NORTH AMERICAN SUBBASIN
Groundwater Sustainability Plan

PREPARED FOR:
RD1001 GSA
Sacramento Groundwater Authority GSA
South Sutter Water District GSA
Sutter County GSA
West Placer County GSA

DECEMBER 2021

North American Groundwater Subbasin (NASb) Groundwater Sustainability Plan Update

Public Workshop #2
January 22, 2026

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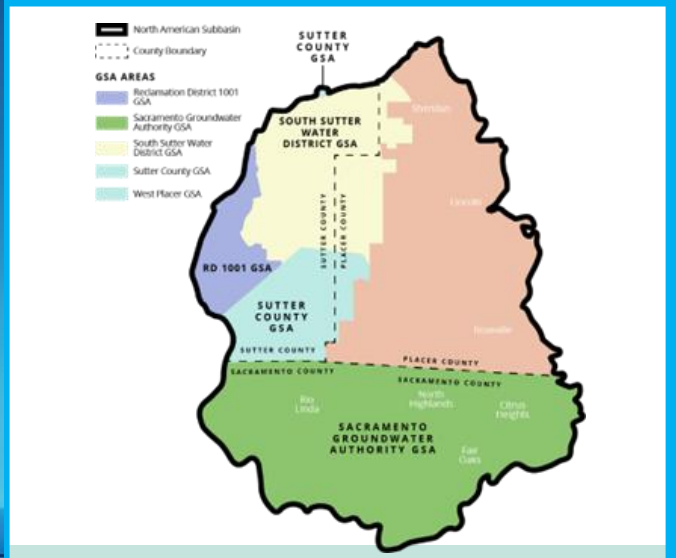
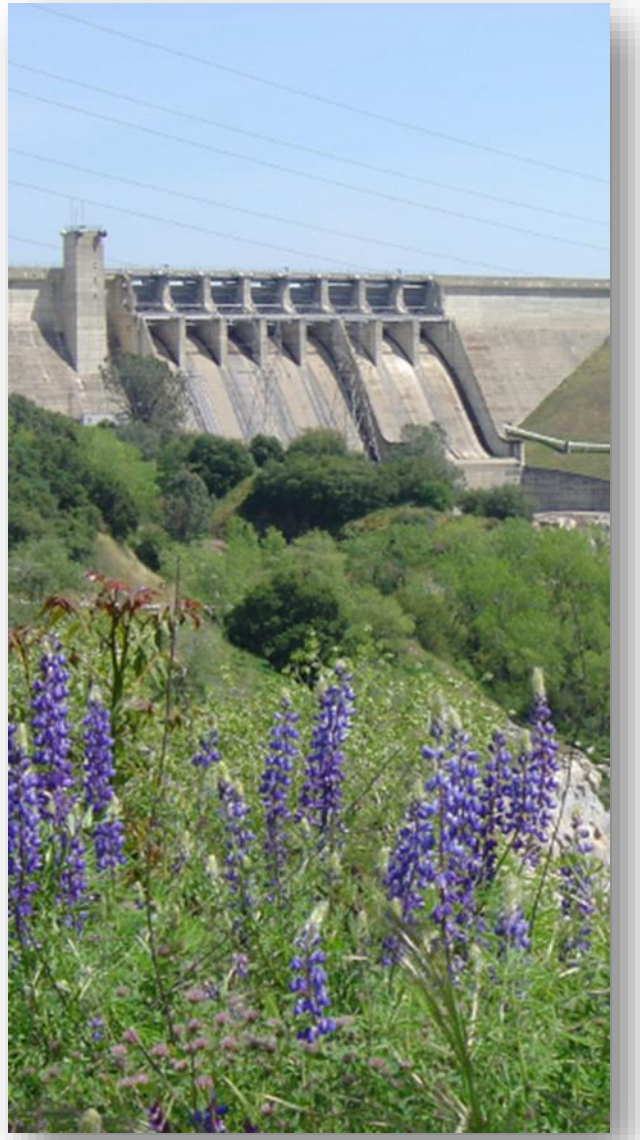


Agenda

- Welcome and Meeting Purpose
- GSP Amendment
- Timeline
- Water Quality Sustainable Management Criteria
- CoSANA Upgrade & Water Budgets
- Questions/Comments



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Welcome and Meeting Purpose

Meeting Purpose

- Provide an update on the progress of GSP and SGMA implementation
- Present proposed approach to revising water quality sustainable management criteria
- Present information on the Cosumnes, South American, North American (CoSANA) model upgrade
- Seek input

A copy of the presentation, along with additional meeting materials, will be available at https://nasbgroundwater.org/

How to Engage During the Meeting

- **On Zoom**:
  - "Raise hand" function to speak or
  - Type question in comment box
- **Via telephone**:
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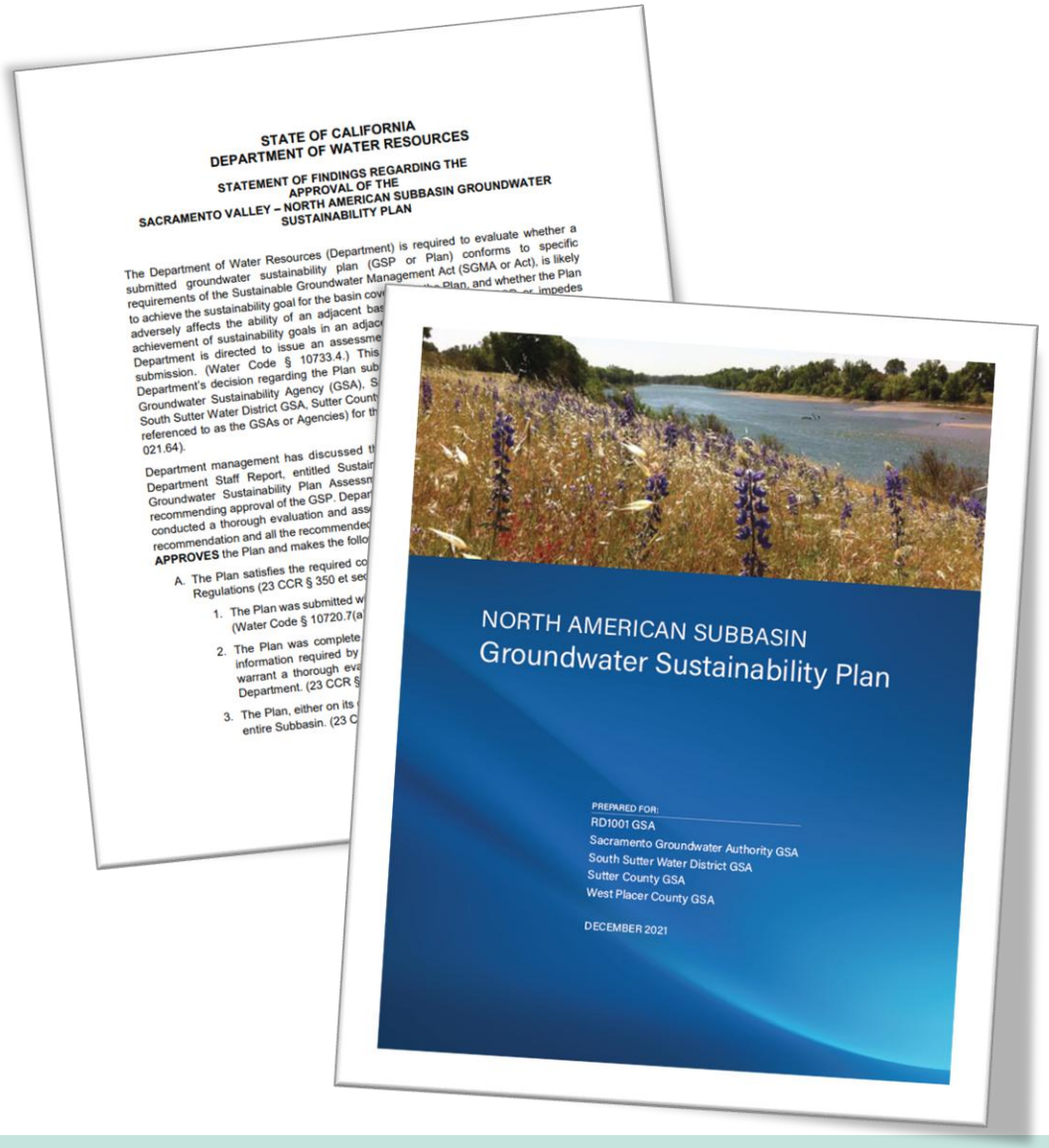
GSP Amendment

GSP Amendment Recap

- DWR provided six recommendations
  - Addressing them can impact determination
- Substantial improvements in data and understanding
- GSAs are considering refinements to meet local needs
- Current Status: In progress, to be submitted by January 2027



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Timeline of Activities

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Sustainability Indicators

Today's topic

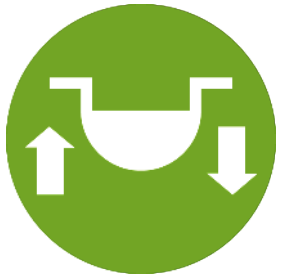
Chronic lowering of groundwater levels

Degraded water quality

Reduction of groundwater storage

Land subsidence

Seawater intrusion



Depletions of interconnected surface waters

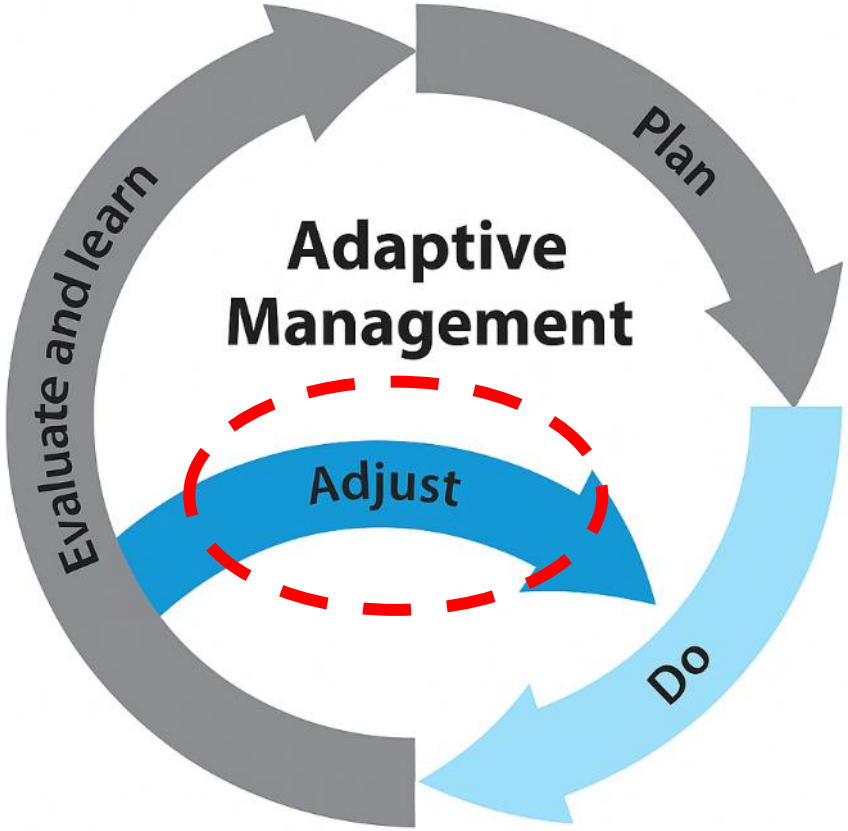
Water Quality Sustainable Management Criteria

Water Quality Criteria Background

- The 2021 GSP established criteria for groundwater quality
- Criteria were developed for two well types
  - Shallow Aquifer Wells (primarily domestic and monitoring wells)
  - Public Water System (PWS) Wells (municipal supply wells)
- Total Dissolved Solids (TDS) and Nitrate are the primary constituents in the Subbasin

Why Update Water Quality Criteria?

