

Potable Reuse

Where we have been and where we are heading

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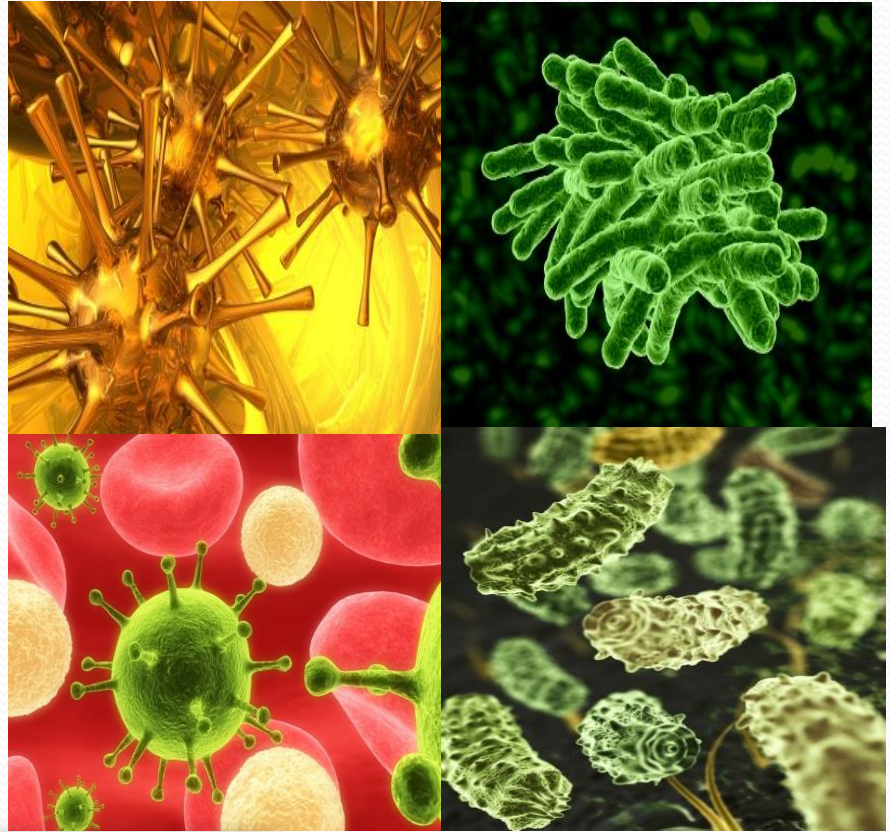
San Diego County Water Authority

Presentation Outline

- Public Health Aspects of Water and Sewage
- Evolution of safe drinking water and potable reuse
- Issues that need to be addressed for direct potable reuse acceptance

Public Health Aspects of Water and Sewage

- Pathogens
 - Pathogenic bacteria
 - Enteric Viruses
 - Protozoa
- Chemicals
 - Pharmaceuticals
 - Personal Care Products



Incidental Reuse

- Water sources protected through CWA- discharge requirements
 - Secondary or Tertiary treatment required
- Water Supplies regulated under SDWA-Surface Water Treatment Rule
 - High level of treatment through filtration plants
 - Increased pathogen removal requirements for impaired sources



Today's incidental Surface Water Augmentation

Sacramento
181 MGD

Davis
7.5 MGD

Vacaville
15 MGD

Galt
3 MGD

Benicia
4.5 MGD

Fairfield
17.5 MGD

Vallejo
15.5 MGD

Martinez
53.8 MGD

Lodi
8.5 MGD

Stockton
55 MGD

Manteca
6.95 MGD

Mountain House
5.4 MGD

Tracy
16 MGD

St. George, UT
6.7 MGD

City of Las Vegas
91 MGD

Clark County
Sanitation Dist.
110 MGD

City of Henderson
43 MGD

Industries within
Henderson
78 MGD

Laughlin WRF
8 MGD

Total Wastewater Discharge
of major cities in/around Bay Delta
390 Million Gallons/Day

+

Additional discharge upstream
600 MGD/Day

=

Nearly 1 Billion Gallons/Day

Total Wastewater Discharge
South of Las Vegas into Colorado River
336 Million Gallons /Day

