Seven Oaks Dam FIRO & Enhanced Recharge Project

SAN BERNARDINO VALLEY
A REGIONAL WATER AGENCY
SINCE 1954

WateReuse Inland Empire Chapter Meeting

August 30, 2023

Greg Woodside - Chief of Planning & Watershed Resilience
Mike Esquer - Senior Project Manager

OUR *mission* IS TO...

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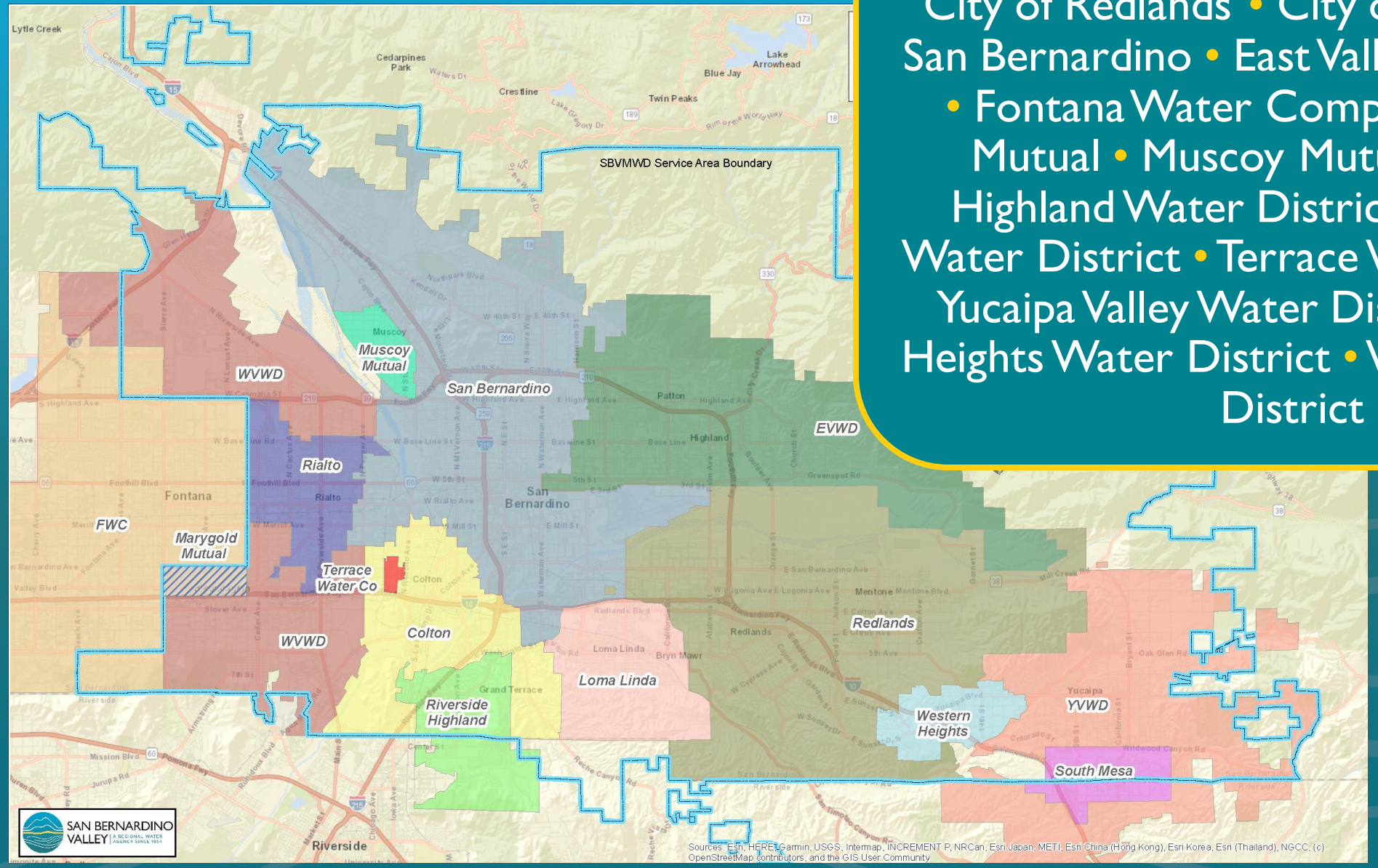
Work **collaboratively** to provide a **reliable** and **sustainable** water supply to support the changing needs of our region's **people** and **environment**.

