

BIOSOLIDS MANAGEMENT SYSTEM (BMS) MANUAL

Biosolids Collection System City of Santa Rosa Utilities



COMMITTED TO EXCELLENCE IN BIOSOLIDS MANAGEMENT

TABLE OF CONTENTS

17 ELEMENTS OF THE BMS

[Element 1: City of Santa Rosa Utilities - BMS Manual](#)

[Element 2: Biosolids Management Policy](#)

[Element 3: Critical Control Points](#)

[Element 4: Legal and Other Requirements](#)

[Element 5: Goals and Objectives](#)

[Element 6: Public Participation and Planning](#)

[Element 7: Roles and Responsibilities](#)

[Element 8: Training](#)

[Element 9: Communication](#)

[Element 10: Operational Controls](#)

[Element 11: Emergency Preparedness & Response](#)

[Element 12: Documentation, Document Control & Recordkeeping](#)

[Element 13: Monitoring and Measurement](#)

[Element 14: Non-conformances – Preventive & Corrective Action](#)

[Element 15: Biosolids Management Program Report](#)

[Element 16: Internal BMS Audit](#)

[Element 17: Management Review](#)

ATTACHMENTS

[2.1 Code of Good Practice](#)

[3.1 SOP's](#)

[6.1 Inquiry / Complaint Form](#)

[6.2 Biosolids Fact Sheet](#)

[8.1 Spill Response and Traffic Plan](#)

Created/Approved:	06/08/07	By:	ZK Biosolids Coordinator
Date issued:	06/08/07		
Date last reviewed:	07/25/08	By:	ZK Biosolids Coordinator
Date last revised:	07/25/08	By:	ZK Biosolids Coordinator

Introduction

The City of Santa Rosa Utilities Subregional System provides wastewater treatment to The City of Santa Rosa, The City of Rohnert Park, The City of Sebastopol, The City of Cotati, Sonoma County South Park Sanitation District, and Unincorporated areas of Sonoma County. The City of Santa Rosa Laguna Treatment Plant (LTP) meets state tertiary treatment requirements and processes two valuable end products: highly treated effluent and biosolids. The effluent is either discharged to Laguna de Santa Rosa, sent to holding ponds for agricultural irrigation, or sent to the Geysers Recharge Project. The biosolids are either recycled to agricultural land as a soil amendment, sent to the compost facility to be composted for use as a soil conditioner, sent to the alpha farm storage facility, or sent to landfill if no other solution is available.

The City of Santa Rosa produces both Class A compost and Class B biosolids, which allows the City to recycle approximately 3,900-4,200 dry metric tons of biosolids each year. In 1992, the City began recycling Class B biosolids to privately owned City farms and to local Farmers. The Class B biosolids have improved soil tilth, reduced the potential for soil erosion, reduced reliance on commercial fertilizers, and maintained or improved crop yields. The Class A compost program began in 1996. In order to produce Class A compost, Class B biosolids are sent to the Laguna Compost Facility.

Biosolids transportation, land application, and composting are accomplished using a combination of City owned/operated equipment and contract owner/operators. The City has been very careful to structure the biosolids and compost programs in such a way that it maintains total control over all aspects of program management: site selection, approval and scheduling, monitoring, recordkeeping, reporting, regulatory interactions, planning, and communication.

The City is committed to continually improving all aspects of the biosolids management program. The City is committed to proactively addressing the challenges that will be encountered with respect to biosolids management in the future, especially changing regulations.

On December 29, 2003, The City of Santa Rosa's Director of Utilities signed a [Letter of Understanding](#) with the National Biosolids Partnership (NBP) in which The City of Santa Rosa agreed to become an NBP Environmental Management System (EMS) agency with the intent to achieve national recognition for its excellent biosolids management program. The City has specifically committed to meet the national requirements for an excellent biosolids program, committed to implement a EMS, and committed to the NBP's National [Code of Good Practice](#).

This Biosolids Management System (BMS) Manual describes The City of Santa Rosa's Environmental Management System for biosolids.

Procedure

1. The BMS manual is intended to be a "living" document. Revisions are expected as new information is obtained, changes to existing systems occur, and as experience is gained in managing the biosolids program.
2. The City of Santa Rosa Biosolids Coordinator will make revisions to the BMS manual on an "as needed" basis.
3. The Biosolids Coordinator will inform the Deputy Director of Utilities Operations of significant revisions/changes to the biosolids program, as well as, other interested parties.

Element 2: Biosolids Management Policy

Created/Approved:	03/02/07	By: ZK Biosolids Coordinator
Date issued:	03/02/07	
Date last reviewed:	7/25/08	By: ZK Biosolids Coordinator
Date last revised:	12/18/07	By: ZK Biosolids Coordinator

Introduction

[The City of Santa Rosa formally adopted the following Biosolids Management Policy on November 2, 2006.](#) The policy establishes guiding principles for the City of Santa Rosa biosolids management program and the BMS.

Biosolids Management Policy Statement

The City of Santa Rosa Utilities Department is committed to customer service and protection of the environment by providing high quality biosolids treatment. This is accomplished by our Biosolids Management System which ensures the optimum beneficial reuse of this product.

The City of Santa Rosa will implement this policy by:

- Following the [Code of Good Practice \(Attachment 2.1\)](#) for biosolids developed by the National Biosolids Partnership.
- Periodically evaluating beneficial reuse options that provide potential for improved efficiencies or better meet the needs of the community.
- Providing adequate training opportunities to personnel associated with the biosolids management programs.

Procedure

1. The Biosolids Coordinator is responsible for ensuring that the biosolids management policy is implemented and communicated to appropriate City staff, contractors, and other interested parties, using one or more of the communication tools listed under the Communication procedure [\(Element 9\)](#).
2. Methods used to accomplish Procedure 1 include, but are not limited to the following:
 - a. meeting with staff to discuss how the policy affects City operations
 - b. meeting with the contractors to discuss how the policy affects their activities
 - c. revising the contracts, upon agreement with the contractors or at the next renewal cycle, to reflect the provisions of biosolids management policy
 - d. meeting with farmers to discuss how the policy guides actions of the City and the contractor
 - e. communications with interested parties are addressed in [Element 9](#).
3. If revisions are needed because of changing conditions, the Biosolids Coordinator will adjust the current policy statement.
4. The Biosolids Coordinator will bring the revisions to the Deputy Director of Utilities Operations for consideration. Recommended revisions to the policy may also be included in the annual BMS Management Review [\(Element 17\)](#).
5. If revisions to the policy are approved, the Biosolids Coordinator will communicate the revised policy as per Procedure 1 above and place the revised policy in the BMS Manual.

Element 3: Critical Control Points

Created/Approved:	06/08/07	By:	ZK Biosolids Coordinator
Date issued:	06/08/07		
Date last reviewed:	07/25/08	By:	ZK Biosolids Coordinator
Date last revised:	02/13/08	By:	ZK Biosolids Coordinator

Introduction

Critical Control Points (or *key processes*) are those biosolids management activities that are under the direct control or influence of the City of Santa Rosa that have the potential, if not managed effectively, to create significant changes to the quality of its biosolids and could create negative environmental impacts. Critical Control Points include activities that can affect the quality of biosolids, how biosolids are managed, or how the City's biosolids program is viewed by the general public and regulators.

[Table 3.1](#) identifies the City's Critical Control Points that need to be managed to avoid problems with biosolids quality and potential environmental impacts. The Critical Control Points were selected by the City's Biosolids Coordinator after reviewing information contained in the [National Manual of Good Practice](#).

The City of Santa Rosa manages its biosolids to:

- meet the regulatory requirements for metal concentrations for land application
- meet the regulatory requirements for pathogen reduction for land application
- meet the regulatory requirements for vector reduction
- maintain minimal content for plastics and debris in the biosolids
- produce a product that does not create objectionable odors

[Table 3.1](#) also contains information on operational controls and monitoring/measurement activities.

Procedure

The following procedure will be used to review and update the selection of Critical Control Points:

1. The City's Biosolids Coordinator will review information in [Table 3.1](#) on an annual basis, when there are regulatory changes, or whenever major operational changes occur.
2. Revisions to [Table 3.1](#) will be documented in writing, in the annual biosolids program report, by The City's Biosolids Coordinator.
3. If revisions to the Critical Control Points are made by the Biosolids Coordinator, information related to roles/responsibilities, operational controls, monitoring/measurement and any other relevant areas of the BMS will also be reviewed and modified as appropriate. Documentation will be consistent with the approach in Procedure 2 above.
4. Following an operational change that requires revisions to the Critical Control Points or their associated environmental impacts, the Biosolids Coordinator will inform the NBP and the third-party verification auditor of the changes.

NOTE: THAT ANY CRITICAL CONTROL POINTS OR OPERATIONAL CONTROLS IDENTIFIED IN APPENDIX F OF THE NBP'S NATIONAL MANUAL OF GOOD PRACTICE BUT NOT SHOWN HERE WERE CONSIDERED BUT DETERMINED, THROUGH EXAMINATION OF FACILITY OPERATIONS, TO NOT BE RELEVANT TO THE PROCESSES USED AT THIS FACILITY

Table 3.1: Critical Control Points, Operational Controls, SOPs, Monitoring/Measurements and Environmental Outcomes

Biosolids Value Chain (Operational Area)	Critical Control Points (Key Processes)	Operational Controls (Control Points)	Standard Operating Procedures (SOPs)	Monitoring & Measurements	Potential Environmental Impacts
Wastewater Collection and Pretreatment	Industrial Users	Industrial Waste Permit	Environmental Compliance Inspections operate under: NPDES Permit No. CA0022764 Title 40 CFR Part 400-403	pH sampling and volume are logged (Hardcopies are kept in the LTP Administration office and the LTP Lab keeps electronic copies in LIMS)	System upsets, off loads
	Commercial Users				
	Septage Receiving Tank	Service contracts Feed rate			
Wastewater Treatment and Solids Generation	Solids screening / grit collection	Screen cleaning and maintenance	Wastewater Treatment and Solids Generations SOP's (under development) Skimmed once per shift (observed) Adjust parameters for auto pumping Adjust parameters for operational control points	Screening removed (cu.ft/day) Grit removed (cu.ft/day) Remotely observe blanket thickness and adjust automatic pump controls as necessary Measure Primary Sludge flow continually, report daily Determine appropriate Activated Sludge wasting rate using MCRT spreadsheet daily	Plastics in biosolids Attraction of vectors (e.g. flies) Odors
	Scum blanket	Scum thickness			
	Primary treatment	Blanket thickness			
	Secondary treatment	Blanket Thickness/ Total System Solids/ Sludge Retention Time			
Solids Stabilization, Conditioning and handling	Anaerobic Digestion	Temperature	Anaerobic Digestion SOP #1 Anaerobic Digestion SOP #2	Temperature observation once a day/ detention once a day based on sludge feed (gal/day) and is logged and recorded electronically in VAX	Pathogens Odors Attraction of vectors
		Detention time			
		Digester mixing procedure			
		"End product" permits			
	Gravity Belt Thickening	Observation and manual adjustments to feed/polymer, etc	Gravity Belt Thickening SOP	Grab samples taken each shift, daily composite analyzed by laboratory	
	Dewatering	Observation and manual adjustments to feed /polymer, etc	Dewatering SOP	Grab samples taken each shift and analyzed using microwave; composite analyzed daily by laboratory	
	Composting	Quality of add mix of bulking agent	Composting SOP Title 40 CFR Part 503 Sonoma County Health Service Permit	Detention time & Temperature kept in a binder and later recorded electronically in VAX	
		Mixture consistency			
		Mixture temperature			
		Mixture turning			
Mixture detention time					
"End product" permits					
Transportation	Alpha Farm	Loading SOP (under development)	% solids	Spills Roadway accidents Truck noise and dust	
	Loading Procedure	Hauling manual/ Contracts			

