Chapter Meeting

September 27, 2023
Vallecitos Water District

Thank you to our sponsor!

Agenda

- Welcome to Vallecitos Water District
- Chapter Updates
  - Funding Update
  - Regulatory Update
  - Call for officers
  - Upcoming events
- Sponsor Highlight
- Vallecitos Water District Recycled Water Program
- Fallbrook Public Utility District Recycled Water Program
- Tour of Meadowlark WRF (15 min drive)

Welcome to VWD

WATEREUSE SAN DIEGO

About VWD

- District founded in 1955
- Current population of 108,392
- 45 square mile service area (San Marcos, Vista, Carlsbad, Escondido, unincorporated areas)
- Governed by a 5-member Board of Directors
- 109+ skilled professionals
- Annual operating budget of $103.7M for FY 23/24
- $28.7M allocated for FY 23/34 CIP projects

Services

WATER: 22,211 accounts

- 14,189 acre-feet sold in FY 2022
- Imported water from Colorado River Aqueduct and State Water Project via the San Diego County Water Authority
- Purchase 2,750 acre-feet annually from OMWD
- Approximately 27% of District's annual supply is a direct connection to the Desalination Plant in Carlsbad

WASTEWATER: 20,742 accounts

- Average sewer flow – 7.25 MGD
- Average flow to Encina Wastewater Authority (EWA) –3 MGD
- Average EDU's added each FY – 360

RECYCLED WATER: OMWD and City of Carlsbad

- 2,575 acre-feet sold in FY 2022
- Recycle up to 74% of District's wastewater at Meadowlark Water Reclamation Facility (MRF)

Chapter Updates

WateReuse San Diego Officers

WATEREUSE SAN DIEGO

Funding Update

- USBR WaterSMART Planning and Project Design Grants
  - $400K, applications due October 17, 2023
- USBR WaterSMART Applied Science Grants
  - $200K, applications due October 17, 2023
- USBR WaterSMART Drought Resiliency Projects
  - $5M, applications due October 31, 2023
- USBR WaterSMART Large Scale Water Recycling
  - $180M, first applications due November 21, 2023

Regulatory Update: Industry Technical Leaders Forum

Conservation Regulations

Recycled Water Provisions

- Special Landscape Area Variance
- High TDS Variance
- Potable Reuse Incentive
- Indoor Standard Provision

Public Hearing Oct 4

Comments Due Oct 17

Clean Water State Revolving Fund

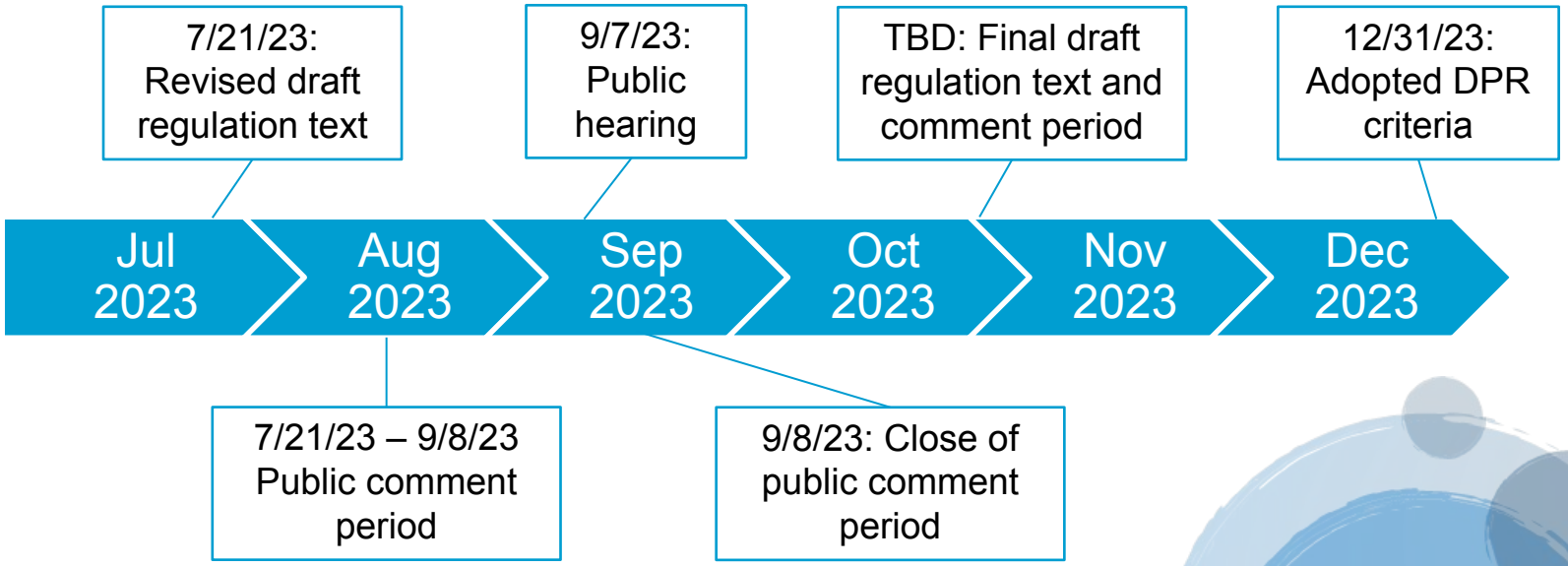
FY 23/24 Intended Use Plan adopted

- $50M cap for new projects
- Cut off score revised to 13
- Gap year in FY 25/26

Concern over sustainability of CWSRF

- Earmarks leaving little left for capitalization grants

DPR Reg Update: Timeline



DPR Reg Update: Highlights

Major Revisions in 2023 Draft

- Pathogen credit for blending, reservoirs, and aquifers
- Flexibility in BAC design
- Removal of sewershed surveillance requirement
- Addt'l requirement for T5 operators

Key Comments on 2023 Draft

- Need for broad alternatives clause
- T5 operator certification vs AWTO5 operator certification
- RWA vs TWA for chemicals
- Unified approach to CEC monitoring

Call For Officers

We will be holding annual elections for Chapter leadership before the end of the calendar year. For 2024, we'll be accepting nominations for: **President-Elect**, **Treasurer**, and **Director of Public Relations and Membership Outreach**.

Jocelyn Lu Morinishi (Past-President) is forming a nominating committee, so **email jmorinishi@brwncald.com if:**

- You're interested in participating in the Nominating Committee
- You're interested in serving on WRSD leadership board
- You have suggestions for colleagues you think would be good for WRSD leadership

2024 officer slate will be presented and election held in Q4 Chapter Meeting.

