



Update on R&D Activities

Board of Directors Meeting

May 1, 2019



Biannual R&D Summary Report

- 28 current projects / programs



OCWD R&D Department R&D Project Update Report

Date: 22 April 2019
To: All Departments
From: Megan Plumlee (R&D)
Subject: R&D PROJECT UPDATE REPORT – Q1 2019

This R&D Project Update Report is generated twice per year (Q1 and Q3) to summarize R&D projects. The first section, "Project Updates", provides a brief status report for 28 different projects and programs. Later sections note recent publications and conference presentations by R&D staff, as well as external research projects in which OCWD's role as a participating utility is coordinated by R&D staff.

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Recent Outcomes (past 6 months)

- Publications (3)
 - *Environmental Sci.: Water Research & Tech.*
 - *J. of Membrane Science*
 - *WRF Report*
- Conference Outreach (10)
 - 6 presentations accepted for WateReuse CA Conf. (March)
 - 4 other conference presentations/ posters
- Grants (3)
 - WRF SPP
 - MWD FSA
 - WRF 4598



Today's Updates

- CCRO Pilot Testing [USBR grant]
- RO Membrane Integrity Study [USBR grant]
- Membrane Biocide Evaluation [pending USBR grant]
- Wastewater Virus LRV Study [MWD grant + WRF grant]



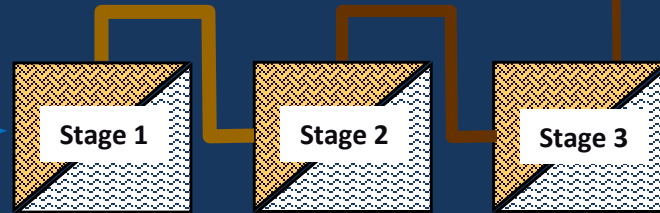
CCRO Pilot Testing - Background





Final expansion:

