% by January 2005.

Kent County Dept. of Public Works Dover, Delaware	Title: Setting and Tracking Objectives and Targets		
	Document No.:	Date Effective:	Page:
Environmental Procedures Manual	2-04-P01	11-01-2003	2 of 6
	Prepared By:	Approved By:	Revisions No.:
Objectives and Targets	Jim Newton		0

4.0 REFERENCES

4.1 Kent County Dept. of Public Works Environmental Management System Program Manual

5.0 REQUIREMENTS

5.1 *Identifying Objectives*

5.1.1. The Core Team will evaluate the list of significant environmental aspects and critical control points generated under Environmental Management System Procedure 2-04-P01 for areas of commonality.

5.1.2 A list of objectives will be prepared by the Environmental Management System Representative to address the general common significant environmental aspects and critical control points, and compared to the environmental/biosolids policy.   The objectives would be agreed to by the Core Team and posted on the Public Works website.

5.2 *Identifying Targets*

5.2.1 The Core Team will evaluate the selected objectives and determine the tasks required to meet each objective. The Core Team will assign target dates and responsible parties to ensure that the dates are met. The Core Team will communicate the selected objectives and targets with senior management to ensure that adequate resources and support is available to accomplish the required elements.

5.2.2 A table will be prepared for each objective with all target activities, dates and responsible parties listed. This table will be posted on the Public Works website and maintained by the Environmental Management System representative.

5.3 *Tracking Objectives and Targets*

5.3.1 The Core Team will evaluate each objective and compare key objective and target actual accomplishments with the planned program on a quarterly basis.

5.3.2 The Core Team will revise the objectives and targets, as necessary, to ensure that movement is continuing to be made towards completion.

5.3.3 Management will review the objectives and targets annually, and recommend changes based upon their review.

6.0   RESPONSIBILITIES

6.1   The EMS Core Team shall develop the objective and targets based upon the significant environmental aspects and critical control points developed under Environmental Management System Procedure 2-04-P01.

6.2   The Core Team shall prepare a list of target activities and determine appropriate baseline information in order to meet selected objectives.

6.3   The Environmental Management System Representative shall maintain and post the list of objectives and target activities, dates and responsible persons.

6.4   The Core Team shall conduct a quarterly progress evaluation and make modifications as necessary to selected objectives and targets.

6.5   Senior management shall conduct an annual review of selected objectives and targets, and provide necessary resources to ensure that they are met.

7.0   DOCUMENTS

7.1   *Related Documents*

None

7.2   *Document Control*

This procedure shall be controlled in accordance with the Environmental Management System Procedures 2-12-P01, Controlling Documents. Maintaining this Procedure is the responsibility of the *Environmental Program Manager* to facilitate retrievability of the documents and up-to-date information.

8.0   RECORDS

8.1   *Required Records*

The list of activities; the list of aspects, and the priority list of aspects shall all be maintained as appendices to this procedure.

8.2   *Records Control*

All records, if required, pertaining to this procedure shall be controlled in accordance with the Environmental Management System Procedures 2-11-P02, Controlling Records.

9.0   ATTACHMENTS

There are no attachments to this procedure.

10.0   APPENDICES

10.1   Appendix A – List of selected objectives and targets currently being addressed by the EMS.

11.0   REVISION HISTORY

Revision No.	Effective Date	Responsible Person	Description of Revision	Appv. By
0		Jim Newton	Initial Issue	

Appendix A

List of selected objectives and targets currently being addressed by the EMS.

2003-2004 Objectives and Targets Table

Objective	Target	Significant Aspects and CCPs Addressed	Environmental Management Program	Proposed Date	Date Completed
Reduce air pollution					
	Reduce sulfur, particulate and CO emissions by 50% from CY 2002 levels	1,2,3,6,8		June 30, 2005	
			Replace 75% of diesel usage with biodiesel in operating equipment	June 30, 2005	
			Replace emergency generator diesel fuel with biodiesel	June 1, 2004	
			Get DNREC to agree to use alternative electricity operation	December 1, 2004	
			Replace dryer diesel fuel with bio-fuel made from grease trap waste or biodiesel	June 1, 2006	
Reduce energy consumption		1,2,3,6			
	Reduce electricity usage by 20% from CY 2002 levels			December 31, 2005	
			Enroll in EPA Green Lights program	June 30, 2004	
			Get DNREC to agree to use alternative electricity operation	December 31, 2004	
			Upgrade to more energy efficient pumps, lights, etc.	December 31, 2005	
			Seek renewable energy alternatives such as wind	December 31, 2006	
Reduce or eliminate effects of chlorine and sulfur dioxide		7			
	Improve safety of existing processes or switch to an alternative disinfection method			June 30, 2009	
			Evaluate chlorine hazard potential	September 30, 2004	
			Hire consultant to look at cost effective alternatives	December 31, 2004	
			Develop plans for alternatives or ways to improve safety of current systems	June 30, 2006	
			Budget finances	November 30, 2006	
			Secure financing	July 1, 2007	
			Construct	December 31, 2008	
			Operate	June 30, 2009	
Reducing sanitary sewer overflows (a.k.a. spills)		2,4,5,8			
	Reduce SSOs by 40% form CY 2002 levels			June 30, 2005	
			Develop system to document sources of SSOs	June 30, 2004	
			Implement FOG program	December 31, 2004	
			Develop action plans to reduce or eliminates SSOs	December 31, 2004	
			Develop CMOM program	June 30, 2005	

MSD – Buncombe County
EMS Environmental 2004 Objectives & Targets

Objective	Target	Baseline	Target	Objective Owner	Legal/ Other Requirements	Significant Aspect	Technological Options	Financial, & Operational	Business Goals	Interested Parties
Sludge Handling Improvements	Install new belt filter presses, new refractory and heat exchanger by August 2004	NA	NA	John Kiviniemi	✗	✔	✔	✔	✔	✗
Research Lagoon material placement alternatives.	Restore lagoon to originally intended use and ash disposal only by December 2005	NA	NA	John Kiviniemi	✔	✔	✔	✔	✔	✔
Septage Receiving Station	Construct by December 2004	N/A	N/A	John Kiviniemi	✔	✗	✔	✔	✔	✔
Vulnerability Assessment	Complete Assessment Review by July 2004	N/A	N/A	John Kiviniemi	✔	✗	✗	✔	✔	✔

SAMPLE EMS DOCUMENTATION

ENVIRONMENTAL MANAGEMENT PROGRAMS

Charleston CPW – WWCD Improvement Plan
Charleston CPW – System Cleaning Program

**Environmental Management System
Summary of Objectives and Targets**

Prepared by: WWCD EMS Progress Team / Senior Supervisors   **Approved by/Date:** A. Williams / **Feb. 9, 2004**

Purpose/Scope: To identify and communicate environmental objectives and targets based upon consideration of CPW's analysis of operational requirements, significant environmental impacts, regulatory standards and compliance, technological options, financial resources, the views of interested parties and the strategic business plan.

Instructions: Each CPW department and/or group having been identified by the P2 Team, as having significant environmental impacts (and/or impacts which management requires departments to track), shall complete this form. This form is to be updated annually (and retained as a departmental record) and updated thereafter when modifications and/or changes occur in CPW activities, products, and/or services. Results of the activities listed below are to be reported as they occur in the departments Monthly Operating Report (MOR). **Note:** This form may be replicated on a computer or duplicated on a photocopier. The computer copy must look similar to this document and contain the same information.

Aspect Item	Specific Negative Impact (Enter a brief description.)	Objective & Target ID/No.	Objective	Target/Performance Indicator	Performance Record
Sewer System Overflows (Significant Aspect)	Contamination of environment	IP-2004.01 (System Cleaning Program)	Reduce the number of sewer system overflows by systematically cleaning designated mainlines.	Clean 556,200' (46,350' monthly ave.) of wastewater collection mainlines on problem and high-risk areas through the 2004-CY. (Ronald Inabinet)	WWCD Monthly Operating Report; Work Orders
Inflow & Infiltration (I & I) (Significant Aspect)	Loss of natural resources through energy use	IP-2004.02 (Closed-circuit Television Inspection Program)	Acquire system condition and critical data for proper asset management.	Perform CCTV inspections on 288,000' (24,000' monthly ave.) on the collection system through the 2004-CY. (Franklin Yates)	WWCD Monthly Operating Report; Inspection reports
Inflow & Infiltration (I & I) (Significant Aspect)	Loss of natural resources through energy use	IP-2004.03 (Mainline Rehab Program)	Rehabilitate existing mainlines to prolong their life and increase efficiency.	Rehab 8000' of wastewater collection mainlines by October 31, 2004. (Franklin Yates)	WWCD Monthly Operating Report
Inflow & Infiltration (I & I) (Significant Aspect)	Loss of natural resources through energy use	IP-2004.04 (Lateral Lining Process)	Rehabilitate laterals utilizing the Cured in Place Process (CIPP).	Rehabilitate 65 laterals using the CIPP process. Complete by Oct. 31, 2004. (Tony Coker)	WWCD Monthly Operating Report; Work orders
Inflow & Infiltration (I & I) (Significant Aspect)	Loss of natural resources through energy use	IP-2004.05 (Infrastructure Repair Program)	Repair defects in the collection system possibly contributing to inflow & infiltration (I & I).	Perform 540 (45 ave. per month) various point and service repairs for 2004-CY. (Tony Coker)	WWCD Monthly Operating Report; Work orders

DOCUMENT DISTRIBUTION
Controlled Original - Chairman, P2 Team
All other copies are uncontrolled.

Objectives and Targets - Continuation Sheet

This sheet may be used as an attachment to the EMS Objectives and Targets form when additional space is required.
NOTE: This form may be replicated on a computer or duplicated on a photocopier. The computer copy must look similar to this document and contain the same information.

Aspect Item	Specific Negative Impact (Enter a brief description.)	Objective & Target ID/No.	Objective	Target/Performance Indicator	Performance Record
Preventive Maintenance	Potential problems with equipment operation resulting in backups and SSOs	IP-2004.06 (Valve Exercising Program)	Ensure all critical valves are in good operation should an emergency occur.	Develop a valve-exercising program. Include drawings delineating valves to operate, SOI(s) & schedule(s). Establish program by May 1, 2004. (Harry McGee)	WWCD Monthly Operating Report; Associated drawings (GIS); Standard Operating Instruction(s); CityWorks scheduling via work orders
Exfiltration	Contamination of waterways	IP-2004.07 (Water Quality Assurance Program)	Identify leaks in collection system resulting in the potential contamination of waterways.	Identify locations where wastewater mains cross waterways and create a GIS map of those locations. Complete by May 1, 2004. Develop an inspection schedule and create work orders in the CMMS by October 31, 2004. (Gregory Daniels)	WWCD Monthly Operating Report; Standard Operating Instruction(s); Work Orders
Emergency Preparedness/ Response	Increased potential for damage to infrastructure, equipment and environment	IP-2004.09 (Flow Control Program)	Develop procedures for redirecting flows during emergency situations.	Develop a flow control program involving valves associated with force mains. Include drawings delineating valves to operate during specified emergencies. Finalize by July 1, 2004. (Harry McGee)	WWCD Monthly Operating Report; Associated drawings (GIS); Standard Operating Instruction(s)
Computerized Maintenance Management System (CMMS)	Potential for maintenance activities to be incomplete; loss of permanent records	IP-2004.10 (Asset Management and Evaluation Program)	Develop a system for evaluating the infrastructure for prioritizing rehabilitation initiatives.	Develop an asset management/evaluation program to include the production of reports identifying system rehabilitation priorities. Accomplish by July 1, 2004. (Chris Hendricks)	WWCD Monthly Operating Report; Standard Operating Instruction(s); Associated standard reports
Training	Lack of intellectual capitol with regard to environmental and	IP-2004.11 (Skills-based Training	Establish improved controls regarding training	Establish procedures & reports for managing the SBT Training database. Accomplish by July 1,	WWCD Monthly Operating Report; Standard Operating

This sheet may be used as an attachment to the EMS Objectives and Targets form when additional space is required.
NOTE: This form may be replicated on a computer or duplicated on a photocopier. The computer copy must look similar to this document and contain the same information.

- Record File/Retrieval ID (Optional):

- Record Schedule No./Retention Period:

Aspect Item	Specific Negative Impact *(Enter a brief description.)*	Objective & Target ID/No.	Objective	Target/Performance Indicator	Performance Record
	operational effectiveness	Improvement Program)	management.	2004. (Susan Roberts)	Instruction(s); Standard training management reports
Operational Evaluations	Improper evaluations resulting in unqualified rehabilitation planning	IP-2004.12 (Pump Station Operational Evaluation Program)	Develop methodologies & criteria for establishing pump station rehabilitation priorities.	Develop formal, logical criteria for determining schedules for pump station rehabilitation. Complete by Aug. 1, 2004. (Harry McGee)	WWCD Monthly Operating Report; Grading Criteria Worksheet; Schedules (if needed)
Air Release Valve PM	Loss of operational & design effectiveness of force mains & pump stations; exfiltration	IP-2004.13 (Air Release Valve PM Program)	Ensure air release valves are working properly.	Establish an air release valve inspection and maintenance program. Complete by Aug. 1, 2004. (Ronald Inabinet)	WWCD Monthly Operating Report; Standard Operating Instruction(s); Inspection and PM schedule
Inflow & Infiltration (I & I) (Significant Aspect)	Loss of natural resources through energy use	IP-2004.14 (I & I Reduction Plan)	Establish a standard methodology for mitigating I & I	Develop a manual and/or SOI(s) for I & I reductions. Include a structured, comprehensive approach to I&I reduction within the document(s), and complete by Sept. 1, 2004. (Franklin Yates)	WWCD Monthly Operating Report; Standard Operating Instruction(s); I & I Manual (if necessary)
Computerized Maintenance Management System (CMMS)	Potential for maintenance activities to be incomplete; loss of permanent records	IP-2004.15 (CMMS Phase-in Project)	Encompass all aspects of operations within CMMS.	Phase-in all Technical Section operations into CityWorks CMMS program by Oct. 1, 2004. (Chris Hendricks)	WWCD Monthly Operating Report; CityWorks technical work orders

Note: Identification number IP-2004.08 was purposely not used to maintain numbering consistency with the Departmental Incentives.

CPW EMS ID No: EMS - 4.3.3 Objectives & Targets ISO 14001, Sub Clause 4.3.3 Objectives & Targets	Revision Date: Feb. 6, 2004	Prepared By: Approved By: Signature:	Ronnie Inabinet A. Williams, Superintendent On File

Program Name: System Cleaning Program	*Pgm. No. (Obj. & Target ID): IP-2004.01* *Section: Maintenance*

1. Background / Purpose:

System cleaning is essential to the proper maintenance and operation of the wastewater collection system. Without scheduled maintenance of the collection system sediment, debris, grease, roots, solids and deposits build up and accumulate in the system. An emphasis is placed on areas that historically have experienced blockages within the system.

2. Objective / Scope:

Objective:

The objective of the WWCD System Cleaning Program is to reduce the number of Sewer System Overflows (SSO's) experienced by systematically cleaning designated mainlines.

Scope:

Cleaning is accomplished through the use of Boss and Harben cleaning units and Vac Trucks.   This equipment utilizes pressures of up to 4000 PSI to scour the pipewalls within the collection system. Various specialized nozzles are utilized during this cleaning process. These nozzles are specifically designed to accomplish certain types of cleaning, providing the most effective means to achieve the desired results.

3. Target / Timelines:

Clean 556,200 feet (monthly ave. of 46,350) of wastewater collection mainlines on problem and high-risk areas through the 2004-CY.

See associated Objective & Target Action Plan for action items, responsibilities and schedules.

4. Performance Indicator:

WWCD Monthly Operating Report
Work Orders

5. Resource Allocation:

For funds allocation, see the 2004 Wastewater Collection Department Operations & Maintenance Budget, Responsibility Number 013, Cost Center (Group Number) 3400 - Operation and Maintenance Budget.

6. Related Documents:

2004 EMS Summary of Objectives & Targets
WWCD Monthly Operating Report
Work orders

P(Hobson1):/Dept. Work/ Wastwater Shared./ISO/Objectives & Targets/2004 Objectives & Targets/2004-01 System Cleaning Prgm.doc

Form No.: WWCD F051 (01/26/04)
Page 1 of 1

SAMPLE EMS DOCUMENTATION

TRAINING

Charleston CPW – Training, Awareness and Competence Procedure
City of Gastonia WWTP – Training Procedure

CPW ENVIRONMENTAL MANAGEMENT SYSTEM PROCEDURE

The on-line version and secured hardcopy are the controlled documents. The secured hardcopy will be identified by an "Official Document" stamp giving date of distribution. Any and all other documents are uncontrolled. Contact the EMS Program Manager for revision level status.

Effective Date:	**October 1, 2000**	**Page 1 of 3**
Revision: 2	**Identification Number: EMS – 4. 4. 2**	
Title:	**Training, Awareness and Competence Procedure**	
Prepared By:	**EMS Procedures Subcommittee**	
Reviewed By:	**EMS Management Steering Committee**	
Approved By:	**William E. Koopman Jr., General Manager**	
	John Cook PE, Assistant General Manager	
Date Approved;	**August 25, 2000**	

0.0 Requirement: ISO 14001, Sub Clause 4.4.2 Training

1.0 Purpose

To identify, provide and track training that will help associates to minimize environmental impacts and increases operating efficiencies.

Scope

ISO 14001, sub clause 4.4.2, requires CPW to identify training needs and provide specific training to those associates whose work activities could cause adverse environmental impact.

3.0 Responsibility & Authority

    3.1 Each department head shall identify environmental training needs.

    3.2 The department head is responsible for maintaining environmental training requirements.

    3.3 Environmental training needs will be evaluated annually by the department.

4.0 Procedure

    4.1 Identification of Training Needs

The knowledge and skills of associates necessary for the department to achieve environmental objectives will need to be identified. Knowledge and skill levels should be considered in recruitment and personnel selection. Ongoing development of associate skills will occur through internal and external training and education programs.

4.2 Conduct of Environmental Training
Training appropriate to the achievement of environmental policies, objectives and targets will be provided to all personnel within the department. Associates should have an appropriate knowledge base, which includes training in the methods and skills required to perform their tasks in an efficient and competent fashion and knowledge of the impact their activities can have on the environment if performed incorrectly.

4.3 Legal and Other Requirements
Education and training will be performed in each department to ensure that associates have appropriate and current knowledge of regulatory requirements, environmental policy and the department's procedures and objectives. The level and detail of training will be determined according to the work assignment or task.

4.4 Training Elements
Departmental environmental training programs should have the following elements:
- Identification of associate training needs to accomplish job assignment;
- Development of a training plan to address defined needs;
- Training of target associate groups;
- Documentation of training received;
- Evaluation of training received.

NOTE: Examples of types of Environmental Training:

Environmental Policy All associates would be required to receive this training to gain an understanding and commitment to the environmental policy, objectives, and targets of CPW.

<u>Strategic Environmental Management</u> Senior management may receive this training to gain commitment and alignment of CPW's environmental policy.

<u>Skills Enhancement</u> Associates with environmental responsibilities linked to significant aspects shall be required to receive identified training to improve performance in specific areas of the department (e.g. operations, laboratory, engineering, maintenance, etc).

<u>Regulatory Compliance</u> Associates whose actions can affect environmental compliance shall be required to receive training on the appropriate regulatory and internal work instruction requirements and be made aware on the consequences of regulatory non-compliance or deviation from approved work instructions.

4.5 Adequate Resources
Adequate resources are to be made available to provide the identified training. In certain cases, training may require certified trainers, such as CDL, HAZWOPER or CPR. Environmental training will also be provided within six months of an associate's hire date. Annual refresher training will be conducted on CPW policy, and departmental objectives and targets.

4.6 Tracking the Training Hours
To document compliance with regulatory and policy requirements, training hours will be collected and tracked. The department head will compare training received with the training plan to ensure policy goals are met. Training records should include:

- Associate name,
- Job title,
- Job description,
- Training requirements,
- Total training hours by category

5.0 Related Documents and Data

5.1 Environmental Training Records
5.2 Instructor Certification Records
5.3 CPW Training Record Form

City of Gastonia / Wastewater Treatment	**Standard Operating Procedure – EMS-0100.005** **Name: Training Procedure**	**Corresponding Requirements:** ISO Standard: 4.4.2 EMS Manual: 4.4.2 NBP Element: 8
	Prepared By: Beth Eckert, Environmental / Administrative Manager	Revision Date: 3/3/03 Revision #: 6
	Approved By: Beth Eckert, Environmental / Administrative Manager Signature:	Effective Date: 11/4/99 Page 1 of 5

1.0 Purpose

1.1   The City of Gastonia Wastewater Treatment Division (WWTD) began implementing an ISO 14001 Environmental Management System (EMS) in January , 2000 and a National Biosolids Partnership EMS in July 2002. As a part of this process, the Division has identified and established documented procedures for the control and monitoring and measuring of the EMS, the significant aspects and impacts and critical control points determined by the Division, and the identified legal and other requirements, when necessary. Due to the nature of the WWT business, processes involved in the control and monitoring and measuring of most significant aspects and meeting legal and other requirements have been practiced for many years throughout the WWT facilities. Also, most staff employed by the Division have been adequately performing these tasks in the absence of documented procedures.

1.2   Management and most operations and laboratory staff have received certifications in water treatment, wastewater treatment, pretreatment, and/or laboratory work. Training at the WWT facilities has historically been done via on the job training by existing employees and supervisors. This process will not be deleted, rather, it will be supplemented by the existence of documented procedures for reference.

1.3   Once they have been formalized, documented training will be done for each employee on procedures relevant to their job duties. However, tasks required to be done in the course of treating or monitoring the wastewater will be performed as needed even in the absence of documented procedures and/or documented training.

1.4   This procedure is to establish a guide for the training of current and future personnel on the EMS and related documents and procedures.

2.0 Associated Equipment

2.1   None

3.0 Associated Documents

3.1   *Document Control Matrix for EMS System - EMS-0101.000A*

3.2   *Document Control Matrix for Crowders Operations - WCR-0101.000A*

3.3 *Document Control Matrix for Crowders Laboratory - WCR-0101.100A*

3.4 *Document Control Matrix for Long Creek Operations - WLC-0101.000A*

3.5 *Document Control Matrix for Long Creek Laboratory - WLC-0101.100A*

3.6 *Document Control Matrix for Pretreatment - WPR-0101.000A*

3.7 *Document Control Matrix for Biosolids - WRF-0101.000A*

3.8 *Aspect and Impact Ranking Form – EMS-0101.003E*

3.9 *Procedure Training Sign-In Sheet –EMS-0101.005A*

3.10 *Training Matrix – EMS-0102.005B*

3.11 *National Biosolids Partnership EMS Guidance Manual*

3.12 *National Biosolids Partnership Manual of Good Practice*

4.0 Procedure

4.1 All employees will be trained on the EMS policy and to a general EMS awareness level. All contractors will be notified of the environmental policy via mail and/or notification upon arrival at the site. Signs referencing the EMS policy have been posted at the entrance to the WWT facilities and the Resource Recovery Farm and policies are in the entrance areas or conference room of each Division location for review by visitors.

4.2 Personnel that can have a significant impact on the environment through their work practices will be trained on:

    4.2.1 The importance of conformance to the environmental policy, requirements of the environmental management system, and emergency preparedness and response requirements. Roles and responsibilities related to these will be communicated.

    4.2.2 The potential or actual significant environmental impacts of their work activities.

    4.2.3 The relevant procedures identified in the training matrix, the benefits of adhering to the procedures and potential environmental consequences of departure from them.

4.3 Training requirements of contractor personnel will be established on a case by case basis. City Staff who serves as the Contractors Contact person shall establish and track these requirements.

4.4 Training roles of Division personnel are as follows:

    4.4.1 EMS Coordinator and management will identify training needs (Training Matrix EMS-0101.005B) regarding the EMS procedures and the EMS Coordinator, or designee,

will train area Supervisors and management on relevant procedures. The EMS Coordinator shall assist supervisors upon request with the training of other personnel.

4.4.2 Supervisors are responsible for identifying training needs of their respective personnel on area Standard Operating Instructions (SOIs). Supervisors are also responsible for ensuring that the identified training needs of their personnel on EMS procedures and area SOIs are met.

4.4.3 Persons either preparing a procedure or approving a procedure are not required to receive documented training on the procedure. Either of these persons must train Division staff that has been identified as needing the training. This may involve the training of Supervisors or other Division personnel so that they may appropriately train identified Division staff.

4.5   Standard Operating Instructions must be developed for each activity which has an impact on a significant environmental aspect or that is needed to properly control a critical control point (as identified on the Aspect and Impact and Critical Control Point Ranking Form # EMS-0101.003E). The area supervisors are responsible for using their knowledge of the operation of their area to determine which procedures affect the significant environmental aspects.

4.5.1 Additionally, supervisors are to refer to the list of critical control points and the NBP Manual of Good Practice for additional information pertaining to procedure requirements to address activities at control critical control points.

4.6 All employees must receive training on documented procedures and revisions which are not exempted via the Corrective/Preventative Action procedure (EMS-0100.004). The area supervisors are responsible for determining which procedures are required for each employee.

4.7 Training needs will be indicated on the training matrix form (EMS-0102.005B) by gray shading. The EMS coordinator or other personnel authorized to make changes on the read-only drive must be notified of any changes in the employee training requirements.

4.8 The EMS Coordinator or designated personnel will train all new employees on policy and EMS awareness on their first day of work, whenever possible, and all current EMS procedures appropriate for the position within 30 days of reporting to work.

4.8.1 Supervisors must make arrangements with the EMS Coordinator to ensure training is completed as required when a new employee reports to work with the Division.

4.9 Training will not be required on revised procedures where the intent of the procedure is not revised, merely logistics i.e. spelling, grammar, numbering, etc... This occurrence will be tracked by a C/PAR.

4.10 When deemed appropriate by the Supervisor, retraining may be done only on the modified portion of a revised procedure. When training is done this way the revised section must be noted on the training form.

4.11 Retraining will be done as a result of an incident where a procedure was not properly followed.

4.12 All trained personnel must sign the sign-in sheet (*EMS-0101.005A*) to document their training and understanding of the procedure.

4.13 The effectiveness of the training will be evaluated by an oral or written test, and/or by observation of the employee performing the task according to procedure. The supervisor or person designated to perform the training will use this information to evaluate whether the training is sufficient or if more training is required. When the training is judged to be sufficient, the supervisor/trainer will date and initial the "Training Sufficient" section of the training sign-in-sheet (EMS-0101.005A) and the employee will be permitted to perform the task unsupervised.

4.13.1 In the event that training is done over a period of time and not on one day, the training may be documented by the entry of a range of dates on the training form and matrix.

4.13.2 Many employees may only be required to perform various portions of a procedure. Training may only be performed on the portion of the procedure that is appropriate and the sections of the procedure trained on must be indicated on the training form (EMS-101.005A).

4.14 The sign-in sheet must be submitted to the EMS Coordinator, or designee, for recording on the Training Matrix (EMS-0101.005B).

4.15 All internal EMS auditors must have either received training from an outside EMS auditing training course or have observed at least one internal audit, audited under the guidance of a previously qualified auditor, and have been trained on the City's EMS Auditing procedure. Prior to auditing without guidance, new auditors must have been deemed sufficiently trained

and able to perform audits by the EMS Coordinator. Internal training and determination must be documented on a procedure training sign-in form (EMS-0101.005A).

    4.15.1 Documentation verifying external auditor training will be maintained in EMS files.

4.16 Compliance auditors are chosen by the Division Manager based on knowledge and experience. The Division staff who are currently serving as compliance auditors have prepared the auditing procedures based on their knowledge and experience. Future internal compliance auditors must receive documented training on the auditing procedure and observe at least one audit prior to becoming a compliance auditor.

5.0 Revision History:

Revision Date	#	C/PAR #	Reason for Revision	Description of Revision
3/3/03	6	EMS-0084	C/PAR	Added a modification history section
	6	EMS-0116	C/PAR	Added NBP requirements as a part of the WWTD's participation in the NBP demonstration group.

SAMPLE EMS DOCUMENTATION

INTERNAL AND EXTERNAL COMMUNICATION

Charleston CPW – Internal Communication Procedure
Charleston CPW – External Communication Procedure
City of San Diego WWC – Communication and Environmental Information

CPW ENVIRONMENTAL MANAGEMENT SYSTEM
PROCEDURE

The on-line version and secured hardcopy are the controlled documents. The secured hardcopy will be identified by an "Official Document" stamp giving date of distribution. Any and all other documents are uncontrolled. Contact the EMS Program Manager for revision level status.

Effective Date: **October 1, 2000**   **Page 1 of 3**
Revision: 2   **Identification Number: EMS – 4. 4. 3 (A)**
Title: **Internal Communication Procedure**

Prepared By: **EMS Procedures Subcommittee**
Reviewed By: **EMS Management Steering Committee**

Approved By: **William E. Koopman Jr., General Manager**
                             John Cook PE, Assistant General Manager
Date Approved: **August 25, 2000**

0.0 Requirement: ISO 14001, Sub Clause 4.4.3 Communication

1.0 Purpose

To build understanding, cooperation, and involvement from all associates in the performance of their duties in an environmentally conscious manner.

2.0 Scope

ISO 14001, sub clause 4.4.3, with regard to environmental objectives and targets, requires establishing processes to report internally and, where desired externally, on the environmental activities of the organization.

3.0 Responsibility & Authority

3.1 Communication of environmental issues is the responsibility of all CPW departments.

3.2 It is the responsibility of every associate to communicate environmental concerns, problems, or suggestions to their supervisor.

4.0 Procedure

4.1 Communication through Normal Management Channels

4.1.1   Management Channels
The traditional flow of information from one management level to the next is appropriate and will be used to communicate environmental information. Periodic, or routine staff meetings with open dialogue is encouraged.

4.1.2   Communication through Internal Newsletters
Certain environmental communications will be made through internal newsletters. Programs that promote environmental excellence should be communicated to CPW associates and considered for release to the public.

4.1.3   Communication through Videos
Videos may be used to relay environmental information to large groups of associates.

4.1.4   Communication through e-mail and Special Memos
Announcements concerning environmental improvement programs, upcoming internal audits, DHEC inspections, etc. will be disseminated through e-mail for large groups of associates or by special memo to specific individuals or groups.

4.1.5   Communication through Suggestion Boxes
Suggestion boxes will be made readily available to all associates. Communication in this form coming directly from individual associates is a valuable source of information about potential environmental impacts. Suggestions will be evaluated concerning environmental improvements. Rewards will be considered for suggestions that are implemented.

4.1.6   Special Communication via Attorney

_____

Certain environmental information should be relayed only to those with a need to know by an attorney. When communication is done in this way the information is protected by the Attorney-Client privilege doctrine.

4.1.7   Recognition Communication
Both positive and negative recognition must be given to associates. Positive recognition shall be given in accordance with CPW recognition programs. Negative recognition must be given if employees knowingly violate regulations or CPW policies that adversely impact the environment. Disciplinary action will be administered in accordance with CPW policy.

4.2 Related Documents and Data

4.2.1   Records containing internal communication sent to associates.
4.2.2   Records containing associate feedback.

CPW ENVIRONMENTAL MANAGEMENT SYSTEM PROCEDURE

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Effective Date:	**October 1, 2000**	**Page 1 of 3**
Revision: 2	**Identification Number: EMS – 4. 4. 3 (B)**	
Title:	**External Communication Procedure**	

Prepared By: EMS Procedures Subcommittee
Reviewed By: EMS Management Steering Committee

Approved By: William E. Koopman Jr., General Manager
John Cook PE, Assistant general Manager
Date Approved: August 25, 2000

0.0 Requirement: ISO 14001, Sub Clause 4.4.3 Communication

1.0 Purpose
The purpose of this procedure is to define the steps that CPW follows to:

(1) Control the receipt, documentation and response to external communications regarding CPW's environmental aspects
(2) Consider external communication procedure on significant environmental aspects
(3) Document related decisions

2.0 Scope
ISO 14001, sub clause 4.4.3, with regard to external communication requires establishing processes on receiving, documenting and responding to communications from external interested parties.

3.0 Responsibility & Authority

    3.1 The department head (or designee) investigates the need for external communication.

    3.2 The Customer Relations Specialist prepares releases of public interest.

    3.3 The General Manager (or designee) authorizes prepared releases to the public.

4.0 Procedure

4.1 External Communication Channels

4.1.1 With regard to CPW's environmental aspects or environmental management system (EMS) the department head (or designee) investigates the need for external communication on a case by case basis. The investigation can be initiated by, but is not limited to, the following:

- Complaints and/or inquires from customers, SCDHEC, community groups, or other interested parties
- External promotional activities regarding CPW environmental policy or programs
- New or changing environmental regulations

NOTE 1: Such communications include, but are not limited to:

- Statements regarding CPW's policy commitment to the environment
- Statements regarding CPW's significant environmental aspects and their potential impacts
- External interested party concerns and questions, and responses to these concerns and questions
- Reports on performance with regard to environmental quality, objectives and targets, and on compliance with environmental regulations as determined by audits and management reviews
- Communications initiated by or to be received by potential legal entities

4.1.2 The department head or (designee) identifies the extent and/or impact of the problem or inquiry and determines what information needs to be communicated.

4.1.3 The department head or (designee) obtains the needed information from the appropriate associates within CPW or the department and, as necessary assistance from the Customer Relations Specialist,

who constructs the content, format, and method of the `communication accordingly. Designated individuals are then authorized to release information to external parties.

4.1.4 Statements regarding CPW environmental policy, significant environmental aspects and their potential impacts, reports on environmental performance or compliance with regulatory requirements and communications to legal entities, shall be reviewed and approved by the CPW General Manager (or designee) prior to release.

NOTE 2: Information in the communication should be understandable, adequately explained, verifiable, and presented in a consistent form. Methods to be considered include, but are not limited to:

- External newspapers or newsletters
- Public announcements and/or news conferences (TV, radio, etc.)
- Paid advertisements or public notices in newspapers, industry journals, or other publications
- Annual reports
- Regulatory submissions and public records
- Commission meetings
- Letters, memos and other correspondence
- Electronic mail messages; faxes, etc.
- Bill inserts
- Internet Web Site

4.1.5 Executive management (or designee) issues the communication to the required recipients and interested parties.

4.1.6 A copy of communication received or sent, as well as any requests that initiated the communication and/or requests for the information shall be retained for a period of **5** years.

4.2 Related Documents and Data

4.2.1 Records regarding EMS external communications.

DD-SEOP-4.4.3

COMMUNICATION OF ENVIRONMENTAL INFORMATION

(INTERNAL AND EXTERNAL)

1.0   PURPOSE AND SCOPE

This procedure describes the methods to be used for documenting and responding to inquiries related to the environmental policies, practices, and performance of the City of San Diego's Metropolitan Wastewater Department (MWWD) Wastewater Collections (WWC) Division. This procedure applies to inquiries made by interested parties external to the WWC Division, as well as WWC Division employees, contractors, or suppliers. The procedure does not apply to the resolution of questions that may be raised during routine environmental training activities, internal, and external audits.

2.0   DEFINITIONS

2.1   Interested Party

For the purposes of this procedure, an interested party is defined as an individual, organization, or group interested in, concerned with, or affected by the environmental performance of the WWC Division. Examples of interested parties include regulatory agencies or authorities, community groups, environmental organizations, the press, private citizens, employees, and employee organizations; the definition may also be extended to contractors or suppliers working at or delivering materials or services to individual WWC Division sections.