Upcoming Events

2023 WateReuse California

- November 5-7, 2023 in Indian Wells, CA

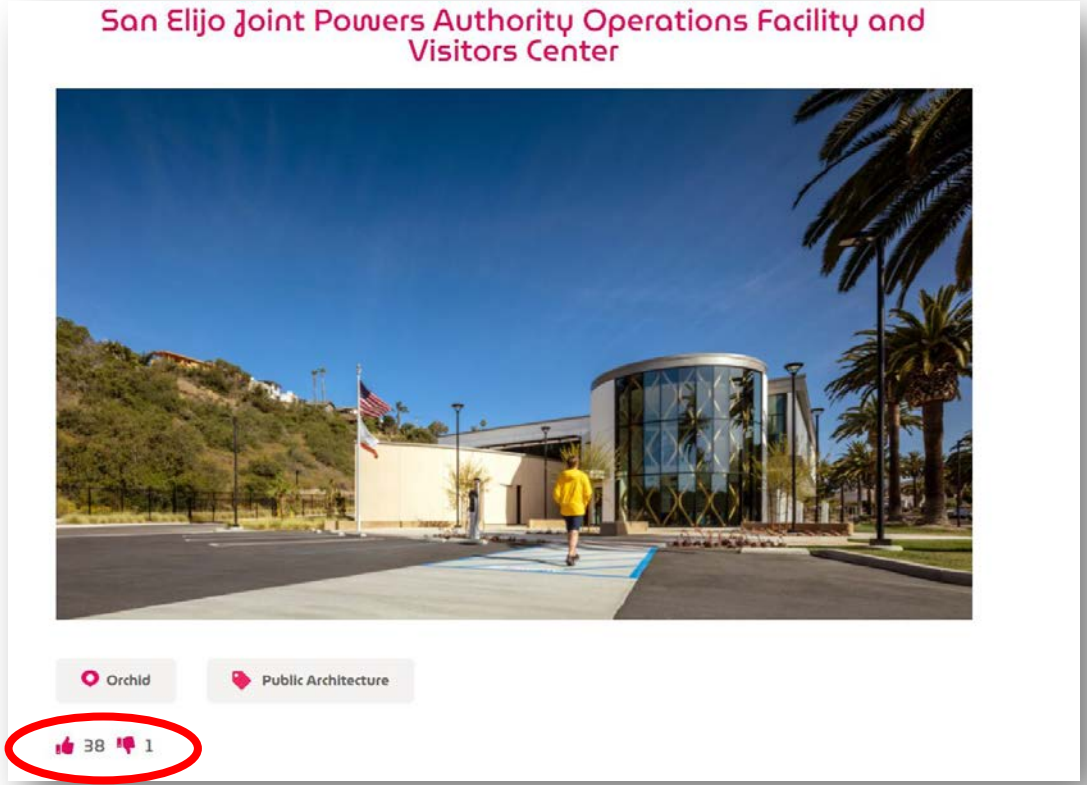
WRSD Q4 Chapter Meeting

- San Diego County Water Authority
- Regulatory roundtable and officer elections
- Happy hour to follow!

2024 WateReuse Symposium

- March 11-13, 2024 in Denver, CO
- Super Saver registration (Sep 20-Oct 11)
- Early Bird registration (Oct 11-Dec 13)

VOTE "ORCHID" ONLINE BEFORE SEPTEMBER 29TH



San Elijo Joint Powers Authority Operations Facility and Visitors Center - Orchids & Onions (orchidsandonions.org)

Sponsor Highlight

Kleinfelder

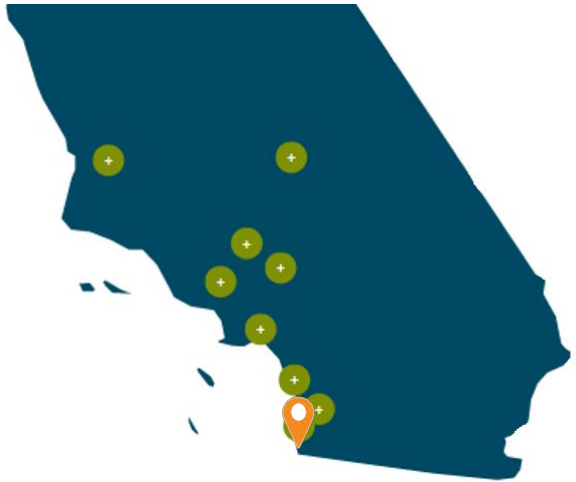
WaterReuse San Diego

KLEINFELDER *by the* NUMBERS

3,000+
staff companywide

85+ Offices
US, Canada & Australia

61 Years
of Engineering, Science & Construction Excellence

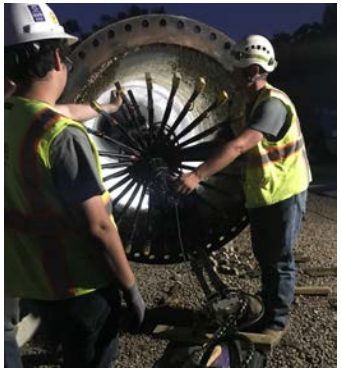


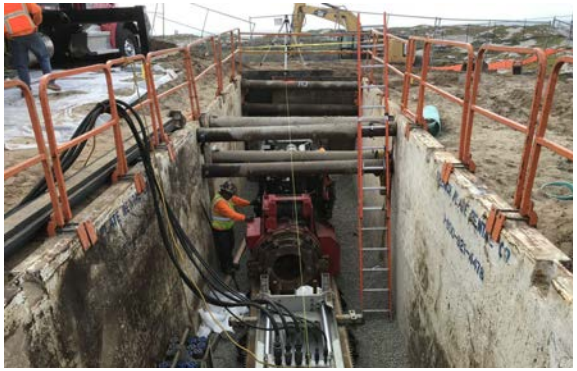
CORPORATE HEADQUARTERS – SAN DIEGO
8 SOUTHERN CALIFORNIA OFFICES
394+ SOUTHERN CALIFORNIA STAFF

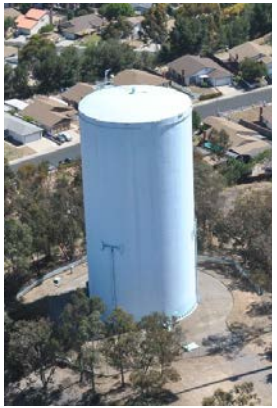
NICK FONTAINE, PE, DBIA
NFONTAINE@KLEINFELDER.COM

ART GARCIA, PE
AGARCIA@KLEINFELDER.COM

Water



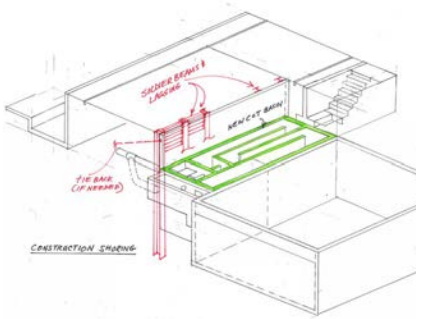



Some So Cal Clients

- San Diego
- Santa Fe Irrigation District
- Carlsbad
- Oceanside
- EMWD
- Ontario

Wastewater



Some So Cal Clients

- Vallecitos Water District
- San Diego
- OC San
- SOCWA
- Coronado
- Helix Water District

Meadowlark CCTs Expansion

Currently in 90% Design
Construction starting 2024

Enables Increased RW Production

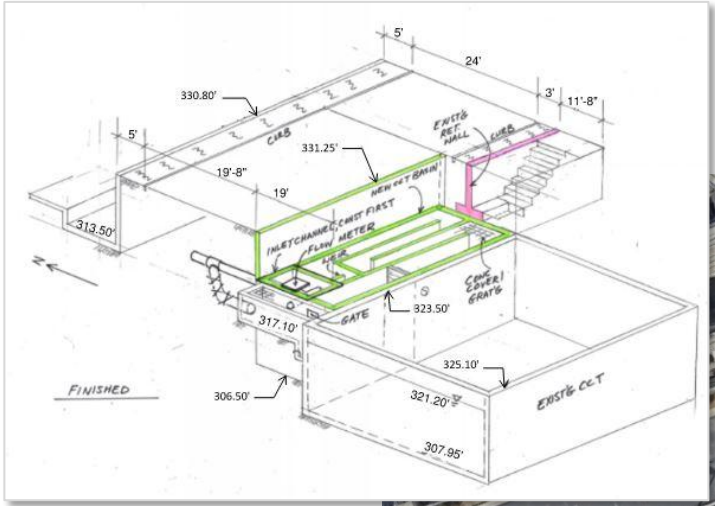
- Add 1.5 MGD of disinfection volume
- Meet/exceed a 90-minute MCT at a the new 6.5 MGD peak dry weather flow