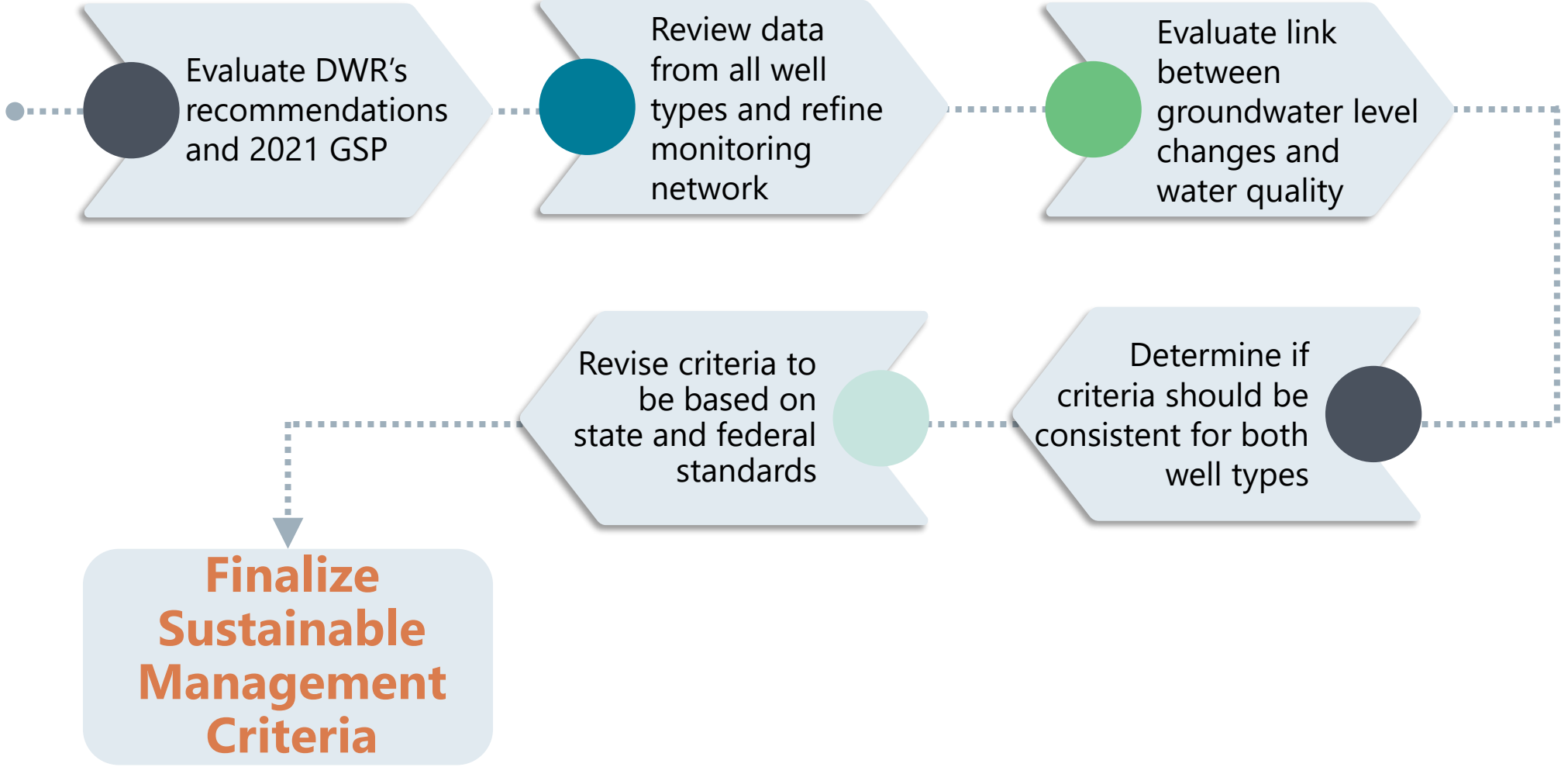
- **Recommended Corrective Action** from DWR
- **New data and information** on water quality conditions
- **Knowledge gained** in implementation
- **Additional time** to consider best approaches



Why Update Water Quality Criteria?

- **Establish one set of criteria for both well types** to better manage groundwater
- **Apply state or federal standards** to better determine when human health risk or crop tolerance may occur
- **Use of Subbasin-wide data** to characterize areas of high concentrations
- **Additional historical data** and clear timeframes used to define recent concentrations and trends

Approach to Updating Water Quality Criteria



Undesirable Results: What are we trying to avoid?

- Water quality fails to meet state or federal standards for:
  - Municipal/public water wells
  - Private well owners
  - Agricultural crops
- Determined by Minimum Threshold exceedances

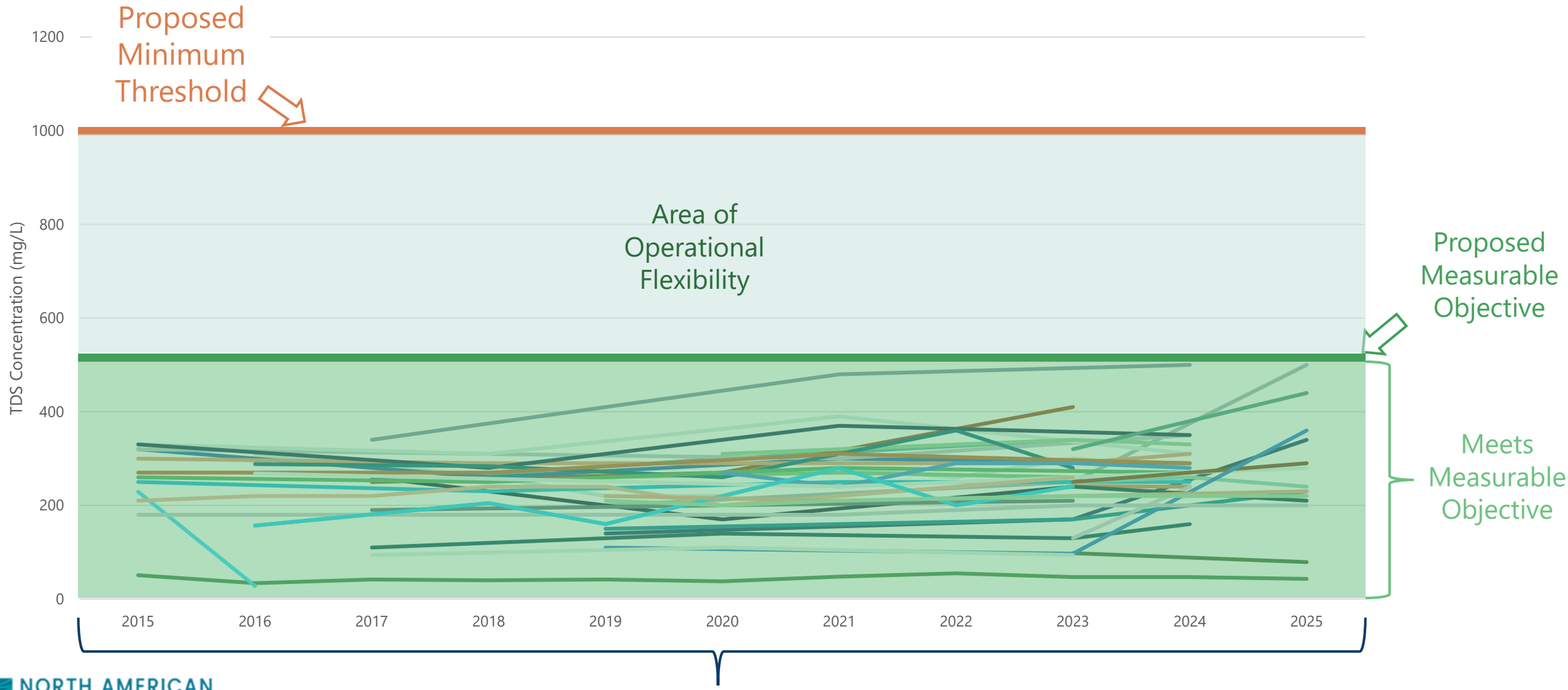
Proposed Undesirable Result & Minimum Thresholds

- Undesirable Result and Minimum Thresholds were updated to incl both well types
- An Undesirable Result occurs wh
  - 25% or more of all Representative Monitoring Sites exceed the Minimu Threshold for two consecutive repo periods
- Minimum Thresholds are based
  - TDS Upper Secondary Maximum Contaminant Level (1,000 mg/L)
  - Nitrate Maximum Contaminant Leve mg/L)

Proposed Measurable Objectives & Interim Milestones

Constituent	Measurable Objective	Interim Milestones
Total Dissolved Solids (TDS)	Higher of: - TDS Recommended SMCL (500 mg/L) *or* - Average concentration since 2015	Equal to the Measurable Objective
Nitrate	Higher of: - 50% of Nitrate MCL (5 mg/L) *or* - Average concentration since 2015	Equal to the Measurable Objective

Proposed Sustainable Management Criteria
Total Dissolved Solids (Average concentration <500 mg/L)



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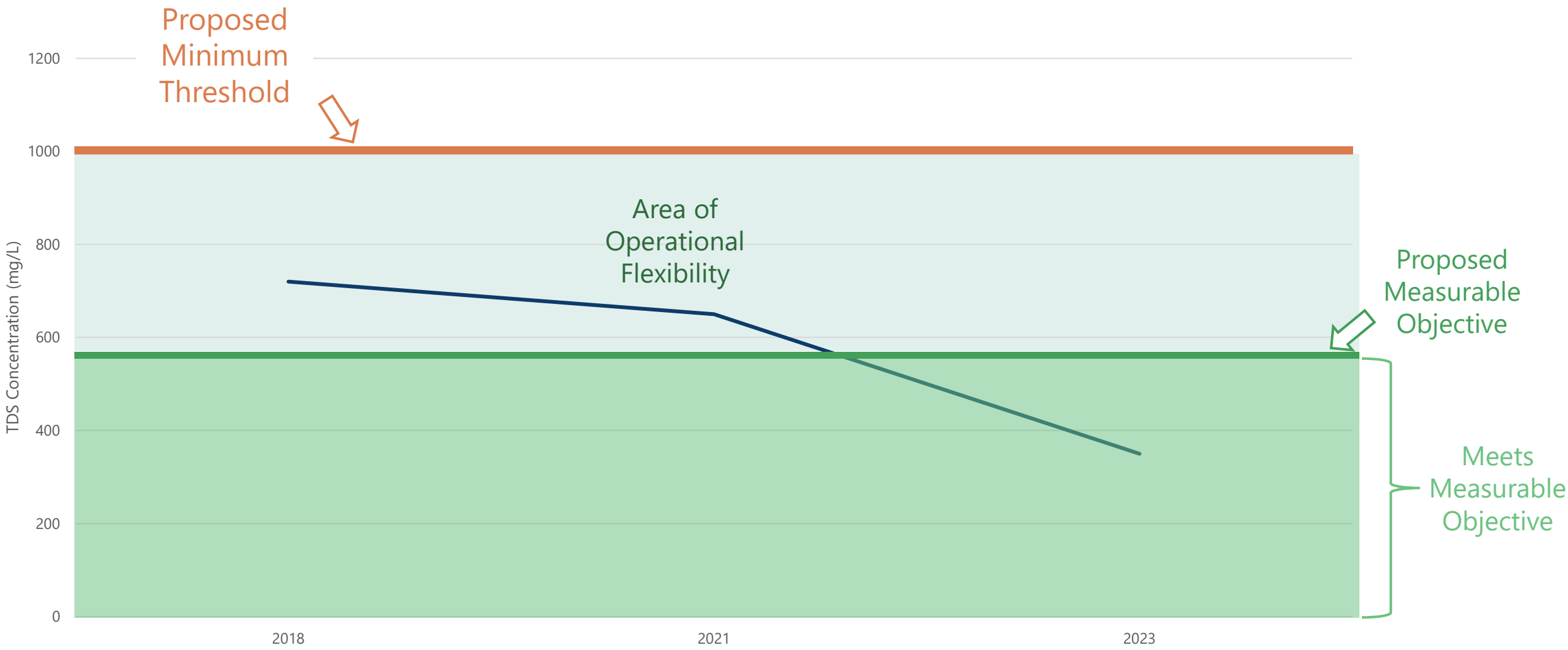
Proposed Sustainable Management Criteria
Total Dissolved Solids (CA3110008_008_008)



