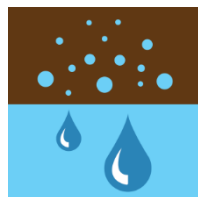
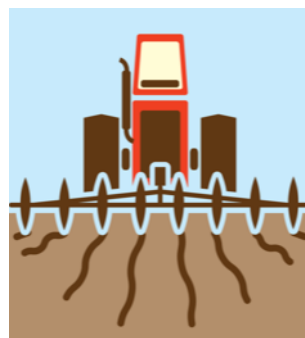


Northeast Residuals and Biosolids Conference

Using a Biosolids Management System (BMS) to Advance Quality Practices

Natalie Sierra, PE | October 23, 2014



San Francisco's land application program

Why revive the BMS?

Implementing the BMS

Continual improvement



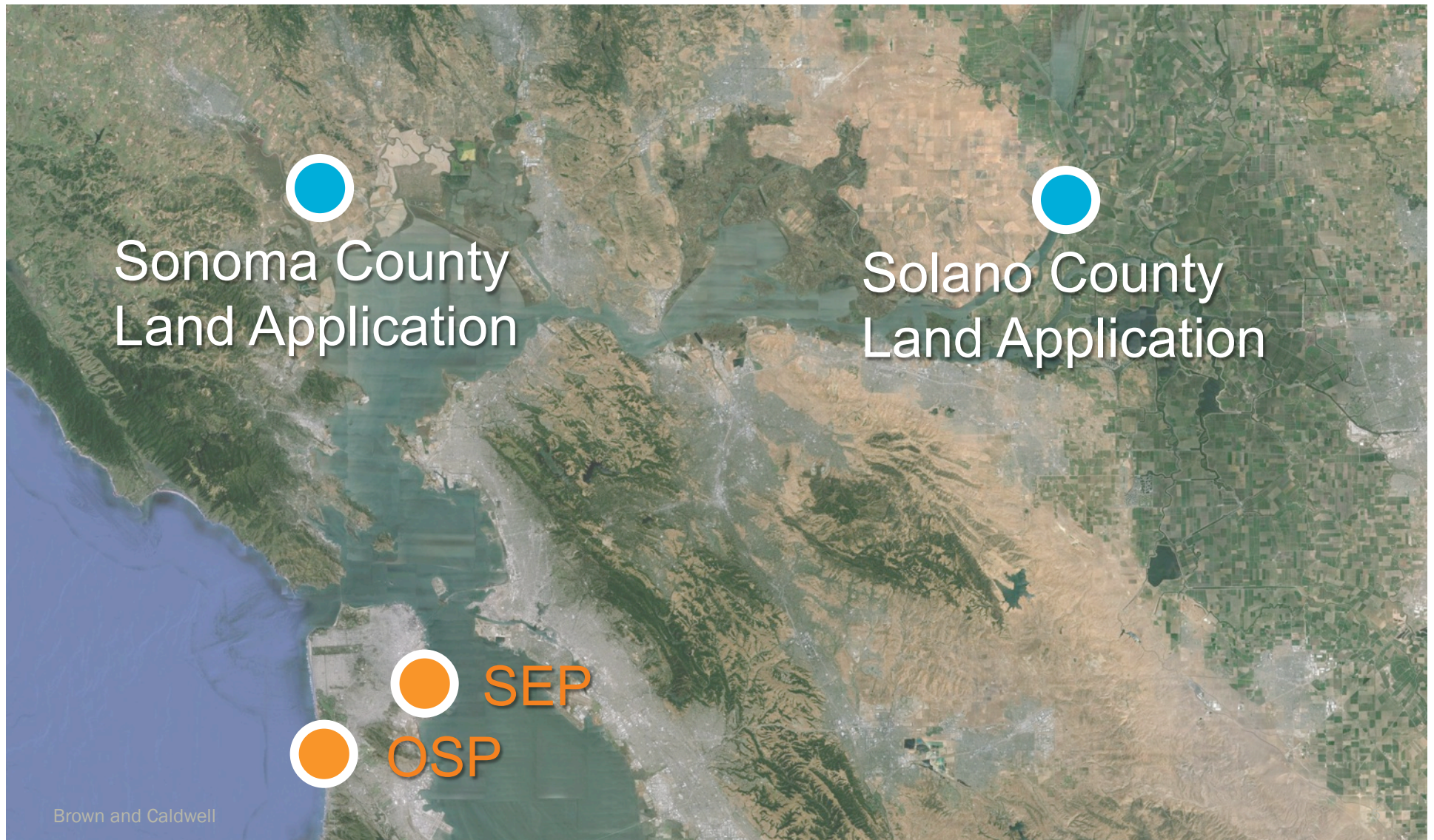


San Francisco's Land Application Program

San Francisco's Biosolids Program

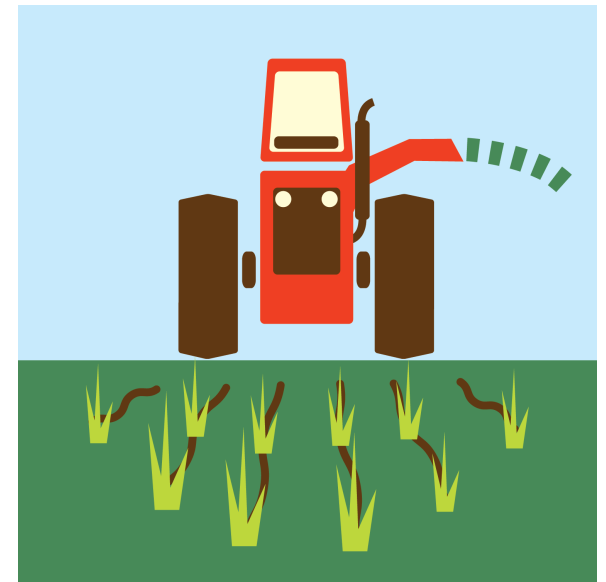
- Class B biosolids
- SFPUC is committed to recycling 100% of its biosolids
- 80,000 wet tons/year
- Four reuse locations
 - ~55% to landfill beneficial use
 - ~40% to land application
 - ~5% to Class A compost

San Francisco's Biosolids Land Application



History of Biosolids Beneficial Use

- Prior to 2000 biosolids disposed or reused (alternative daily cover) in Bay Area landfills
- Limited quantities land applied in Solano County in 2000; subsequent expansion
- In 2002 increased community complaints threatened program
- SFPUC engaged in multi-pronged effort to support land application program



Biosolids Management System

- In 2003 SFPUC signed letter of understanding with NBP
- Key outcomes dovetailed with SFPUC vision:
 - Regulatory compliance
 - Quality management
 - Improved stakeholder relations
 - Environmental performance
- Gap analysis by NBP contractors
- Efforts suspended when SFPUC undertook large capital planning effort



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 comprehensive environmental management system (EMS) for biosolids. Those who embrace the Code and participate in the EMS commit to "do the right thing." Code subscribers and EMS 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.

ENVIRONMENTAL MANAGEMENT SYSTEM: To develop an environmental management system for biosolids that includes a method of independent third-party verification to ensure effective ongoing biosolids operations.

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.



Why Revive the BMS?

Why Revive the BMS?

- Tool for best practices, supports future capital improvement
- Supports knowledge capture
- Continual improvement model for transition to Class A program
- High risk, high visibility program
- Succession planning



