

SACRAMENTO REGIONAL
WATER BANK



A Sustainable Storage & Recovery Program



Sac Water Bank – Project Update to the Regional Water Authority Board

September 11, 2025



Water Bank Project Update

- Project Background & Overview
- Project Development & Status Update
- Water Bank Starting Balance
 - Background
 - Analysis
 - Results



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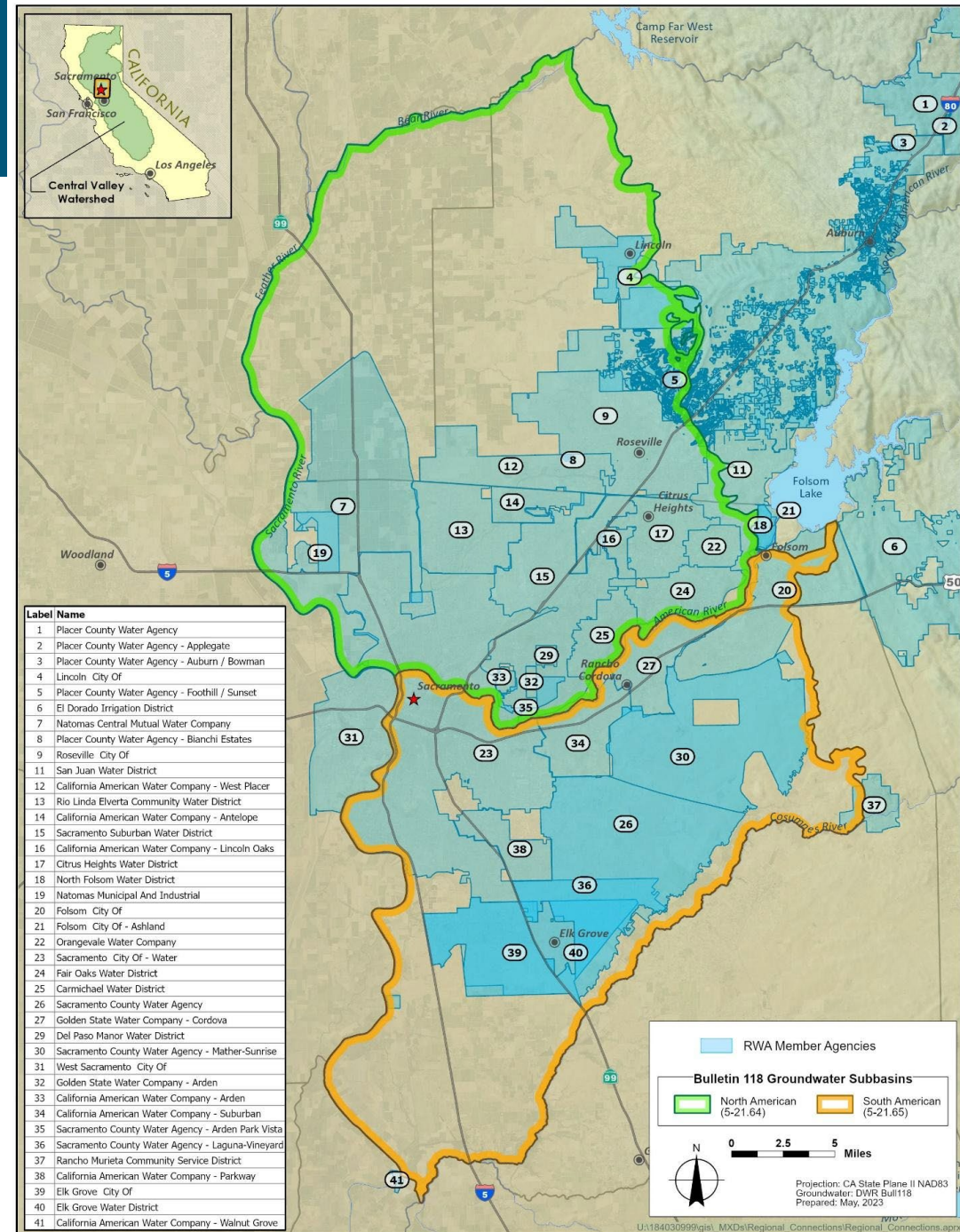


Sacramento Regional Water Bank Participating Agencies

RWA Board Meeting — September 11, 2025



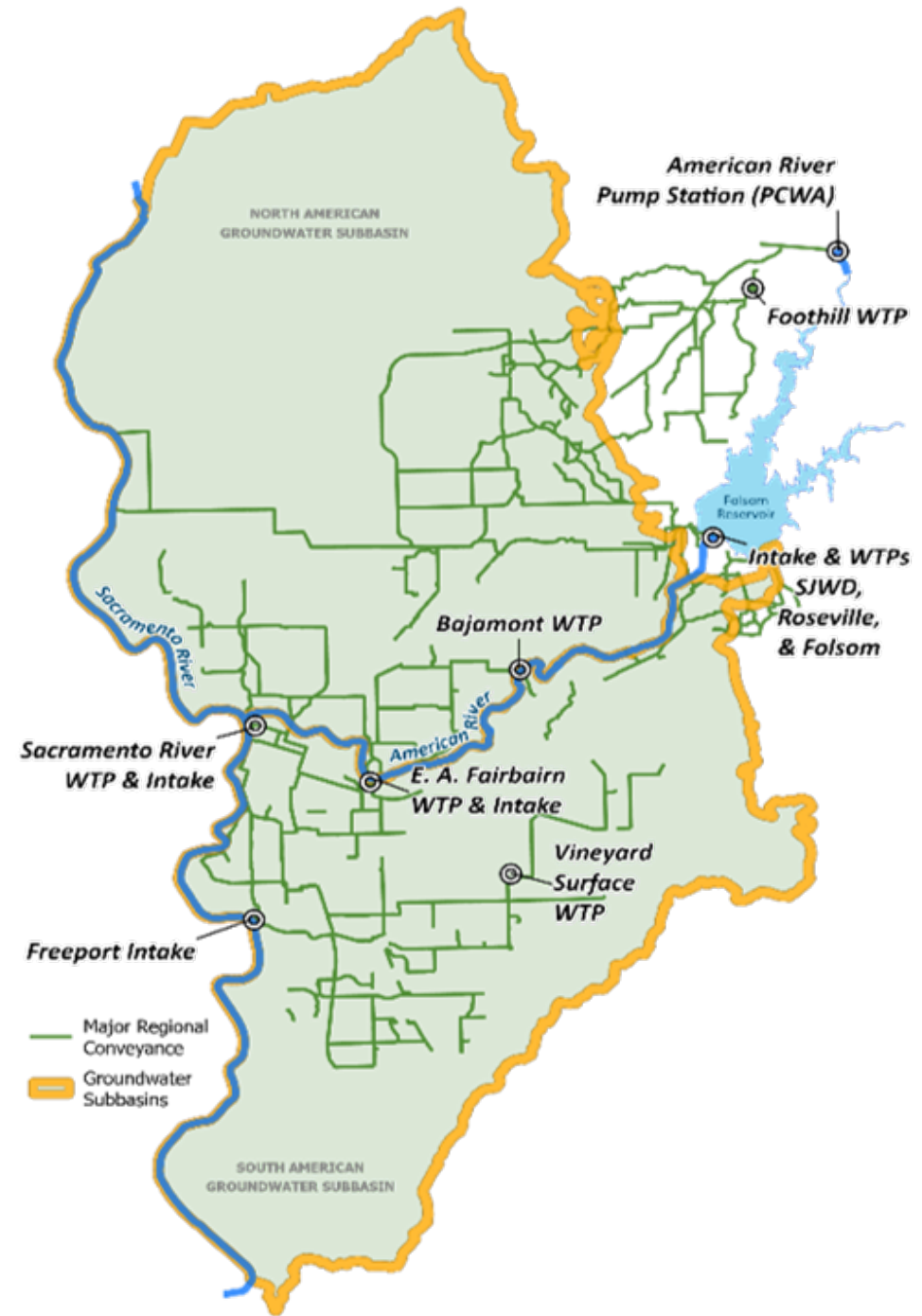
CITY OF
FOLSOM
DISTINCTIVE BY NATURE



Water Bank Overview

Expand conjunctive use in the region to:

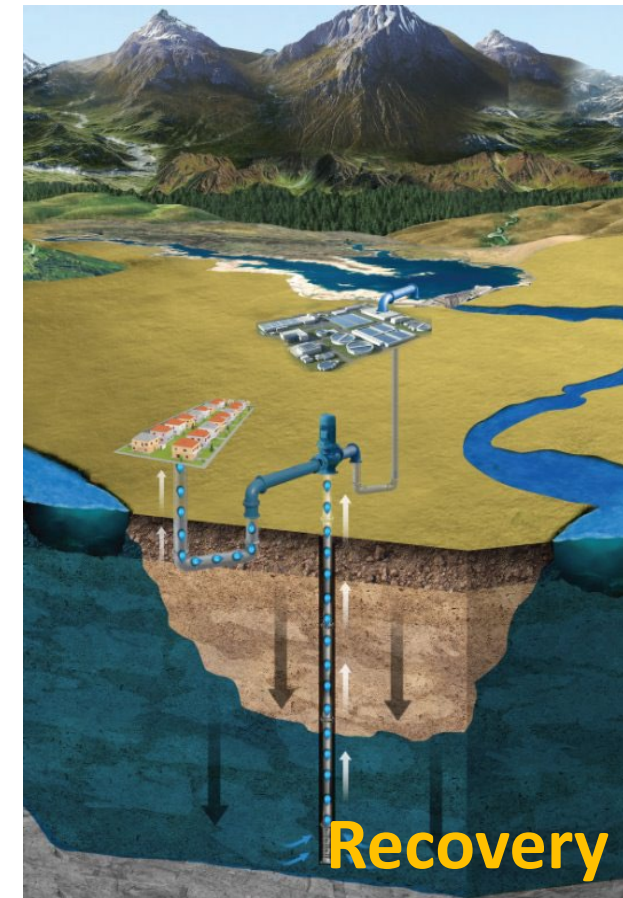
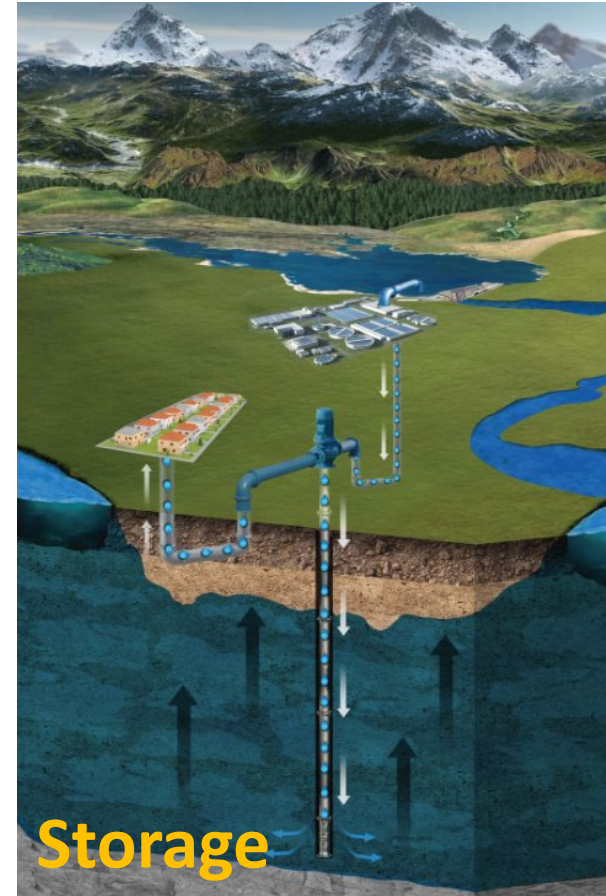
1. Improve long-term regional reliability and provide statewide water supply opportunities when possible; and
 2. Support healthy ecosystem function on the lower American River.
-
- With existing infrastructure:
 - recharge up to 65,000-acre feet per year during wet periods
 - recover up to 55,000-acre feet per year during dry periods.
 - Up to 35,000-acre feet per year of banked water supplies year may be transferred out of the basin.



