2020 SOUTHERN CALIFORNIA WATER CONFERENCE

Innovation in Water

Rob Hills,
Director of Operations,
Cucamonga Valley Water District

Joe Zoba,
General Manager,
Yucaipa Valley Water District

Jeff Noelte,
Director of Engineering and Operations,
East Valley Water District

Robert Starr,
Strategic Technologies,
The Toro Company
Moderator

3A Nitrate Treatment Facility

Cucamonga Valley® Water District

Service Beyond Expectation

Cucamonga Valley Water District
Service Beyond Expectation

District Overview

Water & Wastewater Services

- 190,000 + Customers
- 48,000+ water connections
- 37,000+ sewer connections

Communities Served

- Rancho Cucamonga
- Portions of Fontana, Ontario & Upland

Drinking Water Sources

- Groundwater (43%)
- Local surface water (7%)
- Imported surface water (50%)

Cucamonga Valley® Water District

Service Beyond Expectation

Innovation in Water

Innovative technology

- Biological nitrate reduction

Innovative Design, Procurement & Construction Approach

- District self-performed civil design and CM
- Negotiated construction and equipment contract directly with vendor (WesTech)

Innovative Funding

- Received $2M grant from CA Prop 1

Cucamonga Valley Water District
Service Beyond Expectation

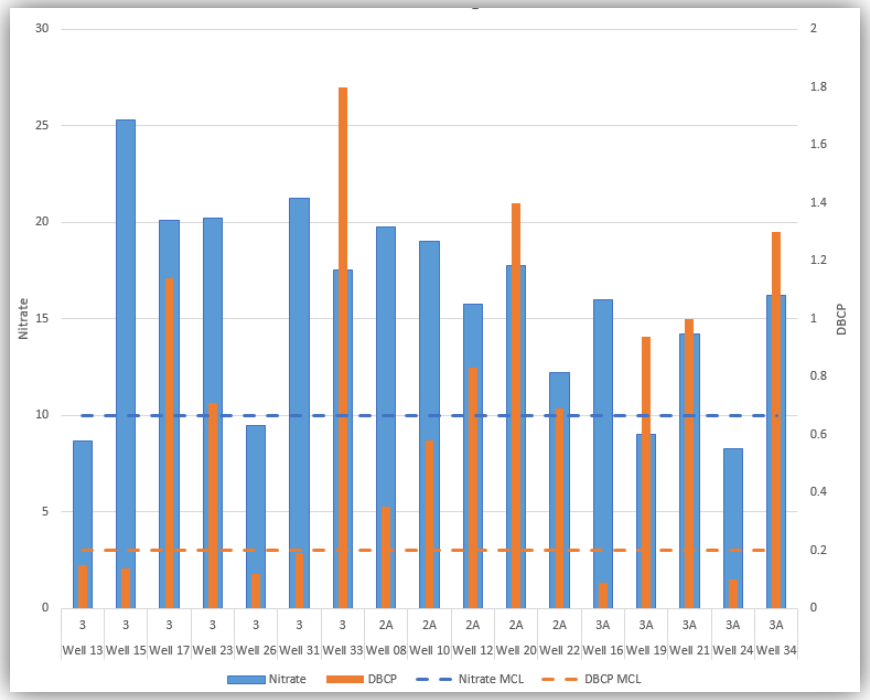
Background

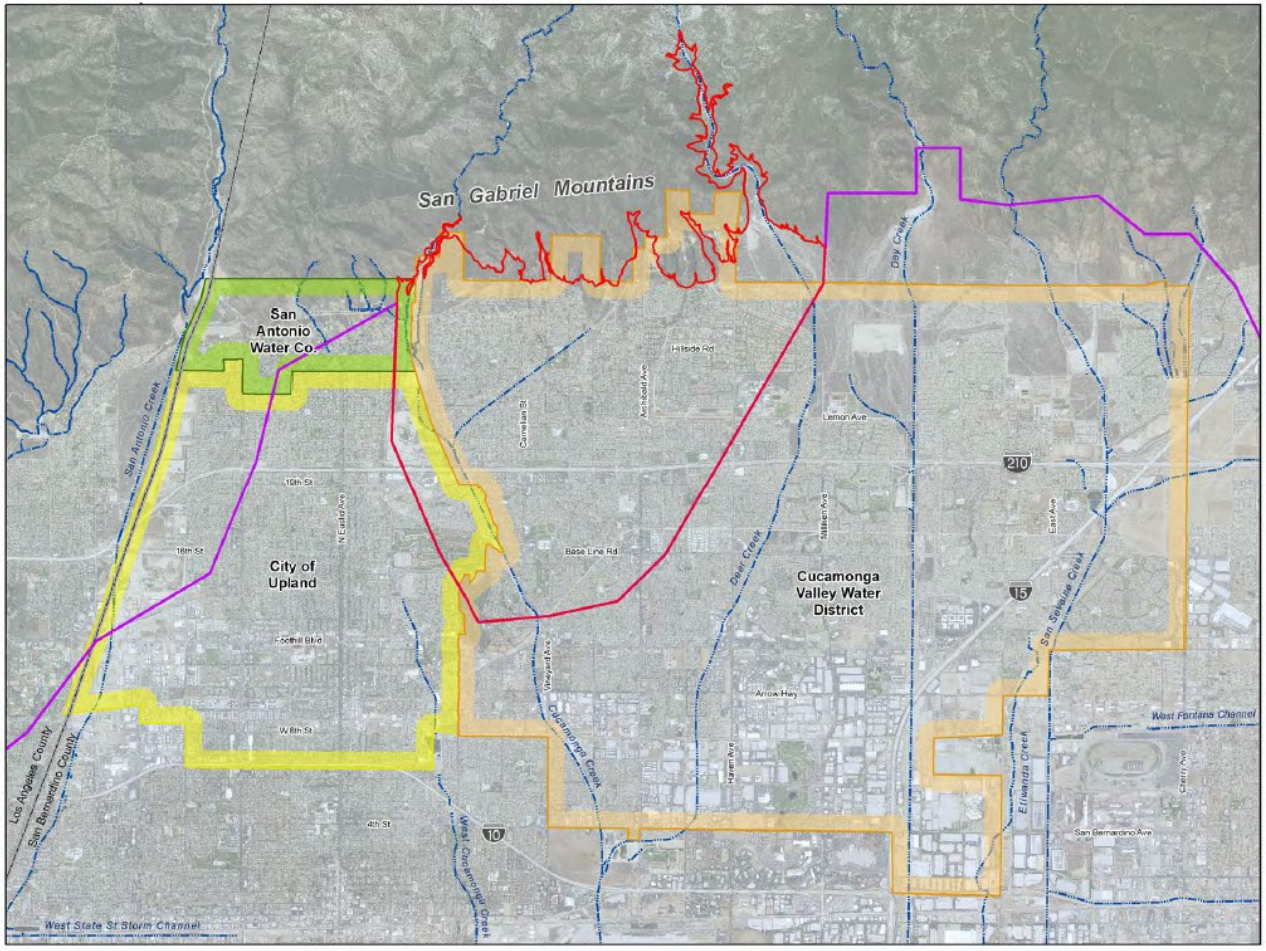
Cucamonga Basin

- Total wells = 17
- Permitted wells = 8
- Wells < Nitrate and/or DBCP MCL = 3
- Historical production 3,000 – 10,000 AF

Biological pilot projects

- APT Water AroNite – 2011 (Nitrate)
- Carollo BIOTTTA – 2013 (DBCP)
- DDW Conditional Acceptance





Main Features

- Cucamonga Basin Adjudicated Boundary
- Chino Basin Adjudicated Boundary

Water Service Agencies

- Cucamonga Valley Water District
- San Antonio Water District
- WECWC/City of Upland

