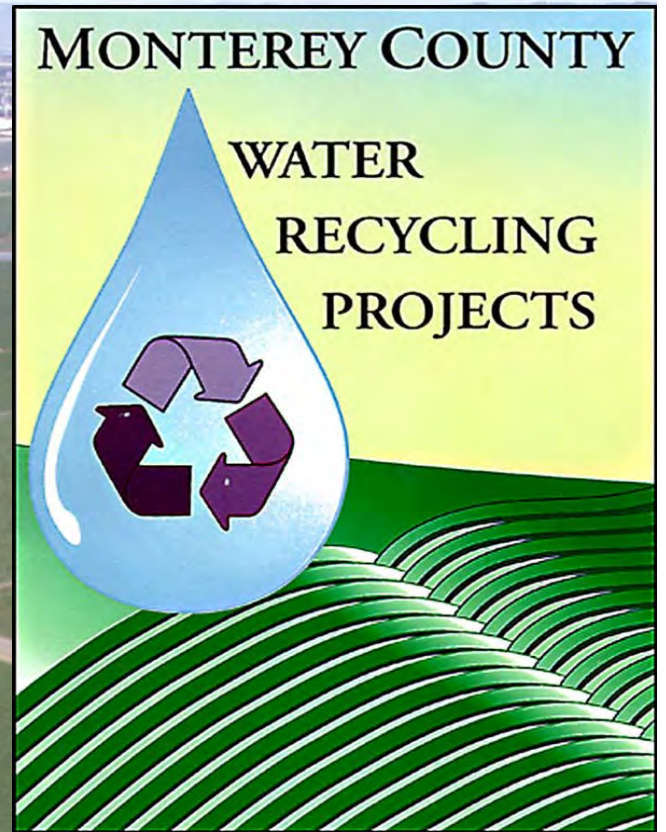


History of the Largest Reclaimed Water Facility for Irrigation of Food Crops Eaten Raw