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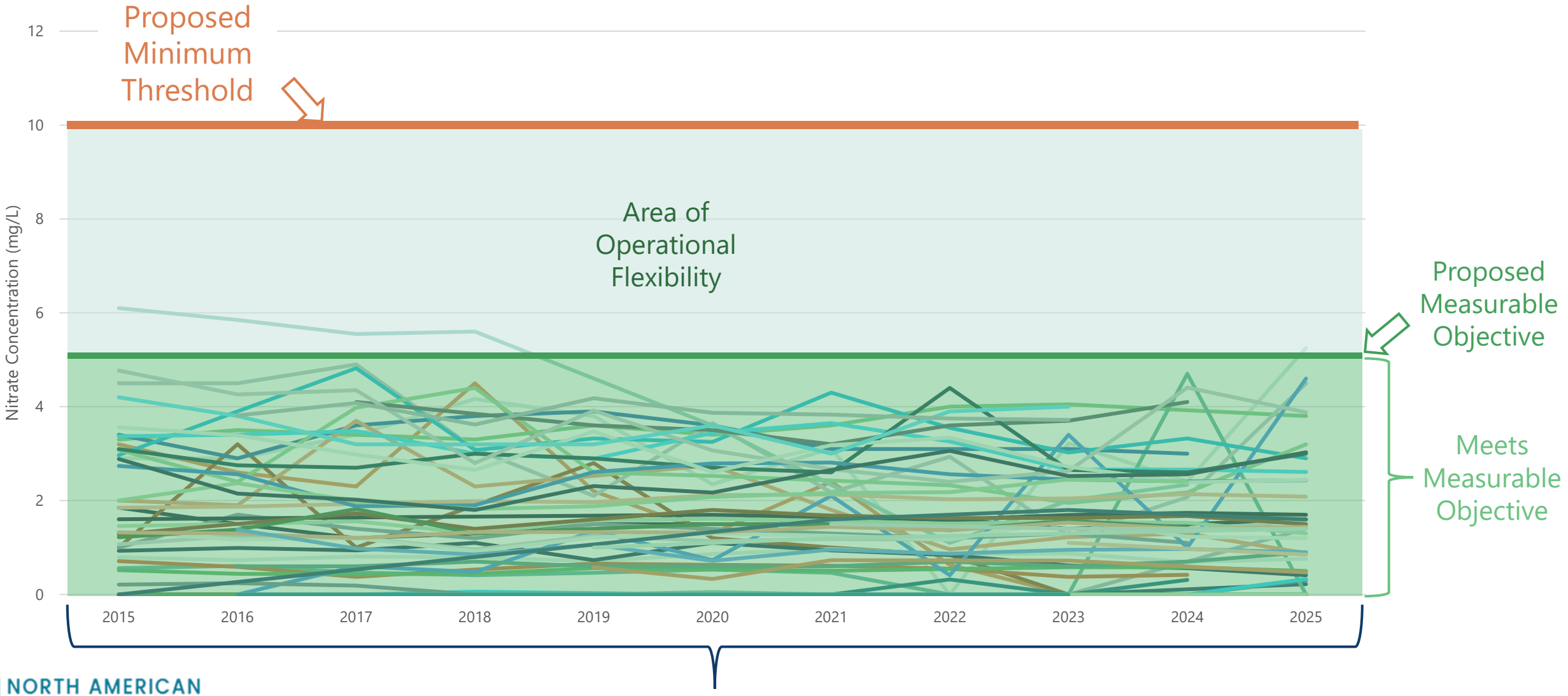
Proposed Sustainable Management Criteria
Nitrate (Average concentration <5 mg/L)



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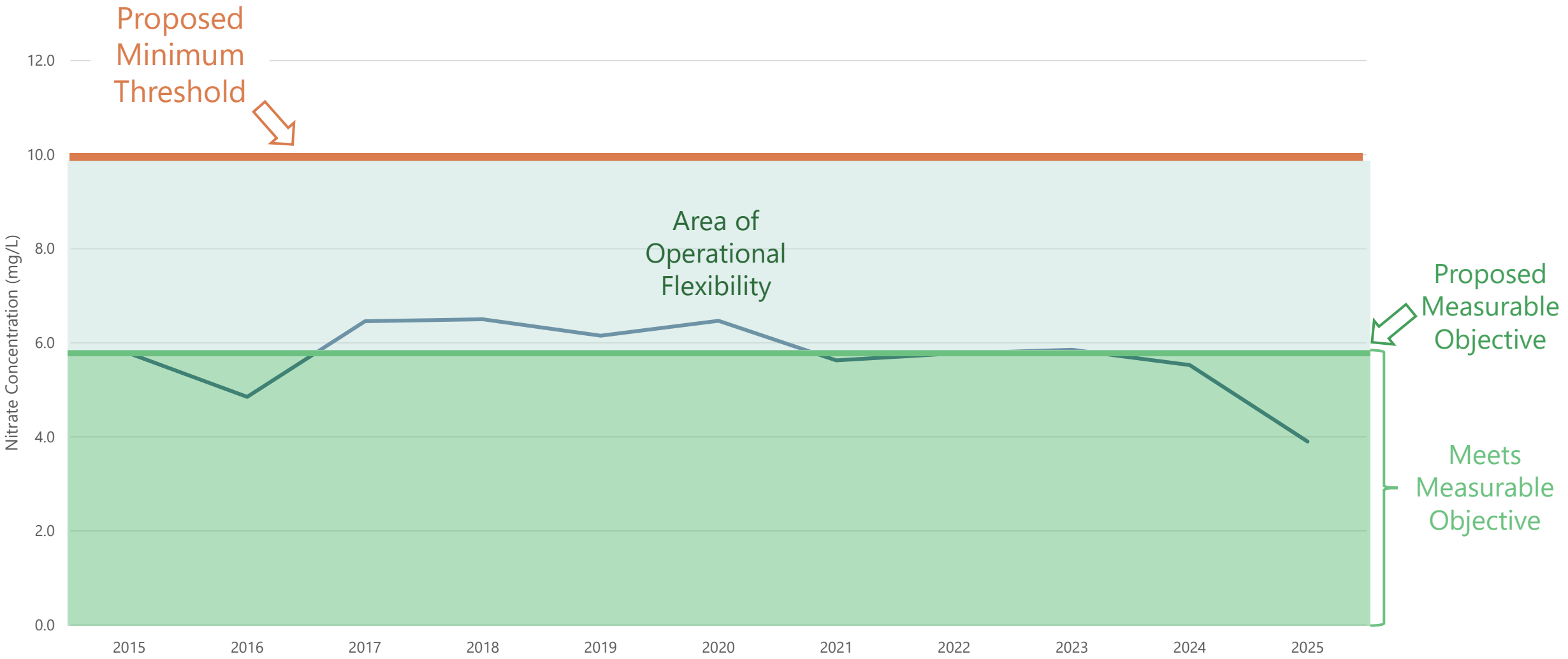
Proposed Sustainable Management Criteria
Nitrate (CA3410001_018_018)



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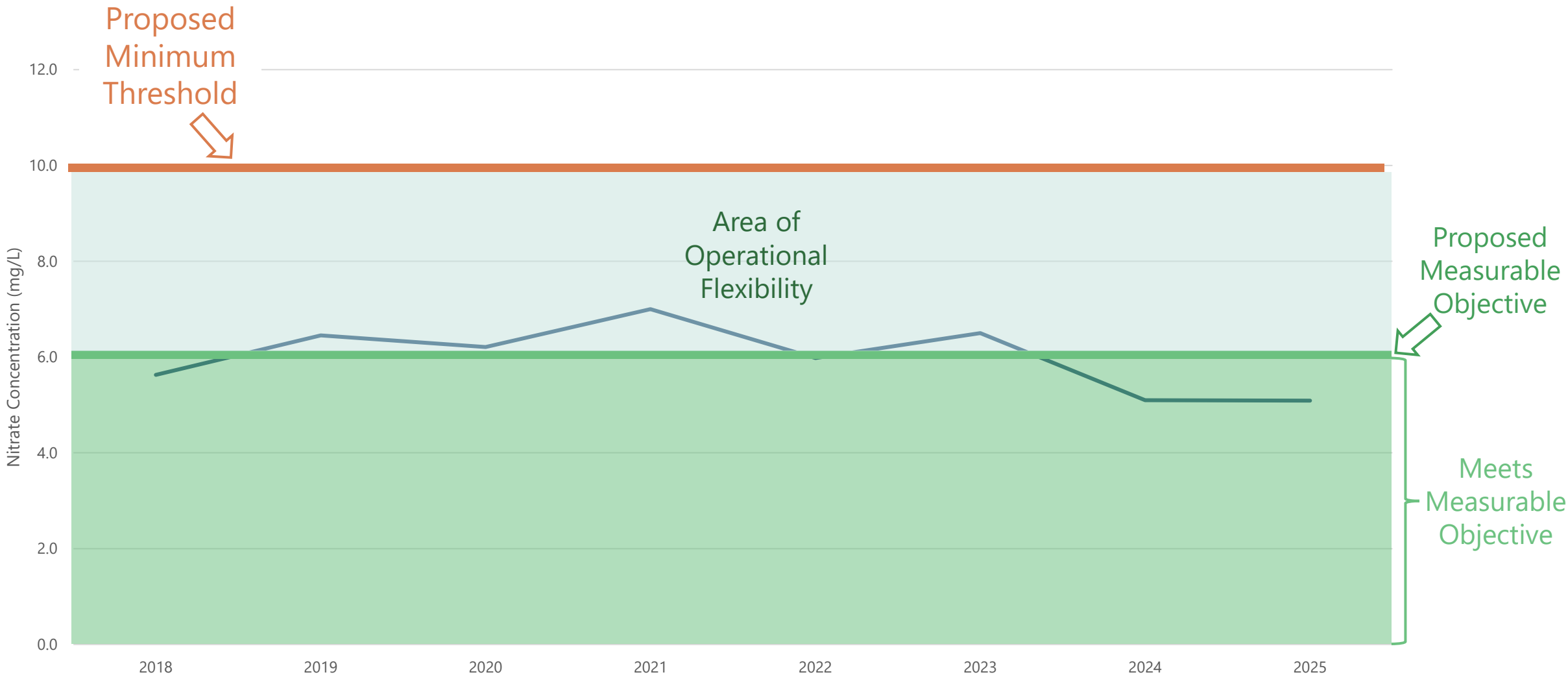
Proposed Sustainable Management Criteria
Nitrate (CA5105014_001_001)



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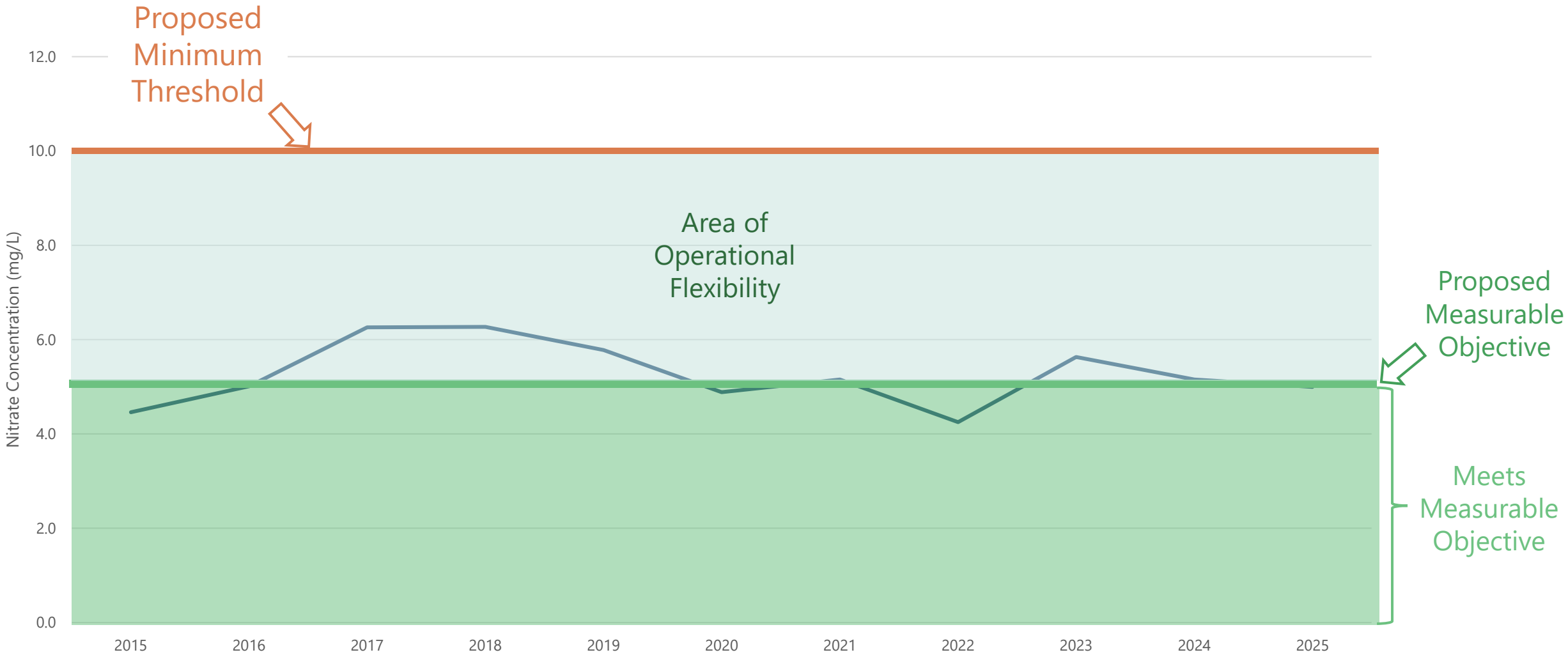
Proposed Sustainable Management Criteria
Nitrate (CA3410013_009_009)