Retail Water Agencies



• City of Colton • City of Loma Linda • City of Redlands • City of Rialto • City of San Bernardino • East Valley Water District • Fontana Water Company • Marygold Mutual • Muscoy Mutual • Riverside Highland Water District • South Mesa Water District • Terrace Water Company • Yucaipa Valley Water District • Western Heights Water District • West Valley Water District •

Preparing for the Future: Diversify

State Water Project

Stormwater Capture

Demand Management

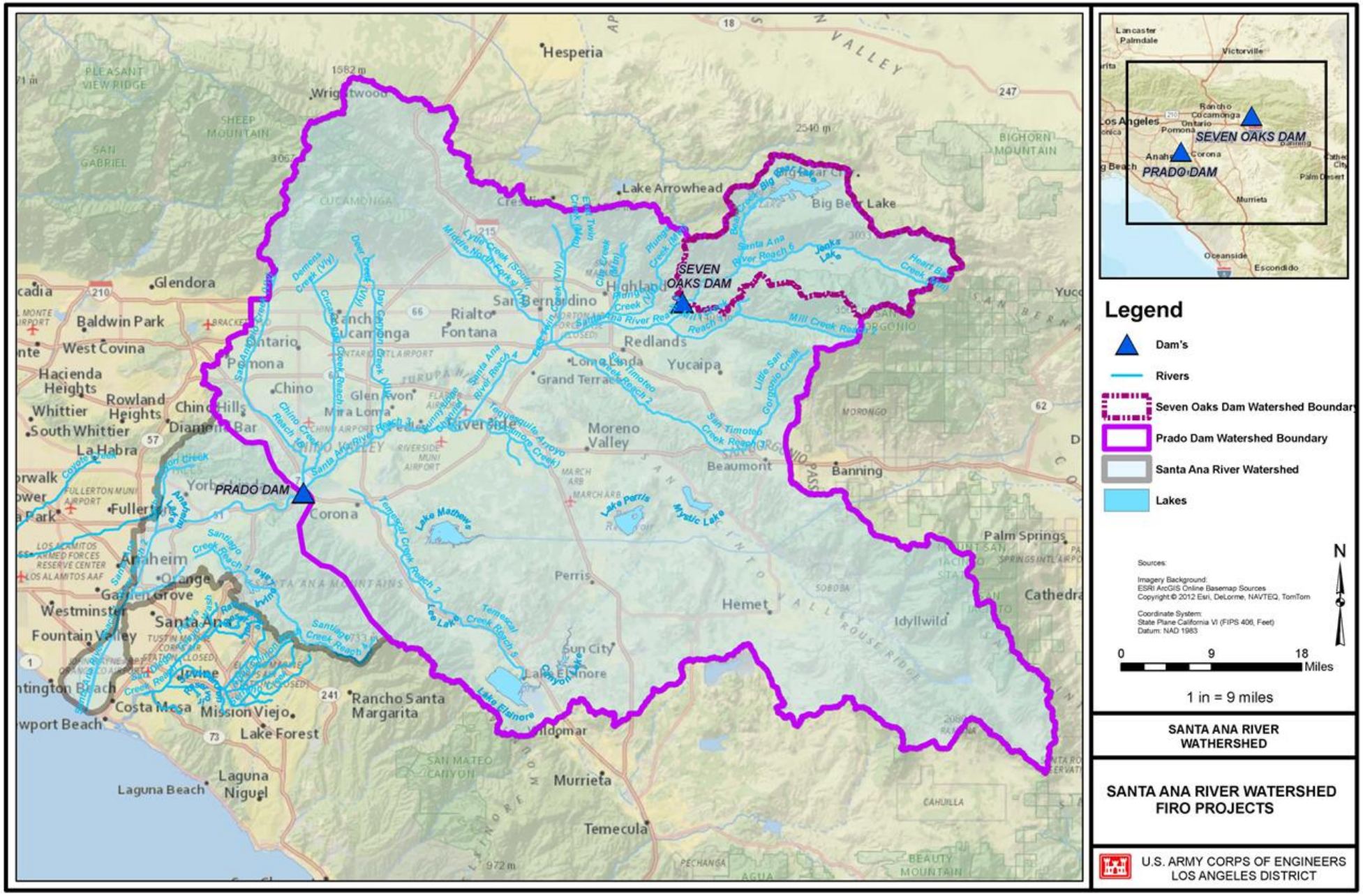
Recycled Water

Reliable Water Supply

Opportunities to Enhance Resiliency

- Collaboration with DWR and East Branch Agencies on SWP
- Coordination with
  - Retail Agencies
  - Conservation District
  - San Bernardino County Flood Control
- Developing additional areas for recharge
- Extend recharge and delivery season
- Construction of new recharge facilities

Forecast-Informed Reservoir Operations (FIRO)