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**

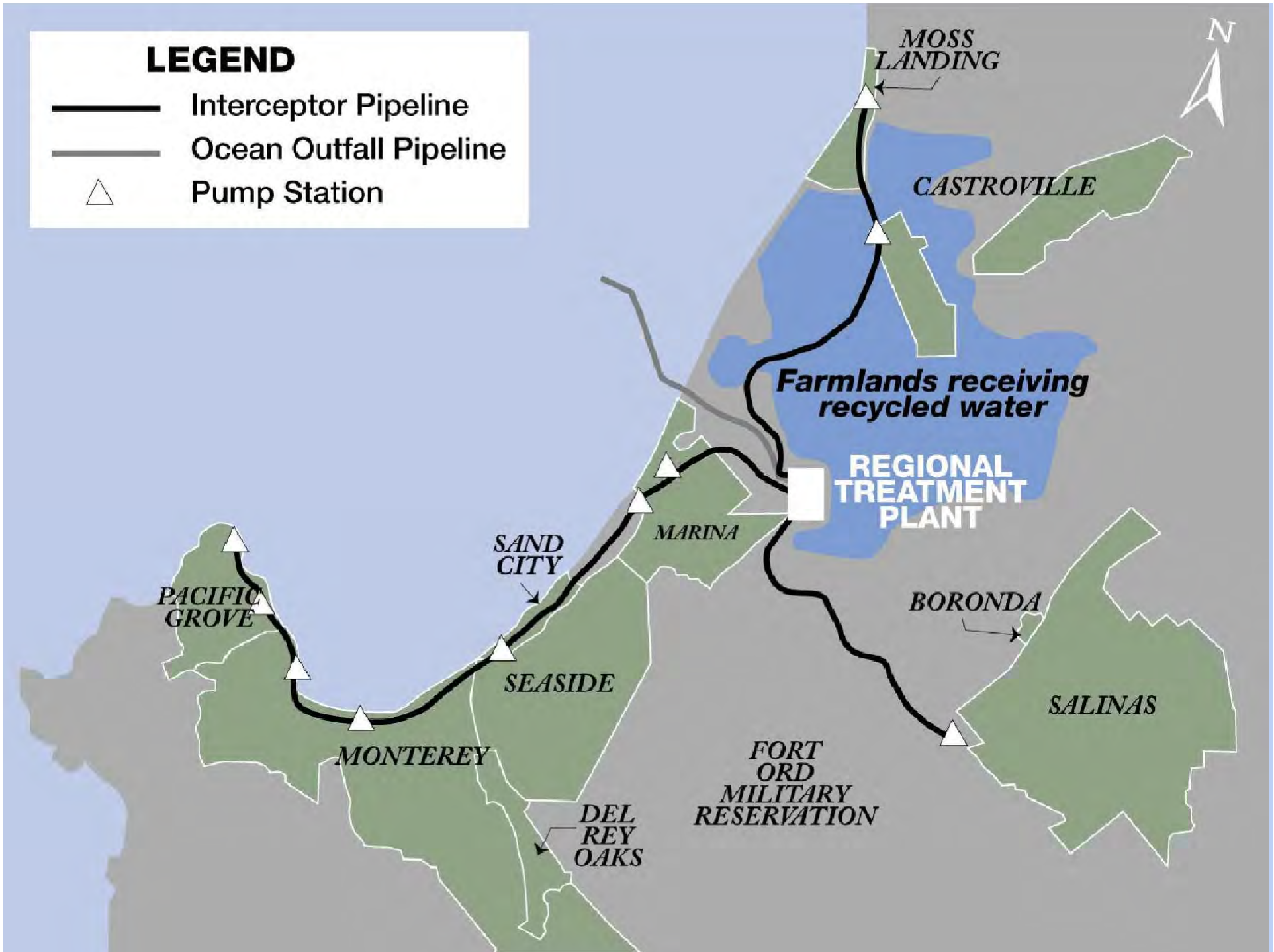


Old Treatment Plants: Over Capacity, Building Moratoriums, Non-Compliant with Federal Clean Water Act, Outfalls on Beach



LEGEND

- Interceptor Pipeline
- Ocean Outfall Pipeline
- △ Pump Station



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

- ≤ 2 NTU average turbidity in any 24-hour period
- ≤ 5 NTU 95% of time in any 24-hour period
- 10 NTU maximum

- Membranes

- ≤ 0.2 NTU 95 % of time in any 24-hour period
- 0.5 NTU maximum

California Water Recycling Criteria - Disinfected Tertiary Reclaimed Water -

- $CT \geq 450$ mg-min/L
- ≥ 90 minutes modal contact time or ≥ 5 logs virus removal
- ≤ 2.2 total coli/100 mL (7-day median)
- ≤ 23 total coli/100 mL in more than one sample in any 30-day period
- ≤ 240 total coli/100 mL (maximum)