2.2 Computerized Maintenance Management System

Any Computerized system that functions as a tool for dispatching and documenting WWC Division field personnel to sewer related emergencies.

3.0   RESPONSIBILITIES

3.1   Environmental Management Representative

The Environmental Management Representative (EMR) has primary responsibility for coordinating, receiving, logging, and evaluating all inquiries about WWC Division's environmental policies, practices, and performance with appropriate WWC Section Managers, staff and the MWWD Public Information Section. The EMR is responsible for responding directly to inquiries related to the ISO 14001 Environmental Management System (EMS). made by WWC Division personnel, but shall review all external EMS inquiries with the responsible Section Manger, Deputy Director and/or Public Information Section prior to making a response.

3.2   WWC Division Personnel

Any WWC Division employee who is contacted by an interested party requesting information regarding the Division's environmental policies, practices, or performance shall refer all such

inquiries to the appropriate supervisor or Section Manager, who in turn will answer or direct the inquiry to the EMR (or Deputy Director as needed) for evaluation and appropriate action.

3.3   Deputy Director, WWC Division

The WWC Deputy Director is responsible for evaluating external information requests with the EMR, for providing direction as to whether a written or verbal response is required, and for reviewing and approving all written responses.

3.4   Section Manager

The Section Manager is responsible for responding to, and logging any inquiries concerning section specific performance and/or programs. The Section Manager may direct inquiry to appropriate Section staff and /or EMR.

4.0   PROCEDURE

General

Internal communication may be conducted through any of the following manners:
- normal management channels i.e. meetings where information flows from one management level to the next)
- electronic message and e-mail
- memos, posters and circulars on notice boards
- internal newsletter
- training programs

External communication issues will be conducted through the following means:

Sewer Pump Stations Section, Construction/TV Section, Main Cleaning Maintenance Section, Engineering Section, Maintenance Coordination/Scheduling Section, Administration Section:

- Sewer Response Inquiry: All inquires of this nature need to be referred to the Sewer Emergency Hotline at (619) 515-3525 and documented in the current CMMS per the WWC Division Sewer Overflow Response and Tracking Plan.

Food Establishment Waste Discharge Section:

- Sewer Infrastructure Inquiry: All FEWD inquiries of this nature will be documented and tracked in the FEWD CMMS.

All Sections:

- Environmental Policy Inquiry: Document the inquiry in the current CMMS and refer the inquiry to EMR

The procedure consists of the following steps:

4.1   The EMR shall document the receipt of written or verbal inquiries related to WWC Division's environmental policies and performance on an Environmental Communications Log form (DD-F-001.0, see the example provided as Figure 1). The EMR shall then evaluate the source and content of the inquiry.

4.2   If the inquiry was received verbally from an interested party within WWC Division, the EMR shall respond verbally, briefly note the content of the response on DD-F-001.0, and enter the date the response was made.

4.3   If the inquiry is in the form of a written complaint or request for specific information from an interested party from outside the Division, the EMR shall confer with the WWC Deputy Director or appropriate Section Manager(s) and determine an appropriate response. If a verbal response is determined to be appropriate, the EMR shall make the contact and record the action in the log as noted in Step 2.

4.4   If a letter or other documented response is required, the EMR shall prepare a draft for the Deputy Director's review, and shall resolve any comments prior to transmittal. Requests for copies of WWC Division's environmental policy (Section 2 of the WWC Division's Environmental Management Plan) shall be honored in all cases. The EMR shall record the type of response on the log, and enter the date of the response.

4.5   Completed Environmental Communications Log pages and associated incoming and outgoing correspondence shall be retained as environmental records in compliance with Section 5.3 of the WWC Division Environmental Management Plan.

4.6   Section Managers will respond to inquiries concerning the performance of their direct staff. The Section Manager may direct inquiries to the EMR.

4.7   The procedures for handling of media communication shall be as follows:

4.7.1 All questions and calls from the press have to be channeled to the MWWD Public Information Officer (PIO).

4.7.2 The PIO shall make reference to Corporate Communication Department prior to any news release to media.

4.7.3 The EMR shall log the details of the media communication when issued by the PIO in Master Log (Figures 2).

5.0   REFERENCES

WWC Division Environmental Management Plan
        Section 2, Environmental Policy
        Section 4.3, Communications
        Section 5.3, Records
WWC Division Sanitary Sewer Overflow Response and tracking Plan (SORTP)

Figure 1

Form DD-F-001.0
External Communications Record

Date Communication Received	
Type of Communication (circle one)	Internal External
Received From	
Address/Telephone Number/ E-Mail	
Content of Communication (attach copy if possible)	
Will Organization Respond?	YES NO
Date of Response	
Person Responding	
Position	
Nature of Response (attach copy if possible)	
Are Internal Actions Necessary? (If Yes, fill out a Corrective & Preventive Action Form, DD-F-006.0.	

Contact Person: _____

Date Completed: _____

Log No.: _____

Figure 2

External Communications Tracking Log Master List

EXTERNAL COMMUNICATIONS TRACKING LOG MASTER LIST

LOG NO.	DATE RECEIVED	RECEIVED BY	DATE ACTION TAKEN
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

SAMPLE EMS DOCUMENTATION

DOCUMENT CONTROL AND RECORD MANAGEMENT

Charleston CPW – Document Control Procedure
Charleston CPW – Record Management Procedure
City of Eugene WWTP – Records Procedure
Kent County DPW – Controlling Documents Procedure
City of Gastonia WWTP – EMS Manual

CPW ENVIRONMENTAL MANAGEMENT SYSTEM PROCEDURE

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Effective Date:	**October 1, 2000**	**Page 1 of 2**
Revision: 3	**Identification Number: EMS – 4.4.5**	
Title:	**Environmental Management System Document Control Procedure**	
Prepared By:	**EMS Procedures Subcommittee**	
Reviewed By:	**EMS Management Steering Committee**	
Approved By:	**William E. Koopman Jr., General Manager**	
	John Cook PE, Assistant General Manager	
Date Approved;	**August 25, 2000**	

0.0 Requirement ISO 14001; Sub Clause 4.4.5
South Carolina Department of Archives and History. Division of Archives and Records Management

1.0 Purpose
This document describes the procedure to be followed for the approval, issue, and maintenance of all environmental management system (EMS) controlled documentation.

2.0 Scope
This procedure shall apply to all CPW EMS controlled documentation.

3.0 Responsibility & Authority

All EMS controlled documentation shall be subject to approval by the following before issue and release:

a) General Manager and Assistant General Manager for EMS Procedures affecting all CPW departments
b) Section Head and/or Department Head for site specific EMS documentation
c) EMS Program Manager for ISO 14000 EMS documentation

4.0 Procedure

4.1 EMS procedures, processes, work instructions, associated records shall be defined, appropriately documented and updated as necessary. Each department

will clearly define the various types of documents and records which establish the EMS.

4.2 A record (master list) of EMS controlled documentation affecting all CPW organizations shall be maintained within Information Services. EMS documentation (i.e., procedures or work instructions, records) which are specific to a department, shall be maintained and controlled within the department and include:

    1) Reference number
    2) Issue number
    3) Disposition of copies

4.3 Distributed copies of EMS controlled documents shall be stamped "Official Document" with the date of distribution.

4.4 All EMS official documents will be of a standard format and contain the following:

- Effective date of distribution
- Number of document pages
- Revision number
- Title of document
- Preparer (originator) of document
- Approval authority (original on file if published electronically)
- Identification number

4.5 Distribution of EMS "official documents" may be published electronically with read only status. The original paper document with approval signature shall be retained on file.

4.6 All copies of EMS documentation that become obsolete by reissue shall be promptly removed, marked obsolete and handled in accordance with the "EMS Records Procedure."

5.0 Related Documents and Data
    5.1 South Carolina Local Government Records Manual
    5.2 EMS Records Procedure

CPW ENVIRONMENTAL MANAGEMENT SYSTEM PROCEDURE

The on-line version and secured hardcopy are the controlled documents. The secured hardcopy will be identified by an "Official Document" stamp giving date of distribution. Any and all other documents are uncontrolled. Contact the EMS Program Manager for revision level status.

Effective Date:	**October 1, 2000**	**Page 1 of** 4
Revision: 3	**Identification Number: EMS – 4.5.3**	
Title:	**EMS Records Procedure**	
Prepared By:	**EMS Procedures Subcommittee**	
Reviewed By:	**EMS Management Steering Committee**	
Approved By:	**William E. Koopman Jr., General Manager**	
	John Cook PE, Assistant General Manager	
Date Approved:	**August 25, 2000**	

0. 0 Requirement: ISO 14001, Sub Clause 4.5.3; Records Management, Section 30-1-80, <u>Code of Laws of South Carolina</u>, <u>1976</u> as amended.

1.0 Purpose:

The purpose of this procedure is to define the steps that CPW follows to ensure that environmental management system (EMS) records are properly identified, collected, indexed and filed to allow for ready access and retrieval.

NOTE: All records created or received by the Commissioners of Public Works during the course of business are considered public records and as such are governed by Section 30-1-80, <u>Code of Laws of South Carolina</u>, <u>1976</u>, as amended. It will be the duty of the Commission to establish and maintain an active and continuing records program in compliance with all statutory guidelines, and to provide for the economical and efficient management of all Commission records from their creation or receipt, through their ultimate disposition.

2.0 Scope:

2.1   This procedure applies to EMS CPW records that associates use, handle or maintain.

2.2   The EMS Records Procedure will provide for:

1.) Record Generation

2.) Record Review

3.) Active Records Storage

4.) Inactive Record Retirement

2.3   Definition of Terms

Active Records - Records that must be maintained in office space because they are referred to once a month or more and are needed to conduct daily business.

Disposition - The final action that puts into effect the results of an appraisal decision for a series of records. Transfer to an archival repository, transfer to a records center, or destruction are some possible disposition actions.

Document – Recorded information, regardless of form or medium. Also called record or documentary material.

Environmental Management System (EMS) Record   Records that are defined as EMS records by the department and listed on the Master Control Document Register as records necessary to maintain conformance with the EMS and ISO 14001 requirements.

Inactive Records - Records referred to less than once a month and are suitable for storage outside of the immediate office.

Record – Recorded information, regardless of physical form or characteristics of the medium (e.g. paper, photograph, sound records, or computer generated, machine readable record) made or received by an organization to fulfil its legal obligations or to transact business.

Records Retention/Disposition Schedule – Document that specifies actions for the retention and disposition of current, inactive, and non-current records series of an organization or agency.

Record Series – Documents arranged according to a filing system or maintained as a unit because they relate to a particular subject or function, result from the same activity, have a particular form, or share some other relationship arising out of their creation, receipt, or use.

Scheduling – The action of establishing retention periods for records and providing for their proper disposition at the end of active use. See Records Retention/Disposition Schedule.

3.0 Responsibility and Authority

3.1   The department document control representative ensures that EMS records are properly identified, collected indexed, filed, and stored to allow for ready access and retrieval, at the department level, and that these records are properly disposed in accordance with the CPW Records Management Policy RM-PM-01.

3.2   The Records Retention Specialist/Information Services will provide for:

1.)   Inventory, appraisal, and scheduling of records according to the policies and procedures as set forth by the South Carolina Department of Archives and History and the EMS;

2.)   Preservation and restoration of records deemed to be of vital, continuing, or enduring value;

3.)   Destruction of records which have outlived their administrative, legal, or fiscal value;

4.)   Transfer and maintenance of inactive and semi-active office records to approved storage facilities;

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Revision: 3   Identification Number: EMS – 4.5.3
Title: EMS Records Procedure

5.) Reporting of all required program information to the South Carolina Department of Archives and History;

6.) Disaster preparedness and recovery efforts for CPW records.

4.0   Procedure

4.1   EMS Record Generation
When an EMS record is needed or generated, the appropriate associate (specified in the procedure or work instruction) completes the record.

4.2   EMS Record Review
The associate conducts a review of the EMS record and forwards the record to the document control representative for review and filing.

NOTE: The EMS record's review ensures that:

1.) The record is complete and legible;

2.) Signatures and initials are filled in where necessary;

3.) The information contained in the record is correct and has not been improperly altered;

4.) Any errors that have been made in the record have been properly corrected, (a single line drawn through the error) the correction initialed and dated;

5.) The record has an approved Record Retention Schedule authorizing its final disposition.

NOTE: It will be the responsibility of the department document control representative to notify the Records Retention Specialist/Information Services of all new EMS record series. A Record Series Inventory Form will be completed by the document control representative for each record series and forwarded along with pertinent information to the Record Retention Specialist

4.3   Active Record Storage
The department document control representative reviews the EMS record for completeness and accuracy and either sends the record back for correction or files the record according to procedure.

NOTE: Containers for storing active records within the department may be folders, file cabinets, boxes, computer directories, etc., provided they allow the record to be properly identified and stored so as to minimize deterioration, damage, or loss.

4.4   Record Retrieval
When a record is removed from filing the person will check out the record in accordance with department procedures.

4.5   EMS Records Purge

Annually or when quantity warrants, the document control representative (or designee) purges all EMS records that are past their retention period and disposes of them according to the CPW Records Management Policy RM-PM-01.

4.6 Inactive EMS Records Retirement

EMS Records that are infrequently needed but must be kept for a specific amount of time for legal, fiscal or administrative reference value should be transferred to inactive records storage in accordance with the CPW Records Management Policy RM-PM-01.

4.7 Inactive EMS Records Retrieval

Requests for EMS record retrieval can be made via telephone, electronically, or in writing. All requests for EMS records placed in storage are to be made through the Records Retention Specialist and/or the document control representative for the respective department in accordance with the CPW Records Management Policy RM-PM-01.

4.8 Final Records Disposition

EMS records must be disposed of in accordance with the CPW Records Management Policy RM-PM-01

5.0 Related Documents and Data

5.1 Document Control Procedure (EMS-4.4.5)

5.2 SC Department of Archives and History Record Series Inventory Form - RS-I-1(90) (EMS-4.5.3 -2)

5.3 SC Department of Archives and History Records Retention Schedule Document - RS-S2(91)(EMS-4.5.3 -3)

5.4 CPW Records Transfer List Document – RTL3.97 (EMS-4.5.3 -4)

5.5 CPW Records Disposal Authorization Document RDR3.97 (EMS-4.5.3 -5)

5.6 SC Department of Archives and History Microfilm Quality Certification for Records Disposition – TEMP-61(3/93) (EMS-4.5.3 -6)

5.7 SC Department of Archives and History Authorization for Disposal of Original Paper Records Stored in Optical Disk Systems (TEMP–80 2/95) (EMS-4.5.3 -7)

5.8 SC Department of Archives and History Microfilm Transmittal and Receipt – ARM – 8A(94) (EMS-4.5.3-8)

5.9 Inactive Record Charge-Out (EMS-4.5.3-9)

5.10 CPW Records Management Policy RM-PM-01

CITY OF EUGENE – WASTEWATER DIVISION
Procedure

Subject:	Records			Document No.	WW-00017
Last Reviewed By:	Linda Delaplain	Original Date:	4/28/00	Revision No.:	2
Approved By:	Management Team			Date Approved:	9/10/03

Purpose

This procedure describes the process to be used for maintaining all records stored by the Division. These records include internal records such as audit records; old versions of revised policies, procedures, and work instructions; records stored in databases (including training, maintenance system, laboratory system, chemical inventory system, distributed control system, etc.; instrument maintenance records; all completed data forms; and other documentation that provides documentation of the Divisions activities. External records include contracts, permits, and other documents that are provided by outside sources.

Scope

This procedure applies to all records that may be stored for the Division in the document imaging system, manual files, databases, or archive files.

- New Records
- Record Retention and Disposal

Definitions

- Archive Files – all records stored in Centrifuge Building are referred to as archive files
- Document Control
- Document Imaging System
- Manual Files
- Record Owner
- Records

Safety Requirements

All specific safety requirements will be included or referred to in specific work instructions.

Procedure (Include reporting requirements and precautionary steps in this section)

Accountability:	Responsibility:
New Records	
Division Staff	Create and/or receive documentation to be maintained as a record for the Division.

Route record to Document Control Staff.

NOTE: If record is to be stored in archives, provide list of documents to be stored to Document Control Staff.

Document Control Staff   Receive document(s) to be stored as a record(s).

Determine filing location of record.

- If record is to be maintained as an image, scan the document into Laserfiche.

- If record is to be filed in the manual files, file.

- If record is to be archived, enter into archive database, print label for archive box and attach to box, route to archive storage.

- If the record is a training record, enter into training database. Route all Training Verification Forms to Laserfiche for scanning.

Record Retention and Disposal

Document Control Staff   On an annual basis, review all records and their retention times. Identify records that are eligible for disposal using the Record Retention Schedule. Route Record Disposal Report to record owner for authorization to dispose of the record.

Division Staff   Review list of records eligible for disposal. Approve records for disposal or note new date for disposal. Route Record Disposal Report back to Document Control Staff.

Document Control Staff   Make changes noted on the Record Disposal Report related to disposal dates. Routes revised Record Disposal Report to Division Management Team for approval.

Division Management Team   Reviews Record Disposal Report, approves or denies records for disposal, and routes back to Document Control Staff.

References

- ISO 14001 Standard, 4.5.3 Records
- EMS Manual, Records Policy
- Record Retention Schedule

CONTENTS

1.0   PURPOSE

1.1   The purpose of this procedure is to establish the general requirements for the work process of controlling documents at the Kent County Dept. of Public Works Regional Wastewater Treatment Facility.

1.2   The purpose of this work process is to establish the Kent County Dept. of Public Works Document and Data Control specification.

2.0   SCOPE

2.1   This procedure addresses all documents and data relating to the requirements of ISO 14000, including documents of external origin as applicable, including:

(a)   Environmental Program Manual
(b)   Procedures
(c)   Process Instructions
(d)   Design Output and Change Documentation
(e)   Special Process Control Documentation
(f)   Associated Reference Documentation and Lists

2.2   Environmental Management System Records are handled in accordance with the Kent County Dept. of Public Works Environmental Management System Procedure 2-11-P01.

3.0   DEFINITIONS

3.1   *Approved Document or Data* - Any informational or instructional paper, drawing, microfiche, microfilm, electronic data, magnetic tape or disc which has been formally approved for issue. This includes, but is not limited to, the following: guides, manuals, procedures, process instructions, regulations, rules, specifications and standards.

3.2 *Controlled Copy* - Any copy of an approved document issued to a particular branch, department or individual, which has been uniquely identified as a "Controlled Copy" and is traceable for recall. The use of a controlled copy ensures that work affecting process safety is performed to the applicable revision of the document, and that the current revision status is established.

3.3 *Environmental Program Document Control* - Control of documents related to the environmental program used to manage and oversee the environmental program.

3.4 *EMS Librarian* – The person responsible for maintaining all controlled documents and updating the documents as they are revised.

3.5 *Traceability* - For documentation, the ability to preserve the revision identity of a copy from its point of issuance to its assigned recipient so that it can be identified or recalled as required.

4.0   REFERENCES

None

5.0   REQUIREMENTS

5.1   *Classes of Documentation*

There are three classes of documentation represented by policy, procedures and process instructions:

5.1.1   Documents produced internally, for example the Environmental Management System documents and the program element procedures and process instructions;

5.1.2   Documents produced outside Kent County Dept. of Public Works, but approved for use as references, for example standards and codes of government or industry organizations pertaining to the work process undertaken by Kent County Dept. of Public Works permanent or contract personnel; and

5.1.3   Incoming documentation, that is to be verified on receipt such as vendor-supplied documents.

5.2   *Issuing and Maintaining Controlled Documents*

5.2.1   Controlled Documents – In order to ensure that only the latest edition of any one Environmental Management System document is being used it is necessary to ensure that the release of the appropriate document is controlled.

5.2.2   Control of all EMS documents shall be the responsibility of the EMS Librarian. As each revision is prepared, the approved document shall be submitted to the EMS Librarian for inclusion in the control system.

5.2.3   All documents shall be maintained in Adobe Acrobat 5.0 "pdf" form on the central network V drive. The EMS Librarian shall ensure that the document is converted to "pdf" format. It shall be secured so that it cannot be modified without a specific password.

5.2.4   All controlled documents shall be available to staff via the Adobe Acrobat Reader.

5.2.5   Once a document is printed, it shall be considered uncontrolled, unless stamped "Controlled" by the EMS Librarian. Such documents shall expire within 90 days of issuance, and must be reissued for additional 90-day periods.

5.2.6   In addition, a statement shall be added to the document that reads "This document is an UNCONTROLLED DOCUMENT, valid only on _____ (the day it is printed), unless stamped CONTROLLED COPY in red ink."

5.3   *Control*

5.3.1   The Environmental Management System Manual, Procedures, and Work Instructions shall be controlled in accordance with this procedure. Numbering of these documents is described in the Kent County Dept. of Public Works Environmental Management System Procedure 2-10-P01.

5.3.2   A controlled Copy Issuance list shall be maintained under the authority of the Environmental Program Manager and in accordance with the Environmental Management System Procedure 2-12-P02, Establishing and Maintaining Libraries.

5.3.3   Documents prepared under this program shall also be maintained using the Greenware software package.

5.4   *Approval*

Document approval authority is given by category as follows:

5.3.1   The Environmental Management System Manual, Procedures, and Work Instructions approval shall be as indicated in the Kent County Dept. of Public Works Environmental Management System Procedure 2-10-P01, Developing Policies, Procedures and Work Instructions.

5.3.2   Environmental Management System design output, change documentation and process control documentation, including Approved Lists, shall be approved by the appropriate Manager, as described in the Kent County Dept. of Public Works Environmental Management System Procedure 2-01-P01.

5.3.3   Reference documentation is considered approved by virtue of reference in the base document.

5.4   *Approved Lists*

Approved lists shall be maintained by category as follows:

The Environmental Management System Manual, Procedures, and Process Instructions, shall be listed on an "Environmental Management System Documents List", maintained under the authority of the Environmental Program Manager (Reference Kent County Dept. of Public Works Environmental Management System Procedure 2-10-P01).

5.5   *Reference Documentation*

Environmental Management System reference documentation shall be listed under an "Approved Reference Documents" section of the library catalog, maintained under the authority of the Environmental Program Manager (reference the Kent County Dept. of Public Works Environmental Management System Procedure 2-12-P02 Establishing and Maintaining Libraries).

5.6   *Environmental Management System Records*

Environmental Management System Records shall be maintained under the authority of the department or unit administrative personnel.

5.7   *Approved Forms*

An Environmental Management System Approved Forms list shall be maintained under the authority of the Environmental Program Manager (Reference the Kent County dept. of Public Works Environmental Management System Procedure 2-11-P02 Controlling Records).

5.8   *Corrective Action*

A master CAR list shall be maintained under the authority of the Environmental Program Manager (Reference the Kent County Dept. of Public Works Environmental Management System Procedure 2-15-P01 Controlling Non-Conforming Conditions and 2-15-P02 Managing Corrective and Preventive Action).

Kent County Dept. of Public Works **Dover, Delaware**	Title: **Controlling Documents**

6.0   RESPONSIBILITIES

The responsibility for Kent County Dept. of Public Works Library(s) rests with each of the Department Management Representatives responsible and shall be coordinated with the Environmental Program Manager for technical consistency.

7.0   DOCUMENTS

7.1   *Related Documents*

7.1.1 Kent County Dept. of Public Works Environmental Management System Manual Section 2 Management System

7.1.2   Kent County Dept. of Public Works Environmental Manual Section 5 Environmental Work Processes

8.0   RECORDS

8.1   *Required Records*

A listing of library documents is to be maintained by the Environmental Program Manager and responsible Management or Supervisory personnel to facilitate retrievability of the documents and up-to-date information.

8.2   *Records Control*

All records, if required, pertaining to this procedure shall be controlled in accordance with the Environmental Management System Procedures 2-11-P02, Controlling Records.

8.3   *Transmittal Confirmations*

Transmittal Confirmations are Environmental Management System Records and shall be maintained in accordance with the Kent County Dept. of Public Works Environmental Management System Procedure 2-11-P02 Controlling Records.

9.0   ATTACHMENTS

9.1   None

Kent County Dept. of Public Works **Dover, Delaware**	Title: **Controlling Documents**

10.0 <u>REVISION HISTORY</u>

Revision No.	Effective Date	Responsible Person	Description of Revision	Appv. By
0		Jim Newton	Initial Issue	

SAMPLE EMS DOCUMENTATION

ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) MANUAL

City of Gastonia WWTP – EMS Manual

City of Gastonia
Wastewater Treatment Division

ISO 14001 - Environmental Management System Manual

Prepared By: Beth Eckert, Industrial Chemist
Approved By: Coleman Keeter, Superintendent of WWTD

Signature: _____

Revision #: 0 / Revision Date: December 7, 1999 / Effective Date: January 1, 2000

TABLE OF CONTENTS

SECTION I - INTRODUCTION

The City of Gastonia's Wastewater Treatment Division (GWWTD) is responsible for treating Gastonia's industrial, commercial, and domestic wastewater to meet state and federal limits for discharge to the surface waters as well as for proper management of its biosolids. Gastonia has two wastewater treatment operations that are designated for these activities. Additionally, the WWTD manages a resource recovery farm and the operations of a contractor that is responsible for land application of biosolids at permitted locations throughout the county.

Wastewater Treatment Operations
Crowder's Creek Wastewater Treatment Plant, 5642 South York Road, Gastonia, NC 28054
Long Creek Wastewater Treatment Plant, 3000 Long Creek Disposal Plant Rd., Dallas, NC 28034
Resource Recovery Farm, 208 Goldmine Rd., Bessemer City, NC

In order to improve management of environmental issues related to these operations and sites, the Gastonia Wastewater Treatment Division has implemented an ISO 14001 environmental management system. This Environmental Management System (EMS) manual presents the environmental policy, structure of the management system, and related documents for the Gastonia Wastewater Treatment Division.

The EMS is designed according to the requirements set forth by the ISO-14001 Standard. Sections 4.2-4.6 parallel the ISO-14001 Standard number scheme. Each of these sections provide specific information or instructions necessary for complying with the requirements in the ISO-14001 Standard.

The EMS manual is the responsibility of the EMS Project Coordinator and is to be reviewed yearly and updated as appropriate, see review procedure (**EMS-0100.001**). The issued copies of this manual are under control of the EMS Project Coordinator.

SECTION II - DISTRIBUTION, REVISION, AND CONTROL

The distribution of this manual shall be conducted manually by the EMS Project Coordinator. The version accessed on the computer system shall be considered the "controlled" copy. There will be a "Master Copy" in hard copy form maintained by the EMS Project Coordinator. This copy shall have the signature of the Superintendent of the Wastewater Treatment Division and the date of approval.

Any part of the manual in hard copy form, other than the master copy and controlled copies issued per the distribution list, shall be considered "UNCONTROLLED" and will have "****THIS IS AN UNCONTROLLED COPY OF A CONTROLLED DOCUMENT****" automatically inserted at the bottom of each page when printed.

The manual will be reviewed a minimum of once per year. The EMS Management Team shall have the responsibility for reviewing the manual annually in **October**.

Recommendations for revisions shall be forwarded to the EMS Project Coordinator. The EMS Project Coordinator will be responsible for all revisions to the manual. He/she will maintain a record of external distribution, if applicable, and maintain obsolete copies on file.

This manual will be controlled manually and in accordance with the Gastonia Document Control Procedure (**EMS-0100.002)**.

SECTION 4.2 - ENVIRONMENTAL POLICY

The EMS Management Team will review the policy annually. If revisions are necessary, the revised policy will be adopted by the City Council in **November**.

The policy will be made available to the public through the City of Gastonia's web-site. The policy will be communicated to all WWTD employees through training events.

CITY OF GASTONIA
WASTEWATER TREATMENT DIVISION

ENVIRONMENTAL POLICY

The City of Gastonia Wastewater Treatment Division is committed to the implementation of a management system which will minimize negative and advance positive impacts on the environment and which will control the wastewater treatment costs to be borne by the consumer. Believing these goals to be fully achievable, the Wastewater Treatment Division is firmly committed to and will:

- Establish procedures to promote continuing improvement of compliance with all applicable environmental laws and regulations.

- Establish procedures to continue efforts to strengthen and improve knowledge of environmental issues within the Division.

- Seek optimal operation of the Wastewater Treatment Facilities to minimize environmental impacts where technically and economically feasible, even if not required by law or regulation.

- Promote cooperation and understanding with the public, customers, and governmental agencies in developing economically feasible and environmentally sound wastewater treatment objectives.

- Continue to promptly report all noncompliance issues in accordance with applicable governmental reporting requirements, evaluate causes of noncompliance, and implement corrective actions.

- Establish procedures for periodic review of environmental compliance with all laws and regulations, as well as with the ISO 14001 Environmental Management System.

- Establish procedures to ensure all that employees are knowledgeable of, and understand and comply with, all applicable environmental laws and regulations.

- Promptly correct any practice or condition not in compliance with this policy.

All employees are expected to comply with the spirit as well as the letter of this policy.

SECTION 4.3 - PLANNING

Location and description of all reference materials has been identified the Document Control / Training Matrix (**EMS-0101.002A**) which is located electronically at **U:\ISO\Forms\EMS-0101.002A** and a hard copy in the office of EMS Coordinator.

The following definitions are provided in the ISO-14000 Standards.

4.3.1 Environmental Aspects

Environmental Aspects - Elements of the organization's activities, products or services which can interact with the environment.

Environmental Impact - Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services.

Significant Environmental Aspect - An environmental aspect that has or can have a significant environmental impact.

GWWTD has identified all known environmental aspects and related impacts of our activities and products that we can control and have influence over in order to determine which can have a significant impact on the environment.

The EMS Management Team shall review at least annually per the EMS Review procedure (**EMS-0100.001**) the list of environmental aspects and impacts and identify the significant aspects using the Aspects and Impacts procedure (**EMS-0100.003**), aspects ranking form (**EMS-0101.003A**), significant aspects determination form (**EMS-0101.003B**), and the significant aspect listing form (**EMS-0101.003C**). The EMS management team will also review aspects and impacts of any new operations, activities, or laws for significance determination. Significant aspects will be considered in setting the environmental objectives.

The EMS management team will consist of the following personnel:

ORC Crowder's WWTP
Lab Supervisor Crowder's WWTP
ORC Long Creek WWTP
Lab Supervisor Long Creek WWTP
ORC of Biosolids
Assistant Superintendent of WWTD
Pretreatment Coordinator

The list of environmental aspects, related impacts and identified significant aspects and impacts will be kept up to date. The list will be comprehensively reviewed annually in November.

4.3.2 Legal and Other Requirements

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The Gastonia Wastewater Treatment Division is required to comply with a variety of legal and other requirements that are applicable to the environmental aspects of its activities, products or services. The following personnel identify environmental regulations and requirements, which govern GWWTD activities and products:

ORC Crowder's WWTP
   Environmental laws relating to treatment and discharge of industrial and municipal wastewater.
Lab Supervisor Crowder's WWTP
   Environmental laws relating to the testing of wastewater samples.
ORC Long Creek WWTP
   Environmental laws relating to treatment and discharge of industrial and municipal wastewater.
Lab Supervisor Long Creek WWTP
   Environmental laws relating to the testing of wastewater samples.
ORC of Biosolids
   Environmental laws relating to the management and application of wastewater treatment plant biosolids.
Assistant Superintendent of WWTD
   Environmental laws relating to the operation of an industrial/municipal wastewater treatment plant.
Pretreatment Coordinator
   Environmental laws related to handling wastewater discharged from commercial or industrial dischargers.

The following resources are used to identify applicable legal and other requirements:

Documents:
CFR books (Code of Federal Regulations) – covers solid waste, hazardous waste, air emission, wastewater, stormwater, biosolids regulations.
EPA Standard Testing Methods – Covers EPA certified wastewater testing procedures.

Regulatory Personnel: direct mailings and discussions with regulators. Representative personnel attend seminars.

Software: Application which is designed for fast regulatory searches. (CD-ROM)
Internet Access – Review of EPA newsletter

Regulator Training: plant personnel shall attend Conferences and workshops with key environmental responsibility on a regular basis to maintain up-to-date knowledge of current and upcoming regulatory requirements.

Periodic permitting and reporting requirements are documented and reviewed for accuracy as identified in the Legal and Other Requirements listing (**EMS-0101.001**).

All employees affected by new regulations will be trained on those regulations by their supervisor according to individual training matrices (**EMS-0101.002B**).

4.3.3 Objectives and Targets
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GWWTD establishes environmental objectives and targets annually during **December** by considering at least the following information:

➢ Legal and other requirements
➢ Significant environmental aspects and impacts
➢ Prevention of pollution
➢ Technological options
➢ Financial, operational, and business requirements
➢ GWWTD environmental policy
➢ Views of interested parties

These objectives and targets will be documented and maintained according to the objectives and targets procedure (**EMS-0100.007**) and the EMS review procedure (**EMS-0100.001**). Objective and targets may be amended at other times during the year as a result of new or revised operations, activities, and/or regulations.

4.3.4 Environmental Management Programs

GWWTD has developed an EMS program entitled Objectives and Targets Improvement Plan (**EMS-0101.007**) that shall be used to achieve its objectives and targets. This program shall include:

➢ designation of responsibility for achieving the objectives and targets at each relevant function and level of organization;
➢ means and time-frame by which they are to be achieved.

The objectives, targets, and programs will be reviewed and approved annually per the EMS review procedure (**EMS-0101.001**) by the Superintendent of the WWTD during the budget development process. The EMS Project Coordinator is responsible for their maintenance and reporting. Projects that relate to new developments and new or modified activities, products or services, the program shall be amended where relevant to ensure that environmental management applies to such projects.

SECTION 4.4 - IMPLEMENTATION & OPERATION

4.4.1 Structure and Responsibility

GWWTD has defined, documented and communicated the roles, responsibility and authority of personnel in order to facilitate effective environmental management. These are identified in the roles and responsibilities listing (**EMS-0100.006**).

The Superintendent of the WWTD is responsible for assuring that adequate human resources, other resources, and training are available to implement and control this EMS.

The EMS Project Coordinator is responsible for ensuring that this EMS is established, implemented and maintained and for reporting on its performance to top management

4.4.2 Training, Awareness and Competence

All employees within the WWTD will be trained on the EMS policy and records maintained in the office of the EMS Coordinator. Based on the annual aspects and impacts analysis each department shall identify training needs for those employees whose work activities may create a significant impact upon the environment. All procedural training records will be maintained in each area supervisor's office. Relevant procedures identified in the Document Control / Training Matrix (**EMS-0101.002A**) shall be established and maintained to ensure employees are aware of:

➢ The importance of conformance with the environmental policy and procedures and with the requirements of the Environmental Management System;
➢ The significant environmental impacts, actual or potential of their work activities and the environmental benefits of improved personal performance;
➢ Their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirements of the Environmental Management System, including emergency preparedness and response requirements;
➢ The potential consequences of departure from specified operating procedures.

Personnel performing the tasks, which can cause a significant environmental impact on the environment, shall be evaluated for competence on the basis of appropriate education, training, and/or experience as identified in the roles and responsibilities listing (**EMS-0100.006**). Records of competency and individual training are maintained in the individual training matrices (**EMS-0101.002B**). During annual performance reviews employees will be evaluated on their demonstration of environmental competency.