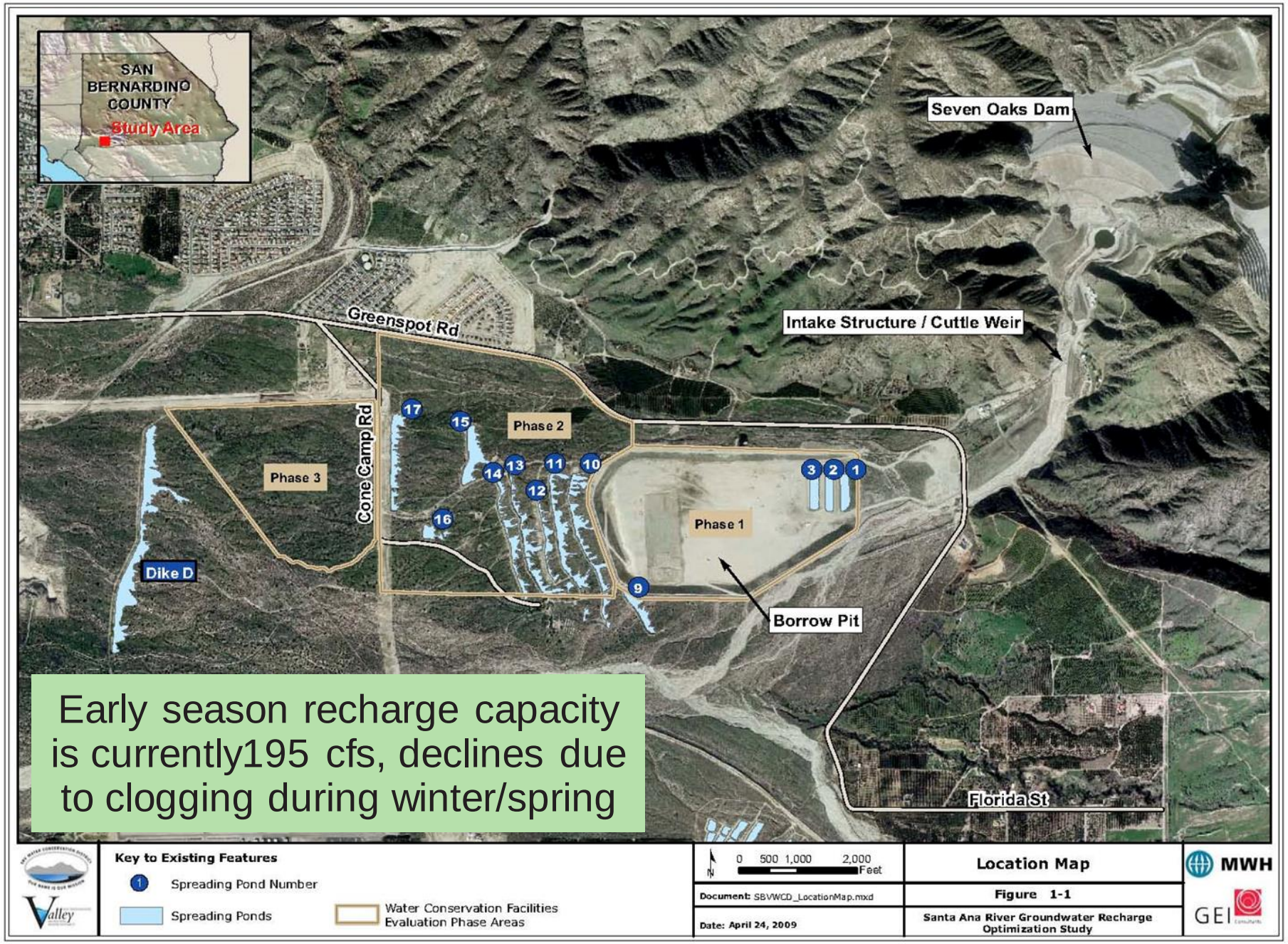


	Owner & Operator	Storage Volume (af)	Authorized Purpose	Role in Regional Water Availability
Prado Dam	USACE	174,000	Flood Risk Management (FRM) and Water Conservation	Release rate in Buffer Pool is coordinated with d/s Groundwater Basin Manager (Orange County Water District) per Water Control Manual
Seven Oaks Dam	3 Flood Control Districts	145,000	FRM	Releases are recharged to groundwater basin d/s to extent practical; Water Control Manual does not specify details of coordinating releases for d/s recharge

Seven Oaks Dam

- Began operation in 2000
- Built to work in tandem for with Prado Dam
  - 38 miles downstream
- Authorized purpose is FRM
- Typically empty to nearly empty

A Portion of Seven Oaks Dam Releases are Recharged into Groundwater Basin Downstream



FIRO: Emerging Enhancement to Dam Operations

FIRO is a reservoir-operations strategy that better informs decisions to retain or release water by integrating additional flexibility in operations policies and rules with enhanced monitoring and improved weather and water forecasts

-(American Meteorological Society, 2020)

FIRO utilizes weather forecasting, streamflow modeling, and watershed monitoring to help water managers selectively retain or release water from reservoirs that reflects current and forecasted conditions, and that adapts to weather extremes.