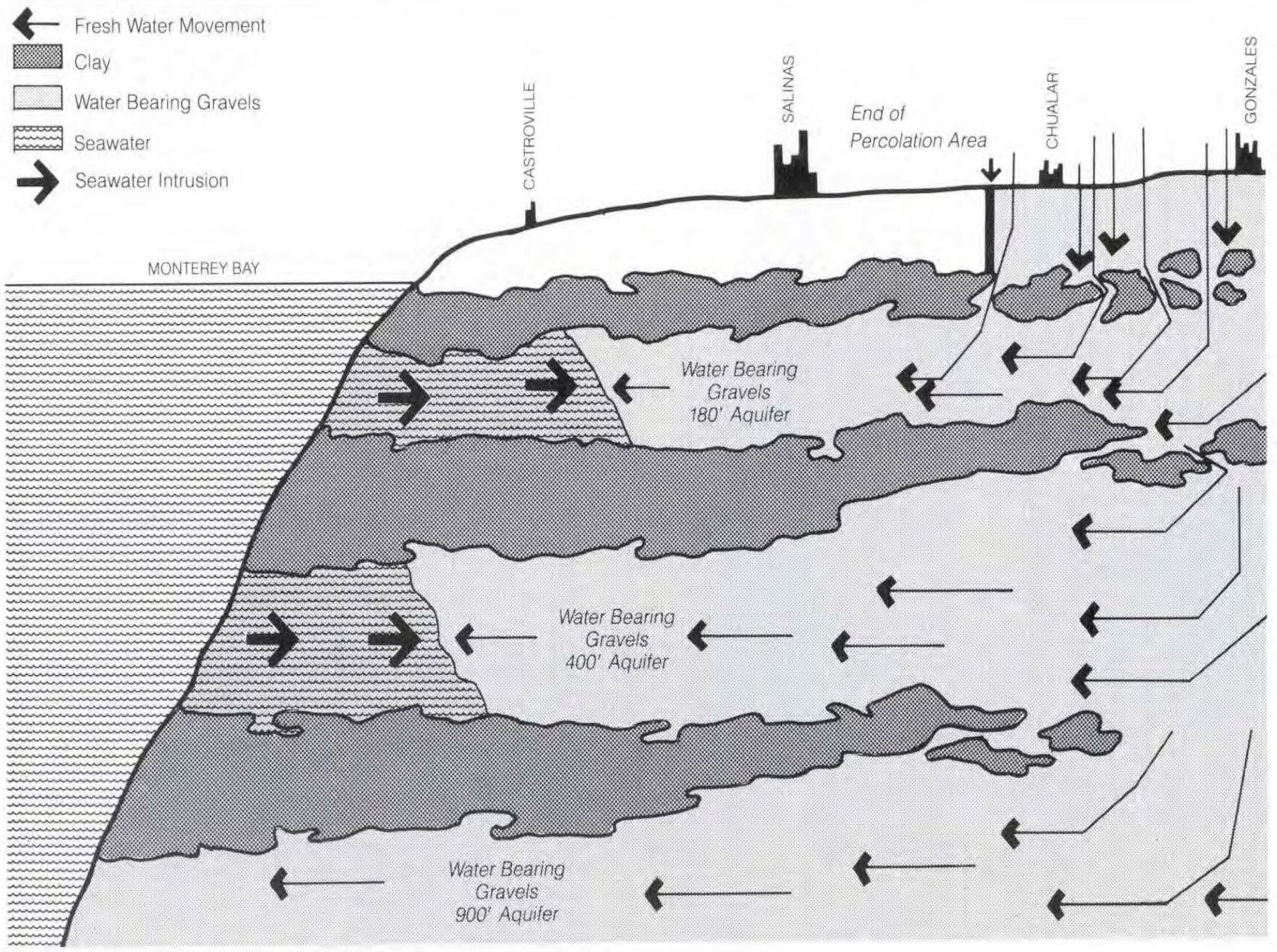
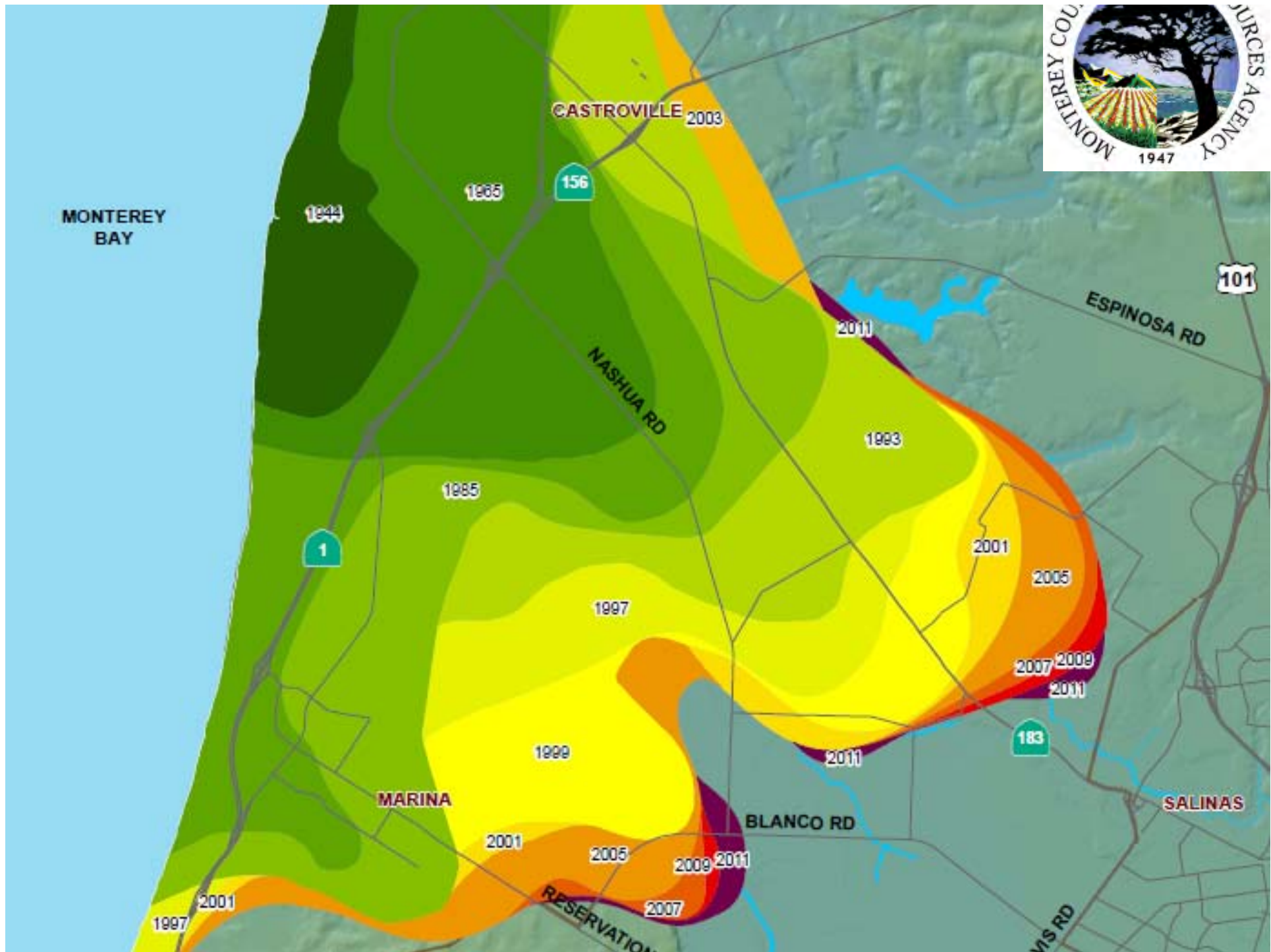