Transportation		Loading Site	General Order 40 CFR Part 503		Odors Road access Setback from service water
		Truck cover			
		Routing requirements			
		Truck cleaning			
		Regulations			
Biosolids End Use, Disposal, Or Beneficial Reuse	Land Application/ Site Selection	Regulations	General Order 40 CFR Part 503 Contracts		Negative impacts on groundwater or surface water resources Odors
		Contracts			
	Location of truck unloading (land application)	Truck loading/unloading procedures			
	Depth to Groundwater (land application)	Land application site selection procedures			
	Agronomic Rate (land application)	Regulations			
	Perimeter of application site (land application)	Regulations			
	Set back distance from surface water/neighbors (land application)	Regulations			
	Class A/EQ product sale and distribution	Bulk Sales/ Retail			
		Transportation Requirements			
	Landfill	Landfill regulations			
"End product" permits					

Element 4: Legal and Other Requirements

Created/Approved:	03/02/07	By: ZK Biosolids Coordinator
Date issued:	03/02/07	
Date last reviewed:	02/12/08	By: ZK Biosolids Coordinator
Date last revised:	01/08/08	By: ZK Biosolids Coordinator

Introduction

Identifying existing legal and other requirements that impact the various aspects of The City of Santa Rosa biosolids program is extremely important. Most of the existing requirements are defined by state and federal regulations and most are reflected in The City of Santa Rosa NPDES (National Pollution Discharge Elimination System) permit No. CA0022764, General Order No. 2004-0012-DWQ, and the Federal Title 40 CFR Part 503. However, when new or revised regulations are proposed, The City identifies, tracks, and assesses the potential effects on the biosolids program.

Procedure

The procedure used by The City to identify, track and assess the potential effects of new or revised regulations that may affect The City's biosolids program is described below.

1. The following sources of information are checked twice a year for updates and are used as appropriate to identify and track potential changes to regulations:
 - Sonoma County Health Services
 - Regional Water Quality Control Board
 - State Water Resources Control Board (SWRCB)
 - California Association of Sanitation Agencies (CASA)
 - State Rural Water Association
 - Cal EPA
 - Water Environment Federation (WEF)
 - National Association of Clean Water Agencies (NACWA)
2. The Biosolids Coordinator is responsible for ensuring that the City is aware of potential changes to regulations. The Biosolids Coordinator will:
 - a. Identify potential changes to regulations through review of information from various sources identified in Procedure 1 above.
 - b. Evaluate potential effects on the City's biosolids program.
 - c. Determine the appropriate actions and schedule, including the need to involve other City staff.
3. The following procedure is used to ensure that new legal and other requirements are appropriately communicated and implemented:
 - a. The Biosolids Coordinator will follow Procedure 2 above.
 - b. The Biosolids Coordinator will be responsible for communicating new requirements to the contractor and farmers on whose land biosolids are applied.
 - c. The Biosolids Coordinator will make any necessary changes to the BMS manual and related documents.
[Table 4.1](#) identifies legal and other requirements specific to The City's biosolids program. The City of Santa Rosa NPDES permit contains very specific regulatory and legal requirements. Detailed information can be found through a direct review of NPDES Permit No. CA0022764.

**Table 4.1: Legal Requirements and Guidance Specific to City of Santa Rosa
Biosolids Land Application Program**

Federal Regulations	Description
40 CFR 122: <i>National Pollutant Discharge Elimination System</i>	Requires municipal disposal to be included in NPDES.
40 CFR 123: <i>State Program requirements</i>	Requires municipal disposal to be included in NPDES.
40 CFR 124: <i>Procedures for Decision Making</i>	Requires municipal disposal to be included in NPDES.
40 CFR 257: <i>Criteria for Classification of Solids Waste Disposal Facilities and Practices</i>	Controls land application of sludge, landfills, and storage lagoons
40 CFR 258: <i>Criteria for Municipal Solid Waste Landfills</i>	Regulates co-disposal of sludge in landfills
40 CFR 403: <i>General Pretreatment Regulations for Existing and New Sources of Pollution</i>	
40 CFR 503: <i>The Standards for the Use or Disposal of Sewage Sludge</i>	Regulates land application, distribution, marketing, monofills, surface disposal, and incineration
NPDES Ocean Discharge Permit: <i>The National Pollutant Discharge Elimination System</i>	Order No. R8-2004-0062 NPDES Permit No. CA0110604

State & Local Regulations	Description
Title 23 California Administrative Code	Chapter 3, Sub-chapter 15: Municipal Sewage Sludge Discharges to Land
State Water Resources Control Board	General waste discharge requirements for the discharge of biosolids to land for use as a soil amendment in agricultural, silvicultural, horticultural, and land reclamation activities (General Order No. 2004-0012-DWQ)
Regional Water Quality Control Board	North Coast Regional Water Quality Control Board and the San Francisco Bay Area Regional Water Quality Control Board waste discharge requirements (NPDES Permit No. CA0022764)
California Integrated Waste Management Board	All landfilled biosolids are disposed of at Redwood Landfill, Novato, CA, a Class III landfill operating under Waste Discharge Requirement Number 95-110, and are used as fill

Element 5: Goals and Objectives

Created/Approved:	03/02/07	By: ZK Biosolids Coordinator
Date issued:	03/02/07	
Date last reviewed:	07/23/08	By: ZK Biosolids Coordinator
Date last revised:	07/23/08	By: ZK Biosolids Coordinator

Introduction

The City of Santa Rosa's Biosolids Management Policy states that "*The City of Santa Rosa Utilities Department is committed to customer service and protection of the environment by providing high quality biosolids treatment. This is accomplished by our Biosolids Management System which ensures the optimum beneficial reuse of this product*" by:

- Following the [Code of Good Practice](#) for biosolids developed by the National Biosolids Partnership.
- Periodically evaluating beneficial reuse options that provide potential for improved efficiencies or better meet the needs of the community.
- Providing adequate training opportunities to personnel associated with the biosolids management programs.

The City of Santa Rosa will set or revise goals to support its policy on an annual basis using the following procedure.

Procedure

1. The City will set or revise goals and objectives for its biosolids program on an annual basis.
2. The Biosolids Coordinator will draft a set of goals and objectives considering:
 - a. The City of Santa Rosa Biosolids Management Policy
 - b. input received throughout the year from the general public, regulators, elected officials, and other interested parties (NOI receipts are maintained by the Biosolids Coordinator)
 - c. input from City staffEach goal will include a short statement identifying its benefit to overall biosolids management activities.
3. Goals will be established using SMART criteria (Specific, Measurable, Achievable, Relevant and Time-bounded).
4. Goals and Objectives will be set considering each of the following-- Environmental Performance, Regulatory Compliance, Quality Management Practices and Relations with interested parties.
5. The Biosolids Coordinator will review and approve goals and objectives.
6. New or revised goals and objectives will be included in the annual biosolids management program report.
7. Final goals and objectives will be posted on the City Intranet.
8. The Biosolids Coordinator will prepare an action plan to support each goal, consistent with the template shown below, that contains schedules, milestones, and necessary resources.
9. The Biosolids Coordinator will be responsible for tracking progress toward each goal on a regular basis

ACTION PLAN AND TRACKING TEMPLATE

Goal/Objective	Target Date	Person Responsible	Resources Available	Interim Status	Date Completed
Goal 1: Beneficially reuse all biosolids that are generated by the Laguna Treatment Plant					
Objective 1.1 Improve the throughput of the compost facility by using 35% of total biosolids produced	2010	Biosolids Coordinator, Senior Maintenance Worker	Utilize new storage ability at Alpha to increase recycling	Facility is on line, best storage practices under development	Date completed
		All biosolids staff	Increase Compost Facility throughput	Equipment improvements to increase throughput are in progress- rebuilding agitator, acquiring a new mixing system	
Objective 1.2 Promote products as environmentally viable alternatives (Note: This objective supports Goals 1 and 2)	On going	All biosolids staff	Compost is promoted as benefiting the community	Outreach through tours and contact with individuals	Date completed
Objective 1.3 Increase available acreage for land application	2010	Biosolids Coordinator	Sonoma Land Trust (Dickson Farm)	In negotiations with Sonoma Land Trust	Date completed
Goal 2: Maximize returns for compost sales					
Objective 2.1 Sell or use 95% of our compost	2010	All biosolids staff	Good customer service drives compost sales	Staff considers individual customer needs and responds appropriately	Date completed
			Compost quality remains high	Production methods and amendment selections are quality based	
Objective 2.2 Promote products as an environmentally viable alternative	On going	All biosolids staff	Compost quality is ensured	Potential quality issues discussed, anticipated, and addressed.	Date completed
			Compost constituents and chemistry is shared with customers	All laboratory work is summarized and available to all customers, uses and restrictions are thoroughly explained	Date completed

Objective 2.3 Improve amendment dependability	January 2008	Biosolids Coordinator	Sonoma Compost, tree service companies, etc	Reviewing current and future needs	Date completed
Objective 2.4 Obtain Seal of testing assurance from the U.S. composting Council	August 2008	Biosolids Coordinator	Staff time	Working through the certification process	Date completed
Goal 3: Develop a stable workforce of experienced, skilled personnel					
Objective 3.1 Develop an effective systematic training program	2007/08 In progress	Senior Maintenance Worker, Treatment Superintendent	Formal training program Performance reviews that drive retraining needs Senior Wastewater Operations	Workers are up to properly trained before completing probation Events like accidents or process errors trigger retraining	Date completed
Objective 3.2 Review staffing requirements (classification, positions, duties)	2007/08	Utilities and Human Resources	Classification study for maintenance staff	Study group is in the process	Date completed
Goal 4: Remain up-to-date on compliance related issues					
Objective 4.1 Comply with the new General Order	Ongoing	Biosolids Coordinator	Regional Water Quality Control Board, Sonoma County Health Services	Status review of the General order and making sure the contractors are complying.	Date completed
Objective 4.2 Make fire system improvements in the Compost Facility	July 2009	Biosolids Coordinator	City of Santa Rosa Fire Department, Simplex Grinnell	Waiting for system to be reviewed and redesigned	Date completed
Objective 4.3 Develop a reporting system to track Class B biosolids compliance	December 2008	Treatment Superintendent	\$60,000 and Staff time	Inquiry Reports being developed to document compliance	Date completed

Objective 4.4 Build fence around Brown farm	July 2008	Reclamation Superintendent	\$15,000	Obtaining materials and constructing the fence	July 22, 2008
Goal 5: Improve reliability					
Objective 5.1 Disconnect dewatering operations from sludge hauling services	December 2008	Treatment Superintendent	\$1.5 million	Waiting for equipment to be built and installed	Date completed
Objective 5.2 Implement dewatering facility improvements recommended in biosolids master plan	August 2008	Treatment Superintendent	\$263, 000	Rehabilitate 2 belt presses One press rebuilt July 2008	Date completed
Objective 5.3 Improve digester temperature reliability	September 2009	Treatment Superintendent	Estimated \$100,000 (not funded as of 8/08)	Replace two existing digester heat exchangers with larger units	Date Completed
Goal 5: Improve environmental performance					
Objective 6.1 Upgrade the bio-filter system at the compost facility	2010	Biosolids Coordinator	Biosolids budget, outside contractors, compost staff	Finding a consultant	Date completed
Objective 6.2 Switch to an environmentally preferable bio-based hydrolytic oil for the agitators in the compost facility	2010	Senior Maintenance Worker (Compost)	Internet, networking with other facilities, conferences, etc.	Researching alternative products	Date completed

Element 6: Public Participation in Planning

Created/Approved:	03/02/07	By: ZK Biosolids Coordinator
Date issued:	03/02/07	
Date last reviewed:	02/12/08	By: ZK Biosolids Coordinator
Date last revised:	01/08/08	By: ZK Biosolids Coordinator

Introduction

The City of Santa Rosa has a well managed biosolids program which has been in operation for over 20 years. During facilities planning efforts in the 1980's, public interest in developing a long term strategy for managing biosolids was present, and significant efforts were undertaken to involve the public. As the biosolids program has matured and become a model at the local, state, and national levels, the public gained confidence in the program, and interest in participating in planning waned.