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A Break for Questions/Discussion

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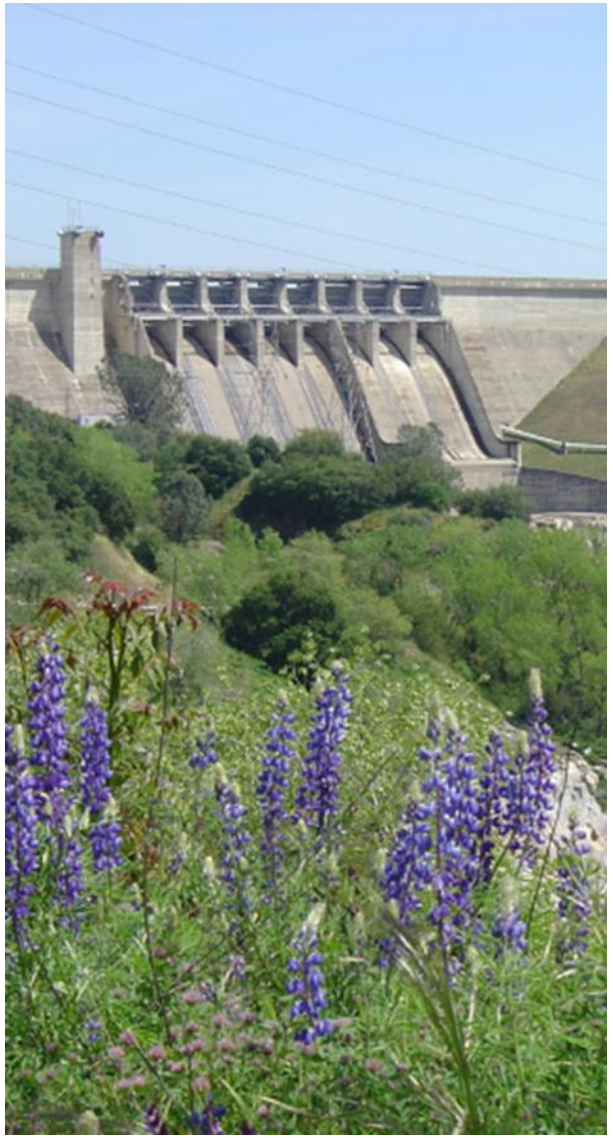

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Cosumnes - South American - North American (CoSANA) Integrated Water Resources Model

Upgrade Status

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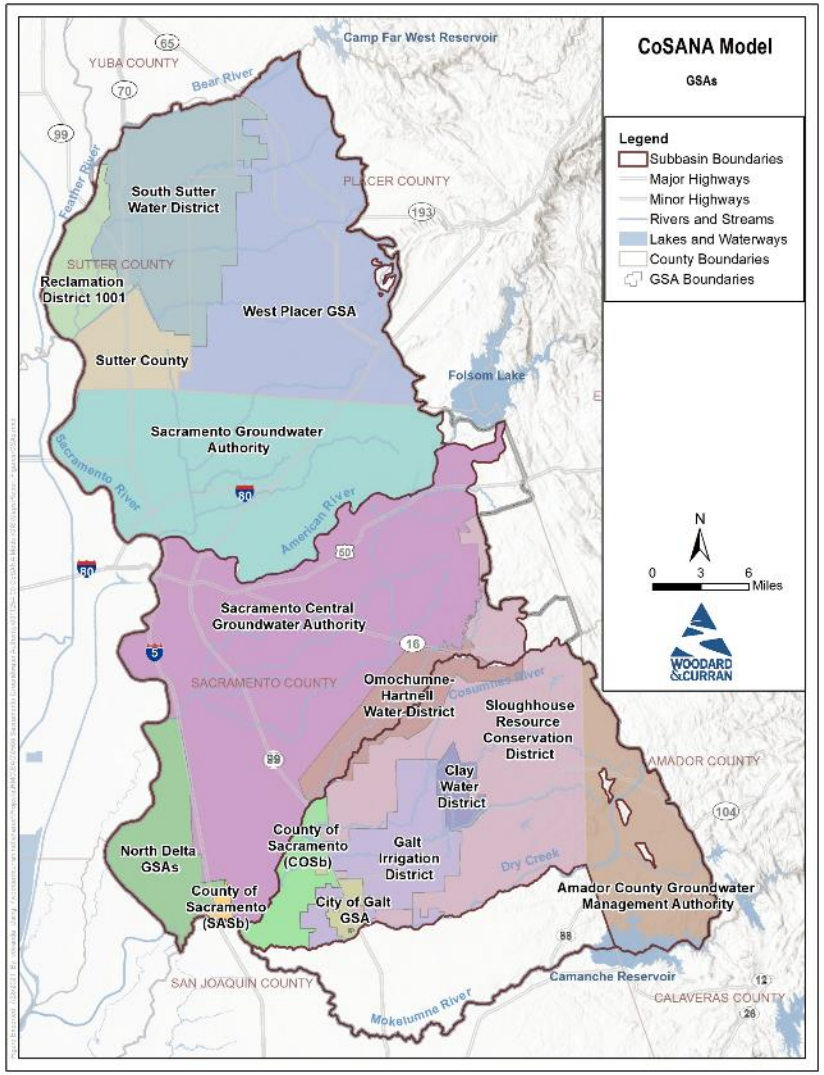
CoSANA Model Upgrade Snapshot

- **Purpose:** Upgrade specific model features in the NASb Subbasin to better support sustainable water management in the Subbasin

- **Data & Technical Updates**: Data gaps, hydrology/period of record, hydrogeology, land use & cropping, stream geometry
- **Water System Characterization**: Water demands and supplies, groundwater infrastructure, remediation activities
- **Model Refinements**: Updated inputs and calibration
- **Reporting & Coordination**: WY 2025 Annual Report and coordination with SRWB
- **Next Steps**: Update baseline conditions and sustainability analyses (SMCs, surface water depletion, PMAs)



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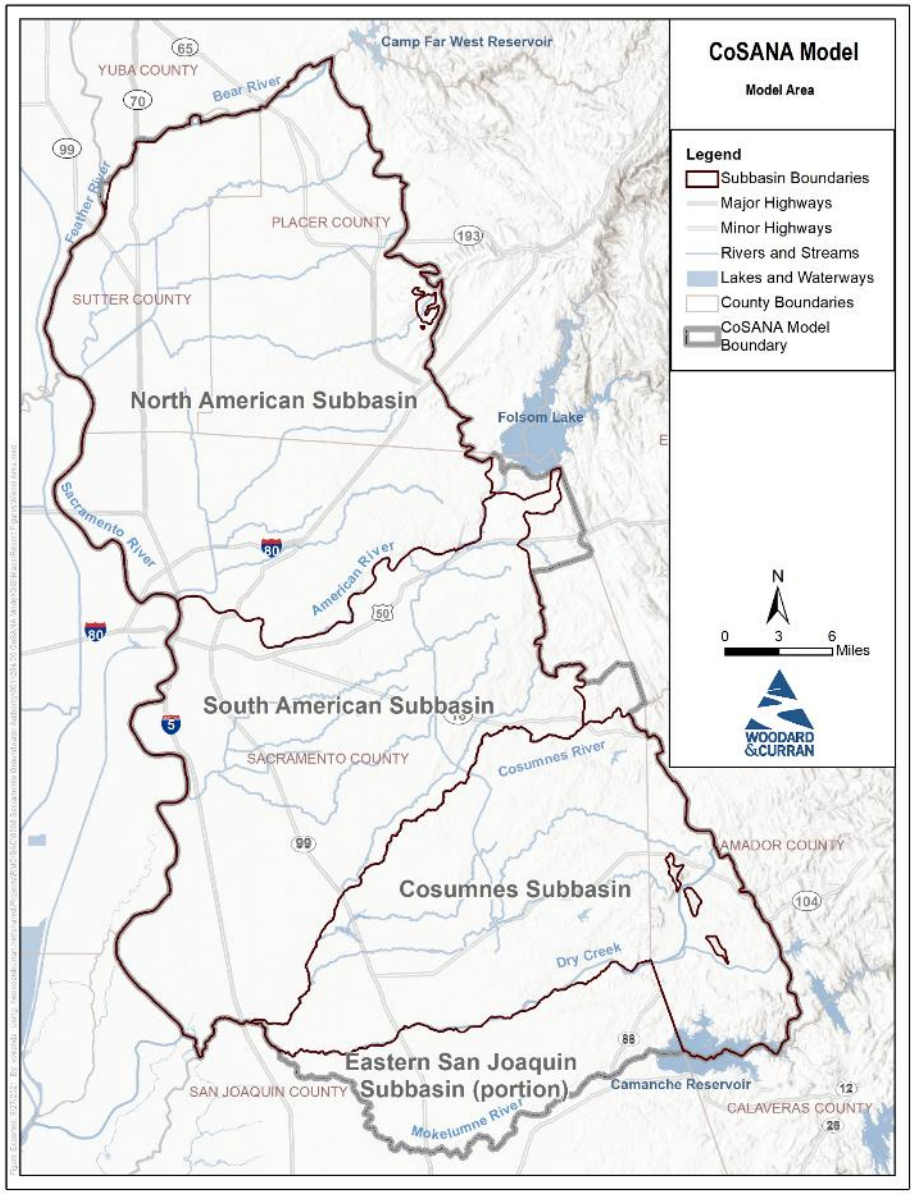
CoSANA Overview

- Subbasin
  - **Co**sumnes
  - **S**outh **A**merican
  - **N**orth **A**merican
  - Eastern San Joaquin (partial)
- Model Area
  - 900,000 acres (approximately 1,400 square miles)
  - Bounded in the north by the Bear River, in the south by the Mokelumne River, in the west by the Sacramento River, and in the east by the Sierra Nevada foothills.
- Modeling Platform: IWFM