Why a Water Bank?

Confidence, Credibility, Incentives

- Advances, modernizes, and institutionalizes existing regional conjunctive use activities
 - Water supply reliability
 - Groundwater sustainability
 - Regional/State water transfers - offsets agency costs and further incentivizes CU Supports Healthy Rivers & Landscapes Program
- Provided ecosystem benefits
- Aids in delta outflow
- Pumping energy savings
- Advances regional water management



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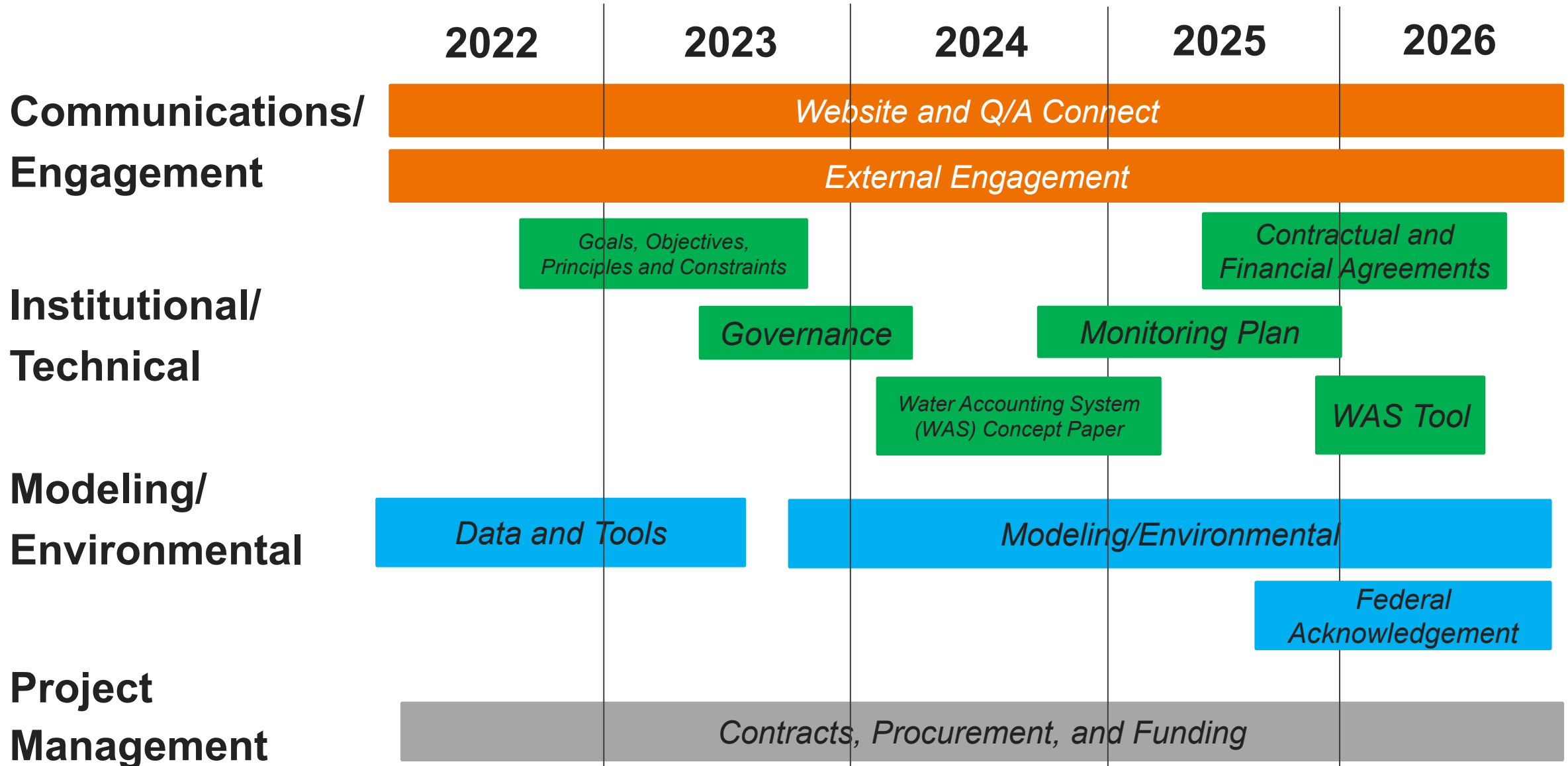


Water Bank Project — Tasks/Activities

Subject to change



RWA Board Meeting — September 11, 2025



Water Bank Key Documents

GOPC (completed June 2023)

Governance (completed Sept 2023)

Water Accounting System (completed March 2025)

Monitoring Plan (in progress)

SACRAMENTO REGIONAL WATER BANK Goal, Objectives, Principles, and Constraints

Purpose and Use of This Document

This is the first of a series of papers that will introduce and describe the process and considerations related to the development and implementation of the Sacramento Regional Water Bank (Water Bank).

This document defines the Water Bank goal, objectives, principles, and constraints that provide the framework to: (1) set the direction for subsequent Water Bank activities (overall strategy, alternatives formulation, analyses, environmental documentation, governance, etc.); and (2) focus development of options and the overall project description.

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- The **GOAL** represents the desired "end state" of activities. The goal captures the intent—the "why"—of the Water Bank and serves as the foundation of the entire development and implementation process.
- **OBJECTIVES** establish the intent of the Water Bank to address related aspects of the region's water management challenges to the maximum extent possible. Objectives provide additional details as to how the goal will be achieved and serve as a means of measuring success in achieving that goal.
- **PRINCIPLES** are overarching, foundational statements of shared values informing Water Bank development, implementation, and decision making.
- **CONSTRAINTS** are factors that shape or limit development, evaluation, and implementation of the Water Bank.

Background

Water management in the North and South American subbasins (hereafter called the American River Basin) is facing the combined climate pressures of warming air temperatures, shrinking snowpack, shorter and more intense wet seasons, more volatile precipitation, and rising sea levels affecting the Sacramento-San Joaquin Delta (Delta). These climate pressures will make it more challenging to simultaneously store and maintain water for droughts, manage flood risk, and protect freshwater ecosystems. Warming air temperature has complex adverse effects on water supply—it reduces the share of precipitation falling as snow, causes early snowpack melting and higher than usual winter runoff, raises water temperatures, and amplifies the severity of droughts and floods. Warmer, more intense droughts increase pressure to draw down groundwater resources. Over-reliance on groundwater for supply can lead to long-term declines in groundwater levels. Warmer, more intense storms add stress to managing surface reservoirs, making it harder to meet often competing objectives of storing water, safeguarding communities from harmful floods, and protecting freshwater ecosystems. Sea level rise threatens the Delta and puts more pressure on Folsom Reservoir to contribute flows to help meet Delta water quality requirements.

SACRAMENTO REGIONAL WATER BANK

Governance: Organizational Framework, Functions, and Associated Roles and Responsibilities

Purpose

This paper is one of a series of papers that introduce and describe the process and considerations related to the implementation of the Sacramento Regional Water Bank (Water Bank). These processes are aspects of Water Bank governance functions.

Background

Governance can be described as "the conceptual model for how an entity is managed, its interactions with and relationship to partners and affiliates, and identification of the operations and systems it oversees." Water Bank governance components include:

- **Vision and Strategy:** Goals, objectives, principles, and constraints
- **Structure:** Organizational framework, functions, and associated roles and responsibilities
- **Operations Support Tools:** Water accounting, monitoring, and reporting
- **Agreements and Finance:** Framework to incentivize water banking and codify roles and responsibilities for water banking

This paper focuses on the **structure** component of Water Bank governance. It outlines the required functions and activities to support successful implementation of the Water Bank, illustrates a general organizational framework to conduct these functions, and describes the associated rules and possibilities. This paper is intended to:

- (1) Establish shared understanding and common terminology among the Water Bank Program Committee members and the Water Bank Development Team, and
- (2) Help the Program Committee and the technical team maintain consistency in their ongoing engagements with other entities and stakeholders as part of the Water Bank development process.

This paper reflects feedback from the Program Committee on the draft *Governance: Roles and Responsibilities White Paper* (dated March 3, 2023). It also reflects additional input and feedback received during the Program Committee meetings on April 6 and April 10, 2023.