Public confidence continues to remain high and public interest in participating in the planning processes is relatively low. The City's proactive approach to providing the public with meaningful opportunities to provide input in the planning processes is consistent with legal requirements, the degree of current public interest, historical levels of public involvement and related local circumstances.

Procedure

1. The City will use a combination of both formal and informal mechanisms to provide opportunities for the public to participate in the planning process.
2. Where reasonable and appropriate or when legally required, opportunities will be provided for the public to formally participate in planning processes. Formal participation opportunities are described below.
3. Opportunities are available for the public to provide input through informal avenues; examples of informal participation opportunities are described below.
4. Information on the third party verification process will be shared with interested parties using any of the formal or informal participation opportunities identified below.
5. The City will record and respond to significant input received from interested parties. An inquiry/complaint form ([Attachment 6.1](#)) will be used to record, when possible, the names, addresses, phone numbers and e-mail addresses of interested parties and are kept in hardcopy in the LTP Administration file cabinet.

Formal participation opportunities

1. **Board of Public Utilities (BPU) Meetings**-The BPU generally meets twice a month and the meetings are open to the public. Public notice of each meeting is published on the City internet site and includes a copy of the agenda.
2. **Public informational meetings**-Public meetings are held on selected projects as a means of soliciting input. There are no statutory requirements to hold public informational meetings. City sponsorship of informational meetings is generally determined on a project specific basis based on recommendations from BPU and/or determinations made by the City Council, with input being solicited from City staff. City staff also participates in informational meetings held by other parties when requested.
3. **Formation of citizen's advisory committees**- The City forms citizen's advisory committees for selected projects which, in the City's judgment, may be precedent setting, address issues outside of areas traditionally considered City "core" business, or address issues that are viewed as potentially generating a great deal of public interest. City of Santa Rosa BPU may request that advisory committees be formed for particular projects.
4. **Notice of Intent (NOI)**- The City files a Notice of Intent with the North Coast Regional Water Quality Control Board for the continuation of the biosolids program. As per State requirements, all adjacent property owners with parcels abutting the subject land application sites and site tenants, as well as pertinent State and local agencies, receive written notification about the biosolids program.

Additional participation opportunities

1. **Informational letters**-Letters are sent to elected officials each year. Letters are also sent to participating farmers in the spring of each year, providing information on such topics as nutrient management, land availability, biosolids quality and the City's BMS Program (farmer mailing list).
2. **Website**-The City maintains a website that contains information on a variety of City related activities, including the City's biosolids management program and the BMS program.
3. **Biosolids fact sheets**- Fact sheets ([Attachment 6.2](#)) are prepared by City staff and are used primarily as a form of internal communication. They are available in hard copy format and electronically on the City intranet site.
4. **Intranet**-The City maintains an intranet site where pertinent information about City activities is conveyed to employees.
5. **Information packets**-These packets contain general information and fact sheets on the City's biosolids program and are available to the public.
6. **Newspaper, radio and television**-City staff work cooperatively with the media and have in many cases been proactive in encouraging stories, articles, etc.
7. **Plant tours and presentations to school/community groups**-The City provides general plant tours to a wide variety of school/community groups and other interested parties.

Element 7: Roles and Responsibilities

Created/Approved:	03/02/07	By: ZK Biosolids Coordinator
Date issued:	03/02/07	
Date last reviewed:	02/12/08	By: ZK Biosolids Coordinator
Date last revised:	01/08/08	By: ZK Biosolids Coordinator

Introduction

Clearly identifying roles and responsibilities is important to the success of both the biosolids management program and the BMS. Without a clear definition of roles and responsibilities, the likelihood of failing to comply with operational and regulatory requirements significantly increases.

Procedure

1. Roles and responsibilities for various individuals (including contractors) that are specific to the BMS are assigned by the Biosolids Coordinator. They are reviewed and updated as necessary.
2. The Biosolids Coordinator will also review existing roles/responsibilities whenever significant operation changes are made to ensure that roles/responsibilities are appropriately defined.
3. General descriptions of the roles/responsibilities for various positions are provided below.

Director of Utilities

The Director of Utilities is responsible for the overall operation of the City of Santa Rosa municipal services, which includes the BMS.

Deputy Director of Utilities Operations

The Deputy Director of Utilities Operations reports to the Director of Utilities and has overall management responsibility for the wastewater treatment plant and the biosolids reuse program, which includes the BMS. The Deputy Director is responsible for coordinating activities within the wastewater treatment operation, for establishing overall direction, determining priorities, and ensuring that all aspects of the operation and maintenance of the treatment facility are conducted in an efficient, cost effective manner and are compliant with existing rules and regulations. The Deputy Director is also responsible for ensuring that the contractor performs hauling and land application tasks in accordance with the terms of the contract and any other operation agreements.

Wastewater Treatment Superintendent and Senior Wastewater Operators

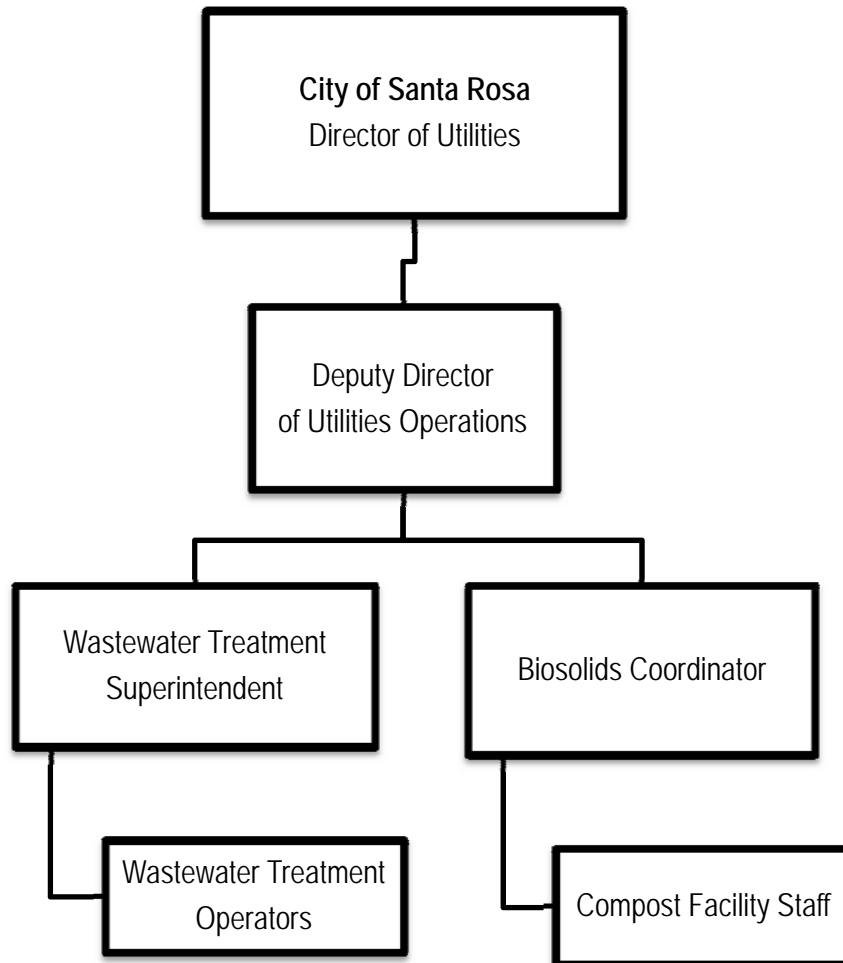
The Wastewater Treatment Superintendent reports directly to the Deputy Director of Utilities Operations and supervises the Senior Wastewater Operators. The Wastewater Treatment Superintendent and the Senior Wastewater Operators are responsible for the day to day management of the liquid and solids treatment system and for ensuring compliance with all regulatory reporting requirements, as defined in the BMS. The Operations Staff are responsible for performing the daily operations necessary to ensure that the plant performs in a satisfactory manner.

Biosolids Coordinator

The Biosolids Coordinator reports to the Deputy Director of Subregional Operations and is responsible for the day to day operation of the City's Biosolids program. The Biosolids Coordinator is also responsible for reviewing and maintaining the BMS and conveying appropriate information to staff and contractors.

Contractors

The City uses contractors to supplement hauling and application capabilities. The contractors supply owner/operated semi trucks and tractors to transport trailers. The contractors are responsible for following instructions necessary to ensure that operations are conducted in a safe and environmentally sound manner. In addition, contract operators are responsible for trip tickets and waste hauler tags which are used for load tracking and regulatory reporting. Additional responsibilities are identified in the contract document. It is important to note that City structures contracts such that it ultimately maintains all responsibility for siting, monitoring/sampling and regulatory reporting. Contractors are responsible for understanding and following the permits and the Emergency Response Plan described in the BMS.



Element 8: Training

Created/Approved:	03/02/07	By: ZK Biosolids Coordinator
Date issued:	03/02/07	
Date last reviewed:	02/12/08	By: ZK Biosolids Coordinator
Date last revised:	01/08/08	By: ZK Biosolids Coordinator

Introduction

Training is important for ensuring good job performance. The City of Santa Rosa demonstrates the importance it places on training by having a full time Training and Safety Coordinator on staff.

Training occurs through a variety of mechanisms, including (but not limited to):

- Crew meetings
- On the job training
- Review of internal reports
- Review of external publications
- Safety and emergency response training sessions
- Operator Training
- Forklift Training
- Plant meetings

Procedure

1. Training is generally based on performance needs as determined by the Directors and Supervisors.
2. Formal training hours are documented in the Hansen database.
3. The following process will be used to ensure that the contractor has a general awareness of the biosolids value chain and the BMS, and how they relate to their areas of responsibility. The Biosolids Coordinator is responsible for implementing these steps:
 - a. At least one meeting annually addressing the BMS will be held with the contractors.
 - b. Contractors participation in training activities is required per contract language.
4. The Biosolids Coordinator will identify relevant training opportunities for the contractors providing biosolids services to the City of Santa Rosa. This will include general BMS awareness training, such as the Spill Response and Traffic Plan ([Attachment 8.1](#))

Element 9: Communication

Created/Approved:	03/02/07	By:	ZK Biosolids Coordinator
Date issued:	03/02/07		
Date last reviewed:	02/12/08	By:	ZK Biosolids Coordinator
Date last revised:	03/02/07	By:	ZK Biosolids Coordinator

Introduction

The City of Santa Rosa is committed to proactively communicating information on the City's biosolids operations both internally and to interested external individuals and agencies. Public confidence in Santa Rosa's biosolids program is high due in part to the City's communication efforts, which are designed to provide ongoing information regarding the biosolids program and related activities. The City of Santa Rosa's communication efforts are consistent with legal requirements, the degree of current public interest, historical levels of public involvement and related local circumstances. Given the structure of the City's service contract, contractors do not play a formal role in the City of Santa Rosa's communications effort.