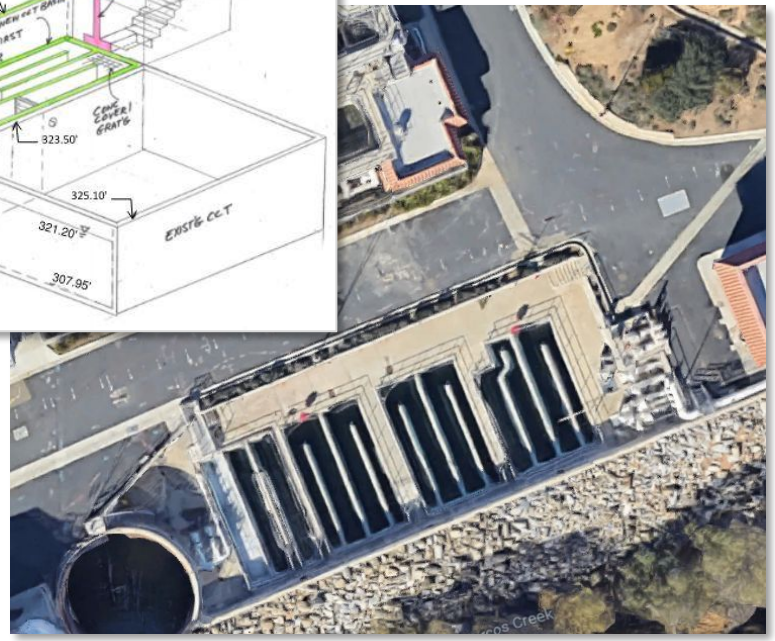
Reduces Risk

- No modification to the existing HGL or downstream pump station
- No modifications to the existing CCTs

Improves Operations

- Add permanent dewatering system for all the CCTs
- Allows isolation of some CCTs for maintenance.





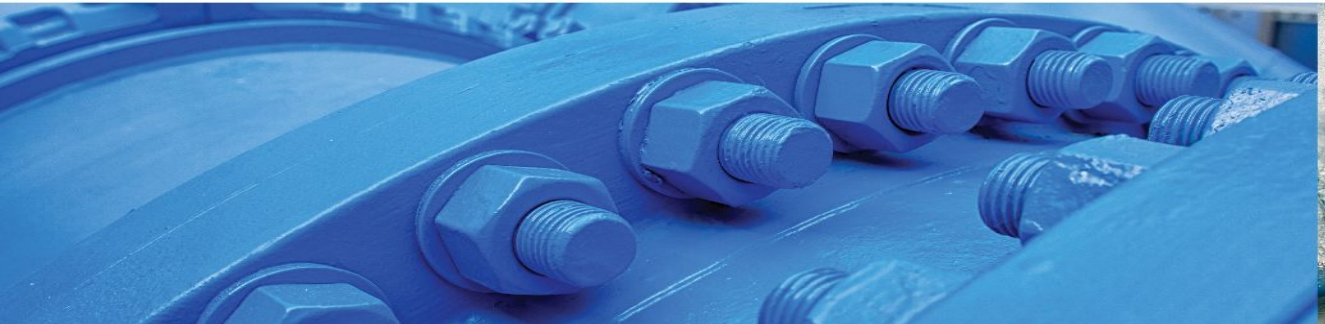
Vallecitos Water District

Jason Hubbard, District Engineer

WaterReuse SAN DIEGO

Vallecitos Water District

Your water and wastewater specialists



Presentation Outline

VALLECITOS WATER DISTRICT
Water and Wastewater Specialists since 1955

- Facilities
- Recycled Water Program
  - History of VWD's Recycled Water Program and the Meadowlark Water Reclamation Facility (MRF)
  - Overview of VWD Service Area and System
  - MRF Treatment Process
  - MRF Improvements and Next Steps
  - NSDWR Coalition Participation

Facilities

<u>WATER</u>:

- 367 miles of water pipes
- 11 pump stations
- 19 reservoirs – 120MG of storage

<u>WASTEWATER</u>:

- 276 miles of sewer pipe
- 4 sewer lift stations
- Encina Wastewater Authority (EWA) capacity – 10.5 MGD

<u>RECYCLED WATER</u>:

- MRF recycling capacity – 5 MGD
- Mahr Reservoir capacity – 54 MGD

Recycled Water Program

VALLECITOS WATER DISTRICT
Water and Wastewater Specialists since 1955

Cheap and Easy are all Sold Out

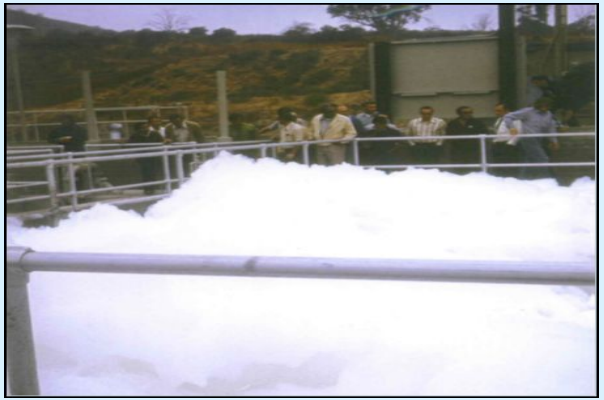
Diversification Is In

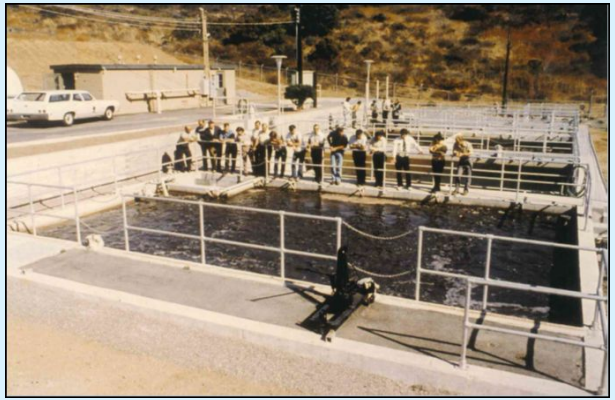
Recycled Water Benefits:

- Locally controlled
- Drought resistant
- Recycled Water used = Drinking Water saved

The Origin

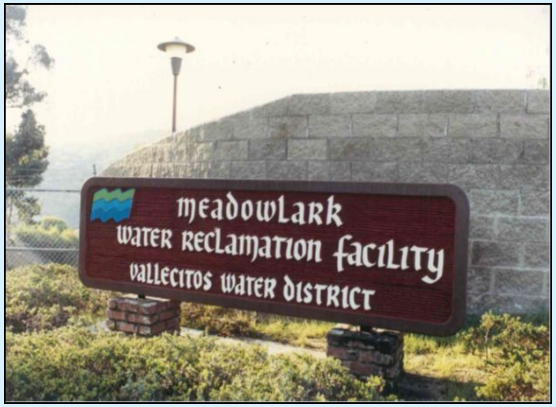
VALLECITOS WATER DISTRICT
Water and Wastewater Specialists since 1955

