

**CalDesal 2013**  
**2<sup>nd</sup> Annual Conference**

**Seawater RO Desalination**  
**CDPH Regulatory Considerations**

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# Outline

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- Assumptions
- Source Evaluation
- Alternative Filtration Technology
- Considerations
- Permitting Process

# Status of Desal in California

- Proposed projects in the next decade<sup>1</sup>

- Pittsburg
- Santa Cruz
- Cambria
- Monterey
- El Segundo
- Huntington Beach
- Dana Point
- Carlsbad
- Camp Pendleton
- Otay (Rosarito)

- Permitted projects in the last decade

- Sand City (2010, 0.6-MGD, brackish wells)
- Catalina Island (1991, reactivated 2003, 0.2-MGD, brackish wells)

<sup>1</sup>Source, fall 2013

# Assumptions

- General guidelines
  - Surface Water Treatment Rule (SWTR)
  - Microbial/Disinfection By-Products Rules (M/DBPR)
  - Long-term 2 Enhanced SWTR
  - Lead and Copper Rule
  - Waterworks Standards
  - Cross-connection Control Regulations (Title 17)

## Assumptions 2

- Brackish water and seawater exceeding secondary short-term MCL for:
  - TDS, 1,500 mg/L
  - Specific conductance, 2,200  $\mu\text{S}/\text{cm}$
  - Sulfate, 600 mg/L
  - Chloride, 600 mg/L
- Primary desalination component: membrane (RO, NF)

# Source Evaluation

- Conduct watershed sanitary survey (Section 64665, Title 22)
  - Identify all sources of actual or potential contamination, including biotoxins
    - Ocean outfalls, surface water outlets, harbor facilities, sewage pump stations
  - Describe watershed management strategies
    - e.g., control measures to prevent dumping of wastes from boats in harbors
  - Recommend appropriate levels of reduction of Crypto, Giardia and virus
  - Must be updated every five years

## Source Evaluation 2

- Detailed characterization of watershed for pathogen control is not necessary if plant design is based on worst case scenario
  - SWTR Minimum: 2-log Crypto, 3-log Giardia, 4-log virus
  - Requires additional 2-log G/V removal and inactivation
  - Worst case: 5.5-log Crypto, 5-log Giardia, 6-log virus
  - Sand City & Carlsbad Designs
- Ocean modeling may be necessary

## Source Evaluation 3

- Determination of pathogen reduction requirements:
  - Total Coliform and E. coli/fecal Coliform monitoring
  - Daily monitoring to capture tidal, seasonal and storm influence
- Wastewater disinfection for discharges affecting marine sources
  - At least 2.2-secondary treated effluent
- For beach wells, Cryptosporidium removal credit could be granted for riverbank filtration

# Alternative Filtration Technology Approval

- Section 64653 (f), Title 22:
  - Demonstrate minimum of 2-log Crypto, 2-log Giardia, 1-log virus removal and
  - Meet turbidity performance standard:
    - $\leq 0.1$  NTU in 95% of measurements each month
    - Not exceed 1.0 NTU at any time
    - Not exceed 0.5 NTU in more than two consecutive samples
- RO membranes that have not been accepted as an alternative filtration technology will be granted pathogen removal credit equal to log TDS reduction (rounded down to nearest whole number)

## Alternative Filtration Technology Approval 2

- Multiple Barrier Treatment SWTR, e.g. Minimum of 0.5-log Giardia & Virus (baseline WQ scenario)
- No bypass or provision for blending raw water with treated water allowed

# Considerations

- Monitoring for specific conductance of each RO unit or bank of units
  - Set triggers for alarm and automatic unit shutdown
  - Establish relationship between conductivity and TDS
  - MIT: Direct and Indirect Integrity Testing

## Considerations 2

- Waterworks Standards
  - ANSI/NSF 60 certification of all chemicals
  - ANSI/NSF 61 certification of all components
- Provisions for corrosion control (Lead and Copper Rule)
  - Next round of lead and copper monitoring include sample sites representing the area served by the desalination plant
- Cross-connection Control Regulations in Title 17, e.g. Brine disposal system, Finished Water Overflow/Drain, etc.

# Permitting Process

- Domestic Water Supply Permit

- Submit a permit application
- Prepare the permit technical report (by an engineer)
- Plans & Specifications
- Draft operations plan
- Document CEQA compliance

<http://www.cdph.ca.gov/certlic/drinkingwater/Pages/ERU.aspx>

- Comply with TMF Requirements (for new systems)

- Contact CDPH and discuss plans ASAP

<http://www.cdph.ca.gov/programs/Documents/DDWEM/OriginalDistrictMapCDPH.pdf>

## Permitting Process 2

- Permit Technical Report
  - General water system information
  - Source water information
    - Watershed Sanitary Survey
  - Treatment and design information
    - Alternative Technology Approval
  - Distribution system information
- <http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Permits.aspx>

## Contact Information

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