Procedure

Identification of interested individuals/organizations

1. A list of individuals interested in Santa Rosa's biosolids program and/or BMS related activities has been developed and is maintained by the Biosolids Coordinator. Current "interested individuals" include:
 - Farmers who own land where biosolids are land applied
 - Residents next to land application fields
 - Neighbors of the treatment plant
 - Other interested individuals
 - State Biosolids Regulator
 - Board of Public Utilities
 - City Council
 - Sonoma County Health Services
 - North Coast Regional Water Quality Control Board (NCRWQCB)
 - SFBay Regional Water Quality Control Board (SFBRWQCB)
 - State Rural Water Association
2. Contact information for interested individuals is currently maintained and updated by the Biosolids Coordinator. Individuals can request to be added to the list.

Communication approach

1. The Biosolids Coordinator will have primary responsibility for ensuring effective communications on the part of the City as it relates to the biosolids program and the BMS.
2. Information to be made available upon request to interested parties will include:
 - a. The City of Santa Rosa Biosolids Management Policy.
 - b. Information about legal and other requirements.
 - c. The City of Santa Rosa biosolids program goals and objectives.
 - d. Biosolids Management Performance Reports.
 - e. Information related to independent, third party BMS verification audit reports.
3. Specific approaches used to facilitate communication, and the frequency of their use, are left to the discretion of the Biosolids Coordinator. Examples of communication include meetings, emails, letters, reports, tours, presentations, newspaper articles and radio programs.
4. The City of Santa Rosa recognizes that communication initiated by interested parties and other individuals may take a wide variety of forms including telephone calls, letters, email, meeting participation, internet contact or other forms.
5. An effort will be made to initially respond to all inquiries or requests for information within 24 hours of receipt of the inquiry or request. Complex inquires/requests may require additional response time.

- a. Simple inquiries or requests for information will not be documented. These may include phone calls related to routine questions, and other similar inquiries/requests. The City Staff responding to an inquiry/request will use their best professional judgment to determine if inquiries/requests fall into this category.
 - b. Significant or detailed requests for information, inquiries or complaints will be documented. These may include detailed requests for information by interested parties, including homeowners, regulators and elected officials. Acceptable documentation methods include letters, memorandums, email records, telephone logs, written meeting summaries, notes to files, or other similar methods.
6. The Biosolids Coordinator will prepare and submit a written report each year, summarizing the internal audit results and corrective actions (if necessary) that have already been taken or will be taken to address any non-conformances. The audit report may be a standalone document or may be included as part of other prepared reports (e.g. the Biosolids Management Performance Report). The audit report will be made available upon request.

Element 10: Operational Controls

Created/Approved:	03/02/07	By: ZK Biosolids Coordinator
Date issued:	03/02/07	
Date last reviewed:	02/12/08	By: ZK Biosolids Coordinator
Date last revised:	03/02/07	By: ZK Biosolids Coordinator

Introduction

Operational controls include standard operating procedures (SOP's), work practices, or other activities that are required to ensure that critical control points are effectively managed.

Elements 3 and 10 are closely linked. [Table 3.1](#) in [Element 3](#) contains detailed documentation of critical control points, related operational controls, standard operating procedures, monitoring and measurements and potential environmental impacts.

Procedures

1. Operational controls have been identified by the City of Santa Rosa Biosolids Coordinator, based on consideration of information contained in the NBP [National Manual of Good Practice](#), legal and other requirements, and state best practices; as well as the personal experiences of the City staff. Operational controls and related procedures include preventative maintenance procedures (located in Hansen), work management systems and any relevant contracted procedures. Current operational controls are found in [Table 3.1](#) of the BMS Manual.
2. Operational controls will be reviewed by the City on an annual basis or whenever significant changes in plant processes and/or operations occur. Revisions to [Table 3.1](#) and associated SOP's and monitoring/measurements will be made by the Biosolids Coordinator following these reviews.
3. Changes will be documented in writing and will be noted in the annual biosolids program report.

NOTE: THAT ANY CRITICAL CONTROL POINTS OR OPERATIONAL CONTROLS IDENTIFIED IN APPENDIX F OF THE NBP'S NATIONAL MANUAL OF GOOD PRACTICE BUT NOT SHOWN HERE WERE CONSIDERED BUT DETERMINED, THROUGH EXAMINATION OF FACILITY OPERATIONS, TO NOT BE RELEVANT TO THE PROCESSES USED AT THIS FACILITY

Element 11: Emergency Preparedness & Response

Created/Approved:	03/02/07	By:	ZK Biosolids Coordinator
Date issued:	03/02/07		
Date last reviewed:	02/12/08	By:	ZK Biosolids Coordinator
Date last revised:	03/02/07	By:	ZK Biosolids Coordinator

Introduction

Having well-defined Emergency Preparedness and Response procedures are an important aspect of biosolids management activities. These procedures help to minimize the risk associated with unusual or emergency situations that can potentially impact human health or environmental quality.

Procedure

1. The City of Santa Rosa Wastewater Treatment Plant has an Emergency Response Manual (ERM) which is formally reviewed and updated by the Wastewater Treatment Superintendent on an as needed basis.
2. The ERM establishes clear protocol for how a wide variety of situations should be handled. Copies of the ERM are kept in all operation offices including: Control Room (Administration Building), Belt Press Office, and Compost Facility. Important emergency contact information is kept in all vehicles used in the City of Santa Rosa biosolids program, including contractor vehicles.
3. Testing and training with respect to safety and emergency response procedures is conducted on a periodic basis as determined by the Training and Safety Coordinator.
4. The need to require contractors performing work related to the City biosolids activities to develop Emergency Response and Preparedness Plans will be determined on a case-by-case basis. Generally, contracted activities are limited to biosolids transportation, spreading, amendment, and land filling. Therefore, relevant portions of the ERM are applicable to these contracted activities and the contractor is not required to develop their own Emergency Response and Preparedness Plans.
5. The biosolids transportation, spreading, amendment, and land filling are performed by contractors to the City. Relevant portions of ERM are applicable to these contracted activities and the contractor is not required to develop their own Emergency Response and Preparedness Plans. The contractor is required to follow relevant sections of The City of Santa Rosa Emergency Response Manual.

Element 12: Documentation, Document Control & Recordkeeping

Created/Approved:	03/02/07	By:	ZK Biosolids Coordinator
Date issued:	03/02/07		
Date last reviewed:	02/12/08	By:	ZK Biosolids Coordinator
Date last revised:	03/02/07	By:	ZK Biosolids Coordinator

Introduction

The City of Santa Rosa has established and maintains documentation for the biosolids management program, including the 17 elements of its BMS. Procedures have been established to ensure that biosolids management program documentation is reasonably available, has been created following established document creation protocol, is kept up to date through periodic reviews and revision, and is properly documented with version information, effective dates and references to replaced or superseded versions. Record retention periods are also established.

Procedure

1. The following documents related to the City's BMS program or relevant biosolids management activities are considered "controlled" documents:
 - a. Policy statements
 - b. The BMS Manual
 - c. Standard Operating Procedures (SOPs)
2. A master document is the controlled document and will be maintained in the Utilities Subregional Biosolids shared folder on [CityWeb](#). The master document will contain a header or a footer stating that it is the master version and the controlled document.
3. Standard operating procedures and the BMS manual will contain the following document control information:

Created/Approved:	By:
Date issued:	
Date last reviewed:	By:
Date last revised:	By:
4. All BMS documents, including policy statements, process control SOPs, equipment maintenance SOPs and all other relevant SOPs and the BMS Manual will be maintained in the Utilities Subregional Biosolids shared folder on [CityWeb](#).
5. Version and revision history will be maintained for all controlled documents.
6. Record retention periods will be consistent with the City's records retention policy. When documents have reached the retention date, the document will be reviewed by the Biosolids Coordinator to determine whether the retention period needs to be extended.
7. Data resulting from monitoring and measurement activities is retained in Utilities Subregional Biosolids shared folder on [CityWeb](#). This information has been retained continuously since operation commenced.
8. The Biosolids Coordinator has sole responsibility for updating/revising the BMS manual to reflect current practices. Minor grammatical edits, links to new or revised documents, etc. are not considered significant changes. Updates/revisions will generally be made in response to one or more of the following:
 - a. Internal audits
 - b. External audits
 - c. Operational changes
 - d. Annual reviews of critical control points, operational control, and biosolids program goals and objectives
 - e. Annual Biosolids Management Program Performance Report.

Element 13 – Monitoring and Measurement

Created/Approved:	03/02/07	By: ZK Biosolids Coordinator
Date issued:	03/02/07	
Date last reviewed:	02/12/08	By: ZK Biosolids Coordinator
Date last revised:	03/02/07	By: ZK Biosolids Coordinator

Introduction

Monitoring and measurement activities conducted by the City of Santa Rosa generally fall into one of the following three categories:

- Activities conducted to demonstrate compliance with legal/regulatory requirements.
- Activities conducted to document performance at critical control and operational control points.
- Activities conducted to track progress toward achieving biosolids program goals and objectives.

The City's National Pollution Discharge Elimination System (NPDES) permit identifies monitoring, measurement and reporting requirements for solids and biosolids by the California State Water Resources Board, North Coast Regional Water Quality Control Board and/or EPA, and addressed here as essential to the overall quality of treatment plant operations. The City also conducts additional monitoring to measure performance at critical control points. [Table 3.1](#) in [Element 3](#) contains a comprehensive listing of monitoring and measurements.

Procedure

1. Monitoring and measurement activities will be reviewed by the Biosolids Coordinator on an annual basis or whenever significant changes in plant processes and/or operations occur.
2. Analytical or instrumentation data is stored in the Utilities Subregional Biosolids shared folder on [CityWeb](#).
3. Progress towards meeting goals and objectives will be tracked at intervals deemed appropriate by the Biosolids Coordinator. Progress will be noted on the [Goals and Objectives Action Plan Template](#) in [Element 5](#).
4. The Biosolids Coordinator is responsible for evaluating the need for monitoring and measurement activities (if any) on the part of the contractor and incorporating necessary language into the service agreement(s).

Element 14: Non-conformances – Preventive & Corrective Action

Created/Approved:	03/02/07	By:	ZK Biosolids Coordinator
Date issued:	03/02/07		
Date last reviewed:	02/12/08	By:	ZK Biosolids Coordinator
Date last revised:	03/02/07	By:	ZK Biosolids Coordinator

Introduction

The purpose of this element is to establish, document and maintain procedures for investigating noncompliance with BMS protocols, legal/regulatory and other requirements, including conformance issues that may arise from monitoring/ measurement activities, or non-conformances noted as a result of internal or external BMS audits.