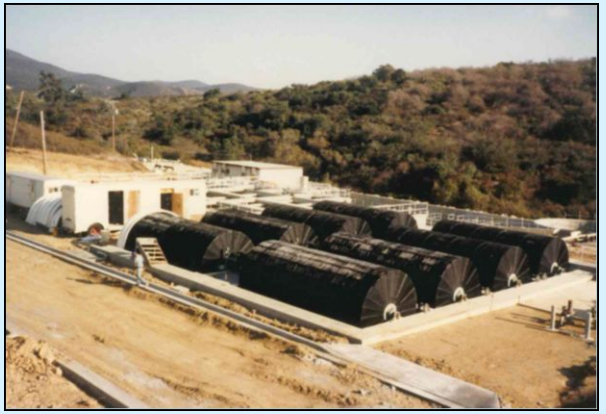




The Beginning

VALLECITOS WATER DISTRICT
Water and Wastewater Specialists since 1955





The Upgrade

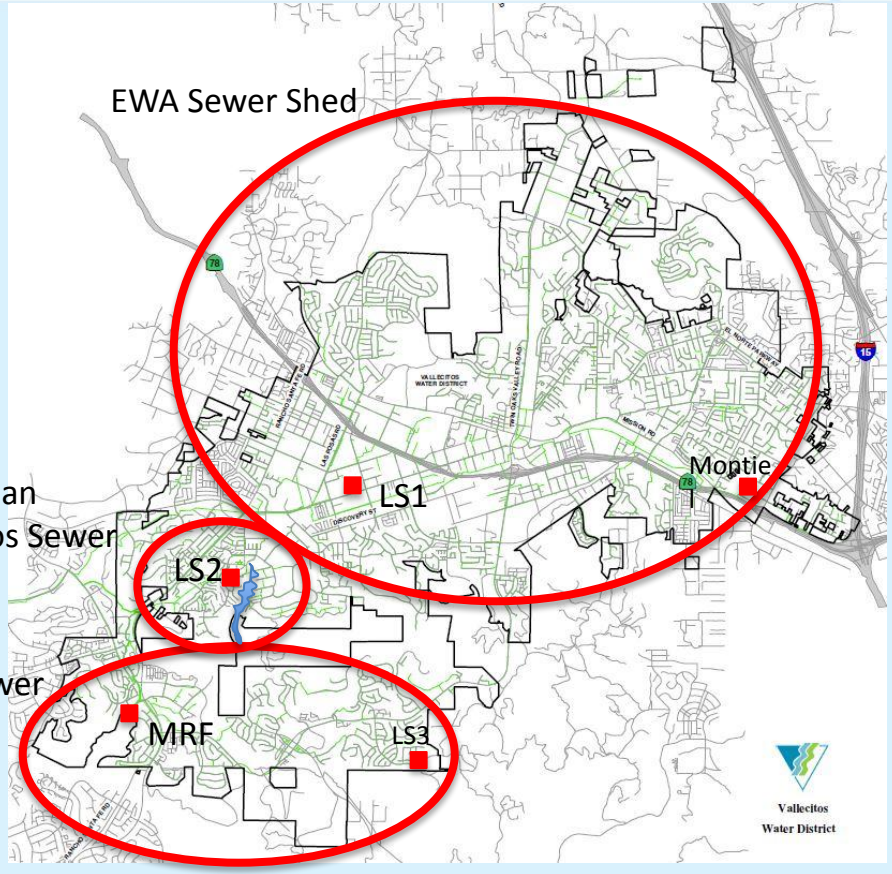
VALLECITOS WATER DISTRICT
Water and Wastewater Specialists since 1955

Meadowlark Water Reclamation Facility (MRF)

VALLECITOS WATER DISTRICT
Water and Wastewater Specialists since 1955

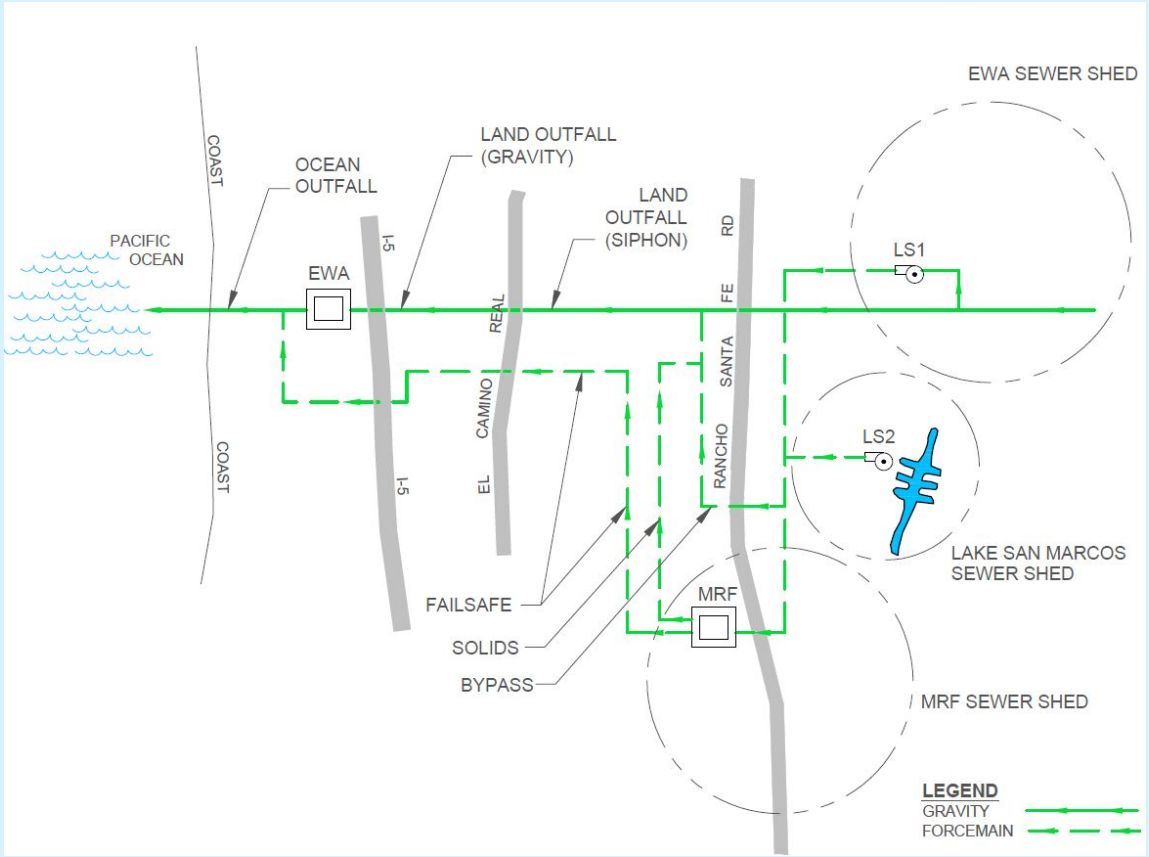
Sewer Service Area Overview

VALLECITOS WATER DISTRICT
Water and Wastewater Specialists since 1955



Sewer System Overview

VALLECITOS WATER DISTRICT
Water and Wastewater Specialists since 1955



MRF Treatment Process

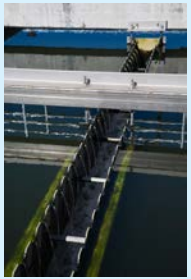
VALLECITOS WATER DISTRICT
Water and Wastewater Specialists since 1955

Primary Treatment

- Headworks – Augers (primary & bypass)
- Sedimentation Basins/Clarifiers - 3

Secondary Treatment

- Microbiological
- Roughing Filters – 2*
- Aeration Basins / Anaerobic zone - 3
- Secondary Clarifiers - 6



Tertiary Treatment

- Filtration Basins (anthracite) – 6
- Chemical addition - coagulant
- Chlorine Contact Time – chlorine gas

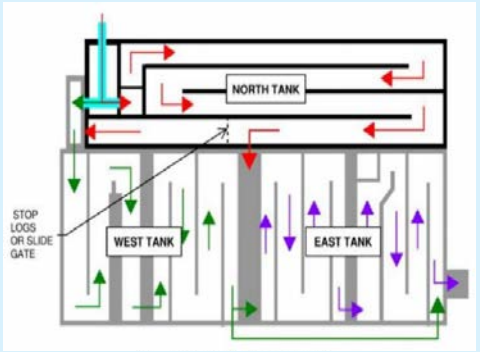
MRF Improvements

VALLECITOS WATER DISTRICT
Water and Wastewater Specialists since 1955

Headworks Modifications - 2021

Aeration Basin Improvements - 2022

Sodium Hypochlorite Conversion - 2024



CCT Expansion - 2024

NSDWR Coalition

VALLECITOS WATER DISTRICT
Water and Wastewater Specialists since 1955

- Investigate opportunities for expanded regional use of Recycled Water
  - Region uses 35,000 acre-feet of recycled water per year
  - Region generates over 200,000 acre-feet of wastewater per year
- Coalition successful in both State and Federal grants for environmental and planning documents, project design, and construction.
  - $37.9M to date
  - $4M for VWD
    - LS1 Pump Improvements (2016)
    - MRF CCT Expansion (2023-2025)

Questions?