Required Functions and Activities

The required activities to support a successful Water Bank can be grouped into four functional areas:

- (1) Policy and legal activities
- (2) Operations activities
- (3) Administrative activities

REGIONAL WATER AUTHORITY

WATER ACCOUNTING SYSTEM FOR WATER BANKING IN NORTH AND SOUTH AMERICAN SUBBASINS

Version 1

March 17, 2025

SACRAMENTO REGIONAL WATER BANK

MONITORING PLAN

FOR GROUNDWATER BANKING IN THE NORTH AMERICAN AND SOUTH AMERICAN SUBBASINS

WORKING DRAFT — January 6, 2025

Stream Depletion (pending)

Modeling Appendix (pending)

CEQA (in progress)

NEPA (pending)

Water Bank Water Accounting System (WAS)

REGIONAL WATER AUTHORITY

WATER ACCOUNTING SYSTEM FOR
WATER BANKING IN NORTH AND SOUTH
AMERICAN SUBBASINS

Version 1

March 17, 2025

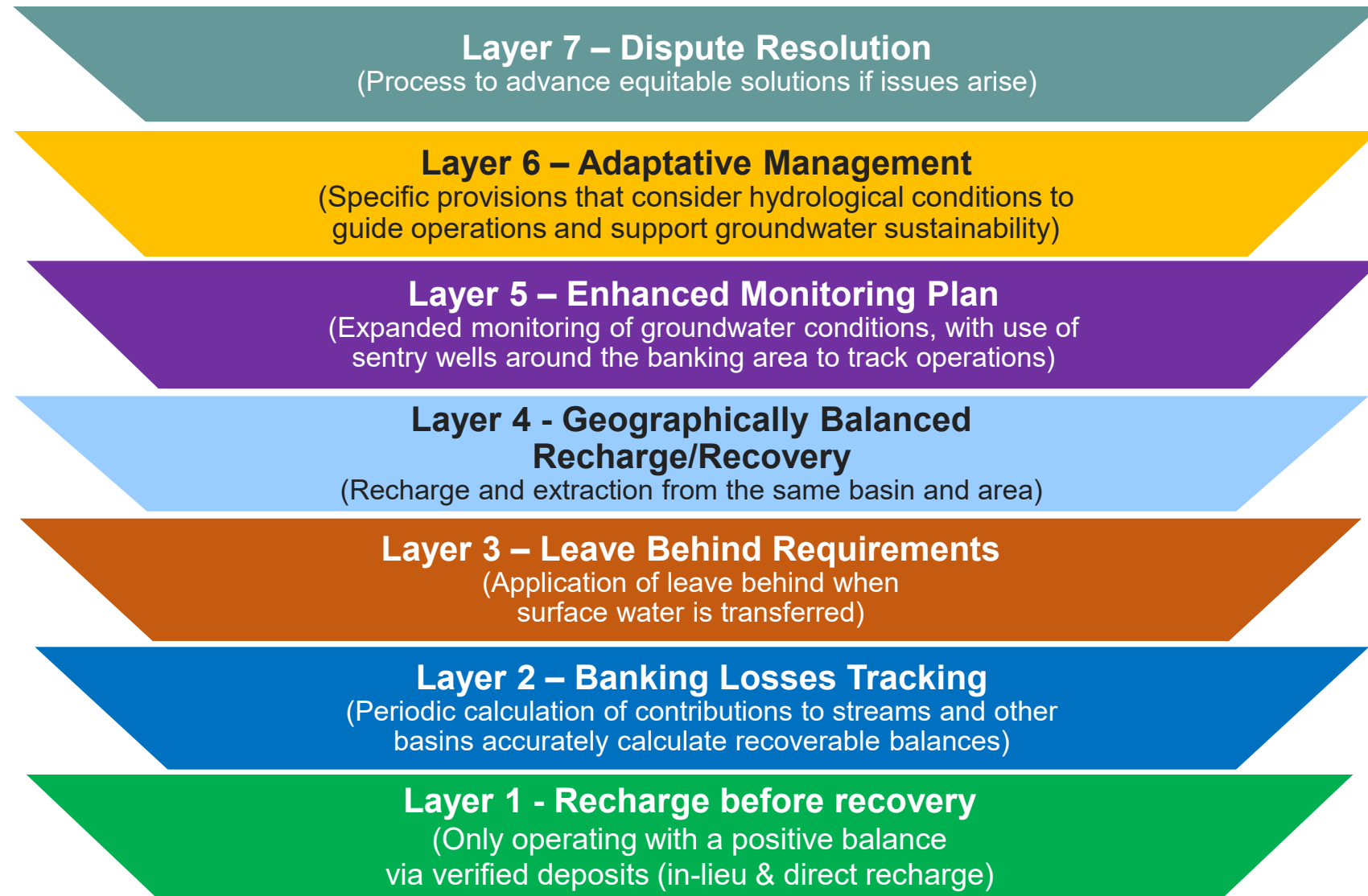
Purpose

The Water Accounting System (or WAS) is designed to effectively and transparently manage and monitor water banking activities within the North and South American Subbasins.

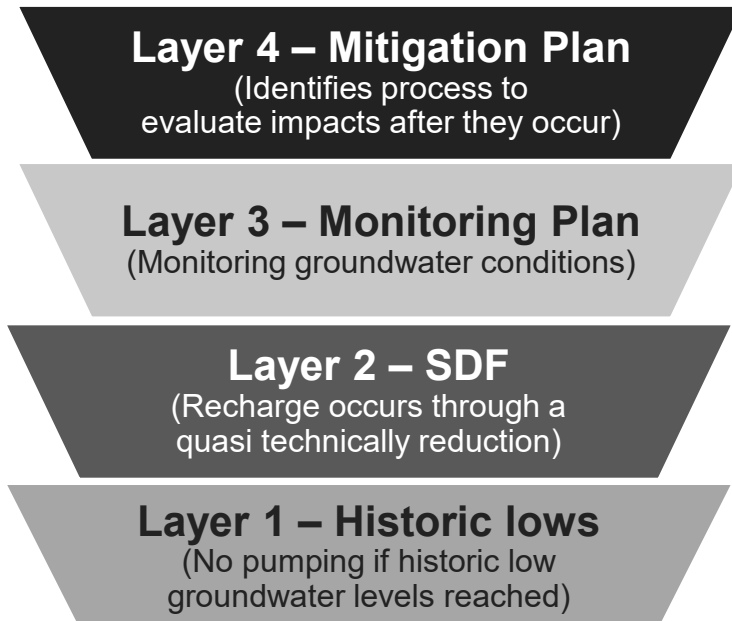
1. In-lieu and Direct Recharge Criteria/Methodology
2. Foundational Principles of Effective Banking
3. Integration of Sustainable Groundwater Management Act Requirements

