ALAMEDA COUNTY WATER DISTRICT

43885 So. Grimmer Boulevard
Fremont, CA  94538

OPERATIONS & WATER QUALITY COMMITTEE

AGENDA

Wednesday, June 3, 2020

4:15 p.m.

ACCESSIBLE PUBLIC MEETINGS: Upon request, ACWD will provide written agenda materials in appropriate alternative formats, or disability-related modification or accommodation, including auxiliary aids or services, to enable individuals with disabilities to participate in public meetings. Please send a written request at least 72 hours before the meeting to the District Secretary, ACWD, 43885 S. Grimmer Blvd., Fremont, CA 94538, or to gina.markou@acwd.com stating your name, mailing address, phone number, and brief description of the requested materials and preferred alternative format or auxiliary aid or service.

MEMBERS OF THE PUBLIC MAY PARTICIPATE IN THIS MEETING VIA WEBINAR https://us02web.zoom.us/j/82466043463 OR BY CALLING ANY OF THE FOLLOWING PHONE NUMBERS: 1-669-900-9128 or 1-346-248-7799 or 1-301-715-8592 FOLLOWED BY 824 6604 3463.

MEMBERS OF THE PUBLIC MAY NOT ATTEND THIS MEETING IN PERSON. DUE TO THE COVID-19 PANDEMIC AND IN ACCORDANCE WITH GOVERNOR NEWSOM’S EXECUTIVE ORDER N-25-20 WHICH SUSPENDS PORTIONS OF THE BROWN ACT, THIS MEETING WILL BE CONDUCTED BY WEBINAR/TELECONFERENCE ONLY.

1. Newark Desalination Facility Source Well Pilot Study
   Presenter: Ranga Sampath

2. Public Comments
NDF Process Overview

Aquifer Reclamation Program Wells
Brackish water is pumped from Aquifer Reclamation wells.

Static Mixer
Upon entering the Desalination Facility, chemicals are mixed with the water to prevent the crystallization of salts on the reverse osmosis membranes.

Cartridge Filters
Cartridge filters remove trace amounts of silt and particulate matter from the water.

Reverse Osmosis Feed Pumps
High pressure pumps force the pretreated water through the reverse osmosis membranes.

Two-Stage Reverse Osmosis Skids
The semi-permeable reverse osmosis membranes allow water molecules and gases to pass through. Salts are left behind.

Decarbonators
A decarbonator removes excess carbon dioxide from the water to minimize corrosion.

Clearwell
In the clearwell, the water is blended with well water to add back minerals and enhances taste.

Blended Product Water Pump Station
The finished water is pumped into the distribution system so that it can flow to local homes and businesses.
NDF Supply Well Locations
Manganese Build Up
(in prefilters)

Membrane Fouling
Darvon 1 – Usage Potential

- NDF expansion is limited since shallow brackish groundwater cannot be treated at the NDF
- Darvon 1 has potential as a groundwater RO feed source - it is currently connected to the raw water pipeline.
- Explore using both Cedar 2 and Darvon 1 as feed supply and re-visit the option of mixing the raw waters from these different aquifers, given that water chemistry in these wells has changed.
Pilot Study Goals

- Determine if Newark (Darvon 1) and CF aquifer water can be safely blended as NDF supply water without fouling the membranes
- Verify if dissolved oxygen (DO) is responsible for manganese oxidation
- If DO is not a contributing factor, verify if the most likely factors are colloidal and sub-colloidal particles that are passing through the filters
Pilot Study Approach

- Review past and current operational data to corroborate the hypothesis
- Conduct particle size fractionation of all sources
- Prepare a testing plan and run the pilot
- Using consultant services (Water Quality & Treatment Solutions, Inc)
Pilot Study Phases

- Phase I – test DO hypothesis by operating the two RO trains in parallel with CF water. Dose one train influent with DO
- Phase II – operate the two trains in parallel. Introduce CF water only on one train and a blend of Cedar 2 and CF water on the other
- Run each phase for three months
- Membrane autopsy at the end of each phase
Study Outcome – Potential Benefits

- Help identify the most likely contributor to RO fouling
- Provide a roadmap to the introduction of Darvon 1 and Cedar 2 well water directly to the RO process
- Help identify potential additional Newark Aquifer well sites for raw water
- Help provide potential treatment alternatives to prevent membrane fouling
QUESTIONS?