VALLECITOS WATER DISTRICT
Water and Wastewater Specialists since 1955

Fallbrook Public Utility District

Aaron Cook, Engineering Manager

WaterReuse San Diego

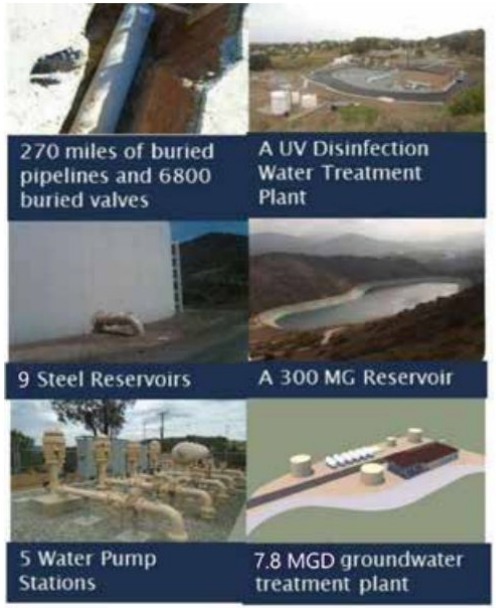
FALLBROOK PUBLIC UTILITY DISTRICT

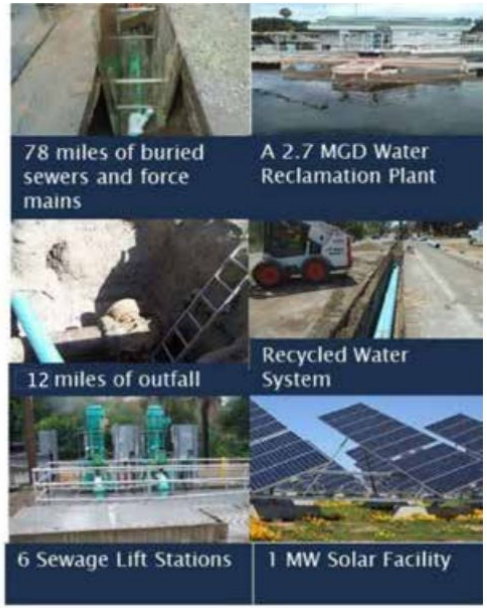
RECLAIMED WATER SYSTEM

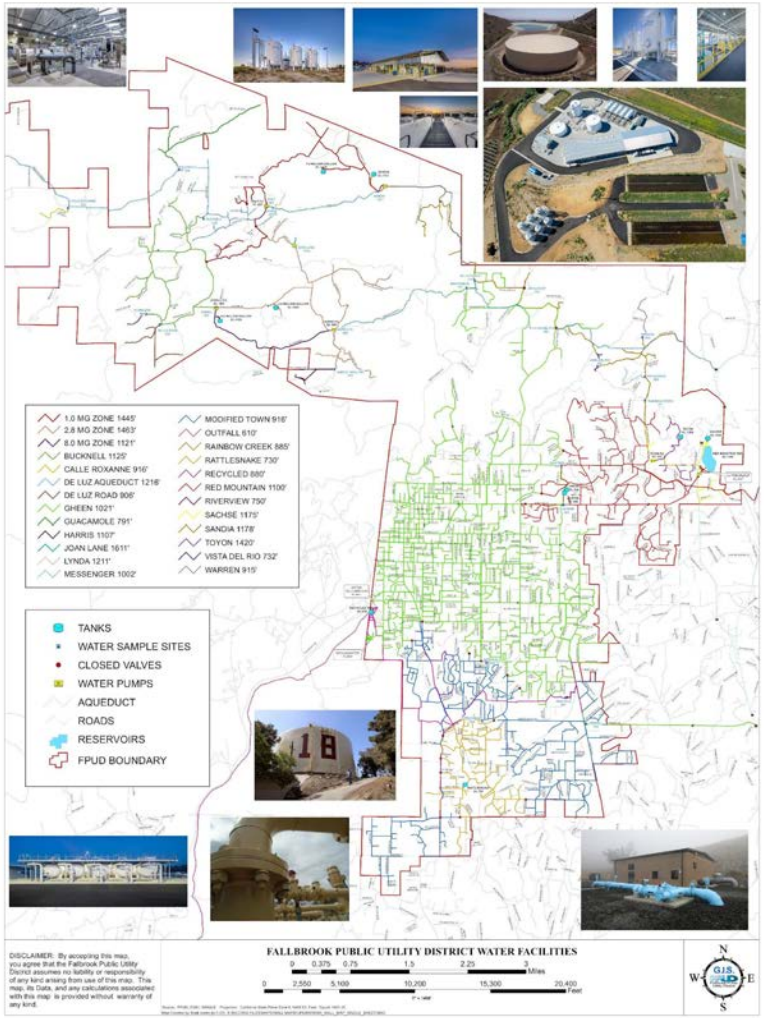
AARON COOK, PE

ENGINEERING MANAGER, FPUD

FPUD OVERVIEW

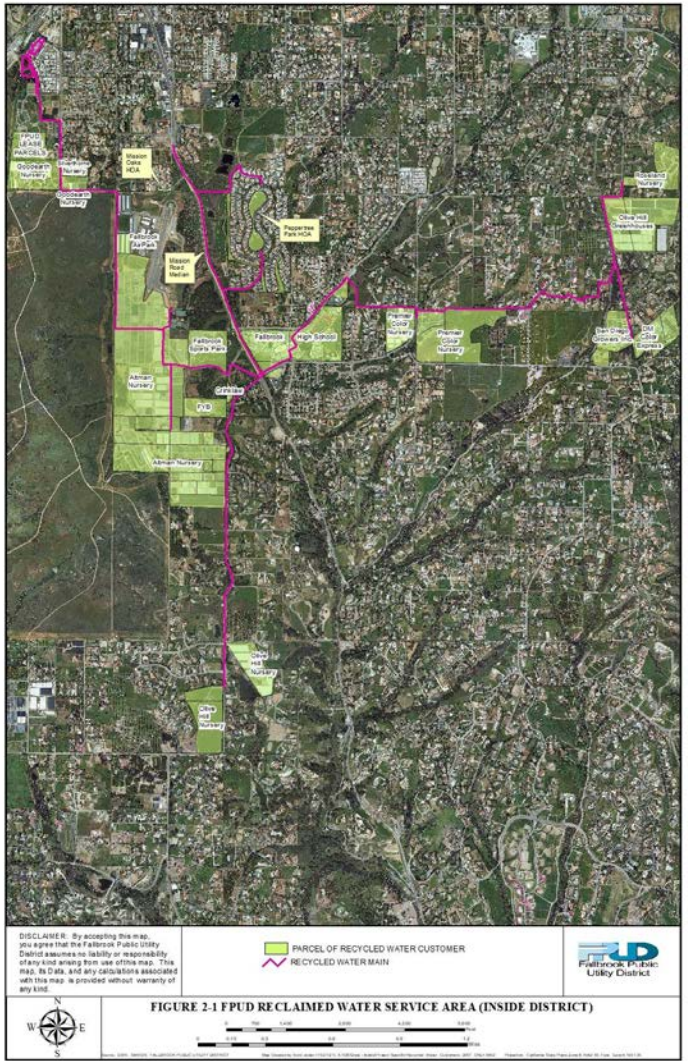






BACKGROUND

- DISTRICT BEGAN SERVING RECLAIMED WATER IN 1991
- IN 2015 WATER RECLAMATION PLANT (WRP) WAS UPDATED TO INCREASE PRODUCTION CAPACITY, OPEN AIR STORAGE FACILITY WAS CONSTRUCTED, AND THE DISTRIBUTION SYSTEM WAS EXPANDED TO THE EAST (PARTIALLY FUNDED BY PROP 84 GRANT)
