Pathways for Permitting Innovative Potable Reuse

Projects

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Key lessons:

- Process and water quality knowledge is essential
- Data forms conclusions (demo, pilot, bench, sampling)
- Design & operation is impacted by data and regulatory process
- ► IAP increases regulatory confidence
- Regulators: frequent communication smooths process

Example projects

Pure Water Monterey

- Groundwater Replenishment Reuse Project
- Permitted under 2014 regulations
- Regulatory environment constantly evolving

Pure Water San Diego

- Surface Water Augmentation Project
- First SWA project design and permitted
- Developed in the absence of regulations

Pure Water Monterey project

- Monterey One Water
- ▶ 5 mgd, 3,700 AFY injection
- Motivated by CDO
- Injection imminent

Examples:

- Finding new wastewaters
- Including ozone pretreatment
- RO concentrate management

October 2019



Pure Water Monterey schedule



Additional source waters

- Challenge: not enough wastewater
- Solution: bring in additional wastewaters
 - Agricultural drainage waters
 - Agricultural industrial wastewater
- Data:
 - Bench-scale treatability testing
 - Water quality monitoring campaign
 - Pilot and demonstration testing
- Result: sufficient wastewater for Project
 - AWPF tailored to wastewaters
 - Regulatory approval of source waters





Ozone pretreament

Challenge: high membrane fouling potential

- New industrial wastewater
- Challenging TF/SC secondary effluent
- Solution: incorporate ozone into the AWPF

Data:

- Bench-scale treatability testing
- Pilot and demonstration testing
- Results:
 - Improves MF and RO treatment performance
 - Oxidizes CECs and pesticides, gaining public and regulatory support
 - Improves RO concentrate discharge compliance with Ocean Plan objectives



RO concentrate ocean discharge compliance

Challenge:

- RO concentrate is only waste discharged during parts of the year
- Constituents projected to exceed NPDES permit

Alternatives:

- Dilution: reduces water available for project
- Treatment: increase project costs
- Innovative regulatory approach: dilution credit for range of flows

Data:

- Source water sampling,
- Ocean outfall dilution modeling
- Results: regional Board approval of novel NPDES permitting approach



San Diego Pure Water

Phase 1 Project Overview



Phase 1

2019 Construction

of San Diego's water locally

Pure Water

will produce

- 30 mgd
- North City PWF to Miramar

Original Concept was to use San Vicente Reservoir



Retention time Volume Regulatory approval

Miramar Concept Developed



Regulatory Pathway Unclear for Miramar

How do we compensate for a much smaller environmental buffer?



Miramar Project Pushed the Boundaries

The first surface water augmentation project in the state

Developed in the absence of regulations

Evolved in parallel with SWA regulations and led to greater flexibility

At the edge of IPR and DPR

So how did we get there?

Developing Sound Concepts with DDW



Understanding Regulatory Intent



V/Q:	<u>Option A</u> ≥ 6 months	<u>Option B</u> ≥ 6 months
Dilution:	<u>></u> 100:1	<u>></u> 10:1
Pathogen LRVs:	12/10/10	13/11/11

- Initial drafts of SWA seek benefits of "substantial" buffers by requiring:
 - Long retention times
 - High degrees of dilution/mixing
- Willing to accept lower dilution with higher level of treatment

► Is a 2-month reservoir feasible?

Concept Development and Testing

Developed a concept for reliability that includes both failure prevention and failure response features



Engaged DDW and IAP in development of a test plan to evaluate concept





Concept Development and Testing



Pathogen Credit at NCWRP











Yearlong, site-specific monitoring campaign

Concept Development and Testing: RO Crediting



Concept Development and Testing: Reservoir Modeling



DDW's hesitation with no regulation in place....



How do we compensate for a much smaller environmental buffer?

Our Answer: Project Reliability



*Standby capacity for unit processes and monitors is built into each of the treatment facilities



Regulator Engagement





Conditional Approval Letter Received



Interaction between testing, permitting, and design



Draft regulations require *practical* applications

- Permitting requires project concepts that support the regulatory intent and are supported with sound data and research
- A real project could lead to regulatory modifications that provide greater flexibility

Make the regulators your partner when pursuing a project