Reviving the BMS

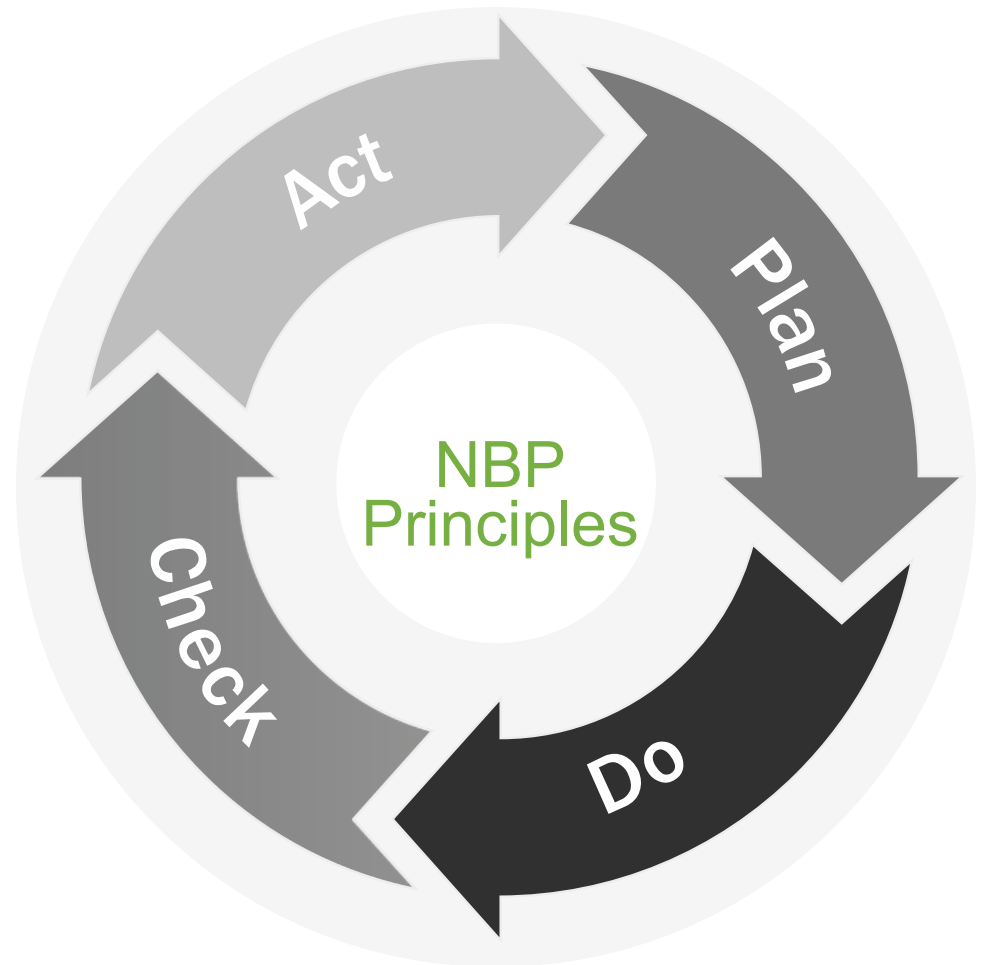
- Significant changes in management and organization
- BMS aligned with new strategic business planning
- Parallel effort in collection system division (ISO 14001)
- In 2011 management approved a new BMS manual
- SFPUC Commissioners approved new BMS policy statement
- Policy and manual dovetails with capital planning