- AVERAGE RECLAIMED SALES OF 599 ACRE FEET PER YEAR (AFY)
- 18 ACTIVE SITES
- USERS INCLUDE LANDSCAPE IRRIGATION AND AGRICULTURAL USERS (MOSTLY PLANT NURSERIES)
- AUTOMATED METERING (READS SENT TO DISTRICT SERVERS AT HOURLY INTERVALS) ALLOWS END USERS TO TRACK/MANAGE THEIR WATER USE ONLINE



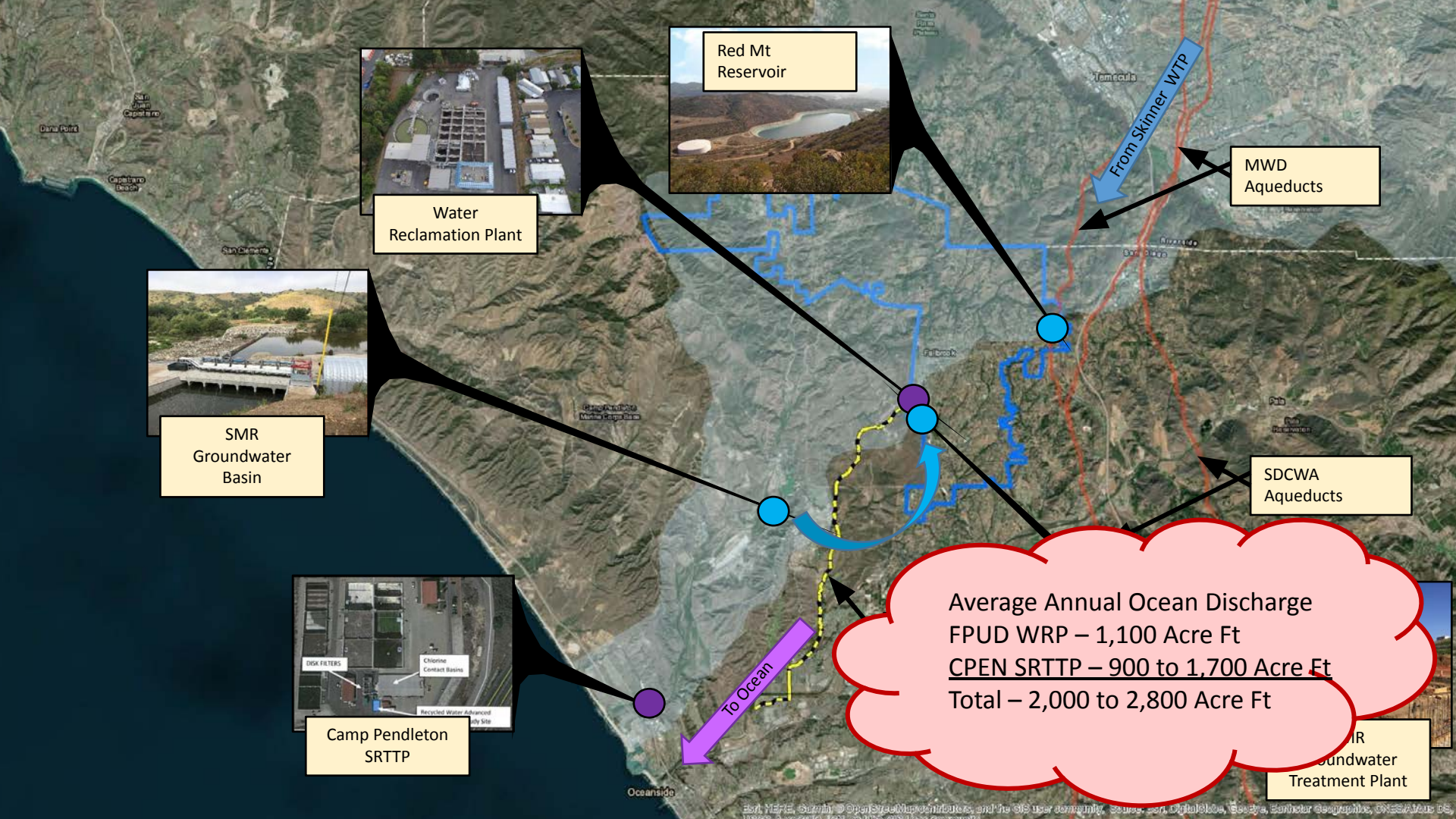
RECLAIMED USER SITE MANAGEMENT

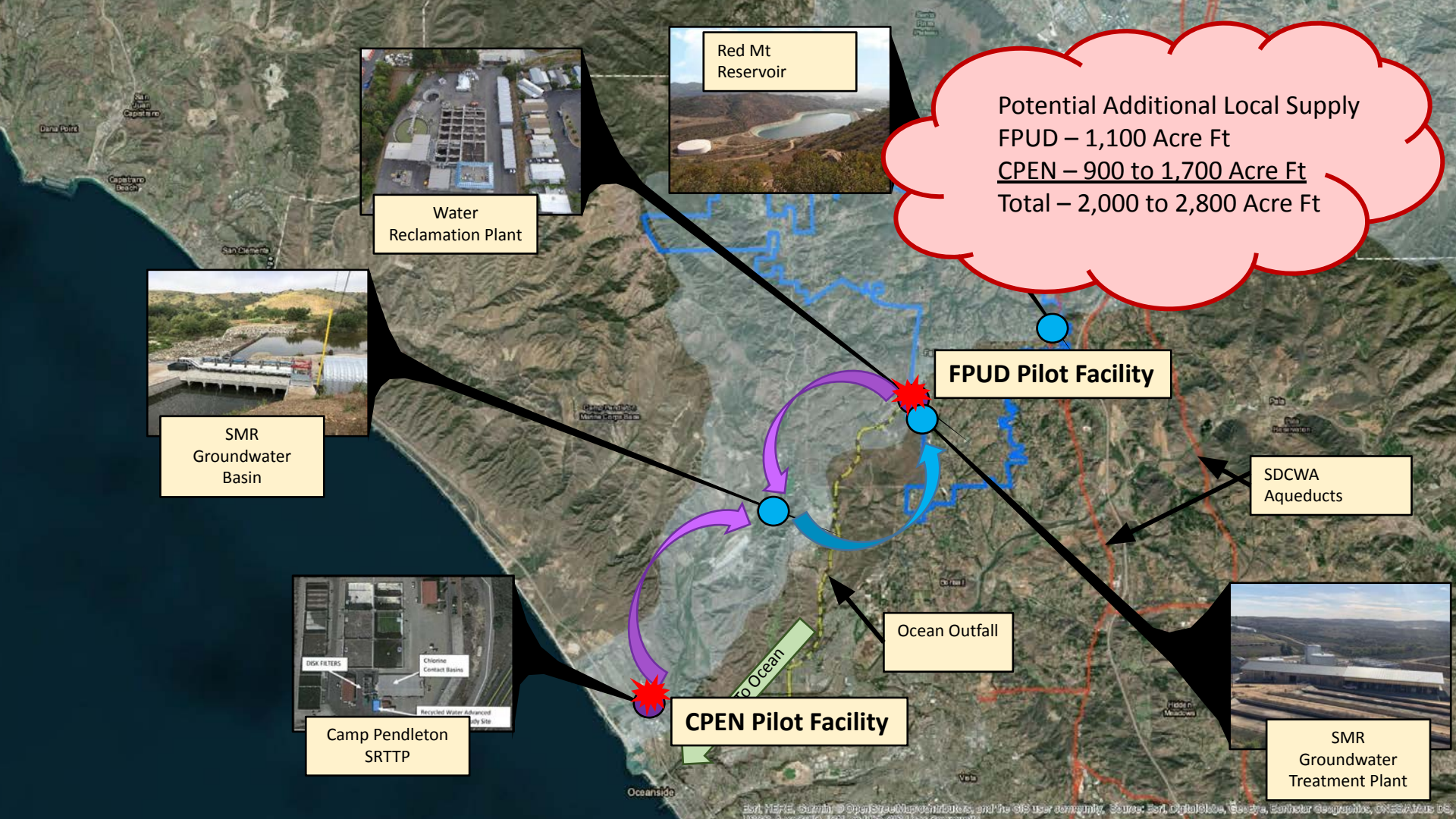
- DISTRICT STAFF PERFORMS ANNUAL INSPECTIONS
  - APPROPRIATE SITE SIGNAGE
  - CROSS CONNECTION CONTROL (DRAW DOWN TESTING)
- BECAUSE USER GROUP IS SMALL AND SOME PLANT NURSERIES HAVE A SUBSTANTIAL CONSEQUENCES DURING SERVICE DISRUPTIONS, OUTAGES (PLANNED AND UNPLANNED) ARE COMMUNICATED DIRECTLY VIA EMAIL AND PHONE BY DISTRICT STAFF