Los Angeles

Santa Ana

Las Vegas



Map created in Oct. 2009

0 30 60 120 Miles

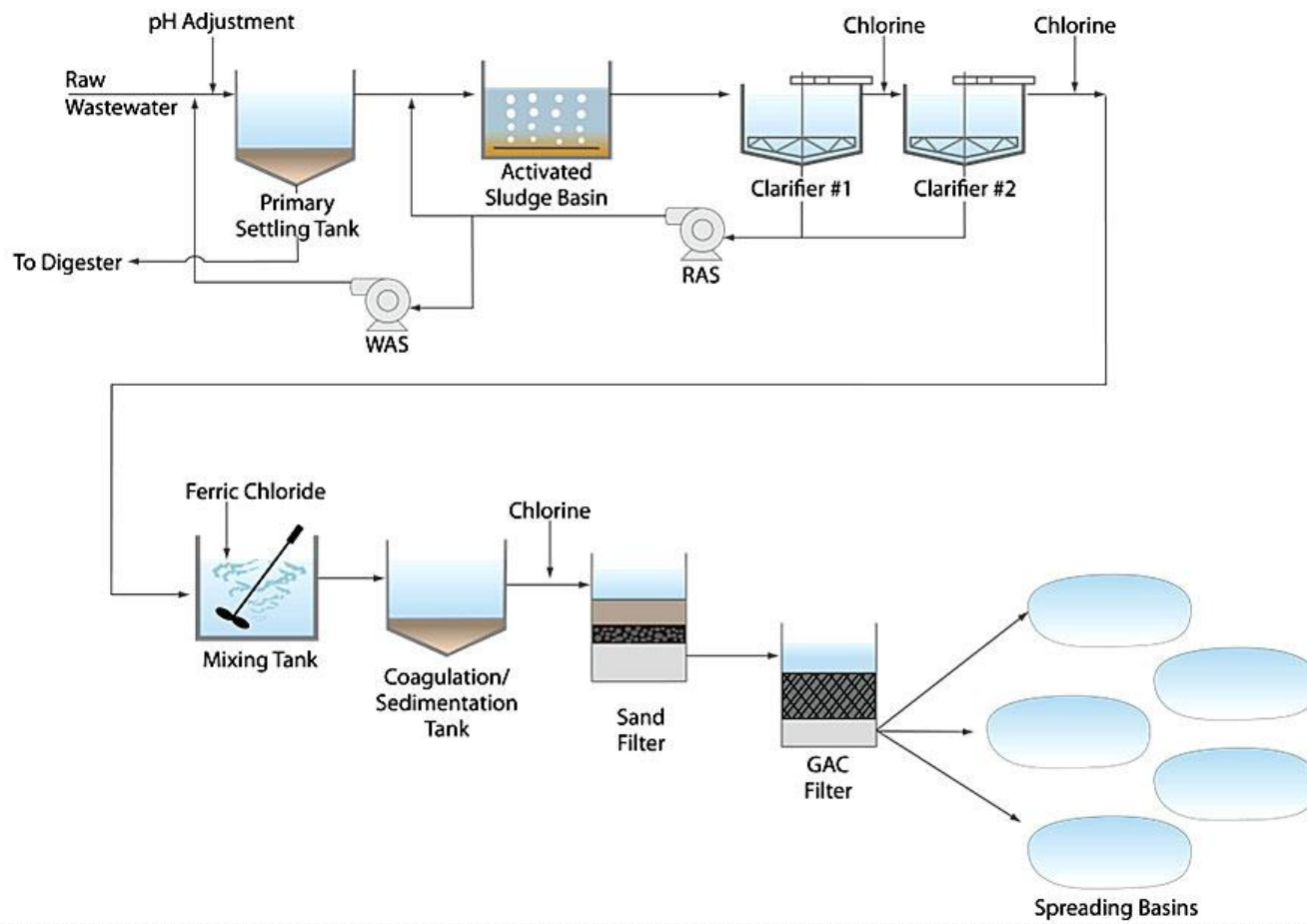
Water and Wastewater Treatment Prevents Disease Outbreaks

- We have relied on water treatment to make our water safe (from sewage) since the late 1800's
 - Cholera and Typhoid Fever: common in 1800's and early 1900's: eliminated in US by chlorination and filtration
 - Cryptosporidium 1993, Milwaukee outbreak infected over 400,000 people – resulted in significant changes to surface water treatment requirements
 - Standards based on virus, cryptosporidium and Giardia Removal