Water Bank Layers of Protection

Sacramento Regional Water Bank

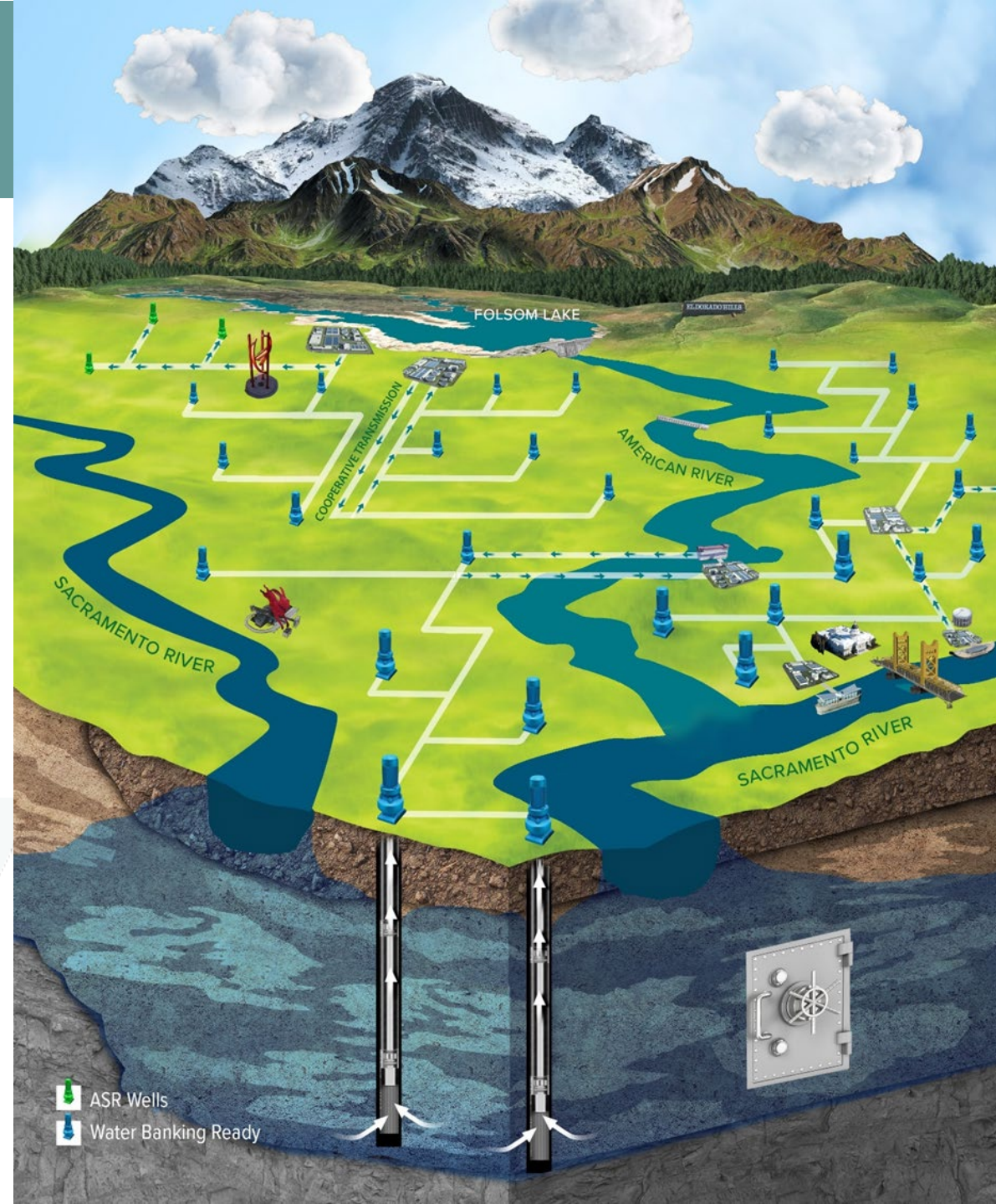


Single Year Groundwater Substitution Transfers

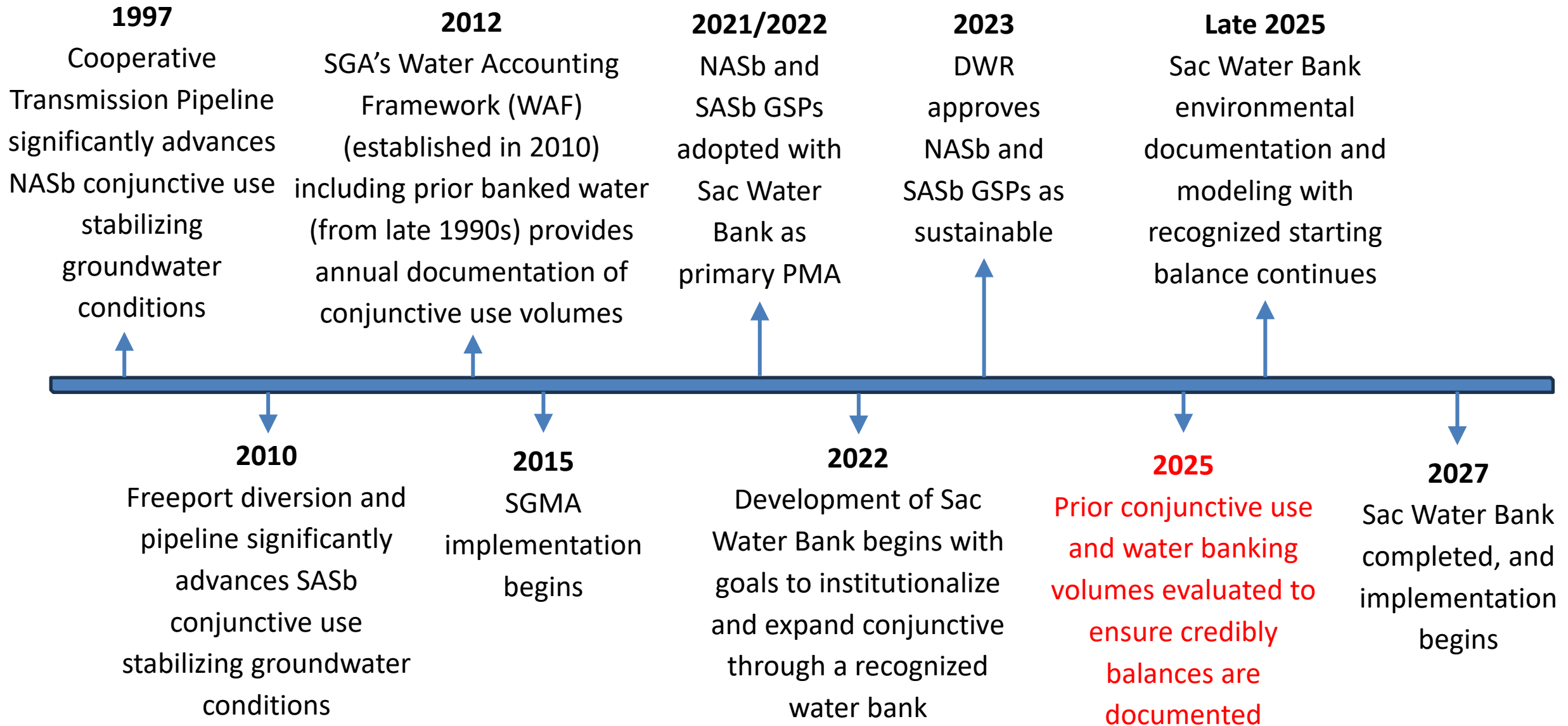


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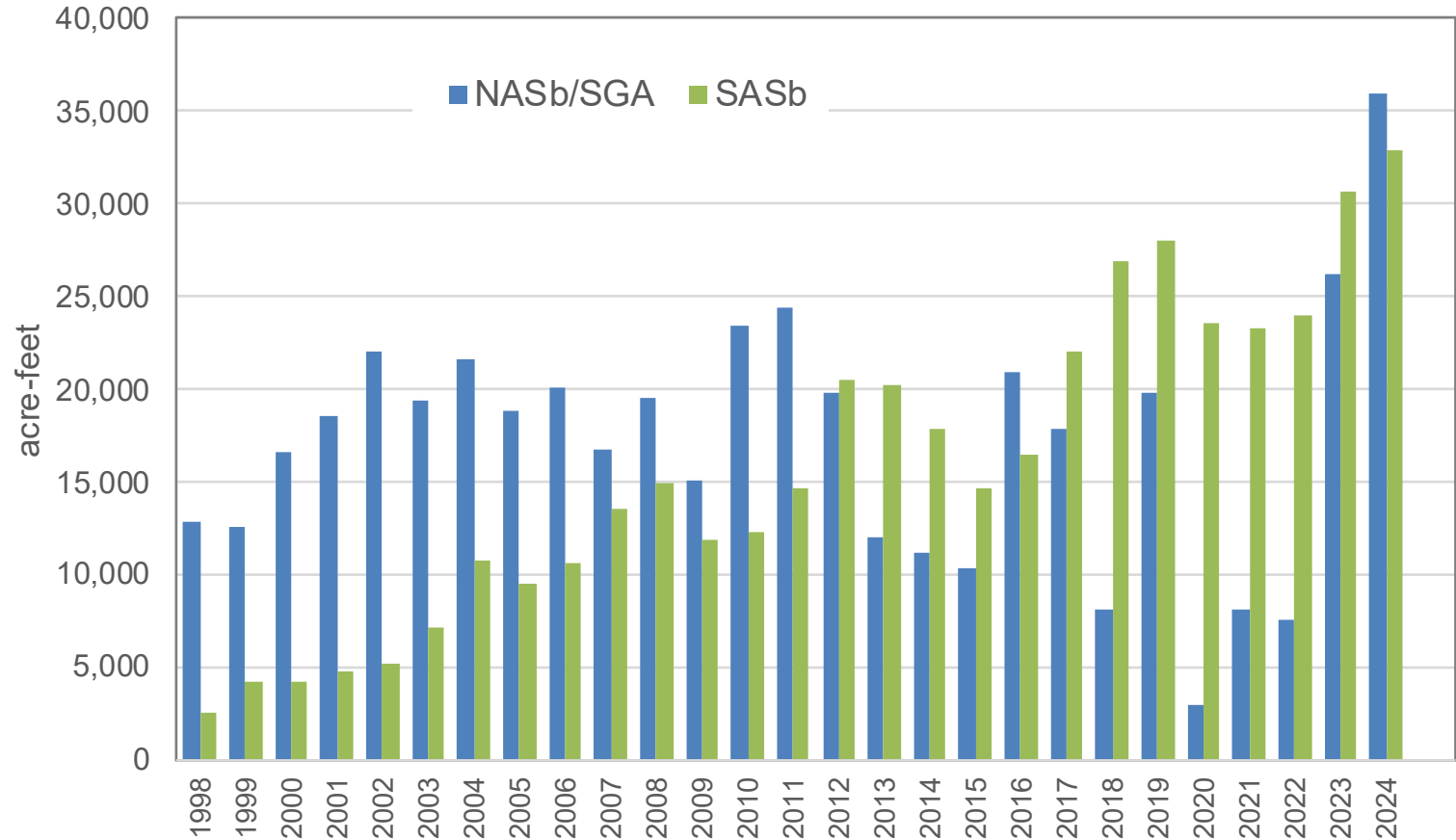


Conjunctive Use and Banking History



Documented and Verified PBW Amounts

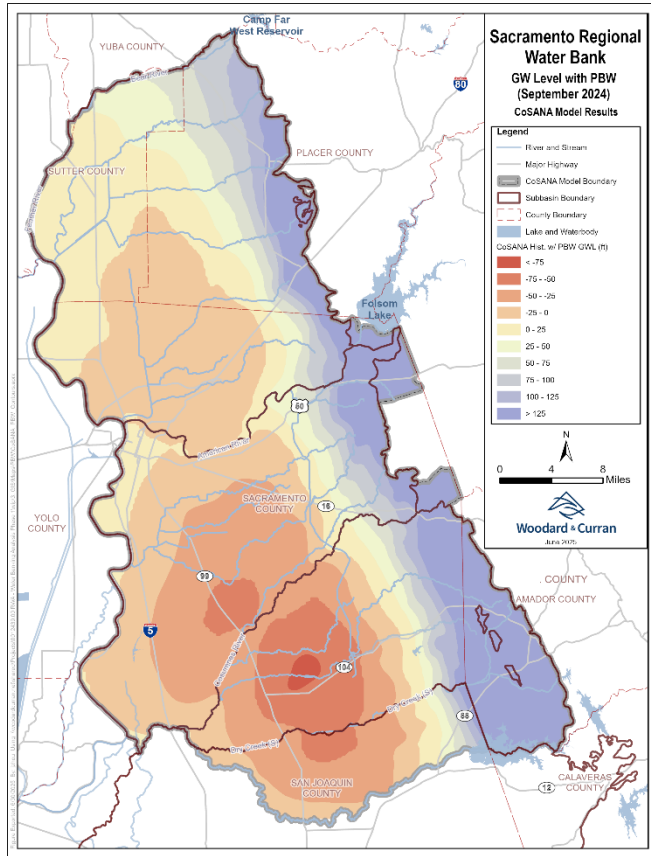
Agency	PBW (AF)
CalAm	17,102
COS	90,035
CWD	91,887
SSWD	268,541
NASb/SGA Subtotal	467,565
GSWC	215,166
SCWA	216,327
SASb Subtotal	431,493
TOTAL	899,058



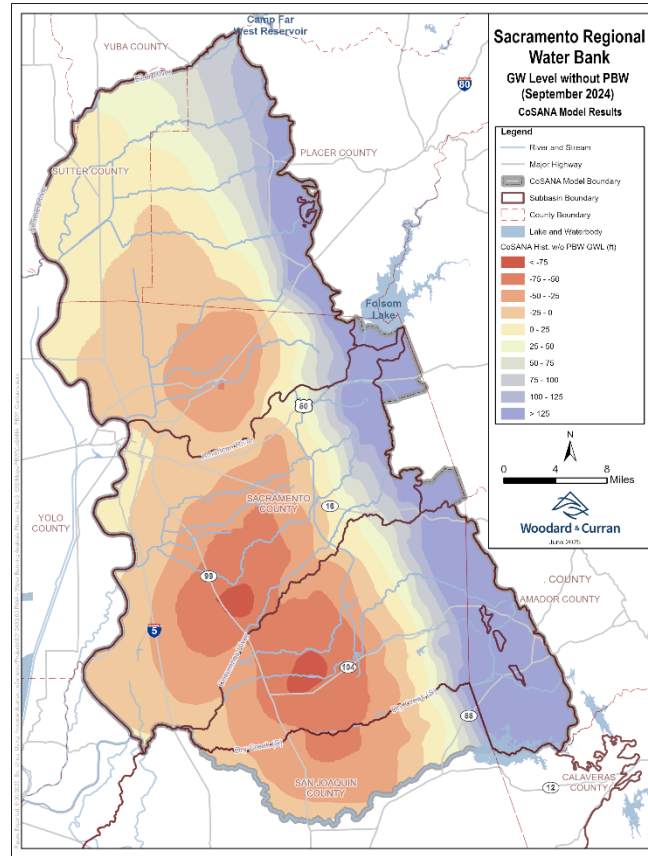
CoSANA Modeling of PBW

Groundwater level (GWL) contours at end of simulation period (Sep 2024)