WTP OPERATIONS

- AVERAGE INFLUENT FLOW AT THE WRP OVER 1600 AFY
- SOLAR ARRAY (DISTRICT OWNED) OFFSETS POWER DEMANDS AT THE WRP
- POTENTIAL UNUSED DEMAND AVAILABLE FOR BENEFICIAL REUSE ESTIMATED AT 588 AFY


Red Mt Reservoir
Water Reclamation Plant
From Skinner WTP
MWD Aqueducts
SMR Groundwater Basin
SDCWA Aqueducts
Ocean Outfall
To Ocean
SMR Groundwater Treatment Plant


Red Mt Reservoir
Water Reclamation Plant
From Skinner WTP
MWD Aqueducts
SMR Groundwater Basin
SDCWA Aqueducts
Camp Pendleton SRTTP
To Ocean
Average Annual Ocean Discharge
FPUD WRP – 1,100 Acre Ft
CPEN SRTTP – 900 to 1,700 Acre Ft
Total – 2,000 to 2,800 Acre Ft
Treatment Plant
Oceanside


Red Mt Reservoir
Water Reclamation Plant
Potential Additional Local Supply
FPUD – 1,100 Acre Ft
CPEN – 900 to 1,700 Acre Ft
Total – 2,000 to 2,800 Acre Ft
SMR Groundwater Basin
FPUD Pilot Facility
SDCWA Aqueducts
Ocean Outfall
CPEN Pilot Facility
Camp Pendleton SRTTP
SMR Groundwater Treatment Plant

CONCEPTUAL DESIGN

Conceptual Design helped inform the cost estimate.

- Included design of the main unit processes, process equipment, pumps, chemical storage and feed systems, compressed air systems, and other components required for a full-scale IPR system.

Main process train: ozone, biofiltration, UF, GAC, and UV.

Ozone
- **Treatment Goal:** oxidize organics, inactivate pathogens, and create assimilable organic carbon for the BAC process.
- Liquid Oxygen (LOX) from a storage tank is vaporized to feed oxygen gas to the ozone generator to produce ozone introduced through an array of fine bubble diffusers. Ozone dose was designed based on a maximum Ozone:TOC ratio of 1.5:1.
- Bromate formation control using chloramines and/or Ozone:TOC ratio optimization.

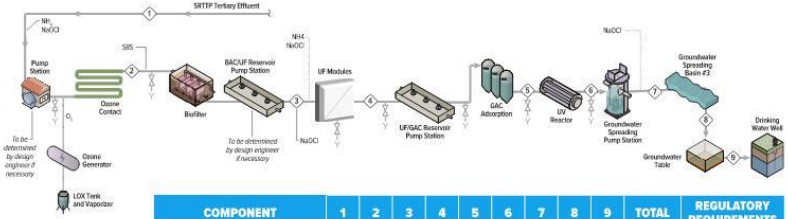
BAC
- **Treatment Goal:** removal of influent TOC and Contaminants of Emerging Concern through biological assimilation.
- Backwashing frequency triggered by headloss, time or turbidity.
- Designed using an EBCT of 15 minutes.

UF
- **Treatment Goal:** solids removal as a pretreatment to GAC and Giardia and Cryptosporidium removal for public health protection.
- Includes a 200-micron strainer.
- Ozone/BAC pretreatment allows a design flux of 49.4 gallons/ft^2/day.

GAC
- **Treatment Goal:** removal of PFAS and some additional TOC.
- Designed using an EBCT of 21 minutes.
- Media changeouts are anticipated to be dependent on PFHxS breakthrough.

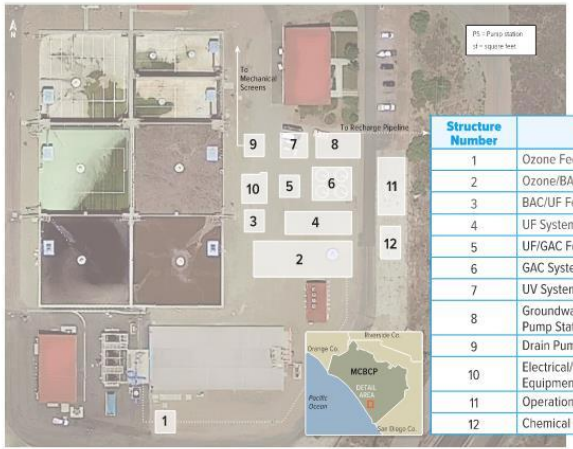
UV System
- **Treatment Goal:** inactivation of pathogens.
- Uses closed-vessel UV reactors.
- Designed to treat water with a UV transmittance of 85%.

Footprint required for all unit processes is estimated to be about 9,000 ft^2, with approximately 27,500 ft^2 of available space at SRTTP for the new IPR plant.