Cost Sharing Technical Studies

- University of California, San Diego- Scripps Institution of Oceanography
- Conduct FIRO Study
  - Prepare Work Plan
  - Steering Committee Meetings
  - Develop technical studies

Program Cost Share		Cost
San Bernardino Valley	72.05%	$506,881
Western (representing Plaintiffs)	27.95%	$196,632
Total	100%	$703,513

Maximize Benefits: FIRO Goal is Optimize for all three

What Does Optimization Look Like?

We do not yet know, but could include the following:

Flood Risk Management

- Enhanced forecasts of atmospheric river events
- Enhanced forecasting of total precipitation and snow/rain level

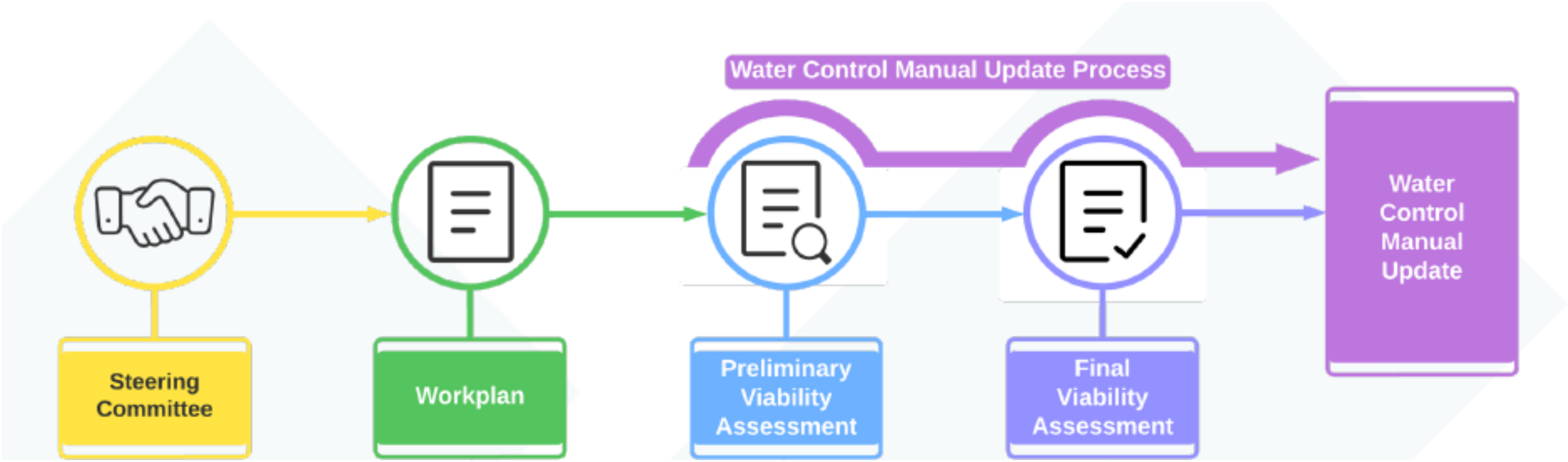
Water Availability

- Hold water in temporary storage for a longer periods, Increase groundwater recharge, increase supplies for surface water treatment plants
- Reduce losses from San Bernardino Valley