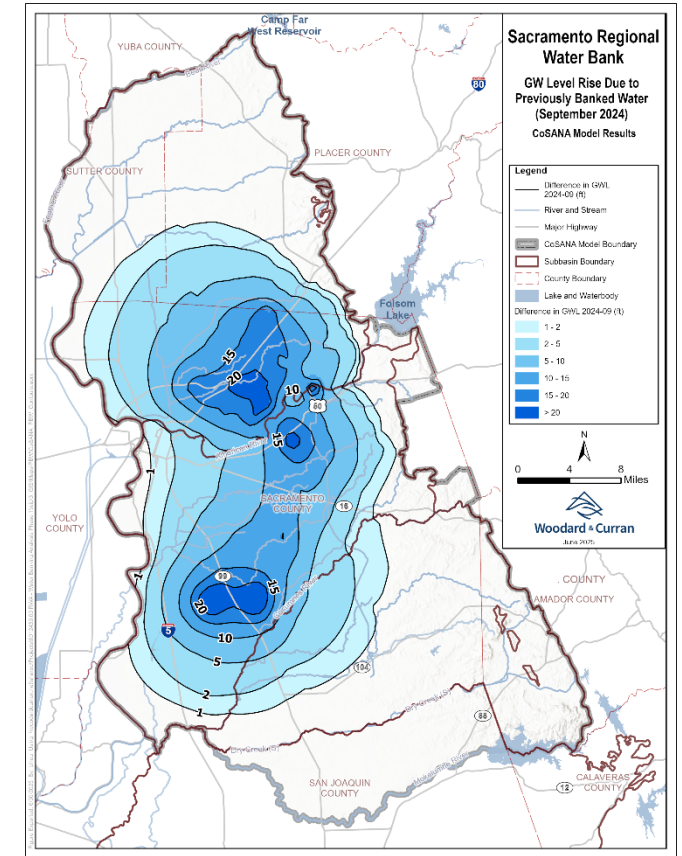
RWA Board Meeting — September 11, 2025



Scenario 1: Historical Conditions with PBW

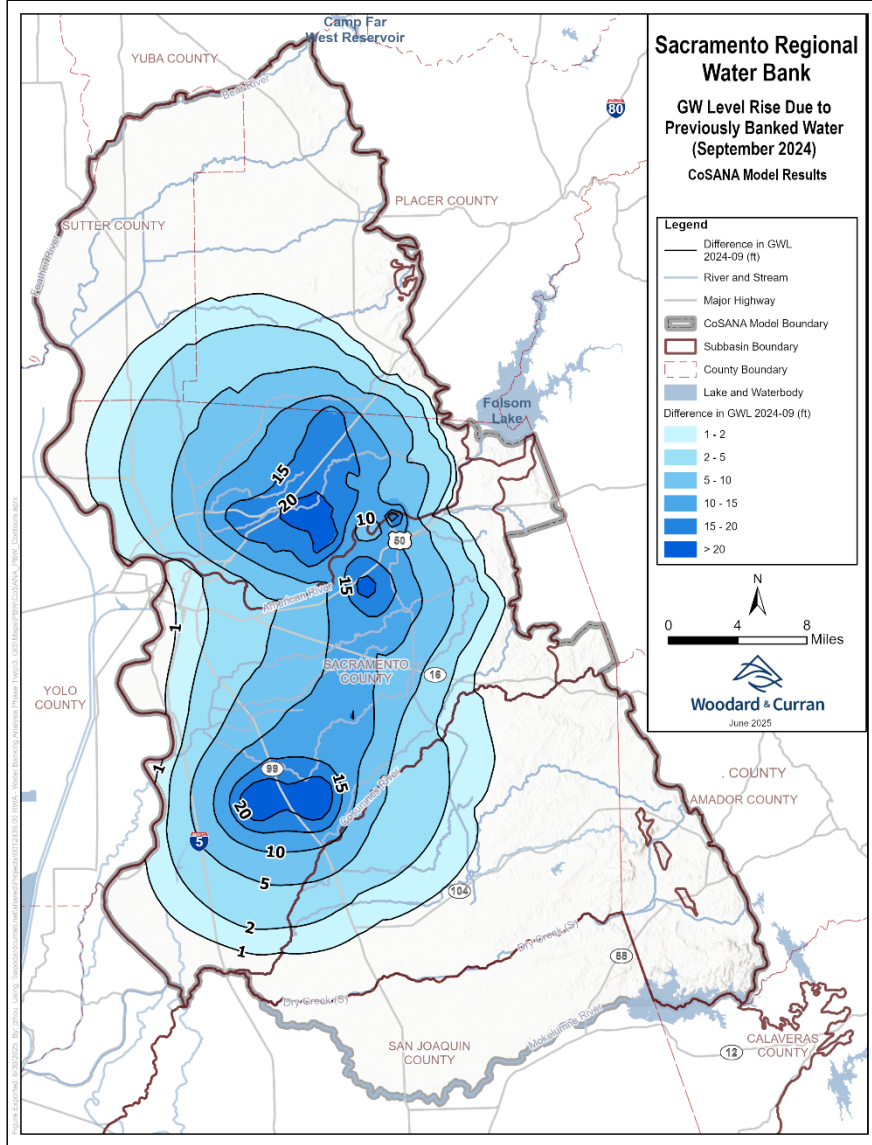


Scenario 2: Historical Conditions without PBW

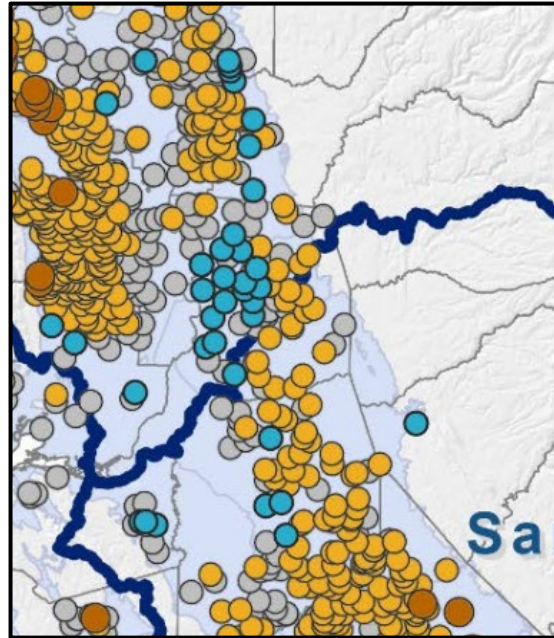


ΔGWL (Scenario 1 – Scenario 2)
Effect of PBW on GWL

PBW has Resulted in Higher GW Storage



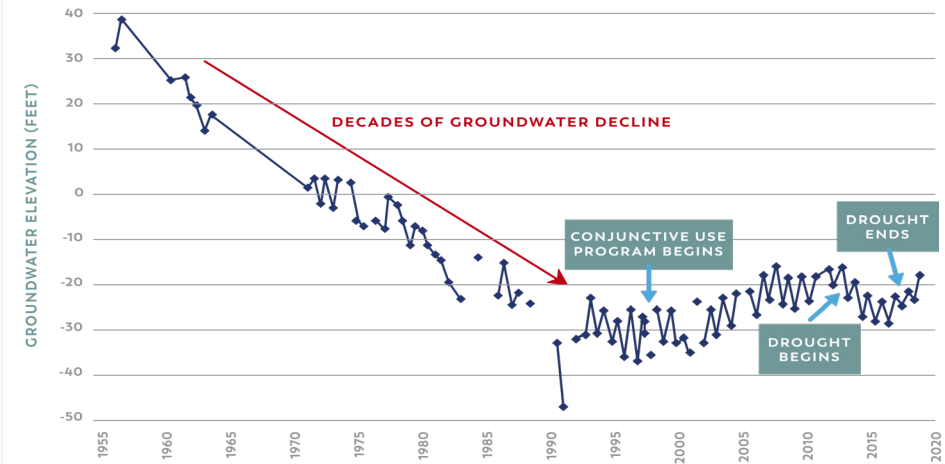
20-year Groundwater Level Trend (Water Years 2004 to 2024)



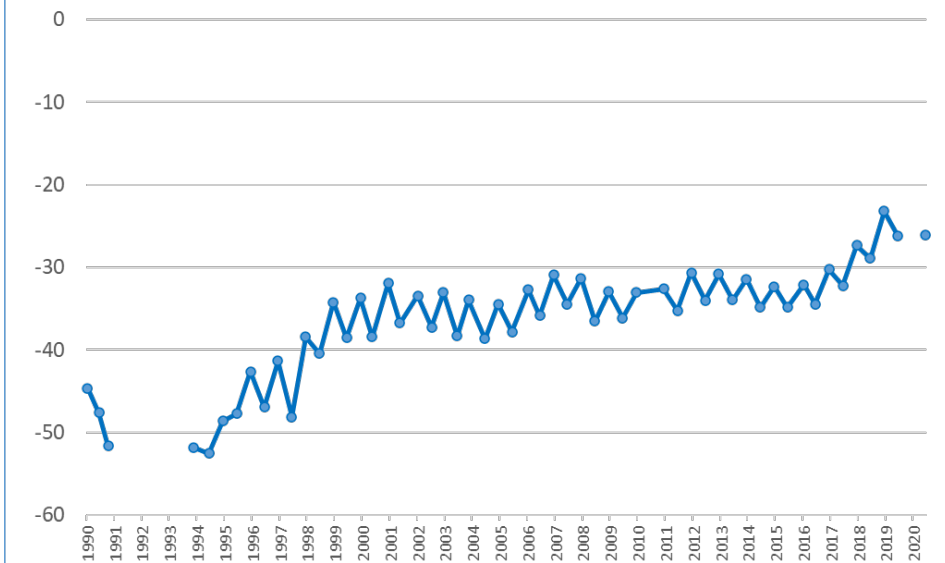
Trend of Groundwater Level Change over 20 years

- Increasing > 2.5 ft/yr
- Increasing 0.01-2.5 ft/yr
- No Significant Trend
- Decreasing 0.01-2.5 ft/yr
- Decreasing > 2.5 ft/yr
- ▭ Hydrologic Regions
- ▭ Groundwater Basins
- ▭ County Boundary