1st chlorination
facility, Jersey city
1904

Early Planned Potable Reuse through Groundwater Recharge- 1930's through present



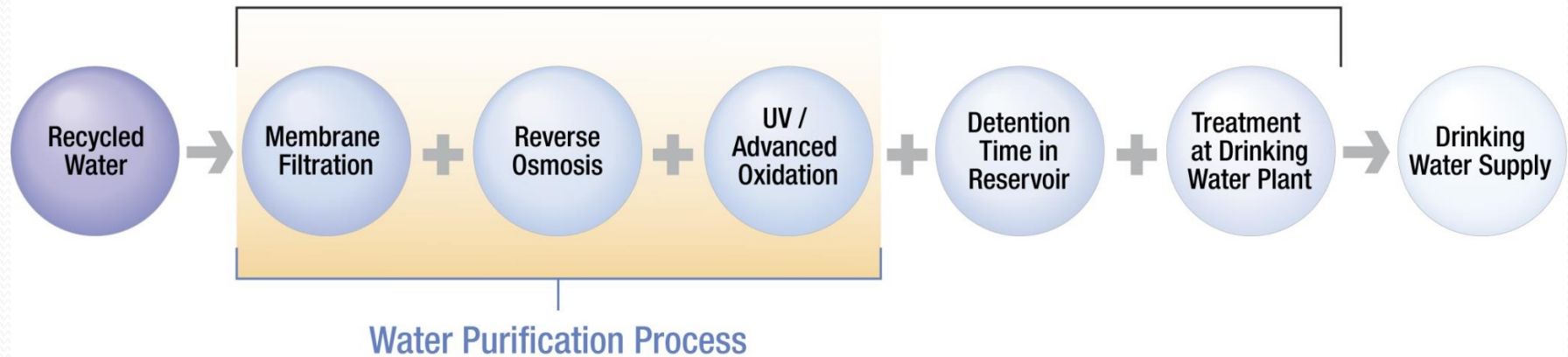
Potable Reuse through Groundwater Injection-1980s

- Advanced treatment allows for groundwater injection
 - Reverse Osmosis, advanced oxidation
- Removes requirement for an environmental barrier of percolation through soil



Potable Reuse through Reservoir Augmentation-Proposed

Multi-Barrier Water Purification Steps

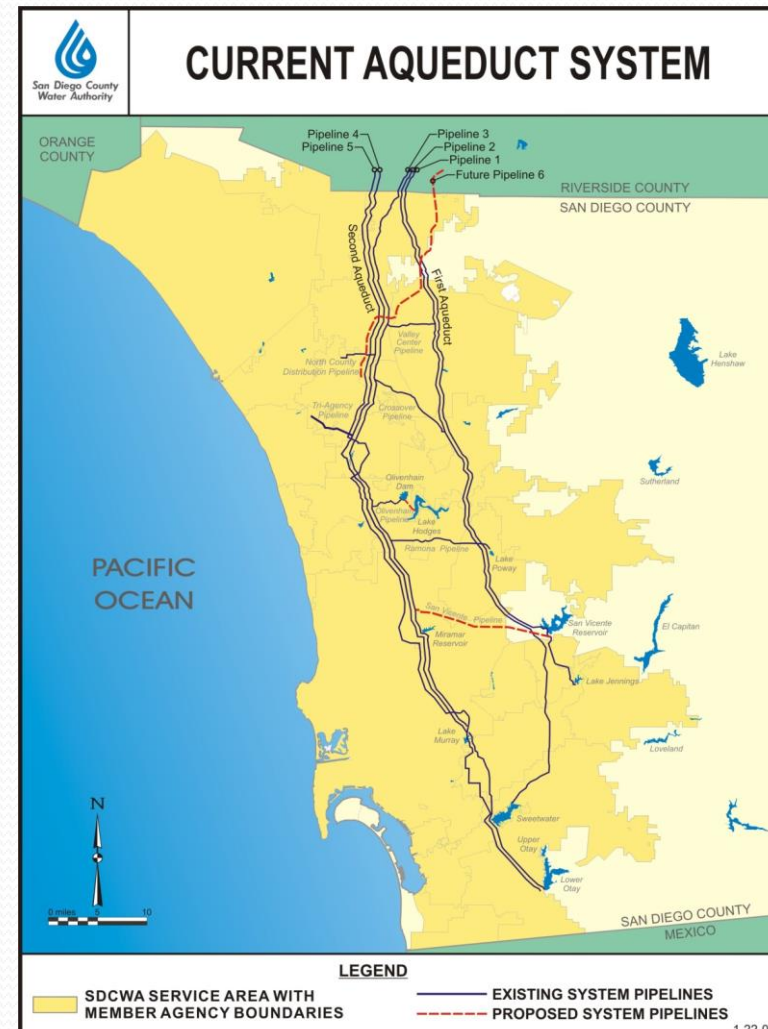


- Groundwater travel replaced with reservoir and treatment
- When groundwater basins not available
- Still includes an environmental barrier/dilution