Streams and Flood Control Channels

2014 NAIP Mosaic +/- 6 meter Resolution

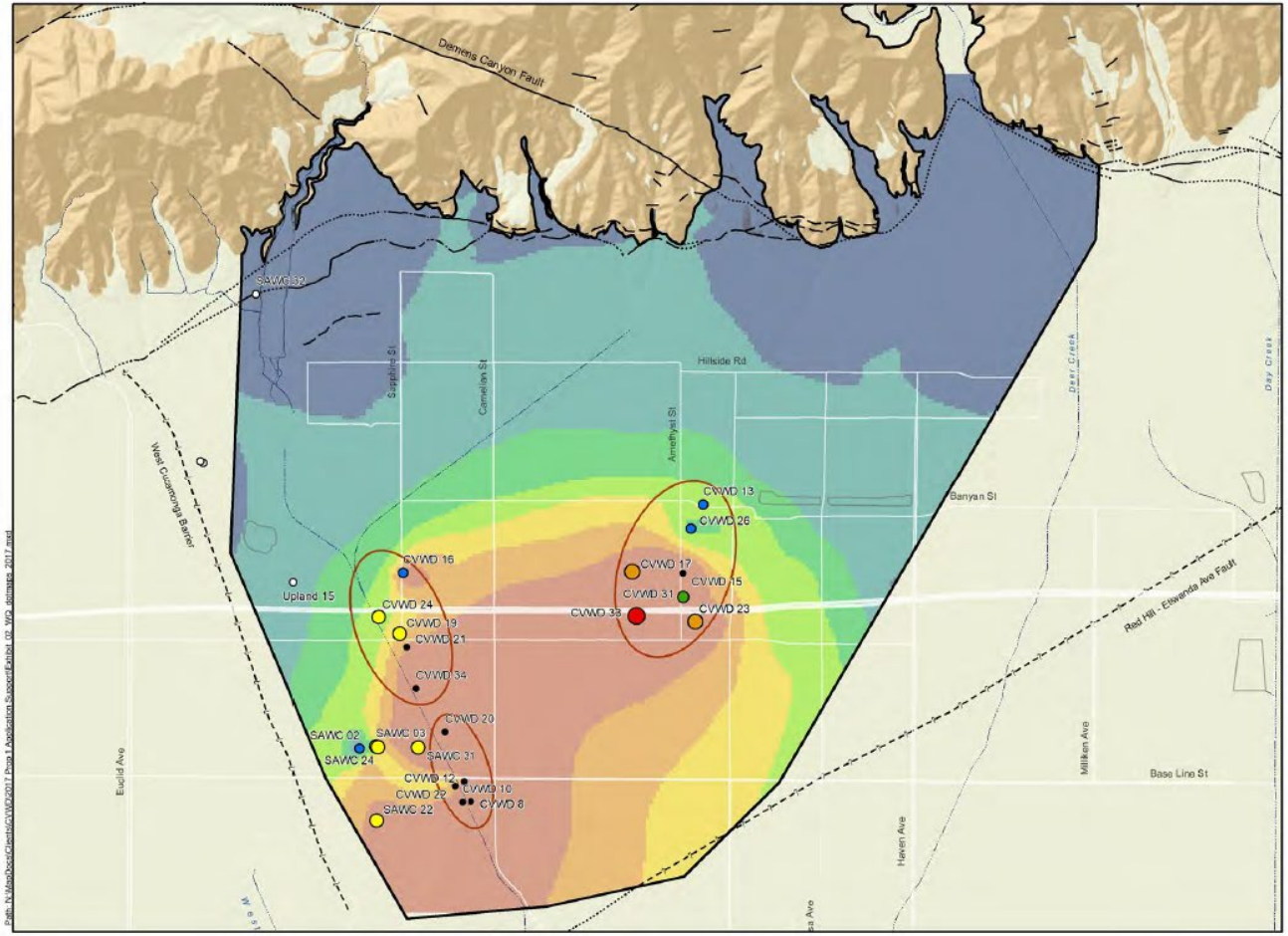
WEI
Wildermuth Environmental, Inc.

Author: MAB
Date: 7/27/2017
Document Name: Exhibit_1_BoundaryMap_v3

0 2 4 Miles

0 2 4 KM

Hydrogeologic and Administrative Boundaries



1,2-Dibromo-3-chloropropane
Maximum Concentration
(Jul 2012 - Jun 2017)
(ug/L)

- 0 < 0.01
- 0.01 - 0.1
- 0.1 - 0.2
- 0.2 - 0.4
- 0.4 - 0.8
- > 0.8

MCL = 2 ug/L

Nitrate-Nitrogen (NO_3-N)
2017 Concentration
(mg/L)

- < 2
- 2 - 4
- 4 - 6
- 6 - 8
- 8 - 10
- 10 - 12
- > 12

MCL = 10 mg/L

- Active Production Wells with No Data
- Cucamonga Valley Water District Wellfield

Geology

Water-Bearing Sediments

Undifferentiated Alluvial Deposits (Pleistocene to Holocene)

Non-Water-Bearing Sediments

Undifferentiated Cretaceous to Tertiary Igneous, Metamorphic, and Sedimentary Rocks, and Quaternary Surface and Landslide Deposits

Faults

- Location Certain
- Location Concealed
- Location Approximate
- Location Uncertain

Other Features

- Cucamonga Adjudicated Boundary
- Streams & Flood Control Channels
- Flood Control & Conservation Basins

Geologic map modified from Morton et al. (2003)

Prepared by:
WEI
Wildermuth Environmental, Inc.

Author: CS
Date: 7/27/2017

0 0.5 1 Miles
0 0.5 1 1.5 KM

Recent Nitrate as Nitrogen (NO_3-N) and 1,2-Dibromo-3-chloropropane Concentrations in Groundwater

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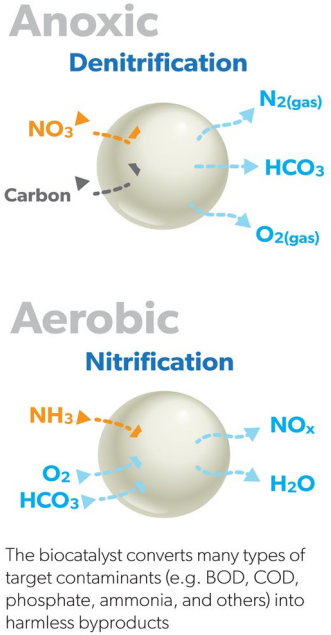
Innovative Tech - MicroVi DeNitroVi

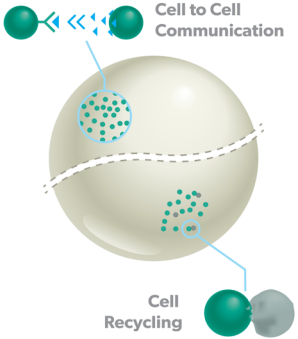
- **What does it do and how does it work?**



The biocatalyst converts many types of target contaminants (e.g. BOD, COD, phosphate, ammonia, and others) into harmless byproducts

Quorum Sensing

- Cells communicate with each other to coordinate how they function and behave as a community
- Result: Stable cell population, resistance to toxicity