All new employees will receive training on EMS related procedures, policy and requirements of the environmental management system upon commencement of work with the City of Gastonia via PowerPoint presentation located at **U:\ISO\training\ISOawareness training**. New or revised procedures affecting existing personnel will be communicated upon implementation.

Training requirements of contractor personnel will be established under the terms of contract. Follow-up will be done annually to evaluate conformance with the contract. City of Gastonia maintenance personnel will be

trained on procedures identified in the Document Control / Training Matrix.

4.4.3 Communication

GWWTD has developed procedures for handling internal communications between the various levels and functions of the department. The EMS Project Coordinator is responsible for communicating information relative to the EMS to upper management and the EMS Team. The EMS Team is responsible for communicating information to affected employees.

GWWTD has documented a procedure for receiving, documenting, and responding to relevant communications from external parties (**EMS-0100.008**).

GWWTD has recorded its decision on considering processes for external communication of its significant environmental aspects. GWWTD will provide a listing of its significant environmental impacts to any interested party. Additionally, the GWWTD has held a seminar for external parties to discuss significant environmental impacts.

4.4.4 Environmental Management System Documentation

GWWTD has developed an EMS documentation system that is organized in a four-tier structure

EMS Manual	Level 1
EMS Procedures	Level 2
Standard Operating Procedures/Work Instructions	Level 3
Forms/Records	Level 4

Each of these levels will provide direction to relative documents in other levels.

4.4.5 Document Control

GWWTD has established a Document Control System that controls all documents and data that relate to satisfying the elements of the ISO 14001 standard and ensures:

➢ they can be located;
➢ they are periodically reviewed, revised as necessary and approved for adequacy by authorized personnel;
➢ the current versions of relevant documents are available at all locations where operations could significantly impact the environment;
➢ obsolete documents are assured against accidental use and those retained for legal or knowledge preservation suitably identified;
➢ they are legible, dated, readily identifiable and properly stored.

GWWTD has developed procedures and responsibilities concerning the creation and modification of various types of documents as identified in the Document Control Procedure (**EMS-0100.002**).

4.4.6 Operational Control
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GWWTD has identified operations and activities associated with the identified significant environmental aspects. Each department shall plan these activities, including maintenance, in order to ensure they are carried out under specified conditions by:

➢ Establishing and maintaining documented standard procedures to cover situations where their absence could lead to deviations from the environmental policy, objectives and targets;
➢ Stipulating operating criteria in the procedures;
➢ Establishing and maintaining procedures related to supplies and services used by the plant and communicating relevant procedures and requirements to suppliers and contractors.

All operating procedures are identified in the document control / training matrix (**EMS-0101.002A**)

4.4.7 Emergency Preparedness and Response

GWWTD has developed an emergency response plan (**WLC-0100.010 and WCR-0100.010**) and a Risk Management Plan (**EMS-0100.010**) which deals specifically with Chlorine and/or Sulfur dioxide related emergencies. The plan identifies the potential for accidents and emergency situations and the corresponding response. The plan also considers the prevention and mitigation of any environmental impacts associated with accidents or emergency situations.

These plans shall be reviewed at least every three years.

SECTION 4.5 CHECKING AND CORRECTIVE ACTION

4.5.1 Monitoring and Measurement

GWWTD has established and maintains a system for measuring and monitoring the key characteristics of our operations that can have a significant impact on the environment. This system includes recording information to track performance, relevant operational controls and conformance with the established objectives and targets.

➢ Monitoring equipment shall be calibrated and maintained and records kept in the office of the responsible supervisor.
➢ A documented procedure (**EMS-0100.009**) has been established to periodically evaluate compliance with relevant environmental legislation and regulation.

4.5.2 Non-Conformance and Corrective Action

GWWTD has established and maintains a procedure to determine the need for and implementing corrective and preventative actions (**EMS-0100.004**).

➢ All employees are empowered to report, document and take temporary action for any nonconformities relating to environmental impacts.
➢ Corrective and preventative actions are taken to eliminate the causes of actual or potential

nonconformities and are appropriate to the magnitude of problems and commensurate with the environmental impact.
➢ Changes to documented procedures resulting from corrective or preventative actions are recorded.

4.5.3 Records Management

GWWTD has established procedures for identification, maintenance, and disposition of all environmental records. These records are kept to demonstrate conformance to GWWTD's EMS, the ISO 14001 standard and applicable regulations.

➢ Environmental records are legible, identifiable, and traceable to the corresponding activity or product involved.
➢ Environmental records are stored in a way that they are retrievable and protected against damage, deterioration or loss.
➢ The retention times for all environmental records are established and recorded.

Refer to the Document Control / Training Matrix (**EMS-0101.002A**) and /or the Legal and Other Requirements (**EMS-0101.001**) documents for retention times and locations.

4.5.4 Environmental Management System Audits

GWWTD has established and maintains procedures to carry out periodic audits of the environmental management system (EMS). The EMS audit procedure (**EMS-0100.011**) will determine the scope, frequency, methodology, and responsibility for the audits.

➢ The purpose of audits is to determine if the EMS has been properly implemented and maintained.
➢ Results of the EMS audits are reviewed with the Management Review Board (MRB).

SECTION 4.6 MANAGEMENT REVIEW

The Management Review Board (MRB) reviews the EMS quarterly to ensure continuing suitability, adequacy, and effectiveness of the EMS. This review is documented.

The MRB addresses the possible need for changes to the policy, objectives, and other elements of the EMS. Observations, conclusions and recommendations are document for necessary action and changes

SAMPLE EMS DOCUMENTATION

OPERATIONAL CONTROL

Charleston CPW – Operational Control Procedure
City of San Diego WWC – Operational Control Procedure

CPW ENVIRONMENTAL MANAGEMENT SYSTEM PROCEDURE

The on-line version and secured hardcopy are the controlled documents. The secured hardcopy will be identified by an "Official Document" stamp giving date of distribution. Any and all other documents are uncontrolled. Contact EMS Program Manager for revision level status.

Effective Date:	**October 1, 2000**	**Page 1 of 3**
Revision: 1	**Identification Number: EMS – 4. 4. 6 (A)**	
Title:	**Operational Control Procedure**	
Prepared By:	**EMS Procedures Subcommittee**	
Reviewed By:	**EMS Management Steering Committee**	
Approved By:	**William E. Koopman Jr., General Manager**	
	John Cook PE, Assistant General Manager	
Date Approved:	**August 25, 2000**	

0.0 Requirement: ISO 14001, Sub Clause 4.4.6 Operational Control

1.0 Purpose

This procedure is used to ensure monitoring and operating instructions are properly identified, issued and controlled, and to ensure that all relevant documents necessary for the proper operation of the process are present.

2.0 Scope

This procedure applies to all associates who issue and control monitoring and operating instructions at CPW where EMS requirements are in place.

3.0 Responsibility & Authority

    3.1 The department head (or designee) is responsible for the approval, revision, and issuance of monitoring and operating instructions and ensuring associates have the necessary training to perform the job.

4.0 Procedure

    4.1 Issue and Control of Monitoring and Operating Instructions

Effective Date: **October 1, 2000**   **Page 2 of 3**
Revision: 1   **Identification Number: EMS – 4. 4. 6 (A)**
Title: **Operational Control Procedure**

4.1.1   Prior to placing new or modified monitoring or control equipment in service the department head will direct the drafting of monitoring or operating instructions for that operation.

NOTE: Monitoring and operating instructions should include the following information where relevant:

- Monitoring and Operating Instruction Title and Identification Number
- Process or equipment name
- Operating criteria
- Startup instructions
- Shut down instructions
- Emergency operation (loss of power, SCADA, etc)
- Inspection and test instructions
- Corrective action instructions
- Revision date and approval
- Safety requirements
- Housekeeping
- Location of manufacturer's reference material

4.1.2   The draft monitoring and operating instructions are submitted to the appropriate supervisor(s) to review for operability, completeness, consistency and clarity.

4.1.3   The supervisor(s) note any changes or concerns and forwards back to the individual or team that prepared the draft.

4.1.4   The individual or team that prepared the draft makes the necessary corrections.

4.1.5   The department head reviews and approves the new or revised monitoring and operating instructions.

4.1.6   The department head (or designee) issues the monitoring and operating instructions to the appropriate supervisor(s).

4.1.7   The supervisor(s) ensures the operators have the necessary training, including the environmental impacts or potential consequences in deviating from the specified work instructions.

4.1.8   The department head (or designee) ensures the documents are available and controlled at all appropriate locations, the most current versions are available for use, and obsolete versions are prevented from further use.

4.1.9   Obsolete documents to be retained for legal and or knowledge preservation are removed and marked "Obsolete.

4.2 Related Documents and Data

4.2.1   Training Records
4.2.2   Records of Change to related documented procedures
4.2.3   Manufacturer's Reference Material
4.2.4   Document Control Procedure

DD-SEOP 4.4.6

OPERATIONAL CONTROL

1.0   PURPOSE AND SCOPE

The procedure for identifying operational controls for operations and activities that are identified as potential critical environmental impacts. This procedure applies to all situations at the MWWD WWC Division, or areas within the control or influence by MWWD WWC Division, where its absence could lead to deviations from the division environmental policy and the objectives and targets.

2.0   RESPONSIBILITY AND AUTHORITY

It is the responsibility of the EMS Environmental Management Representative, Section Managers and their designees to prepare appropriate procedures ensuring effective management of critical control points and for those situations where the absence of a procedure could lead to deviations from the Environmental Policy and the objectives and targets.

3.0   PROCEDURE

3.1   Operational control procedures shall be established by the WWC for operations that have been identified to have significant environmental impacts and/or where their absence could result in significant environmental impacts.

3.2   The Operational control procedures shall be established and maintained by the appropriate WWC Section and may cover the following:

- Process operations, maintenance and equipment specifications criteria
- Methods of chemical storage, handling and transfer
- Spill and clean up
- Management and disposal of wastes
- Operation and Maintenance of Sensitive or Critical Environmental Control Equipment

3.3   Most operational control and maintenance procedures shall be established as the third level documentation (excepting those activities determined to be inter-departmental in nature and that apply to multiple sections within WWC). All procedures shall be made available at the point of use. (refer to Documentation matrix in Document Control procedure, DD SEOP 4.4.5)

3.4   Operational control procedures shall also make reference to existing documented Departmental and/or Division Instructions that cover at least the following or in whose absence may lead to a deviation from the environmental policy:

- Purchase or transfer of goods and services and use of external resources
- Hazardous tasks
- Hazardous materials
- Maintenance of calibrated safety equipment

3.5   The relevant EMS requirements, including the WWC Environmental Policy, shall be communicated to suppliers and contractors.

3.6   The Section manager reviews the "Standard Operating Procedures" (DD-SEOP 4.4.4) for environmental protection and control content and makes improvement to existing procedures, or develops new procedures as required.

3.7   New or revised SOP's are to be processed by the Document Control Group (DCG). DD-SEOP 4.4.5.

3.8   Procedures are reviewed and revised based on corrective actions recommended as the result of environmental incidents (such as spills or releases) or environmental audits; when new processes or products are introduced, or when new environmental regulations are identified that could reasonably affect MWWD WWC Division operations.

3.9   The Section Managers are responsible for approving Section specific Standard Maintenance Procedures (SMP's) or Operating Procedures (SOP's) where the absence of SOP's could lead to a significant environmental impact.

4.0   REFERENCES

DD-SEOP 4.3.1, Environmental Aspects and Impacts Identification

DD-SEOP 4.3.3, Establishment of Environmental Objectives, Targets and Programs

DD-SEOP 4.4.4, Standard Environmental Operating Procedures

DD-SEOP 4.4.5, Document Control

DD-F-002.0, Aspects and Impacts Register

SAMPLE EMS DOCUMENTATION

EMERGENCY PREPAREDNESS

Charleston CPW – Emergency Preparedness & Disaster Recovery Procedure
City of San Diego WWC – Emergency Preparedness and Response Procedure

CPW ENVIRONMENTAL MANAGEMENT SYSTEM PROCEDURE

The on-line version and secured hardcopy are the controlled documents. The secured hardcopy will be identified by an "Official Document" stamp giving date of distribution. Any and all other documents are uncontrolled. Contact the EMS Program Manager for revision level status

Effective Date:	**October 1, 2000**	**Page 1 of 7**
Revision: 2	**Identification Number: EMS – 4. 4. 7**	
Title:	**Emergency Preparedness & Disaster Recovery Procedure**	
Prepared By:	**EMS Procedures Subcommittee**	
Reviewed By:	**EMS Management Steering Committee**	
Approved By:	**William E. Koopman Jr., General Manager**	
	John Cook PE, Assistant General Manager	
Date Approved:	**August 25, 2000**	

0.0 Requirement: ISO 14001, Sub Clause 4.4.7 Emergency Preparedness/Response

1.0 Purpose

To minimize disaster impacts and return CPW back into operation in a safe, quick, cost effective and environmentally sensitive way.

2.0 Scope

ISO 14001, sub clause 4.4.7, applies to the need to identify, prevent, and respond to emergencies and the period of time following the emergency event.

3.0 Responsibility & Authority

3.1 Executive management is responsible for ensuring that an emergency preparedness program is implemented and for approving the emergency preparedness plans.

3.2 Section heads and department heads are responsible for plan development, plan implementation and emergency preparedness team selection.

3.3 Emergency Preparedness Team(s) (response/disaster recovery) are responsible for dealing with immediate threats to associates, the public and the environment and assisting in returning CPW back to functional operation

4.0 Procedure

4.1 Up-front Activities

4.1.1 The department head/section head will initiate the process to prepare a disaster response/recovery plan. The department head will assemble the Emergency Response/Disaster Recovery Team(s).

After review and approval of the plan(s), the team(s) will test the plan as conditions allow and, communicate the plan to associates and document. At least annually, or in the event of a disaster, review the plan and recommend plan modifications as necessary.

4.1.2 Duties of the Department Head/Facility Manager
The duties of the department or facility manager include the following aspects:
a)   Identify potential risks to facilities and processes;
b)   Identify and implement Best Management Practices (BMP's) where necessary (i.e., Process Safety Management, Risk Management, Hurricane Preparedness, etc.);
c)   Establish incident reporting procedures;
d)   Maintain, testing and inspection equipment according to specified frequency and procedures;
e)   Establish emergency preparedness training for facility personnel;
f)   Review new and significantly modified equipment or processes for modification of emergency response plans as necessary;
g)   Manage emergency response change to new or modified equipment or processes;
h)   Review at least annually, facility procedures for release prevention and emergency response;
i)   Review and update hazard assessments at least every five years or as a result of changes;
j)   Audit compliance of prevention programs at least every three years as required by the EPA Risk Management Plan and OSHA's Process Safety Management Standard.

4.1.3   Identification/Impact Assessment of Facility Resources
The department head or facility manager will inventory critical operations and available resources to identify and assess potential risk in the event the facility is destroyed in part or in total. This inventory should identify what critical items may need to be quickly replaced. The inventory should include, a description of required personnel skills, necessary chemicals or equipment, and identification of vendor sources.

4.1.4   Impact Minimization Strategies
An impact minimization strategy will be prepared for the identified resources that are critical and have a high likelihood of being impacted or destroyed. For example, this may include special training, backup files, backup communications or operations at other locations, additional containment around some chemicals and wastes, temporary containment (sandbagging) around critical equipment, bracing, and fire suppression equipment.

4.1.5   Phone Numbers and Contacts
There should be documented emergency numbers in both the emergency plan and disaster recovery plan. As a minimum the following should be included:
a) department head, section head, or facility manager
b) relevant civil defense contacts, (fire, police, toxic release contacts, FEMA, etc)
c) executive management
d) safety manager

4.1.6   Routine Inspections
The department's status, resources and supplies in terms of disaster recovery should be inspected frequently. As resources or facilities change, preparedness and recovery plans should be updated.

4.1.7   Off-site Disaster Headquarters
The affected department head, with input from the section head and/or executive management, will establish a working headquarters and necessary communication links.

4.1.8   Production and environmental control equipment will be appropriately maintained with preventive maintenance controls.

4.1.9   Critical Data
Regulatory records, account data, etc. should be backed up and stored in a protected environment. Software systems, such as, Supervisory Control and Data Acquisition (SCADA) essential to production will be backed up with the ability to function at other locations. Paper type files, which are critical to the operation should be copied and filed at a backup location or stored electronically or on microfiche, in a fire-resistant location.

4.1.10   Supplies
Some supplies should be purchased before a disaster, for the health and safety of the associates. Supplies should include such items as food, water, bedding, flashlights, tools, first aid kits, etc. for at least a three-day period.

4.1.11   Environmental Protection Supplies
Environmental protection supplies, such as spill cleanup materials, personal protection equipment, over-pack drums, etc. and materials required in regulatory plans such as the Risk Management Plan (RMP) will be maintained.

4.1.12   Emergency Plan Training and Distribution
It is important to prepare and distribute emergency plans to essential associates before a disaster occurs. Training on emergency response and disaster recovery will be given and documented to team members and associates involved in work that may cause significant environmental impact.

4.2   **Disaster Control**

4.2.1   During and Immediately Following a Disaster
After the immediate crisis is under control, the following activities should occur. These steps are considered as recovery actions.

4.2.2   Convene the Emergency Response Team/Disaster Recovery Team

The ERT/Disaster Recovery Team will transition into a disaster recovery team (DRT). Additional members will/may be added at this time and include management, operations, safety, purchasing and finance members.

4.2.3   Area Inspections
The DRT will do an initial audit for safety hazards and, if any are found, notify associates to stay out of the affected area until corrected. Additional inspections would be made to assess facility or equipment operability and preliminary cost estimates on financial damage.

4.2.4   Associate Needs
After assessing immediate safety needs, longer-term needs should be considered. This may include information to families or help in locating families. This may include additional supplies such as food, water, blankets, and temporary shelter for associates, etc.

4.2.5   Insurance Companies/Relief Agencies
Proper insurance representatives/federal agencies should be called to schedule site visits as soon as possible.

4.2.6   Human Resource Skills Bank
Associates who are able to report to work should report to an identified individual or location so that recovery needs can be matched with associate skills and assigned appropriate recovery tasks.

4.2.7   Reestablish Process Control and Utilities
During the disaster some utilities may have shut down by accident or design. The DRT will work with the water and wastewater departments and with the gas and electric companies to restore service.

4.2.8   Reestablish Communications
CPW personnel will need to be directed during communication outages. Telephone company personnel may be needed to reestablish critical phone lines. It may be necessary to use cellular phones and radios for initial communications. Once communications are reestablished, a call-center should be set up to respond to associate and public questions and concerns.

4.2.9   Facility Repairs
Start work in restoring damaged facilities, based upon critical need.

4.2.10   Reassess and verify that chemical and waste systems are working and not causing adverse environmental impacts. If a potential problem is noted, it should be checked out, and if necessary, immediately corrected.

4.2.11   Reestablish SCADA and Computer Systems
Some operations are totally dependent upon computer systems. These must be repaired or relocated as quickly as possible. Computer systems that support customer services should be reestablished as quickly as possible.

4.2.12   Replacement of Critical Files
Any essential files that may have been destroyed should be re-created by off-site or back-up files. This is especially important concerning certain customer or associate personnel files.

4.2.13   Reestablish Financial and Human Resources System
It may be necessary to shift certain financial and HR systems, such as compensation and benefit administration to another site for a period of time.

4.2.14   Media
Contacts from, or to the media, should be directed by CPW executive management or an authorized designee.

4.3 Post Incident Investigation

4.3.1 In the event of an emergency situation or accident that has significantly impacted the environment or which has the potential to do the same, a post incident investigation will be conducted. An emergency situation or accident requiring a post incident review is one in which there is the potential to be a major violation of a regulatory permit, a major impact to public health or services, or a major impact to the environment. The need for a post incident investigation shall be determined by executive management or the appropriate department head and a post incident review team shall be assembled accordingly to conduct the investigation. Such post incident investigations shall evaluate the cause(s) of the incident and identify factors which should be evaluated for preventing or mitigating the impacts of future incidents, including revising its emergency preparedness and response procedures and documenting the results.

4.3.2 Corrective Action Plan
The affected department shall prepare a corrective action plan (if necessary) and submit the plan and subsequent plan amendments to the Post Incident Review Team for review and approval. The EMS program manager (or designee) shall track the activities of the corrective action plan and perform verification surveillance(s) upon completion of corrective action plan activities and submit recommendation(s) for closure to the Post Incident Review Team.

4.4 Related Documents and Data

4.4.1 Emergency Response Plans
4.4.1 Inventory of Damaged Facilities
4.4.2 Spill Report Records.
4.4.3 Injury Report Records
4.4.4 Emergency Response and Disaster Recovery Team records
4.4.5 FEMA, Damage Survey Report Forms
4.4.6 Post Incident Review Report
4.4.7 Corrective Action Plan

DD-SEOP 4.4.7

EMERGENCY PREPAREDNESS AND RESPONSE

1.0   PURPOSE AND SCOPE

This document defines the procedures to establish and maintain plans and to identify the potential for, and responses to, incidents and emergency situations on employees, public and the environment and for preventing and mitigating the likely illness, injury and environmental impacts that may be associated with them.

This procedure and associated operational controls address or consider impacts and degree of risks associated with environmental aspects, issues related to illness and injury, and corrective actions associated with the following:

- accidental discharges to water and land
- accidental emissions to the atmosphere
- specific environmental and/or ecosystem effects associated with accidental releases
- unsafe work practices and/or conditions

The procedure also specifies the process utilized by the company to periodically review emergency preparedness and response procedures in light of operational changes, and following the occurrence of an unexpected incident or event.

2.0   DEFINITIONS

3.0   RESPONSIBILITIES

4.0   PROCEDURE

4.1   Identification of Emergency Situation

4.1.1   The General Water Utility Supervisor, Standby and Duty Supervisors, and EMR (as appropriate) shall be responsible to identify potential emergency response situations where environmental impacts may result.

4.1.2   The identification of potential emergency situations shall be reviewed once a year during the emergency drills or when a new response and containment activity is being introduced.

4.1.3   The emergency situations shall be updated in the above mentioned applicable documents.

4.2   Emergency Response Procedures

4.2.1   Procedures covered by this DD-SEOP are described in detail in the WWC Divisions Sewer Overflow Response and Tracking Plan (SORTP). This document contains sewer overflow response and notification procedures for use at the operations level in

specifically responding to emergency events. Additionally, the document is intended for use by Division management in determining the types and levels of resources necessary to respond to and mitigate emergency situations. The SORTP and relevant attachments is therefore incorporated by reference into this DD-SEOP.

4.2.2 The referenced documents provide the following information for adaptation into this procedure:

- Regulatory Requirements
- Receiving Information Regarding Sewer Overflows
- Dispatching Crews to Sewer Spill Sites
- Definitions of incidents and responder requirements
- Emergency management structure and organization-spill event notification listing
- Emergency procedures are provided for each of the categories of operational scenarios identified
- Post-emergency response notification and reporting procedures and investigation follow up
- Sanitary Sewer Overflow Tracking Database

4.2.3 The above mentioned applicable documents shall be make available either by hard copies or soft copies to the following:

- Section Manager
- Duty Supervisor
- Central Operations Management Center (COMC)
- Sewer Alarm Monitoring Section (SAMS)
- City of San Diego Dispatch Center (Station 38)

4.3 Emergency Training

4.3.1 Awareness training of the emergency response and spill notification procedures shall be provided to all new employees during the orientation briefing conducted by the Section Manager and I&OS department.

4.3.2 Appropriate WWC staff shall be trained in their roles during an emergency situation. Practical exercise (where appropriate) shall be conducted to familiarize with their roles. The I&OS Division and respective WWC Section Managers shall coordinate training of the ERT members.

4.4 Emergency drills and situations

4.4.1 Emergency drills involving hazardous materials usage should be carried out according to a pre-determined schedule. The I&OS Division together with the ERT shall schedule such drills involving partial or all the operations at each location.

4.4.2 The EMR and ERT Rep shall discuss the results of the emergency drills or cause of the emergency situations and minutes of the meeting shall be maintained.

4.4.3   The I&OS Department and WWC ERT Rep shall meet to discuss the occurrence of an emergency situation. An investigation shall be compiled for an occurrence of an emergency situation to be submitted to the authority or/and management.

4.4.4   The above mentioned applicable documents shall be reviewed and revised according after each emergency drills or occurrence of emergency situation.

4.5   Mitigating Environmental Impacts.

4.5.1   Relevant Emergency Plan procedures have been established to handle emergency situations.

4.5.2   Fire fighting equipment and spill kits are made available to handle fire and spill emergency situations respectively. First aid supplies are also made available in the event of emergency situations. Procedures have been established for maintenance of fire fighting equipment.

4.5.3   If there is an emergency and after bringing under control, employees will be able to go back to their workplace to inspect for any damages upon clearance and instruction from ERT Coordinator(s).

4.5.4   Appropriate Section Managers shall arrange for contractors to clear the debris and to clean up the area. All debris shall be disposed appropriately according to legislated requirements.

4.5.5   Appropriate Section Managers shall decide whether to form an inquiry committee to investigate into causes and recommend remedial actions to prevent future occurrence.

5.0   REFERENCES

MWWD Departmental Health and Safety Manual

MWWD Major Incident Response Plan

City of San Diego Emergency Operations Plan

City of San Diego Employee Emergency Handbook

City of San Diego Hazardous Waste Management Guide

WWC Sewer Overflow Response and Tracking Plan

Section-specific emergency contingency response plans

SAMPLE EMS DOCUMENTATION

MONITORING AND MEASUREMENT

Charleston CPW – Monitoring and Measuring Key EMS Characteristics Procedure
City of Eugene WWTP – Monitoring and Measurement Procedure
City of Gastonia WWTP – Monitoring and Measuring Procedure
City of San Diego WWC – Calibration of Environmental Measurement and Test Equipment

CPW ENVIRONMENTAL MANAGEMENT SYSTEM PROCEDURE

The on-line version and secured hardcopy are the controlled documents. The secured hardcopy will be identified by an "Official Document" stamp giving date of distribution. Any and all other documents are uncontrolled. Contact EMS Program Manager for revision level status.

Effective Date:	**October 1, 2000**	**Page 1 of 2**
Revision: 0	**Identification Number: EMS – 4.5.1 (A)**	
Title:	**Monitoring and Measuring Key EMS Characteristics**	
Prepared By:	**EMS Procedures Subcommittee**	
Reviewed By:	**EMS Management Steering Committee**	
Approved By:	**William E. Koopman, Jr., General Manager**	
	John Cook PE, Assistant General Manager	
Date Approved;	**August 25, 2000**	

0.0 Requirement   ISO 14001 1996-E, Sub Clause 4.5.1 Monitoring and Measuring

1.0 Purpose

This procedure describes the process for the scheduled monitoring and measurement of key characteristics of the organization's environmental management system activities.

2.0 Scope

This procedure addresses collection of environmental data associated with operations and activities that have the potential to have a significant environmental impact.

3.0 Responsibility and Authority

3.1 The department head is responsible for submitting a monthly operating report (MOR) which describes the key characteristics of the EMS and the status of the objectives and targets and associated improvement programs.

3.2 The department supervisor(s) are responsible for generating environmental monitoring and measurement data to be submitted in the Monthly Operating Report (MOR).

3.3 Executive management shall review the monthly operating reports to assure continuing suitability and effectiveness of the EMS.

4.0 DEFINITIONS AND ACRONYMS

EMS   Environmental Management System

Environmental Key Characteristics - an element of an operation or activity that includes a measurement or an inspection process the results of which supports evaluation of environmental performance of objectives and targets.

Monitoring - a systematic process of watching, checking, observing, inspecting, keeping track of, regulating or otherwise controlling key parameters and characteristics of a department's management activities to determine conformance with a specific standard or other performance requirement, or to measure progress toward its environmental objectives and targets.

Measurement - a systematic method for estimating, testing, or otherwise evaluating key parameters and characteristics of a department's management activities to determine conformance with a specific standard, other performance requirement.

5.0 Procedure

     5.0.1   Monthly Operating Report (MOR)

               A monthly report shall be established for department heads/supervisors to submit monitoring and measuring information to support performance of the EMS. The report is to be structured as a minimum to:
- Provide status of environmental management programs designed to fulfill environmental objectives and targets,
- Provide status of performance indicators as related to targeted timeframes,
- Provide compliance status of environmental operating permits issued by environmental regulatory agencies.

     5.0.2 Performance Tracking

     Environmental data collected to reflect environmental performance is to be maintained in such a manner to allow the evaluation of progress toward realizing environmental objectives and targets.

6.0   Related Documents

        Environmental Aspects,

        Objectives, Targets, and Improvement Programs

        Legal and Other Requirements

        Operating Permits

7.0   RECORDS

        Monthly Operating Report

EMS Monitoring and Measuring
Standard Operating Procedure

1.0 Purpose

1.1 The following procedure provides guidance for preparing quarterly reports which will be reviewed during quarterly Management Review Board meetings in order to monitor and measure the Division's significant impacts on the environment, biosolids program performance at critical control points, compliance, progress on objectives and targets, and results of compliance and EMS audits. During the Management Review Board meeting the Division Manager WWT and Director of Public Works and Utilities shall use all provided information to ensure the continuing suitability, adequacy and effectiveness of the EMS.

2.0 Associated Equipment

2.1 None

3.0 Associated Reference Material

3.1 Data Trend data base

3.2 Spill reports

3.3 Incident Reports

3.4 Division utility bills

3.5 Compliance Audits

3.6 Summary of Activities and NPDES Permit Limit/SOC Violations (EMS-0101.009)

3.7 SIU notices of violations

3.8 Hazardous waste manifests

3.9 Biosolids bills

3.10 Laboratory data

3.11 External communications logs

3.12 EMS Audits

3.13 Training matrix (EMS-0101.002B)

3.14 Corrective and Preventative Action reports (EMS-0101.004) (reviewed at C/PAR meetings by MRB which are held at least bi-monthly)

3.15 Monitoring and Measuring Forms (as MRB Reports on the Read-only drive)

- EMS-0101.013A   EMS Status Report
- EMS-0101.013B   Long Creek Operations
- EMS-0101.013C   Crowders Creek Operations
- EMS-0101.013D   Long Creek Laboratory
- EMS-0101.013E   Crowders Creek Laboratory
- EMS-0101.013F   Biosolids
- EMS-0101.013G   Pretreatment
- EMS-0101.013H   Facility Maintenance

4.0   Procedure

4.1   During each management review board meeting, data will be presented to track the performance of the environmental management system.

    4.1.1   At a minimum this review will track the division's performance regarding the significant environmental impacts in each area, biosolids program performance at each critical control point, compliance, objectives and targets, compliance audits, EMS audits, operational controls, and the suitability, effectiveness, and adequacy of the EMS.

4.2   Each area supervisor or designated personnel shall complete the appropriate monitoring and measuring forms (EMS-0101.013_), by utilizing necessary resources as identified above.

4.3   All forms shall be submitted to the EMS coordinator or other designated personnel via e-mail prior to the management review board meeting. The EMS coordinator or designated personnel shall compile all data provided into a single report to be provided at the management review board meeting.

    4.3.1   The quarterly report shall be provided to members of the MRB at least 5 days prior to the meeting to ensure that each member has sufficient time to review the information.

4.4   Supervisors will be responsible for providing an oral presentation regarding the status in their area. The EMS Coordinator or designated personnel shall be responsible for reporting on the status of EMS activities.

4.4.1 The EMS Coordinator or designated back-up shall issue periodic updates via e-mail, memo, or bulletin board regarding updates to EMS level documentation, EMS training, and status of EMS audits.

4.5 The EMS Coordinator or designated personnel shall document the MRB meeting with meeting minutes. The minutes of this meeting shall be filed along with a copy of the Quarterly report in the EMS Coordinators files and maintained on the U: drive.

4.5.1 The EMS Coordinator will create C/PARs for any actions, which are requested during the MRB meeting to ensure follow-up.

5.0   Revision History:

Revision		C/PAR #	Reason for Revision	Description of Revision
Date	#			
5/20/02	3	EMS-0074	External Auditor	Removal of Deviations statement from Level II procedures
5/20/02	3	EMS-0084	C/PAR	Added a modification history section
10/14/02	4	EMS-0116	C/PAR-NBP	Added NBP requirements and element number
10/14/02	4	EMS-0119	External auditor – C/PAR	Include a time frame to have the MRB report to members to ensure enough time to properly review the document
1/21/03	5	29	MRB	Requires EMS Coordinator of designee to issue EMS updates monthly to include audit status. Allowed for less restrictive time frame on C/PAR meetings to at least bi-monthly instead of monthly.
8/11/03	6	171	CPAR	Changed EMS Update to periodically instead of monthly. Added Facility Maintenance Monitoring & Measuring Form

CITY OF EUGENE – WASTEWATER DIVISION
Procedure

Subject:	Monitoring and Measuring			Document No:	WW-00015
Last Reviewed By:	Management Team	Original Date:	8/8/00	Revision No:	2
Approved By:	Management Team			Date Approved:	7/17/03

Purpose

The purpose of this procedure is to outline how the Division will ensure appropriate methods are in place to monitor and measure performance against the environmental objectives and targets of the management system.

Scope

This procedure covers methods to ensure the reliability of data, calibration of relevant equipment and instruments, and compliance with the management system.

Definitions

- QA/QC
- EMS Program Coordinator

Safety Requirements

All specific safety requirements will be included or referred to in specific work instructions.

Procedure (Include reporting requirements and precautionary steps in this section)

Accountablity:	Responsibility:
Management Team Supervisors	Track performance of environmental monitoring and measurement activities that are applicable to the Division's management system.
EMS Team Management Team	Identify appropriate environmental performance indicators for the Division that are relevant to the Division's activities, consistent with our environmental policy, practical, cost effective and technologically feasible.
EMS Manager	Develop process to periodically evaluate compliance with relevant environmental and legislative regulations.
	Analyze results of measuring and monitoring systems to determine areas of success and to identify activities requiring corrective action and improvements.
Laboratory Supervisor Environmental Data Analyst	Review Quality Assurance Plan annually.

Supervisors	Ensure that relevant work section QA/QC procedures are consistent with the approved QA/QC plan.
	Develop and maintain appropriate processes and instructions to ensure reliability and documentation of data such as calibration of instruments, test equipment and software or hardware sampling.
EMS Program Coordinator	Develop and maintain work instructions for relevant monitoring and measurement activities to document performance related to the Division's environmental objectives and targets.
Division Staff	Inform supervisors of any activities or irregularities that may have an impact on monitoring or measuring requirements related to the environmental management system.
	Perform calibration of instrumentation and test equipment, confirms hardware and software sampling is functional.
	Assist in the development of work instructions for monitoring and measurement activities.
	Perform monitoring and measurement activities such as :

- Measure mercury level in influent
- Measure paper goods purchased
- Measure vehicle fuel usage and mileage
- Monitor purchased paper goods for recycle content
- Measure annual power consumption
- Monitor quantities of non-recyclable waste

Environmental Data Analyst	Review and interpret environmental data.

References

Quality Assurance Plan

DD-SEOP 4.5.1

CALIBRATION OF ENVIRONMENTAL MEASUREMENT AND TEST EQUIPMENT

1.0   PURPOSE AND SCOPE

This procedure applies to the major sections that comprise the Wastewater Collections (WWC) Division of the City of San Diego's Metropolitan Wastewater Department (MWWD).   It describes a controlled process for calibrating and maintaining those environmental measurement and test equipment (EM&TE) items that are used specifically for the gathering of data to directly support monitoring and measurement requirements that are invoked as permit conditions or as other legal or regulatory requirements, or that support MWWD initiatives related to beneficial use of waste byproducts.   In addition, processes for monitoring and calibration of equipment used in support of EMS performance measurement are covered by this procedure. This procedure does not apply to measurement or test devices used for other routine operational or process monitoring or measurement purposes.

