History of the Largest Reclaimed Water Facility for Irrigation of Food Crops Eaten Raw

Brad Hagemann, AGM
Monterey County Agriculture $4B

Lettuce = $1.23 billion, 133,000 acres
Strawberries = $714 million, 10,992 acres
Broccoli = $298 million, 52,694 acres

450,000 AFY Groundwater Pumping
90+% Agriculture
1,800 Wells
REGULATIONS FORCED REGIONAL SOLUTIONS

- FEDERAL CLEAN WATER ACT 1972
  - Secondary treatment
- California Ocean Plan
  - Outfall pipe to extend past “zone of prohibition”

- National Marine Sanctuary Regulations
Old Treatment Plants: Over Capacity, Building Moratoriums, Non-Compliant with Federal Clean Water Act, Outfalls on Beach
Regional Treatment Plant 1989
Capacity: 29.6 MGD  Current Flow:  18 MGD
Located on 100 Acres

Solar Facility 2010
1.12 MW

Tertiary Treatment Plant 1998
Capacity: 29.6 MGD  Current Flow:  18 MGD
California Water Recycling Criteria
- Disinfected Tertiary Reclaimed Water -

• Media Filtration
  – $\leq 2$ NTU average turbidity in any 24-hour period
  – $\leq 5$ NTU 95% of time in any 24-hour period
  – 10 NTU maximum

• Membranes
  – $\leq 0.2$ NTU 95% of time in any 24-hour period
  – 0.5 NTU maximum
California Water Recycling Criteria
- Disinfected Tertiary Reclaimed Water -

- \( CT \geq 450 \text{ mg-min/L} \)
- \( \geq 90 \) minutes modal contact time or \( \geq 5 \) logs virus removal
- \( \leq 2.2 \) total coli/100 mL (7-day median)
- \( \leq 23 \) total coli/100 mL in more than one sample in any 30-day period
- \( \leq 240 \) total coli/100 mL (maximum)
Figure 3  Movement of Groundwater in the North Salinas Valley
STRONG PARTNERSHIPS
The Key to Success
From Concept in 1970’s

“...manages, protects, and enhances the quantity and quality of water ...”.

“...exists to protect and improve the health of the people in Monterey County.”

“Dedicated to meeting the wastewater and reclamation needs of our member agencies while protecting the environment”
Current Status in U.S.

- >1,500 water reuse facilities in U.S.
- 2.5-3.0 billion gallons/day of municipal wastewater was recycled in 2008
- 5-6% of municipal wastewater is reused
- Majority of recycled water from 4 states
  - Arizona
  - California
  - Florida
  - Texas
FACILITY FUNDING

• **Wastewater Facilities - $130 M**
  – Environmental Protection Agency (EPA) clean water grants 75%
  – California State Water Resources Control Board (SWRCB) clean water grants 12.5%
  – Tax free bonds/interest 12.5%
  – Utility fee for rate payers

• **Reclamation Facilities - $75 M**
  – Low interest loans from the Bureau of Reclamation & SWRCB
  – Salinas Valley landowners pay property assessment for benefit
  – Water delivery charge. Users pay about 50% cost of water
Property Tax Annual Assessment per Acre

- Within Project $303.26
- Agriculture North $11.61
- Agriculture South $5.15
- 1-4 Unit Residential $11.61
- Commercial/Industrial $101.22
- Dry Farming $1.24
Cost for Water

- Land Assessment $303.26/acre/year
- Water Delivery Charge $71.73/AF
- Combined Cost About $223/AF for 2.0 AF/acre. Well water costs $90-$130/AF

95% Use Recycled Water
DISTRIBUTION

Castroville Seawater Intrusion Project (CSIP)

- 48 miles of pipeline
- 21 supplemental wells
- 222 parcels
- 112 turnouts
- 9 monitoring stations
- 3 booster pumps
- $30M Treatment Plant and $37M Distribution System

12,080 acres
CSIP Historical Water Cost
$/Acre-Foot
(includes property assessments and water use charges for typical 2 AF/Acre application rate)

4% average annual increase
Major Crops Grown

- Artichokes
- Strawberries
- Cauliflower
- Broccoli
- Lettuce
- Celery
- Strawberries

- Artichokes
- Strawberries
- Cauliflower
- Broccoli
- Lettuce
- Celery
Furrow irrigation
Sprinkler irrigation
Surface drip irrigation
Buried drip irrigation
Drip & Sprinkler irrigation
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tr>
<td>TDS</td>
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<tr>
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<tr>
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<tr>
<td>Potassium</td>
<td>19 mg/L</td>
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Sewage Sodium Sources

- Potable
- Uncontrollable Sources
- Major Users
  - Residential
  - Commercial
Annual Average Sewage Influent
A Little Help Here, Please!
Reclaimed Water
Successful
Sustainable
Reliable
“New” Water
Safe
Questions?

“Changing Wastewater To Safe Water”

Brad Hagemann
brad@mrw pca.com