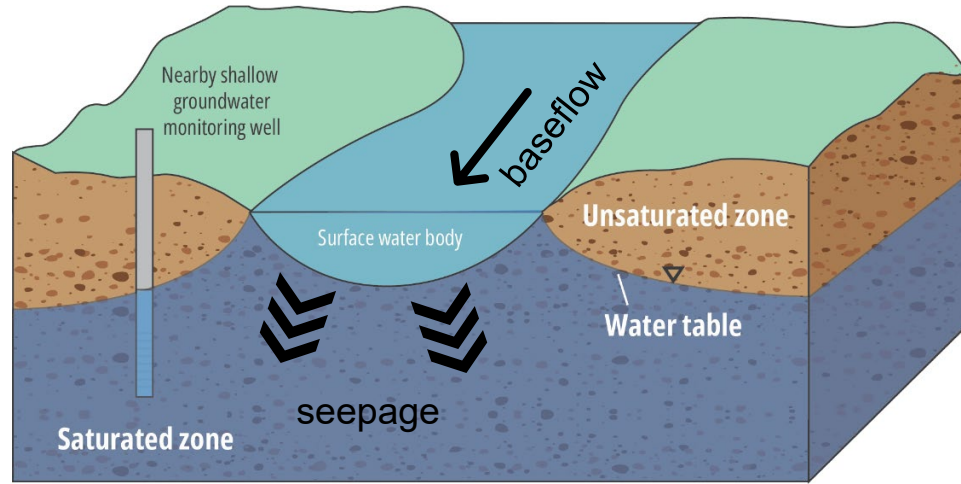
LONG-TERM GROUNDWATER LEVELS, NORTHERN SACRAMENTO COUNTY (WELL 10N05E14Q002M)



Well SCGA #8

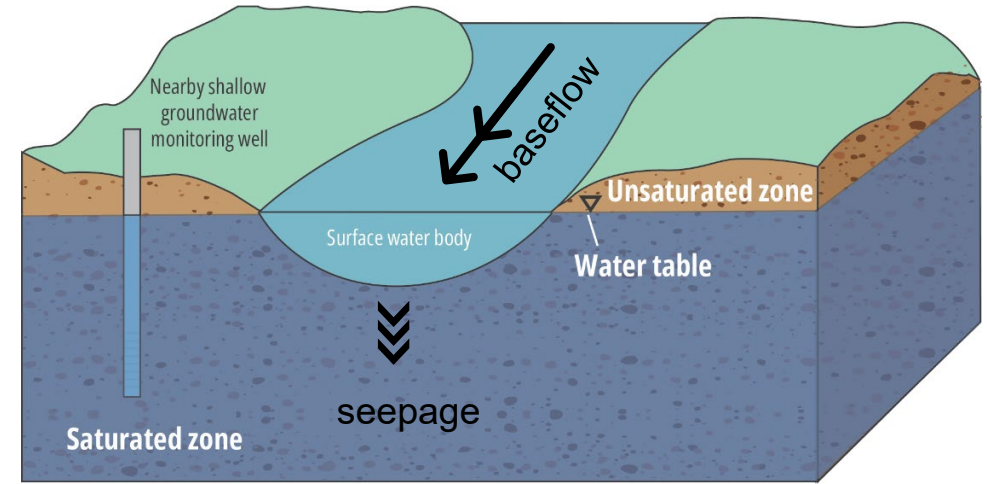


Higher Groundwater Levels Affect Seepage Conditions with the Interconnected Streams



Conditions without PBW

- Higher groundwater pumping
- Lower groundwater elevations
- More stream seepage
- Less baseflow in the streams



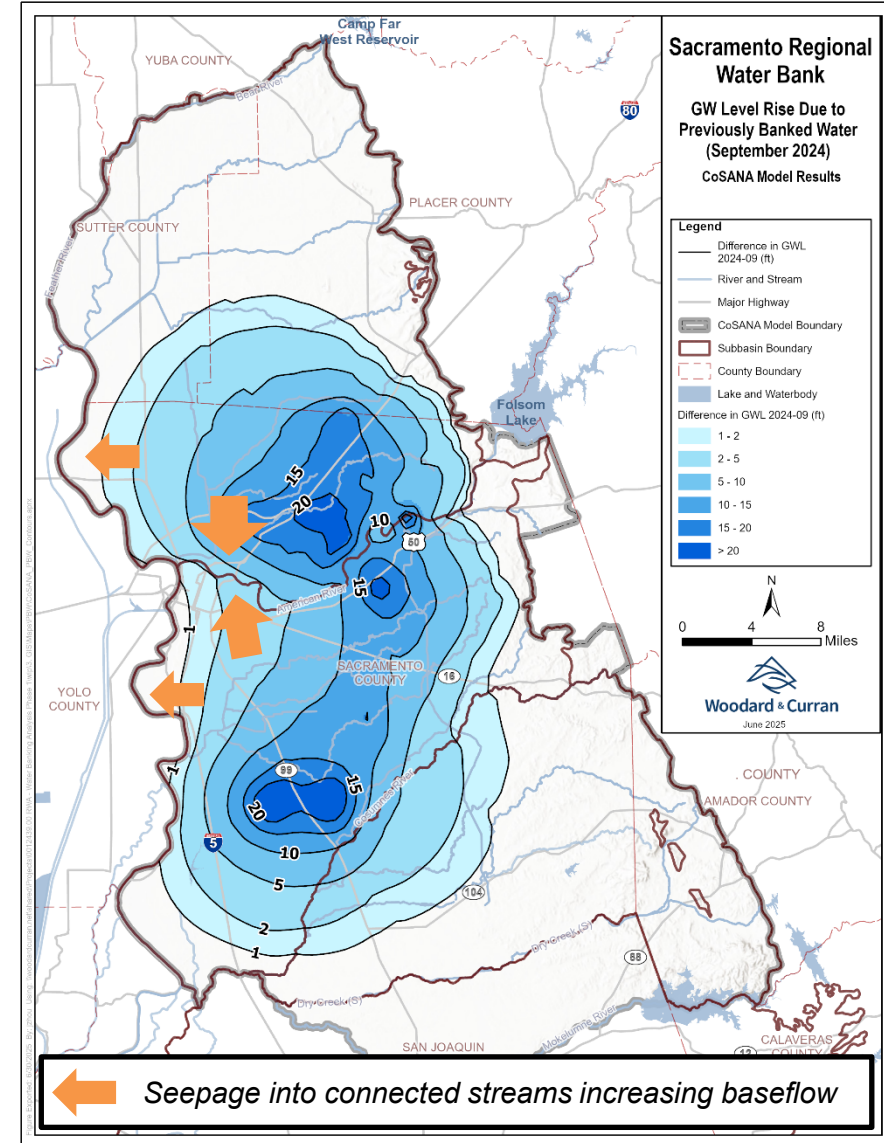
Conditions with PBW

- Lower groundwater pumping
- Higher groundwater level
- Less stream seepage
- More baseflow in the streams

PBW has Contributed to Changes in Stream Baseflows

Changes in Seepage to/from Interconnected Surface Water Bodies:

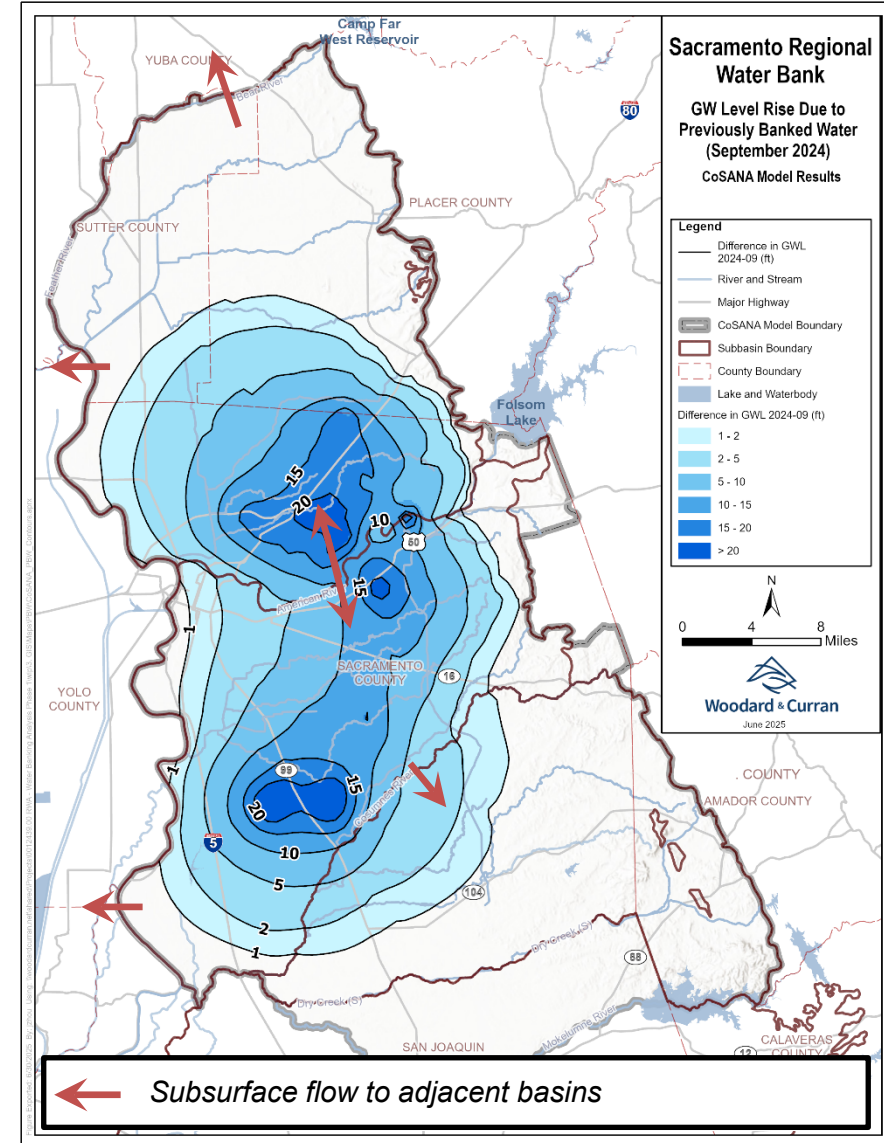
- Higher groundwater levels due to PBW have resulted in less seepage from streams, and net increase in streams baseflow.
- PBW is reduced by amount equivalent to the net change in stream seepage (net increase in baseflow).



PBW has Contributed to Changes in Inter-basin Subsurface Flows

Changes in Subsurface Flow to/from Adjacent Basins:

- Higher groundwater levels due to PBW have resulted in net increased outflow to neighboring subbasins
- PBW is reduced by amount equivalent to the net increase in outflow to adjacent subbasins.