Procedure

1) NPDES Related Legal/Regulatory Non-conformances

Legal/Regulatory Requirements are either specifically identified in the City's NPDES Discharge Permit or Biosolids permit or are incorporated by reference. The permit(s) contains procedures for investigating non-conformances of legal/regulatory requirements.

2) BMS Non-conformances Identified During Internal Audits

- a. Internal audits will be conducted in accordance with procedures developed under [Element 16](#).
- b. An audit worksheet will be completed for each element audited. The worksheet will contain the following information:
 - i. Element #
 - ii. Audit type (for example, internal or external audit)
 - iii. Auditor's name
 - iv. Time period being audited
 - v. Audit date(s)
 - vi. Summary of findings
 - vii. Non-conformances (if any) and cause
 - viii. Corrective actions already taken (if any)
 - ix. Recommended additional corrective actions (if any)
 - x. Person(s) responsible for implementing corrective action(s)
 - xi. Changes in policies, programs, plans, operational controls and monitoring/measurements needed to prevent reoccurrence (if any)
 - xii. Estimated completion date
 - xiii. Required resources
 - xiv. Tracking
- c. The auditor will complete (i) through (v) above, as well as all specific questions contained in the worksheets. A current copy of the NBP Third Party Auditor's Guidance document will be available as a resource to the internal audit team.
- d. Completed audit worksheets will then be submitted to the Biosolids Coordinator for review. This may be done by completing the appropriate sections directly on the worksheet or addressing them through a separate written report.
- e. The Biosolids Coordinator is responsible for tracking progress using methods he/she deems appropriate. For minor non-conformances, progress will be tracked every 4 weeks. For major non-conformances, progress will be checked every 2 weeks. Tracking will be documented by completing the tracking sheet which is included as part of the audit worksheet.
- f. The Biosolids Coordinator will prepare and submit a written report each year, summarizing the internal audit results and corrective actions (if necessary) that have already been taken or will be taken to address any non-conformances. The audit report may be a stand alone document or may be included as part of other prepared reports (e.g. the Biosolids Management Performance Report). The audit report will be made available upon request.

3) BMS Non-conformances Identified During 3rd Party Audits

- a. 3rd party audits will be conducted in accordance with the procedures identified by the National Biosolids Partnership.
- b. Audit reports will be submitted to the City of Santa Rosa Biosolids Coordinator
- c. If the auditor identifies non-conformances, the Biosolids Coordinator will follow the steps listed under Procedure 2)b.(ii-vi) above.
- d. Minor non-conformances will be corrected within a 90 day period and major non-conformances will be corrected within a 30 day period, unless the auditor and the City agree that these timeframes need to be extended.

AUDIT AND CORRECTIVE ACTION WORKSHEET

I	ELEMENT #:
II	AUDIT TYPE:
III	AUDITOR'S NAME:
IV	PERIOD BEING AUDITED:
V	AUDIT DATE(S):
VI	SUMMARY OF FINDINGS:
VII	NONCONFORMANCES (IF ANY) AND CAUSE:

IX	CORRECTIVE ACTIONS ALREADY TAKEN (IF ANY):
X	RECOMMENDED ADDITIONAL CORRECTIVE ACTIONS (IF ANY):
XI	PERSON(S) RESPONSIBLE FOR IMPLEMENTING CORRECTIVE ACTION(S):
XII	CHANGES IN POLICIES, PROGRAMS, PLANS, OPERATIONAL CONTROLS AND MONITORING/MEASUREMENTS NEEDED TO PREVENT REOCCURRENCE (IF ANY):
XIII	ESTIMATED COMPLETION DATE:
XIV	REQUIRED RESOURCES:

XV	TRACKING:		
	CORRECTIVE ACTION WORKSHEET		
	DATE	STATUS OF CORRECTIVE ACTION	SUPPORTING DOCUMENTATION

Element 15: Biosolids Management Program Report

Created/Approved:	03/02/07	By: ZK Biosolids Coordinator
Date issued:	03/02/07	
Date last reviewed:	02/12/08	By: ZK Biosolids Coordinator
Date last revised:	03/02/07	By: ZK Biosolids Coordinator

Introduction

The City of Santa Rosa will annually prepare a performance report that provides summary information on activities associated with the biosolids management program(s) and the BMS.

Procedure

- 1) The Biosolids Coordinator will prepare an annual report on biosolids that summarizes the performance of the biosolids management program. The performance report will be completed each year and will address performance during the previous calendar year. At a minimum, the report will contain the following information:
 - a. Summaries of monitoring data and other measurements that demonstrate the performance of the City's biosolids program relative to established goals, objectives and legal requirements.
 - b. Summary of relevant contractor activities.
 - c. Summaries of actions that have been taken on a voluntary basis.
 - d. Progress towards achieving biosolids program goals and objectives.
 - e. A summary of internal audits that states any deficiencies or non-conformances.
 - f. A summary of independent third party audits.

The performance report will be available upon request.

Element 16: Internal BMS Audit

Created/Approved:	03/02/07	By: ZK Biosolids Coordinator
Date issued:	03/02/07	
Date last reviewed:	02/12/08	By: ZK Biosolids Coordinator
Date last revised:	03/02/07	By: ZK Biosolids Coordinator

Introduction

The City of Santa Rosa will conduct periodic internal audits of the BMS program in order to determine the effectiveness of the biosolids program.

Procedure

- 1) The City will conduct internal audits of the BMS program on an annual basis, except in those years when a formal 3rd party audit is conducted.
- 2) Internal audits will be completed each year except in those years that a formal 3rd Party Audit is completed and will address program activities completed during the previous operating period.
- 3) The audit will be conducted by the City's BMS Internal Audit Team under the direction of the Biosolids Coordinator.
- 4) The audit will evaluate the effectiveness of the biosolids program, including progress toward goals and objectives, response to non-conformances, management review, public participation and communications.
- 5) All documents and records related to internal audits will be maintained in the Biosolids file on the City's server.
- 6) The NBP Agency BMS Guidance Manual and other appropriate documents will be made available as a resource to the audit team. The objective methods listed in Guidance are as follows:
 - i. Document and records review
 - ii. Interviews
 - iii. Direct observation
- 7) Nonconformances will be addressed using the procedure identified in Element 14.
- 8) The Biosolids Coordinator will prepare and submit a written report to the Deputy Director of Utilities Operations each year, summarizing the internal audit results and corrective actions (if necessary) that have already been taken or will be taken to address any nonconformances. The audit report may be a standalone document or may be included as part of other prepared reports (e.g. the Biosolids Management Performance Report). The audit report will be available upon request.
- 9) Biosolids Coordinator will periodically evaluate the need to provide training or guidance to the internal auditors and will be responsible for coordinating any subsequent activities related to training or guidance.

AUDIT AND CORRECTIVE ACTION WORKSHEET

I	ELEMENT #:
II	AUDIT TYPE:
III	AUDITOR'S NAME:
IV	PERIOD BEING AUDITED:
V	AUDIT DATE(S):
VI	SUMMARY OF FINDINGS:
VII	NONCONFORMANCES (IF ANY) AND CAUSE:

IX	CORRECTIVE ACTIONS ALREADY TAKEN (IF ANY):
X	RECOMMENDED ADDITIONAL CORRECTIVE ACTIONS (IF ANY):
XI	PERSON(S) RESPONSIBLE FOR IMPLEMENTING CORRECTIVE ACTION(S):
XII	CHANGES IN POLICIES, PROGRAMS, PLANS, OPERATIONAL CONTROLS AND MONITORING/MEASUREMENTS NEEDED TO PREVENT REOCCURRENCE (IF ANY):
XIII	ESTIMATED COMPLETION DATE:
XIV	REQUIRED RESOURCES:

XV	TRACKING:		
	CORRECTIVE ACTION WORKSHEET		
	DATE	STATUS OF CORRECTIVE ACTION	SUPPORTING DOCUMENTATION

Element 17: Management Review

Created/Approved:	03/02/07	By: ZK Biosolids Coordinator
Date issued:	03/02/07	
Date last reviewed:	02/12/08	By: ZK Biosolids Coordinator
Date last revised:	03/02/07	By: ZK Biosolids Coordinator

Introduction

The City of Santa Rosa will conduct a management review of its biosolids and BMS program on an annual basis. The purpose of this review will be to address the possible need for changes to policy, the goals and objectives, the biosolids management program and other BMS elements based on internal BMS audit results, third party verification audit results, changing circumstances, and the City's commitment to continual improvement.

Procedures

- 1) Biosolids Coordinator will review BMS and related biosolids management activities on an annual basis.
- 2) The review will be conducted each year and will cover activities of the previous year.
- 3) The scope will include:
 - a. Review monitoring data and other measurements that demonstrate the performance of the City's biosolids program relative to established goals, objectives and legal requirements.
 - b. Review progress towards achieving biosolids goals and objectives.
 - c. Review internal audit results.
 - d. Review 3rd party audit results.
 - e. Review the need for changes in existing policy or the adoption of new policy to support the BMS and biosolids related activities.
- 4) To facilitate the review, the Biosolids Coordinator will prepare a written report that addresses each of the above areas. The report will include recommendations (if any) for changes that should be considered by the Deputy Director of Utilities Operations.
- 5) The report and management review will be carried out in close coordination with the Biosolids Management Program Performance Report and the internal BMS audit. To the extent practicable, an effort will be made to develop a single report on an annual basis.
- 6) The Biosolids Coordinator will schedule a meeting with the Deputy Director of Utilities Operations to discuss the report.
- 7) Any changes to policies, goals/objectives, plans, procedures, work practices and other BMS elements deemed necessary as part of the management review will be documented in writing by the Biosolids Coordinator.
- 8) The Biosolids Coordinator will develop a schedule and action plan to address recommendations from the management review.

ATTACHMENTS



CITY OF SANTA ROSA
UTILITIES DEPARTMENT

Code of Good Practice

The Code of Good Practice (“the Code”) is a broad framework of goals and commitments to guide the production, management, transportation, storage, and use or disposal of biosolids – in short, a biosolids management system (BMS). Those who embrace the Code and participate in the BMS commit to “do the right thing.” Code subscribers and BMS participants pledge to uphold the following principles of conduct:

COMPLIANCE: To commit to compliance with all applicable federal, state, and local requirements regarding production at the wastewater treatment facility, and management, transportation, storage, and use or disposal of biosolids away from the facility.

PRODUCT: To provide biosolids that meet the applicable standards for their intended use or disposal.

BIOSOLIDS MANAGEMENT SYSTEM: To develop a biosolids management system a method of independent third-party verification to ensure effective ongoing biosolids operations is included.

QUALITY MONITORING: To enhance the monitoring of biosolids production and management practices.

QUALITY PRACTICES: To require good housekeeping practices for biosolids production, processing, transport, and storage, and during final use or disposal operations.

CONTINGENCY AND EMERGENCY RESPONSE PLANS: To develop response plans for unanticipated events such as inclement weather, spills, and equipment malfunctions.

SUSTAINABLE MANAGEMENT PRACTICES AND OPERATIONS: To enhance the environment by committing to sustainable, environmentally acceptable biosolids management practices and operations through a biosolids management system.

PREVENTIVE MAINTENANCE: To prepare and implement a plan for preventive maintenance for equipment used to manage biosolids and wastewater solids.

CONTINUAL IMPROVEMENT: To seek continual improvement in all aspects of biosolids management.

COMMUNICATION: To provide methods of effective communication with gatekeepers, stakeholders, and interested citizens regarding the key elements of each biosolids management system, including information relative to system, including information relative to system performance.