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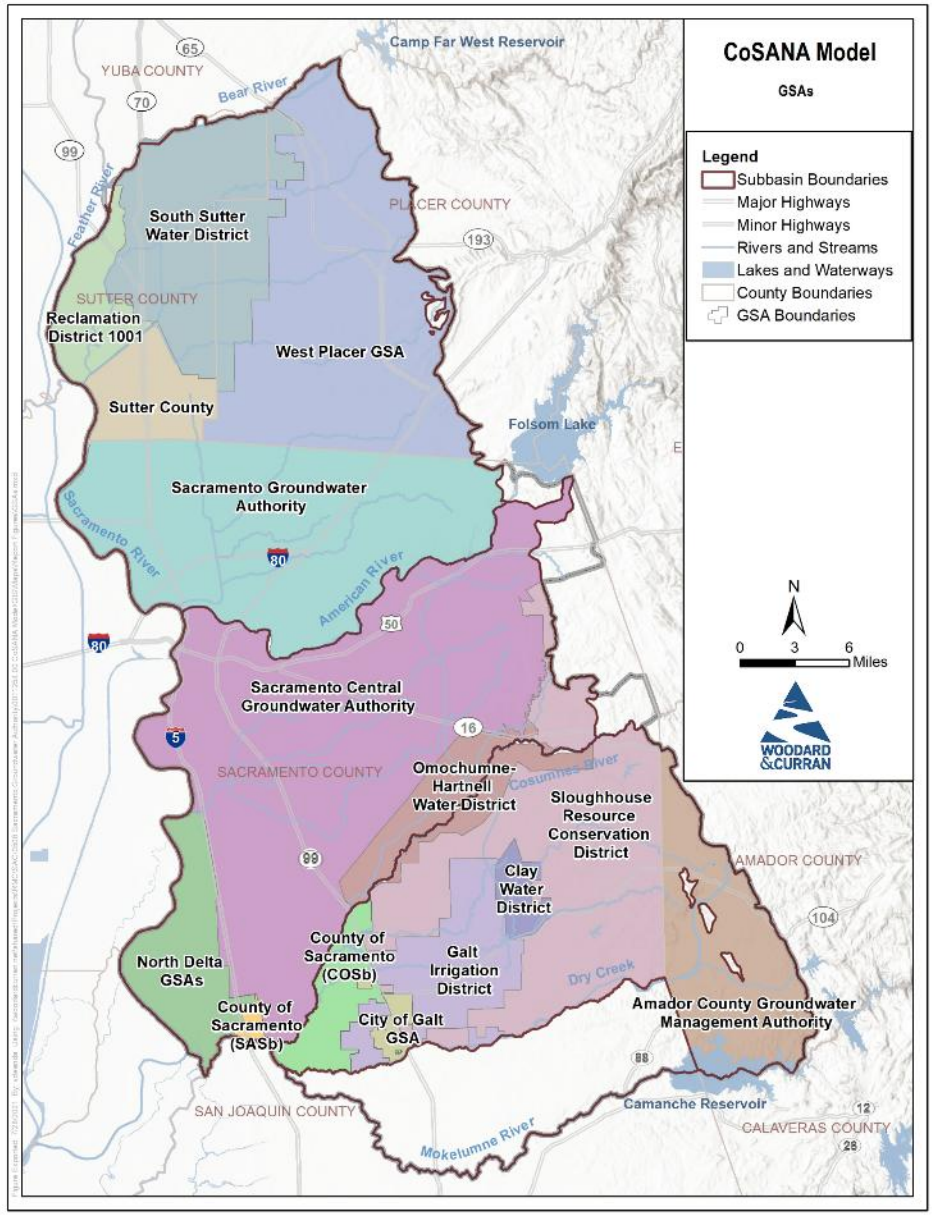
CoSANA Overview

- NASb GSAs
  - Reclamation District 1001
  - Sacramento Groundwater Authority
  - South Sutter Water District
  - Sutter County
  - West Placer County
- Water Supply
  - Supply to agricultural and urban water purveyors
- Hydrologic period
  - Water Years 1970-2024 on a monthly time step



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Annual Precipitation for the Hydrologic Period

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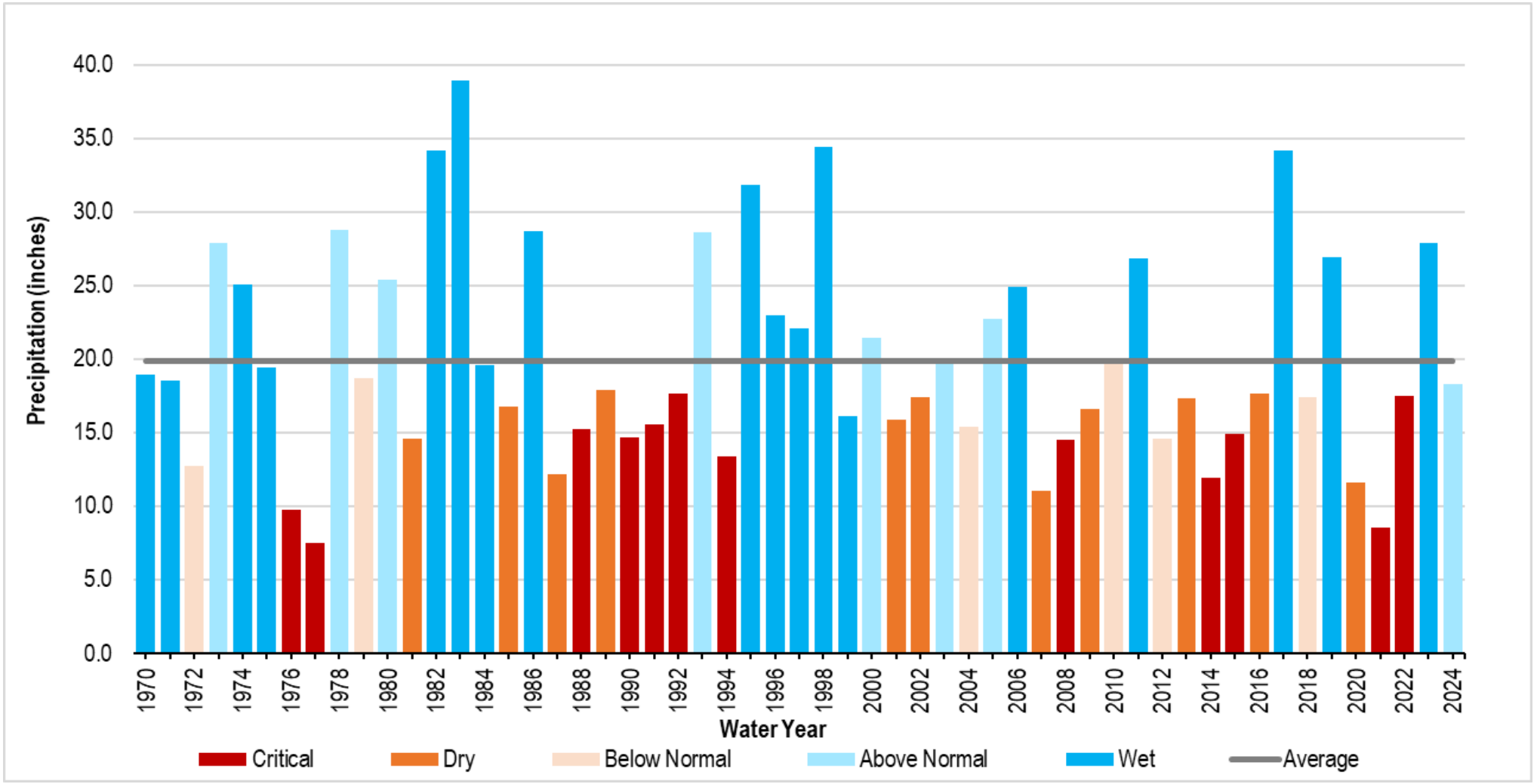

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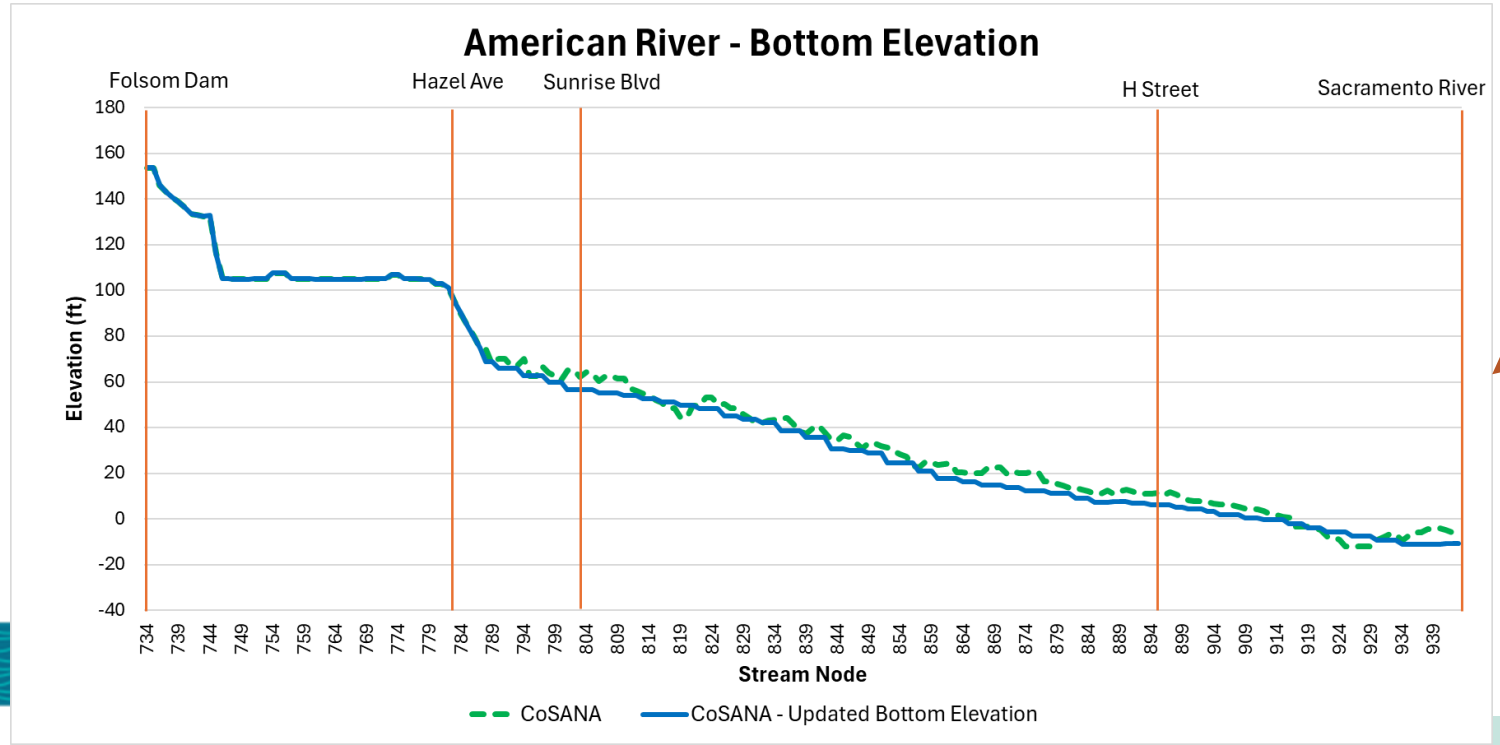
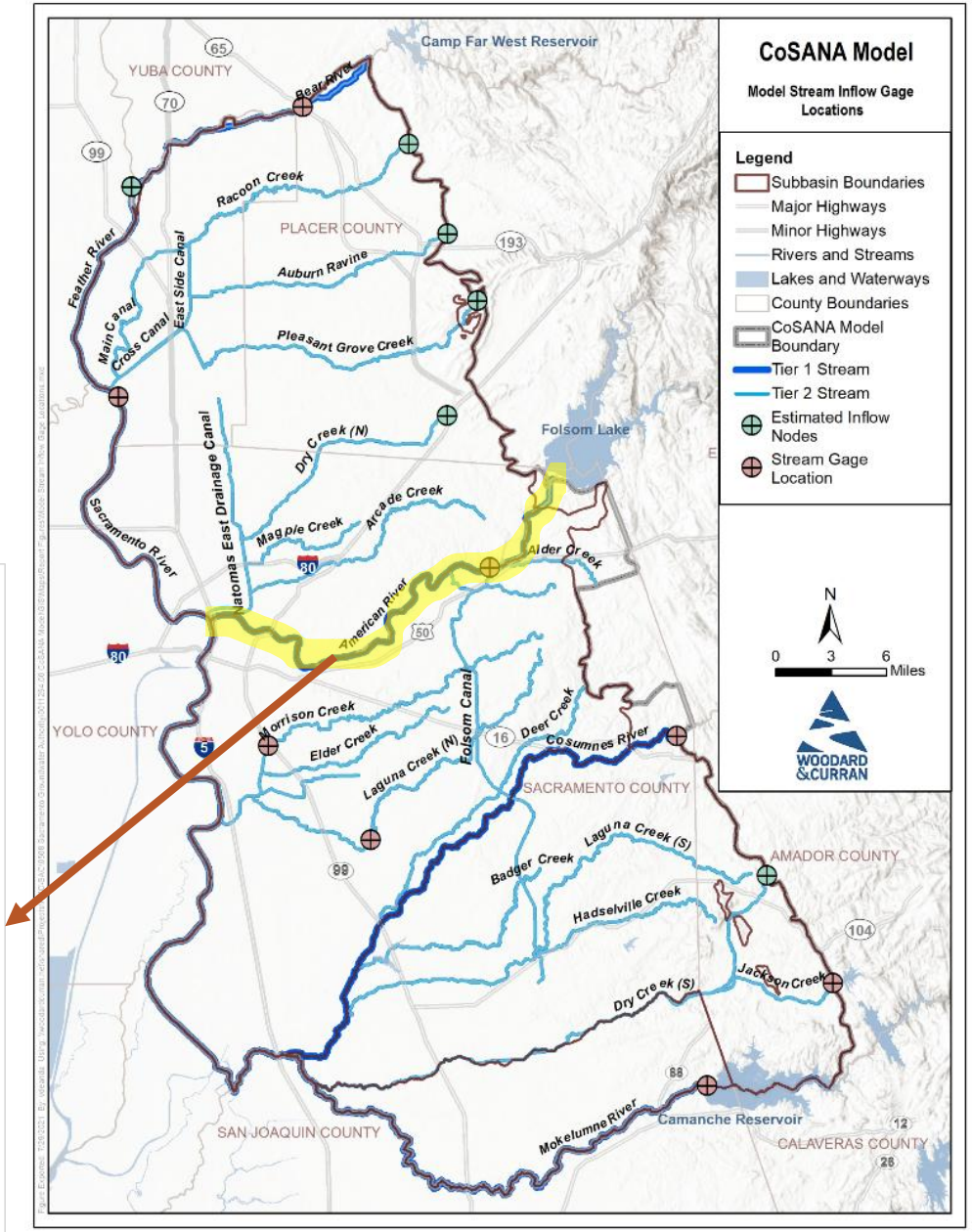
Rivers and Streams