Calibration and maintenance of EM&TE is required so that the accuracy and precision of the environmental data collected (and potentially, the calculations based on the data) are known and defensible.

2.0   DEFINITIONS

2.1   Calibration

Calibration is defined as the periodic comparison of an instrument or measurement device to a standard of known and greater accuracy, in order to assure the continuity and accuracy of measurements or data. If no calibration standards meeting the definition in Section 2.2 exist, then the basis or justification of calibration methods must be separately documented as noted in Section 4.

2.2   Calibration Standard

A calibration standard is defined as a device or reference used as a means of comparison for quantitatively determining the accuracy, precision, and repeatability of instruments or measurement devices. Calibration standards must have a known and traceable relationship to nationally recognized standards such as those maintained by the National Institute of Standards and Technology (NIST).

3.0   RESPONSIBILITIES

3.1   Section Electrical Support

Staff assigned to major WWC Division operations have primary responsibility for the development of section-specific EM&TE calibration/maintenance requirements matrices, and for implementation of the calibration and maintenance program requirements defined by this procedure.

3.2   Environmental Management Representative (EMR)

The EMR is responsible for monitoring the development of section-specific EM&TE calibration/maintenance requirements matrices, and for providing technical assistance to individual Section Managers where necessary.

3.3   Section Managers

Section Managers or their designees are responsible for review and approving applicable section-specific EM&TE calibration/ maintenance requirements and for ensuring that appropriate resources are made available to ensure that calibration and maintenance are performed within their established intervals.

4.0   PROCEDURE

The procedure consists of the following steps:

4.1   Individual Section Managers shall, with the assistance of the EMR, and the Operations and Inspection Section prepare a section-specific inventory of EM&TE for which calibration and maintenance under this procedure is required.

4.2   For each equipment item so identified, calibration and maintenance requirements (i.e., establishment of equipment identifier, calibration/maintenance interval, calibration/maintenance procedure or process, and source of calibration or maintenance, if performed externally) shall be developed and documented in the WWC Division's Computerized Maintenance Management System (CMMS). Requirements are described further in the following paragraphs.

4.3   Unique numerical identifiers shall be assigned to all EM&TE items. All EM&TE with expired calibration or maintenance due dates shall, where practicable, be tagged with an "Out of Service" tag pending calibration, maintenance, or withdrawal from the EM&TE inventory.

4.4   The required calibration and/or maintenance intervals shall be established, based on the manufacturer's recommendations, the level of projected use, the usage environment, and usage history. Maintenance intervals may be less than or equivalent to, but not greater than, calibration intervals.

4.5   The recall date shall represent the date by which the EM&TE items must be withdrawn from service for calibration and/or routine maintenance.

4.6   Specific calibration and maintenance instructions shall be provided, based, upon the EM&TE manufacturer's recommendations. Calibration standards to be used should be identified; if no calibration standards exist, then the basis or justification of the calibration methods must be separately documented

        Any limitations on use shall be specifically defined.

4.7   The completed EM&TE Calibration Measurement Requirements shall be presented to the Section Manager or their designee for review and approval; all comments shall be resolved to the reviewer's satisfaction.

4.8   The Section Manager shall coordinate the calibration and/or maintenance of all EM&TE identified with Electrical Support and Planner/Scheduler staff.   Where practicable, a calibration tag shall be physically attached to the device indicating calibration recall date and the equipment asset number. Calibration may be performed under the direction of the section manager, either internally or externally (by qualified calibration service subcontractors). Regardless of whether the calibration is performed internally or externally by a subcontractor, all reference standards shall be traceable to nationally recognized standards. If no standards exist, written justification of the calibration method shall be documented in the "step description" column of the CMMS procedures.

4.9   The EM&TE Calibration Measurement Reports shall be used by the Section Managers to track ongoing EM&TE calibration/maintenance status. A record copy shall be forwarded to the EMR, when requested, for information and retention in the environmental records in compliance with Section 5.3 of the EMP.

4.10   The Electrical Support staff shall notify Section Managers in advance of any calibration and maintenance activity to allow for the planning of any required system downtime or instrument changes. Environmental Coordinators may initiate internal Corrective Action Requests (CPAR see DD-SEOP 4.5.2, "Non-Conformance and Corrective and Preventive Action") or purchase orders as appropriate to control specific equipment recall, calibration, and maintenance activities.

        Failure to complete schedule calibration or maintenance within the interval defined on the section's EM&TE Calibration Measurement Requirements Procedures shall be considered to be a nonconformance, subject to the corrective and preventive action processes defined by DD- SEOP 4.5.2, "Non-Conformance Corrective and Preventive Action."

5.0   REFERENCES

WWC Division Environmental Management Plan
        Section 4.6.1, Environmental Action Requests
        Section 5.1, Monitoring and Measurement
        Section 5.2, Control of Non-conformance's and Corrective and Preventive Action
        Section 5.3, Records

DD-SEOP 4.5.2, Nonconformance and Corrective and Preventive Action

TABLE 1 (DD-SEOP 4.5.1)

ENVIRONMENTAL MEASUREMENT AND TEST EQUIPMENT CALIBRATION AND MEASUREMENT MATRIX

Section: _____

Approved By: _____

Approval Date: _____

Equipment Name	Control No.	In Service Y/N	Calibration Interval	Maintenance Interval	Recall Date	Calibr/Maint. Date	Limitation on Use	Calibr/Maint. Instructions

* may not be greater than calibration interval

Form # DD-F-012.0
Form Rev. Date: 6/02

SAMPLE EMS DOCUMENTATION

EMS INTERNAL AUDIT

City of Eugene WWTP – Internal EMS Audit Procedure
City of San Diego WWC – Internal EMS Audit and Compliance Verification Procedure

CITY OF EUGENE – WASTEWATER DIVISION
Procedure

Subject:	Internal Audit			Document No:	WW-00018R4
Prepared By:	Roland Hoskins	Date Prepared:	11/7/00	Revision Date:	12/16/02
Approved By:	Management Team	Date Approved:	12/16/02	Next Review Date:	1/1/04

Purpose

The purpose of this procedure is to document the process for performing annual internal audit(s) of the Wastewater Division EMS to determine the conformance or nonconformance and identify opportunities for improvement.

Scope

The Internal Audit Procedure applies to all internal EMS audits of Division's EMS performed by trained personnel. The audits may cover all activities and processes comprising the EMS elements, including but not limited to the ISO 14001 Standard.

Definitions

- Audit Conclusion
- Audit Finding
- Internal Auditors
- Corrective Action Request (CAR)
- Audit
- Audit Criteria
- Lead Auditors
- Observation
- Objective Evidence
- Nonconformance.

Safety Requirements

All specific safety requirements will be included or referred to in specific work instructions.

Procedure (Include reporting requirements and precautionary steps in this section)

Accountablity:	Responsibility:
Division Director	Initiate audits when necessary. The reasons to initiate an audit may include, but are not limited to: - Verify that the EMS is implemented and is maintained to meet specified requirements - Evaluate the EMS against the ISO 14001 Standard.
Lead Auditors	Provide lead direction for all phases of the audit.

Division Director Lead Auditors	Assist EMS Manager in assigning the audit team members.
EMS Manager	Assign audit team.
EMS Manager Lead Auditors	In November of each year, develop the auditing schedule for the next year. This schedule will include a complete system audit every three years.
Division Director	Approve audit schedule.
EMS Manager Lead Auditors	Develop the audit scope.
Division Director	Approve audit scope.
Lead Auditors	Schedule and conduct audit team meetings (including opening, closing and out-briefing meetings). Facilitate the audit team in preparing audit plan. Review audit plan, scope, and relevant procedures to prepare for the audit.
Audit Team	Prepare for assigned audit using the blank audit forms. Contact auditee with at least one week before scheduled audit to develop interview schedule and obtain copies of the procedures and information relevant to the scope of the audit.
Supervisor	Facilitate audit preparation and assign audit guide if necessary.
Division Director	Initiate the audit by opening meeting or e-mail notice that includes the audit scope.
Division Staff as assigned	Be available to assist the audit teams during the audit.
Audit Team	Determine EMS system conformance to the audit criteria by collecting analyzing and documenting objective evidence through interviews, examination of documents, and observations of activities and conditions in the areas of concern. Record Audit findings of nonconformance(s) based on audit conclusions, individually or as like-groups, on CAR forms.
Lead Auditor	Prepare final audit report and internal audit findings information and route to EMS Manager. Compile all of the auditor's notes and evidence related to the audit and route to Document control staff.
EMS Manager	Initiate non-conformance correction action process if necessary. Update audit status log.
Lead Auditors	Prepare and assign audit teams to conduct any follow up audits if necessary. Conduct follow-up audits. Complete and approve audit documentation and route to EMS Manager.

EMS Manager   Approve follow up audit reports.

Internal Audit Opening Meeting Guidelines (optional)

- Introduce participants to encourage active and cooperative participation in the audit process.
- Introduce any observers or external participants and define their role.
- Review the audit scope and objectives.
- Review the audit plan. This may include a timetable and other relevant arrangements with the auditee, such as closing meeting time and interim meetings between the team and the auditee's representatives.
- Summarize the activities of conducting the audit and review the resources needed to conduct the audit. Confirm the availability of the staff to needed by the audit team.
- Identify formal communication links between the audit team and the persons responsible for the areas being audited.
- Confirm any matters relating to confidentiality.
- Review the relevant safety requirements of the areas the audit team will be auditing.

References

ISO Standard – 4.5.4, Environmental Management System Audit
Table 3: Summary of Applicable Federal, State, and Local Laws, Regulations, and Other Requirements
Internal Audit Report Check List
Internal Audit Questions and Trail Form
Corrective Action Request (CAR) Form
Final Internal Audit Report Form

DD-SEOP 4.5.4

**ENVIRONMENTAL MANAGEMENT SYSTEM AUDITS
AND COMPLIANCE VERIFICATION**

1.0   PURPOSE AND SCOPE

This procedure establishes minimum requirements for planning, performing, and documenting periodic internal audits of the ISO 14001-based environmental management system (EMS) established for the City of San Diego's Metropolitan Wastewater Department (MWWD), Wastewater Collections (WWC) Division.

2.0   DEFINITIONS

2.1   EMS Audit

An EMS audit is defined as a planned and documented investigation performed in accordance with written procedures or checklists for the purpose of verifying, by examination and evaluation of objective evidence, that applicable elements of an ISO 14001-based EMS have been developed, documented, and effectively implemented in accordance with specified requirements.

2.2   Lead EMS Auditor

A Lead EMS Auditor is a qualified and trained individual who is authorized to plan, organize, and direct EMS Audits of WWC Division section and activities; to report findings and observations; and to evaluate the adequacy of corrective and preventive action. At a minimum, WWC Division Lead EMS Auditors shall have received ISO 14001 internal EMS Auditor training and have participated in an internal audit, as an auditor.

2.3   EMS Auditor

An EMS Auditor is defined as a qualified and trained individual who is authorized to perform specific EMS Audit functions under the direction of a Lead EMS Auditor. At a minimum, each auditor must attend a documented training session conducted by the Lead EMS Auditor that presents the detailed requirements of this procedure and discusses their roles in the planned audit.

2.4   EMS Audit Observer

An EMS Audit Observer is an EMS audit team member assigned to observe audit activities under the direction of the Lead EMS Auditor. At the Lead EMS Auditor's discretion, technical observers may be requested to perform specific audit functions in relation to their area of expertise. At a minimum, each observer must attend a documented training session conducted by the Lead Auditor that presents the detailed requirements of this procedure and discusses their roles in the planned audit.

2.5   Finding

A finding is defined as a deficiency or lack of compliance with any element of an EMS. All findings must be formally resolved to assure effective correction of the observed condition and the adoption of system improvements or preventive measures to reduce or preclude the likelihood of recurrence.

3.0   RESPONSIBILITIES

3.1   Environmental Management Representative

The Environmental Management Representative (EMR) is responsible for establishing audit schedules and for designation or selection of Lead EMS Auditors who are independent of the day-to-day management of the plant functions to be audited. The EMR shall also review and approve EMS audit plans and reports.

3.2   Lead EMS Auditor

The Lead EMS Auditor is responsible to the EMR for the organization, planning, and direction of EMS audits, as well as the selection, training, and supervision of the audit team. The Lead EMS Auditor prepares audit plans and reports, and is responsible for evaluating and recommending any required corrective and preventive action responses resulting from audit findings.

3.3   EMS Auditors or Observers

Auditors are responsible for assisting in audit preparation, conducting audit investigations, and reporting results in compliance with this procedure, under the direction of the Lead EMS Auditor. When requested, audit observers shall assist in audit preparation and in conducting audit activities in areas in which they have specific expertise.

3.4   Section Managers

Section Managers of audited section or group shall provide time, work space, and personnel as necessary to support the performance of EMS audits, and are responsible for supervising the prompt and effective resolution of any audit findings.

4.0   PROCEDURE

The audit process is described in the following steps, and is summarized in the flowchart presented in Figure 1:

4.1   Audit Scheduling: EMS Audits shall be conducted at least annually. Audit frequency may be increased at the discretion of the EMR or when specifically requested by upper management.

4.2   Audit Notification: The Lead EMS Auditor shall notify the managers or section heads of the audited organization at least ten days prior to the projected audit date. The

notification shall set the date, time, location, and method of the opening meeting, and shall request that appropriate section personnel participate. Audit notification, opening and closing meeting requirements may be met via e-mail communication.

4.3   Audit Plan: The Lead EMS Auditor shall prepare an audit plan. At a minimum, the audit plan shall include the following:

- the audit number (consecutive, by calendar year);
- a statement of the audit objectives; an identification of the specific section areas being audited;
- a discussion of any special emphasis or focus; references to appropriate plans, procedures, or requirements documents;
- the date(s) of the audit; and an identification of the audit team and the members' assigned roles.

Records of previous audits and corrective and preventive action requests for the audited organization shall be reviewed prior to preparation of the audit plan. Identification of trends or repeated problems identified during the review shall be reflected in the scope of the audit, as appropriate. Any areas of special emphasis shall also be noted in the audit plan.

Audit team selection shall be based on consideration of the particular areas of emphasis for the audit and the qualifications and capabilities of the prospective team members. Audit team members should be sufficiently independent of the day-to-day management of the audit areas that they are responsible for so that the potential for a conflict of interest is minimized. Completed audit plans shall be submitted to the EMR and affected section managers for review and comment prior to the audit.

4.4   Audit Checklist Preparation: The Lead EMS Auditor shall prepare or direct the preparation of an audit checklist based on the elements of the ISO 14001 standard. EMS auditors or observers may be assigned the preparation of specific checklist sections, especially in areas for which they will assume auditing responsibilities. Checklist content shall be consistent with the scope of the audit presented in the Audit Plan. Copies of the checklist, the audit plan, and any required reference specifications, procedures, or plans shall be distributed to the audit team prior to the audit. The Lead EMS Auditor shall brief the audit team on the general scope of the audit and the details of the audit plan, and shall discuss audit checklist assignments prior to the pre-audit opening meeting.

4.5   Opening Meeting: The pre-audit opening meeting shall be conducted by the Lead EMS Auditor, and shall be attended by the audit team members and appropriate representatives of the audited section. Participation shall be documented. The scope of the audit and duties of the auditors or any technical observers shall be briefly presented. Questions from the audited organization shall be answered, proper lines of communication established, and a time set for the closeout meeting. These requirements may be met via e-mail communications.

4.6   Conducting the Audit: Each auditor shall proceed with the investigations required by their assigned portion of the checklist. General guidance on auditing methods is provided in Attachment 1 of this procedure. Auditing methods may include records review, interviews with individual WWC Division staff members, and/or direct observation of plant activities.

        The audit team shall meet and report on audit progress as directed by the Lead EMS Auditor. Observed conditions that require immediate corrective action shall be promptly reported to the management of the audited group or organization. Demands on resources and time may not be increased beyond the level presented in the opening meeting without first discussing and obtaining approval of such requests from the affected section manager.

        When the checklist items have been completed, the audit team shall meet and present their potential findings to the Lead EMS Auditor. The Lead EMS Auditor shall review the auditors' input, obtain additional clarification where required, and prepare or direct the preparation of a draft list of potential findings.

4.7   Closing Meeting: A draft list of potential findings and observations shall be presented to representatives of the audited organization in a brief post-audit closing meeting. Participation shall be documented.   Discussion shall generally be limited to the presentation of findings and the clarification of any misunderstandings. These requirements may be met via E-Mail communications.

4.8   Audit Report Preparation: After the post-audit meeting, the auditors shall prepare final copies of their completed checklist sections and submit them to the Lead EMS Auditor. The Lead EMS Auditor shall prepare a formal audit report, which shall include the following items: a brief description of the audit scope; the identification of the audit team and key personnel contacted from the audited organization; a general statement summarizing the effectiveness of the EMS; and a brief discussion of any findings.

        Each finding shall also be recorded on a Corrective/Preventive Action Request (C/PAR) form in compliance with the requirements of DD-SEOP 4.5.2, Non-Conformance and Corrective and Preventive Action   The audit report and any C/PAR forms shall be submitted to the management of the audited organization for appropriate action, with copies provided to the EMR and the Deputy Director, WWC Division.

4.9   Review of Corrective/Preventive Action Responses and Audit Closeout: The Lead EMS Auditor shall participate in the development of corrective and preventive actions as necessary to ensure that each finding or observation has been adequately addressed. When proposed corrective actions have been determined to be acceptable, the Lead EMS Auditor shall notify the EMR and the affected section managers that the audit is considered to be closed.

4.10   Audit Documentation: Once the audit has been closed, the Lead EMS Auditor shall forward a complete copy of the audit documentation to the environmental records in compliance with Section 5.3 of the WWC Division EMP. At a minimum, audit

documentation shall include copies of the audit notification memo, the audit plan, audit opening and closing meeting participation sheets, the completed audit questionnaire, the audit report, copies of any closed C/PAR forms, and an audit closeout memorandum.

4.11   External Audit/Compliance Verification

Audit Requirements

4.11.1   The Management Representative or assigned person is to administer the compliance audit activities. Notification must be sent to personnel in the WWC, and he/she shall hold a meeting with the External Auditor to clarify the purpose of the Audit, and areas or functions to be inspected.

4.11.2   The type of External Audits are listed as follows and is not exhaustive:

   a.   ISO 14001 certification and surveillance audits.

   b.   Internal City Initiated Audit.

   c.   External Compliance Audit.

4.11.3   During the course of the audit, an area representative shall accompany the Auditor(s), and answer general questions about the section activities, processes and services.

4.11.4   During the audit and exit meeting, the WWC Division representative(s) should neither agree nor disagree to carry out any recommendations or requirements necessitating a capital appropriations request or budget approval process prior to implementation.

4.11.5   The Auditing parties will submit their findings in writing. Findings should be written in a factual manner that does not reflect conjecture, supposition or unwarranted conclusions.   Findings should be marked "Confidential," and forwarded to respective WWC Section Heads who will ensure that distribution is limited to only those persons with a specific need for the information. A copy of the report must be forwarded to the EMR.

4.11.6   After the site receives a written audit report from the auditor, and any clarification needed, the respective WWC Section Heads, EMR and other MWWD representatives will discuss the recommendations and requirements with affected site management. A corrective action plan, which addresses all findings, should be developed by responsible departments. The Corrective/Preventive Action Report (C/PAR) shall be raised as per DD-F-006.0 accordingly.

4.12   All External audit reports and corrective action plans shall be retained as required.

5.0   REFERENCES

WWC Division Environmental Management Plan
  Section 5.2, Control of Non-conformances and Corrective and Preventive Action
  Section 5.3, Records
  Section 5.4, Environmental Management System Audit

DD-SEOP 4.5.2, Non-Conformance and Checking Corrective and Preventive Action

DD-SEOP 4.5.4 June 2003
EMS Audit Rev 1
MWWD WWC Division 6

Figure 1

EMS Audit Process

```
┌──────────────────┐
│ Prepare audit    │──────────────────────►   Lead EMS Auditor
│ notification memo │
└──────────────────┘
         │
         ▼
┌──────────────────┐
│ Select and train │          Lead EMS Auditor
│ audit team       │
└──────────────────┘
         │
         ▼
Lead EMS    ┌──────────┐     ┌──────────────────┐
Auditor     │ Resolve  │────►│ Prepare audit plan│──────────►  Lead EMS Auditor
            │ comments │     │ and checklist     │
            └──────────┘     └──────────────────┘
                 ▲                    │
                 │                    ▼
                 │          ◇ EMR/Facility           EMR/Facility Sup's
            No   └──────────  Sup. Accept? ◇
                                    │ Yes
                                    ▼
                          ┌──────────────┐     Lead EMS Auditor/
                          │ Conduct audit│     Audit Team
                          └──────────────┘
                                    │
                                    ▼
                          ┌──────────────────┐
                          │ Prepare audit report,│──────────►  Lead EMS Auditor
                          │ C/PARs as required   │
                          └──────────────────┘
                                    │
                                    ▼
EMR/Facility   ┌──────────┐   ┌──────────────────┐
Sup's          │ Resolve  │──►│ Prepare corrective/│────────►  EMR/Facility Sup's
               │ comments │   │ preventive action  │
               └──────────┘   │ responses as required│
                   ▲          └──────────────────┘
                   │                   │
                   │                   ▼
              No   │          ◇ Lead EMS Auditor    Lead EMS Auditor  Yes
                   └──────────  Accept? ◇──────────►
                                   │
                                   ▼
                          ┌──────────────────┐        Lead EMS Auditor
                          │ Advise EMR and   │
                          │ Facility Superintendents│──►┌──────────────┐
                          │ of closure       │         │ File records │   EMR/Records Clerk
                          └──────────────────┘         │ per EMP 5.3  │
                                                       └──────────────┘
```

C/PAR - Corrective/Preventive Action Request
EMP - (WWC Division) Environmental Management Plan
EMR - Environmental Management Representative
EMS - Environmental Management System

(DD-SEOP 4.5.4)

ATTACHMENT 1:

SUPPLEMENTARY GUIDANCE FOR CONDUCTING EMS AUDITS

1.0   GENERAL CONSIDERATIONS

This attachment provides general guidance that should be considered by the Lead EMS Auditor, individual auditors, and the audit team as a whole during the onsite portion of an EMS audit.

1.1   Audit Team Behavior

The overall demeanor of the audit team must be perceived as ethical, professional, objective, and fair.   The Lead EMS Auditor is responsible for monitoring the activities of the audit team; unacceptable behavior by any audit team member should not be permitted.   The Lead EMS Auditor should take whatever action is necessary in response to unacceptable behavior, up to and including removing the responsible individuals from the audit team.

1.2   Overcoming Negative Perceptions

Even in the best situations, an auditor may encounter a certain amount of distrust, anxiety, anger, fear, or obstinacy on the part of the audited organization or section.   These kinds of negative responses will hinder the progress of the audit and will detract from the usefulness of the information obtained, unless an effort is made to establish a positive (or at least neutral) setting for the audit.   The Lead EMS Auditor must make a concerted effort to establish a productive setting for the audit, from the first verbal contacts, through the opening meeting, daily debriefings, and closing meeting.   Because the audit team's primary mission is to obtain reliable information about the performance relative to specific written standards, audit team members must work to gain a functional level of cooperation in order to gain access to objective evidence.

1.3   Negative Situations

Extremely negative responses by audited personnel in an audited organization are rare, but they can occur, and can be difficult to handle when they do.   If such a situation should occur, audit team members should politely break off the line of inquiry and bring the matter separately to the attention of the Lead EMS

Auditor, who should attempt to resolve the issue with the section manager.   Regardless of the situation, audit team members must never show anger.

If a situation is truly unresolvable, the Lead EMS Auditor should cancel the remainder of the audit, hold a brief closeout meeting with the audited section manager or superintendent to explain the reasons for cancellation, and advise that the audit will be rescheduled after negotiating a new audit date.   If at this time the management representative asks the Lead EMS Auditor to continue the audit, the Lead EMS Auditor should state the conditions that are necessary.   If the conditions are accepted, then the audit team should resume the audit.   If no

request to continue the audit is made, or if the conditions for continuing the audit are not accepted, then the Lead EMS Auditor should direct the audit team to cease its activities.

1.4   Preconceptions

To the extent possible, audit team members must set aside any preconceptions about the audited section capabilities, regardless of whether they are good or bad. No matter how justifiable such assumptions might be, the audited section strengths and weaknesses must express themselves as part of an objective process. Audit team members must never go into an auditing situation with the intention of finding something (or nothing) wrong. If the auditing process is not open and objective, areas of significant strength or weakness may be missed and the accuracy of the information gained from the audit may be compromised.

1.5   Flexibility

The Lead EMS Auditor should be free to redirect the emphasis of the audit in process, as necessary to concentrate the audit team's resources on critical areas of investigation that may come to light in the audit. The areas of emphasis in the audit plan and the checklists should be followed to the extent possible, but if, in the Lead EMS Auditor's judgment, the situation warrants redirection, it is appropriate to concentrate on specific areas of the checklist and not investigate others; another audit may be performed at a later date to investigate other areas of the program.

1.6   Documentation

The audit checklist should be formatted to facilitate inquiries and note-taking, but each audit team member should use the note-taking methods that they are most comfortable with. Reference copies of the WWC Division EMP and its supporting SEOPs and other documents should be readily available to the team.

2.0   AUDITING METHODS: "DO'S" AND "DON'TS"

Audit team members should:

- be prepared; the EMP sections and procedures associated with assigned area of inquiry should be read and understood beforehand;
- stay in charge of any interviewing situation, and steer conversations away from long monologues or irrelevant discussions;
- recognize that the presence of the audit team is by nature disruptive;
- listen and observe more than they talk;
- thank audited personnel for their assistance when there are no more questions;
- take good notes that accurately describe the individuals contacted, the documents reviewed, and the observations made;
- verify or qualify the extent of potential problems by increasing the sample of records evaluated, or by conducting additional interviews;
- frame audit questions in language that the audited organization or department will understand;
- keep questions brief and focused;

- clarify questions if they seem to be misunderstood;
- complement the audited Section when particular strengths are observed;
- ask open-ended questions to open up lines of inquiry or to gain access to additional information; such questions should be phrased using "who", "what", "when", "where", "why", "how", and "which" (none of which can be answered "yes" or "no"); and
- ask closed questions to confirm a point; closed questions should be phrased using words like "is", "do", "has", "can", "will", and "shall", which will result in a "yes" or "no" answer.

Audit team members should not:

- talk too much, argue, use profanity, or discuss personalities or the results of other audits;
- criticize personnel from the audited Section, especially in front of their co-workers or supervisors;
- disagree with other audit team members or the Lead EMS Auditor in front of the audited Section staff; any such discussions should be reserved for the audit team members only;
- permit representatives of the audited Section to see the audit team's working notes or checklists;
- obtain records or documents without the permission or participation of the audited Section;
- identify a problem in front of the audited section personnel as anything other than something that should be looked at further; notes should be taken and specific concerns verified by reviewing a larger sample of information;
- discuss the decision regarding whether the problem requires more investigation or represents a finding without first discussing the issues separately with the Lead EMS Auditor first; or
- make comments regarding the inadequacy of the audited section' EMS processes or procedures, unless objective evidence suggests that audited section' written requirements are not being fulfilled.

SAMPLE EMS DOCUMENTATION

NONCONFORMANCE AND CORRECTIVE ACTION

City of Gastonia WWTP – Corrective/Preventative Action Procedure
City of San Diego WWC – Nonconformance and Corrective/Preventative Action Procedure
City of Eugene WWTP – Nonconformance and Corrective Action Procedure

City of Gastonia	**Standard Operating Instruction – EMS-0100.004** **Name: Corrective/Preventative Action Report**	**Corresponding Requirements:** EMS Manual: 4.5.2 ISO Standard: 4.5.2 NBP Element: 14
	Prepared By: Beth Eckert, Environmental / Administrative Manager	Revision #: 7 Revision Date: 3/9/04
Wastewater Treatment	Approved By: Beth Eckert, Environmental / Administrative Manager	Effective Date: 3/9/04
	Signature:	Page 1 of 3

Corrective / Preventative Action
Standard Operating Procedure

1.0 Purpose

1.1 This procedure is to develop and implement a corrective and preventative action program to monitor, report, investigate and mitigate any impacts caused by the occurrence of non-routine incidents and/or near misses and nonconformance with the Division's environmental policy or any related procedures.

2.0 Associated Equipment

2.1 None

3.0 Associated Documents

3.1 *Corrective/Preventative Action Report EMS-0101.004*

3.2 *Document Control Procedure EMS-0100.002*

3.3 *City of Gastonia: EMS Manual EMS-0100.000*

3.4 *City of Gastonia EMS Manual: EMS-0100.000 and Policy*

3.5 *ISO 14001 Standard: ANSI/ISO 14001-1996 Environmental management systems – Specifications with guidance for use*

3.6 *National Manual of Good Practice for Biosolids*

3.7 *National Biosolids Partnership Biosolids EMS Guidance Manual*

4.0 Procedure

4.1 Corrective/Preventative Action Reports (C/PAR) will be used to identify potential needs for corrective and/or preventative actions identified during EMS review, external and internal regulatory audits, internal and external EMS audits, and following the occurrence of an event that may have a significant environmental impact or a deviation from a current procedure.

4.2 All Corrective/Preventative Action Reports should be completed within 5 working days following first knowledge of an incident or near miss.

4.3 Any employee is empowered to create a C/PAR following an incident or near miss or at any other time the employee wishes to make recommendations for changes to existing procedures or policies and/or to identify the need for addition policies and/or procedures.

4.4 Area supervisors or trained internal auditors are required to develop Corrective/Preventative Action reports for incidents or near misses reported by employees or identified by other means unless an employee has already done so.

4.5 While completing the C/PAR the author should use the following guidance (If another report form such as the state spill report, the internal supervisor's report, or any other detailed report form is required that completely

satisfies the intent of any of the following sections you may complete that section by typing or writing "See attached form" and attaching a copy to this report):

4.5.1   List personnel who identified the problem.

4.5.2   Describe the problem. If procedure or EMS documents and/or procedures are a focus of the findings then they should be identified by their document control #, when possible. If prompted by an audit the auditor must specify which section of the ISO Standard and/or NBP EMS Guidance Manual the finding is related to.

4.5.3   Provide a root cause analysis, which identifies the source of the problem.

4.5.4   Describe Corrective/Preventative Action.

4.5.4.1   If unable to determine what corrective or preventative actions must be taken to resolve the problem, skip this section. If it's an emergency issue, the supervisor must contact the appropriate personnel to immediately resolve the problem.

4.5.4.2 If able to determine what corrective or preventative actions must be taken to resolve the problem, take appropriate actions. If long-term action is required submit report without completion date for this section.

4.5.5   The author must submit the completed corrective action report to the EMS Coordinator, or designee, along with any and all support data for submittal to the Management Review Board (MRB) at the CPAR meeting.

4.6   MRB will determine if the corrective action that has taken place is sufficient.

4.6.1   Internal auditors will determine if proposed corrective actions are sufficient for C/PARs generated as a result of audit findings.

4.6.2   If sufficient and completed, the report will be signed and returned to the EMS Coordinator for proper filing.

4.6.3   If insufficient or not completed, the Division Manager or designee may assign a new or revised corrective/preventative action to take place, establish a desired completion date, and assign necessary resources i.e. staff time, funds, etc…

4.6.4   CPARs will continue to be reported on during each CPAR meeting until the corrective actions have been completed to the satisfaction of the MRB.

4.7   While modifying a procedure, as a result of a C/PAR, if additional changes are determined to be needed, it is not necessary to write an additional C/PAR if the changes do not change the intent of the procedure. These changes include grammar, re-wording for clarification, spelling, updating of names, phone numbers, and/or references.

4.8   The EMS Coordinator will report final actions to MRB and record completed corrective/preventative action reports on the read-only drive. Any required changes in the documented procedures as a result of the corrective/preventative action will be completed by area supervisors per the Document Control procedure (EMS-0100.002).

Controlled copies of this document have a blue signature are on green paper or are on the computer network U drive

5.0 Biosolids Contractor

5.1   The Biosolids contractor shall be an active participant in the CPAR process.

5.2   The contractor, or its representative, shall be trained on and is expected to comply with the requirements of the CPAR procedure.

5.3   The contractor will also be trained on how to generate a CPAR and/or provided a City contact to assist with the generation of necessary CPARs.

5.4   In addition, when notified by City Staff that Biosolids issues are going to be discussed at a CPAR meeting the Contractor or its representative shall be in attendance.

5.0   Revision History:

Revision Date	#	C/PAR #	Reason for Revision	Description of Revision
3/14/02	4	EMS-0074	External Audit	Removal of the section that states that deviations from this procedure must be documented in a C/PAR, the statement appears to give approval to deviate from the procedure.
8/7/02	5	EMS-0084	C/PAR	Added a modification history section
		EMS-0103	C/PAR	Added section stating that additional C/PARs are not required to make minor changes when already revising a procedure as a result of a C/PAR.
		EMS-0116	C/PAR	Added the National Biosolids Partnership (NBP) EMS element number to the header for linkage purposes and document control requirements. Also, added verbiage to include NBP requirement section on C/PAR if applicable.
11/18/03	6		External Audit	Streamlined the auditing and cpar process to complement one another. And for all findings during an audit to be tracked through the CPAR process.
	6		Internal Audit	Included a requirement for MRB to designate resources for complete corrective actions.
3/9/04	7	258	Internal Audit	Inclusion of Biosolids Contractor into the CPAR program.

DD-SEOP 4.5.2

NON-CONFORMANCE AND CORRECTIVE AND PREVENTIVE ACTION

1.0 PURPOSE AND SCOPE

This procedure describes a controlled process for initiating corrective and preventive action in response to externally or internally reported non-conformances that relate to the implementation of the ISO 14001 conforming environmental management system (EMS) established for the Wastewater Collections (WWC) Division of the City of San Diego's Metropolitan Wastewater Department (MWWD).

2.0 DEFINITIONS

2.1   Non-conformance

For the purposes of this procedure, a non-conformance is defined as a demonstrated lack of conformance to the environmental policy commitments and other mandatory provisions of the WWC Division EMS, as documented by the WWC Division Environmental Management Plan (EMP) and the supporting plans and procedures referenced therein.

Non-conformance with planned arrangements (including deviations from established procedures) can be identified by EMS Internal Audits (DD SEOP 4.5.4, Environmental Management System Audits and Compliance Verification), management reviews   (DD-SEOP 4.6.1), or may be brought to the EMR's attention through internal and external communications (DD-SEOP 4.4.3), Communication of Environmental Information (Internal/External).   Corrective action requests may be issued following non-conformances identified by the WWC Division's third-party ISO 14001 registrar during pre-assessments, registration audits, or follow-up surveillances.

2.2   Corrective and Preventive Action Request Forms

Corrective and Preventive Action Request (C/PAR) forms shall be initiated by the Environmental Management Representative (EMR) to facilitate the investigation of non-conformances, the determination of the root causes of non-conformances, the correction of non-conforming conditions, and the specific preventive actions that are deemed necessary to reduce or preclude the likelihood of recurrence.

