



Sewer Authority Mid-Coastside

Recycled Water Study SAM Board Presentation

September 22, 2008

Recycled Water Study Presentation Outline

- Recycled Water Treatment Technologies
- Project Timeline & Cash Flow
- Next Steps

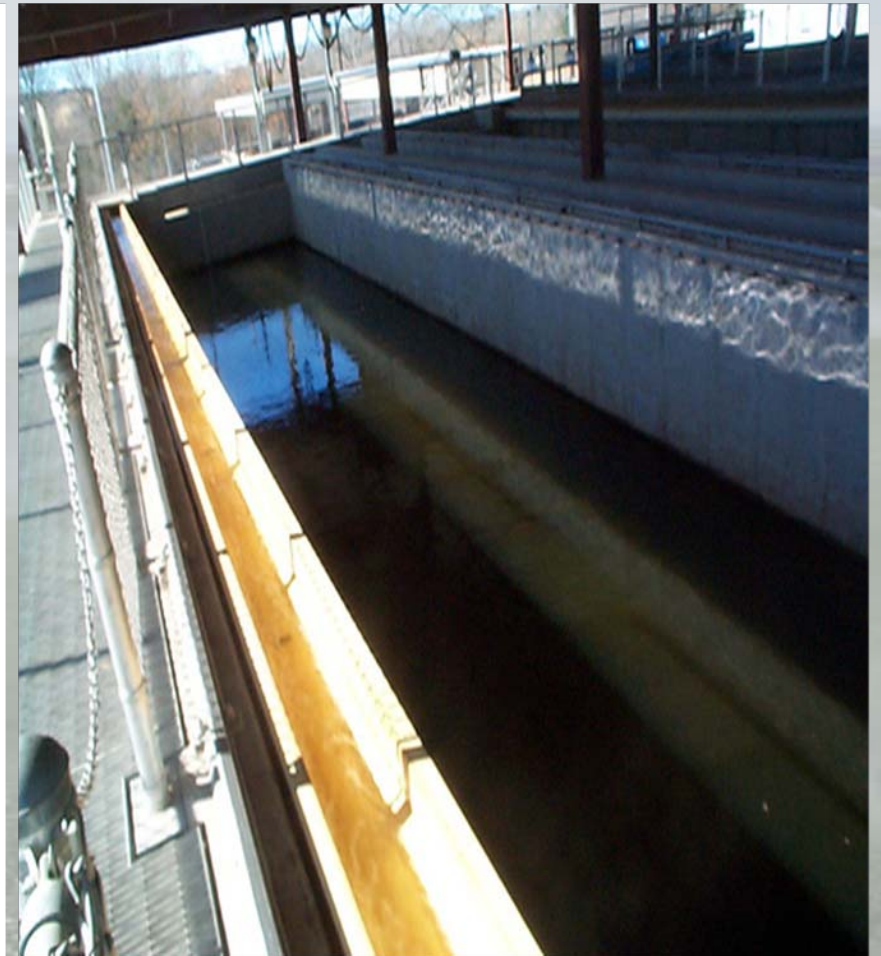
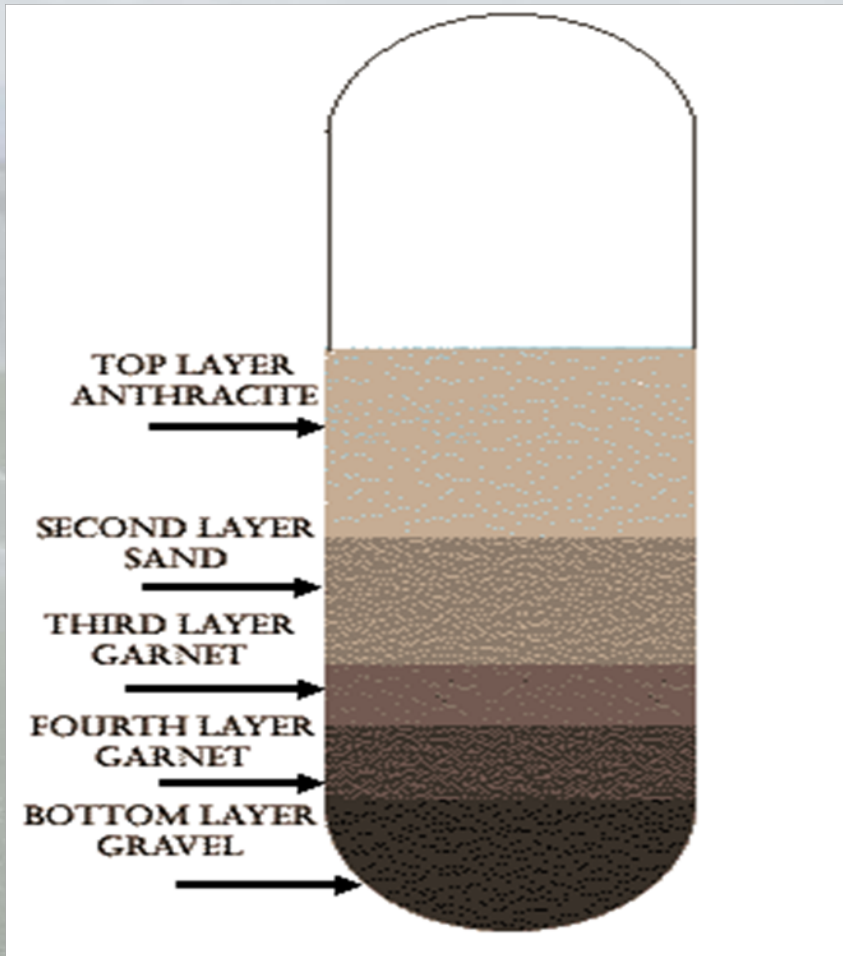
Recycled Water Treatment Technology Overview