Anaerobic Digestion SOP #1

Location

The anaerobic digesters are located east of the primary treatment structures.

System Control

To manually operate the feed valves, the appropriate OPEN/CLOSE/AUTO selector switch must be turned to either the OPEN or CLOSE or AUTO position.

In the AUTO mode, a microprocessor is used to allow flow switching between the four digesters proportioned on a poundage or volume basis. In addition, a timer system is provided to allow flow switching on a regular timed sequence. The desired number of digesters (1 to 4) to be fed is input into the programmable controller. The sludge feeding mode is selected using a panel-mounted selector switch labeled MODE SELECT and marked TIME/FLOW/MASS.

In the TIME mode, sludge flow is fed to each digester on an adjustable-time basis. (The time duration to each digester is equal according to the operator-selected time period.)

In the FLOW mode, the operator can select the volume of sludge to be delivered to each digester in sequence.

In the MASS mode, both sludge flow and sludge suspended solids signals are received and used to determine sludge mass. Multiply sludge flow by sludge percent solids (by weight) to derive a sludge mass value. Set the sludge mass to be delivered to each digester in sequence.

All digester feed selections are input at the PLC Timer/Counter Access Module.

- Time is in MINUTES, 0-99999.
- Flow is in thousand gallons, 0-99999.
- Mass is in hundred pounds, 0-99999.

The combined sludge flow is metered by an electronic flowmeter at a point downstream after all sludge combine and prior to the Primary Heat Exchangers. An ultrasonic density meter manufactured by Xertex National Sonics is used to measure sludge density. The meters are installed near the Primary Heat Exchanger in the digester tunnel. The meters and a microprocessor make it possible to monitor and control the feed and flow switching to the digesters.

In each feed mode, the amount of sludge delivered to each digester is determined by the PLC except in the event of valve failure or high sludge feed line pressure. When the high line pressure is received or a valve open signal is not received, the program immediately shuts the valve on the digester being fed and opens the feed valve of the next digester in sequence.

Other digester alarm modes include:

- Compressor
 - Low Seal Water Flow
 - Low Suction Pressure
 - High Discharge Pressure
- Gas Leak Detection
- High Digester Feed Pressure
- High/Low Digester Level

- Digester Overflow
- Programmable Controller Failure

Alarm indications are transmitted to the Graphic Panel Alarm System for any alarm condition monitored on Field Control Panel FP-AD-2. An alarm reset is provided on Panel FP-AD-2.

Safety

Handrails and walkways around the digesters must be kept in good repair and clean.

There are many overhead pipes in the sludge digestion system, especially in the basement of the sludge control building. Use caution when walking in the digester area or operating equipment.

Use caution when working on the digester cover area. Keep the edge in sight at all times and stay away from the edge whenever possible.

Do not enter an empty digester without taking full precautions for entering a dead air space. There is no such thing as a totally "empty" digester.

Wear nonsparking shoes when walking on the digesters. Use nonsparking tools when working on the digesters.

NEVER SMOKE AROUND A DIGESTER:

The primary hazard associated with the digesters is from digester gas. Digester gas is a byproduct of the anaerobic digestion process. It is potentially explosive or combustible mixture of gases consisting primarily of methane (65-70%) and carbon dioxide (26-30%), with trace amounts of nitrogen, hydrogen, hydrogen sulfide, and oxygen.

In order for a fire to occur, the proper amount of oxygen must be mixed with the combustible digester gas; therefore, all the digester gas piping and equipment are kept under a positive pressure to prevent any leakage or atmospheric air into the system.

Gas leaks from the gas collection system could create an atmosphere conducive to fire and/or explosion. This hazard is more easily detectable than air leaks into the system because a gas leak may be detected by a gas detector and usually by smell. The sense of smell, however, should not be relied on as an instrument of detection. Periodic checks of the gas piping and collection equipment should be made with a portable gas detector. It is important that there be no smoking, sparks, or open flames in areas where gas may be leaking. The electrical equipment in the gas compressor rooms is all explosion-proof to prevent a hazardous condition from occurring.

CAUTION: AVOID SMOKING, SPARKS, OR FLAMES IN THE BOILER ROOM, ENGINE GENERATOR ROOM, DIGESTER PUMP ROOM, GAS COMPRESSOR ROOMS, DIGESTER ROOFS, OR ANY ENCLOSED AREA WHERE DIGESTER GAS MIGHT BE PRESENT.

The equipment associated with the digester gas system includes flame arrestors, pressure relief valves, automatic control valves, gas compressors and controls, waste gas incinerator and controls, engine generator and controls, hot water boiler and controls, and gas condensate traps. The flame arrestors protect against flashback from the waste gas incinerator, the engine generator, and the mixing compressors. They should be checked and cleaned on a regular basis to prevent possible blockage. The pressure relief valves, which provide relief should excessive pressure develop in the digester tanks or gas systems, are vented to the atmosphere outside the building. Checks of the pressure relief valves should be made on a regular basis to ensure that they relieve pressure at the designated pressures.

When disassembling any equipment or piping connecting to the digesters in which digester gas may be present, portable fans should be used to prevent the concentration of digester gas from reaching the explosive limit (LEL). Measures should also be taken to ensure that there is no gas flow through the equipment/piping when maintenance is done.

Keep guards in place and securely anchored on the sludge recirculation pumps and the gas recirculation blowers.

Use lock and tag procedures faithfully when working on equipment.

Allow heat exchangers to cool before attempting to do maintenance on them. If it is too hot to hold comfortably, you do not have a control over the situation.

Hot water lines to the heat exchangers are hot enough to burn bare skin. Avoid them.

Startup

The following startup outline is based on the assumption that a digester has been down for cleaning/repair with the other digester carrying the load. See specific startup procedures for floating and fixed cover digesters.

1. Go through startup procedure checks for the sludge circulation, and digester heating equipment. Assure all digester valves, access hatches, and covers are properly positioned. All the systems must check out.
2. Fill the digester approx. 1/2 full with water.
3. Heat the water to 98 degrees F using the digester sludge circulation/heating system.
4. To start a digester there must be full digesters online to seed the one being started.
5. Transfer digested seed sludge from the online digesters to the startup digester.
6. Start the digester gas mixing system. Direct the poor quality digester gas to the waste gas incinerator.
7. Begin feeding raw sludge to the startup digester, feed at a slow rate. Increase the feed rate gradually monitoring the VA/alkalinity.
8. When digester is producing good gas quality, direct gas to the mixed gas boosters.

The piping and valving provided allow many variations for flow arrangements. The mixing compressors, and sludge recirculation pumps may be interchanged with one another for many purposes through proper switching of valves. The digesters themselves may even be operated in series, rather than parallel, if desired.

Shutdown

The following shutdown outline is based on the assumption that a digester will be down for cleaning/repair with the other digesters carrying the load. See specific shutdown procedures for floating and fixed cover digesters.

1. Stop feed to the digester to be shut down.
2. Direct the shutdown digester's gas to the waste gas incinerator.
3. Stop gas mixing, sludge circulation, and the HRS flow to the digester heat exchanger.
4. Start digester dewatering following normal process (pump sludge to the belt press).
5. Continue pumping with dewatering pump until digester is empty.

Emergency Operation

Excessive high or low sludge levels in the digesters must be avoided. High levels may result in an overflow, low levels may result in gas loss or poor mixing. Sludge may be manually transferred between digesters to maintain proper operating levels.

The digester gas mixing systems need to be in continuous operation, only a short shutdown can be tolerated. Failure to maintain digester mixing may result in excessive sludge foaming and subsequent malfunction of the digester gas system (digesters 1 & 2 floating covers may "sink").

Location

Sludge from digesters is heated by circulation through external spiral heat exchangers. A heat exchanger and circulation pump is located next to each digester in the digester equipment room. The combined primary sludge, thickened secondary sludge, and scum are heated in two pipe heat exchangers that are located in the piping gallery north of the digester equipment room.

Hot water is supplied to the heat exchangers from the heat recovery system of the cogeneration engines, which are located in the cogeneration building. If the heat provided by that source is not sufficient to meet system demands, the water boiler in the operations building is intended to operate as necessary to meet the demand.

Controls

The sludge heat exchange process is controlled based on the sludge temperature. The sludge circulation pumps operate continuously to circulate sludge from each digester through its sludge heat exchanger. The operation of these pumps is controlled by START/STOP switches mounted locally. An ON indicator light will illuminate on the pump control panel to indicate that the pump motor is on.

Three-way water temperature control valves modulate to control the flow rate of hot water through the heat exchangers in response to temperature. Hot water is supplied to the heat exchangers until the sludge temperature is increased to approximately 100° F, as sensed by a temperature element located in the circulating sludge piping.

The sludge heater hot water circulation pump circulates water through the heating loop. This pump is controlled by an ON/OFF switch. This loop also includes a temperature control valve, which is used to maintain a constant sludge temperature. A temperature probe at the primary sludge heat exchanger detects the temperature of the water jacket circulating through the heat exchanger. The temperature is indicated at a temperature indicator controller. The temperature indicator controller is a set point controller; it will open or close the temperature control valve to maintain the set temperature. If the actual temperature is greater than the set point temperature, then the valve should close to reduce the amount of hot water flowing into the system. In contrast, if the actual temperature is lower than the set point temperature, then the temperature indicator controller will open to allow greater flow of hot water into the system.

Safety

General safety precautions related to working around areas that may contain methane gas should be followed. There should be no smoking, sparks, or open flames in this area. Avoid contact with the hot water piping; this piping is very hot where it is not covered with insulation. Lock out and tag any equipment before performing maintenance procedures.

Heat Exchangers

Startup

1. The engine hot water circulation system should be in operation. Operation of the auxiliary hot water boiler system is described in the Process Heat section. The hot water circulation pump, located in the Boiler Room, should be running to supply hot water to the sludge heating system.
2. Hot water should never flow through a heat exchanger that does not have sludge circulating in it. This causes sludge to become baked on the heat exchanger contact surface. When putting a heat exchanger back into service, first open the valves in the sludge circulation piping and start the sludge circulation pump.
3. Open the isolation valves in the hot water piping to allow hot water to flow to the heat exchangers and start the hot water circulation pump.

Shutdown

The sludge heating system will normally be in service continuously, with individual pieces of equipment periodically shut down for maintenance. During equipment shut down for maintenance, duplicate equipment may be used by valving the system to reroute flow. To take the heat exchanging system out of service:

1. Stop hot water flow through the heat exchanger by turning off the hot water circulation pump, and closing the heat exchanger isolation valves in the hot water piping.
2. To stop sludge flow through the heat exchanger, either turn off the sludge circulation pump or open the valve in the sludge heat exchanger bypass piping, before closing the sludge piping heat exchanger isolation valves.

Sludge Circulation Pumps

Startup

1. Open and close appropriate valves to line up pump for operating mode desired.
2. Open gland seal water isolating valve to control unit. It is important to maintain sealing characteristics for packing gland life.
3. Bump Start. Check rotameter to verify that solenoid valve opens to allow seal water flow through rotameter.
4. Depress ON button. Check rotameter for gland seal water flow and adjust flow to 1-3 gpm on rotameter.

