



Subcommittee on Pure Water Southern California
and Regional Conveyance

Pure Water Southern California Demonstration Testing and Activities Update

Item 3c

March 26, 2024

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Demonstration Testing and Activities Update

Subject

Pure Water Southern California Demonstration Testing and Activities Update

Purpose

To provide an update on the recent program demonstration testing and related activities

Next Steps

Continue testing and support efforts to meet the program goals and objectives

Outline

- Role of Demonstration Testing
- Science Advisory Panel Workshop
- Demonstration Testing Activities
- Direct Potable Reuse Update
- Next Steps



Role of Demonstration Testing



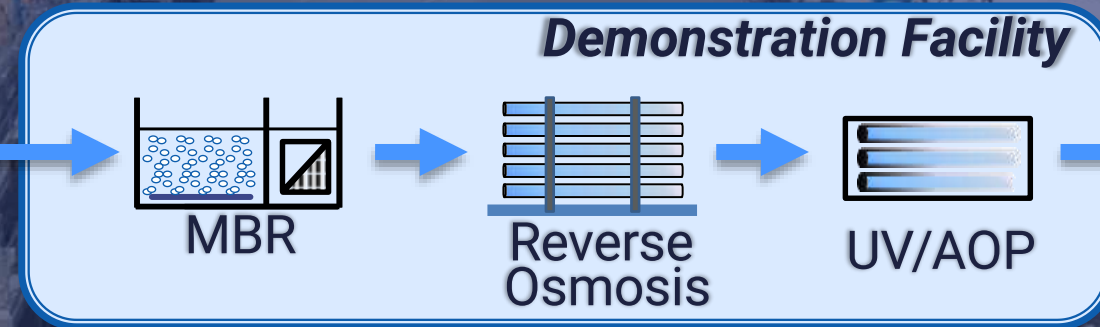
- Confirm treatment processes required to meet potable reuse requirements
- Generate data for regulatory acceptance
- Optimize design criteria and operational strategies
- Verify source water quality criteria
- Characterize concentrate and residual streams
- Confirm capital and operating costs
- Provide venue for public engagement and dialogue

Napolitano Innovation Center Testing To-Date

Secondary Effluent
(2019-2021)

Primary Effluent
(2021-2023)

Tertiary MBR (tMBR) Testing
(2019-2021)



Secondary MBR (sMBR) Testing
(2021-2023)



Engagement with the Independent Science Advisory Panel

- Expert panel required to review alternative approaches for meeting existing regulations
- The National Water Research Institute has facilitated seven program workshops since 2018



Areas of Expertise

Microbiology

Toxicology

Chemistry

Hydrogeology

Wastewater Treatment

Regulations/Permitting

Corrosion

Advanced Water Treatment



Independent Science Advisory Panel Workshop No. 7

Workshop No. 7
March 5-6, 2024

Hybrid at LACSD
Headquarters

- Topics covered included
 - sMBR testing results
 - NdN tMBR testing update
 - DPR approach
- Panel feedback will inform planning, design, and permitting
- Draft panel report anticipated April 2024

sMBR: Secondary MBR

tMBR: Tertiary MBR

NDN: Nitrifying/Denitrifying

DPR: Direct Potable Reuse



Demonstration Facility Improvements (Nov – Dec 2023)

Grace F. Napolitano Innovation Center



- Partnered with LACSD to develop the scope for improvements and share costs
- Established new test configurations with equipment, modifications, and programming
- Increased flexibility, enhanced reliability for future testing
- Completed critical equipment and facility



New Chemical Tubing



Bioreactor Improvements



Operations Trailer Roof Replacement

Demonstration Testing

- Plant restarted in December 2023 in tMBR mode
 - Address nutrient removal challenges observed in 2019
 - Metropolitan staff leading plant O&M, monitoring, testing
 - LACSD supporting treatment evaluation and optimization
- Testing Scope for NDN tMBR + RO + UV/AOP
 - Establish operating conditions and evaluate performance
 - Conduct optimization studies to enhance full-scale design
 - Gather data to inform future DPR testing



RO: Reverse Osmosis
UV/AOP: Ultraviolet Light/
Advanced Oxidation Process

Tertiary MBR Testing Startup Activities (Jan to Mar 2024)



RO Element Installation



Routine Field Water Quality Monitoring



MBR Membrane Maintenance



Instrument Verification



Tour for LACSD Laboratory Staff



Pathogen Analysis Training for LACSD Staff



MBR Filtrate Pump Replacement

Inform and Support Program Integration

- Design Criteria and Engineering Report
 - Water quality goals
 - Operational targets
 - Operations plan
 - Performance monitoring and response
- Concentrate and residuals management
- Operator training and development



Demonstration
Testing
Benefits



Ongoing DPR Research

DPR regulations adopted by
the State Board in **Dec 2023**

Rulemaking in progress;
to become effective in **2024**

Testing for DPR through Raw Water Augmentation

- Recent **bench-scale** testing evaluated alternatives
- **Pilot-scale** testing may include ozone, BAC/GAC
- Panel to provide feedback on bench-scale results and proposed pilot test alternatives for evaluation



Bench-scale “jar testing” for
treatability



Bench-scale GAC testing setup

Next Steps



MBR Testing

- Complete NDN tMBR testing
- Develop plans for Nitrifying-only tMBR testing
- Submit sMBR testing report to regulators

DPR Testing

- Refine approach for DPR pilot testing incorporating Panel feedback
- Commence DPR pilot-scale equipment design and test plan development
- Complete a White Paper on Metropolitan's recommended approach for DPR