Cryptic Growth

- Organisms "consume" dead cells
- Result: No net production of biosolids

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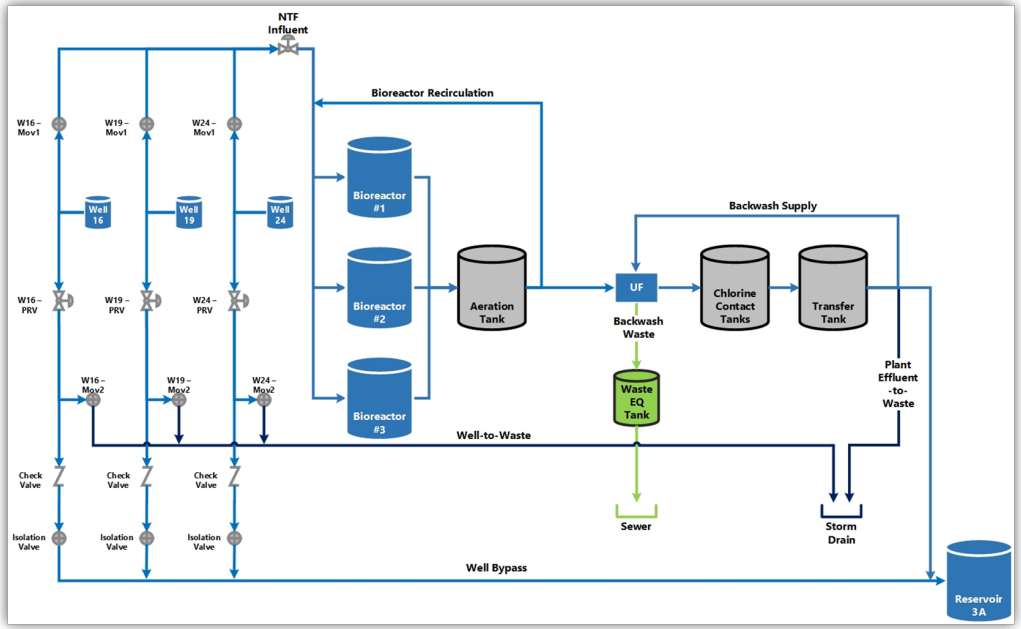
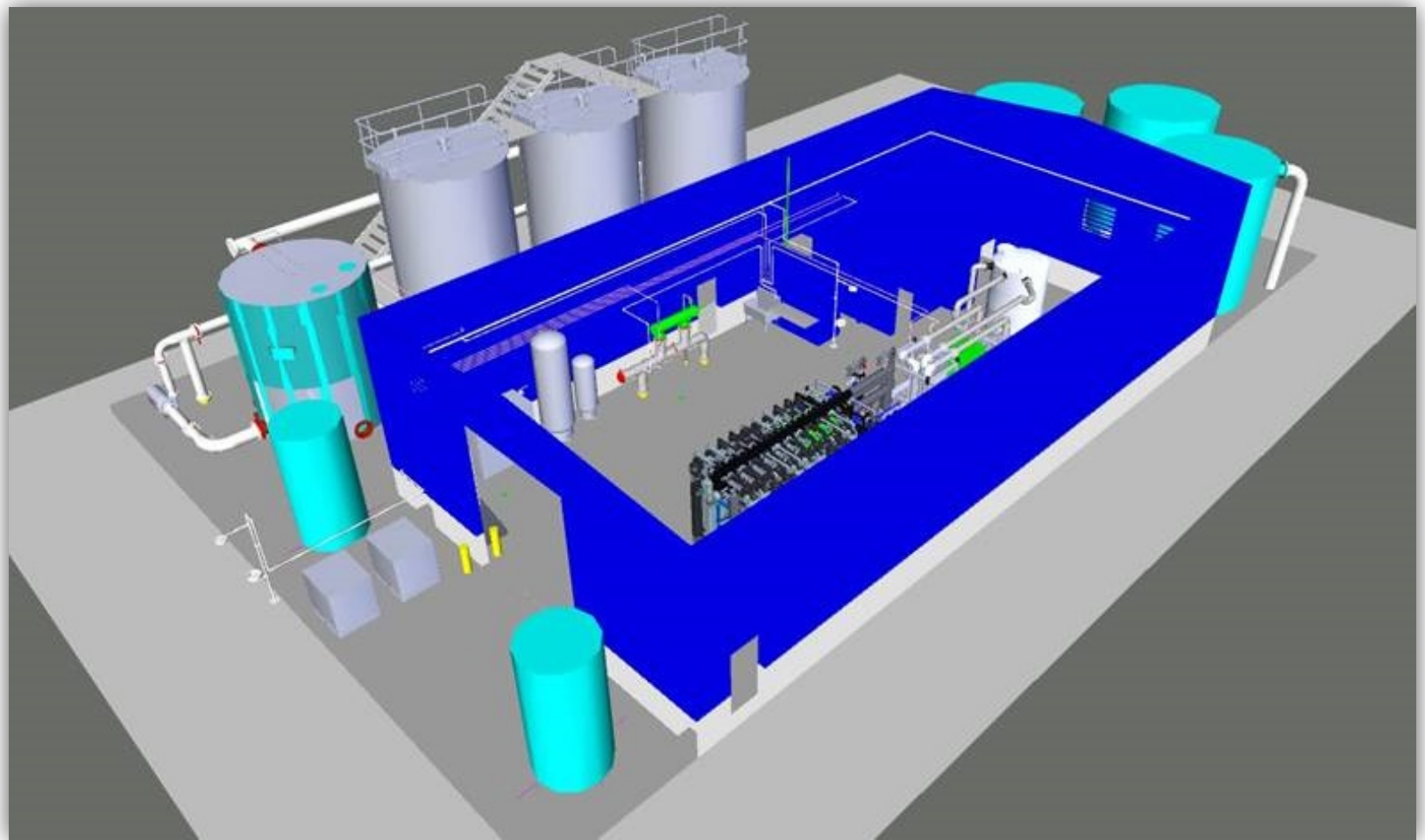
Overview of processes

- Influent Well Flow Control Facility
- Bio-reduction
- Aeration
- Ultrafiltration
- Disinfection
- NTF Effluent Equalization/Transfer
- 3A Reservoir



January 2019



January 2020

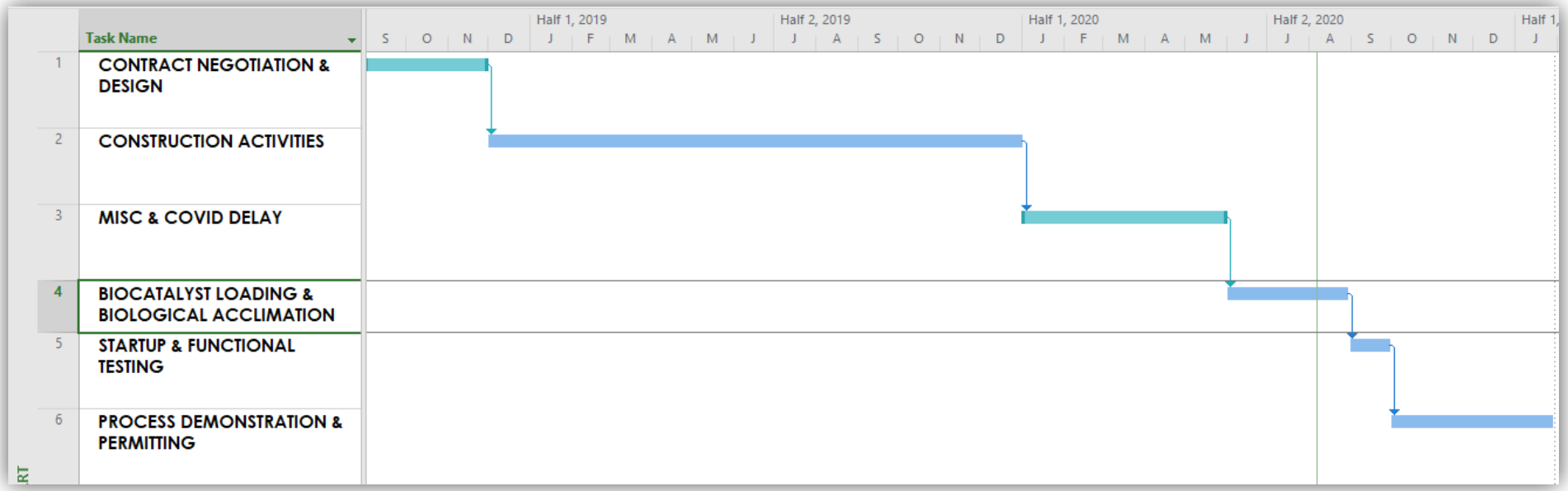
January 2019

January 2020

Cucamonga Valley Water District

Service Beyond Expectation

Schedule



Contact

Rob Hills

Director of Operations

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Cucamonga Valley Water District