3.0 RESPONSIBILITIES

3.1   WWC Division Staff and Section Managers

WWC Division staff are responsible for bringing suspected non-conformances to the attention of their assigned Section Managers, or to the EMR.

3.2   Environmental Management Representative (EMR)

The EMR is responsible for evaluating potential non-conforming conditions noted in internal or external communications, EMS audits, management review, or third-party registrar audits and surveillance activities, and for initiating the C/PAR process where non-conformances are

determined to exist. The EMR shall actively participate in the resolution of the non-conformance and shall work with the responsible Section manager or section supervisor to identify appropriate corrective and preventive actions. The EMR is responsible for preparing corrective and preventive action requests, verifying completion, and logging of the issuance and closure. The EMR shall prepare and present a report to management on a monthly basis identifying the current status and resolution of all C/PAR's.

3.3   Responsible Section Manager or Supervisors

Section Managers or Supervisors determined to have primary responsibility for a non-conformance shall participate with the EMR in the evaluation of the non-conformance, determination of the root cause of the non-conformance, determination of appropriate measures to be taken to correct the immediate situation, and the determination of appropriate preventive measures that could reasonably be taken to reduce or preclude the likelihood for recurrence of the non-conformance. It is the responsibility of the Section Manager, Supervisor or assigned management to ensure these corrective and preventive actions are completed within the determined time frame or report the progress and the revised completion dates to the EMR, prior to the original completion date.

4.0   PROCEDURE

The procedure consists of the following steps:

4.1   Upon receipt of environmental communications that indicate a potential non-conforming condition, or upon review of internal or external EMS audits, or management review reports that indicate a potential non-conforming condition, the EMR shall make a preliminary determination of whether or not a non-conformance exists.

4.2   For conditions identified through internal or external communications, and for which no non-conformance is determined to exist, the EMR shall make an appropriate verbal or written response to the originator through the processes defined in DD-SEOP 4.4.3, Communication of Environmental Information (Internal/External), and forward documentation of such action to the environmental records in compliance with Section 5.3 of the WWC Division EMP . If a nonconformance is determined to exist, go to step 3.

4.3   The EMR shall document the nonconformance on a C/PAR form (DD-F-006.0), assign the C/PAR a unique identifier (2 digit year/sequebntial number), and enter basic C/PAR information on the C/PAR Status Tracking Log (form DD-F-007.0).

4.4   The EMR and responsible Section Manager or supervisor shall discuss the non-conforming condition and its fundamental or root causes, and jointly develop appropriate measures that can be taken to correct the near-term condition, as well as preventive measures that could reasonably be expected to reduce or preclude the likelihood of the

recurrence of the nonconformance. The EMR shall forward a copy of the open C/PAR to the Section Manager with primary responsibility for the nonconforming condition, and jointly develop appropriate corrective and preventive actions.

4.5   Root cause determination and proposed corrective and preventive actions shall be briefly summarized on the C/PAR form. Approval signatures are required by the Section Manager, with appropriate implementation signatures and dates upon completion of the corrective action.

4.6   Due dates for completion of the proposed corrective and preventive actions shall be established, and the C/PAR updated as appropriate to document the EMR and Responsible Section manager or supervisors recommendations. Completion dates may be extended as determined necessary by the Section Manager or Supervisor with EMR approval. These extended dates will be noted on the C/PAR in addition to an explanation for the extension.

4.7   The EMR shall track the progress of corrective and preventive action completion using the C/PAR Status Tracking Log, and verify completion of all required actions. Once completion has been verified, the EMR shall indicate C/PAR closure by signature, and the completed C/PAR, with any attachments, shall be forwarded to the environmental records for retention in compliance with Section 5.3 of the WWC Division EMP.

5.0   REFERENCES

WWC Division Environmental Management Plan
        Section 4.3, Communication
        Section 4.6, Operational Control
        Section 5.1, Monitoring and Measurement
        Section 5.2, Control of Non-conformances and Corrective and Preventive Action
        Section 5.3, Records
        Section 5.4, Environmental Management System Audit
        Section 6, Management Review

DD-SEOP 4.4.3, Communication of Environmental Information (Internal/External)

DD-SEOP 4.3.2, Regulatory Tracking and Analysis

DD-SEOP 4.5.4, Environmental Management System Audits and Compliance Verification

DD-SEOP 4.6.1, Environmental Management Review

DD-F-006.0, CPAR Form

DD-F-007.0, CPAR Log

CITY OF EUGENE – WASTEWATER DIVISION
Procedure

Subject:	Nonconformance and Corrective Action			Document No:		WW-00016R3
Last Reviewed By:	Management Team	Date Prepared:	6/26/00	Revision Date:		2/6/03
Approved By:	Management Team	Date Approved:	2/6/03	Next Review Date:		2/1/05

Purpose

This procedure describes the process to ensure that the Division establishes, maintains and uses a system to identify nonconformances from regulations or requirements and to specify a process to identify and track corrective and preventive actions.

Scope

This procedure applies to all nonconformances requiring corrective or preventive action by staff. These will typically identified by the following methods:

- Internal and external audits
- Environmental Compliance Audits
- Safety Audits
- Inspections
- Incident Reports
- Complaints
- Compliance Inspections
- Permit Inspections

Definitions

- Audit Team
- Corrective Action Request (CAR)
- Environmental Compliance Assessment
- EMS
- EMS Manager
- External Auditors
- Nonconformance

Safety Requirements

All specific safety requirements will be included or referred to in specific work instructions.

Procedure (Include reporting requirements and precautionary steps in this section)

Accountability: **Responsibility:**

Division Management Team   Provide appropriate resources to ensure nonconformances are corrected.

Audit Team	Conduct conformance audit/internal or external assessment.
Audit Team Staff	Identify potential nonconformance and notify supervisor and Audit Team member by e-mail.
Audit Team	Determine whether the potential nonconformance meets the criteria for a nonconformance or an observation.
Lead Auditor	Enter nonconformance or observation information into CAR Database. Select either "finding" or "observation." Submit CAR information to EMS Manager by e-mail.
EMS Manager	Review corrective or preventive action request information and inform Division Management Team of any identified nonconformance that involves a potential regulatory or legal noncompliance. Determines appropriate staff to take corrective or preventive action. Enters appropriate staff name into CAR Database, and request corrective or preventive action.
Division Staff	Identify the cause of the nonconformance. Identify appropriate corrective or preventive action. Complete Corrective Action Approval Request in CAR Database and forward electronically to EMS Manager, with copy to work section supervisor (if supervisor does not complete form).
EMS Manager	Reviews Corrective Action Approval Request. Requests additional information if necessary. Consults with Division Management Team prior to approving . recommended corrective or preventive action.
Division staff	Implement the necessary corrective or preventive action. When corrective or preventive action is completed, fill out Corrective Action Completion Details form in CAR Database. Forward by e-mail to EMS Manager.
EMS Manager	Closes corrective or preventive action.
Internal Auditors	Include review of completed corrective or preventive actions in scope of audits.

References

- ISO 14001 Standard, 4.5.2 Non-conformance and Corrective and Preventive Action
- EMS Manual, Nonconformance and Corrective Action Policy
- Internal Audit Procedure
- Monitoring and Measuring Procedure

SAMPLE EMS DOCUMENTATION

MANAGEMENT REVIEW

City of Eugene WWTP – Management Review Procedure
City of San Diego WWC – Environmental Management Review Procedure

CITY OF EUGENE – WASTEWATER DIVISION
Procedure

Subject:	Management Review			Document No:	WW-00019
Last Reviewed By:	Management Team	Date Prepared:	8/8/00	Revision No:	3
Approved By:	Management Team			Date Approved:	2/13/04

Purpose

The purpose of this procedure is to define the minimum requirements for conducting management review of the Division's Environmental Management System.

Scope

This procedure applies to management reviews performed by the Division Management Team and the EMS Team. Management reviews will consist of comprehensive annual evaluations to determine the adequacy of the:

- Division's environmental policies and procedures
- Current environmental objectives and targets
- Overall effectiveness of the EMS in facilitating achievement of environmental objectives

Definitions

- Division Management Team
- EMS
- Environmental Objective
- Environmental Target

Safety Requirements

All specific safety requirements will be included or referred to in specific work instructions.

Procedure (Include reporting requirements and precautionary steps in this section)

Accountablity: Responsibility:

EMS Manager   At least annually, coordinate and conduct management reviews.

Summarize data from:

- EMS audits
- objectives and targets information
- correspondence from interested parties
- significant changes to the EMS
- other relevant documentation concerning the EMS

Manage production of Division Annual Environmental Report

Supervisors	Review work section's activities semi-annually in relation to EMS objectives and targets, training, and aspect management.
	Provide summary and recommendations for improvements to EMS Team.
EMS Teams	Document any observations, conclusions and recommendations for improvement.
	Prioritize needed EMS conclusions and recommendations for improvement and report to EMS Manager.
EMS Manager Division Management Team	In management review, evaluate the above information to assess the effectiveness of the EMS, and if it is contributing to continual improvement of the Division's environmental performance.
	Assign responsibility and deploy resources to facilitate changes to EMS.
	Distribute findings of semi-annual reports to Division Staff.
EMS Manager	Create record of management review meeting(s), and forward to Document Control Specialist
Document Control Specialist	File record of management review.
Supervisors	Implement necessary changes, or assign responsibility for necessary changes. Follow Documentation/Document Control Procedure.
	Communicate any policy and procedural changes to staff.
Division Staff	Comply with changes to the EMS.

References

- ISO 14001 Standard, 4.6 Management Review
- EMS Manual, Management Review Policy
- Documentation/Document Control Procedure.

ENVIRONMENTAL MANAGEMENT REVIEW

1.0 PURPOSE AND SCOPE

The purpose of this procedure is to define the minimum requirements for conducting annual, independent management reviews of the ISO 14001-based environmental management system (EMS) established for the City of San Diego's Metropolitan Wastewater Department (MWWD) Operations and Maintenance (WWC) Division. This review will be conducted in order to ensure the effectiveness, sustainability and adequacy of the EMS with the objective of continual improvement. This procedure covers all personnel affecting WWC's operations, activities, and products

2.0 DEFINITIONS

2.1 Management Reviews

Management reviews are defined as comprehensive evaluations performed by or at the direction of the Deputy Director, WWC Division in order to determine the adequacy of

- the WWC Division's environmental policy;
- current environmental objectives and targets relative to the WWC Division's overall policy goals; and
- the overall effectiveness of the EMS in facilitating the achievement of environmental policy goals and specific environmental objectives.

Management reviews should not be confused with periodic EMS Management Team briefings, internal EMS audits (see DD-SEOP 4.5.4, "Environmental Management System Audits") or third-party ISO 14001 EMS registration audits. However, management reviews should consider the results of recent internal and third-party EMS audits, along with 1) the extent to which objectives and targets have been met; 2) changing operational or regulatory conditions; 3) the concerns of interested parties; or 4) future needs or other external factors which may affect the necessary structure and content of WWC Division's EMS.

2.2 Interested Party

An interested party is defined as any individual or group concerned with, interested in, or potentially affected by the environmental performance of the WWC Division. Examples of interested parties may include regulatory agencies or authorities; community groups; environmental organizations; the press; or employee organizations.

3.0 RESPONSIBILITIES

3.1 Deputy Director, WWC Division

The WWC Division Deputy Director is responsible for performing or supervising the performance of independent, documented, annual management reviews of WWC Division's EMS, as described in this procedure.

3.2 Environmental Management Representative

The Environmental Management Representative (EMR) is responsible for assisting the Deputy Director, WWC Division or his designee in the performance of management reviews by providing audit reports, environmental performance data summaries, environmental communications records, third party audit correspondence, or other information as may be requested. The EMR is also responsible for the planning and execution of any mandatory action items that may be established as a result of the management review.

4.0 PROCEDURE

The management review process is described in the following steps and is summarized as a flowchart in Figure 1:

4.1 Management review shall be conducted at least once a year, however, may be more frequent depending on internal or external audit activities.

   The management review team shall consist of the following members:

   - Deputy Director (or designee)
   - EMS Management Representative
   - EMS Steering Committee members i.e. Section Managers and designees

4.2 If for any reason an EMS Steering Team member cannot attend the meeting, he/she appoints an alternate person to represent his/her function at the meeting. At least 75% of the EMS Steering Team shall be in attendance to meet the management review attendance requirement.

4.3 The EMS Management Representative is responsible for:

   - setting up management review meetings;
   - assigning responsibility for taking the meeting minutes to one of the meeting attendees;
   - publishing the meeting minutes; and
   - ensuring the meeting minutes and attendee list are retained according to record retention procedural requirements.

4.4 The EMS Management Representative prepares and issues the meeting agenda in advance that may include some or all of the topics listed in Figure 1.

4.5   The EMS Management Review Team shall discuss the agenda items and assess the effectiveness, suitability and adequacy of the management system. Some or all of the following shall be used in the assessment process:

- progress of objectives and targets
- overall program results
- internal and external audit results
- closure of C/PARs
- risk assessment results
- other policy and procedure modifications relative to operational changes

4.6   Assessment results, decisions, and action items from the meeting are recorded in the Management Review Meeting Minutes Summary Form.   The EMS Management Representative shall keep these minutes according to DD SEOP 4.5.3, "EMS Recordkeeping"..

4.7   The EMS Management Representative or his/her designee shall monitor progress to ensure that action items raised during the management review are promptly addressed. Areas needing improvement shall be planned into the next internal audit.

5.0   REFERENCES

WWC Division Environmental Management Plan,
Section 2, "Environmental Policy";
Section 3.3, "Objectives and Targets";
Section 5.3, "Records";
Section 5.4, "Environmental Management Systems Audits";
Section 6, "Management Review".

DD-SEOP 4.3.3, "Establishment of Environmental Objectives, Targets and Programs"

DD-SEOP 4.4.3, "Communication of Environmental Information (Internal /External)"

DD-SEOP 4.3.4, "Environmental Action Requests"

DD-SEOP 4.5.4, "Environmental Management System Audits and Compliance
                          Verification".

FIGURE 1

MANAGEMENT REVIEW PROCESS

(DD-SEOP 4.6.1)

FIGURE 1A - SAMPLE EMS MANAGEMENT REVIEW MEETING

Month, Date, Year

Agenda

To meet WWC's commitment to continual improvement of the EMS, a discussion of the continuing suitability, adequacy and effectiveness of the EMS topic(s) discussed will be carried out through a review of the EMS. The EMS topics(s) discussed during the EMS Management Review meeting, findings, and any action items assigned must be recorded on the EMS Management Review Minutes Summary Form (See Doc. No. DD-F-010.0). Example agenda items are listed below:

- Review overall EMS system
- Review Environmental Policy
- Review significant aspects/hazards and impacts/risks
- Review and approve EMS objectives, targets, and programs (versus program results)
- Review environmental compliance performance
- Review environmental training system
- Review internal and external communications processes, including communication of significant environmental issues
- Review EMS internal and external audit findings
- Consider possible improvements in the EMS as it has been developed
- Discuss budgets and expenditures since last management review
- Discuss site preparations for any up-coming third party EMS audits
- Other agenda items

The following must be addressed and documented on the EMS Management Review Meeting Minutes Summary:

- Is the EMS topic/issue discussed suitable, adequate, and effective? If not, indicate proposed changes and/or improvements.
- Are changes to policy, objectives, or other areas of the EMS necessary? If so, indicate change(s) and proposed implementation method.
- Any additional action items/areas for improvement

FIGURE 1A

SAMPLE EMS MANAGEMENT REVIEW MEETING

Agenda (Continued)

In order for management to effectively carry out their review, the following documents/items listed below are examples of reference materials that may be used during the EMS management review meeting. Additional reference materials not listed below may also be used. All applicable documents or other information utilized during the meeting must be attached and/or referenced in the EMS Management Review Minutes Summary Form (See Doc. No. DD-F-010.0) and/or meeting minutes.

- A review of previous EMS Management Review meeting minutes/action items
- Applicable environmental incidents, non-conformances and corrective action plans/reports
- Applicable employee suggestions and safety committee meeting minutes
- A review of applicable WWC EMS metrics
- New or changed legislation
- Changes in applicable technology, including work processes
- Changes in business environment or WWC's financial and/or competitive position that may influence policy, objectives and targets

FIGURE 2A

EMS MEETING ATTENDANCE SHEET

DD-F-010.0

MANAGEMENT REVIEW MEETING MINUTES SUMMARY FORM

Meeting Date:

Item #	EMS Topic Discussed	Suitable	Adequate	Effective	Policy	Objective(s)	Other Elements	Action Item(s)/Notes	Target Date
		(Y/N)			Change Necessary? (Y/N)				
1									
2									
3									
4									

* Use additional forms or attachments as necessary

Appendix B

EMS Supplemental Toolbox

I.   EMS Presentation

II.   Communication

III.   Gap Analysis Checklist

IV.   EMS Software

V.   Compliance Checklist

VI.   Training

VII.   EMS Audit

EMS SUPPLEMENTAL TOOLBOX

EMS PRESENTATION

Gastonia Wastewater – EMS Implementation and Development

City of Gastonia
Wastewater Treatment Division
Environmental Management System Development and Implementation

Presented By: Donald E. Carmichael, P.E., Director of Public Works and Utilities
Beth Eckert, Industrial Chemist/ EMS Coordinator

Overview of the City of Gastonia's Wastewater Treatment Division

- Two wastewater treatment facilities
- Approximately 11.0 million gallons of wastewater treated daily
- Treatment facility staff of 51 employees
- 23 significant industrial users; 6 general permits issued

How Gastonia Became Interested in an EMS?

- Attended NCDPPEA - ISO 14001 seminar
- Spoke with our Industries who were seeking ISO 14001 certification
- Recognized how it could benefit our organization by helping us to:
  - Minimize and potentially eliminate noncompliance
  - Minimize our impact on the environment
  - Provide consistency over time within the operation
- Became a pilot program with the State of North Carolina

Approval from Gastonia's City Council

- Several members were businessmen, who were familiar with ISO standards, the consistency of application and policy it brings to an organization and recognized the benefit to the City
- Good environmental stewardship
- Above and beyond compliance with laws and regulations
- Proactive - not reactionary
- Recognized intangibles, such as improved public image

Who will Develop the EMS?

- Management selected the following personnel:
  - EMS Coordinator
  - EMS Team
- Staff Member from NC Div. of Pollution Prevention and Environmental Assistance assisted the City
- Ideas and suggestions were sought from all employees

EMS Coordinator

- EMS Coordinator was trained by an external source on ISO 14001.
- Responsibilities include:
  - Training the rest of the WWTD staff on ISO 14001 Environmental Management Systems
  - Guiding development and ensuring that progress was being made on the EMS
  - Ensuring conformance to the ISO 14001 standard

EMS Team

- Responsibilities include:
  - Being the core group of people who develop the EMS
  - Developing and reviewing aspect and impacts
  - Developing and reviewing procedures
  - Training of personnel in their respective areas

NC DPPEA Staff Member

- John Burke helped in every step.
- He had previous experience in EMS development, which provided the City with a starting point for each step.
- He helped with training, procedure development, form development, etc…
- He also helped to ensure that our procedures and programs conformed to the ISO 14001 standard

Gastonia Began EMS Development

- Kick-off meeting was held February 2, 1999.
  - ISO 14001 EMS training of the EMS Team
  - Development of a strategy and timeline for EMS implementation

ISO 14001 EMS Policy/Objectives

EMS policy is developed, significant aspects and regulatory requirements identified, and objectives and targets established.

ISO 14001 Elements

1)Environmental Policy; 2) Significant Environmental Aspects and Impacts; 3) Legal Requirements; 4) Objectives and Targets

REVIEW

Upper management reviews various reports at regular intervals to determine the need for changes to policy, objectives, and/or procedures.

ISO 14001 Elements

Management Review

STRUCTURE/RESPONSIBILITY

To carry out the policy and objectives, employees are trained on procedures relevant to their work activities and consequences of departure from those procedures. Employees are made aware of their roles and responsibilities.

ISO 14001 Elements

1)Roles and Responsibilities; 2) Training, Awareness, and Competence; 3) Operational Control; 4) Internal and External Communication; 5) Emergency Preparedness and Response; 6) Document Control

CHECKING/CORRECTIVE ACTION

A monitoring program is established to evaluate environmental performance. Employees can report problems to management through corrective action reports. Audits are conducted to evaluate EMS effectiveness

ISO 14001 Elements

1) Corrective and Preventative Action Program; 2) EMS Auditing; 3) Monitoring and Measuring Program; 4) Record Keeping

Policy and Objectives

Environmental Policy

- An environmental policy was developed by the EMS team
- Approved by City Council on March 16, 1999.
- The policy is located on Gastonia's website at www.cityofgastonia.com

Aspects and Impacts

- An aspect and impact procedure and forms were developed
- Aspects and impacts were:
  - identified
  - rated high, medium, or low for severity and frequency
  - significance was determined
- The EMS Team took approximately 3 months to determine significance - done by June, 1999.

Legal and Other Requirements

- Identified and made a list of all legal and other requirements for the WWTD:
  - Permit effective and expiration dates
  - Compliance report due dates
  - Contract dates, etc...
- Determined a procedure for keeping them current
- C/PAR resulted in adding EMS review dates

Objectives and Targets

- The EMS team developed a list of objectives and targets for the division based on:
  - Significant aspects and impacts
  - Legal requirements
  - Interested third parties
  - Economical concerns
  - Technological concerns

Structure and Responsibility

Who had Responsibilities under the EMS?

- Successful EMS must involve every level of personnel from Trades Helper to City Council Member
- EMS Team developed a document entitled Roles and Responsibilities
  - Lists every position and their responsibilities as they pertain to the EMS

Structure of the EMS

- EMS manual which outlines the City's EMS
- Procedures both for the operation of the management system and the operational controls of the facilities
- Awareness and procedural training
- Development of forms and supporting documentation

EMS Manual

- Format based on the ISO 14001 standard to assure the EMS was structured to meet the requirements of the standard
- Written by EMS Coordinator, reviewed by the EMS team and approved by the Superintendent of the WWTD

EMS Procedures

- Created as a direct result of the ISO 14001 standard, like the following:
  - Document Control
  - Training
  - Aspect & Impact
  - Corrective / Preventative Action
  - EMS Auditing
  - External Communication
  - Monitoring and Measuring
- Standard only requires 3 documented procedures: monitoring and measuring, compliance audits, and operational controls

Document Control

- Document numbering system
  - Divisional documents have EMS numbers
  - Site specific documents are identified as such by a specific prefix
  - Procedures and forms are listed on the Document Control Matrix
- Signatures on original documents are blue
- Controlled copies
  - Green paper
  - Computer (read-only drive)
- All other documents are uncontrolled

Document Control Matrix

Document Title	Document #	Revision	Retain	Frequency	Controlled Copy Locations
ENVIRONMENTAL MANAGEMENT SYSTEM DOCUMENTS					
Procedures for Environmental Management System					
Environment Management System Manual	EMS-0100.000	0	As Needed	As Needed	• U: Drive 1. Long Creek Operations 2. Crowders Conf. Room 3. PW Director's Office 4. Pretreatment Office 5. Superintendent's Office
EMS Review Procedure	EMS-0100.001	0	As Needed	As Needed	• U: Drive 1. Long Creek Operations 2. Crowders Conf. Room 3. PW Director's Office 4. Pretreatment Office 5. Superintendent's Office
Document Control Procedure	EMS-0100.002	0	As Needed	As Needed	• U: Drive 1. Long Creek Operations 2. Crowders Conf. Room 3. PW Director's Office 4. Pretreatment Office 5. Superintendent's Office

Training

- Training for Everyone
  - EMS policy
  - EMS awareness
  - Corrective/preventative Action
  - External Communication
- Supervisors determine who is to be trained on specific operational control procedures
- Training is documented and listed on the training matrix

Training Matrix

Document Title	Document #	Rev	Coleman Keeler	Larry Cummings	Diane Shumate	Opal Morgan	Beth Eckert	Janet Maddox	Nancy Matheny	Christina Johnson	Bobby Hanna	Charlie Graham	David Hux	Jim Elden
EMS Management Procedures														
Awareness Training	N/A	N/A	5/9/00	5/9/00	9/11/00	8/28/00	NR	5/9/00	9/11/00	5/12/00	5/12/00	5/9/00	5/9/00	9/11/00
Environment Management System Manual	EMS-0100.000	0	NR	2/14/00			NR							5/8/00
EMS Review Procedure	EMS-0100.001	0	5/30/00	2/14/00			NR	4/10/00					5/8/00	5/8/00
Document Control Procedure	EMS-0100.002	0		2/14/00			NR	4/10/00					5/8/00	5/8/00
Aspects and Impacts Procedure	EMS-0100.003	0	5/15/00	2/14/00			NR	5/9/00					5/8/00	5/8/00
Corrective/Preventative Action Report Procedure	EMS-0100.004	2	5/9/00	5/9/00	8/30/00	8/28/00	NR	5/9/00	8/28/00	9/11/00	8/30/00	8/30/00	5/9/00	5/9/00
Training Procedure	EMS-0100.005	1		12/18/00			NR	4/10/00					12/18/00	12/18/00
Roles and Responsibilities Listing	EMS-0100.006	0	5/30/00	2/14/00	8/30/00	8/28/00	NR	4/10/00	1/27/00				5/8/00	5/8/00
Objective and Targets - Improvement Plan Summary	EMS-0100.007	1	NR			8/28/00	NR							
External Communications Procedure	EMS-0100.008	1	5/28/00	6/28/00	9/11/00	8/28/00	NR	5/28/00	8/28/00	9/11/00	8/30/00	8/30/00	8/14/00	5/28/00
Environmental Management System Audit	EMS-0100.011	0					NR						5/8/00	
Sewer Overflow / Reporting Procedure (Press Release);Media List; Distribution list; Emergency Phone list	EMS-0100.012	3	NR		9/1/00		NR							9/1/00
Monitoring and Measuring Procedure	EMS-0100.013	0		NR			NR							
Legal and Other Requirements	EMS-0101.001	1		NR			NR							

4

Operational Controls

- Developed as a result of what the EMS Team determined to be significant to the Gastonia WWTD
- Developed to help achieve an Objective and Target set by the Gastonia WWTD

Checking and Corrective Action

Checking / Corrective Action

- The EMS is designed to continually improve itself through the following programs:
  - Monitoring and measuring
  - Corrective/Preventative Action Reports
  - Internal Audit Program
  - Management Review

Monitoring and Measuring

- Procedures for tracking and documenting the impacts the WWTD is having on the environment
- Measurements are taken and records are maintained for each area related to the impacts determined to be significant
  - proper calibration is required and documented of all equipment related to these measurements
- Audits are conducted and documented

Corrective/Preventative Action Reports

- All employees are encouraged to complete C/PARs, as the result of:
  - system failure
  - procedure deviation
  - recommendation for improvement, etc...
- C/PARs are reviewed by the management review board
  - C/PARS remain open until it is determined by the Superintendent that sufficient action was taken and completed

Audit Program

- Auditors trained by an external source in ISO 14001 Auditing
- Auditors from each area of the WWTD
- Each area audited biannually and audit reports generated
- Responses are received from the area supervisor
- Follow up is done to assure all findings have been corrected.

Management Review

Management Review Board

- Monthly review of C/PARs
- Quarterly review of:
  - Status of the EMS procedures and training
  - Results of the monitoring and measuring actions
  - Progress on objectives and targets
  - Audit results

Benefits of the EMS

- Enhanced cooperation among staff
  - Within the WWTD as well as with other Divisions in the City
  - Consistency in applications, despite employee turnover
- Public awareness of the City's commitment to environmental excellence
- Improved relationships with State authorities
- Controlled documented procedures
- EPA accepted the EMS documentation and/or descriptions as the WWTD's portion of the MOM program

Plans for our EMS

- Become Certified
  - Why?
    - Third party confirmation that our EMS conforms to the standard
    - Positive recognition for the City's efforts
- Expand to other areas of the Public Works Department

Summary

- The City of Gastonia has taken the position that we would like to consistently go above and beyond compliance.
- We feel that ISO 14001 is a large step in that direction because:
  - Establishes a framework for an EMS
  - By design it provides for continual improvement
    - Maintain a proactive approach to compliance
    - Provides a systematic progressive solution to current and future problems

EMS SUPPLEMENTAL TOOLBOX

COMMUNICATION

Clark County, Washington Public Works - Questions for Frontline Employees
City of San Diego WWC – Quarterly EMS Newsletter
City of Eugene WWTP – News Article
City of Charleston CPW EMS Policy and Commitment Statement
City of Charleston CPW - WCD Associate Recognition Program

Environmental Management System (EMS)
Introductory Questions for the Frontline (Shop Floor) Employees

1. Are you aware of the positive environmental work being done by Equipment Services? What?

2. In your mind what are the top 3 things the shop does that can or does negatively impact the environment?

3. What is the shops greatest opportunity for environmental improvement?

4. Do any environmental regulations affect the shops? If yes, what are they and how do they apply to you?

5. If you have concerns about a product or a material where do you go for information?

6. Is the environment important to you? How or why?

7. Does this environmental policy work for you?

   C – Compliance with Regulations
   C – Continuous Improvement
   P – Pollution Prevention
   W – Working Together toward Sustainability

8. What do we need to get the buy-in from your fellow employees to make this EMS project a success?

9. Can you think of something this EMS project can do for you to make your job more rewarding?

10. What could management provide you to be a better environmental shop supporter?

Did You Know?

STANDARD OPERATING PROCEDURES (SOP):

- ❖ WWCD has currently incorporated 36 new SOPs into the MWWD/WWC Operations and Policy Manual
- ❖ Where are these located?
  All Section Managers (GWUS, Project Manager, Senior Civil Engineer, And Senior Management Analyst) have controlled copies in their office.
- ❖ Who is responsible for complying with these SOPs?
  Every employee of the Wastewater Collection Division
- ❖ Who is responsible for training on SOPs?
  You're Immediate Supervisor

WHO IS YOUR ENVIRONMENTAL MANAGEMENT TEAM (EMT)?

Jose Oropeza – Construction   Gary Neel - NROW
Terrell Powell – ROW   Angela Salah - Administration
Bert Seldura – SPSIOM   Pashant Pandya – Maintenance Coordinators
Nabeel Qawasmi – Engineering   Kristen Ikeda – FEWD
Mike Whelan – CCTV   Johnny Mitchell
Rick Donahue

WHO IS YOUR ENVIRONMENTAL MANAGEMENT SYSTEM STEERING COMMITTEE (EMSSC)?

Chris Toth, Deputy Director   Bill Denhart, Assistant Deputy Director
Rick Donahue, Environmental Management Rep.   Johnny Mitchell, Alternate Environmental Management Rep.
Alex Acosta Mathis, Senior Management Analyst   Mike Bedard, G.W.U.S.
Leroy Davis, G.W.U.S.   Kevin Gensler, G.W.U.S.
Isam Hireish, Senior Civil Engineer   Mike Giehl, FEWD Program Manager

UPCOMING EVENTS:

September 8, 9, 10, 2003   ISO 14001 Internal Audit
November 2, 3, 4, 2003   ISO 14001 Final Assessment Audit

ENVIRONMENTAL BEAT

+   CERTIFICATE OF CONFORMANCE TO THE ISO 14001 STANDARD
         ISSUED TO WASTEWATER COLLECTION DIVISION:

Certificate Number:	38024
Effective Date:	12 December 2003
Expiration Date:	11 December 2006
Issued Date:	15 December 2003

CONGRATULATIONS TO ALL EMPLOYEES
WWCD IS ISO 14001 CERTIFIED!

+   Recycling Progress: October to December 2003:

• Plastic Bottles	27 pounds
• Glass Bottles	13 pounds
• Aluminum Cans	11 pounds
TOTAL	$ 29.46 - Used for Holiday Party

Metal Bin: Please do not put any plastics, garbage, or paper in metal recycling
         bin. This is for metal only.

+   Your Environmental Management Team (EMT):
         Terrell Powell is now the Wastewater Collection Division's Alternate
         Environmental Management Representative (AEMR)

Jose Oropeza – Construction	Gary Neel - NROW
Terrell Powell – ROW/AEMR	Angela Salah - Administration
Bert Seldura – SPSIOM	Pashant Pandya – MCS
Nabeel Qawasmi – Engineering	Kristen Ikeda – FEWD
Mike Whelan – CCTV	Rick Donahue - EMR

+   Upcoming Events: **Your WWCD EMT is currently seeking input on
                           selecting a mascot for our flag and banner. Please
                           submit your ideas to your E.C.**

City of Eugene
CityNews

News from people at the City of Eugene

April 4, 2002

As part of its on-going effort to keep the community informed and involved, the City of Eugene publishes this weekly newsletter highlighting the work being done to make Eugene a better place.

*Click here to see a listing of this week's **Public Meetings Calendar***

Past City News Pages

Table of Contents

AROUND THE CITY

Fire Department Earns Renewal of State Exemption

Oregon State Fire Marshal Bob Garrison has granted the City of Eugene a renewal of its exemption from adhering solely to fire safety codes adopted by the State, and from oversight of the City's fire prevention programs by the State office. With the exemption, the City is free to adopt codes and code amendments that address specific local issues. This has been done on a number of occasions, and the option remains open to the City as an exempt jurisdiction should other issues arise.

A jurisdiction can be granted an exemption by meeting certain criteria in the area of fire prevention; that is, the local fire department must assume responsibilities including code enforcement, fire investigation, public education, juvenile firesetter counseling, and others. At this time, only nine Oregon jurisdictions including Eugene have the exemption. Mr. Garrison will come before the City Council on April 8 to present Eugene's certificate of exemption. For more information, please contact Acting Fire Marshal Reggie Augsburger at 682-5411.

Environmental Management System Saves Trees, Water, Power

The new Environmental Management System at the Wastewater Division helped save more than half a ton of paper in the past year using simple reduction strategies.

Wastewater's Environmental Management System established targets to reduce paper use and increase the post-consumer content of paper products that are used. The division has employed a number of simple strategies over the past year in an effort to accomplish these goals. These strategies include reducing the default margins for printed documents, using duplex options on the division's printer, reformatting reports to use less paper, and installing cloth towel dispensers in restrooms. In addition, the division has written guidelines for the use of paper and established purchasing requirements for post-consumer content. Staff is encouraged to use electronic media for correspondence, and computers or overheads are used at meetings instead of handing out paper copies of agendas and informational materials. These efforts have been supported with reminder stickers on equipment and training for all employees on paper reduction targets and objectives.

The division's goal for last year was to reduce overall consumption of paper goods by 30%. A monitoring report shows that the actual reduction was approximately 20%, and the 30% target will be retained as next year's goal. In terms of specific reductions, the amount of paper used was cut by 0.6 tons or around 120,000 sheets of paper. The goal for using recycled paper was that 70% of the gross amount of all paper goods purchased would be made from recycled material with a minimum of 30% post-consumer content. The Wastewater Division exceeded this goal by using 97% recycled paper and will change the goal for the next year to 99%. The environmental benefits from these efforts can be stated in the following terms: ten 50-foot-tall trees saved, 12,300 gallons of water saved, 6,470 kilowatt-hours of electricity saved, and 2.6 cubic yards of landfill space that did not have to be used. Using recycled content also saves water and power since each ton of paper made with recycled fibers saves 7,000 gallons of water and 4,100 kilowatt-hours of electricity. For more information, contact Peter Ruffier, Wastewater Division Director, at 682-8606.

