California Bioresources Alliance
Symposium 2013

September 19, 2013
CalEPA Lunch Presentation
Overview of Today’s Field Trip
to the Sacramento Regional
Wastewater Treatment Plant

Presenter
Michael Donahue, Senior Civil Engineer
SRCSD Operations
Agenda

Overview of Field Trip – what’s on the tour?

Classroom Session ~ 60 minutes
✓ General overview of District, Interceptor System, and Plant
✓ Onsite solids handling program
✓ Biosolids Recycling Facility (BRF)
✓ The Bufferlands
✓ New FOG station
✓ Q&A

Walking tours ~ 2 x 45 minutes each
✓ BRF
✓ Fog station
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✓ Lab (alternate for tour #1)
SRCSD Overview

- SRCSD
  - 1.4 million customers
  - 8 pump stations > 10 mgd
  - 177 miles of Interceptor pipes (8 to 12 ft. diameter)
  - 165 mgd Sacramento Regional Wastewater Treatment Plant

- Service Area
  - Sacramento Area Sewer District (SASD) – *the other Sanitation District*
  - Cities of Sacramento and West Sacramento (Yolo County)
  - Cities of Citrus Heights, Elk Grove, Folsom, Rancho Cordova
SRCSD Interceptor System
Lower Northwest Interceptor 2006
• 15 ft. diameter casing (later filled with grout)
• 2- 66 inch diameter force mains
• 90 feet below Sacramento River bottom
Sacramento Regional Wastewater Treatment Plant Tour

1:45 Welcome
Ruben Robles, Director of SRCSD Operations

1:55 Overview of SRCSD and the Biosolids Recycling Facility
Michael Donahue, Senior Civil Engineer, Operations

2:10 Bufferlands
Bryan Young, Natural Resource Supervisor

2:25 FOG Station
Grayson Kohls, Associate Civil Engineer II, Operations

2:40 Quick Break, followed by tour one (BRF or FOG)
Each Tour lasts 45 minutes

3:30 Return to Commons Area to switch destinations for tour two

4:15 Bus Leaves for downtown
• Sneak Preview - this afternoon’s tour
  – Plant
  – BRF
  – FOG
  – Bufferlands
Synagro Biosolids Recycling Facility (BRF)
• Solids Handling Process – special lunch topic

• Sneak Preview - this afternoon’s tour
  – Plant
  – BRF
  – FOG
  – Bufferlands?
Bufferlands – 2,650 acres
SRWTP
Process Area
900 acres
Overview of Field Trip – what’s on the tour?

Classroom Session ~ 90 minutes
✓ General overview of District, Interceptor System, and Plant
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• Onsite Solids Handling Process
  – Inexpensive to handle & dispose
    • West Coast Plants - $400 - $550 per dry ton
    • SRWTP onsite handling process - $150 per dry ton
  – No thickening required
  – No hauling distance for disposal
  – Permanent onsite disposal

Notes
  – Solids injection production depends on length of dry season
  – 15,000 to 20,000 dry tons
  – Future outlook - Onsite disposal will increase
SRWTP Solids Handling Program

Primary Sedimentation → Primary Sludge 3% TS

Secondary Sedimentation → Secondary Sludge 0.5% TS

Primary Sludge 3% TS → PS

Secondary Sludge 0.5% TS → WAS → TWAS

4 DAFTs 3.5% TS & 2 GBTs (6% TS)

18 day detention at 96 °F
65 dry tons/day

Digesters

1.6% TS
0.9 MGD DS

45 dt / day

Solids Storage Basins (ponds)

40 Acres 40 Acres 40 Acres

Lined Dedicated Land Disposal (Permanent Onsite Disposal)

HS (~ 5% TS)
16,000 dt / yr

45 dt / day

SYNAGRO

20 dt / day

Biosolids Recycling Facility

Class A Pellets to Agricultural Fields

7300 dt / yr

259x133

H ~ 5% TS
16,000 dt / yr
SRWTP Solids Handling Program
On Site Disposal at SRWTP

• SSBs - Solids Storage Basins (lagoons)
  – 20 ponds; 125 acres
  – Sludge harvested from ponds May to November

• LDLDs - Lined Dedicated Land Disposal fields
  – *Permanent* disposal in 3 fields, 120 acres total
  – Inject beneath surface
    • Application rate
      – 150 dry tons per acre per year
Anaerobic Digester with external Draft Tube mixers
Constructed in 1996
Solids Storage Basin (SSB)

2 ft. of clean water cap as odor barrier

Aerator/mixer keeps algae alive
Facultative Sludge Lagoon (SSB) Process Schematic
Solids Storage Basins
Dredging Operation - April to October
Harvested Sludge distribution pad/ flow meters
Injection of 6% TS solids
Disc + Plow + Disc maximizes evaporation
3 day turnaround until next Solids Injection
Recent History - Solids Disposal

• 1982 to 1999 – 20 solids storage ponds & 5 disposal fields

• 1990s - RWQCB concerns
  – Groundwater aquifer - 30 ft. below solids injection fields
  – Nitrate detected at monitoring wells
  – SRWTP constructed perimeter ground water collection system
Recent History – Solids Disposal

• 1999 - RWQCB Cease & Desist Order
  – SRWTP had to close five DLDs or line them
  – Effective Nov. 1999; extended to Nov. 2001
  – Eventually lead to Lined DLD option (2002, 03)
  – And to the BRF (2004)
**C&D Order**
**Impact to Solids Handling Program**

- **BOS Decision**
  - Proceed with design/construction of 3 LDLDs
    - Onsite to handle 70% of digested solids load
    - Close other two DLDs (w/ ET Cover)
  - RFP and Negotiate for design-build-own-operate pellet plant
    - Offsite disposal of 30% of digested solids load
    - EPA CFR 503 - Class A biosolids pellets
    - Heat drying – retains the nutrients
    - Synagro – lot of hauling/land application experience
    - *BRF presentation – later at the Plant*
Lining the DLDs

• Lined DLD Design
  – Leachate Collection and Return System (LCRS)
    • Compacted clay subgrade; 60 ml liner
    • A foot of pea gravel
    • Geomembrane; native DLD soil
    • All percolation water collected & sent to headworks

• Construction
  – DLDL 2 & 4 completed in 2002; LDLD 3 completed in 2003
  – Total cost $21M
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Questions ?