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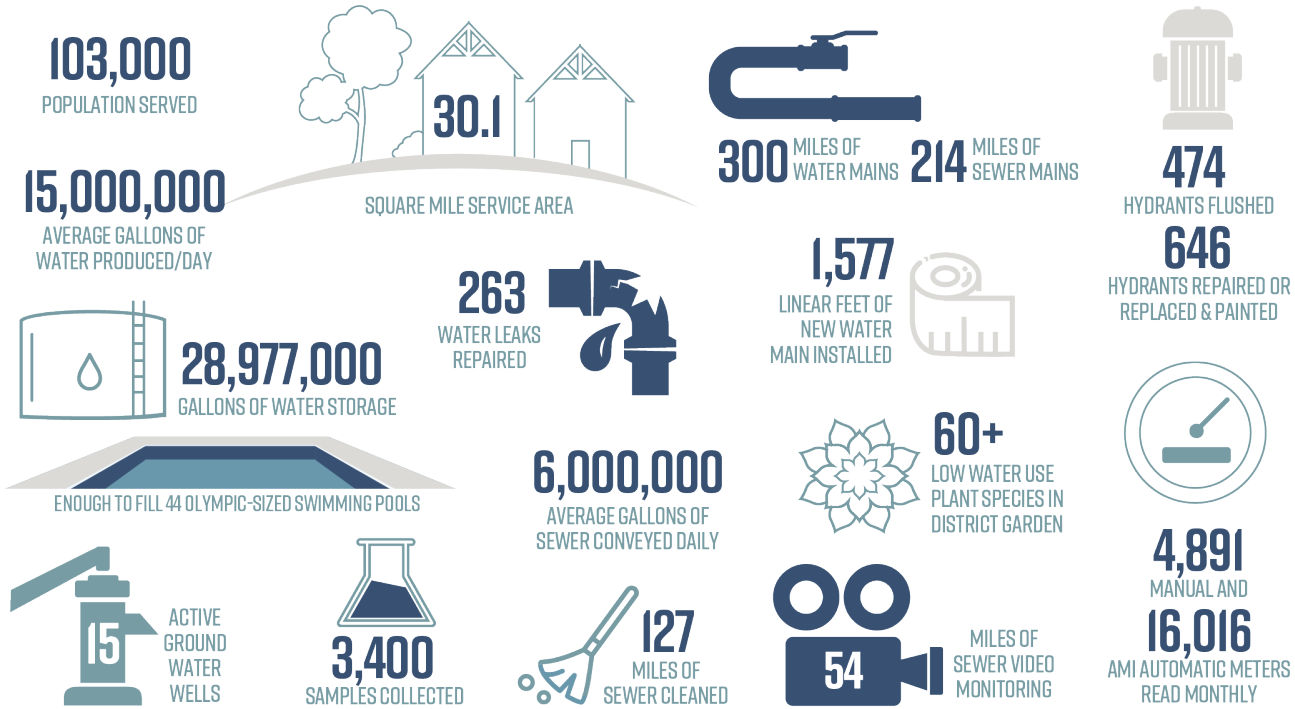
STERLING NATURAL RESOURCE CENTER

