Regional Recycled Water Program

Engineering and Operations Committee
Item 6b
June 11, 2018
Outline

- Demonstration Plant
  - Objectives and Overview
  - Construction Status
  - Testing and Monitoring Strategy

- Program Planning Studies

- Schedule
Demonstration Plant Objectives

- Provide data for regulatory acceptance
- Confirm viability of membrane bioreactor (MBR) process
- Optimize full-scale treatment process design
- Establish cost clarity for treatment
- Confirm operational dependencies/interfaces with LACSD
- Provide vehicle for public outreach and acceptance
Location of AWT Facilities at JWPCP

Full-Scale AWT Site

Demon Plant Site

Main St.

Sepulveda Blvd.

Lomita Blvd.

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Chemical Feed Systems

Reverse Osmosis

UV Light/Advanced Oxidation Process

MBR – Aerobic and Anoxic Tanks

MBR – Membrane Modules
Demonstration Plant Process Train
0.5-MGD Capacity

Aerobic and Anoxic Tanks

- JWPCP Non-nitrified Secondary Effluent
- Waste Activated Sludge to JWPCP

Membrane System for MBR

- 0.25 MGD
- 0.25 MGD

Reverse Osmosis

- 0.50 MGD
- RO Brine and Return to JWPCP

UV/AOP

- 20 GPM
- Return to JWPCP

Waste Activated Sludge to JWPCP

0.50 MGD
Demonstration Plant Construction

Current Status and Schedule

- Construction approximately 40% complete
- Complete construction - Late 2018
- Commence start-up and operation - Early 2019
Construction Progress

March 1, 2018

May 23, 2018
Demonstration Plant Influent Pipe
JWPCP Secondary Effluent - LACSD
Process and Tank Farm Areas
Foundation for MBR Filters
MBR Equipment
Membrane Bioreactor for Water Reuse

- Commonly used in non-potable reuse applications
- Limited use in potable reuse projects due to lack of pathogen removal regulatory credit to date
- Ongoing industry efforts to quantify pathogen removal through MBR
- Effective technology for treating JWPCP effluent
  - Removes pathogens
  - Manages nitrogen
  - Minimizes RO fouling
  - Removes biodegradable CECs
MBR Process at Demonstration Plant

- Fine Screening
- Aeration Basin Nitrification
- Anoxic Basin Denitrification
- Membrane Modules Filtration
- Water flow
- Aeration Basin
- Anoxic Basin
- Membrane Modules
- Filtration
Demonstration Project
Testing and Monitoring

- Primary focus during first year of testing is achieving regulatory acceptance of MBR
  - Extensive microbial testing to demonstrate pathogen removal

- Water quality from all unit processes will be monitored to ensure treatment goals are met
  - CEC monitoring will be included

- LACSD will characterize JWPCP source water and brine/waste streams from the AWT process
Testing and Monitoring Plan

Testing and Monitoring Plan drafted

Testing Schedule

Pre-testing
- Equipment Testing and Process Acclimation (3 months)

Phase 1
- Baseline Performance Testing (4 months)

Phase 2
- Challenge Testing and Evaluation (8 months)

Additional testing for process optimization and full-scale design criteria deferred to later year
Regulatory Oversight

State Water Resources Control Board

- Division of Drinking Water
- Regional Water Quality Control Boards
  - Los Angeles Region
  - Santa Ana Region
Ongoing Regulatory Coordination

- Continued engagement with regulators since early 2016
- Feedback received on various program elements
  - Potential regional program concept
  - Groundwater basin analyses
  - Demonstration plant process train
  - Demonstration testing strategy
- Upcoming meetings to finalize testing and monitoring plan for regulatory review and approval
Independent Advisory Panel

- Independent panel of experts required to review alternative approaches for meeting existing regulations (e.g., application of MBR)

- National Water Research Institute commissioned to secure panel for demonstration project

- Workshop scheduled for early August 2018 for panel review of testing and monitoring plan

- Panel will help guide demonstration project, and review data and all regulatory submittals
Independent Advisory Panel

Panel Members

**NWRI**
- Richard Bull, Ph.D.
  - Toxicology
- Joe Cotruvo, Ph.D.
  - Chemistry
- Charles Haas, Ph.D.
  - Microbiology
- Thomas Harder, R.G.
  - Hydrogeology

**Ed Means**
- Adam Olivieri, Ph.D.
  - Regulations and Permitting
- Vernon Snoeyink, Ph.D.
  - Pipeline Corrosion/Water Chemistry
- Michael Stenstrom, Ph.D.
  - Wastewater Treatment
- Paul Westerhoff, Ph.D.
  - Drinking/Advanced Water Treatment
Program Planning Studies
Full-Scale Assessments

- Conceptual planning and phasing evaluations
- Groundwater modeling
- Source control assessments and nitrogen management studies
- Institutional and financial arrangements
- Public outreach planning efforts
**Schedule**

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<tr>
<th>Activity</th>
<th>2018</th>
<th>2019</th>
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<td>Demonstration Plant</td>
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<tr>
<td>Conceptual Planning Studies Report</td>
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<tr>
<td>Assessment of IRP, Rates, and Terms</td>
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- **Construction**
- **Operations/Testing**
- **Studies**
- **Other**
- **Completion**
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