- Sand/Cloth Media Filtration
- Microfiltration (MF) and UV Disinfection
- Reverse Osmosis (RO)

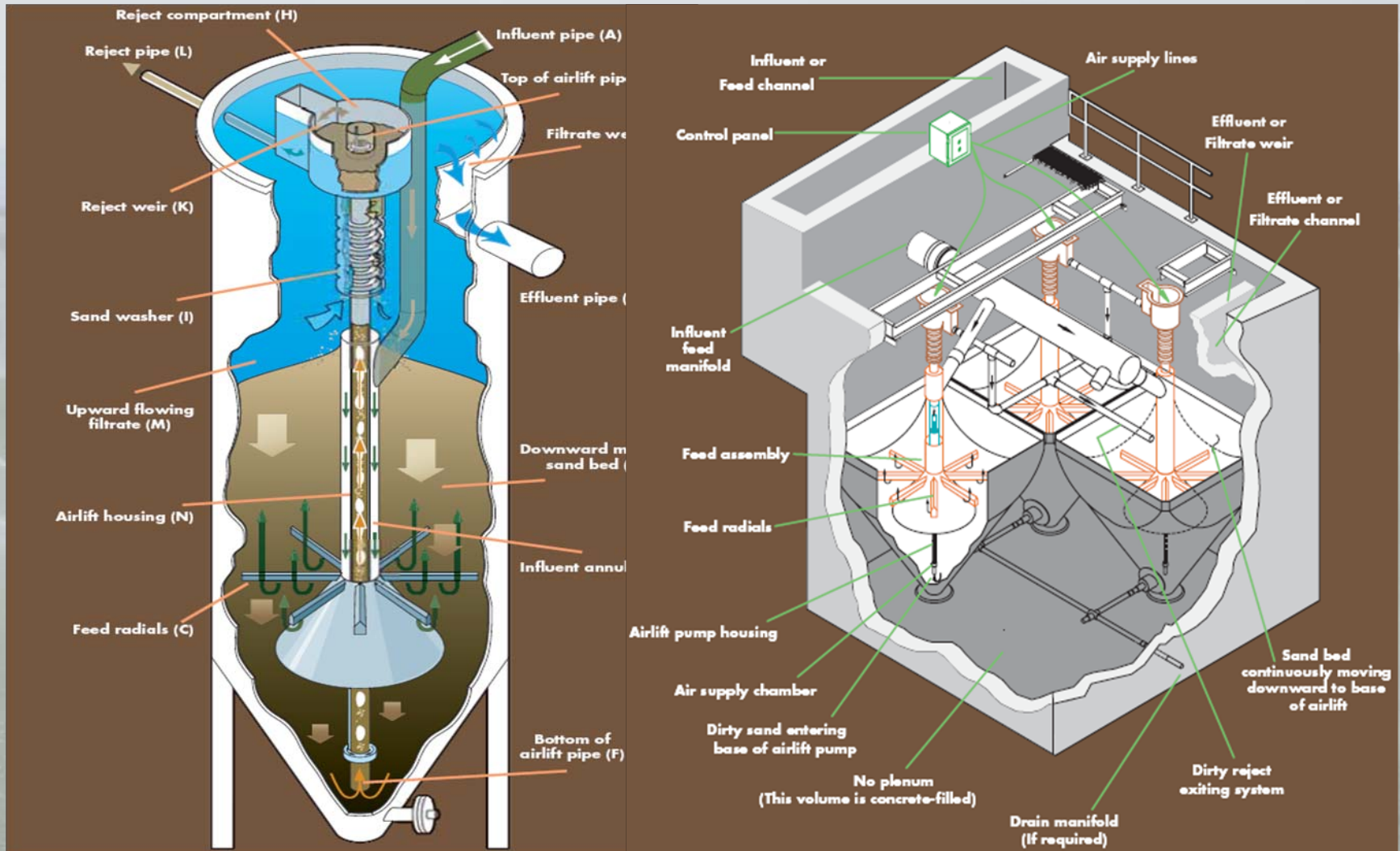
Sand/Cloth Media Filtration

- Commonly used in water and wastewater treatment applications for particle removal
- Dual Media or Cloth
- Modular Technology
- Pretreatment will likely be required for SAM secondary effluent
- Overall lowest cost