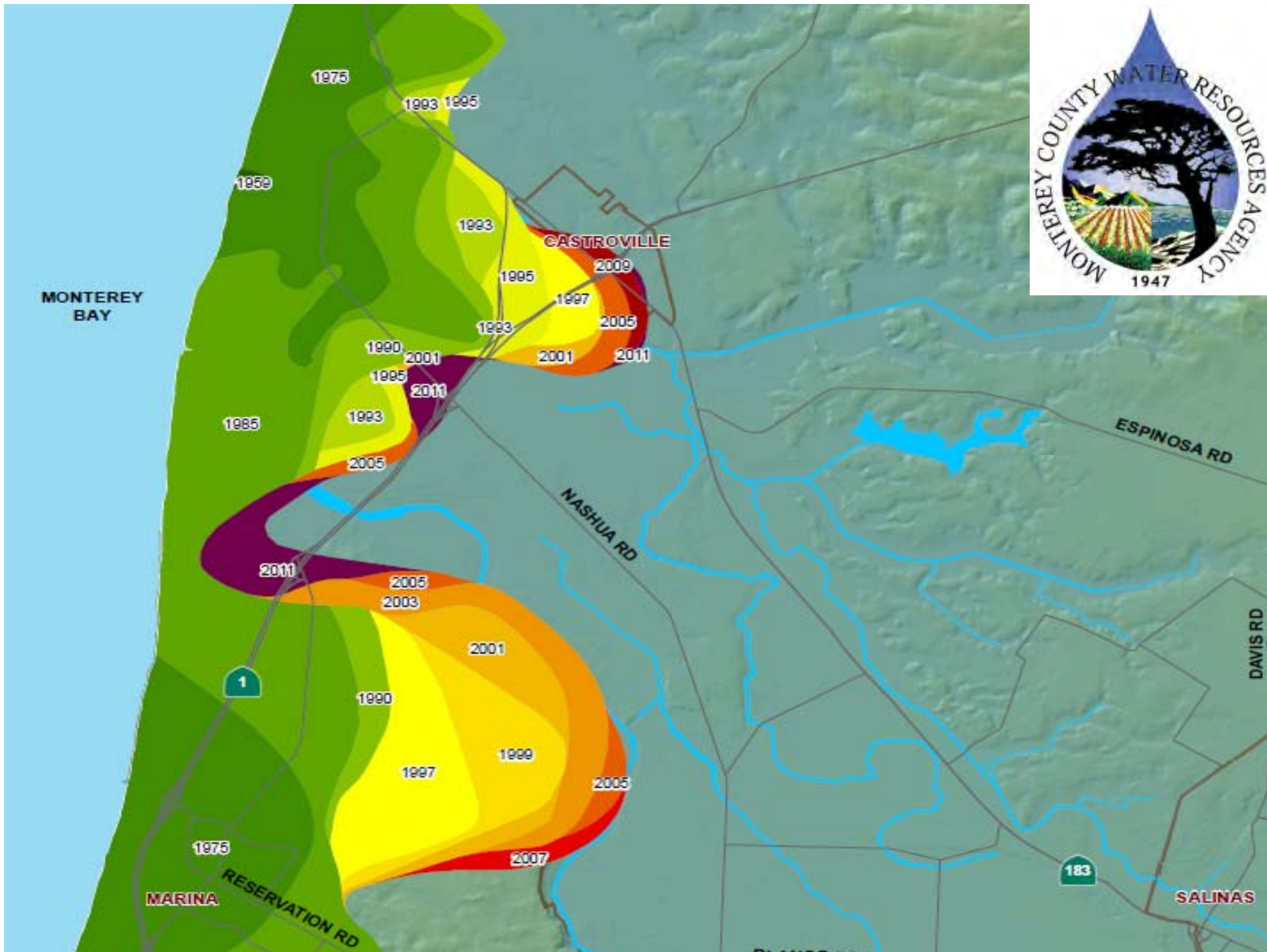