Direct Potable Reuse through raw water augmentation

- Applies same advanced treatment as groundwater injection
 - Higher quality than existing raw water supplies
 - Proven reliable technologies
- Infrastructure costs for indirect potable reuse can be high
- Raw water augmentation can build on existing infrastructure
- Treated again at downstream surface water treatment plant

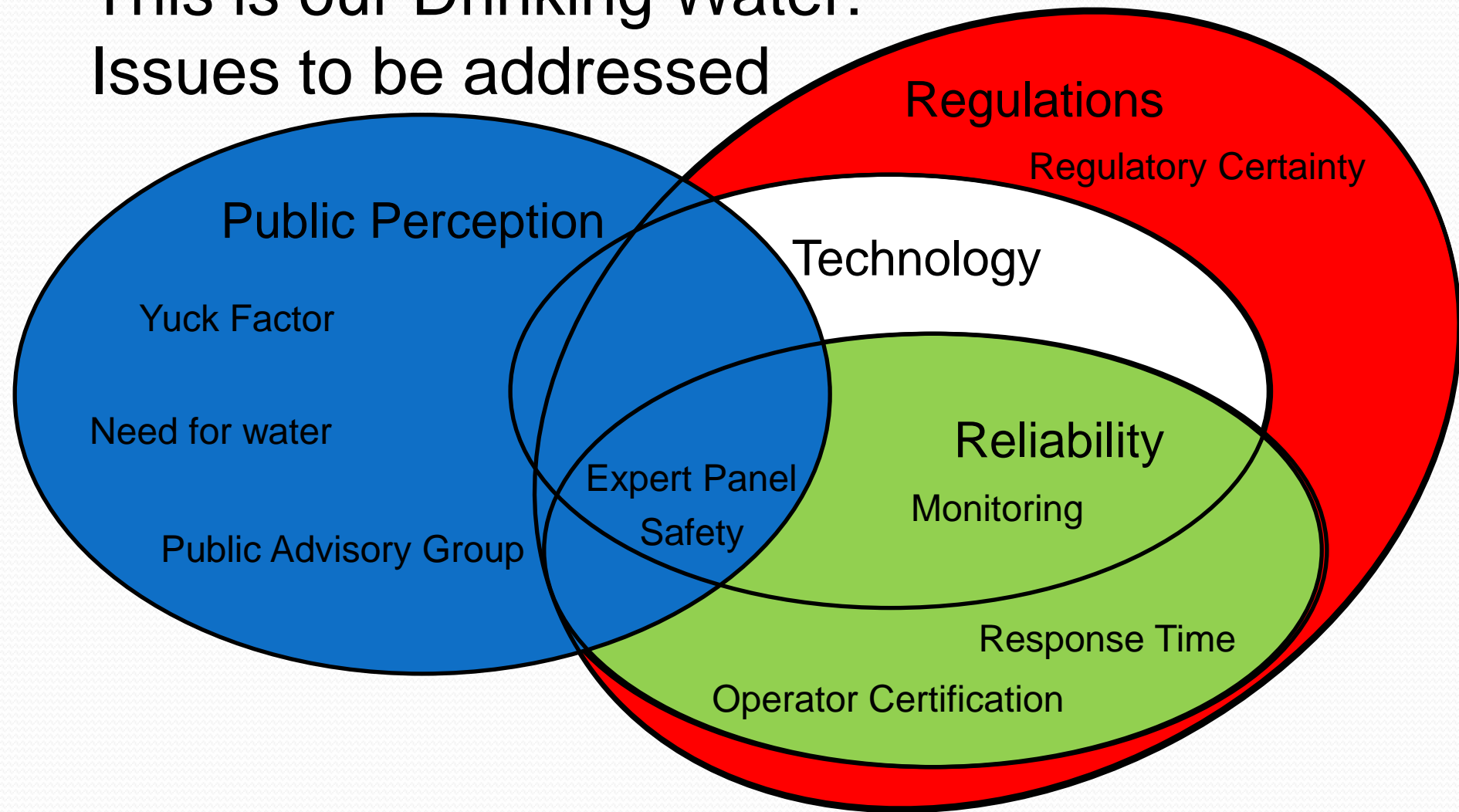


Direct Pipe to Pipe Potable Reuse

- Relies on a single treatment facility
- Highest degree of reliability required



This is our Drinking Water: Issues to be addressed



Need

California Bishops Pray for Rain



**California governor declares
drought emergency**



**Muslims pray for rain at
California lake amid
record-low water level**



Technology and Reliability



Potable Reuse Initiative



Expert Review

Agency Proposed Projects



Project Implementation



Regulatory Certainty

Jurisdiction of RWQCB and CDPH over Water Recycling