COMPONENT	1	2	3	4	5	6	7	8	9	TOTAL	REGULATORY REQUIREMENTS
Flow (mgd)	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2			
Water Recovery (percentage)		100	99	95	100	100	100	100			
Pathogen Log Removal Value											
Viruses	-	6	-	-	-	6	-	-	3.5	15.5+	12
Giardia	-	6	-	4	-	6	-	-	-	16+	10
Cryptosporidium	-	1	-	4	-	6	-	-	-	11+	10
TOC (mg/L)	6.6	-	5.0	-	4.5	-	-	3.31	-		4.92
TOC Removal (percentage)	-	-	25	-	10	-	-	40	-		

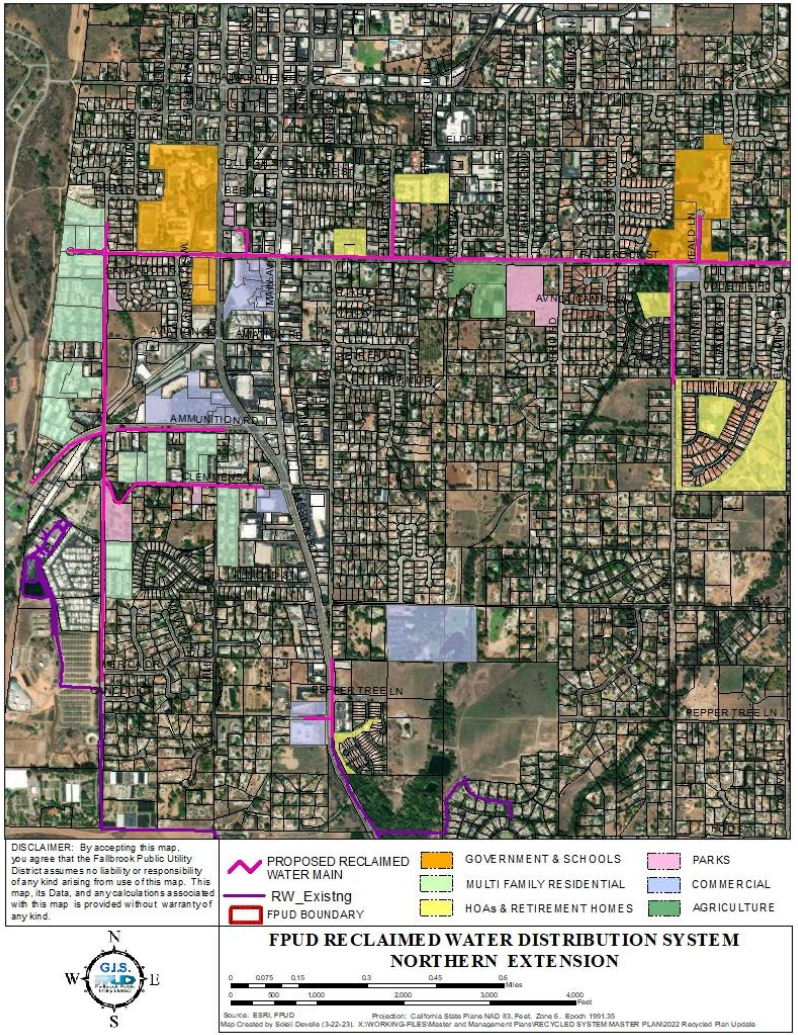
1. 2.2 mg/L assumes SAT factor of 0.40.
2. Dilution can be accounted for, which would increase the 0.5 mg/L TOC limit of wastewater origin to 4.9 mg/L limit for discharge. Refer to section 3.3 in the Feasibility Report for calculations.



Structure Number	Name	Area (SF)
1	Ozone Feed Pump Station	600
2	Ozone/BAC	4,500
3	BAC/UF Feed Pump Station	600
4	UF System	2,000
5	UF/GAC Feed Pump Station	600
6	GAC System	1,800
7	UV System	700
8	Groundwater Spreading Pump Station	1,000
9	Drain Pump Station	600
10	Electrical/MCC/Ancillary Equipment Room	900
11	Operations Building	2,000
12	Chemical Storage	900

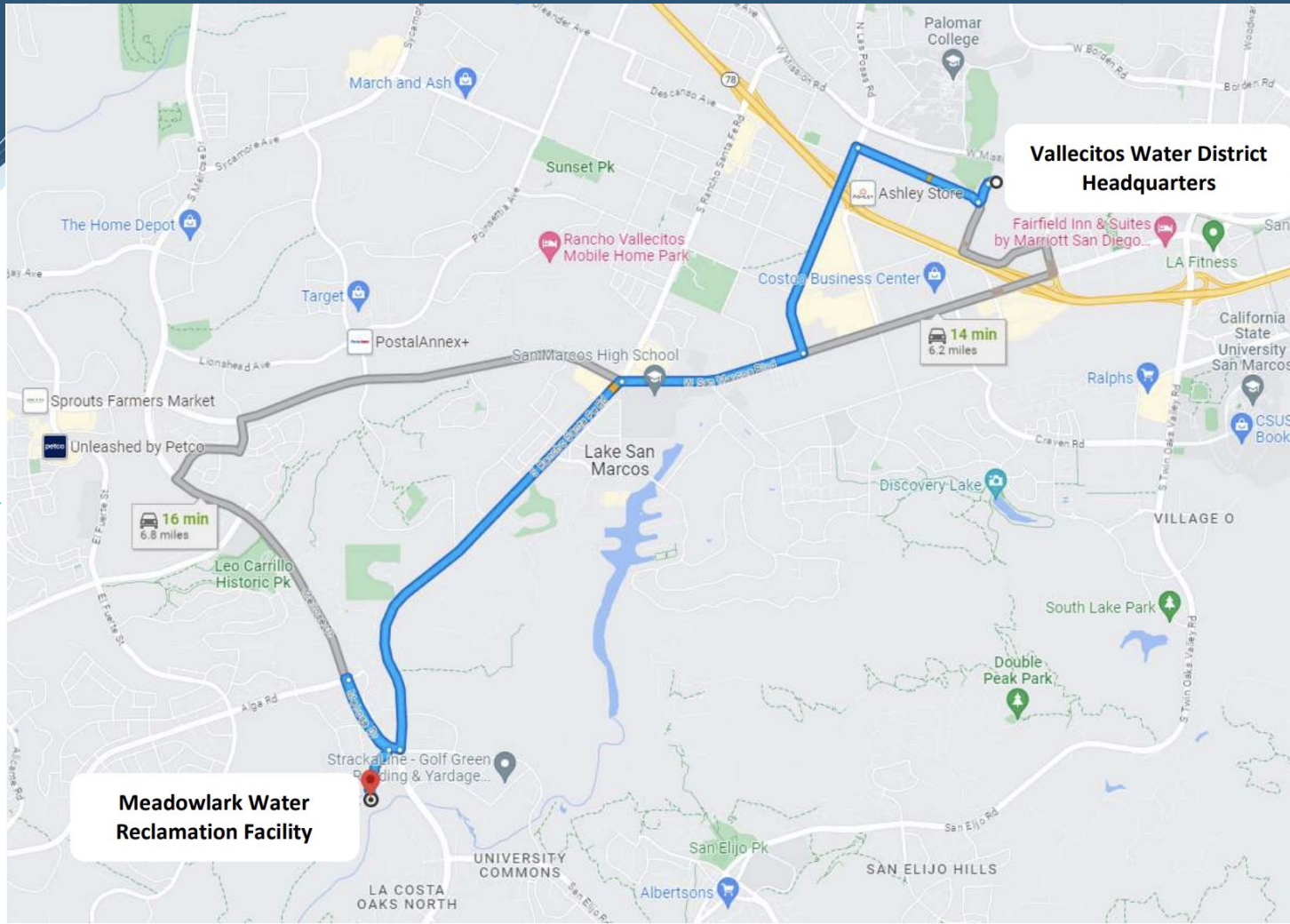
SYSTEM EXPANSION & DEMAND DEVELOPMENT

- CURRENT PLANNING HAS IDENTIFIED A SUBSTANTIAL EXPANSION OF THE RECLAIMED DISTRIBUTION SYSTEM AS THE BEST COURSE OF ACTION TO INCREASE RECLAIMED DEMANDS
- THE “NORTHERN EXTENSION” WILL EXPAND THE EXISTING RW DISTRIBUTION SYSTEM INTO THE CENTER OF FALLBROOK
- NEW RW SITES WILL INCLUDE; APARTMENT COMPLEXES, CEMETERY, SHOPPING CENTERS, GOVERNMENT BUILDINGS, RETIREMENT HOME, AGRICULTURAL SITES AND HOA COMMON AREAS (LANDSCAPE IRRIGATION)



- QUESTIONS?

Tour of Meadowlark WRF



WATEREUSE SAN DIEGO

Meadowlark WRF Parking

WATEREUSE SAN DIEGO