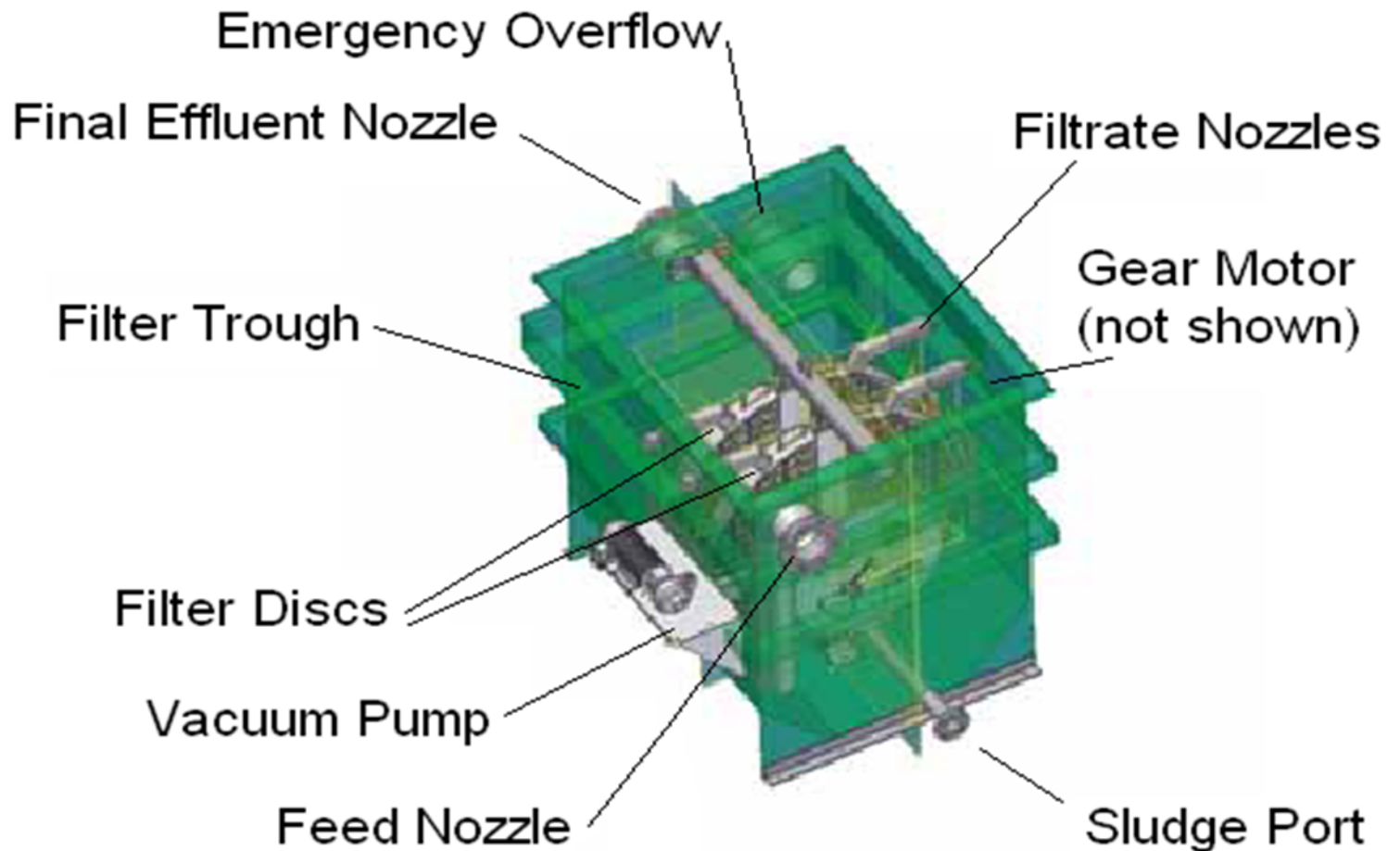
Sand Filtration



Sand Filtration



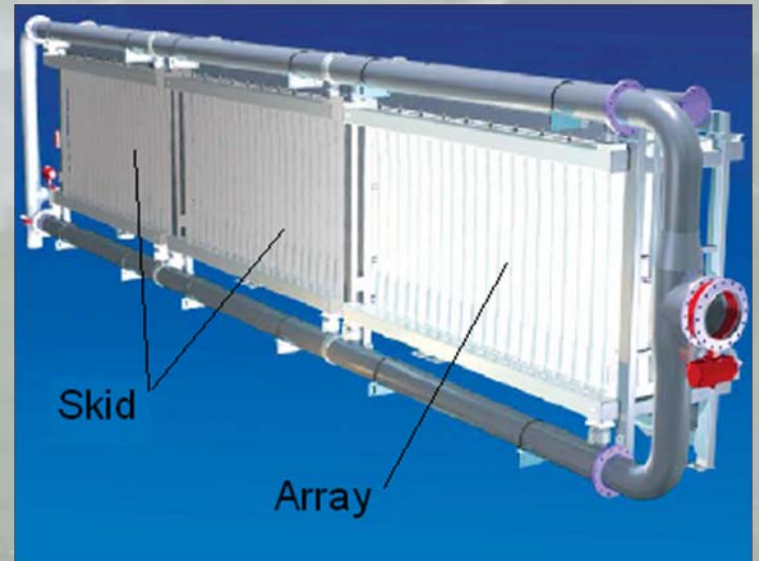
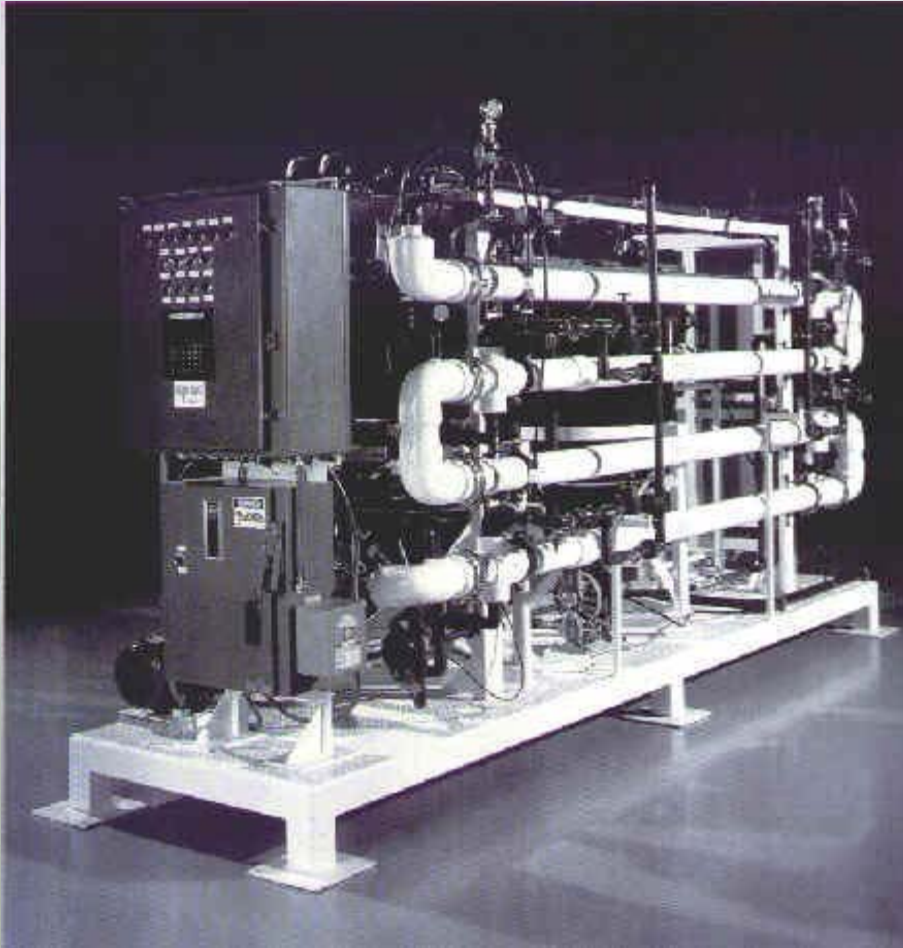
Cloth Media Filtration



Microfiltration

- Utilizes membranes with varying pore sizes for particle and colloidal solids removal
 - Microfiltration: 0.008-2 micrometer particles
 - Ultrafiltration: 0.005-0.2 micrometer particles
- Available from several manufacturers
- Modular technology
- Higher cost than filtration