- Stream Tiers
  - Tier 1 – Major streams
  - Tier 2 – Tributary streams
- Stream Inflows
- Stream Geometry
  - Refined for Bear, Feather, Sacramento and American Rivers

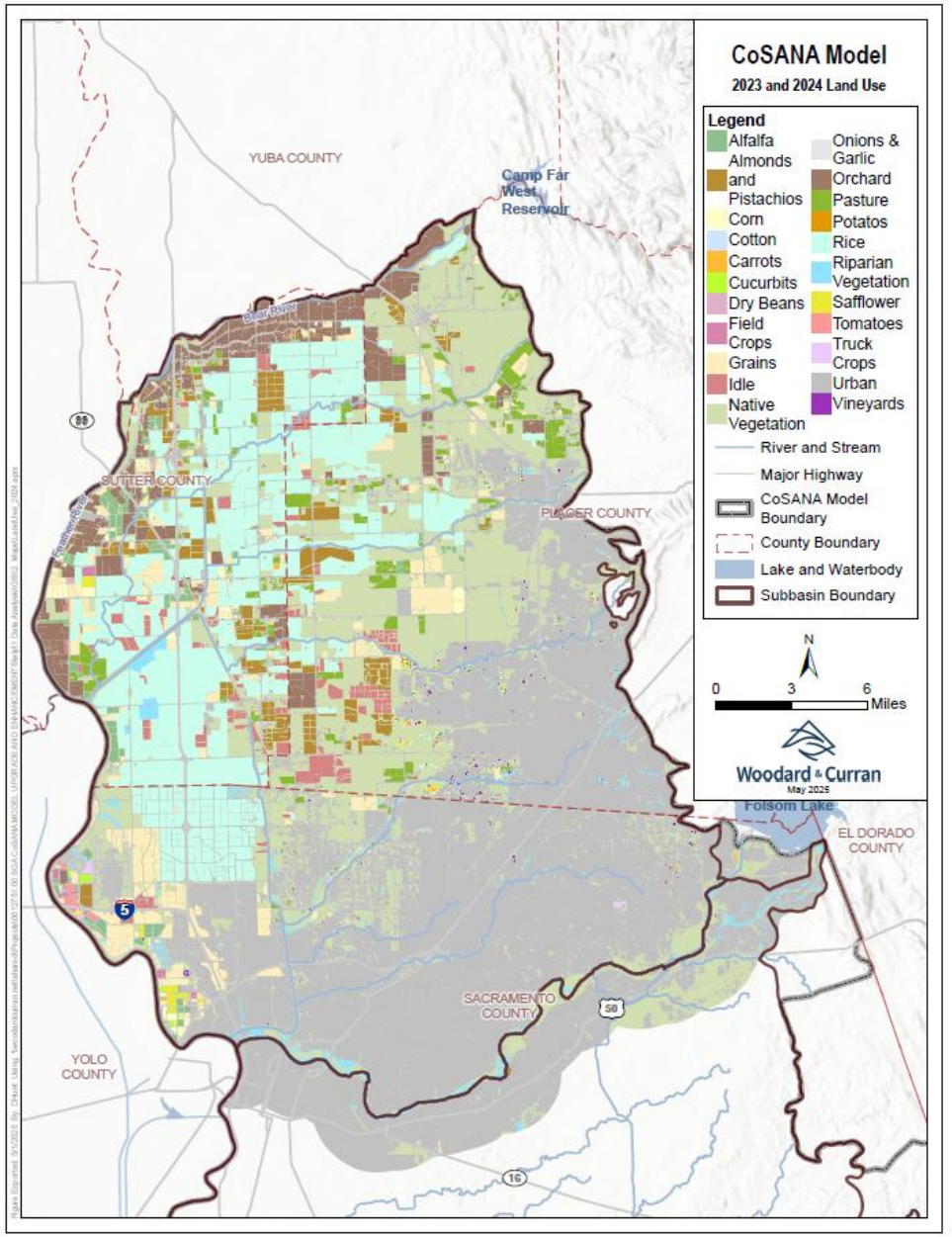




Land Use and Cropping

- Updated in the CoSANA Upgraded Model for NASb Subbasin
  - LandIQ 2016 – 2023
  - Verified by NASb GSAs

Land Use Type	Model Category
Irrigated Crops	Grain
	Cotton
	Sugar Beets
	Corn
	Dry Beans
	Safflower
	Other Field Crops
	Alfalfa
	Pasture
	Tomato
	Cucurbits
	Onions & Garlic
	Potatoes
	Other Truck Crops
	Almonds & Pistachios
	Other Deciduous
	Citrus & Subtropical
	Vineyards
	Idle
	Rice
Other Land Use	Urban Landscape Water Surface Riparian Vegetation Native Vegetation



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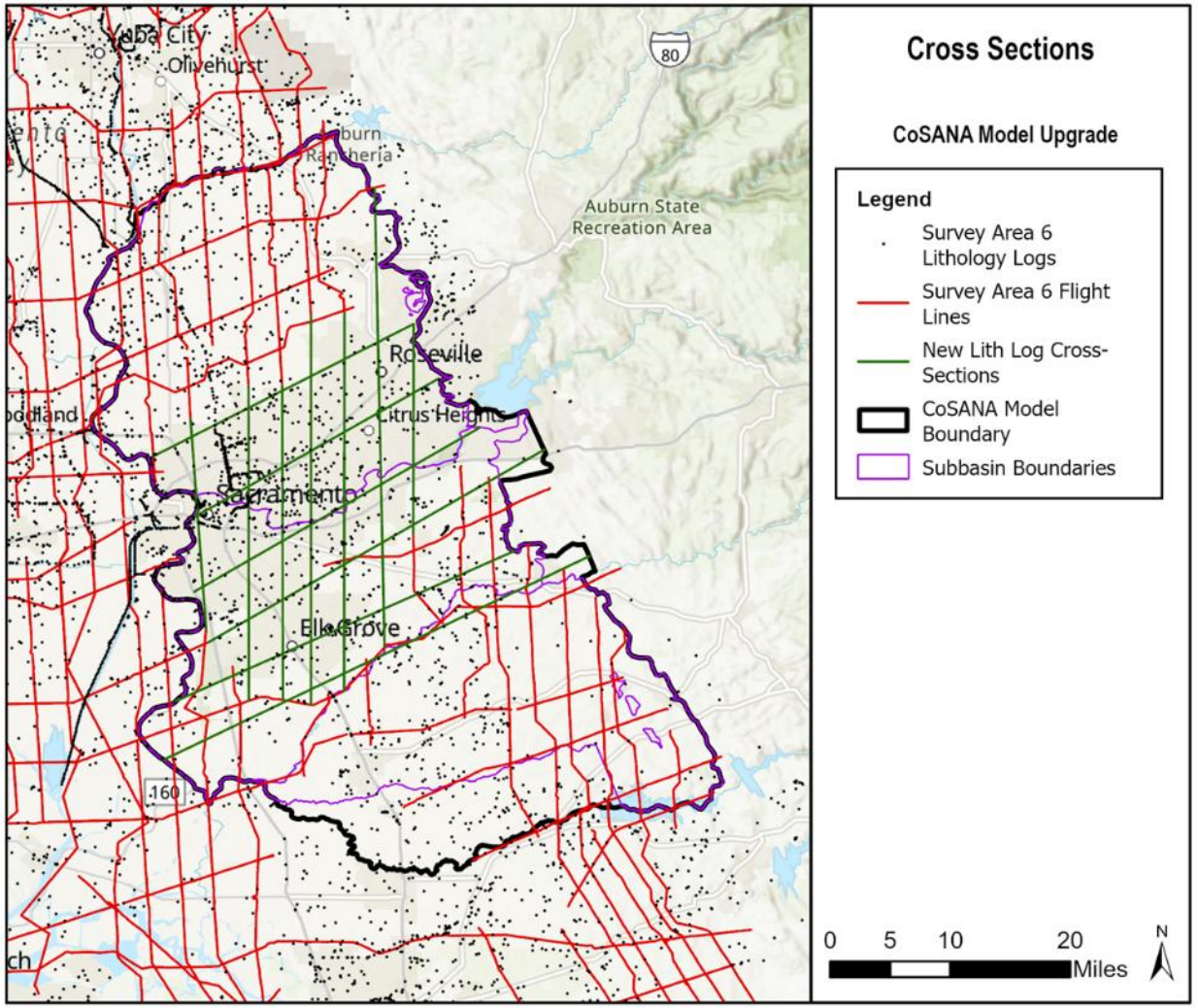
Stratigraphy

- Layering
  - Layer 1: Recent alluvium and the Riverbank Formation
  - Layer 2: Laguna Formation
  - Layer 3: Mehrten Formation
  - Layer 4: Valley Springs Formation
  - Layer 5: Ione Formation
- Refinements
  - Use of Airborne Electromagnetic (AEM) Survey Data
  - Combined boring logs