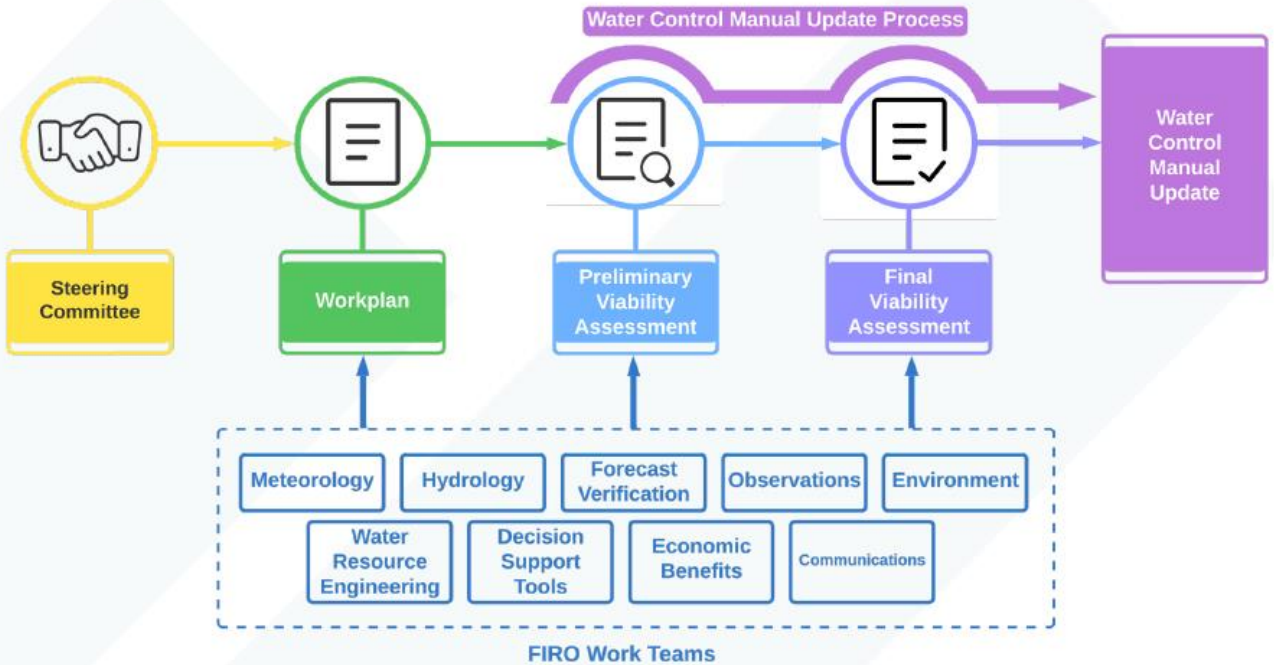
Environmental Resources

- Release water to enhance alluvial fan habitat, in connection with potential channel modification.

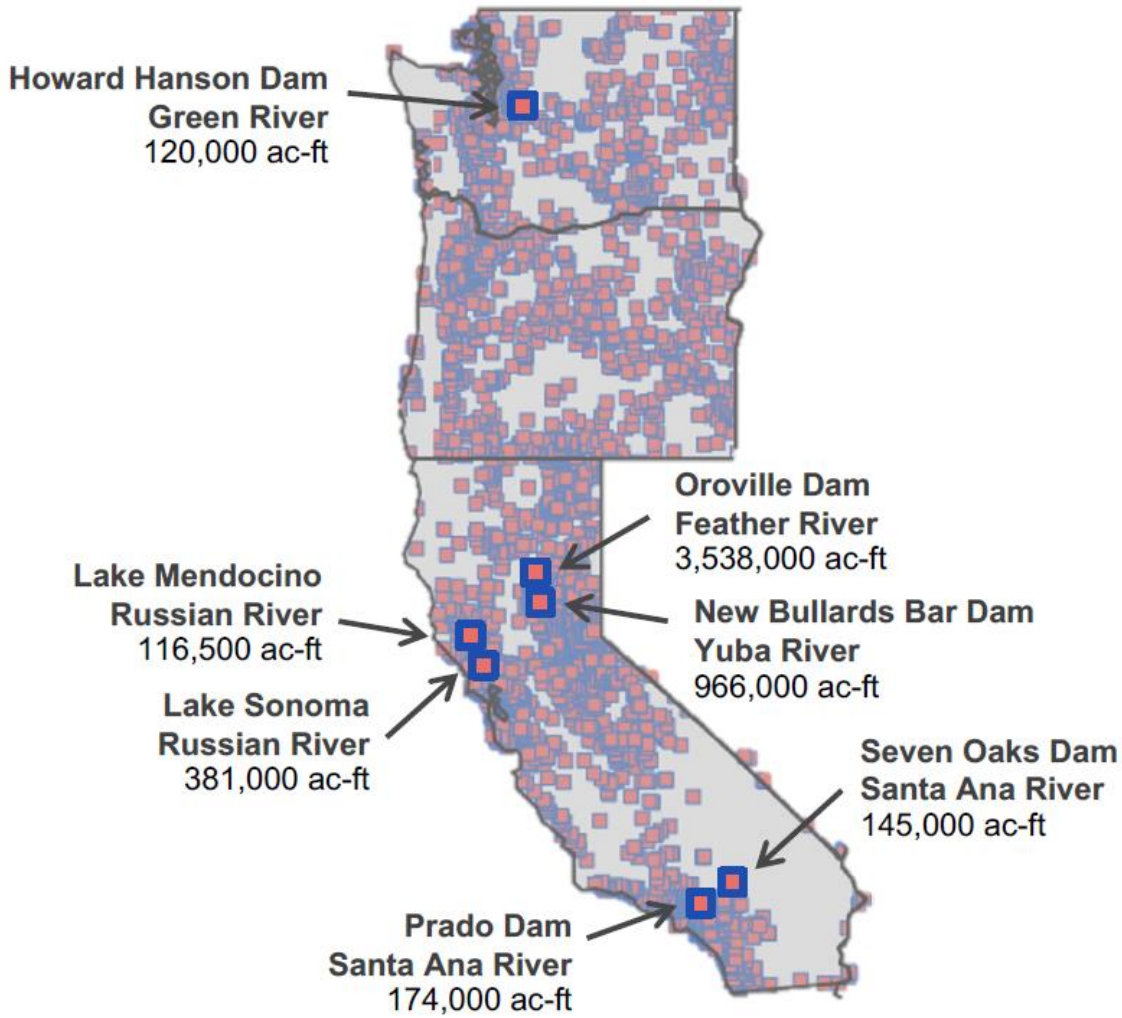
Summary of major steps in assessment of FIRO