Remaining Banked Water Accounts for Changes in Stream Seepage and Subsurface Flow

$$\text{In-Basin Banked Water} = \text{PBW} - \text{A} - \text{B}$$

PBW

(A) Contribution to Streams

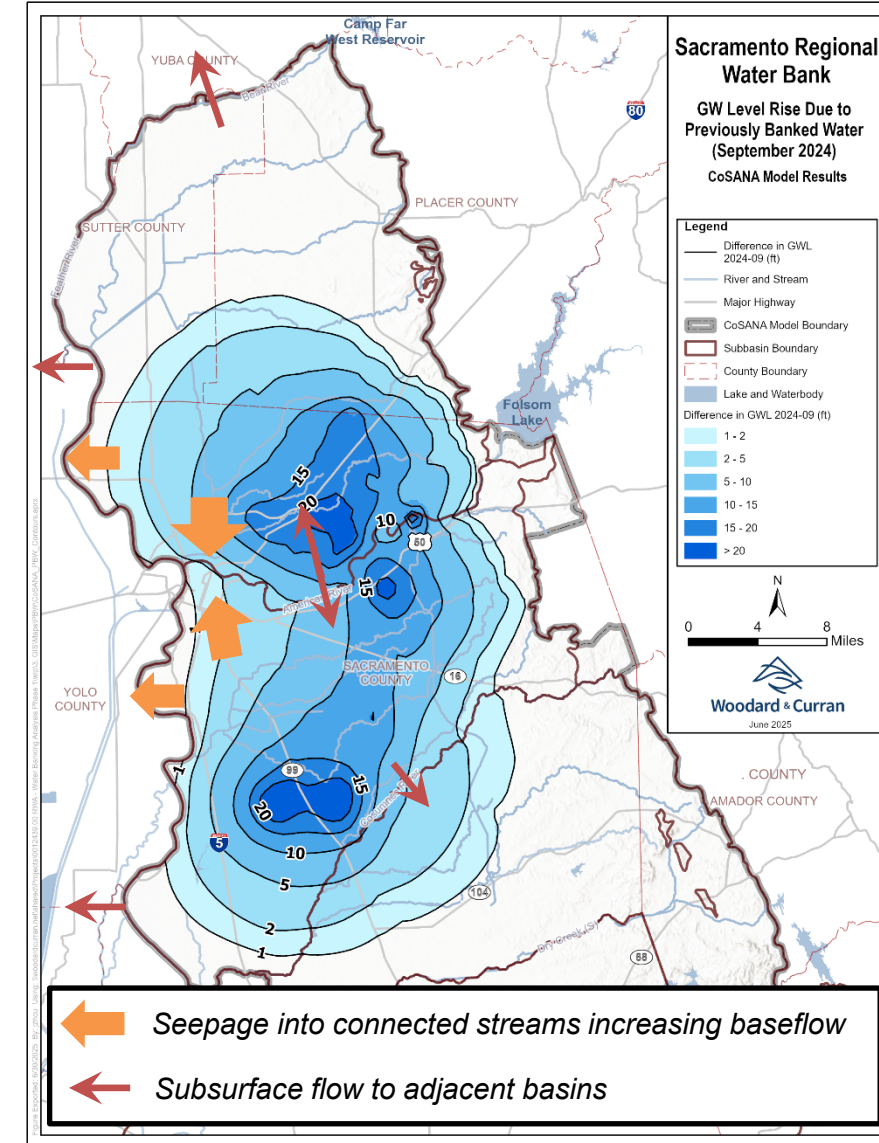
(B) Subsurface Flow

In-Basin Banked Water

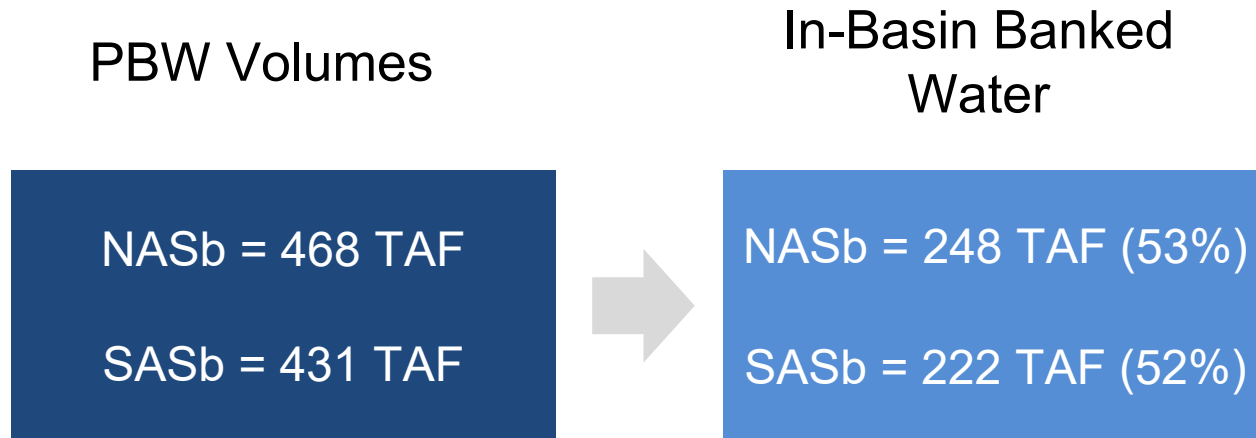
PBW = Documented volume of water banked consistent with in-lieu and direct recharge methodology and criteria

A = PBW portion contributing to increased baseflow

B = PBW portion contributing to increased subsurface outflow to adjacent subbasins



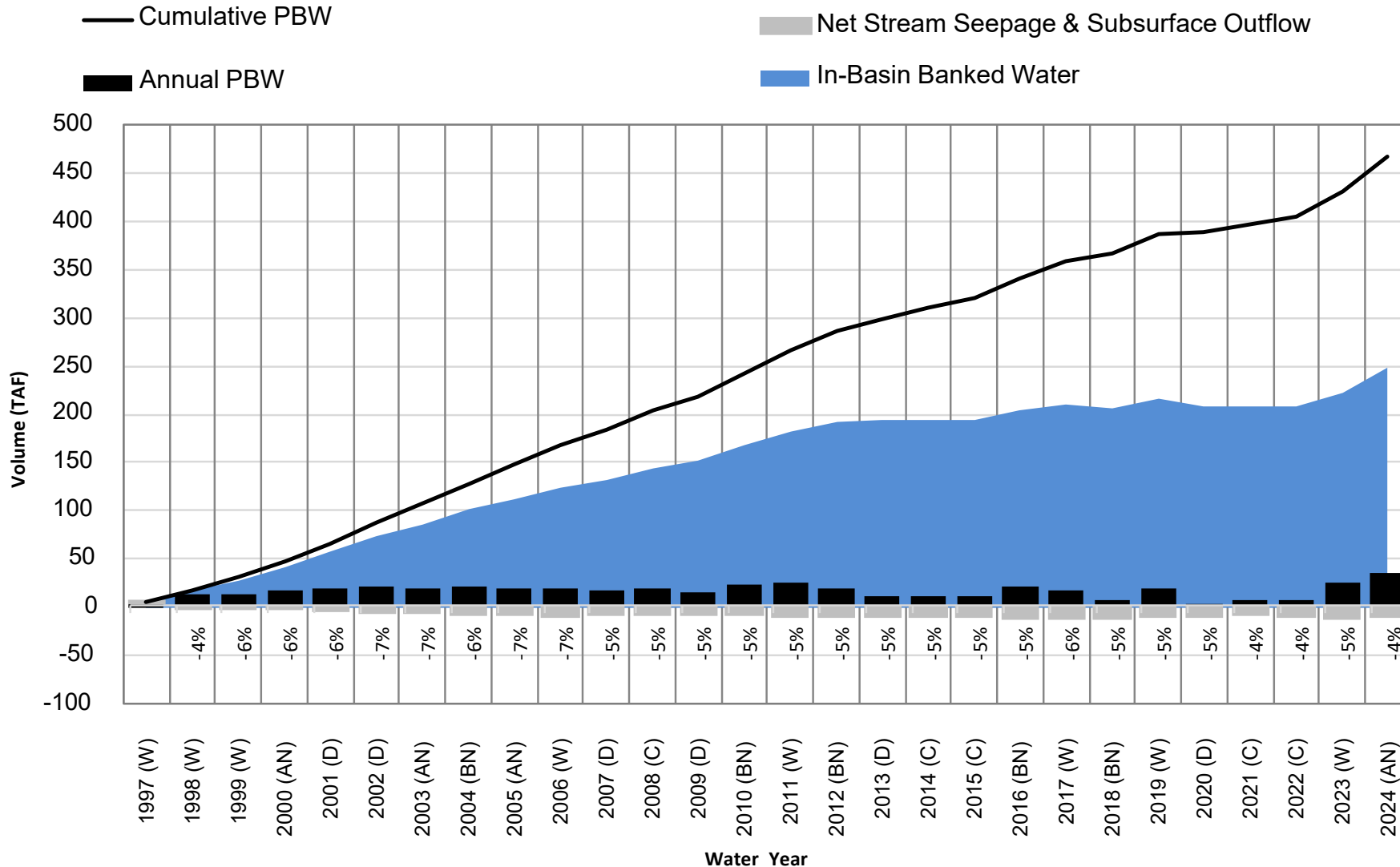
In-Basin Banked Water Balances



Agency	PBW (AF)	In Basin Balance (AF)
CalAm	17,102	9,081
COS	90,035	47,807
CWD	91,887	48,791
SSWD	268,541	142,592
NASb/SGA Subtotal	467,565	248,271
GSWC	215,166	110,847
SCWA	216,327	111,446
SASb Subtotal	431,493	222,293
TOTAL	899,058	470,564