During normal operation, the following should be checked regularly:

1. Maintain gland seal water flow. Check rotameter for normal location of indicator ball. Check for normal leakage past gland seal packing.
2. Check sludge flow. Check for flow by observing discharge pressure or movement of pump check valves.
3. Listen for bearing noises. These pumps are normally silent.
4. Feel motor for normal running. A hot motor indicates an obstructed line, a bad bearing, drag from packing, worn vee belts, a binding impeller, or internal motor problems.
5. Observe vee belts. Flappy or noisy belts indicate imminent parting of a belt--replace it now. Slipping belts must be cleansed and /or tightened or they will soon burn through.
6. Feel pump for vibration. Increased vibration indicates loose impeller, bearing loose in bearing land, debris collected on impeller, or bent shaft.
7. Check gland leakage drainpipe and clear if necessary.

Shutdown

1. Depress OFF button.
2. Close gland seal water supply valve.
3. Close pump suction and discharge valves.
4. Lubricate pump as necessary per equipment manufacturer's maintenance schedule.

Gravity Belt Thickening SOP

Location

The gravity belt thickeners are located in the gravity belt thickening facility.

System Control

Each of the three gravity belt thickeners is controlled from its local control panel and through a programmable controller. The belt washwater pumps, hydraulic pumps, belt drives, and polymer feed pumps are started using the automatic START pushbuttons on the local belt thickener control panels. An emergency stop pushbutton, located on each thickener control panel, can be used to manually stop the system components associated with a given thickener. The polymer and WAS feed rates are adjusted from their individual field control panels. The TWAS feed pumps and belt wash water booster pumps are started manually. After manually starting the equipment associated with the gravity belt thickeners, system operation will be controlled through the programmable controller.

Alarm conditions for equipment interlocked with the gravity belt thickener result in shutdown of gravity belt and WAS pump operation and will sound an audible alarm. Loss of adequate pressure in the hydraulic circuits or belt wash systems will result in an audible alarm and system shutdown.

Safety

The following safety precautions should be observed:

- Always use proper lockout procedures before working on equipment.
- Always use caution when near moving parts. Avoid wearing loose-fitting clothing that could get caught in moving parts.
- Thickeners are equipped with red emergency stop ropes around the periphery of the machine. These ropes may be pulled in an emergency.
- Keep area clean. Always clean up polymer spills immediately. Polymer is very slippery and is a hazard on floors.

Startup

Operation of the belt thickeners requires direct control of several equipment components as a system. These components are:

- Belt Thickeners (including electric and hydraulic drives)
- Polymer Transfer System
- Polymer Feed Systems
- Washwater Booster Pumps
- TWAS Pumps

In standard operating mode, each belt thickener and its associated pumps are started from the automatic start push-buttons at the thickener field panel.

The following checklist should be used when preparing the thickener for startup:

1. No foreign debris on belt.
2. Chicanes properly positioned.
3. Belt is not off rollers.
4. Main drive unit is OFF.

5. Alignment sensing paddle is properly engaged with belt.
6. Tensioning yoke in "retract" position (belt will be loose on rollers).
7. Ramp engaged (active) or disengaged (inactive), as desired.
8. Doctor Blade properly engaged with belt.

To startup the gravity belt thickening system:

1. Open the valves in the belt wash water system and start the belt washwater booster pump from the thickener control panel. Ensure that the nozzles are correctly positioned relative to the belt surface (approximately 45-degrees to oncoming belt).
2. Start the thickener hydraulic system.
 - a. Check reservoir oil level
 - b. Start hydraulic pump
 - c. Tighten belt tensioning yoke.
 - d. Check hydraulic system pressure
 - e. Check steering circuit by stroking the valve each direction and letting the steering assembly travel in both directions. The valve and the unit should each move without sticking.
3. Start the thickener main drive unit.
 - a. Make certain the machine is free of any obstructions
 - b. Start the drive unit.
4. With drive energized, adjust speed controlling mechanical hand wheel to desired belt speed. This belt speed should be consistent with optimum speed, which has been determined in performance testing. In the absence of a predetermined speed, a good starting point would be 15 to 20 meters/minute (50-66 feet/minute).
5. Open valves in polymer transfer and feed system. Energize the polymer blending unit and adjust to predetermined or desired feed rate. Allow ample time for polymer to reach injection point before continuing to the next step. (See also Gravity Belt Thickening Facility [Polymer System](#).)
6. Open valves in the WAS feed piping to gravity belt thickener. Energize WAS pumps and adjust to predetermined or desired feed rate with the controller, which will adjust the feed control valves. The WAS pumps should be set at the proper pressure setpoint to allow pumping of the flow rates set on controllers. Insufficient pressure will prevent achieving desired feed rate, excessive pressure will result in frequent modulation of the GBT Flow Control Valves.
7. Adjust sludge/polymer mixer positioning arm to opening required for desired flocculation. Once the proper reaction is occurring between the polymer and sludge, opening the mixer (decreasing mixing energy) will enlarge flocculation size and, conversely, closing the mixer (increasing mixing energy) will reduce flocculation size. Generally a fine, granular, flocked sludge is desirable.

At this point, the machine should be allowed to stabilize and the operator should monitor the following:

1. Distribution of sludge in gravity section.
2. Drainage rates.
3. Tracking pattern of filter belt. If belts tend to mistrack when solids are loaded, check tension and solids distribution. Gross misalignment will sound an alarm.
4. Position of adjustable ramp. Ramp should be angularly adjusted to maximize shear caused by the rolling back action of the sludge solids. (See discussion of ramp in the Process Overview section.) The ramp is adjusted by rotating the hand crank located on the unit. Optimum machine performance can be achieved by adjusting the belt speed and ramp slope.
5. Belt washing effectiveness. Look for streaking or striping on belt. Fully open the wash box hand wheel to clean the wash nozzles. Return the hand wheel to its original position after cleaning.
6. Percent thickened solids. If not satisfactory, adjust polymer feed, belt speed, and ramp angle.
7. Consistent sludge and polymer flow. If flow of either is lost, the cake detector switch, which is located at the middle of the gravity zone, will trigger and sound the alarm.

Shutdown

1. Stop the flow of WAS to a gravity belt thickener by turning off the WAS feed pumps and closing the valves in the WAS feed piping to the thickener. If only one gravity belt thickener will be shut down, it will only be necessary to close the WAS feed valves to the thickener to be shut down.
2. Shut down polymer feed system.
3. Once sludge and polymer flows have been stopped, it is essential that the machine be allowed a wash down period. Leaving the washwater source on for approximately 10 to 15 minutes while hosing off any sludge residue will prevent belt clogging and extend overall machine life. NEVER LEAVE SLUDGE TO DRY IN THE MACHINE.
4. Turn off the thickener main drive unit.
5. Turn off the thickener hydraulic unit.
6. Turn off the thickener washwater booster pump.
7. Once cleaning is completed and all power to the thickener is off the machine will be ready for the next operating period.

Solids Dewatering SOP

The sludge dewatering process is operated from the central control panel (CCP) within the dewatering building. The following summarizes the process instrumentation and control.

Belt Press System Control

Operation of the belt presses requires direct control of several component pieces of equipment as a system. These components are:

- Belt Presses (including electric and hydraulic drives)
- Belt Press Feed Pumps
- Conveyors
- Polymer Feed Pumps
- Washwater Pumps

The belt press system can be operated in either the manual or the automatic control mode. In manual mode, the operator is responsible for starting all equipment in the proper sequence and timing. Starters are located at the equipment or the local control panel (LCP) near each belt press. Starting and stopping individual drives for maintenance purposes are done from these local panels.

In automatic mode, each belt press and associated pumps and conveyors are started from the AUTO START pushbutton in the LCP. When initiated, a programmable controller starts the equipment in the proper sequence and timing.

In either manual or automatic mode, the polymer feed rate and sludge feed rate are adjustable from the CCP.

The local panel for each press contains the hand switches and pushbuttons to perform the manual sequence of operation and an emergency stop pushbutton which is used to stop the system components associated with a given press in an emergency. Automatic starting and stopping of the belt press system are performed from the CCP in the dewatering building operations room.

In the automatic mode of operation, after the AUTO START pushbuttons for the equipment associated with belt press operation and the AUTO START button for belt press operation are pushed, the equipment will be automatically started in the following sequence:

1. Washwaster pump
2. Hydraulic pump
3. Belt press drive
4. Conveyors
5. Polymer feed unit
6. Sludge feed pump

The sludge feed, polymer feed, belt press speed, and conveyor speed can be manually adjusted from the local control panels.

The AUTO STOP button on the CCP reverses the startup sequence automatically.

Belt Press Feed Pumps Control

The constant speed belt press feed pumps may be started manually or automatically. If the water level falls to a low level in the blend tank, all of the pumps will shut off to prevent damage from running dry.

Washwater Pump Control

The belt press washwater pumps are operated manually or automatically as part of the belt press system. In addition, each pump has a pressure switch, pressure gauge, and flow meter on the discharge. The flow meter assists the operator in troubleshooting belt press

performance by indicating plugged or partially blocked belt wash nozzles. The belt press will automatically stop if the washwater pressure falls.

Polymer Feed Unit Control

The polymer feed units are also operated manually or automatically as part of the belt press system. The polymer feed units are equipped with variable speed drives and paced by either a 4 to 20 mA signal from a flow meter in the polymer discharge line, or by an operator-selected fixed speed setting. The speed or flow rate selected and the polymer concentration determine the polymer dosage. The feed unit pumps are protected against running dry by a low-level shutoff signal from sensors in the polymer feed tanks.

Conveyor Control

Control is manual or automatic as part of the belt press system. The conveyor drives are manually set at a variable speed to allow tailoring of the belt capacity to belt loading. In this way the conveyors can be run slowly during light loading, thereby increasing belt life and overall system reliability. Motion sensors on the conveyors shut down the belt press system in the event of a tripped or broken conveyor belt.

Polymer Transfer Pumps

The polymer transfer pumps can be operated manually or automatically. In the AUTO mode, these pumps automatically start and stop based on the level in the polymer feed tank. The pumps will also automatically stop when the polymer storage tank reaches a low level.

Alarms

Alarms are provided in several places to notify the operator of abnormal conditions and, in many cases, to shut down equipment to prevent damage or spills. The following list summarizes the alarms and shutdown functions. The manufacturer's O&M manual contains the standard alarms and shutdown functions that are part of the manufacturer-supplied belt press equipment.

Equipment	Condition	Alarm/Emergency Shutdown
1. Conveyors	No motion w/ motor running	Transfer/incline alarm and shutdown
		Press conveyor alarm and 2 presses shutdown
*2. Washwater System	Pressure low for system	Alarm
	Pressure low for belt press	Press shutdown
*3. Polymer Feed Tank	High level	Polymer feed pump shutdown
	Low level	Alarm and belt press sludge feed pump shutdown
*4. Belt Press	Malfunction	Alarm and emergency shutdown on polymer feed units, and sludge-feed pumps
*5. Polymer Feed Pumps	High pressure	Alarm and pump shutdown
*6. Polymer Mix/Feed Tanks	Low low level	Alarm and polymer feed pump shutdown
	High high level	Alarm and polymer transfer pump shutdown
*7. Blend Tank Feed Pumps	Low pressure	Pumps shut down

*When either one of these alarms is activated, it shuts down all systems. These alarms not only shut down an individual piece of equipment, but also all equipment listed in Items 2 through 7.