Figure 3 Movement of Groundwater in the North Salinas Valley





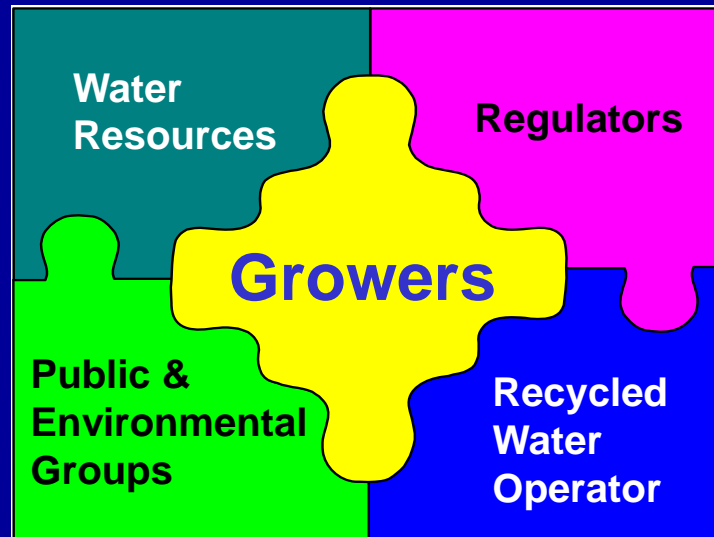
STRONG PARTNERSHIPS

The Key to Success

From Concept in 1970's



"...manages, protects, and enhances the quantity and quality of water ..."



"Dedicated to meeting the wastewater and reclamation needs of our member agencies while protecting the environment"



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

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 stations
- \$30M Treatment Plant and \$37M Distribution System