EAST VALLEY WATER DISTRICT

DISTRICT-AT-A-GLANCE

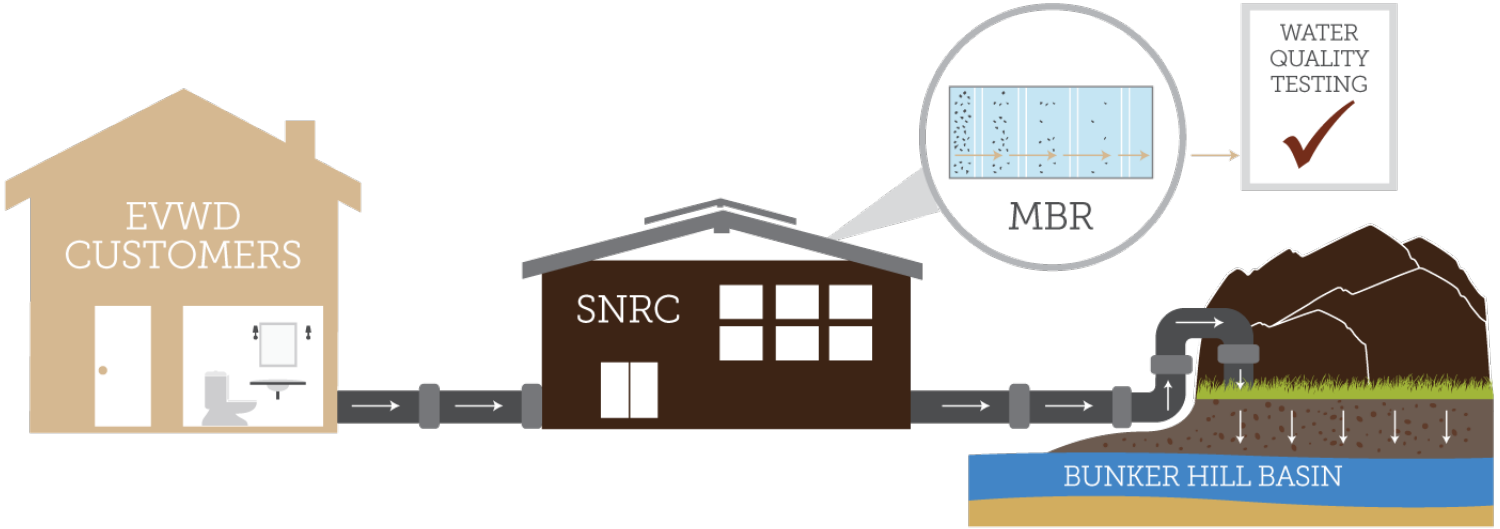


PROJECT OVERVIEW

TREATMENT PLANT OVERVIEW

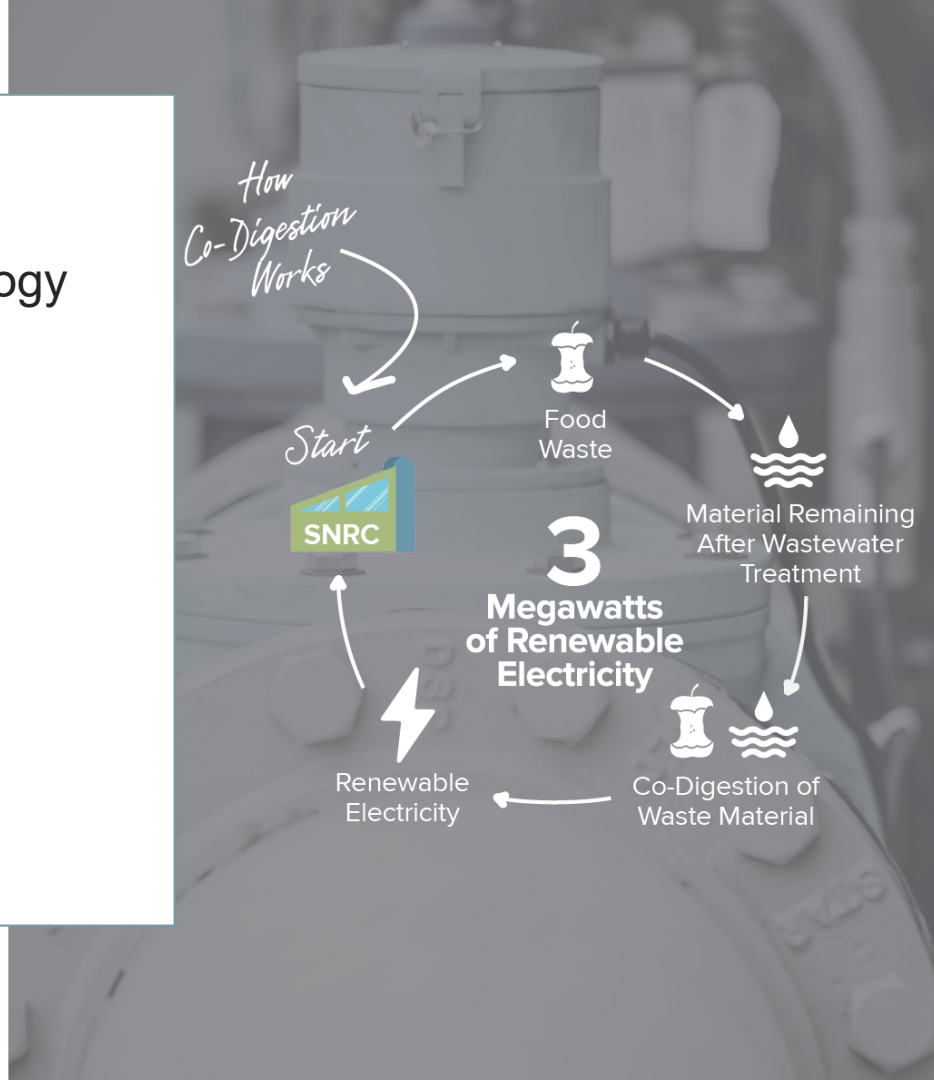
MEMBRANE BIOREACTORS (MBR) TECHNOLOGY

- Membrane Bioreactors
  - Produce Better Water than Conventional Treatment
- Filters Microscopic Particles and Organisms
- MBR + UV Disinfection Produces Water that Meets All Requirements for Recharge



MAXIMIZING RESOURCES

- State-of-The-Art Co-Digestion Technology
- Create Renewable Electricity
- Renewable Electricity Will Offset Operating Costs
- Extra Energy Will Be Transferred Onto SCE's Grid



COMMUNITY PARTNERSHIPS

- San Bernardino City Unified School District
  - Water and Resource Management Pathway
  - Water Ecology Learning Lab (WELL)
- San Bernardino County Superintendent of Schools
  - ROP/Career Technical Education

COMMUNITY BENEFITS

- Groundwater Replenishment
  - Up to 8 million gallons of water per day
- Educational Courses
  - Compliment Science, Technology, Engineering and Math (STEM) Programs
- Community Space
- Community Programs
- Neighborhood Improvements

KEEPING RESIDENTS ENGAGED

- Time-Lapse Cameras
- Social Media
  - Boosted campaigns to help reach more residents
- Mailers Included with Water Bills
- Handouts
- Local Newspaper
- Consumer Confidence Report

THE STERLING NATURAL RESOURCE CENTER IS FUNDED IN PART BY:

Funding for this Sterling Natural Resource Center project has been provided in full or in part by the Proposition 1 - the Water Quality, Supply, and Infrastructure Improvement Act of 2014 and the Clean Water State Revolving Fund through an agreement with the State Water Resources Control Board. California's Clean Water State Revolving Fund is capitalized through a variety of funding sources, including grants from the United States Environmental Protection Agency and state bond proceeds.

The Urban Greening Program is part of California Climate Investments, a statewide program that puts billions of cap-and-trade dollars to work reducing greenhouse gas emissions, strengthening the economy and improving public health and the environment—particularly in disadvantaged communities. The cap-and-trade program also creates a financial incentive for industries to invest in clean technologies and develop innovative ways to reduce pollution. California Climate Investment projects include affordable housing, renewable energy, public transportation, zeroemission vehicles, environmental restoration, more sustainable agriculture, recycling and much more. At least 35 percent of these investments are made in disadvantaged and low-income communities. For more information, visit California Climate Investments.