as of September 2024

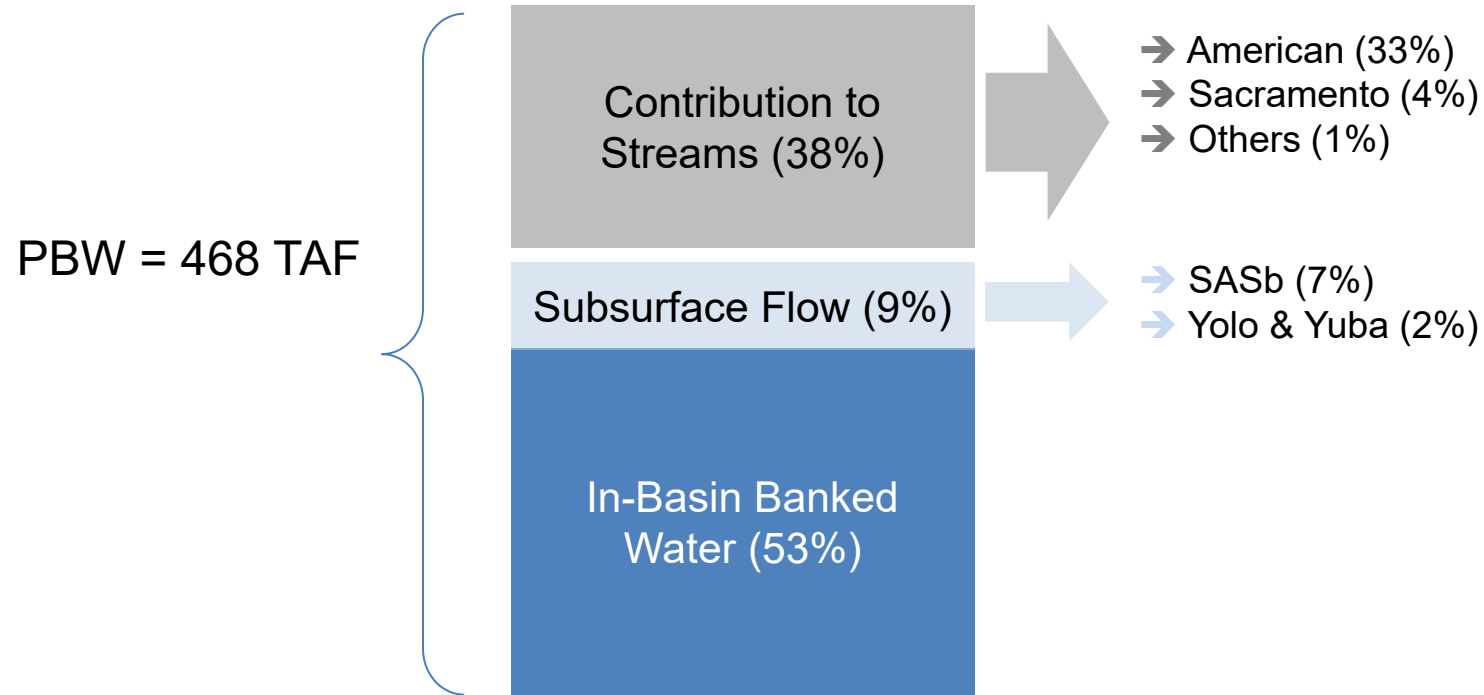
PBW Analysis - NASb



- Cumulative PBW = 468 TAF
- In-basin banked water = 248 TAF (53%)
- In-basin banked water reflects contribution to streams & subsurface outflow.
- Historical NASb contribution to streams & subsurface outflow \approx 4 - 6% per year of banked water balance

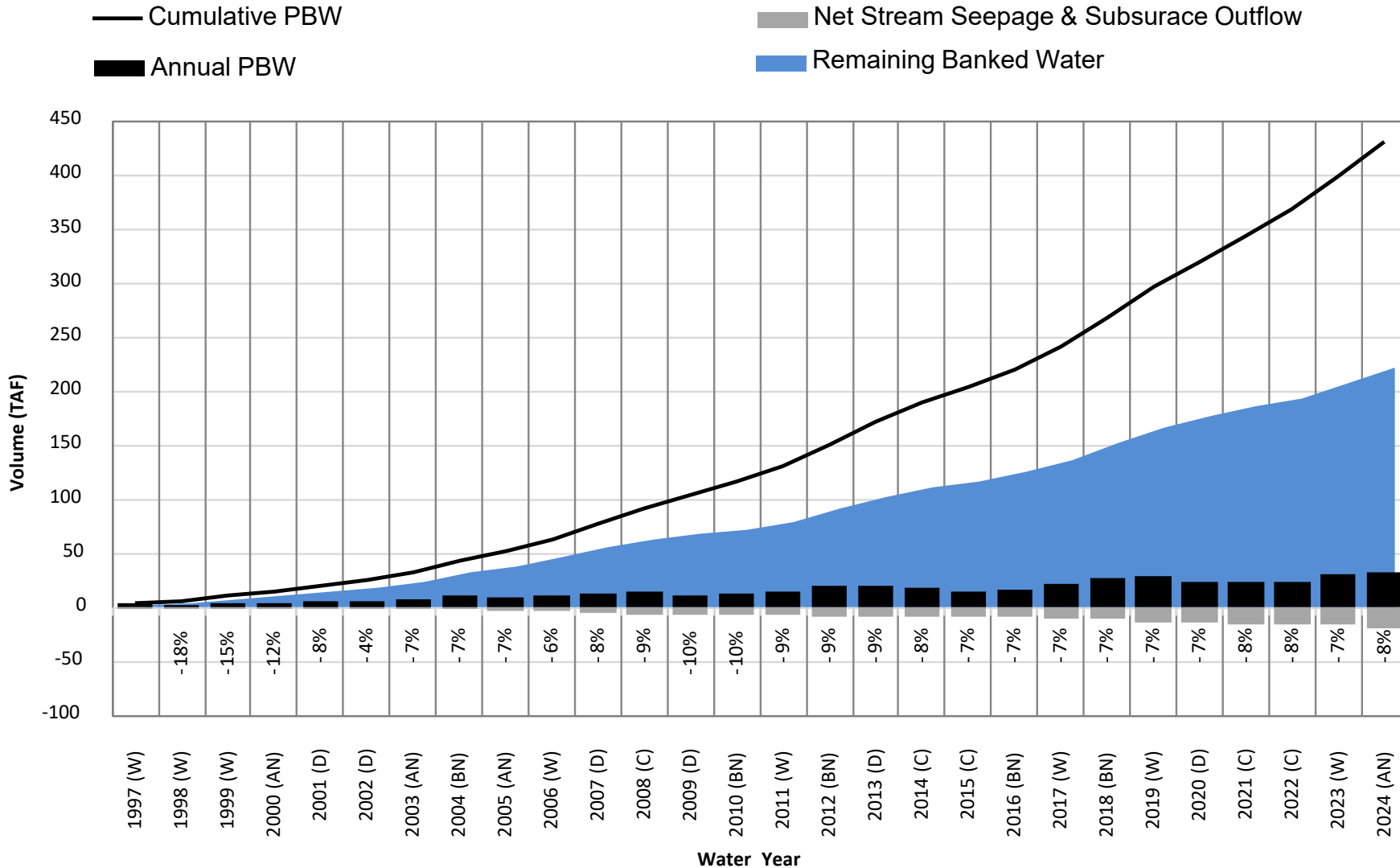
PBW Analysis - NASb

NASb's PBW Balance after 27 years (as of September 2024)



- Historical NASb contribution to streams & subsurface outflow \approx 4 - 6% per year of banked water balance

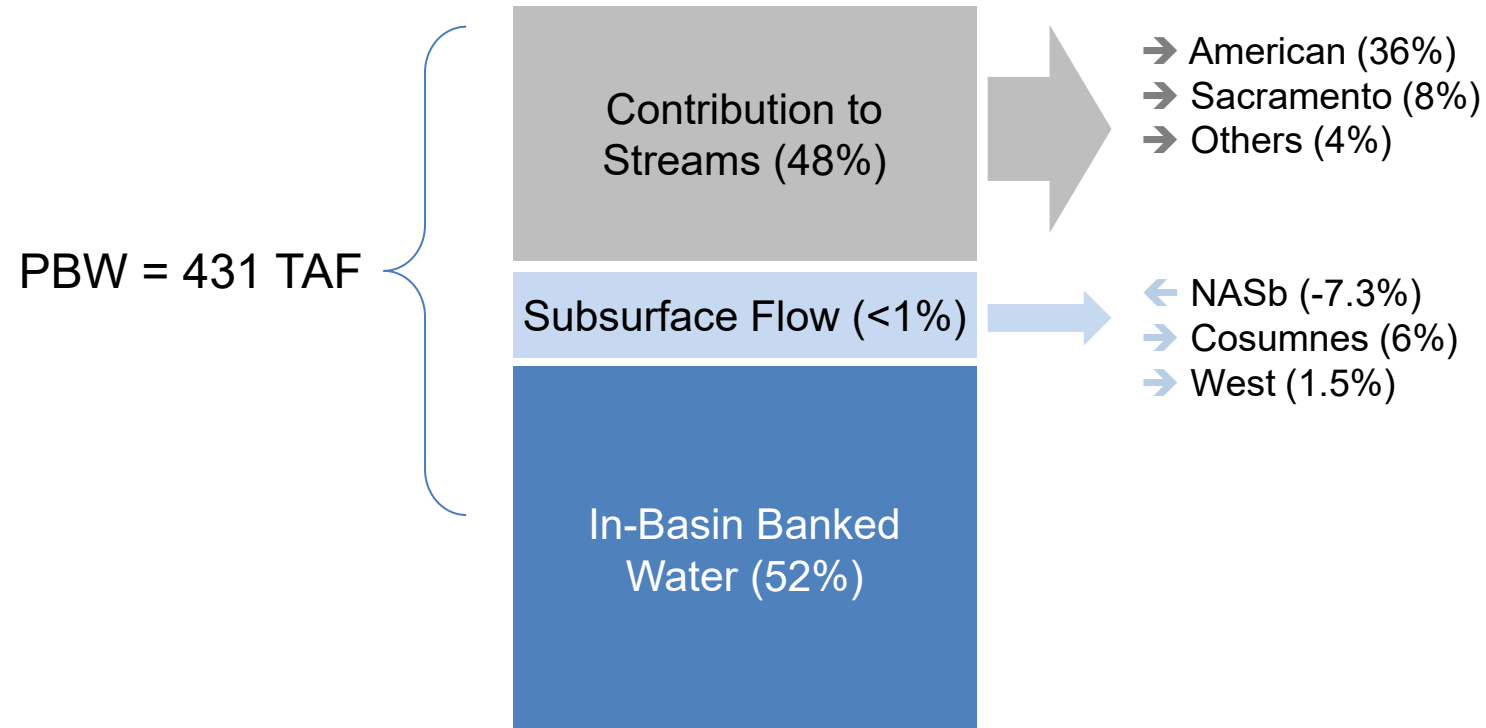
PBW Analysis - SASb



- Cumulative PBW = 431 TAF
- In-basin banked water = 222 TAF (52%)
- In-basin banked water reflects contribution to streams & subsurface outflow.
- Historical SASb contribution to streams & subsurface outflow ≈ 7 - 8% per year of banked water balance

PBW Analysis - SASb

SASb's PBW Balance after 27 years (as of September 2024)



- Historical SASb contribution to streams & subsurface outflow \approx 7 - 8% per year of banked water balance

Banked Water Provides Multiple Benefits

- Ecosystem benefits
- Delta outflow
- Downstream
- Support Healthy Rivers & Landscapes
- Groundwater sustainability
- Water reliability

Connected
streams



Contribution to
Streams

Adjacent
Basins



Subsurface Flow

In-Basin Banked
Water

- Groundwater sustainability
- Water supply reliability
- Pumping energy savings
- Regional/State Water Transfers to offset Participating Agency costs and incentivize conjunctive use
- Support Healthy Rivers & Landscapes, American River Climate Adaptation Plan, etc.

Sacramento Regional Water Bank
contact information:

waterbankinfo@rwah2o.org

Sacramento Regional Water Bank
website: <https://sacwaterbank.com>