Implementing the BMS

Implementing the BMS

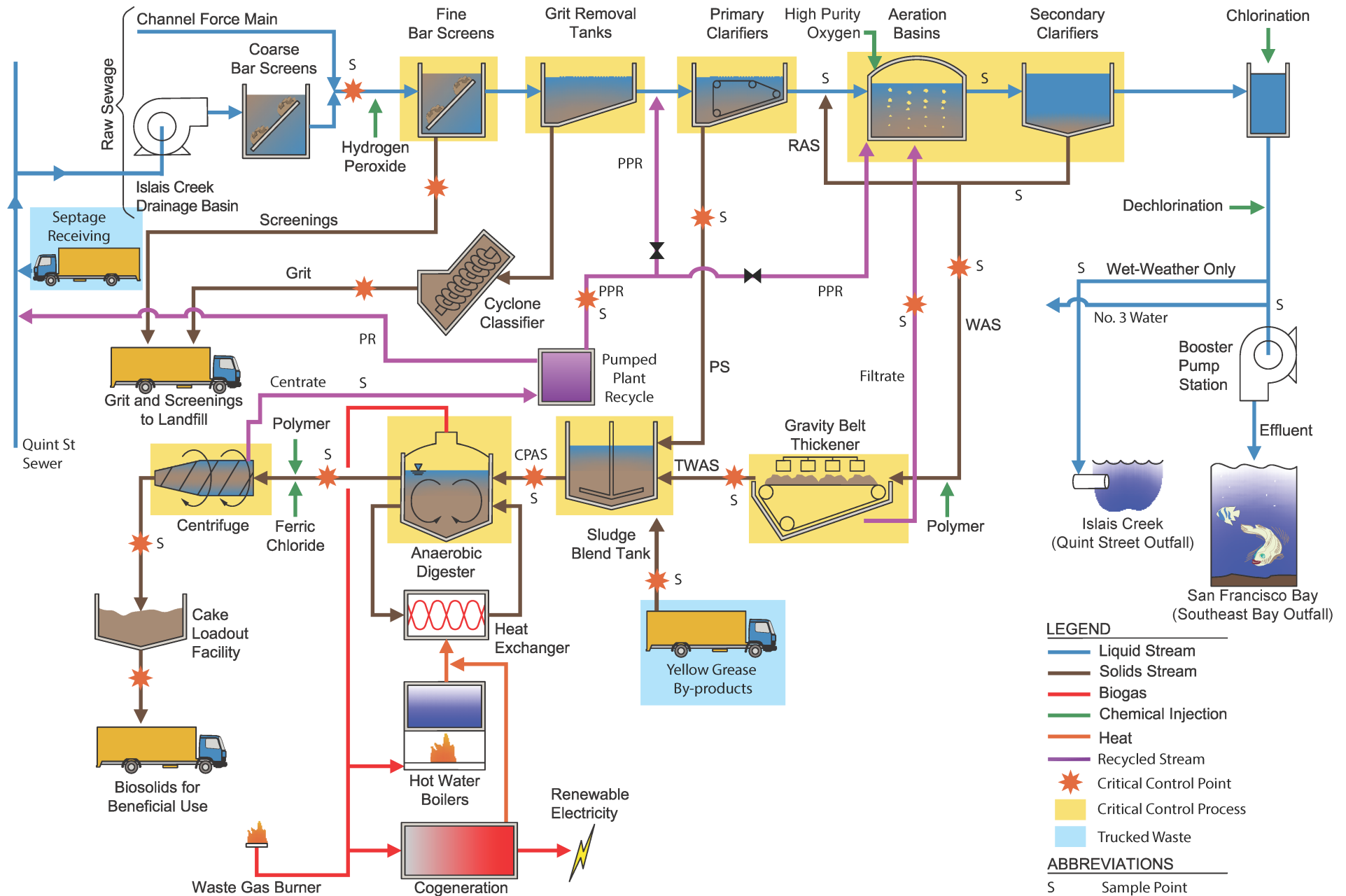
- NBP's program based on plan-do-check-act model
- BMS elements
 - Policy
 - Planning
 - Implementation
 - Measurement and Corrective Action
 - Management Review



BMS Elements

- BMS manual
- Biosolids management policy
- Biosolids program goals and objectives
- Legal and other requirements
- Public participation in planning
- Roles and responsibilities
- Training
- Biosolids critical control points
- Communication
- Operational control
- Monitoring and measurement
- Preventative and corrective action
- Biosolids management program report
- Internal EMS audit
- Management review
- Emergency preparedness
- Documentation and document control

Most Room for Improvement



Critical Control Points

Critical Control Point: SEP Anaerobic Digestion

- Occasional low detention times, temperatures and VSR recorded
- Addition of heated storage digesters
- Adjust active volume annually for grit volume and cover position
- Pump rates during power curtailment – setting operational boundaries per adjusted active volume
- Digester cleaning program invigorated
- Training on temperature readings
- Diversion from land application if Class B not met

Loss of active
volume due to grit
accumulation



Critical Control Point: Land Application

- Ensuring compliance
- Third party contractors are responsible for load out, trucking and land application
 - Contractual obligation to support BMS
 - Regular meetings with haulers
 - Requirements for driver training and equipment for spills
 - SFPUC performs inspections of land application sites
 - Contractual penalties for failure to follow BMPs, regulatory violations, etc.