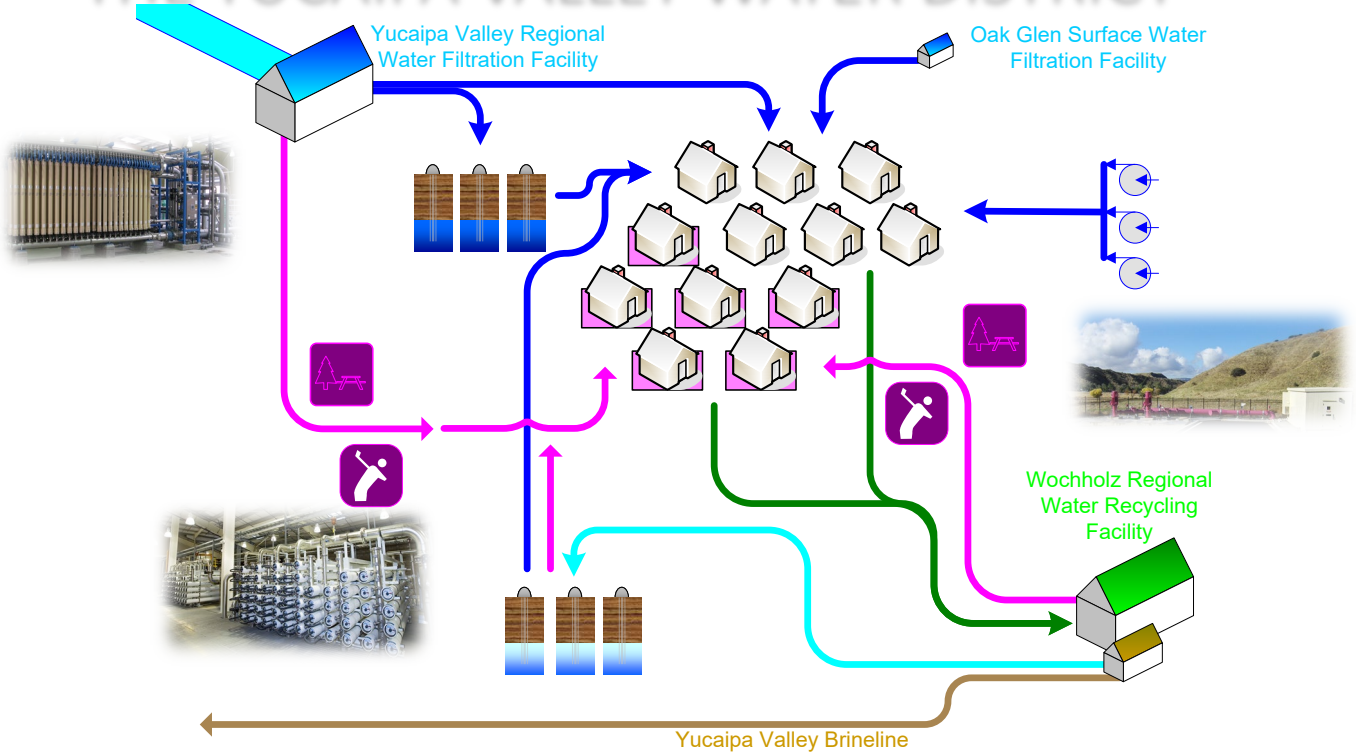

discussion

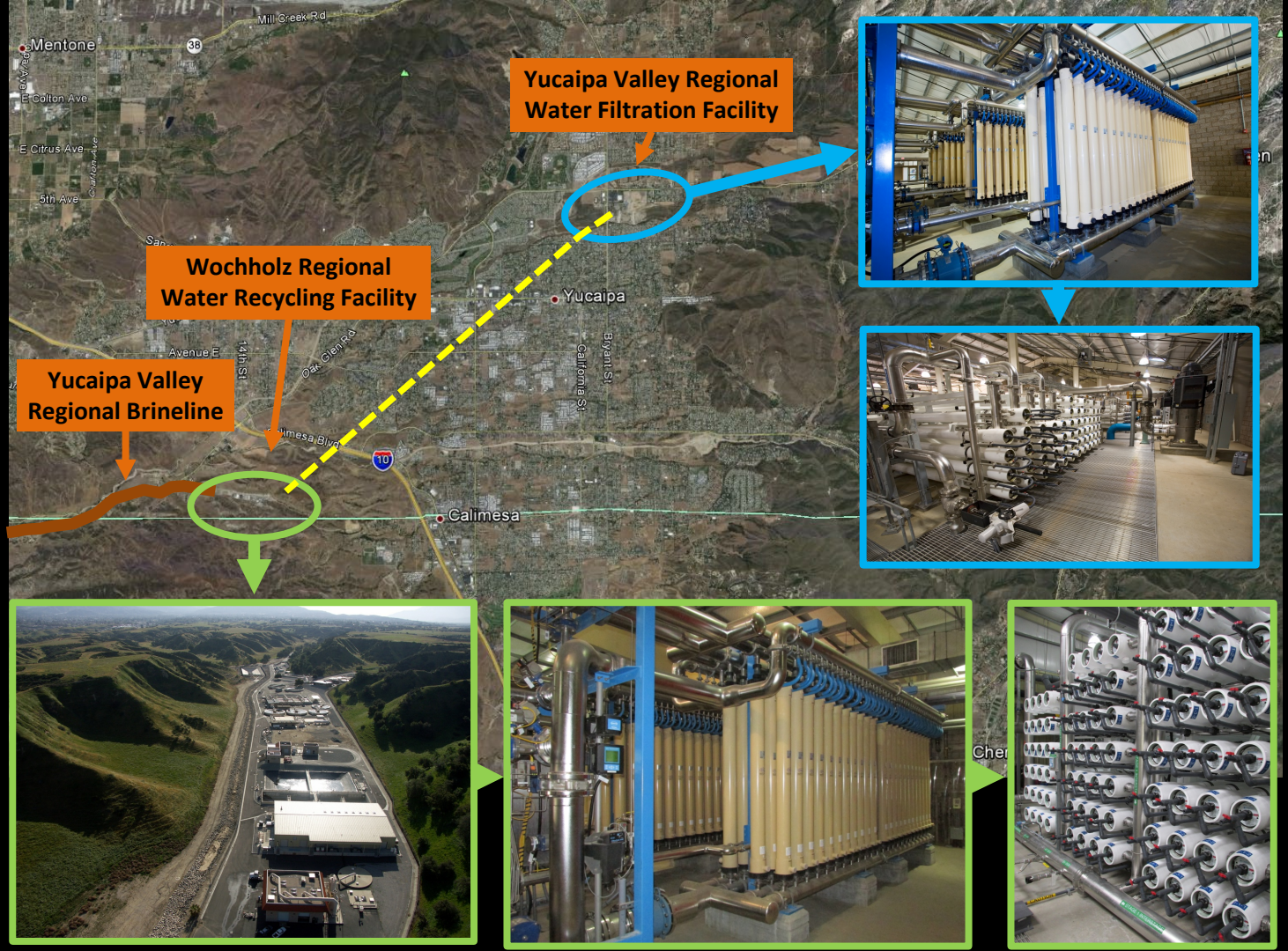
THE BENEFITS OF A DUAL PLUMBED COMMUNITY

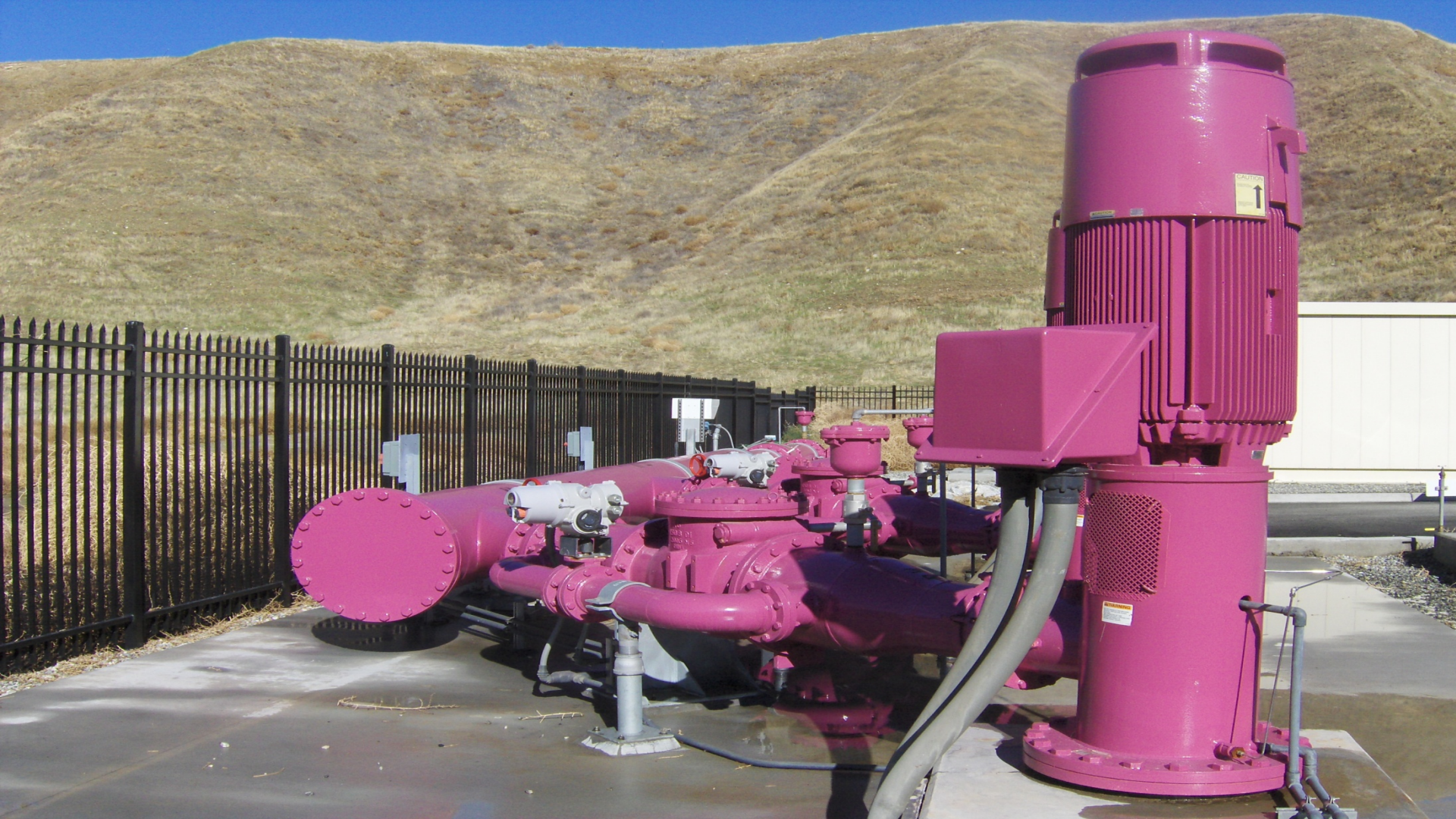
JOSEPH ZOBA, GENERAL MANAGER

YUCAIPA VALLEY WATER DISTRICT

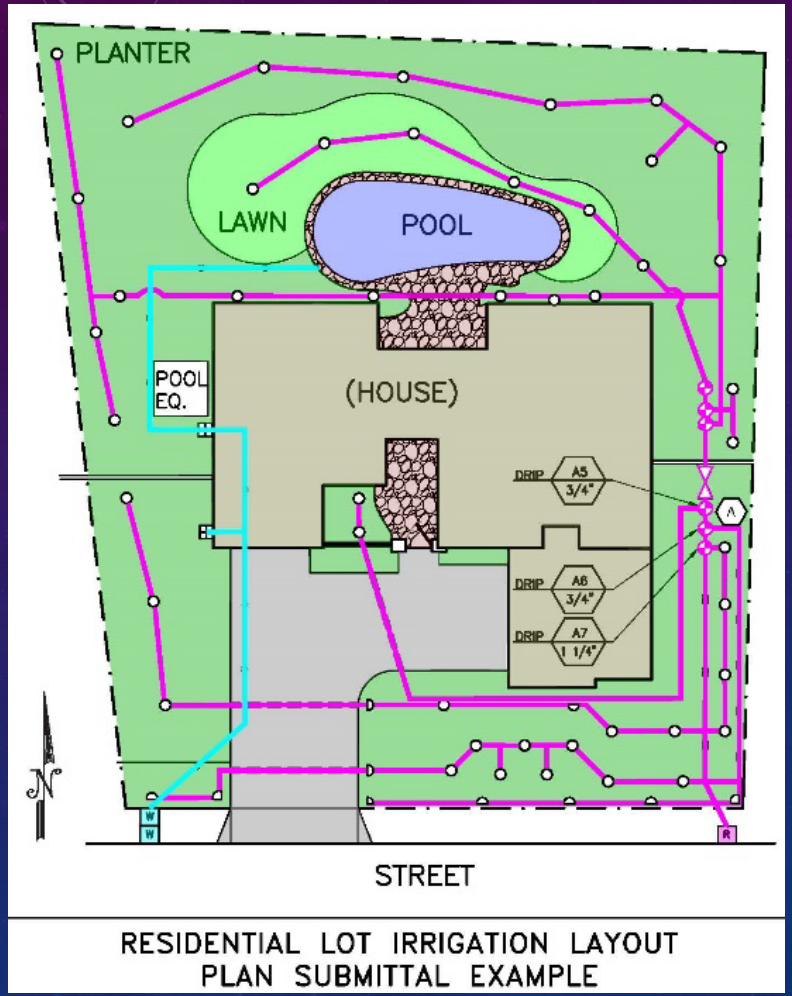
WATER RESOURCE MANAGEMENT SCHEMATIC FOR THE YUCAIPA VALLEY WATER DISTRICT