FIRO viability assessment process – a collaborative process

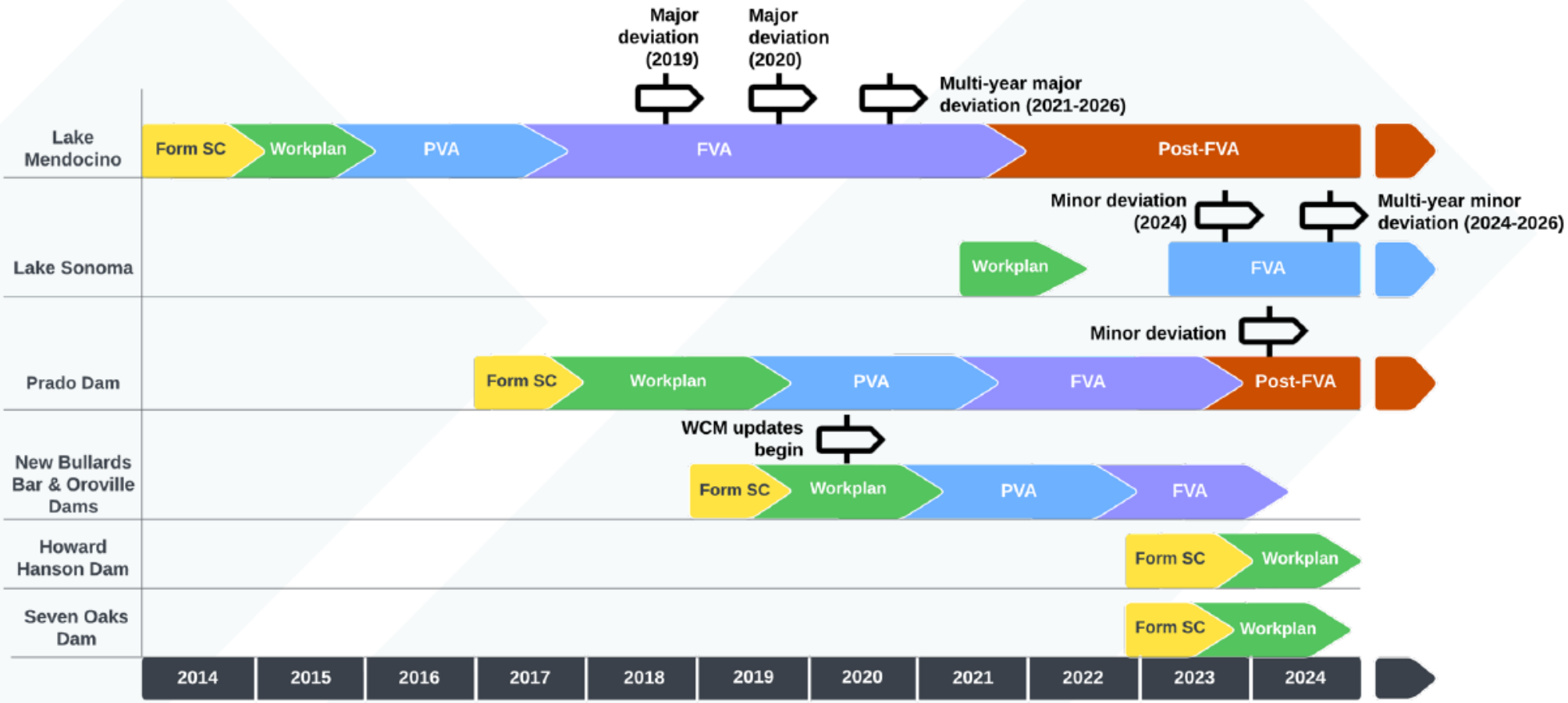


If the viability assessment demonstrates that FIRO results in better outcomes than existing operations, then the Steering Committee pursues implementation of FIRO via an update to the Water Control Manual (WCM).