Emergency Preparedness

- Spill control packet developed for contract hauler
- Training for key SFPUC personnel: operations, communications, regulatory
- Routine meetings for land applier, hauler, and key SFPUC staff members to address field practices



Document Control – SOPs

- At the OSP, processes had changed significantly – no documentation for these changes
- Manuals and SOPs support consistent operation
- Procedures assist with troubleshooting
- Procedures assist with operator training



Continual Improvement

Focus on Other BMS Elements

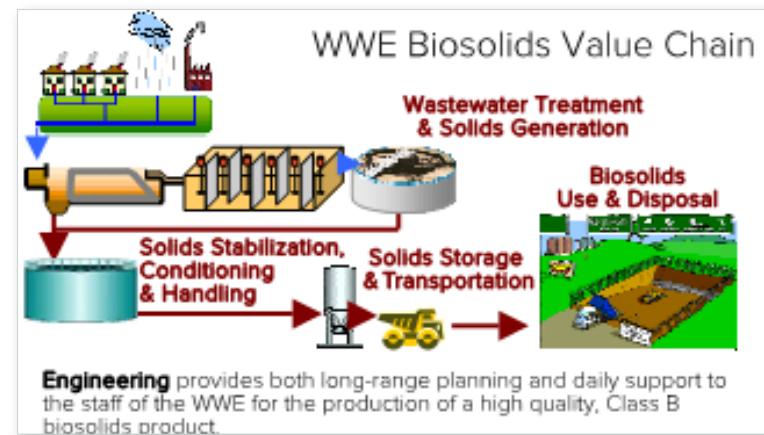
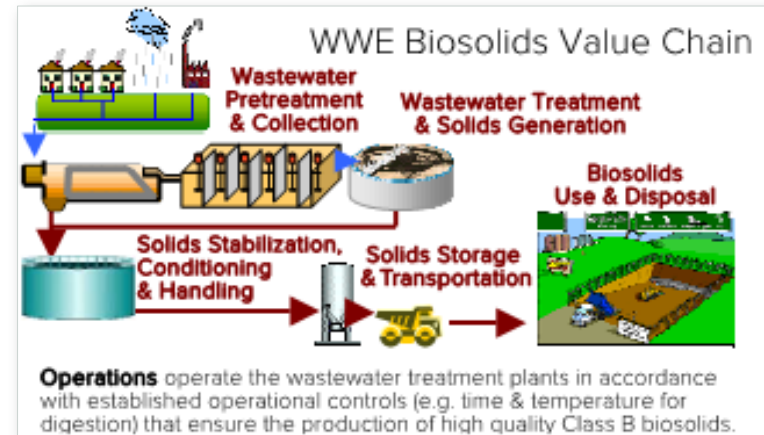
- Training: CCPs for operations and engineering annually
- Document Control: Logsheets and SOPs
- Reporting mechanisms for Commission and SFPUC management to maintain awareness of program

Internal Audit

- Personnel selected from each major division
- Helps raises BMS awareness
- Introduces more objectivity from those outside the program
- Weekly meetings over three months

Third-Party Audit

- General awareness – credit cards of CCPs
- Training
- Posters for control room
- Teaser posters for entire plant
- Outreach to other BMS stakeholders



The Future of the BMS

- Third party scheduled for 2015 – Silver Level Recognition
- Once certified – Gold Level Recognition
- Plan to do annual audits and review to work towards Platinum Level Recognition



Summary of Lessons Learned

- Seems like big hurdle—but you are doing most of this already
- Management support critical
- Internal champion key
- Even good programs can improve
- Benefits outweigh efforts
- Contracting with third party auditors (planning and contracting rules)





Questions?

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