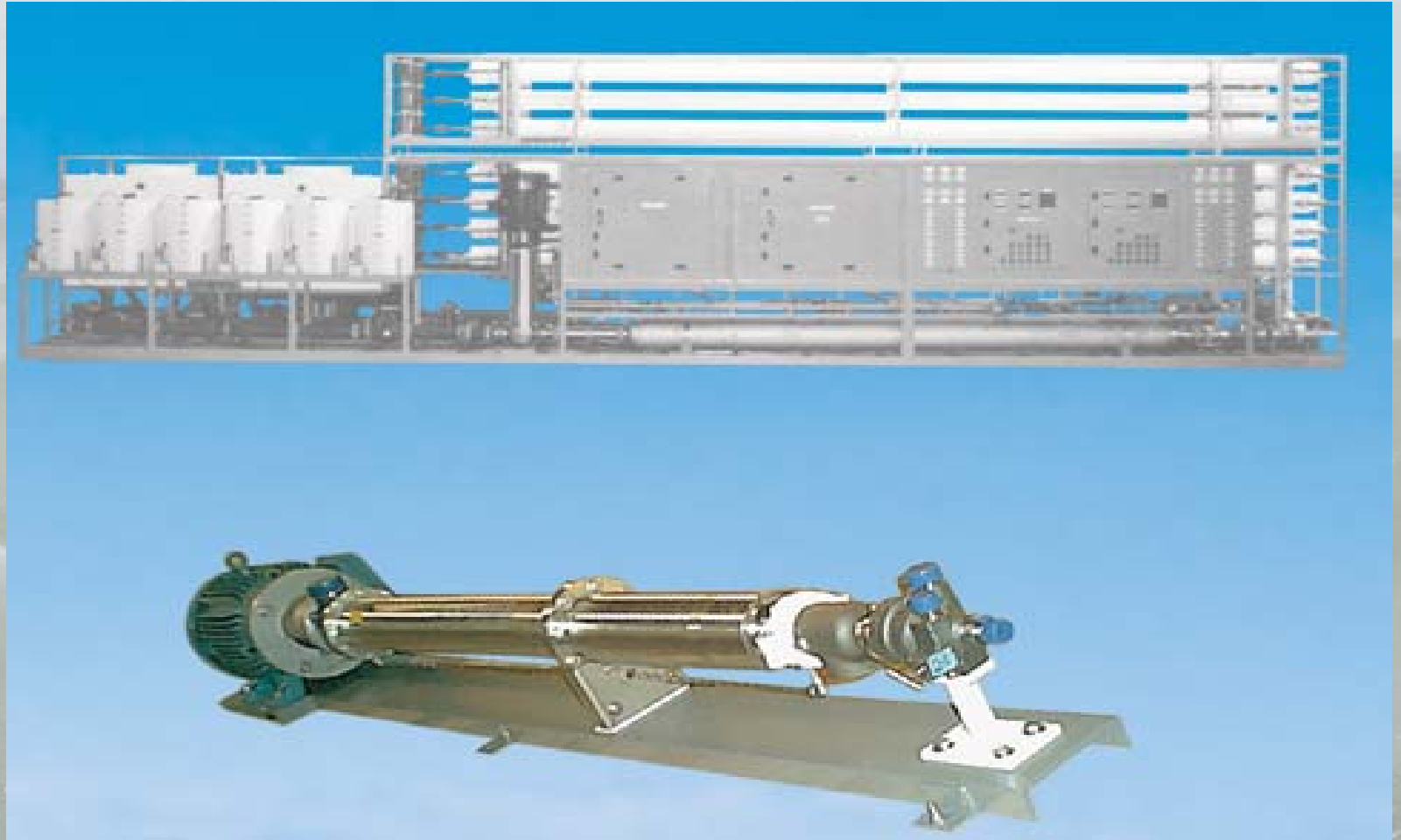
Microfiltration



Reverse Osmosis

- Utilizes pressure to push water across a semi-permeable membrane allowing only water to pass
- Available from several manufacturers
- Modular technology
- Pre- and post-treatment is required
- Highest overall cost

Reverse Osmosis



Recycled Water Study

Timeline and Cashflow Assumptions

- Modular Project includes two phases:
 - Phase I: facilities for 0.6 MGD to supply the OC Golf Courses only;
 - Phase II: facilities for 1.65 MGD of recycled water
- Timeline and Cashflow Projections are for Phase I only