Center for Western Weather and Water Extremes

FIRO Assessment & Implementation Process

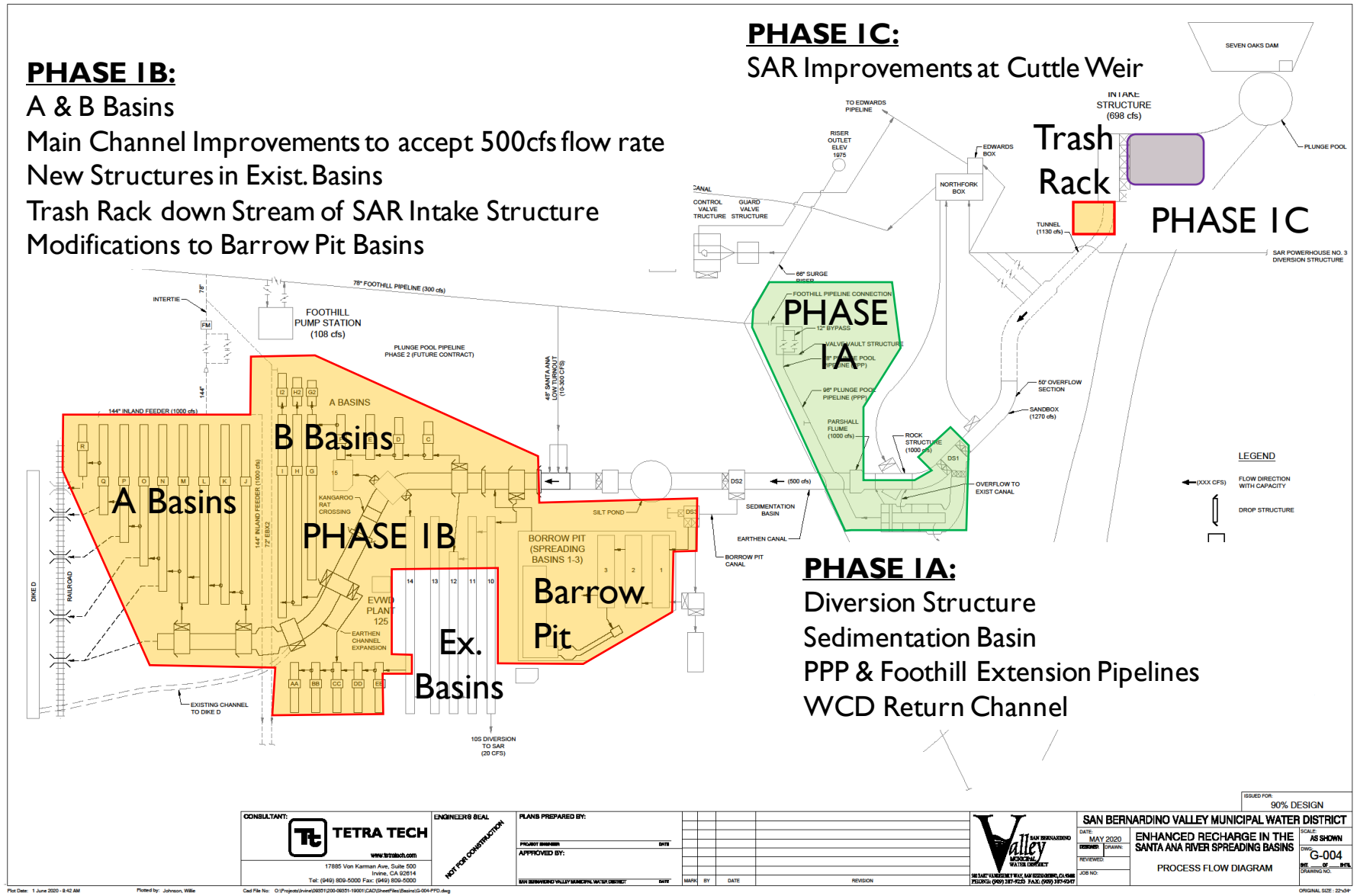


Source: Center for Western Weather & Water Extremes, 2023

Enhanced Recharge 1B

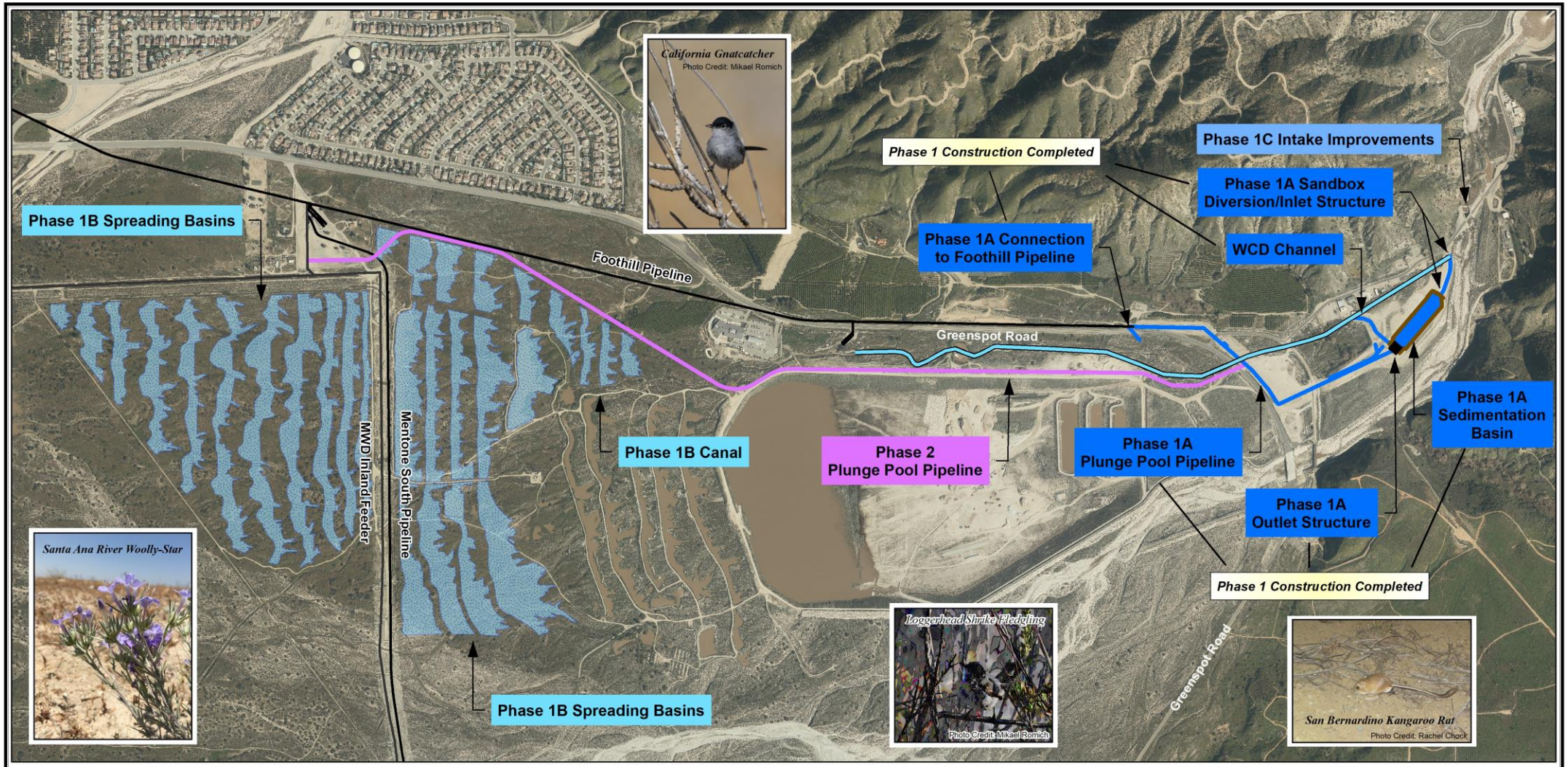
PHASE 1B:
A & B Basins
Main Channel Improvements to accept 500cfs flow rate
New Structures in Exist. Basins
Trash Rack down Stream of SAR Intake Structure
Modifications to Barrow Pit Basins

PHASE 1C:
SAR Improvements at Cuttle Weir



PHASE 1A:
Diversion Structure
Sedimentation Basin
PPP & Foothill Extension Pipelines
WCD Return Channel

CONSULTANT: TETRA TECH, www.tetratech.com, 17885 Von Karman Ave, Suite 500, Irvine, CA 92614, Tel: (949) 809-5000 Fax: (949) 809-5000
ENGINEER'S SEAL — NOT FOR CONSTRUCTION
PLANS PREPARED BY: PROJECT ENGINEER DATE
APPROVED BY: SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT DATE
MARK | BY | DATE | REVISION
ISSUED FOR: 90% DESIGN
SAN BERNARDINO VALLEY MUNICIPAL WATER DISTRICT
DATE: MAY 2020 | DESIGNED: | DRAWN: | REVIEWED: | JOB NO:
ENHANCED RECHARGE IN THE SANTA ANA RIVER SPREADING BASINS
PROCESS FLOW DIAGRAM
SCALE: AS SHOWN
DWG: G-004
SHT ___ OF ___ SHTS
DRAWING NO.
ORIGINAL SIZE : 22"x34"



Facilities of Enhanced Stormwater Capture and Recharge Along the Santa Ana River Project

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W E
S

1,000 500 0 1,000 Feet

Aerial Photography Date: March, 2019
Source: SBVMWD, SBCO

Date: 8/28/2023

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Stormwater Capture: Enhanced Recharge Project – 1B


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