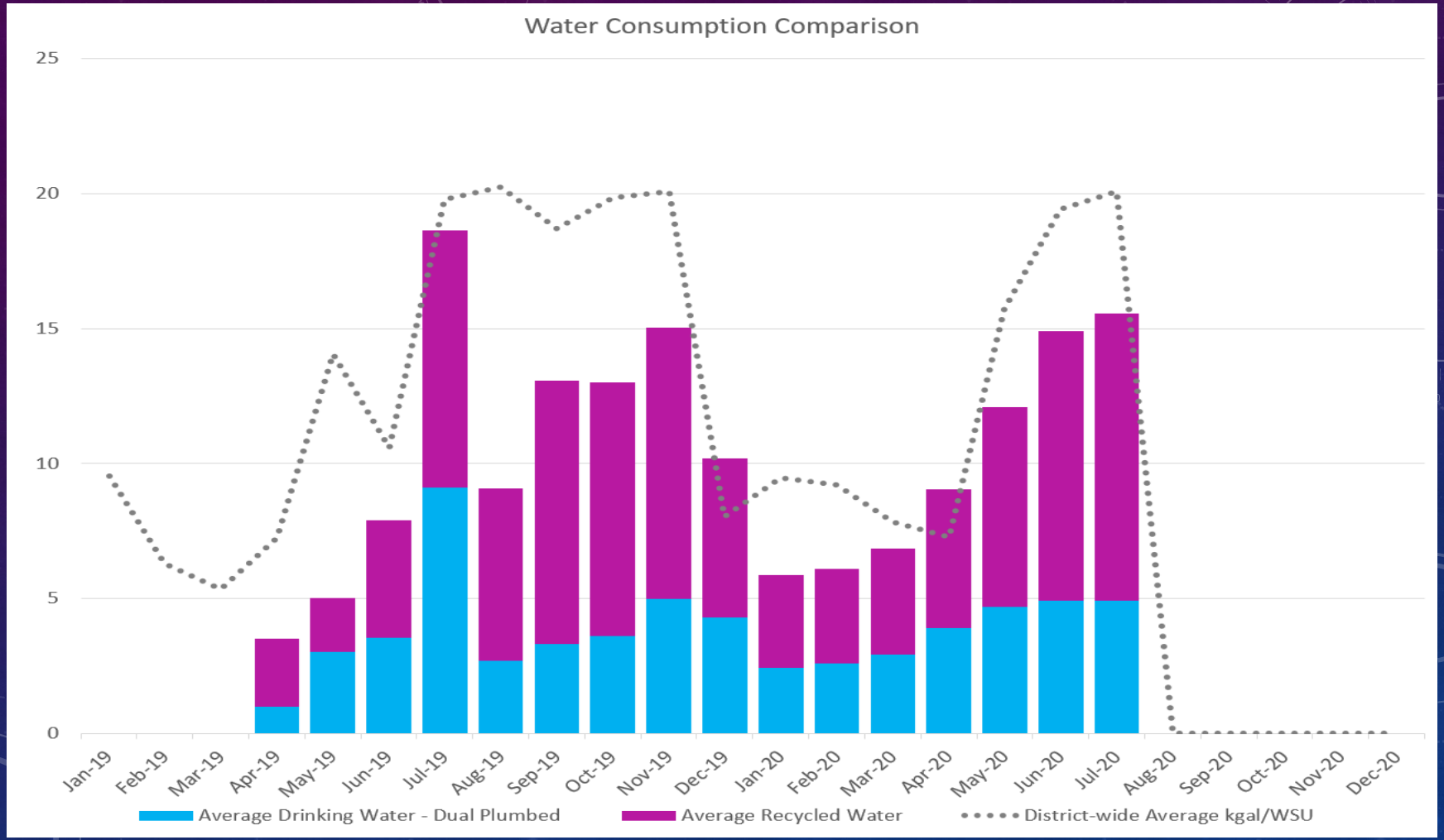

Yucaipa Valley Regional Water Filtration Facility
Wochholz Regional Water Recycling Facility
Yucaipa Valley Regional Brineline
Mentone
Yucaipa
Calimesa
Mill Creek Rd
E Colton Ave
E Citrus Ave
5th Ave
Avenue E
14th St
Oak Glen Rd
California St
Bryant St
10