COMMISSIONERS OF PUBLIC WORKS
CITY OF CHARLESTON, SOUTH CAROLINA

ENVIRONMENTAL MANAGEMENT SYSTEM POLICY

POLICY STATEMENT:

The Charleston Commissioners of Public Works (CPW) is committed to the supply, treatment, and delivery of safe potable water and the collection, treatment, and disposal of wastewater in an environmentally sensitive and responsible manner. This policy establishes the commitment to meeting all applicable federal, state, and local laws, regulations, and statutes. In addition, it establishes the commitment, working cooperatively and openly, to meet customer and community water quality and environmental expectations. It establishes the commitment to improving cost and resource efficiencies. Further, this policy establishes the framework for setting and reviewing environmental objectives and targets with the intent of preventing pollution, protecting the environment, and continually improving environmental performance for present and future generations.

POLICY IMPLEMENTATION:

Recognizing that many aspects of operations carried out at CPW can impact the environment, this policy establishes the directives for all associates. This policy shall be formally communicated and explained to all CPW associates and made available to the public. It shall be centrally maintained and updated as necessary to reflect the changing needs and goals of CPW.

The CPW Environmental Management System (EMS) established by this policy, shall pursue and measure continual improvement in performance by establishing and maintaining documented environmental objectives and targets that correspond to the mission, vision, and core values adopted by CPW. In addition, CPW shall conduct its operations to:

- Emphasize environmental vigilance over CPW resources, processes, products, wastes, contamination and prevention of pollution.
- Develop management and associate commitment to the protection of the environment and prevention of pollution. Set clear environmental objectives and targets with clear assignment of accountability and responsibility and implement Environmental Improvement Programs.
- Commit to compliance with the letter and spirit of all applicable, federal, state, and local laws and regulations.
- Plan, design, develop, construct, operate, and maintain facilities to encourage resource-efficiency and the protection and improvement of the quality of the environment.
- Encourage integration of environmental planning into the strategic business plan.
- Establish a management process for achieving targeted environmental performance by routinely monitoring and reporting on significant environmental aspects.
- Implement a process of continual quality improvement for environmental management with the goal of achieving and maintaining third party certification for the EMS.
- Establish an effective environmental communication program with external environmental stakeholders such as the South Carolina Department of Health and Environmental Control (SCDHEC), community groups, and other interested parties as needed.

The Environmental Management System shall undergo review by the CPW officers on an annual basis. The effective date of this Environmental Policy is the 15th day of October, 1998.

Committed to by the associates of the Water Distribution Department for the Commissioners of Public Works of the City of Charleston, South Carolina.

Steve W. Kinard Manager	William E. Koopman, Jr. Assistant Manager	John B. Cook, P.E. Director of Engineering	Patric M. McClellan Director of Administration Services
Anderson, J.	Baker, M.	Bickerstaff, R.	Brown, F.
Brown, W.	Buncomb, E.	Carcueva, M.	Champagne, C.
Cockrum, J.	Copleston, P.	Couche, D.	Cummings, N.
Cypress, J.	Dais, B.	Daniels, D.	Dombrowski, K.
Eldredge, T.	Ellis, E.	Franks, D.	Gaillard, F.
Giacomarro, M.	Green, K.	Hamilton, B.	Heyward, M.
Hill, K.	Hoagland, R.	Jenkins, J.	Jenkinson, D.
LeBlanc, C.	Marks, J.	McCrady, A.	McCutchen, J.
Middleton, A.	Middleton, F.	Moore, P.	Myers, R.
Nelson, R.	Nesbitt, R.	Oberoi, K.	Prentiss, J.
Ravenel, A.	Relyea, J.	Remington, W.	Richardson, E.
Richburg, T.	Roszell, D.	Sageser, R.	Sam'l E
Sanders, G.	Sanders, L.	Scott, L.	Simmons, N.
Singleton, J	Smalls, L.	Smiley, J.	Sordelet, C.
Staggers, W.	Sullivan, K.	Watson, L.	White, L.
Whitsett, K.	Williams, B.	Williams, C.	Wright, St. J
Young, L.			

Commissioners of Public Works
of the City of Charleston, SC

Wastewater Collection Department
Associate Recognition Program
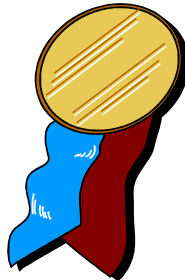
Prepared By:

the WWCD Employee Recognition Committee

and the

Employee of the Quarter/Year Committee

Approved by: _____
              Adrian Williams, Superintendent

Revision: 2002-0; Effective Date: September 01, 2002

	Wastewater Collection Department **Associate Recognition Program** *Page 2 of 9*	
COMMISSIONERS OF PUBLIC WORKS Of the City of Charleston South Carolina		
Revision: 2002-0 Effective Date: September 1, 2002	Prepared By: Asso. Recognition Committee and the EOQ/EOY Committee	Approved By: Adrian Williams, Superintendent

Award Program Index

Committee Members:

WWCD Employee Recognition Committee:

Rick Bickerstaff
Letty Clay
Rodney Cromwell
Larry Ferguson
Ronnie Inabinet
Robert Simmons
W.C. Swain

Employee of the Quarter/Year Committee:

Ronnie Inabinet
Chris Hendricks
Jeff Tisdale
Solomon Wade
Earnest Washington
Susan Roberts

Employee of the Quarter:

The recommended procedure for recognizing an associate as the Employee of the Quarter (EOQ) is as follows:

Recommendation Procedure:
- The EOQ Chairperson will initiate a reminder for nominating associates for this award. Reminder will be forwarded via e-mail, interoffice memo or verbally during a scheduled department meeting.
- Any associate within the WWCD may be recommended for this award by any other associate within the department.
- Recommendation forms are available at the Ballot Box (Suggestion Box) located under the WWCD bulletin boards at the rear of the facility.
- All nominations must be placed in the Ballot Box by the time and date specified by the EOQ Chairperson.

Eligible Associates:
- All full-time departmental associates are eligible. New associates become eligible at the end of their orientation period.
- No associate who has been chosen within the past 6-month period is eligible.
- Associate(s) become ineligible if they have received a disciplinary action, i.e., written warning, days off, etc., for policy violation during the quarter.

EOQ/EOY Recognition Committee:
The Recognition Committee will be comprised of employees chosen by their peers or established through volunteering. The committee will equitably represent all sections and levels of the department.

Recognition Committee Members:
- Chairperson, chosen by the committee members, will serve a 2-year term.
- Committee members, either appointed or as volunteers, will serve a 1-year term.
- One representative from each section of the department is required.
- When possible past winners may be chosen to serve as committee members.
- Advisor(s) - as required.

At the end of a Chairperson's term, the existing committee members and new members will nominate and appoint a new Chairperson. The new Chairperson may be one of the existing committee members nearing the end of their term.

Committee members will seek their own replacement at the end of their term. A committee member's replacement should be from their current section unless otherwise approved by the Superintendent.

Wastewater Collection Department
Associate Recognition Program

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| Revision: 2002-0 | Prepared By: Asso. Recognition Committee | Approved By: Adrian Williams, |
| Effective Date: September 1, 2002 | and the EOQ/EOY Committee | Superintendent |

The Superintendent or Assistant Superintendent may act as an advisor to the committee, but will carry no vote.

EOQ Selection Process:
- The Recognition Committee will meet on the third week of the last month of each quarter.
- The committee members will review all nomination forms and the details included on the forms, and will discuss the following:
  - ✓ Excels in general productivity
  - ✓ Willingness to assist associates throughout the department
  - ✓ Contributes to the goals of the department
  - ✓ Commendable customer service
  - ✓ Team oriented
  - ✓ Positive attitude

- The committee will vote on the nominees, and the nominee with most votes will be awarded EOQ.
- In the case of a tie vote, the Superintendent will make the final decision.

   All associates' personnel information is to be kept confidential.

Award Package for the "Employee of the Quarter"
- The EOQ award will be presented at the following departmental meeting.
- An "Employee of the Quarter" plaque will be presented to the associate.
- The associate's name will be engraved on a brass plate, which will be affixed to the EOQ plaque. The plaque will be displayed in the front lobby area.
- An EOQ certificate will be presented to the associate and a copy placed in the associate's personnel file.
- A letter of appreciation will be presented to the associate and a copy placed in the associate's personnel file.
- A fifty dollar ($50) non-cash gift card to the retail store or other establishment (as available) of their choice will be issued to the associate.
- The associate will have the privilege of parking in the designated "Employee of the Quarter" parking space located at the front of the associate parking area, for the duration of the year.
- The associate will have their choice to attend lunch with their supervisor, Senior Supervisor, Assistant Superintendent, Superintendent or an Officer of the company, whomever they choose.
- The associate's name will be sent within 5 working days to Human Resources for recognition in a CPW news publication.

   Special Note: The Committee Chairperson will be responsible for coordinating the above recognition and awards.

Revision: 2002-0 Effective Date: September 1, 2002	Prepared By: Asso. Recognition Committee and the EOQ/EOY Committee	Approved By: Adrian Williams, Superintendent

Employee of the Year:

Eligible Associates:
- All associates who were nominated as Employee of the Quarter through the duration of the year are eligible.
- Associate(s) become ineligible if involved with negligent loss or damage of equipment, or have received a disciplinary action for policy violation.

EOY Selection Process:
- Each associate in the department will be given a ballot sheet listing the eligible associates.
- Departmental associates will mark their selection on the ballot sheet. Voting will be done by secret ballot and tabulated by the EOQ/EOY Committee.
- Voting may occur during a departmental meeting.
- In case of a tie vote, the Superintendent will be asked to cast the deciding vote.

EOQ/EOY Recognition Committee:
The EOQ/EOY Committee will preside over EOQ/EOY awards. *See section on EOQ.*

Award Package for the "Employee of the Year"
- The EOY award will be presented at the following departmental meeting and/or the Safety and Service Awards luncheon held each year.
- An "Employee of the Year" plaque will be presented to the associate.
- The associate's name will be engraved on a brass plate, which will be affixed to the EOY plaque. The plaque will be displayed in the front lobby area.
- An EOY certificate will be presented to the associate and a copy placed in the associate's personnel file.
- A letter of appreciation will be presented to the associate and a copy placed in the associate's personnel file.
- A one hundred twenty-five dollar ($125) monetary gift will be issued to the associate.
- The associate will have the privilege of parking in the designated "Employee of the Year" parking space, located at the front of the associate parking area, for the duration of the year.
- The associate will have their choice to attend lunch with their supervisor, Senior Supervisor, Assistant Superintendent, Superintendent or an Officer of the company, whomever they choose.
- The associate's name will be sent within 5 working days to Human Resources for recognition in a CPW news publication.
- An "Award Notification Form" must be forwarded to the Accounting Dept. with awards over fifty dollars ($50). Per state and federal compensation laws the associate must be taxed on awards over fifty dollars ($50).

    Special Note: The Committee Chairperson will be responsible for coordinating the above recognition and awards.

Revision: 2002-0 Effective Date: September 1, 2002	Prepared By: Asso. Recognition Committee and the EOQ/EOY Committee	Approved By: Adrian Williams, Superintendent

Productivity Management Program (PMP) Awards:

This award is based on monthly cumulative PMP points for the entire department.

Eligible Associates:

All permanent associates in the department receive this award when the department's productivity points from the PMP program exceed 100%.

Part-time or temporary employees who work the entire quarter will also be eligible.

Award Package:

Each associate will receive a non-cash gift card/certificate worth eight dollars ($8).

The individual awards can be combined to finance a department-wide event, i.e., department-wide luncheon, breakfast, baseball game, etc. Each associate will vote on combining the awards prior to final approval. The majority will rule.

	Wastewater Collection Department **Associate Recognition Program**	*Page 7 of 9*

Revision: 2002-0 Effective Date: September 1, 2002	Prepared By: Asso. Recognition Committee and the EOQ/EOY Committee	Approved By: Adrian Williams, Superintendent

Associate/Crew of the Month Award:

Eligible Associates:

- All associates that measure their level of production through the Productivity Management Program (PMP).
- Associates that accumulate points based on a "team" approach, i.e., designated crew, will be considered one unit.
- In consideration of crewmember shifting, the crew that the associate spent the majority of their time with during the month will be the crew that they are measured with.
- Associate(s) become ineligible if they have received a disciplinary action, i.e., written warning, days off, etc., for policy violation during the month.

Selection Criteria:

- PMP points accumulated by each crew, technician, administrative personnel, etc. will be calculated to establish an average for each month.
- The PMP average for each section will be compared to determine the section winner.
- Section winners will be as follows:
  - Administrative Section (if participating)
  - Construction Section
  - Maintenance Section
  - Pump Station Section
  - Technical Section

- For an associate/crew to win in consecutive months, the associate/crew must exceed their previous month's productivity percentage by 5%.

Award Package:

- ACMA award certificate will be given to the individual or to all associates on a crew.
- The individual or all associates on a crew will receive a ten dollar ($10) non-cash gift card or certificate.

Presentations shall be made monthly at a department gathering: i.e., departmental meeting, skills based training, safety training, etc.

COMMISSIONERS OF PUBLIC WORKS Of the City of Charleston South Carolina		
Revision: 2002-0 Effective Date: September 1, 2002	Prepared By: Asso. Recognition Committee and the EOQ/EOY Committee	Approved By: Adrian Williams, Superintendent

Excellent Performance Award (Spot Award):

Eligible Associates:

All WWCD associates are eligible.

Selection Criteria:
- Supervisory level associates may recommend an associate or crew worthy of recognition directly to the Superintendent or Assistant Superintendent.
- Selection will be made based on the significance of a "job well done", operational improvement suggestion, safety suggestion, project or program implementation, etc.
- The award must be verbally approved by the Superintendent or the Assistant Superintendent, and an Officer of the company.

Award Packages:

Bronze Award:
- This award is given to any associate whose suggestions or performance has impacted the WWCD in a positive manner.
- Justification for the award includes but is not limited to:
  - Going "above the call of duty".
  - Performing job requirements with significant productivity under abnormal circumstances.
  - Implemented safety improvement suggestions.
  - Implemented operational improvement suggestions.
  - Receipt of "letters of recognition" from supervisors, associates, internal or external customers, etc.

- Monetary value range: $10 to $ 49
- Monetary award will consist of non-cash gift cards/certificates.
- Upon evaluation the Superintendent or Assistant Superintendent, and an Officer of the company will determine the actual award value.
- A Bronze Award certificate will be presented to the associate and a copy placed in the associate's personnel file.

Silver Award:
- This award is given to any associate whose suggestions or performance has impacted the WWCD in a highly significant manner.
- Justification for the award includes but is not limited to:
  - Going well "over and above the call of duty".
  - Performing job requirements with significant productivity under abnormal circumstances with a substantial outcome.

- Implemented safety improvement suggestions with significant operational effects.
- Implemented operational improvement suggestions with a significant outcome.
- Monetary value range: $50 to $99
- Per state and federal compensation laws the associate must be taxed on awards over fifty dollars ($50).
- An "Award Notification Form" must be forwarded to the Accounting Dept. with awards over fifty dollars ($50).

Gold Award:

- This award is given to any associate whose suggestions or performance has impacted the WWCD in a tremendously significant manner.
- Justification for the award includes but is not limited to:
  - Performance, actions, operational suggestions and/or improvements resulting in an extraordinarily significant outcome.
  - Performance, actions, operational suggestions and/or improvements resulting in a significant cost-savings to the department and/or company.
- Monetary value range: $100 to $200
- Per state and federal compensation laws the associate must be taxed on awards over fifty dollars ($50).
- An "Award Notification Form" must be forwarded to the Accounting Dept. with awards over fifty dollars ($50).
- The Superintendent has the authority to alter the monetary value range as appropriate to the operational improvement.

Special Note: An associate can receive a maximum of three hundred dollars ($300) per year in awards.

EMS SUPPLEMENTAL TOOLBOX

GAP ANALYSIS CHECKLIST

Global Environment & Technology Foundation – Gap Analysis Checklist

Gap Analysis
EMS Check List

Answer the following questions. After completing the questions, review the questions for which you answered **No**. These are some of the areas you will pay special attention to when developing your Environmental Management System.

Reference – refer to the ISO 14001 Section that applies and identify and reference the procedures, policies, materials, etc. that you have at your Port that partially or fully meet the EMS (ISO) requirement.

Left to do – activities/actions (e.g., draft the procedure, update a current procedure with additional language, maintain this record, etc.) required to fully implement the EMS requirement.

Responsibility – for identifying and assigning action items to organization personnel who will assist in ensuring the EMS requirement is met.

POLICY	
1. Does your organization have a documented environmental policy?	Yes ☐ No ☐ Partial ☐
Reference:	
Notes:	
2. Does the policy include commitments to a) continual improvements, b) prevention of pollution and c) compliance to relevant laws and other requirements to which the organization subscribes?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

3. Is the policy communicated to all employees and made available to the public?	Yes ☐ No ☐ Partial ☐
How is it made available to all employees? How is it made available to the public?	
Reference:	
Left to do:	
Responsibility:	
Notes:	

4. Has the policy been endorsed and signed by Top Management?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

PLAN

1. Has a procedure to identify the significant environmental aspects of your operations been established and implemented?	Yes ☐ No ☐ Partial ☐
Is the procedure documented?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	

Responsibility:
Notes:

2. Has a procedure to identify, track and communicate (to applicable employees) applicable laws and regulations and other requirements to which the organization subscribes been documented, established and implemented?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

3. Have documented environmental objectives and targets been established that:	
• identify responsibilities, schedules and the means by which the objectives and targets will be met	Yes ☐ No ☐ Partial ☐
• take into account the significant environmental aspects, laws, regulations, legal and other requirements and policy commitments	Yes ☐ No ☐ Partial ☐
• consider the views of interested parties	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

DO	
1. Have defined roles, responsibilities and authorities, including the appointment of a specific management representative in charge of the EMS been established?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	
2. Have sufficient financial, technical and human resources been made available to implement the EMS?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	
3. Are all employees and contractors aware of the requirement of the EMS, their roles in it, and potential consequences of departure from operating procedures? Are training records maintained?	Yes ☐ No ☐ Partial ☐ Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

4. Has the organization identified training needs and methods for providing general awareness of the EMS to all employees and managers?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

5. Are all employees whose work involves significant environmental aspects competent by training, experience and/or education? Are training records maintained?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

6. Have internal communications procedures regarding EMS issues been established and implemented?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

7. Has the organization established procedures for communicating relevant requirements to suppliers and contractors regarding significant environmental aspects of services?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

8. Has the organization considered procedures for external communication of its significant environmental aspects?	Yes ☑ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

9. Are the core elements of the EMS documented, including all of the required procedures?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

10. Is there an implemented and documented procedure for managing documents and records to ensure that it is current, accurate and readily retrievable?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

11. Have documented operational controls (e.g., work instructions, maintenance manuals, etc.) for activities associated with significant environmental aspects been developed and implemented?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

12. Have emergency identification, preparedness and response procedures/plans been established, implemented and tested?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

CHECK & ACT	
1. Have procedures been documented and implemented that are associated with significant environmental aspects, operational controls and objectives & targets being monitored and measured?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

2. Are operations associated with significant environmental aspects, operational controls and performance toward objectives and targets being monitored and measured (e.g., calibration, record reviews, performance observations, trend analyses, etc.)?	Yes ☐ No ☐ Partial ☐
Are relevant records maintained?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

3. Have procedures for evaluating compliance (e.g., audits, reviews, or inspections) with legal requirements been established and are they being implemented?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

4. Are there procedures in place and being implemented for handing EMS nonconformances and corrective and preventative actions?	Yes ☐ No ☐ Partial ☐
Are records maintained?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

5. Is the information from the monitoring & measuring, auditing programs and training being <u>recorded</u> and reported on a regular basis?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

6. Is there a procedure for EMS audits and is it being implemented?	Yes ☐ No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

MANAGEMENT REVIEW	
1. Is senior management, on a regular basis, reviewing the structure and performance of the EMS to determine the appropriateness and effectiveness of the EMS and identify potential opportunities for improvement?	Yes ☐　　No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

2. Is the management review documented and are management recommendations for continual improvement documented and tracked?	Yes ☐　　No ☐ Partial ☐
Reference:	
Left to do:	
Responsibility:	
Notes:	

EMS SUPPLEMENTAL TOOLBOX

EMS SOFTWARE

Global Environment & Technology Foundation – EMS Software Assessment

Environmental Management System Software

EMS SOFTWARE ASSESSMENT
March 15, 2004

Revised June 23, 2004

Cooperative Agreement # 82886901

Global Environment & Technology Foundation
2900 South Quincy Street, Suite 410 Arlington, VA 22206
(703) 379-2713 Fax: (703) 820-6168

EMS SOFTWARE COMPARISON

As part of the U.S. Environmental Protection Agency (U.S. EPA) and American Association of Port Authorities (AAPA) supported Ports Environmental Management System (EMS) Assistance Project, GETF conducted a neutral analysis of "off the shelf" software products specifically designed to support an organization's development, implementation, and subsequent management of its EMS. The assessment focused primarily on managing environmental issues; however, the analysis also considered the software's capability for integrating quality, environment, security, and safety and health into a single management system approach. An integrated management system approach may be very well suited to the complex, overlapping issues and pressures faced by Ports. While the assessment was conducted specifically with Ports in mind, the assessment may be useful to other public sector businesses and organizations considering the use of software to support their EMS. GETF was specifically selected to conduct this software assessment due to its unique synergy of in-house skills and expertise in both EMS development and technical assistance, and its knowledge of leading information technology applications.

EMS implementers are seeking tools that allow them to efficiently manage EMS implementation and maintenance tasks, such as project scheduling and management, training and training records, documentation management, and internal auditing and corrective/preventative actions. EMS software packages can offer the following key implementation management and EMS maintenance tools:

- Better communication between environmental and project staff at multiple installations
- Easy access to routine environmental and EMS documents and records
- Access to regulations and other requirements; enhanced management of permits, reporting, and compliance
- Database query, reporting, and updating
- Document repositories
- Enhanced project management
- E-mail based notification systems with escalation functions
- Calendar and EMS milestone and progress functions
- EMS report generation tools
- Information access security controls

Assessment Approach

The software assessment entailed collecting factual information via interviews, product demos, message exchanges, and web research on sixteen EMS-focused software products currently available. The products were identified through working knowledge and past experience, colleague referrals, and general research. Each of the identified products were assessed against specific criteria (see evaluation criteria descriptions below) as deemed critical to implementing a viable computer-based management system. Example criteria included: ISO compliance, platform dependencies/adaptability, email notification capability, template provision, licensing requirements, access controls/security features, training, product support, and price. The products were also assessed for manageability of fundamental EMS elements, including: document control features, procedure writing, sample documentation database, environmental aspect and

risk assessment, tracking regulatory compliance, record management, corrective and preventative action, and auditing. Potential users should subsequently ensure a selected product is compatible with the organization's existing IT infrastructure prior to purchasing an EMS software system.

GETF utilized every effort to maintain a neutral disposition and to provide factual information as gathered through product marketing materials, product vendor interviews, and web-based demos. GETF did not have the ability, due to time and logistics, to demo each individual product. Based upon the information collected, GETF subjectively divided the software products into two tiers based on capabilities and specific relevance to the Port EMS Assistance Project. The following is a breakdown of the software products by tier (products are listed alphabetically):

Tier 1
Amadeus Environment Expert eQRP
Entropy International Envoy
Enviance
GreenWare ISO 14000 Implementation Software
GreenWare ISO 14000 Software Suite
IBS America QSI System for Environmental Management
Integrum ISOft 14000
Intelex ISOsoft 14001
Prism Equation
ZMH² EMS-EZ (Graduate research project, included due to potential leveragability)

Tier 2
Dakota Auditor EMS
EMAServer Module ISO 14001 WES
Gage EMSTutor - ISO 14001 Expert System
IsoTop GP ISO 14001 TimeSaver Software
ISYS International ISO 14001 Expert-Ease
Oxegen - Oxegen EMS
Solution Foundry EMSolution Web

Evaluation Criteria Descriptions

Software Functionality

> **Documentation Templates:** Software includes sample document templates (i.e., procedures, policies, manual, etc.) that can be used in the development of an organization's relevant EMS-related documents and/or easily customized to fit the needs of an organization.

> **Document Creation/Integration:** The degree of product flexibility for creating and/or integrating relevant EMS documents into the management system varies greatly. This element is commonly a "sticking point" with products being too prescriptive with regards to document format. Some products are based upon readymade documents/procedures that drive the overall system allowing minimal flexibility on the part of the user, whereby

other products allow a high degree of flexibility with the user able to choose between provided templates, creating documents from scratch, and/or incorporating existing external documents from varying application programs (e.g., Microsoft Word, PDF, etc...).

Document Control/Review Functions: Software includes a document management function, with the ability to track controlled documents, provide a review process, and archive documents. Documents are linked in some format to other relevant components of the EMS (i.e. activities, tasks, responsibilities, training, etc…).

Document Archive/Library: EMS documentation is maintained to accommodate adequate record control and all records and documents are indexed and easily locatable. Many providers offer a library type structure, similar to Microsoft Windows Explorer, with documents linked to relevant activities within the EMS.

Data Compilation and Report Preparation: Software has tools to provide environmental analysis in summaries and graphical reports to determine trends, etc…

Calendar Management: Software has a viewable calendar function to track upcoming EMS implementation and management tasks and deliverables. Products also may have the capability to integrate email notifications/reminders.

Milestone/Task Management and Tracking: Software includes a management tool that produces automatic reminders/notification to individuals and/or groups, such as reminders of projects, tasks, and permit requirements. This function may be linked to calendar management tools.

Regulatory Compliance Management: Compliance management tools to assist with the tracking and compliance of legal and other requirements, including permit deadline reminders, regulatory updates, roles and responsibilities, etc…

Gap Analysis Tool: Software includes a tool that allows an organization to assess their EMS against the ISO 14001 requirements either at the beginning of EMS implementation activities and/or at a specific time of their choosing (e.g., prior to an audit).

Aspect/Impact Analysis Tools: Software has an environmental aspect analysis tool to identify, rank, and prioritize a user organization's most significant environmental impacts.

Audit Component/Tools: Software includes information relative to audit requirements and procedures enabling internal and/or external auditors to verify and document whether the organization's EMS is in conformance with the audit criteria set out in ISO 14010 and 14011. This component may include a comprehensive set of audit procedures, tests, checklists and sample questions, as well as requisite audit documentation and reporting abilities.

Training Management: Software has tools to manage training requirements and training records relevant to environmental management.

Context-specific ISO 14001 Text: Includes ISO 14001 Standard language and direct references to the relevant elements.

Public Entity Clients

Public Entity Clients: Software caters to public entities specifically or as a significant portion of their client base. Public entities have been identified that utilize the software.

Integrated System Capability

Integrated System Capability: Software is designed for integration with other systems, such as quality management, safety and health, etc…

System Architecture

Client Server Solution / Stand-alone PC Version: Software is installed directly on the user's hard-drive and/or hosted internally and purchased through individual licenses.

Web-enabled/Hosted by Provider (ASP): Software can be accessed via web browser, hosted by the software vendor, and does not require software to be installed on individual user's desktops. In addition, web-enabled software is Internet and Intranet capable and platform independent. Software can be linked to other applications and websites to provide up-to-date information.

Database: The software's back-end database and query platform (e.g., Microsoft SQL, Oracle, etc…).

Client Operating System: The different operating systems the software supports (e.g., Windows 98/ME/XP, MS Office, Internet Explorer 5.0 or higher, etc…).

Security Features/Multi-level Access: The software allows for multiple levels of user access, limited by defined roles and responsibilities. The access is determined by an individual user's log-in information. This feature serves two purposes: 1) provides security through limiting access to important information and documents; and 2) simplifies the system by only providing access to information and features (i.e., clears the clutter) necessary to the individual/group user.

Product Cost

Single Desktop License: The software's available cost and options on licensing of their product.

Training: Software includes access to training, either included within the software package or available through a classroom structure. Additional costs are denoted.

Product Support: Technical assistance/product support offered by the software provider as part of the purchase price. Additional costs (i.e., annual support fees) and description denoted. Often this aspect is negotiated and customized at time of purchase.

Unique Software Needs and Characteristics of Public Sectors

Historically, EMS software tools have targeted private sector organizations and corporations; however, several providers have recently focused significant attention on the growing pool of public entity EMS implementers. Due to the initial focus of product development on the private sector, many of the existing products do not meet public sector-specific needs and organizational characteristics (i.e., technological capabilities, scalability to small organizations, operational sectors such as wastewater, etc...). Although an organization's approach to EMS implementation may be similar (i.e., plan-do-check-act, 17 elements of the ISO 14001 Standard, etc...), there are fundamental, organizational differences between public and private sector entities. EMS implementation experience has revealed that the needs, level of requisite support, and capabilities of private versus public sector EMS implementers can vary considerably.

Research and feedback has shown that many existing products, originally created for use in the private sector, are too prescriptive in regards to the structure and implementation of an EMS for use by many public entities. Many of these products are driven by the immediate goal of "achieving ISO certification" as quickly as possible, not a goal necessarily held by public entities. Therefore, many products offer a "cookie-cutter" type approach that strives for turn-key implementation of an EMS. In addition, for an EMS to be successful in driving effective environmental management for public organizations, documents, procedures, policies, and the like must be adaptable to different educational levels and technical capabilities and specific for the site and operational sector (e.g., fleet maintenance) in question. While initially the prescriptive nature of some software is comforting and supportive, overcoming inflexibility in later stages of EMS development and implementation is often extremely time consuming, labor intensive, and counter-productive.

It should also be noted that many public entities implementing EMSs have found that a lot of EMS software packages include many more functions and capabilities than are actually utilized or necessary in practice. The needs of a particular organization can differ widely depending upon organizational size, internal capabilities and resources, and approach to EMS. The central component of a software tool for EMS implementation and maintenance is its ability to control and manage documentation and records. For many organizations this is the sole driver for purchasing an EMS software product, resulting in the organization only utilizing a portion of the software's overall capabilities. In fact, some organizations have realized that all they need is a tool to help manage the documentation and have either developed this in house or hired an external consultant to do so. Therefore, one alternative to consider, dependent upon an organization's specific needs, is to develop or purchase an EMS document management tool.

To our knowledge, the commercial market for such focused products is currently limited with most developed for internal purposes only. GETF was able to demo one such product during this

research, which was produced by the University of Massachusetts – Lowell, a participant in the U.S. EPA-supported 2nd EMS Initiative for Public Entities program. This product is currently being fine-tuned for marketability, but incorporates a very user-friendly interface and capabilities. Additional information on this product can be found at www.uml.edu/epaems.

Public-sector Focused Software
Currently, two EMS software providers have focused significant amounts of time and effort in customizing their products to fit the unique needs of public sector clients, having distinguished themselves, at least for the present time, from other competitors: Greenware (www.greenware.com) and Intelex (www.intelex.com). Both of these products have been procured and utilized by participants in the EMS Initiatives for Public Entities pilot projects and have secured contracts with a larger and more diverse range of public entities than similar competitors. As part of this software comparison effort, GETF participated in software demos and conducted interviews with selected users to assess the components and practical application of both software products.

Overall, both products were of similar quality and scope. Participants in the EMS Initiatives, as well as other relevant GETF clients that have utilized each of these products, have been generally satisfied that the products greatly enhance their ability to implement and manage their respective EMSs. However, a common thread throughout the user feedback has been that the Greenware product does not offer the degree of flexibility with regards to document creation and integration and significant aspect prioritization that was originally desired. Most organizations have learned to accommodate this limitation with resulting success. During the product demo, Greenware representatives expressed that their company is working diligently to increase the flexibility of their product.

Although GETF strived to maintain a neutral assessment of the available EMS software products, it was clear from research and demonstration that Intelex stands out when assessing software effectiveness strictly for public entity EMS use. Other vendors within the Tier 1 listing also offer outstanding management products; however, several expand beyond the scope of EMS, most notably the Amadeus Environment Expert eQRP product. GETF's experience and research clearly identified Intelex as a more user-friendly EMS-specific software package with a simple, straightforward user interface and direct applicability to public entity characteristics and requirements. The Manager's Dashboard, a unique feature to Intelex, was a great overall project management tool and offered a tremendous sense of comfort and control in managing the day-to-day activities of an EMS, a product capability especially valuable to public entity Environmental Management Representatives, as often they are expected to be the lone EMS expert within an organization providing leadership for implementation. In addition, the software maintains format consistency throughout every component, is exceptionally well linked throughout the management system, and offers tremendous, personalized product support. One weakness that was identified in the comparison to other products was that Intelex was among the highest in product cost.

Conclusion
It has become increasingly evident that more and more public entities are interested in software products to better manage their environmental impacts, especially with the implementation and

maintenance of EMSs. This follows a similar trend to that which occurred within the private sector over the last decade. GETF has witnessed this transition firsthand through the current EMS Initiative for Public Entities project in which over half of the participants have purchased or are considering the purchase of EMS-focused software. The Ports, due to the relative complexity of operations and issues as compared to the various public entity sectors, can significantly benefit and essentially implement and maintain more robust EMSs with the assistance of software products.