**SAM Recycled Water Project Schedule
Phased Plant – 0.6 MGD**

Task Name	Duration	Predecessor	2008				2009			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Recycled Water Project – PHASED Approach										
Task 1 Recycled Water Study	12 mos			█						
Task 2 Secure Agreement with OCP	12 mos	1			█					
Task 3 Secure Funding	18 mos	2			█					
Task 4 Planning, Environmental Review & Permitting	27 mos	3								
Subtask 4.1 Preliminary Design Report	6 mos							█		
Subtask 4.2 Refine Project Description/Alternatives	30 days							█		
Subtask 4.3 CEQA Review	12 mos	4.2							█	
Subtask 4.4 Permitting	18 mos	4.3								
Task 5 Design Phase	16 mos	4.4								
Subtask 5.1 Design	12 mos	4.1								
Subtask 5.2 Bid/Award Phase	4 mos	5.1								
Task 6 Construction	18 mos	5								
CASH FLOW (x \$1,000)				\$20	\$20	\$70	\$73	\$71	\$70	\$123
Cumulative Total (x \$1000)										

Assumptions:

1. SAM's reserves would be utilized initially and repaid through funding
2. Construction Cost = \$3.4 million
3. Legal, Administration, & Planning Costs = \$720,000
4. Design & Construction Management Costs = \$580,000
5. Total Project Cost = \$4.7 million

**SAM Recycled Water Project Schedule
Phased Plant – 0.6 MGD**

Task Name	Duration	Predecessor	2010				2011			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Recycled Water Project – PHASED Approach										
Task 1 Recycled Water Study	12 mos									
Task 2 Secure Agreement with OCP	12 mos	1								
Task 3 Secure Funding	18 mos	2								
Task 4 Planning, Environmental Review & Permitting	27 mos	3								
Subtask 4.1 Preliminary Design Report	6 mos									
Subtask 4.2 Refine Project Description/Alternatives	30 days									
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Subtask 4.4 Permitting	18 mos	4.3								
Task 5 Design Phase	16 mos	4.4								
Subtask 5.1 Design	12 mos	4.1								
Subtask 5.2 Bid/Award Phase	4 mos	5.1								
Task 6 Construction	18 mos	5								
CASH FLOW (x \$1,000)			\$153	\$120	\$75	\$100	\$100	\$150	\$150	\$5
Cumulative Total (x \$1000)				\$720						\$580

Assumptions:

1. SAM's reserves would be utilized initially and repaid through funding
2. Construction Cost = \$3.4 million
3. Legal, Administration, & Planning Costs = \$720,000
4. Design & Construction Management Costs = \$580,000
5. Total Project Cost = \$4.7 million