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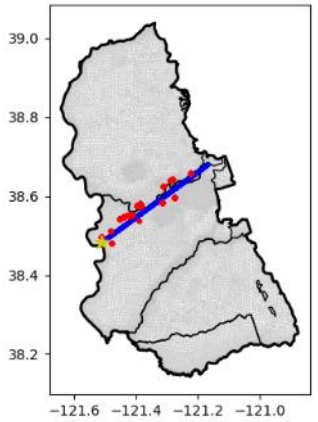
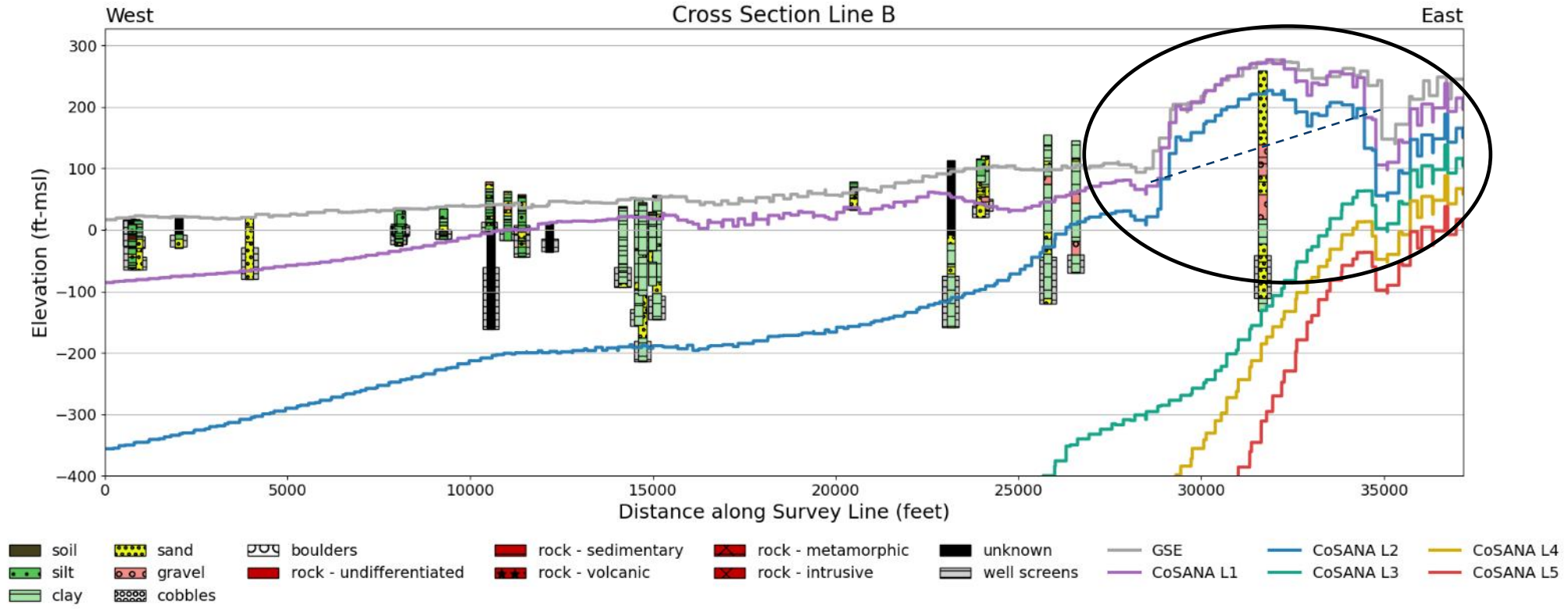
Layer 1: Upper American River (Before)





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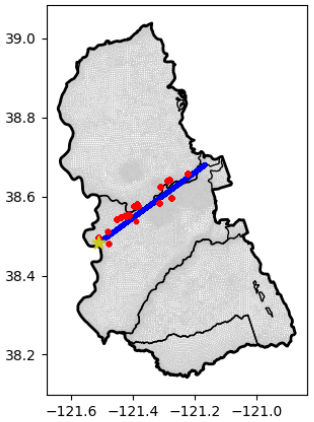
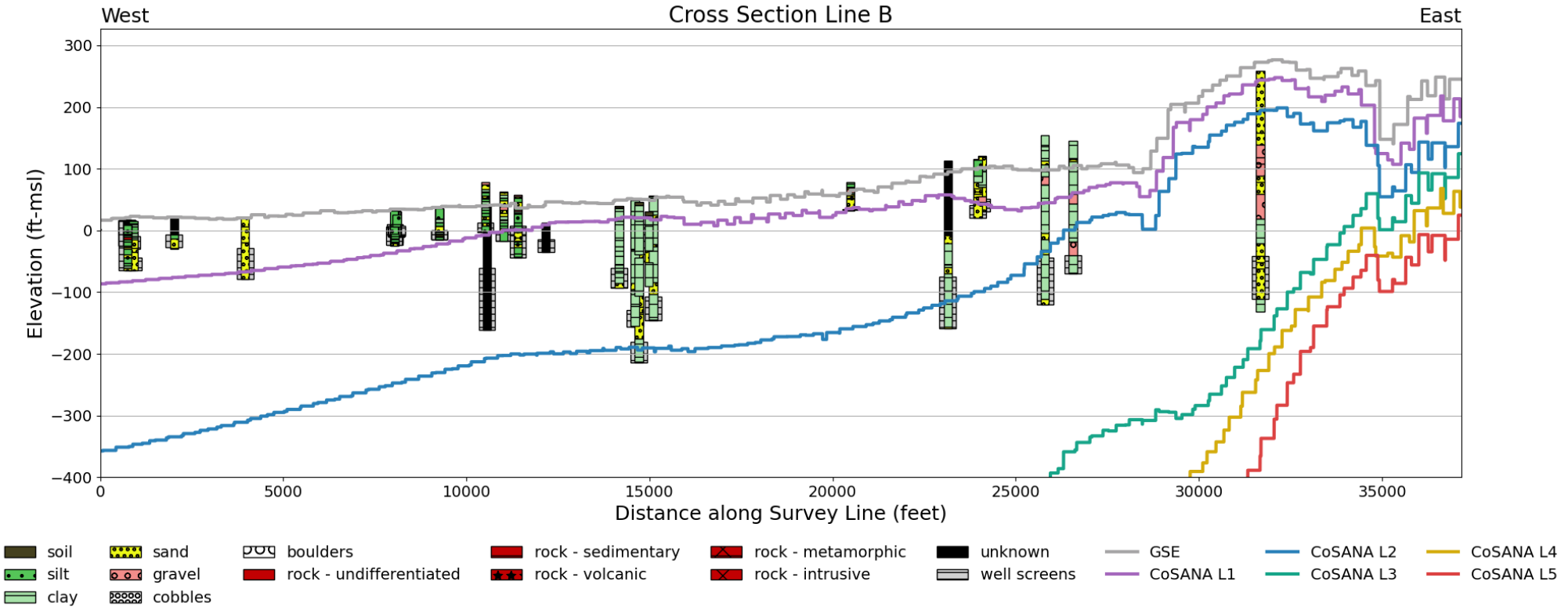
Layer 1: Upper American River (After)





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CoSANA Model
Calibration & Results

CoSANA Model Calibration

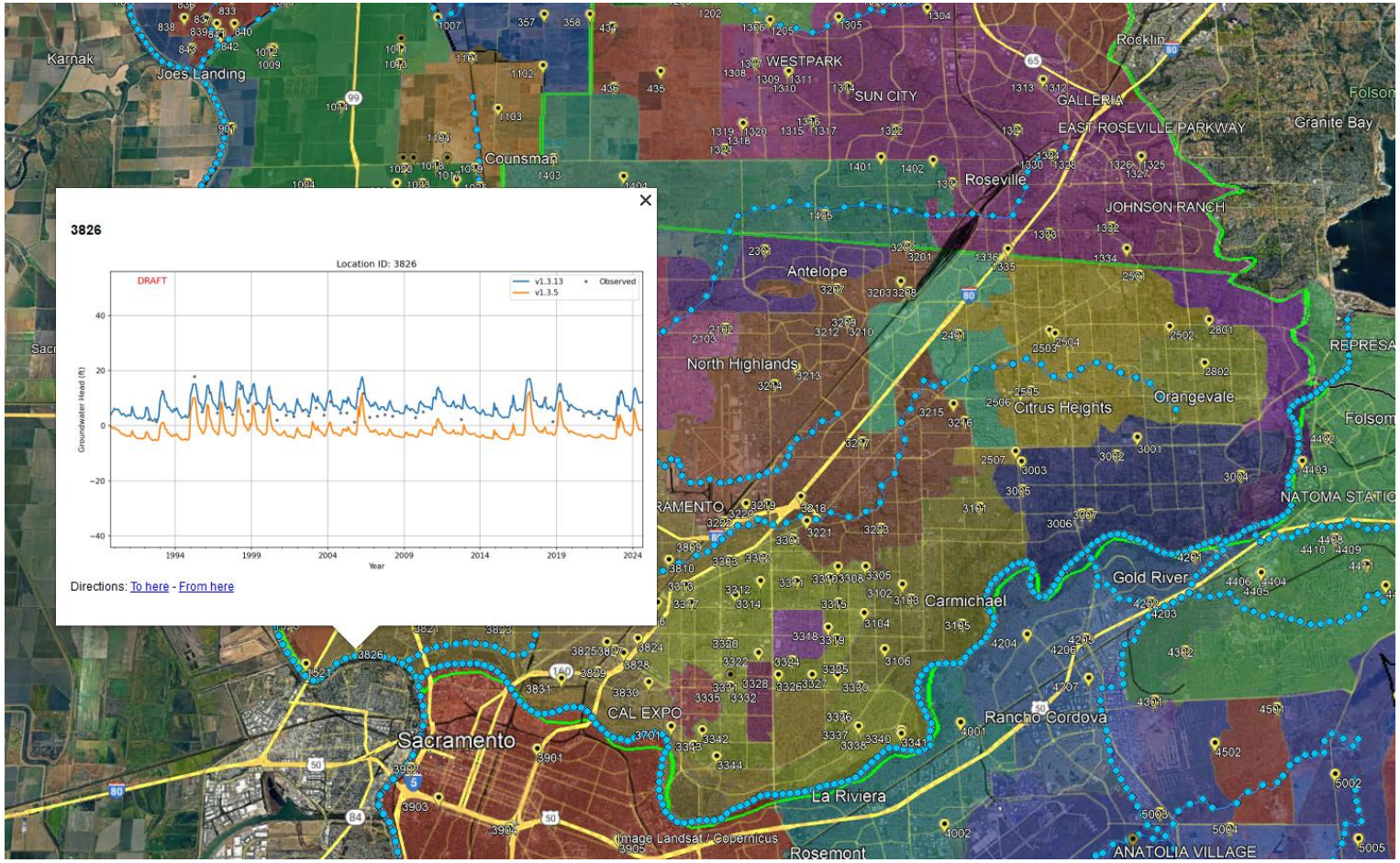
Approaches

- Set up calibration targets
  - Groundwater levels from observation wells
  - Streamflow data from stream gages
- Developed and calibrated water budgets for the land surface, groundwater, and stream systems
- Performed calibration using Parameter Estimation (PEST)
  - Aquifer & streambed parameters
- Performed manual calibration
  - Model sensitivity and uncertainty analysis

CoSANA Model Calibration

Sample Results

- Comparison between simulated and observed groundwater levels



Sample results, subject to change

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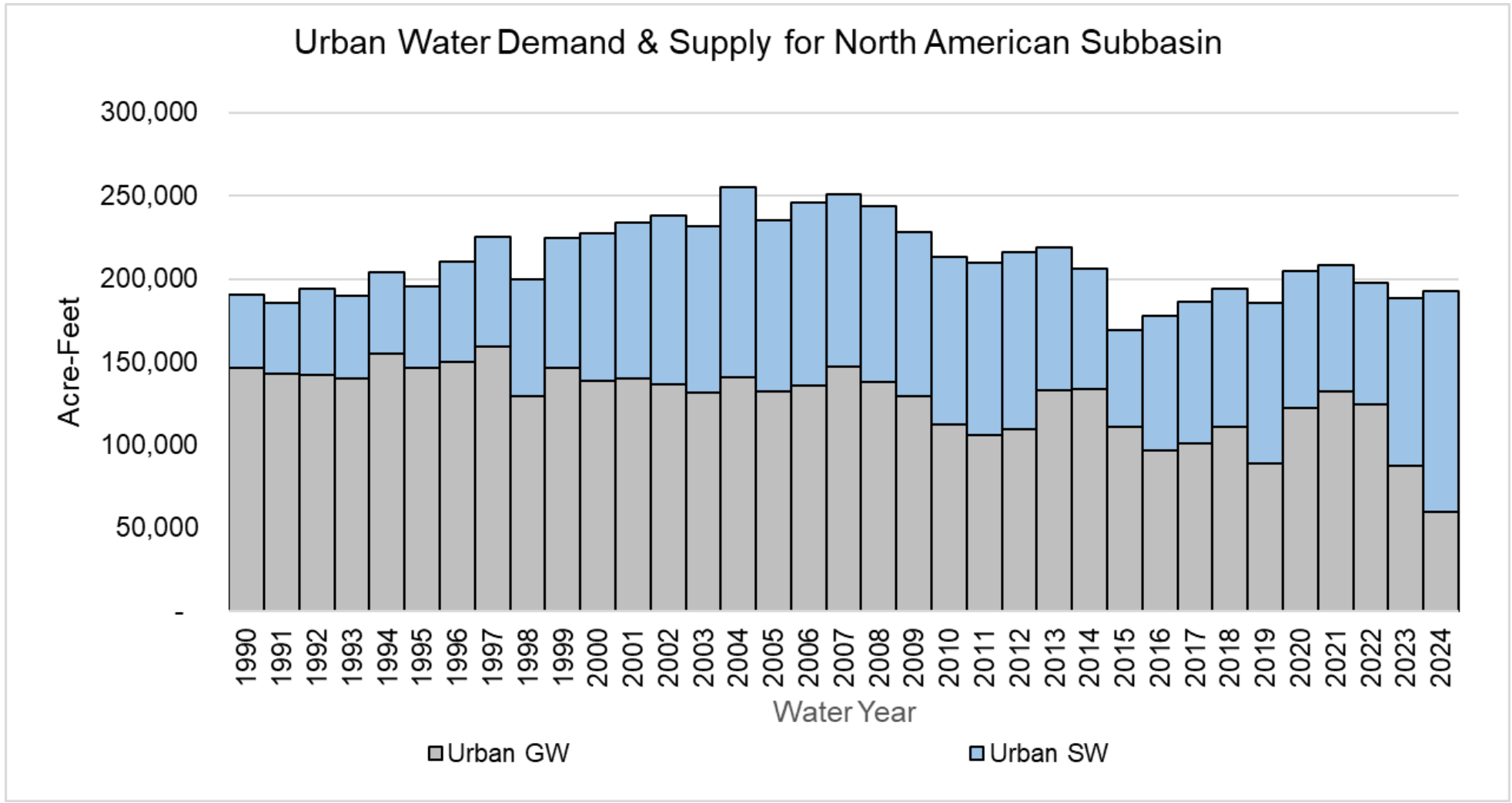
Historical Water Budget