Evaluation Criteria	Amadeus *Environment Expert*	Entropy International *Envoy*	Enviance	GreenWare *ISO 14000 Implementation Software*	GreenWare *ISO 14000 Software Suite*	IBS America *QSI System for Environmental Management*	Integrum *ISOft 14000*	Intelex *ISOsoft 14001*	Prism *Equation*	ZMH² *EMS-EZ*
Software Functionality										
1. Document Control										This product was developed through the University of South Carolina's Technology Incubator Program. The product was included here due to the potential ability to be modified and adapted to meet Port-specific EMS needs. The product has a minimal initial costs and is currently being examined for commercial viability enhancements. The product was originally developed for the sole purpose of certifying the University to ISO 14001.
a. Documentation Templates		Yes, the product includes a variety of ISO 14001 templates (procedures, policies, checklists, etc…)	Yes. The System includes document templates that facilitate preparation of and revisions to required documents.	No, can be purchased separate ($250).	Yes. Procedures can be easily created from scratch, linked to templates, or linked to existing documents (i.e., Word, PDF, etc..)	Yes, the module includes all of the templates and examples needed to create procedures, work instructions, etc…; however, these components are based upon ISO 9000.	Yes, linked to relevant implementation steps of the established plan	Yes, each implementation step is linked to appropriate samples and templates	Yes, best practice templates searchable by key word/topic, including ISO explanations. Also documents can be created with any application software.	
b. Document Creation/Integration	Allows you to easily access and view the latest version of each relevant document. Review, approval and distribution sequences are electronically managed. Distribution is instantaneous. Grants access only to documents linked to your duties, personal needs and preferences.	The product allows the user to link to or upload external electronic files, diagrams, and other applications. In addition, the software includes a range of templates.	Yes. The System supports an unlimited number of documents in the Document Manager. These documents may be externally created or created through the Template described above. All documents (files of any type) can be associated with specific components of the user's model.	Documents can be easily created from scratch, linked to templates, or linked to existing documents (i.e., Word, PDF, etc…). Several users have expressed that the product utilizes verbatum ISO language and is at times inflexible with document creation, resulting in longer format documents. Greenware has recently focused upon increasing flexibility.	Documents can be easily created from scratch, linked to templates, or linked to existing documents (i.e., Word, PDF, etc…). Several users have expressed that the product utilizes verbatum ISO language and is at times inflexible with document creation, resulting in longer format documents. Greenware has recently focused upon increasing flexibility.			Yes, users can take advantage of provided templates, create new documents from scratch, or incorporate existing documents in nearly any format.	Document templates are provided in off the shelf Microsoft software and can be used as is or edited appropriately. Documents can be created in any software format used and uploaded or linked to equationASP. Documents can be grouped so that related documents are stored together in folders.	
c. Document Review Process	Yes, document access controlled by user entitlement.	Automatically denotes author, creation date, issue, version number, revision date, and approver. Controlled through the user access and privileges tools	Yes. The System includes a Document Manager	Yes, customizable views for draft, final, etc. Diagnostic features that automatically evaluate completion and status, including a digital signature function and sign off/review checkbox.	Yes, customizable views for draft, final, etc. Diagnostic features that automatically evaluate completion and status, including a digital signature function and sign off/review checkbox.	Yes, revision control and automated document status updates. Includes a temporary storage function for approved but unreleased documents in order to give users the opportunity to train themselves on these documents prior to official release.	Yes, via e-mail system	Yes, document manager creates a list of reviewers, whom are sent an email with the document w/ a link to approve, reject, or edit. Only released revisions are available to general staff w/ built in controls for paper versus electronic distribution. Only document managers can access the advanced document management functions.	Documents are circulated for review and approval via notices that automatically generate emails to those who need to review the document. Reminder and escalation notices help users complete the review on-time. Parallel document approval allows multiple users to review a document at the same time. Approved and rejected votes are recorded online. System automatically remembers who approved the document from its previous version.	
d. Document Archive	Yes, utilizes a data warehouse structure ensuring that records are easily accessible.	Yes, documents are maintained and stored within a central document library.	Yes, the Document Manager function controls and archives previous versions. Documents are associated with the various components of the EMS and controlled through specific security settings.	Yes, via a record registry ensuring proper maintenance for audits.	Yes, via a record registry ensuring proper maintenance for audits.	Yes, each document contains a complete, automatically generated history and is automatically archived.	Yes	Yes, past revisions and revision information are all archived.	equationASP keeps all versions of every document uploaded. Document owners can access the archive while other user only access the current approved versions of documents. Records of approval, changes, etc. are maintained for every version.	
e. Document Library (linked)	All documents are organized in one place through a Windows Explorer-type structure and can be accessed easily and quickly. Documents are linked to keywords, references to other documents and physical locations.	Yes, documents, diagrams, audio/video, and other applications are all linked and stored within a central library, thereby ensuring adequate document control.	Yes, all documents are accessible through a set of folders with an unlimited number of subfolders allowed, with access controlled through security settings.	Yes, aspects (both sign and non-sign) are automatically linked to a relevant series of worksheets. All information entered into the worksheets are linked to the EMS manual, including operational controls and procedures. Structure closely resembles Windows Explorer.	Yes, aspects (both sign and non-sign) are automatically linked to a relevant series of worksheets. All information entered into the worksheets are linked to the EMS manual, including operational controls and procedures. Structure closely resembles Windows Explorer.	Yes, reference module of current documentation indexed via the creation of an EMS Policy Manual and Tier 1 documentation.	Yes, generated docs are linked to various components through a central library.	Yes, controlled per ISO requirement and accessible through an Intranet Index. Documents can also be accessed from outside of the system by utilizing a tool to generate a URL. Reference library linked with ISO Standard descriptions, document samples/templates, PowerPoint Training Courses, and other tools.	The equationASP document library allows users to browse the library to locate documents or search by key word, document owner, revision date, document status, and other criteria about the documents.	Yes

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2. Data Compilation and Report Preparation	Yes, a report generator for extraction, manipulation, and presentation of information related to the EMS. Graphics and statistical tool included.	Yes, users can instantly generate both standard and filtered reports for single, multiple, or all sites	Yes. The System has an ad hoc reporting tool that allows compilation, analysis and reporting of EMS components, compliance data, and records of audits, incidents, accidents, etc, including process time dependent parameters and graphical display formats.	Yes, the product has many reporting/data compilation options, including time/cost (by individual), status, training, corrective action, etc… Exportable to Microsoft Word or HTML.	Yes, the product has many reporting/data compilation options, including time/cost (by individual), status, training, corrective action, etc… Exportable to Microsoft Word or HTML.	Yes, real-time reporting and analysis	Yes, Ad Hoc Reporting tool to create reports and charts from data contained within Integrum and other data sources.	Yes, including compliance (and cost of compliance), significant aspect, monitoring and measurement activities, and general EMS progress reports.	All areas of equationASP offer automatic and customizable reports that show document, corrective action, internal audit, survey, and data collection information. Reports can be viewed on-line, printed, downloaded to Microsoft Excel, and sent to other users as notices / emails.	
3. Calendar Management	Yes, implementation schedule with target dates for activities, tasks, monitoring and measuring, etc..	Yes, create action plans and an implementation schedule, with milestones and task/completion date reminders.	Yes. The System includes a set of calendars organized by user and by EMS component w/ Email reminders of scheduled actions or milestones including a direct link to the task completion page.	Yes, the EMS Calendar provides a summary of all document due dates, tasks and actions, including key monitoring and document review dates. Automatic email responsibility notifications and links to relevant documents.	Yes, the EMS Calendar provides a summary of all document due dates, tasks and actions, including key monitoring and document review dates. Automatic email responsibility notifications and links to relevant documents.	Yes, via an email escalation function. Not clear whether the product has the ability to develop a project implementation plan.	Yes, linked to "to do" lists and responsibility (including regulatory) notification function.	Yes, including a custom implementation plan that creates a step-by-step process for implementation with progress measures and milestones.	The Project Management function provides a pre-defined EMS implementation plan that is customizable for use at the client. The Project Management system schedules all EMS implementation tasks, assigns to teams, and notifies users when action items are due.	
4. Milestone/Task Management and Tracking	Yes, tasks can be assigned to employees via an EMP tree structure, which allows you to see at a glance what stage each EMS is at along with respective objectives, targets, and tasks. Each employee accesses only the information relevant to his/her responsibilities.	Yes, individual sites can be managed with unique users, system access, and responsibilities defined. Roles and responsibilities management tools, including individual, team, and site task lists. Reminder function for completion dates and reviews, including a report function.	Yes, the System's Task Manager allows individual and/or group task assignments. Reminders and escalators are standard and are delivered via email with a link to the task completion page. Tasks are shown in calendars with completion information linked to report functions.	Yes, each user will have an individual calendar listing tasks, activities, due dates, etc… Email notification functions must be manually imputed and are not automatic.	Yes, each user will have an individual calendar listing tasks, activities, due dates, etc… Email notification functions must be manually imputed and are not automatic.	Yes, includes an escalation function to alert management of missed deadlines with message automatically generated and distributed by modules. The product maintains a record of all escalation mail messages for review.	Yes, automatic notifications and task reminders (via email), including a notification calendar and schedule.	Yes, automatic email notification with direct link to activity and relevant documents and customized "task menu" specific to each user. Notification is escalated if task is overdue or pending for a specified amount of time. Operational equipment maintenance activities may also be tracked via email notification.	The Project Management function automatically records the completion of tasks and provides a variety of project status reports that show implementation in Gantt chart form and in terms of on-time vs. late and percent complete.	
5. Regulatory Compliance Management (non-conformance notification)		Yes, compliance management tools (update capacity/assistance unknown) with automatic non-conformance plans and records. Software assists with establishing and maintaining a register of legislation and "anticipating the requirements and impacts of new legislation and standards."	Yes. The System includes automatic data warnings, tasks, follow up (missed deadline or parameter exceedance), and emails to facilitate regulatory compliance. Follow up actions allow classification of the non-conformance into predefined categories such as "Reportable", "Permit Compliance Deviation", "Exempt", etc. Regulatory tracking is also connected to report functions.	Yes, legal and other requirements are linked to relevant aspect worksheets, which is linked to a CD, website, or other source of information. Legal and Other worksheet includes links, responsibility, review date, and future review dates.	Yes, legal and other requirements are linked to relevant aspect worksheets, which is linked to a CD, website, or other source of information. Legal and Other worksheet includes links, responsibility, review date, and future review dates.	Yes, legal register which must be populated by the user with all current environmental regulatory information.	Yes, all applicable requirements must be populated and updated by the user. Software includes a hot-spot link tool for updates, allows electronic documents (i.e. permits) to be incorporated into the system, and critical dates can be entered into the calendar for personnel reminders.	Yes, complete management system ensures compliance to fed, state, and municipal regulations AND other requirements (non-regulatory), but the client is responsible for identifying all applicable regulations. Tracks and delegates action plans for permit compliance. Manages the review, update, and implementation of requirements and tracks associated reporting requirements. Compliance status is displayed through a graphical "Dashboard" by facility, division and department, or organization-wide. Ability to feed in outside update services directly into the EMS software.	equationASP offers tools and worksheets to identify, record, and track legal and other requirements related to the organization. The Improvement System offers ability to enter, administer, assign, and complete nonconformances related to the EMS and notifies all relevant functions.	
6. Gap analysis tool		No, not a specific tool, audit checklist included	Yes, the System includes a predefined report of gaps in the EMS.	Yes, clause-by-clause gap analysis	Yes, clause-by-clause gap analysis	Yes, internal assessment tools for gap analyses and/or internal audits	Yes ISO Navigator tool for users, readers, and auditors	"EMS Status" tool that provides an instant assessment of EMS conformance. Manager's Dashboard allows and instantaneous "snapshot" of the EMS with green and red checks to show status.	equationASP includes a Gap Analysis tool and worksheet to assist in conducting a baselines assessment of the organization and its current status and readiness for an EMS implementation.	

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7. Aspect/Impact Analysis Tools	Yes, software follows the format of aspect identification via activities, O'sT's, and establishment of EMPs. Performance follow-ups and establishment of monitoring and measurement activities. Each aspect connected directly with relevant legal and other requirements, objectives, training, etc...		Yes, the System includes a means to identify, rank, prioritize and re-evaluate environmental impacts. Reporting allows	Yes, each identified aspect is manually linked (via checkbox function) to applicable ISO requirements, documents, reference links, and activities.	Yes, each identified aspect is manually linked (via checkbox function) to applicable ISO requirements, documents, reference links, and activities.	Yes, an EMS Aspects Register.		Yes, an Env. Aspects and Impacts Module steps users through the identification and ranking. The first step is identifying Activities, Products, and Services (APSs). User-defined scoring criteria. Automatic links between ASPs, aspects/impacts, and relevant management components, and subsequently O'sT's and EMPs.	equationASP includes guidance, explanation, tools, and worksheets for identifying, recording, evaluating, and scoring aspects and impacts up front and for the long term.	
8. Audit Tools	Yes, Audit Module organizes an audit schedule enabling the assignment of appropriate resources. Integratable with a CAR Module and an Action Module, which is connected directly to the personnel responsible.	Yes, including audit checklists	Yes, the System includes predefined questions that guide an audit. This pertains to both the development of the EMS and regulatory compliance audits. Audit findings are tracked to closure through automatically created and assigned tasks. Continuous improvement can be evaluated through summary reports D6	No	Yes, ISO 14000 Audit Software for internal and external auditors and ISO 14000 Audit Pro, which includes a set of fully customizable audit protocols, controls and tests, and linked audit report function. Includes graphical representation and percentage of conformance.	Yes, internal assessment tools for gap analyses and/or internal audits. The original ISO 9000-focused product includes a comprehensive audit and corrective action module, but is it unclear whether a similar structure currently exists for the ISO 14000 product.	Yes, including an archived Audit Trail.	Yes, via NCR & C/PAR forms and management tools linked with a complete Audit module.	equationASP includes an Internal Audit system to schedule all EMS audits, assign them to auditors, plan and prepare standard and customized checklists, enter audit reports, and generate corrective actions related to the audits.	
9. Training Management	Yes, ability to identify training needs and management training activities for personnel with environmentally-sensitive tasks.	Yes, training needs analysis and management	Yes, the System has a tracking function allowing training schedules, automatic attendance reminders, and training records by subject matter, location, or individual.	Yes, a training worksheet for general and specific training management. Allows a training plan to be developed for each aspect. Does not include automatic training notifications.	Yes, a training worksheet for general and specific training management. Allows a training plan to be developed for each aspect. Does not include automatic training notifications.	Yes, the product is designed to plan, track, and record the training of employees.	Yes, a training database linked to activities, projects, tasks, etc. Notifications and training records included.	Yes, via email notifications and personalized "my training" calendar. Training "work groups" to target employees with similar training requirements. The reference library includes PowerPoint Training Courses and other tools to assist with implementation.	equationASP includes web-based training courses that teach users about the EMS in introductory and intermediate levels of detail. The system automatically records those users who have taken and completed the courses. equationASP also offers the ability to send Training Notices to staff when they require training on the EMS and its documentation.	
10. Context-specific ISO Text	Not specifically based upon ISO 14001. Includes all the elements, but no reference to the standard.	The product supports all activities in the process of implementing and maintaining a management system certifiable to ISO 14001.	Yes. EMS components include ISO specific text.	Yes, interative worksheets address each individual element of the ISO 14001 standard.	Yes, interative worksheets address each individual element of the ISO 14001 standard.		Yes	Each step of the implementation project plan is linked to the ISOsoft reference library and includes in-depth descriptions of the ISO 14001 requirements. Summarizes conformance to all requirements through a real-time, graphical "Dashboard". Terms can be modified to fit the organization.	equationASP breaks the ISO standard into manageable chunks of information and provides easy to read and understand explanation of the requirements. The ISO standard is linked to the topics that need to be addressed throughout the EMS.	Compliant w/ ISO 14001
11. Multi-lingual	Yes, each user can work in his/her own language		System does not currently include languages other than English. Enviance has provided estimates to clients for inclusion of multiple languages in the software package.			Training and implementation services offered in English, Spanish, and French		Yes, PC-based systems are available in Portuguese, Mandarin Chinese, German, Spanish, Italian, and English. Web-based system in French and English w/ a Spanish version under development.		

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Applicability										
1. Ports	Port of Houston Authority		Yes. The System addresses EMS, compliance management, reporting, auditing and training needs of ports.				Yes, non-US			
2. Public Entities (general)		Universities, large government offices, railway system, and District Council	Yes. The System addresses EMS, compliance management, reporting, auditing and training needs of various public entities. Currently, the System is used by Universities, Federal DOE research labs, The National Institutes of health, United States Coast Guard, United States Navy, the National Institute of Standards and Technology, and a county sanitation district.	14 local gov clients listed, including cities, counties, and an airport authority, as well as 40 EPA sites.	14 local gov clients listed, including cities, counties, and an airport authority, as well as 40 EPA sites.	A couple of utilities on the client list, mostly industry/manufacturing	No public entity clients currently. Provided live demos to US Army and PA DOT which were well received, but still under evaluation.	City of Scottsdale, Waterloo Waste Management facility (1st in N.A. ISO registered), York Region Water and Wastewater departments (also 1st in N.A.), and others. City of Charlottesville and Rivanna Sewer and Water Authority (pending).	DoD including Army operations & Chemical Materials Agency, Department of Homeland Security, and others.	
Integrated System										
1. Health and Safety	Yes, as an integratable module	Yes, as an integratable module	Yes. The System can be integrated with Health and Safety data management systems. The System can also be configured to track safety incidents and produce safety	No	No	No	Safety statistics and incident management, linked to CAR. Software complies with British, Australian, and ISO safety management standards.	Yes, via available module	Yes	Yes, the product also integrates occupational health and safety concerns into the overall management system.
2. Quality Control	Yes, as an integratable module	Yes, as an integratable module	Yes. The System can be integrated with quality control data management systems.	No	No	Yes, QSI originally focused upon ISO 9000 Support and leveraged existing products.	Yes	Yes, via available module	Yes, including ISO 9001, ISO 17025, and others (Lean Manufacturing, Continuity of Operations Planning).	
System Architecture										
1. Client Server Solution/Stand-alone PC	Yes	Available Option; additional client server requirements		Available option	Available option	Available	Available	Yes, can be hosted on internal servers via a single installation.	Yes, equationNET can be licensed and installed on client servers.	Yes
2. Web-enabled/Hosted by Provider (ASP)	Web-enabled, implementable in multiple sites.	Available Option, annual subscription	Yes. The System is developed and hosted by Enviance, Inc. and can be installed behind the customer's firewall and hosted internally.	Available option, $1000/site/unlimited users	Available option, $1000/site/unlimited users	Available option, can include remote compliance management	Available option, annual server and software maintenance fee.	Available	Yes, equationASP hosted by Prism and accessed via internet and web browser.	No
3. Database		Microsoft SQL Server 7, 2000, or Oracle 8i	SQL 2000			Oracle, DB2, Lotus Notes, SQL Server, ODBC, et…	Lotus Notes	Oracle and SQL, can be integrated with other existing databases.	Microsoft SQL or Oracle 9i	
4. Client Operating System	Microsoft Office	Windows NT4, 2000, Me, 98, or 95; Internet Explorer 5.0 or higher	Internet Explorer. No software or hardware purchase is needed.	Windows 95, NT, or Higher	Windows 95, NT, or Higher	Windows	Microsoft Windows, preferably NT or 2000+	Microsoft NT and Windows 2000 IIS Server 4 or 5; all major Web Browsers.	Windows 95 or higher.	Windows 98/ME/XP and MS Office
5. Security	Yes	Yes	Yes. Each command and response is fully encrypted using Secure Socket Layer (SSL) 128 bit technology.	Yes	Yes	Yes	Yes, multi-level encrypted code security	Log-in name/password (multi-level access/abilities)	Firewall, VeriSign encryption, user name / password	
6. Security Features/Multi-level Access/Authority	Yes, the Document Management module grants access only to the information necessary for an individual employee or defined group.	Yes, individual user access and privilege controls	Yes. Various authorization levels are included for both users and groups. Authorizations and permissions can be set at the individual EMS component/data element level, if desired.	Yes, user right settings and controlled access to the system w/ several levels of user controls including "read only".	Yes, user right settings and controlled access to the system w/ several levels of user controls including "read only".	Yes	Yes, multi-level encrypted code security, including selective information distribution to contractors, suppliers, and the public.	Yes, including "levels of viewing authority" and customized security group settings. These functions are fully controlled and applied by the system administrator. Access and data management may be based upon an organization's structural hierarchies.	All areas of equationASP including documents, corrective actions, audits, and other data can be made accessible to all user or security can be applied to designate which users have access to different documents and functions.	

Evaluation Criteria	Amadeus *Environment Expert*	Entropy International *Envoy*	Enviance	GreenWare *ISO 14000 Implementation Software*	GreenWare *ISO 14000 Software Suite*	IBS America *QSI System for Environmental Management*	Integrum *ISOft 14000*	Intelex *ISOsoft 14001*	Prism *Equation*	ZMH² *EMS-EZ*
Cost										
Note: Costs are dependent upon the specific needs of individual clients, as the majority of products are scalable in several variables. This assessment has attempted to provide a "ballpark" comparison.										
1. Single Desktop License	Client may select requisite modules and pay only for them.		Pricing available upon request by calling 1-866-Enviance	$1,399 ($700/user 2-9) ($350/user 10+)	$2,479 ($1,239/user 2-9) ($619/user 10+)	Contact was unable to provide cost information, since their systems are customized to fit the needs of individual clients.	$995	Price varies from approx. $2,000 up. Product is purchased by individual module with the full package (quality, safety/health, etc..) approximately $8,000. Product is customized for client organization structure.	Typical format is annual subscription for designated number of staff / users, price starts at $5k annually for up to 15 users and increases incrementally for additional blocks of users with the price per user going down as more users are added.	$617/license
2. Training		Customized training solutions delivered via the Internet	First day included in license. Additional days at $1,200/day for up to 10 participants.	1-day $250/participant; 2-day $350/participant	1-day $250; 2-day $350; Auditor training $350 (All per participant)	Includes a EMS Advisor module that offers guidance for development, implementation, and checking of the EMS. Various training options available.	On-line training database available 24hrs/day at $245/user	Intelex provides a Installation and Administration Guide and the ISOsoft User Manual. Additional training may be customized and provided for an extra cost.	equationASP includes web-based training courses that teach users how to use the system. Live training can be provided on-site and/or remotely via on-line meetings and phone and can be provided in daily or hourly formats. Most users only need a few hours of training to use the system effectively.	No
3. Product Support		Yes, support and upgrades. Additional price?	Yes. Included in license cost.	25%	25%	Yes, via annual maintenance contract. Telephone support M-F, access to technical website 24 hours per day.	Yes, product support (email and phone) and upgrades are included in the annual support fee.	Annual support and maintenance contract, utilizing mutually agreed upon issue severity levels.	Phone and email customer support, on-line Help system, and quarterly upgrades, are included in subscription / license fees.	No
Additional Information										
1. Website Address	http://amadeus-csi.com/solutions/eQRPEnvironment.asp	http://www.entropy-international.com/home/products/environmental-management.asp	www.enviance.com	http://greenware.ca/software/iso2.html	http://greenware.ca/software/iso2.html	http://www.qualitysys.com/website/website.nsf/0/8c66deb4c9e6fe7d852568c10053ea0a?OpenDocument	http://www.isoft14000.com/display.asp?pageID=2	http://www.intelex.com/isosoft14001index.htm	www.prismesolutions.com	http://incubator.research.sc.edu/
2. Available Demo	Yes, via Internet/phone combo. Regularly scheduled public demos every	Yes	Yes. With teleconference and via web.	Yes, self-guided	Yes, self-guided	Available, including a free analysis of an organization's software needs.	Yes, online w/ conference call	Yes, via web conference.	Yes, on-line at www.prismesolutions.com or guided demos upon request.	
3. Location of Headquarters	Europe and Canada	UK	Carlsbad, CA	Berkeley, CA and Toronto, Ontario	Berkeley, CA and Toronto, Ontario	Lexington, MA	Australian product, Trinity Consultants is a North American (Dallas, TX) reseller	Toronto, Ontario	King of Prussia, PA 888-386-2330	Columbia, SC
Special Notes										
		Based upon Plan-Do-Check-Act model with a very similar breakdown of activities as GETF's model.	Cost includes product upgrades which are delivered seamlessly with no actions required by customer. Enviance is used by numerous public entities and industrial customers. Annual user conference is held.	Utilized by a Muni II participant (Tri-Met) and recently purchased by Muni III participants (Kent County and Metro Waste)	Utilized by a Muni II participant (Tri-Met) and recently purchased by Muni III participants (Kent County and Metro Waste)		The product has been used by single site operations to large corporations; however, a desktop product called ISOmate is also available with essentially the same functionality.	Utilized by a Muni I Participant (Scottsdale), very good/responsive product support. Easy to navigate, Manager's Dashboard very useful for EMR.	Call Mike Reeve at 603-763-4791 or email at mreeve@prismesolutions.com.	Created through the University of South Carolina Columbia Technology Incubator (USCTI) business incubator program.

EMS SUPPLEMENTAL TOOLBOX

LEGAL AND OTHER REQUIREMENTS

City of Gastonia WWTP – Compliance Sampling/Evaluation Checklist

COMPLIANCE SAMPLING/EVALUATION INSPECTION

WWTP: PERMIT NO.

INSPECTORS:

PERSONS INTERVIEWED:

DATE:

ENTER TIME:

PERMIT:

VERIFY NAME OF PERMITTEE, ADDRESS, TITLE, PHONE NUMBER	YES ☐	NO ☐
COMPARE FACILITY DESCRIPTION WITH ACTUAL	YES ☐	NO ☐
ARE ALL PROCESS UNITS BEING OPERATED?	YES ☐	NO ☐

_____

_____

_____

DOES PERMIT EXPIRE SOON?	YES ☐	NO ☐

EXPIRATION DATE:

ORC:

IS CERTIFICATION OF ORC ADEQUATE?	YES ☐	NO ☐
IS ORC VISITING FACILITY AS REQUIRED?	YES ☐	NO ☐

WHO IS DESIGNATED BACK-UP?

RECORDS / REPORTS:

ARE SELF-MONITORING RECORDS MAINTAINED ON SITE AND AVAILABLE?	YES ☐	NO ☐
DISCREPANCIES?	YES ☐	NO ☐
IS ORC LOG MAINTAINED?	YES ☐	NO ☐
ARE WHO, WHAT, WHERE, WHEN OF SAMPLING LISTED IN LOG?	YES ☐	NO ☐

ARE INSTRUMENT CALIBRATION RECORDS MAINTAINED?   YES ☐   NO ☐

ARE PH METERS CALIBRATED DAILY?   YES ☐   NO ☐

ARE 3 BUFFERS USED?   YES ☐   NO ☐

IS SLOPE LISTED?   YES ☐   NO ☐

ARE BUFFERS DATED WHEN REC'D?   YES ☐   NO ☐

ARE BUFFERS DATED WHEN OPENED?   YES ☐   NO ☐

ARE DO METERS CALIBRATED DAILY?   YES ☐   NO ☐

IS CL TITRATOR CALIBRATED DAILY?   YES ☐   NO ☐

ARE ALL THERMOMETERS AND METERS CALIBRATED BY A
NIST TRACEABLE CERTIFIED THERMOMETER?

    PH METER THERMOMETER?   YES ☐   NO ☐

    INFLUENT COMPOSITE SAMPLER ?   YES ☐   NO ☐
    TEMPERATURE: LAST CALIBRATION DATE:

    EFFLUENT COMPOSITE SAMPLER?   YES ☐   NO ☐
    TEMPERATURE: LAST CALIBRATION DATE:

ARE MAINTENANCE RECORDS KEPT?   YES ☐   NO ☐

FACILITY SITE REVIEW:

EVALUATE PROCESS UNITS.

EVERYTHING OPERATING PROPERLY?   YES ☐   NO ☐

SYMPTOMS THAT SUGGEST PROBLEMS:

SITE WELL MAINTAINED: YES ☐   NO ☐

GRASS MOWED, ACCESS ROAD MAINTAINED?   YES ☐   NO ☐

DISCUSS ANY SLUDGE WASTING

ARE CHEMICALS / OPERATING PROC. USED AS "BANDAID"
SOLUTIONS OR TO ENHANCE TREATMENT?   YES ☐   NO ☐

EXPLAIN:

ARE SCREENINGS / GRIT CONTAINED AND DISPOSED OF?   YES ☐   NO ☐

WHERE DISPOSED?

IS ROUTINE MAINENANCE APPARENT?   YES ☐   NO ☐

FLOW MEASUREMENT:

IS MEASURMENT METHOD CONSISTENT WITH PERMIT
REQUIREMENTS?   YES ☐   NO ☐

IS A NON-CALIBRATED FLOW MEASURING DEVICE USED?   YES ☐   NO ☐

IF RECORDING FLOW METER IS USED, IS RECORDER WORKING?   YES ☐   NO ☐

DETERMINE FREQUENCY OF CALIBRATION AND BY WHOM:

IS COMPOSITE SAMPLER FLOW PROPORTIONAL?   YES ☐   NO ☐

LABORATORY:

ANY ANALYTICAL TEST PERFORMED REQUIRING CERTIFICATION? YES ☐   NO ☐

ANY PARAMETERS CONTRACTED OUT?   YES ☐   NO ☐

LIST:

LAB CERTIFICATION NUMBERS AND EXPIRATION DATES:

SPOT CHECK INSTRUMENT / EQUIPMENT CALIBRATION AND RECORDS:
pH Meters ☐

Thermometer Calibration ☐

EFFLUENT / RECEIVING WATERS:

IMPACT OF EFFLUENT ON RECEIVING STREAM:

DOES EFFLUENT HAVE VISIBLE SOLIDS?   YES ☐   NO ☐

FOAMY OR HIGHLY COLORED?   YES ☐   NO ☐

IS UPSTREAM CLEAR?   YES ☐   NO ☐

HOW FAR DOWNSTREAM DOES MIXING OCCUR?

ARE UPSTREAM AND DOWNSTREAM COLLECTIONS CORRECT?   YES ☐   NO ☐

COMPLIANCE SCHEDULES:

IS FACILITY OPERATING UNDER SOC/JOC?   YES ☐   NO ☐

WHICH PARAMETERS ARE AFFECTED BY INTERIM LIMITS?

DISCUSS VIOLATIONS OF SOC/JOC SCHEDULED ACTIVITIES:

SELF-MONITORING PROGRAMS:

IDENTIFY NONCOMPLIANCE WITH PERMIT/SOC/JOC LIMITS:

ANY NOVS RECEIVED?   YES ☐   NO ☐

ARE MONITORING FREQUENCIES MAINTAINED?   YES ☐   NO ☐

ARE DMR'S CORRECTLY COMPLETED?   YES ☐   NO ☐

REVIEW SAMPLE COLLECTION, PRESERVATION, TRANSPORTATION:

ARE HOLDING TIMES CORRECT (6 HOUR FECAL)   YES ☐   NO ☐

IF MONITORING IS PERFORMED AT A GREATER THAN REQUIRED
FREQUENCY, IS ALL DATA REPORTED?   YES ☐   NO ☐

OPERATIONS AND MAINTENANCE:

ESTABLISHED PREVENTATIVE/CORRECTIVE MAINTENANCE   YES ☐   NO ☐
PROGRAM?

IS STAFFING ADEQUATE?   YES ☐   NO ☐

ESTABLISHED PROCESS CONTROL PROGRAM?   YES ☐   NO ☐

ARE ALL SAMPLE JUGS AND BOTTLES CLEANED DAILY?   YES ☐   NO ☐

ARE SAMPLES PRESERVED APPROPRIATELY?   YES ☐   NO ☐

SLUDGE DISPOSAL:

INVESTIGATE SLUDGE HANDLING AND DISPOSAL, INCLUDING SITE
OF ULTIMATE DISPOSAL.

ARE ANY PERMITS REQUIRED?	YES ☐	NO ☐
DO THEY HAVE THEM?	YES ☐	NO ☐
IS ANY MONITORING REQUIRED?	YES ☐	NO ☐
ANNUAL REPORTS REQUIRED?	YES ☐	NO ☐
IS DIVISION RECEIVING THEM?	YES ☐	NO ☐
SITE OF DISPOSAL CONSISTENT WITH PERMIT?	YES ☐	NO ☐

OTHER QUESTIONS / NOTES:

EMS SUPPLEMENTAL TOOLBOX

TRAINING

City of Gastonia WWTP – EMS Training Matrix (partial)
City of San Diego WWC – EMS Training Matrix
City of San Diego WWC – Safety and Training Report Template

Controlled Version on Computer U: Drive - All printed copies are uncontrolled

Crowders Creek Laboratory Procedures				Steve Oakley		Susan Copeland		Phil Hazelwood		Jason Hunnicutt		Sandra Herron		Rocio Bell		Stephanie Scheringer	
Document Title	Document #	Rev	Revision Date	Training	Training Sufficient	Training	Training Sufficient	Training	Training Sufficient	Training	Training Sufficient	Training	Training Sufficient	Training	Training Sufficient	Training	Training Sufficient
Chemical Hygiene Plan	WCR-0100.100	3	05/20/02	NR	NR	06/06/02	06/06/02	06/06/02	06/06/02	06/06/02	06/06/02	06/06/02	06/06/02	10/31/02	10/31/02	06/07/02	06/07/02
Quality Assurance Manual	WCR-0100.102	5	10/21/03	NR	NR	11/05/03	11/06/03	11/05/03	11/06/03	11/05/03	11/06/03	11/05/03	11/06/03	11/05/03	11/06/03	11/05/03	11/06/03
Laboratory Checks and Calibrations	WCR-0100.103	4	06/09/03	NR	NR	06/10/03	06/11/03	06/10/03	06/11/03	06/12/03	06/12/03	06/10/03	06/11/03	06/11/03	06/11/03	NR	NR
Washing and Preparation of Glassware and Bottles	WCR-0100.104	3	09/27/02	NR	NR	09/27/02	09/27/02	09/27/02	09/27/02	09/27/02	09/27/02	09/27/02	09/27/02	11/06/02	11/06/02	NR	NR
Sample Bottle Preparation & Allocation	WCR-0100.105	7	10/21/03	NR	NR	10/23/03	10/23/03	10/27/03	10/27/03	10/23/03	10/23/03	10/23/03	10/23/03	10/23/03	10/23/03	NR	NR
Data Verification	WCR-0100.106	4	03/12/04	NR	NR	10/17/03	10/17/03	10/17/03	10/17/03	10/17/03	10/17/03	10/17/03	10/17/03	10/17/03	10/17/03	10/17/03	10/17/03
Mercury Spill Clean Up Procedure	WCR-0100.108	1	02/21/01	NR	NR	03/27/01	03/27/01	03/28/01	03/28/01	03/27/01	03/27/01	03/28/01	03/28/01	11/01/02	11/01/02	03/28/01	03/28/01
Inorganic Acid & Base Spill Clean Up Procedure	WCR-0100.109	1	02/21/01	NR	NR	03/27/01	03/27/01	03/28/01	03/28/01	03/27/01	03/27/01	03/28/01	03/28/01	11/01/02	11/01/02	03/28/01	03/28/01
Laboratory Waste Chemical Storage/Disaposal	WCR-0100.110	3	07/10/01	NR	NR	11/14/01	11/14/01	11/14/01	11/14/01	11/14/01	11/14/01	11/14/01	11/14/01	11/06/02	11/06/02	11/14/01	11/14/01
Sample Receiving	WCR-0100.111	6	10/21/03	NR	NR	10/23/03	10/23/03	10/27/03	10/27/03	10/23/03	10/23/03	10/23/03	10/23/03	10/23/03	10/23/03	NR	NR
Switching Temperature Control Units on Environmental Rooms at Crowders Laboratory	WCR-0100.112	5	02/12/03	NR	NR	02/14/03	02/14/03	02/13/03	02/13/03	02/14/03	02/14/03	02/13/03	02/13/03	02/18/03	02/18/03	02/14/03	02/14/03
Procedures for Changing Set-point - Room Too Warm	WCR-0100.112A	4	02/12/03	NR	NR	02/14/03	02/14/03	02/13/03	02/13/03	02/14/03	02/14/03	02/13/03	02/13/03	02/18/03	02/18/03	02/14/03	02/14/03
Procedures for Changing Set-point - Room Too Cold	WCR-0100.112B	4	02/12/03	NR	NR	02/14/03	02/14/03	02/13/03	02/13/03	02/14/03	02/14/03	02/13/03	02/13/03	02/18/03	02/18/03	02/14/03	02/14/03
Weekend Work Scheduling for Laboratory Technicians	WCR-0100.113	1	05/18/01	NR	NR	06/06/01	06/06/01	06/06/01	06/06/01	06/06/01	06/06/01	06/06/01	06/06/01	11/01/02	11/01/02	06/14/01	06/14/01
Microscopic Observation	WCR-0100.114	1	04/15/03	NR	NR												
Conductivity Analysis- Orion Conductivity Meter Model 128	WCR-0100.118	1	04/09/03	NR	NR	11/13/03	11/13/03	04/11/03	04/11/03	NR	NR					04/11/03	04/11/03
Alkalinity Analysis	WCR-0100.121	3	02/03/03	NR	NR	02/04/03	02/04/03	02/04/03	02/04/03	02/04/03	02/04/03	02/04/03	02/04/03	02/04/03	02/04/03	NR	NR
Ammonia-Nitrogen Analysis	WCR-0100.122	8	10/21/03	NR	NR	10/23/03	10/23/03	10/27/03	10/27/03	10/23/03	10/23/03	10/23/03	10/23/03	10/23/03	10/23/03	NR	NR
Ammonia-Nitrogen Analysis by Orion 720A Meter	WCR-0100.122A	3	10/21/03	NR	NR	10/23/03	10/23/03	10/27/03	10/27/03	10/23/03	10/23/03	10/23/03	10/23/03	10/23/03	10/23/03	NR	NR
Ammonia Nitrogen Distillation Method	WCR-0100.123	5	10/21/03	NR	NR	10/23/03	10/23/03	10/27/03	10/27/03			10/23/03	10/23/03	10/23/03	10/23/03	NR	NR
Automated Biochemical Oxygen Demand Analysis	WCR-0100.124A	5	09/24/03	NR	NR	09/26/03	09/26/03	10/01/03	10/01/03	09/26/03	09/26/03	09/26/03	09/26/03	09/26/03	09/26/03	NR	NR
Biochemical Oxygen Demand Analysis - Manual Method	WCR-0100.124B	2	01/22/03	NR	NR	01/24/03	01/24/03	01/24/03	01/24/03	01/24/03	01/24/03	01/24/03	01/24/03	02/21/03	02/21/03	NR	NR
Chemical Oxygen Demand Analysis	WCR-0100.125	3	05/13/03	NR	NR	05/15/03	05/15/03	05/15/03	05/15/03	05/15/03	05/15/03	05/15/03	05/15/03	01/20/04	02/13/04	NR	NR
Chemical Oxygen Demand Analysis (Using Shimadzu Spectrophotometer)	WCR-0100.125B	3	05/14/03	NR	NR	05/15/03	05/15/03	05/15/03	05/15/03	05/15/03	05/15/03	05/15/03	05/15/03	01/20/04	02/13/04	NR	NR
Total Cyanide Analysis	WCR-0100.127	0	04/07/03	NR	NR	11/05/03	12/17/03			04/21/03	04/21/03			04/07/03	04/16/03	NR	NR
Fecal Coliform Analysis	WCR-0100.128	10	02/25/04	NR	NR	03/10/04	03/10/04	03/10/04	03/10/04	NR	NR	03/10/04	03/10/04	03/10/04	03/10/04	NR	NR
Metals Analysis by ICP-MS	WCR-0100.130	5	12/05/03	NR	NR											NR	NR
Mercury Analysis - Water Bath Digestion Method	WCR-0100.131	5	02/21/03	NR	NR	NR	NR									NR	NR
Mercury Analysis - Hot Block Digestion Method	WCR-0100.131A	3	02/21/03	NR	NR	NR	NR									NR	NR

1. Shaded area indicates training is required.   2. Date is date most recent documented training on that revision was received.
3. NR indicates training is not required since the person wrote or approved the procedure.