12,080 acres



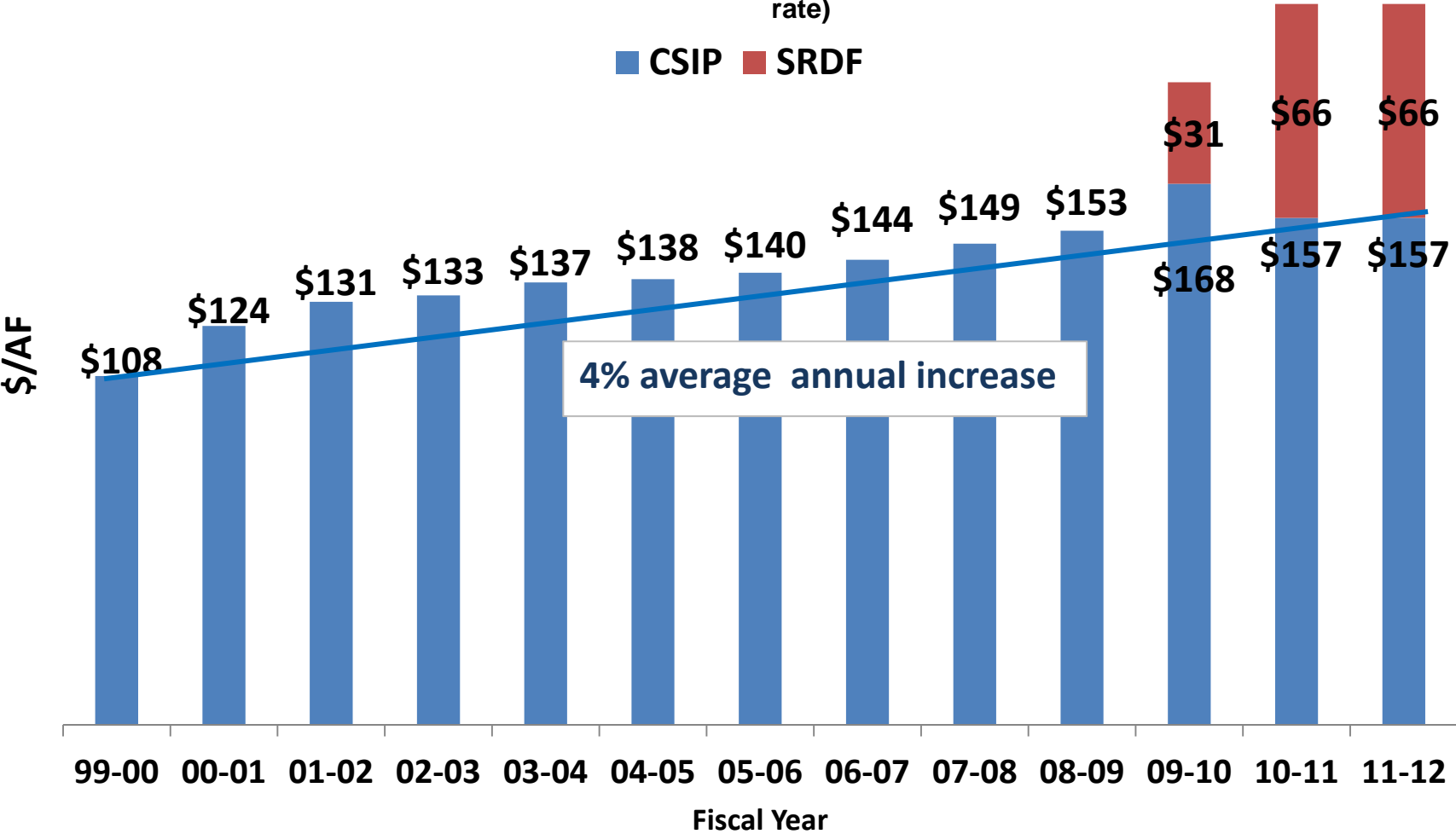


CSIP Historical Water Cost

\$/Acre-Foot

(includes property assessments and water use charges for typical 2 AF/Acre application rate)

CSIP SRDF



Major Crops Grown

Artichokes



Strawberries



Lettuce



Cauliflower



Broccoli



Celery



Furrow irrigation



Sprinkler irrigation





Surface drip irrigation

Buried drip irrigation



Drip & Sprinkler irrigation



RECYCLED WATER QUALITY 2012

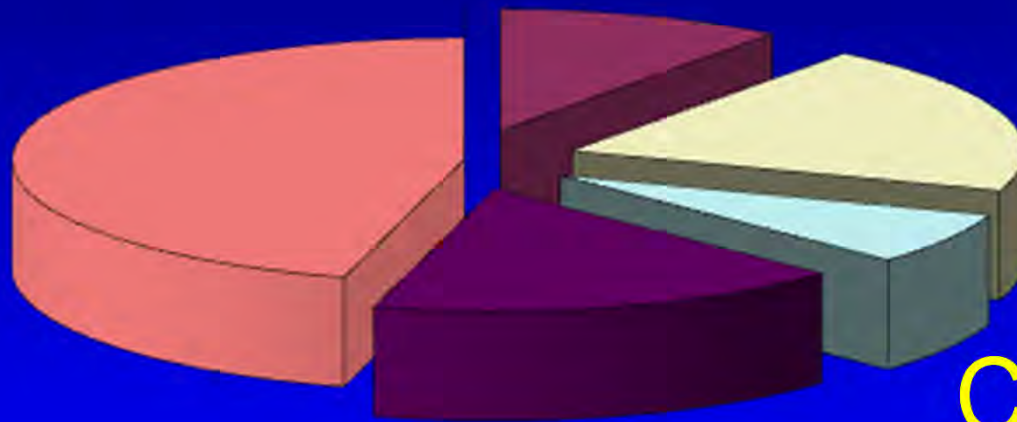
TDS	807 mg/L
SAR	4.8
pH	7.1
Chloride	262 mg/L
Sodium	172 mg/L
Total Nitrogen	42 mg/L
Total Phosphorous	3.2 mg/L
Potassium	19 mg/L