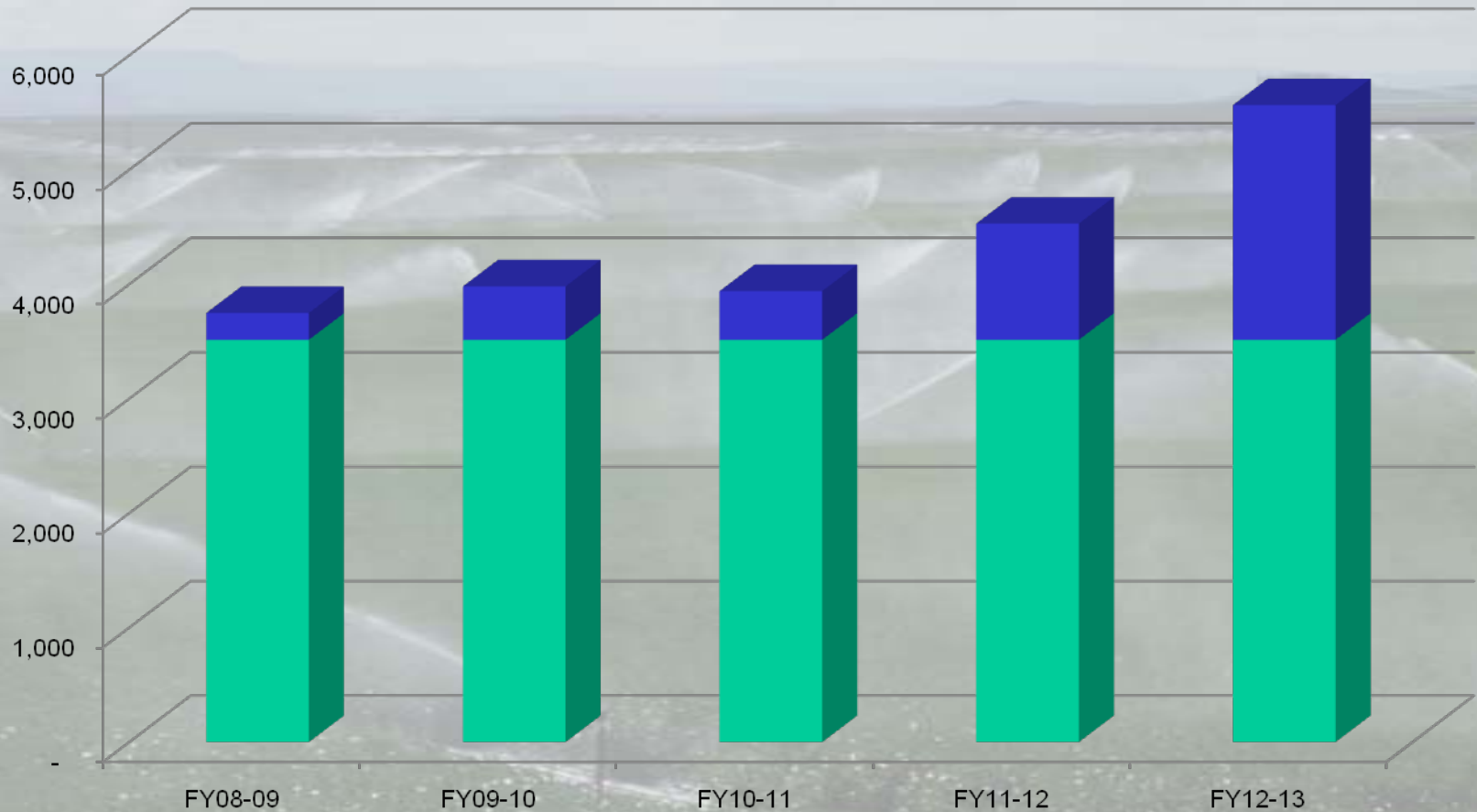
**SAM Recycled Water Project Schedule
Phased Plant – 0.6 MGD**

Task Name	Duration	Predecessor	2012				2013			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Recycled Water Project – PHASED Approach										
Task 1 Recycled Water Study	12 mos									
Task 2 Secure Agreement with OCP	12 mos	1								
Task 3 Secure Funding	18 mos	2								
Task 4 Planning, Environmental Review & Permitting	27 mos	3								
Subtask 4.1 Preliminary Design Report	6 mos									
Subtask 4.2 Refine Project Description/Alternatives	30 days									
Subtask 4.3 CEQA Review	12 mos	4.2								
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Task 5 Design Phase	16 mos	4.4								
Subtask 5.1 Design	12 mos	4.1								
Subtask 5.2 Bid/Award Phase	4 mos	5.1								
Task 6 Construction	18 mos	5								
CASH FLOW (x \$1,000)				\$360	\$500	\$500	\$550	\$1,000	\$500	
Cumulative Total (x \$1000)									\$3,410	\$4,710

Assumptions:

1. SAM's reserves would be utilized initially and repaid through funding
2. Construction Cost = \$3.4 million
3. Legal, Administration, & Planning Costs = \$720,000
4. Design & Construction Management Costs = \$580,000
5. Total Project Cost = \$4.7 million

Recycled Water Project Costs



Sewer Authority Mid-Coastside

NEXT STEPS

- Develop a Recycled Water Supply Agreement for potential customers
- Conduct Phase II Recycled Water Study: Facilities Study utilizing grant money
- Initiate environmental review and permitting
- Procure funding
- Design and construct facilities