Training Matrix for EMS Management Procedures

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EMS Chart #: EMS-0102.005B
Format Revision #: 2
Date Format Updated: 8/4/03
Date Printed: 5/14/2004

Crowders Creek Laboratory Procedures				Steve Oakley		Susan Copeland		Phil Hazelwood		Jason Hunnicutt		Sandra Herron		Rocio Bell		Stephanie Scheringer	
Document Title	Document #	Rev	Revision Date	Training	Training Sufficient	Training	Training Sufficient	Training	Training Sufficient	Training	Training Sufficient	Training	Training Sufficient	Training	Training Sufficient	Training	Training Sufficient
Metals Hot Block Digestion Procedure	WCR-0100.132	2	11/13/02	NR	NR											NR	NR
Metals Microwave Digestion Procedure	WCR-0100.133	2	12/05/03	NR	NR											NR	NR
Nitrates Analysis	WCR-0100.134	3	11/06/01	NR	NR	04/23/01	04/23/01	04/23/01	04/23/01	04/19/01	04/19/01	04/23/01	04/23/01			04/24/01	04/24/01
Nitrate & Nitrite Analysis - FIAS Method	WCR-0100.136	0	11/26/02	NR	NR	11/26/02	11/26/02									NR	NR
pH Analysis	WCR-0100.137	4	12/31/02	NR	NR	01/02/03	01/03/03	01/02/03	01/03/03	01/07/03	01/07/03	01/02/03	01/03/03	01/06/03	01/06/03	NR	NR
Ortho Phosphorus	WCR-0100.138	5	02/20/03	NR	NR	08/19/02	08/19/02	08/19/02	08/19/02	08/16/02	08/16/02	08/16/02	08/16/02			12/03/02	12/03/02
Total Phosphorus Analysis	WCR-0100.139	8	02/19/03	NR	NR	01/09/03	01/09/03	NR	NR	01/09/03	01/09/03	01/09/03	01/09/03			NR	NR
Residual Chlorine Analysis	WCR-0100.140	5	02/19/03	NR	NR	02/20/03	02/20/03	02/20/03	02/20/03	02/20/03	02/20/03			02/20/03	02/20/03	02/19/03	02/19/03
40 Day Vector Attraction Analysis	WCR-0100.141	3	08/04/03	NR	NR											NR	NR
Solids - % Total Solids/% Total Volatile Solids Analysis	WCR-0100.143	6	08/04/03	NR	NR	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03			NR	NR
Solids – Total Solids/Total Volatile Solids Analysis	WCR-0100.144	4	08/04/03	NR	NR	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03	08/04/03			NR	NR
Total Suspended/Total Volatile Suspended Solids Analysis	WCR-0100.145	5	09/18/03	NR	NR	09/26/03	09/29/03	09/26/03	09/29/03	09/26/03	09/29/03	09/26/03	09/29/03	09/26/03	09/29/03	09/26/03	09/29/03
Total Kjeldahl Nitrogen Analysis	WCR-0100.146	5	12/31/03	NR	NR	01/02/04	01/02/04	01/13/04	01/13/04	01/02/04	01/02/04					NR	NR
Volatile Acids Analysis	WCR-0100.147	3	02/03/03	NR	NR	02/04/03	02/04/03	02/04/03	02/04/03	02/04/03	02/04/03	02/04/03	02/04/03	02/04/03	02/04/03	NR	NR
ADMI Color Analysis	WCR-0100.150	8	02/20/03	NR	NR	08/27/02	08/27/02	08/27/02	08/27/02	08/28/02	08/28/02	08/28/02	08/28/02	11/14/02	11/14/02	08/28/02	08/28/02
Clean Hood Operation	WCR-0100.153	3	11/14/01	NR	NR	08/19/02	08/19/02									NR	NR

1. Shaded area indicates training is required.   2. Date is date most recent documented training on that revision was received.
3. NR indicates training is not required since the person wrote or approved the procedure.

Figure 2
Wastewater Collection Occupational Catergories
(DD-SEOP 4.4.2)

WWC

WASTEWATER COLLECTION OCCUPATIONAL CATEGORIES

Revision April 2003

ML= Mandated By law
DR= Department Required

ML	DR				MWWD Course Numbers / New TIMS Occupational Categories	MW101266 Emergency Preparedness	MW800211 Environmentally Sensitive Lands	MW101335 Hazard Communication	ES9*HR01 HAZMAT for Handlers - 8 Hrs.	ES9*HR01 Hazmat for Handlers - 4 Hr. Review	ES9*SR01 Hazmat Handlers for Supervisors	MW102002 Herbicide and Pecticide Safety	MW101134 Injury and Illness Prevention	MW14001A ISO Awareness	MW1*SEMS Stand. Emerg. Man. System (S.E.M.S.)	MW800200 Storm Water Pollution Prevention
					TRAINING HOURS	1	2	1	8	4	4	2	1	1	1	1
					FREQUENCY	0	0	0	0	1	1	1	0	1	0	0
3	0	0	5	5	Administration - Non-Supervisory	ML		ML					ML	DR	ML	ML
3	0	0	8	0	Administration - Supervisory	ML		ML					ML	DR	ML	ML
3	0	1	9	0	Equipment Operation, W/O Confined Space	ML		ML					ML	DR	ML	ML
3	0	1	9	2	Equipment Operation, W/ Confined Space	ML		ML					ML	DR	ML	ML
3	0	1	7	5	Equipment Technician I, II, III W/Confined Space	ML		ML					ML	DR	ML	ML
3	0	1	8	0	Equipment Technician I, II, III W/O Confined Space	ML		ML					ML	DR	ML	ML
3	0	2	3	0	Engineering - Non-Supervisory (FEWD)	ML		ML					ML	DR	ML	ML
3	0	2	4	0	Engineering - Supervisory (FEWD)	ML		ML					ML	DR	ML	ML
3	0	2	1	0	Engineering - Non-Supervisory (Non-FEWD)	ML		ML					ML	DR	ML	ML
3	0	2	2	0	Engineering - Supervisory (Non-FEWD)	ML		ML					ML	DR	ML	ML
3	0	2	5	5	Plant Process Control Electrician W/Conf. Space	ML		ML					ML	DR	ML	ML
3	0	2	5	0	Plant Process Contr. Electrician W/O Conf. Space	ML		ML					ML	DR	ML	ML
3	0	3	5	0	Plant Process Control - Supervisory	ML		ML					ML	DR	ML	ML
3	0	1	9	5	Utilities - Non-Supervisory W/ Confined Space	ML		ML					ML	DR	ML	ML
3	0	3	0	0	Utilities - Non-Supervisory W/ Confined Space (NROW)	ML		ML				ML	ML	DR	ML	ML
3	0	2	9	0	Utilities - Non-Supervisory W/O Confined Space	ML		ML					ML	DR	ML	ML
3	0	2	9	5	Utilities - Non-Supervisory W/O Confined Space (NROW)	ML		ML				ML	ML	DR	ML	ML
3	0	1	8	5	Utilities - Supervisory W/ Confined Space	ML		ML					ML	DR	ML	ML
3	0	1	7	0	Utilities - Supervisory W/O Confined Space	ML		ML					ML	DR	ML	ML

Frequency

0 = One Time Training

5 = Repeat every 5 years

SAFETY AND TRAINING REPORT
*TAILGATE

DATE OF TRAINING _____ **LOCATION** _____ **PTL PS1 PS2 PS64 PS65 PENA EMG DRISC**

SAFETY TOPIC PRESENTED_____ _____

REFERENCE MATERIAL USED IN PREPARATION FOR THIS PRESENTATION :_____

INSTRUCTOR _____ **EMP ID#:**_____

Name of each person in attendance

LAST NAME (PRINT)	SIGNATURE	EMP ID#	LAST NAME (PRINT)	SIGNATURE	EMP ID#

ELAPSED TIME OF PRESENTATION   NUMBER IN ATTENDANCE   TOTAL TRAINING HOURS

_____ X _____ = _____

IMPORTANT: ORIGINAL – DEPARTMENT TRAINING SUPERVISOR, MS 901A/MOC 2
              COPY - RETAINED BY SENIOR SUPERVISOR SUBJECT TO CAL-OSHA AUDIT

EMS SUPPLEMENTAL TOOLBOX

EMS INTERNAL AUDIT

City of Gastonia WWTP – Internal EMS Audit Checklist
City of Gastonia WWTP – Internal EMS Audit Plan Worksheet
City of Gastonia WWTP – Internal EMS Audit Report Template

Public Works and Utilities Department
Internal EMS Audit
Checklist

Audited Section: _____ Division: _____

Scheduled Audit Date: _____ Audit Location: _____

Lead Auditor: _____

Auditors: _____

_____

Auditors in Training: _____

Pre-Audit Planning Meeting

Date: _____ Time: _____ Location: _____

Attendees: _____

Comments

Pre-Audit Talk with Section Supervisor

Supervisor: _____ _____

Date: _____ Time: _____

Comments: _____

Audit

Start Date: _____

Finish Date: _____

Comments: _____

C/PARs Generated

By: _____ Date: _____

C/PARs #s: _____

Comments: _____

C/PARs Returned

Date: _____

Written by: _____

Comments: _____

Report Completed

Date: _____

Written by: _____

Comments: _____

Completed Audit Report given to EMS Coordinator

By: _____ Date: _____

Internal EMS Audit
Audit Plan Worksheet

Scheduled Audit Date:	Audit Location:

Auditors:

Primary Procedure/Document? ☐ No ☐ Yes (If yes, the following information is required.)

Document Name: _____ Owner: _____

Document ID: _____ Revision #: _____

Pre-Audit Preparation

Support Documentation Reviewed:

_____ _____

_____ _____

_____ _____

Follow-up Issues from previous audits:

_____

_____

_____

_____

_____

Audit Plan

Positions to Interview:

_____

_____

☐ Item/Issue: _____

Notes: _____

_____

☐ Item/Issue: _____

Notes: _____

_____

☐ Item/Issue: _____

Notes: _____

Form #: EMS-0101.011B
Effective Date: 2-14-2001
Revision Date: 2-14-2001
Revision #: 0

Record ID #: EMS-0101.011B-_____-_____
Corresponding Procedure: EMS-0100.011

Page 1 of 2

ENVIRONMENTAL MANAGEMENT SYSTEM
Internal Audit Report

Audit Date: **Section(s) Audited:**
Supervisor/Contact:
Auditors:

The following is a detailed internal audit report as required and defined by procedure
EMS-0100.0011 of the City's Environmental Management System.

I.   **Environmental Policy:** ☐ In Conformance ☐ Not in conformance ☐ Not Audited
       Findings-C/PAR#s:
       Opportunities for Improvements:
       Comments:

II.   **Environmental Aspects:** ☐ In Conformance ☐ Not in conformance ☐ Not Audited
       Findings-C/PAR#s:
       Opportunities for Improvements:
       Comments:

III.   **Critical Control Points:** ☐ In Conformance ☐ Not in conformance ☐ Not Audited
       Findings-C/PAR#s:
       Opportunities for Improvements:
       Comments:

IV.   **Legal &Other Requirements:** ☐ In Conformance ☐ Not in conformance ☐ Not Audited
       Findings-C/PAR#s:
       Opportunities for Improvements:
       Comments:

V.   **Objectives and Targets:** ☐ In Conformance ☐ Not in conformance ☐ Not Audited
       Findings-C/PAR#s:
       Opportunities for Improvements:
       Comments:

VI.   **Structure and Responsibility:** ☐ In Conformance ☐ Not in conformance ☐ Not Audited
       Findings-C/PAR#s:
       Opportunities for Improvements:
       Comments:

VII. **Training, Awareness, Competence:** ☐In Conformance ☐Not in conformance ☐Not Audited
       Findings-C/PAR#s:
       Opportunities for Improvements:
       Comments:

VIII. **Communication Programs:** ☐ In Conformance   ☐ Not in conformance   ☐ Not Audited
Findings-C/PAR#s:
Opportunities for Improvements:
Comments:

IX. **Public Participation:** ☐ In Conformance   ☐ Not in conformance   ☐ Not Audited
Findings-C/PAR#s:
Opportunities for Improvements:
Comments:

X. **EMS Documentation:** ☐ In Conformance   ☐ Not in conformance   ☐ Not Audited
Findings-C/PAR#s:
Opportunities for Improvements:
Comments:

XI. **Document Control:** ☐ In Conformance   ☐ Not in conformance   ☐ Not Audited
Findings-C/PAR#s:
Opportunities for Improvements:
Comments:

XII. **Operational Control:** ☐ In Conformance   ☐ Not in conformance ☐ Not Audited
Findings-C/PAR#s:
Opportunities for Improvements:
Comments:

XIII. **Emergency Preparedness Response:** ☐In Conformance ☐Not in conformance ☐Not Audited
Findings-C/PAR#s:
Opportunities for Improvements:
Comments:

XIV. **Monitoring and Measurement:** ☐ In Conformance   ☐ Not in conformance   ☐ Not Audited
Findings-C/PAR#s:
Opportunities for Improvements:
Comments:

XV. **Corrective/Preventative Action Program:** ☐In Conformance ☐Not in conformance ☐Not Audited
Findings-C/PAR#s:
Opportunities for Improvements:
Comments:

XVI. **Records:** ☐ In Conformance   ☐ Not in conformance   ☐ Not Audited
Findings-C/PAR#s:
Opportunities for Improvements:
Comments:

XVII. **EMS Audit Program:** ☐ In Conformance   ☐ Not in conformance ☐ Not Audited
Findings-C/PAR#s:
Opportunities for Improvements:
Comments:

XVIII. **Biosolids Performance Report:** ☐ In Conformance   ☐ Not in conformance
☐   Not Audited
Findings-C/PAR#s:
Opportunities for Improvements:
Comments:

XIX. **Management Review – ISO 14001:** ☐ In Conformance ☐ Not in conformance ☐ Not Audited
Findings-C/PAR#s:
Opportunities for Improvements:
Comments:

Auditor Signature_____Date_____

Auditor Signature_____Date_____

Auditor Signature_____Date_____

Effective Date: 4/1/00   Corresponding Procedure: EMS-0100.011
Revision Date: 11/16/03   Form #: EMS-0101.011A - _____-_____
Revision #: 4

Appendix C

Additional Sources of Information

Provided EMS Support to Wastewater Facilities

USEPA	www.epa.gov and www.epa.gov/owm/sectmis.htm
Cal-EPA	www.calepa.ca.gov/
Water Environment Federation (WEF)	www.wef.org/
Association of Metropolitan Sewerage Agencies (AMSA)	www.amsa-cleanwater.org/
Delaware Department of Natural Resources and Environmental Control (DNREC)	www.dnrec.state.de.us/dnrec2000/
North Carolina Division of Pollution Prevention and Environmental Assistance (NC DPPEA)	www.p2pays.org/ and www.p2pays.org/iso/
North Carolina Department of Environment and Natural Resources (NC DENR)	www.enr.state.nc.us/
North Carolina State University Industrial Extension Service (NCSU IES)	www.ies.ncsu.edu/
Texas Commission on Environmental Quality (TCEQ)	www.tceq.state.tx.us/ and http://www.tnrcc.state.tx.us/exec/sbea/ems/
Public Agency EMS Group	This is an informal group of public Oregon agencies that have, or are interested in, EMS. The group meets quarterly to share information and discuss EMS practices and procedures.
Registrar Accreditation Board	http://www.rabnet.com/index.shtml

Wastewater's Favorite Sources of EMS Information

- Benchmarking Report: Environmental Management Systems (http://www.cityofseattle.net/environment/Agenda_EMP.htm)
- Best Practices Guide: Application of ISO 14000 EMS for Municipalities (http://www.iie.org/programs/energy/pdfs/Applic%20ISO%2014000%20for%20Municipalities.pdf)
- EMS : An Implementation Guide for Small and Medium-Sozed Organizations (http://www.epa.gov/owmitnet/iso14001/ems2001final.pdf)
- EMS: Do They Improve Performance, University of North Carolina, January 2003. (http://ndems.cas.unc.edu/)
- EMS Troubleshooter's Guide for Local Governments (http://www.peercenter.net/troubleshooters.cfm)
- Ford Motor Company, ISO 14001 EMS Workbook, June 2000 (http://www.p2pays.org/ref/08/07378.htm)
- ISO 14001 Answer Book, Dennis Sasseville, 1997
- ISO 14001 Environmental Management Systems - Guidance Document, Specialty Technical Publishers
- The ISO 14000 Handbook, Edited by Joseph Cascio, ASQ Quality Press
- ISO 14001 Standard and related ISO 14000 series documents
- Management Systems for Public Utilities Integration Project (http://www.cityofseattle.net/environment/documents/AnnualReport2000-1.pdf)
- Moving Toward Comprehensive Utility Management Systems, Report of Environmental ISO 14001 "PIZZA", MGMT Alliance Inc. (http://www.mgmt14k.com/014kpizza.htm)
- NBP EMS Guidance Manual (http://biosolids.policy.net/emsguide/manual/)
- NSF – ISR Policies for Environmental Management Systems Registration. (http://www.nsf-isr.org)
- TCEQ Environnemental Management System, Interim Evaluation Protocols (http://www.tnrcc.state.tx.us/exec/sbea/ems/protocols.html)

Don't forget your current organization's O&M Plans and Environmental Policies and Programs as references and integration opportunities!

Wastewater's Favorite <u>Websites</u> for EMS Information

- NC DEPPA (www.p2pays.org)
- US EPA (www.epa.gov/owm/iso14001/index.htm) & http://www.epa.gov/ems/
- US EPA Region IV (http://www.epa.gov/region04/)
- PEER Center (http://www.peercenter.net/)
- National Biosolids Partnership (http://biosolids.policy.net/)
- Kent County EMS Website (http://www.kentcountydpw.com/)
- National Database on EMS (http://www.eli.org/isopilots.htm)
- Local Government Environmental Assistance Network (LGEAN) Toolbox: (http://www.lgean.org/html/toolbox.cfm)
- Clean Texas (http://www.cleantexas.org)
- TCEQ Environmental Management Systems (http://www.tnrcc.state.tx.us/exec/sbea/ems/index.html)
- Texas Pollution Prevention Resources (http://www.p2plan.org/)
- MGMT Alliances Inc. EMS Homepage (http://www.mgmt14k.com/)
- King County Environmental Links (http://www.metrokc.gov/environ.htm)
- NSF International Strategic Registrations (http://www.nsf-isr.org/)
- PEER Center Local Resource Centers (http://www.peercenter.net/resourcecenters/)

In addition, several other organizations offer valuable EMS guidance and information, including, but in no way limited to, the following:

North Carolina EMS Program (http://www.p2pays.org/iso/)
Multi-State Working Group on EMS (http://www.iwrc.org/mswg/)
National Database on EMS (http://www.eli.org/isopilots.htm)
International Organization for Standardization (ISO) (www.iso.ch)
Registration Accreditation Board (RAB) (www.rabnet.com)

There are also several alternative EMS implementation guidance manuals available:

Continual Improvement in Utility Management: A Framework for Integration
This Guide responds to a defined need within utility management by providing a roadmap showing how a collective group of management initiatives interrelate and how a utility can best approach integrating them in the context of a continual improvement management system framework. This Guide was funded through a cooperative agreement with the U.S. Environmental Protection Agency (EPA), and sponsored by the Association of Metropolitan Sewerage Agencies (AMSA) and the Water Environment Federation (WEF).
http://www.peercenter.net/ewebeditpro/items/O73F3799.pdf

An Environmental Management System Troubleshooters' Guide for Local Governments
The Environmental Management System (EMS) Troubleshooters' Guide for Local Governments has been compiled from experiences and lessons learned through various EMS Initiatives for Government Entities. The practical data and case study material has been extracted from over 23 municipal, state, and local organizations which implemented EMSs as participants in these initiatives. The document is structured to systematically lead a facility, by addressing the needs and issues that a facility might encounter, throughout the four phases of EMS implementation. http://www.peercenter.net/troubleshooters.cfm

Environmental Management Systems: An Implementation Guide for Small and Medium Sized Organizations
In December 2000, the U.S. EPA, in cooperation with NSF International, completed this revised version of the original guide intended to offer a plain English, common sense guide to organizations interested in implementing an EMS, using the basic Plan-Do-Check-Act model.
http://www.epa.gov/OW-OWM.html/iso14001/wm046200.htm

Environmental Management Tools for SMEs (Small and Medium Sized Enterprises) - A Handbook
A guidance document produced by the European Environment Agency intended for small- and medium-sized enterprises interested in implementing environmental management practices.
http://reports.eea.eu.int/GH-14-98-065-EN-C/en/enviissu10.pdf

Best Practices Guide: Application of ISO 14001 Environmental Management Systems (EMS) for Municipalities
This guide is for senior and mid-level technical staff (facility managers, directors of engineering or technical services, directors of capital planning) from municipal agencies, utilities and institutions who are interested in implementing an EMS. The guide provides enhanced technical, management and analytical tools for the development of a broader Municipality EMS and a more narrowly structured Municipal Facility EMS.
http://www.iie.org/programs/energy/pdfs/Applic%20ISO%2014000%20for%20Municipalities.pdf

ISO 14001 Guidance Manual
The USA-based National Center for Environmental Decision-making Research has created a document that is specific enough to set up and implement an EMS, but general enough to allow the flexibility for addressing unique characteristics. The various sections of the manual describe each element of the ISO 14001 standard and provide step-by-step procedures and tips for developing and implementing an EMS.
http://www.ncedr.org/guides/iso.htm

Appendix D

EMS Glossary

Glossary

American National Standards Institute Registrar Accreditation Board (ANSI-RAB) – Body that accredits ISO 14001 Environmental Management Systems (EMS) registrars and auditors.

Audit Finding – A discovery of lack of conformance to the requirements of an (ISO 14001-based) EMS criteria/checklist. All audit findings must be resolved as found during the internal audit or through a formal EMS process of corrective and preventative action.

Audit Finding – The discovery of a lack of conformance to the requirements of an EMS (ISO 14001-based) criteria/checklist. All audit findings must be resolved as found during the internal audit or through a formal EMS process of corrective and preventative action.

Auditor – Person with the qualifications to conduct an EMS audit.

Baseline – The starting point from which to track the achievement of an objective. Establish "normalized" baselines to accurately measure how your facility's environmental performance could change over time. Normalized baselines will measure your actual environmental performance changes rather than changes in production, customer demand, or other non-environmental related factors.

Competency Training – Employees whose work may create a significant environmental impact must get appropriate training and be deemed competent based on education, training or experience. For example, most wastewater facilities need to have state licensed operators. The license is a way to demonstrate competency.

Conformance – To verify an organization's EMS to a specified standard (ISO 14001).

Continual improvement – The principle of continual improvement, as fundamental to the ISO 14001 Standard, is intended to ensure that an organization does not simply adopt an EMS, or other Plan-Do-Check-Act based management system, for cosmetic purposes and thereby remain static. Continual improvement is the process of enhancing a management system to achieve improvement in overall performance and effectiveness in line with the organization's management policies. It is one of the three main commitments of the EMS. After checking their EMS through monitoring and measuring, and find and fix audits, organizations apply the lessons they have learned to improve their environmental management.

Controlled Documents – Policies, procedures, manuals, and other documents that are a part of your EMS that require control or managed. A controlled document is one that is reviewed for relevance to your activities on a regular schedule (typically annually) to ensure that the most current version is being used "in the field."

Corrective Actions – As a result of the audit findings, corrective action reports (CARs) are assigned to all nonconformances to correct EMS deficiencies as they occur. CARs track an audit finding, and assign tasks to be completed, responsibilities, and timeframes.

Corrective Action Request (CAR) – A report form to identify, track and manage corrective actions.

EMS Core Team – A cross-functional team made up of individuals within the organization that helps facilitate EMS implementation across the organization. Team members are the EMS experts and cheerleaders.

Environment – Surroundings in which an organization or facility operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation.

Environmental Aspect – Element of an organization's activities, products or services that can interact with the environment. Aspects = Causes

Environmental Impact – Any change to the environment, whether adverse or beneficial, that results from an organization's activities, products or services. Impacts = Effects

EMS Fenceline – Project scope and/or operational areas in an organization in which the EMS is implemented. For example, for wastewater operations, this could include the pretreatment and the laboratory operations.

External Communication – Providing information and soliciting input, receiving inquiries and complaints, responding, and documenting exchanges with interested parties outside the fenceline of your facility.

EMS Manual – An EMS document that describes your core system elements and how the different elements are interrelated. A "roadmap" for your EMS. Auditors find a manual very useful when verifying your EMS.

EMS Records – Reports, checklists, training, and other data generated that provides verification that your organization is following the EMS as intended.

Work Instruction – Documented work tasks at your facility that provide a detailed understanding of how specific work process(es) are accomplished. For example, an instruction or checklist on the proper disposal of recyclables (batteries, oils and greases, rags, etc.) in your auto maintenance shop.

Emergency Situation – Condition (e.g., spills, releases, fires, etc.) that can have an environmental impact and that requires an emergency response or action.

Emergency Response – Actions taken to address an environmental incident.

Emergency Response Plan – A detailed plan that describes the logistics, procedures, who to contact, roles and responsibilities, reporting requirements, etc. in the event of an emergency or spill.

EMS Audit – A planned and documented review performed in accordance with a documented audit procedure for the purpose of verifying, through interview and an evaluation of EMS documents and records, conformance with the applicable elements of your EMS.

EMS Auditor – A qualified and trained individual who conducts EMS audits. Each EMS Auditor should attend documented training that presents the requirements of a standard (e.g., ISO 14001) EMS and of your organization's EMS audit procedure and discusses their roles in an EMS internal audit.

EMS Lead Auditor – A qualified and trained individual who plans, organizes, and directs your organization's EMS internal audits. The EMS Lead Auditor is the leader of your EMS audit team and will report audit findings and observations to management.

Environmental Management System (EMS) – A system for identifying environmental and organizational issues and implementing improvements based on Deming's Plan-Do-Check-Act model. The EMS has 17 elements that help organizations achieve environmental policy commitments and environmental performance improvements.

Environmental Management Representative (EMR) – The clearly-identified EMS team leader who has the responsibility and management authority for implementing the EMS from start to finish.

EMS Core Team – A cross-functional team made up of individuals within the organization that helps facilitate EMS implementation across the organization. They are the EMS experts and cheerleaders.

EMS Audit – A systematic, documented verification process of objectively obtaining and evaluating an organization's EMS to determine whether or not it conforms to the environmental audit criteria pre-defined by the organization and applicable standards (i.e. the ISO 14001 Standard).

EMS Core Team – A cross-functional team made up of individuals within the organization that help to facilitate EMS implementation across the organization. These are the EMS experts and cheerleaders.

EMS Fenceline – Operational area or areas within an organization where the EMS is implemented.

EMS Fenceline – Project scope and/or operational areas within an organization in which the EMS is implemented.

EMS Implementation Team – Individuals within the organization who are closest to the actual workflow and who assist the Core Team and the EMR in better understanding operational activities. Implementation Teams are generally very involved in designing operational controls, testing emergency preparedness and response plans, and identifying the environmental aspects of their daily activities.

Environmental Target – Detailed performance requirement, quantified where practicable, based on an organization's defined environmental objectives and that must be met in order to achieve those objectives.

Environmental Aspect – Element of an organization's activities, products or services that can interact with the environment. Aspects = Causes

Environmental Impact – Any change to the environment, whether adverse or beneficial, that results from an organization's activities, products or services. Impacts = Effects

Environmental Objective – An overall environmental goal based on an established environmental policy, that an organization sets itself to achieve. Wherever possible, environmental objectives should be quantified, in order to facilitate the evaluation of environmental performance and the measurement of progress towards specific environmental targets.

Environmental Target – A detailed performance requirement, quantified where practicable, that arises from the environmental objectives and that needs to be set and met in order for the objective to be achieved.

EMS Awareness Training – Training involving an overview of the basics of your EMS, including your environmental policy, significant aspects, objectives and targets, and the importance of operating under specific procedures and work instructions (operational controls) required under the EMS.

Environmental Management Program (EMP) – A structured program with a set of specific identifiable actions (an "action plan") providing the direction for EMS objectives and targets to be obtained and tracked. Your EMP should assign tasks, resources, responsibilities, and timeframes for achieving your objectives and targets.

Environmental Management Representative (EMR) – The clearly-identified EMS team leader who has the responsibility and management authority for implementing the EMS from start to finish.

Environmental Management System (EMS) – A system for identifying environmental and organizational issues and implementing organizational improvements based on Deming's Plan-Do-Check-Act model. The EMS has 17 elements that help organizations achieve environmental policy commitments and environmental performance improvements.

Environmental Performance – Measurable results of the EMS related to an organization's control of its environmental aspects, based on its environmental policy, objectives and targets.

Environmental Policy – An organization's formal statement defining its intentions and principles in relation to its overall environmental performance. It provides a framework for action and setting environmental objectives and targets.

Environmental Objective – An overall environmental goal based on an established environmental policy, that an organization sets itself to achieve. Wherever possible, environmental objectives should be quantified, in order to facilitate the evaluation of environmental performance and the measurement of progress towards specific environmental targets.

Environmental Target – A detailed performance requirement, quantified where practicable, that arises from the environmental objectives and that needs to be set and met in order for the objective to be achieved.

"Footprint" – The environmental impact of your facility - how your operations and services interact with the air, water, land, resources, local and regional community, etc.

Gap Analysis – Preliminary assessment of an organization's environmental programs and management practices to see where they match up with EMS requirements.

Interested Parties ("Stakeholders") – An individual or group, internal or external to the organization, concerned with or affected by the environmental performance of your organization. For example, local residents, citizen groups, and environmental regulators are all examples of "interested parties." In addition, consider your own employees – inside and outside of your fenceline – to be interested parties.

Internal Communication – Flow of information top-down, bottom-up, and across your entire EMS fenceline.

ISO 14001 – One of the Environmental Management Standards developed by the International Organization for Standardization in Geneva, Switzerland. It is the requirements document that specifies the seventeen (17) elements of an EMS. It is the standard protocol (requirements document) in the ISO 14000 series that specifies the necessary elements of an EMS.

Key Characteristic – An element of an operation or activity that can be measured or evaluated for environmental performance of objectives and targets.

Legal Requirements – The set of rules and legal regulations that apply to the operations and services of an organization, including local, state, and federal laws.

Major Nonconformance – A deficiency in meeting the requirements of an EMS. One or more of the 17 elements of the EMS are not addressed (e.g., no system procedure) or implemented (e.g., not following a system procedure as written).

Minor Nonconformance – A finding that leads to a failure to conform completely with an EMS element, but is not considered to be a breakdown in your system. For example, a number of employees were overdue on their EMS refresher training.

Observation – A recognition of something done incorrectly or an area of concern. While not a major or minor nonconformance with an EMS requirement, if done correctly it could strengthen the EMS or if done incorrectly, could potentially cause a system failure.

Other requirements – The rules and guidelines that an organization follows that are not legally binding under existing environmental laws, but to which an organization is committed (e.g., industry standards or voluntary guidelines). Under an EMS, these requirements require the same commitment as legally binding requirements.

Operational Controls – Documents that specify the way to execute a certain activity or operation. Operational controls are assigned to operations and services involving significant aspects and are documented through the use of work instructions, procedures, manuals, programs, etc. Examples include maintenance work, pretreatment operations, chemical ordering, etc.

Performance Indicators – Measurement tools, selected by management that can be used to support the evaluation of environmental performance in relation to a specific target. Performance indicators may be adjusted to meet specific management needs or as necessary to ensure progress towards specific environmental targets.

Pollution Prevention – The development, implementation, and evaluation of efforts to avoid, eliminate, or reduce pollution at the source. Any activity that reduces or eliminates pollutants prior to recycling, treatment, control or disposal.

Preventive Actions – A proactive approach to managing actions that are assigned to any EMS nonconformance made that will prevent potential environmental issues before they occur.

Registrar – A third-party organization that awards the EMS certification.

Registration – A recognized validation that an EMS has passed an accredited independent, third-party audit.

Root Cause – Underlying reason that led to or may lead to an EMS nonconformance. For example, if a group of employees were not following a procedure, the underlying cause could be that they were not properly trained on the procedure or that an updated procedure was not communicated to them.

Self-Declaration – An internal review of conformance to all elements of an EMS. EMS self-declaration is an organization's statement that it conforms with all elements of the ISO 14001 Standard.

Stakeholders – Groups and organizations having an interest or stake in an organization's EMS (e.g., regulators, shareholders, customers, suppliers, special interest groups, residents, etc.).

Surveillance – A scheduled sampling of EMS elements to maintain a third-party registration.

System Procedure – An EMS (ISO 14001) required document that establishes purpose, scope, roles & responsibilities, the tasks to be completed, and where and how the associated records and documents are maintained.

Third-Party – An independent EMS auditor that is qualified to conduct EMS audits.

Top Management – Person or group with executive responsibility for the organization and the EMS.

Work Instruction – A series of steps and activities directed to a very specific area or process. Examples include cleaning the rake at wastewater pretreatment operations and calibrating a pH meter.