Composting SOP

In the Compost Facility, there are 12 bins that hold the compost. They are loaded with a mixture of amendments (green waste, sawdust, screened overs, or wood chips) and biosolids at the front of each bin. That mixture is moved from the front to the rear of the bins with giant agitators that mix and move the compost. The agitators measure 14 feet from the front to the rear, so it moves the compost 14 feet each time the agitators are run through the bins. The agitators are like huge rototillers. The bins are 210 feet long, so if you ran each bin once a day for 15 days, you would run out the first day's loading on day 15. Each of bins have 5 temperature sensors that are located behind stainless steel plates in the walls. The zones are labeled A, B, C, D and E. We added two more places where we take temperatures, in B zone, 14 feet from the end and in C zone, 14 feet from the start. We designated these zones as C1, C2 and C3 zones. This gives us a total of 7 temperature-taking points.

Under EPA Rule 503, we are required to achieve temperatures of our compost that will meet or exceed 3 straight days of 55 Degrees Centigrade (131 Degrees Fahrenheit) and 14 total days (not consecutive) of at least 40 Degrees Centigrade (104 Degrees Fahrenheit). The 55 Degree requirement is from EPA Rule 503, Table 5-4, Processes to Further Reduce Pathogens (PFRPs) Listed in Appendix B of 40 CFR Part 503. The 40 Degree requirement is from EPA Rule 503, Table 5-8, Summary of Options for Meeting Vector Attraction Reduction. We take temperatures once a day, from Monday through Friday. We use a digital thermometer to take the temperatures. As the temperatures are taken, they are written on a form. This form is a simple blank form that we created to write the temperatures on. The blanks are located on the front desk in a folder labeled "Temp Work Sheet" and in the U drive of Biosolids under the title "forms." The temperatures are then copied to a tracking form showing the loadings and temperatures of each bin. Also, these loadings are recorded in a form that is on the CPU on the U drive under Biosolids "Tracking." We track these temperatures to assure that they have met all of the requirements of the 503 Regulations. If we haven't achieved the proper temperatures by the time it comes out the rear of the bin, we document this in our daily log book and tracking forms and use this unfinished compost as amendment in another bin. We then track that all the way through the process to assure that it meets PFRP (Program for Reduction of Pathogens).

**LAGUNA TREATMENT PLANT
ODOR COMPLAINT INVESTIGATION**

Date _____ Name of investigator _____
 Person filing complaint _____
 Address _____
 Phone number _____
 Date & time complaint occurred _____
 Nature of complaint _____

INVESTIGATION:

Date & time of investigation _____

- | Strength of odor | Description of odor |
|---|--|
| 1. <input type="checkbox"/> No odor | 1. <input type="checkbox"/> Ammonia |
| 2. <input type="checkbox"/> Faint | 2. <input type="checkbox"/> Decayed Cabbage |
| 3. <input type="checkbox"/> Noticeable | 3. <input type="checkbox"/> Fecal |
| 4. <input type="checkbox"/> Definite | 4. <input type="checkbox"/> Fishy |
| 5. <input type="checkbox"/> Strong | 5. <input type="checkbox"/> Garlic |
| 6. <input type="checkbox"/> Overwhelmingly strong | 6. <input type="checkbox"/> Medicinal |
| 7. <input type="checkbox"/> Intermittent | 7. <input type="checkbox"/> Rotten egg |
| | 8. <input type="checkbox"/> Skunk |
| | 9. <input type="checkbox"/> Other/Describe _____ |

- | Wind direction (from chart recorded) | Strength of wind | |
|--|---------------------------------------|---|
| 1. <input type="checkbox"/> North wind | 6. <input type="checkbox"/> Northeast | 1. <input type="checkbox"/> Quiet |
| 2. <input type="checkbox"/> South wind | 7. <input type="checkbox"/> Northwest | 2. <input type="checkbox"/> Mild |
| 3. <input type="checkbox"/> East wind | 8. <input type="checkbox"/> Southeast | 3. <input type="checkbox"/> Gusty |
| 4. <input type="checkbox"/> West wind | 9. <input type="checkbox"/> Southwest | 4. <input type="checkbox"/> Strong |
| 5. <input type="checkbox"/> No wind | | 5. <input type="checkbox"/> Very strong |

Try to comment on whether odor occurs during any specific time of the day, day of the week or weather conditions.

Comments: _____

Corrective Action: _____

Reviewed by: _____ Date _____
 (OPERATIONS SUPERVISOR)

**LAGUNA TREATMENT PLANT
NOISE COMPLAINT INVESTIGATION**

NAME OF INVESTIGATOR: _____ DATE: _____
PERSON FILING COMPLAINT: _____
ADDRESS: _____
PHONE NUMBER: (DAY) _____ (EVENING) _____
DATE & TIME COMPLAINT OCCURRED: _____
NATURE OF COMPLAINT: _____

INVESTIGATION

WAS NOISE SOURCE LOCATED, AND WHERE: _____
NATURE OF NOISE (PLEASE NOTE VOLUME, CYCLES, TYPE, ETC.): _____

DOES THE NOISE OCCUR DURING ANY SPECIFIC TIME OF DAY, DAY OF WEEK, OR CERTAIN WEATHER CONDITIONS? _____

CORRECTIVE ACTION

REVIEWED BY: _____ DATE: _____
OPERATIONS SUPERVISOR

NOISE.FRM
emw

Biosolids Fact Sheet
Generator /Facility
Laguna Wastewater Treatment Plant

Description:

Biosolids are reusable solids from the wastewater treatment process. At Laguna Wastewater Treatment Plant biosolids have been treated by anaerobic digestion and dewatered by filter presses. The dewatered, semi-solid form is referred to as cake.

Biosolids are not a hazardous material. The biosolids cake produced at Laguna Treatment Plant is primarily organic. It is beneficially reused as a soil amendment on agricultural land (land application & compost). Routine analyses demonstrate that metals concentrations meet EPA standards which allow the material to be land applied at unrestricted metals loading rates.

Anaerobic digestion significantly reduces, but not completely eliminates pathogens (disease causing microorganisms). Digesters, which are operated at specific time and temperature parameters, produce EPA Class B biosolids. Class B quality is suitable for application to agricultural land in concert with certain site restrictions.

Typical Characterization:

Appearance	Black, semi-solid
Total Solids Content	16%
Free Liquid	None
pH	7.1
Nitrogen	64000 mg/Kg
Phosphate	24806.2 mg/Kg
Potassium	1395.3 mg/Kg
Metals Content	Meets EPA Table 3
Pathogen Reduction	Meets EPA Class B
Soluble Metals	Non-hazardous per California Title 22 STLC and TTLC

Handling Practices:

Biosolids are treated to reduce pathogens. Nonetheless, there is the potential for exposure to pathogenic microorganisms. Major routes of infection are ingestion and direct contact. Good, common sense, personal hygiene and work habits provide adequate protection for workers handling biosolids.

Always wash hands after contact with biosolids. Additional recommendations include:

- Never eat, drink or smoke before washing hands.
- Avoid touching face, mouth, eyes, nose, or genitalia before washing hands
- Eat in designated areas away from biosolids handling activities.
- Do not smoke or chew tobacco or gum while working in direct contact with biosolids.
- Use gloves, when applicable.
- Keep wounds covered with clean, dry bandages.
- Change into clean work clothing on a daily basis.

If contact occurs, wash contact area thoroughly with soap and water. Use antiseptic solutions on wounds, and bandage with clean, dry dressing. For contact with eyes, flush thoroughly but gently.

The Centers for Disease Control recommends that immunizations for diphtheria and tetanus be current for the general public which includes all wastewater workers. Boosters are recommended every ten years. The tetanus booster should be repeated in the case of

a wound that becomes dirty if the previous booster is over five years old. Consult a doctor regarding direct exposure to an open wound or mouth.

Hazard Potential:

Biosolids are not combustible under ordinary circumstances; if stored in airtight containers for an extended period, methane gas may be produced which could ignite in the presence of a spark or open flame. Extinguish with dry chemical, water spray or foam. Avoid use of open flames in confined areas and around sealed transport containers. Vent confined areas and transport containers if biosolids have been stored for any significant length of time.

Hydrogen sulfide may also be generated in sufficient quantities to be a hazard in enclosed areas such as tarped transport containers. Hydrogen sulfide gas, which smells like rotten eggs, can be toxic. Exposure can be avoided by removing the container tarp prior to unloading, and discharging as much materials as possible prior to employees entering the container.

Generator Data:

Generator Name:	City of Santa Rosa Subregional Compost Facility
Address:	4301 Llano Road
City, State, Zip:	Santa Rosa, CA 95401
Area Code & Phone #:	707-543-3374
Contact:	Mr. Zachary Kay, Biosolids Coordinator

SPILL RESPONSE AND TRAFFIC PLAN
(as required by Biosolids Storage and Transportation Specification No. 8)

SPILL RESPONSE

The beneficial reuse of the Santa Rosa Biosolids by land application involves the transport of Biosolids by specially designed (leak proof) tractor-trailer trucks over city, county, and state roadways. A municipal wastewater Biosolids, such as that produced at the City of Santa Rosa's Laguna WWTP, is a stabilized substance that poses an extremely limited health hazard. However, to mitigate potential nuisance and traffic safety conditions, a contingency plan is necessary in case of a Biosolids spill during transport. As a result, City personnel should implement the plan set forth in this Section, together with such additional action as may be necessary, in the event of an accidental spill.

Communication between the driver and other authorities is essential in the event of unforeseen accidents while hauling Biosolids. Consequently, it is required that all Biosolids hauling vehicles be equipped with radios or cellular telephones. Although Biosolids are not a hazardous material and pose only a limited health hazard, personnel responding to a spill are required to use the same protective equipment as when working around sewage; this would include protective footwear, long-sleeved and -legged clothing, and gloves and eye protection as required by individual circumstances.

Minor Spill

In the case of a minor spill of a small quantity of Biosolids, the driver shall:

1. Notify one or more of the individuals on the Emergency contact Roster (next page) by radio or telephone.
2. Flag the affected area to divert traffic away from cleanup operations.
3. Manually load the spilled product and continue transport to the land application site.
4. If the spill was caused by a mechanical malfunction, the driver will make appropriate repairs or will contact the plant maintenance supervisor to make appropriate repairs prior to further transport.

Major Spill

In the case of a major Biosolids spill where a significant quantity or all of the Biosolids are spilled from the vehicle, the driver shall:

1. Notify one or more of the individuals on the Emergency Contact Roster by radio or telephone. The Emergency Contact individual will immediately dispatch City-owned cleanup equipment and repair personnel as necessary and contact the agencies on the Emergency Notification List.
2. Flag the affected area to divert traffic away from the spill and the cleanup operations.

Non-spill Accident

In the case of a non-spill accident, the driver will:

1. Notify one or more of the individuals on the Emergency Contact Roster by radio or telephone. The Emergency Contact individual will immediately make the necessary arrangements to remove the truck from the accident site.
2. Notify the California Highway Patrol via telephone at 707-576-2175.

City Emergency Contact Roster

Contacts during regular business hours (8:00 a.m. to 5:00 p.m.; Monday – Friday)

Title	Name	Telephone Number
Biosolids Coordinator	Zachary Kay	707-543-3374
Biosolids Senior Operator	Tom Evans	707-543-3442

Contacts during evening hours (5:00 p.m. to 8:00 a.m.) and weekends

Title	Name	Telephone Number
Plant Senior Operator		707-543-3350
Biosolids Coordinator	Zachary Kay	707-542-6509