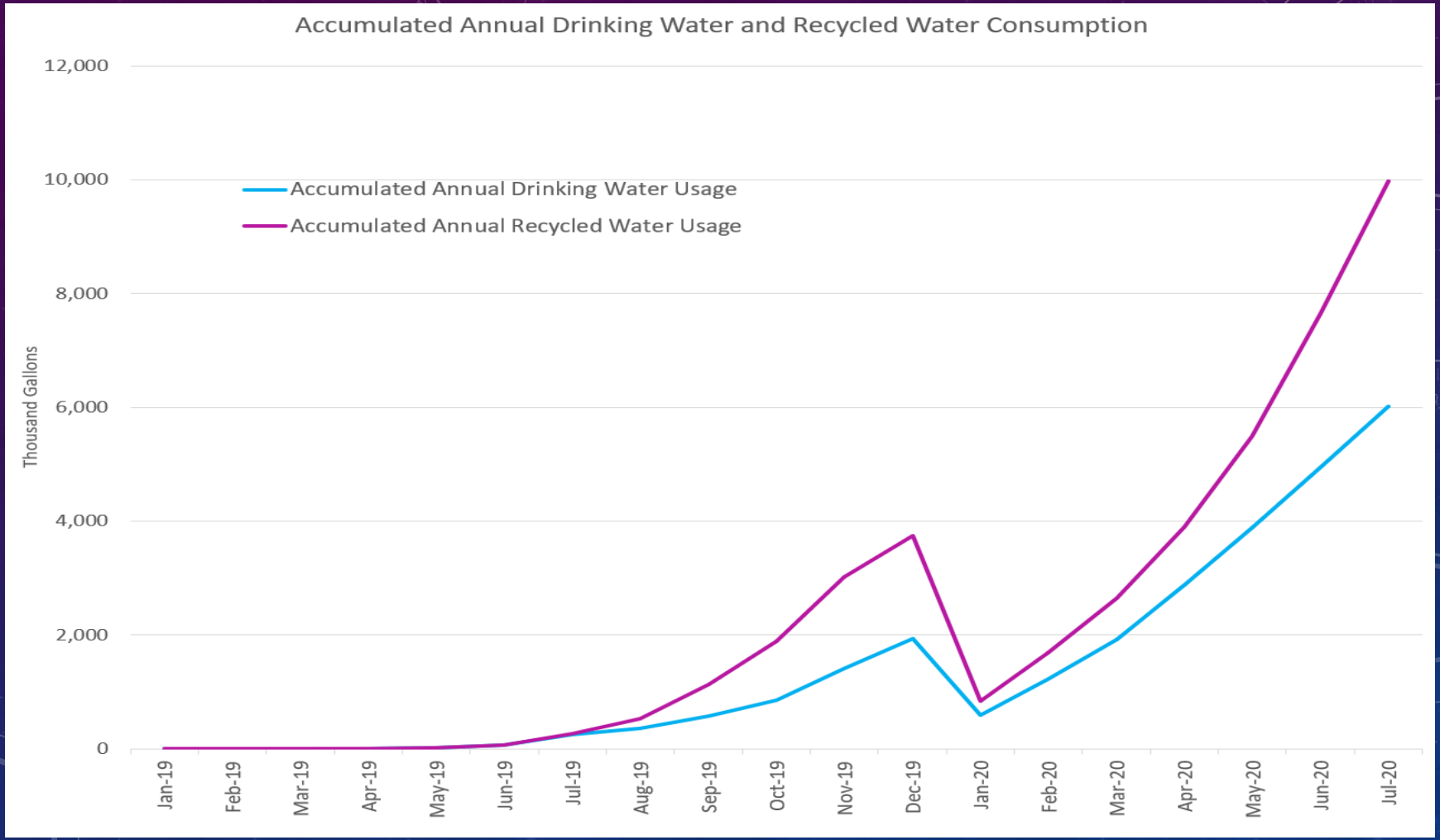


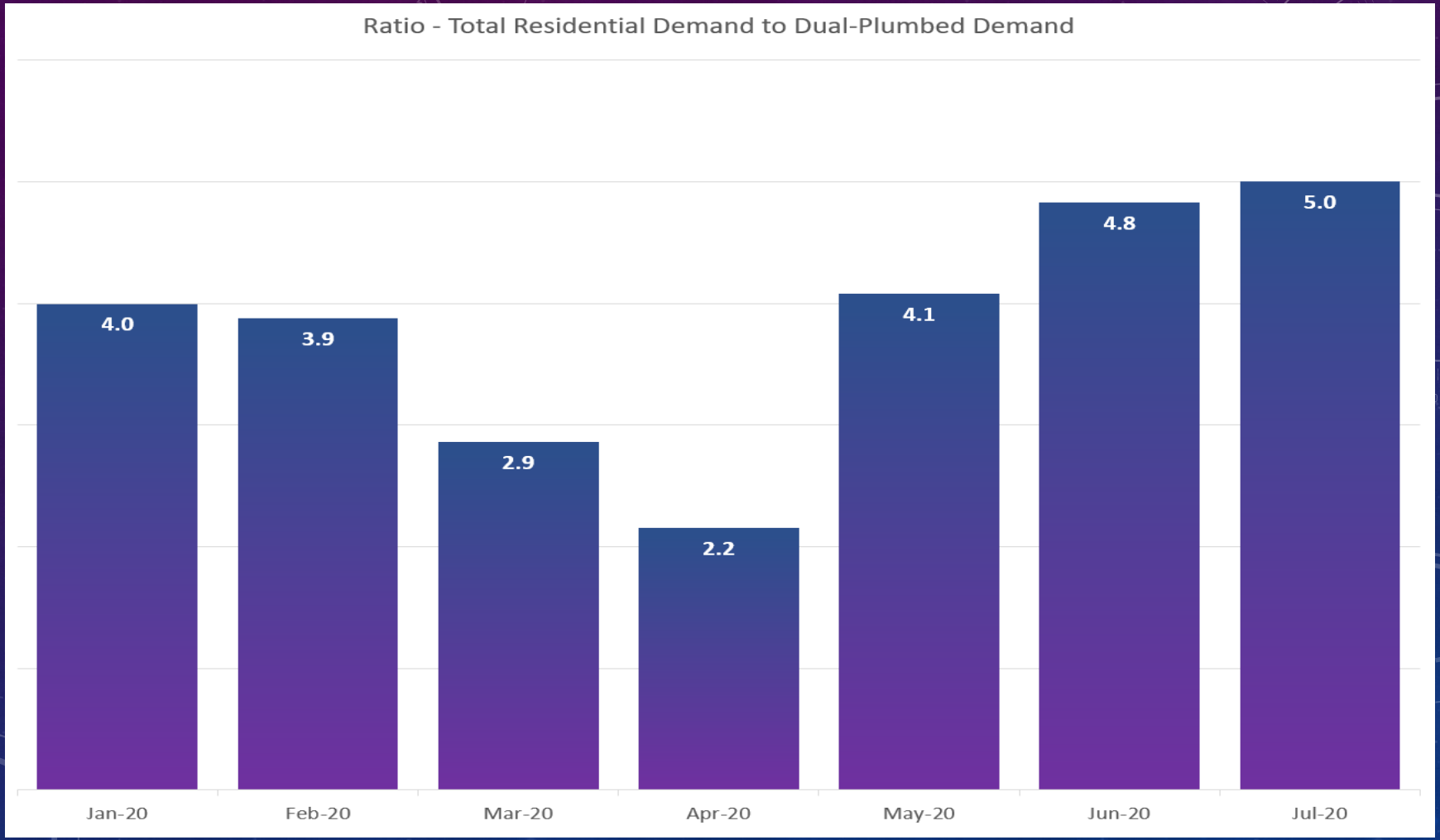
THE STRATEGIC SUSTAINABILITY OF DUAL PLUMBED HOMES



RESIDENTIAL LOT IRRIGATION LAYOUT
PLAN SUBMITTAL EXAMPLE


Water Consumption Comparison
25
20
15
10
5
0
Jan-19
Feb-19
Mar-19
Apr-19
May-19
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
Average Drinking Water - Dual Plumbed
Average Recycled Water
District-wide Average kgal/WSU


Accumulated Annual Drinking Water and Recycled Water Consumption
12,000
10,000
8,000
6,000
4,000
2,000
0
Thousand Gallons
Accumulated Annual Drinking Water Usage
Accumulated Annual Recycled Water Usage
Jan-19
Feb-19
Mar-19
Apr-19
May-19
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20


Ratio - Total Residential Demand to Dual-Plumbed Demand
4.0
3.9
2.9
2.2
4.1
4.8
5.0
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20