Urban Water Use



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Sample results, subject to change

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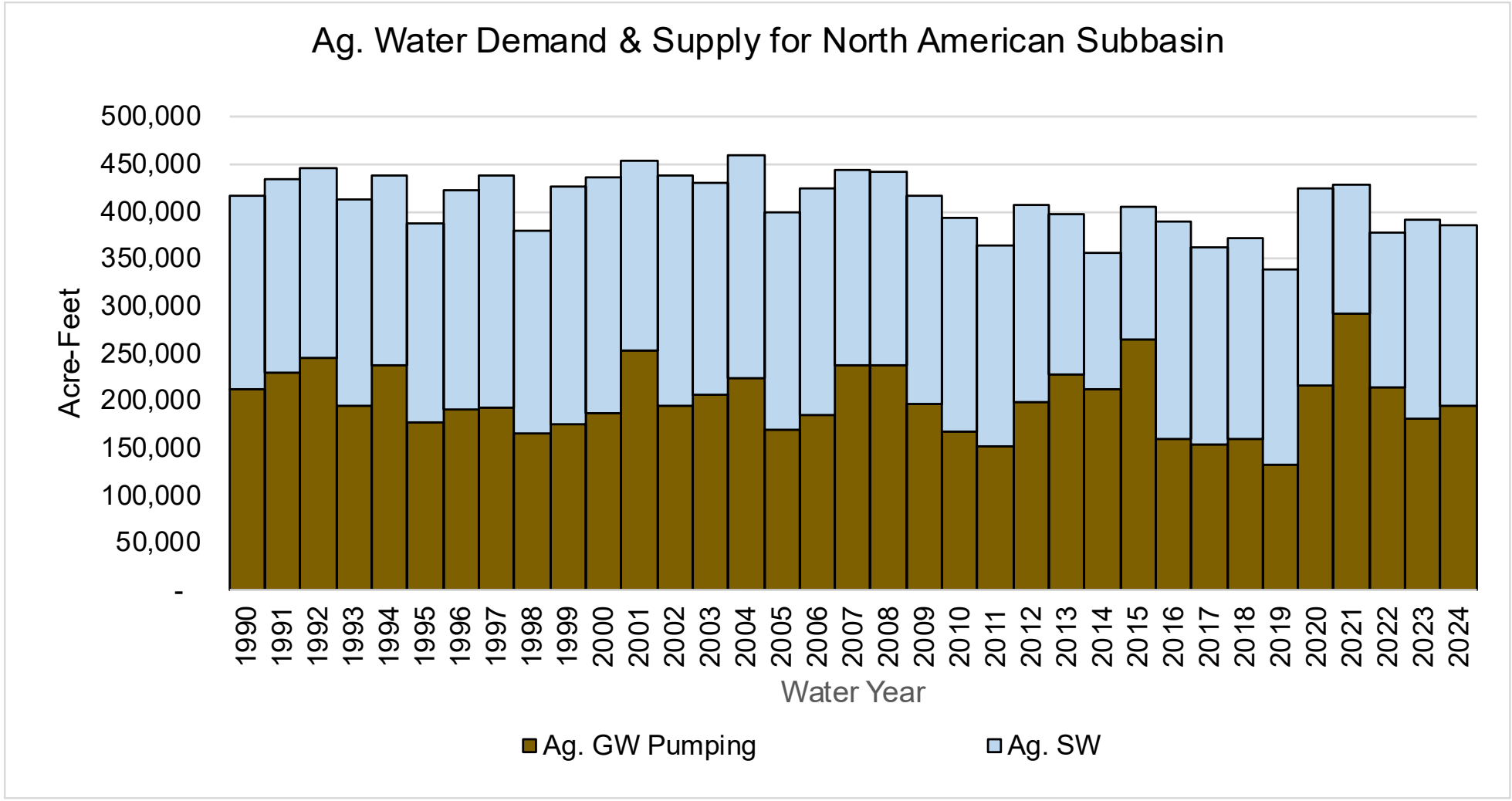
Historical Water Budget

Agricultural Water Use



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Sample results, subject to change

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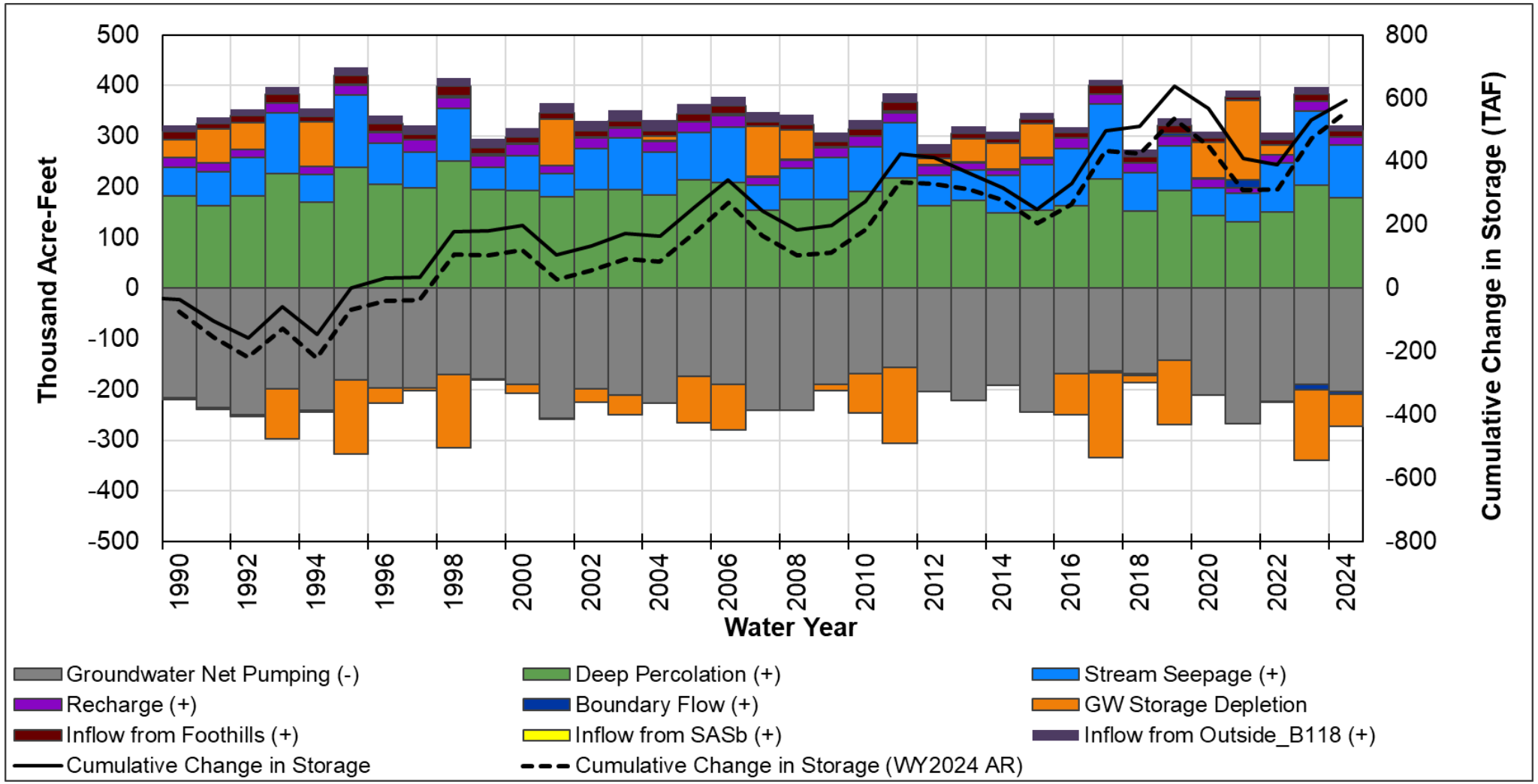
Historical Water Budget

Groundwater Budget



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Sample results, subject to change

Next Steps

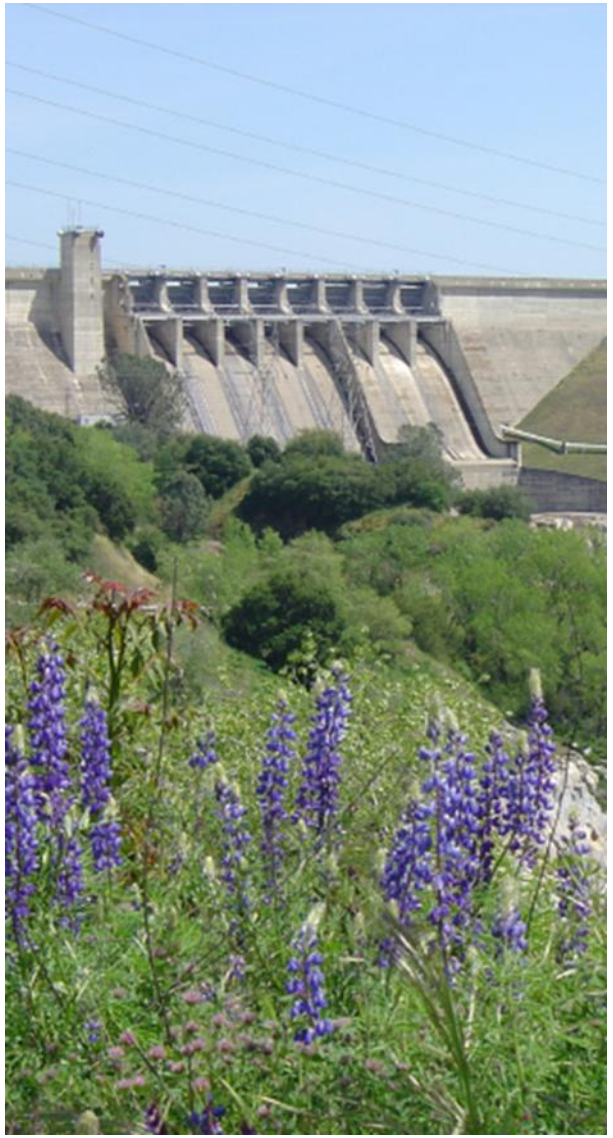
- Update Baseline Conditions
  - Complete Current Condition Baseline
  - Update Projected Condition Baseline Model
  - Update Projected Condition Baseline with Climate Change Model
- Perform Sustainability Analysis
  - Updated SMCs
  - ISW Depletion Estimates & SMCs
  - Updated PMAs
- Complete GSP Annual Report (Water Year 2025)
- Coordinate with Sacramento Regional Water Bank (SRWB)

Upcoming Public Engagement

- **March 12, 2026**
  - Projects & Management Actions
  - GSP Implementation
  - Periodic Evaluation

- **Summer 2026**
  - Water Year 2025 Groundwater Conditions and Annual Report

- **Fall/Winter 2026**
  - Public Comment on GSP Amendment
  - GSP Amendment Adoption



Questions/Comments?

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Thank You!

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