153 MGD
RO Feed
(MF effluent)



23 MGD RO Concentrate

concentrate
disposal

23 MGD

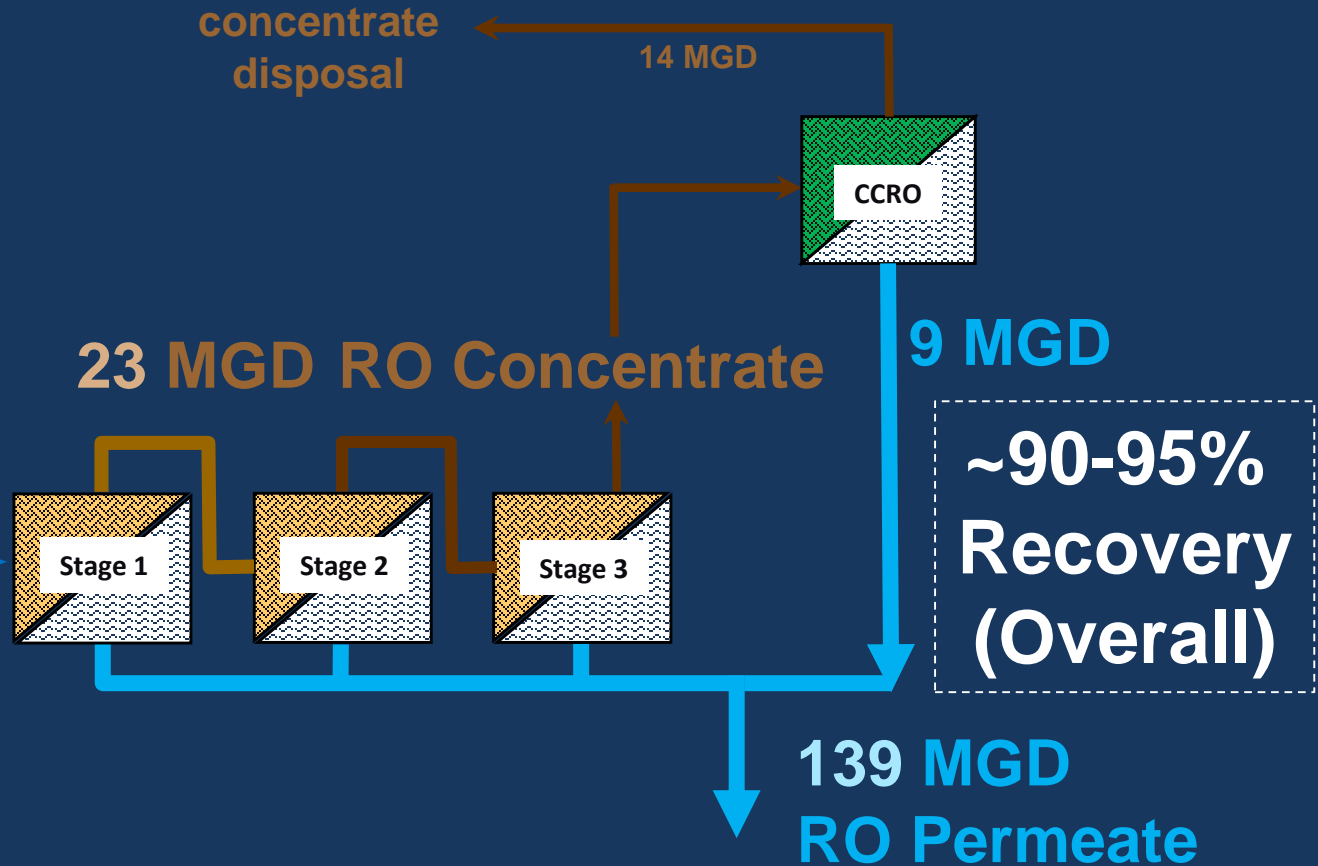
85%
Recovery

130 MGD
RO Permeate



Hypothetical:

153 MGD
RO Feed
(MF effluent)





CCRO Pilot Testing

- Current status / progress:
 - Treating plant **RO concentrate** as the feed water
 - Recovery is 57-61% (corresponding to **91%** overall)
 - Successfully achieved ~ 2 mo. interval between cleanings. Using plant RO feed in side conduit.
 - Two sampling events for comprehensive product water quality analysis
 - Planning for additional USBR grant-required tasks (e.g., virus challenge)

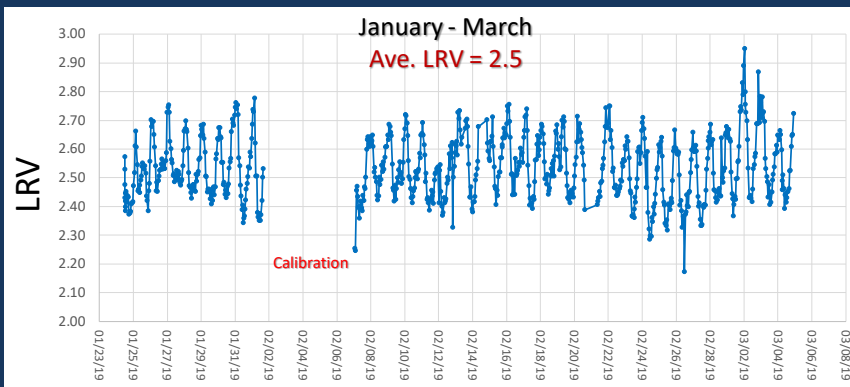


Partners:
Desalitech
Jacobs
Carollo



RO Membrane Integrity Study

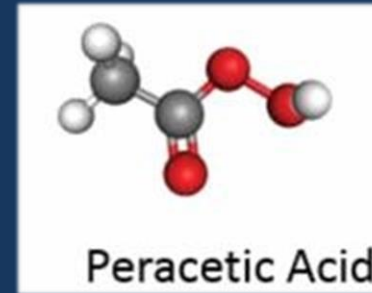
- Objective: to evaluate **novel methods** for ensuring RO process **integrity** via *online water quality monitoring* – to achieve greater regulatory credit toward required virus removal
- Update: Data collected on ATP presented at WaterReuse conference





Membrane Biocide Evaluation

- Objective: **test a replacement for chlorine** (used to control MF and RO membrane biofouling) to avoid undesirable byproducts in finished water
- USBR grant proposal is pending
- Status: “control” pilot underway (using chlorine)



Partners:
Stanford U.



Wastewater Virus LRV at OCSD

- Objective: establish degree of **virus removal by OCSD** treatment that precedes OCWD's advanced purification, toward regulatory credit
- Status: Test plan under review by DDW



Partners:
OCSD
MSU

Photo: Field concentration of water sample by UF filter



Questions?

Summary:

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- Wastewater Virus LRV Study [MWD grant + WRF grant]