Sewage Sodium Sources

Potable

Major Users

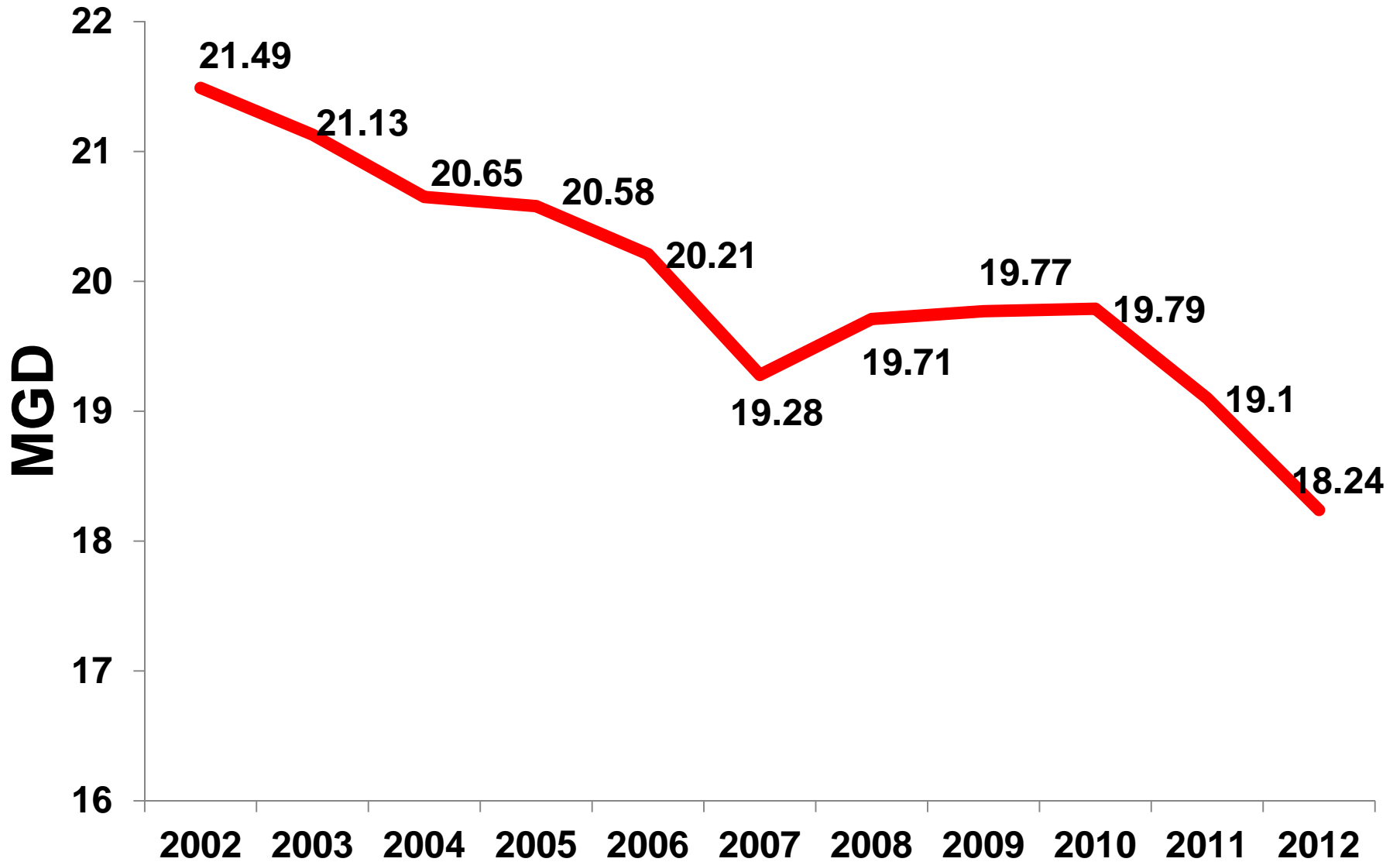
Residential



Commercial

Uncontrollable
Sources

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@mrwpca.com