

Sacramento Groundwater Authority

Agenda Items 4 & 5

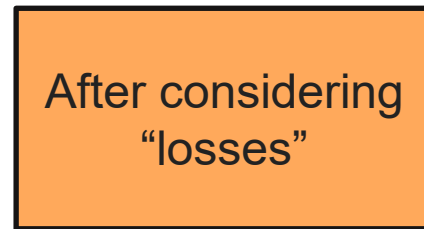
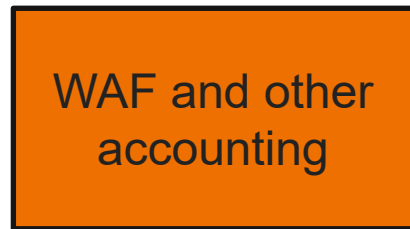
Trevor Joseph, Manager of Technical Services
October 9, 2025

Agenda Item 4

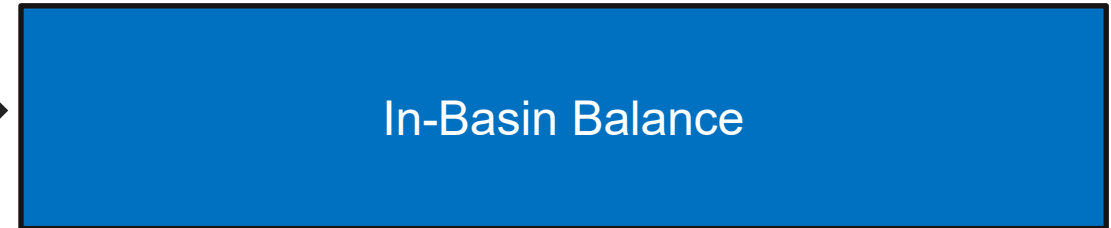
Ad Hoc Committee Update – Water Accounting System

Previously Banked Water (PBW) to Water Bank Starting Balance (WBSB)

Previously Banked Water



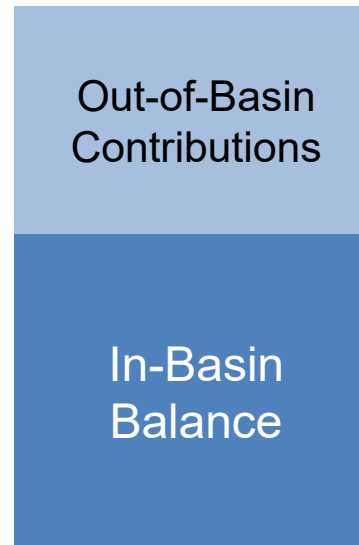
Water Bank Starting Balance



**Contributions to
Streams**



**Subsurface flows
to Adjacent Basins**



Water Bank Regional Benefits

Water Bank Starting Balance Process

Step 1

Present results on how much Previously Banked Water (PBW) remains in the NASb & SASb

June

Step 2

Share and obtain feedback from interested parties on PBW analysis

July/Aug

Step 3

Program Committee decides on a Water Bank Starting Balance

- Direct Team to incorporate 53%/52% into modeling analyses
- Consider interested parties' input on modeling analysis and approve a WBSB at Sep 2025 PC meeting

Aug/Sept PC Meeting
or ad hoc meeting

Step 4

RWA incorporates WBSB volume into final modeling analysis and environmental documentation

ASAP

Previously Banked Water - PC vote on recognizing full remaining (in-basin) previously banked water (cont.)

Program Committee vote on a policy that recognizes full remaining (in-basin) previously banked water, subject to the Sacramento Regional Water Bank (SRWB) Water Accounting System (WAS) safeguards

Background

- This policy suggestion is proposed for two reasons:
 1. Move the Water Bank project forward and recognize a starting balance to incorporate into the WAS that enables the SRWB project work to continue including completion of environmental documentation.
 2. Properly credit past investments of water banking agencies - acknowledges nearly 30 years of regional conjunctive use where agencies shifted to surface water in wet years, improving groundwater storage and avoiding overdraft.
- This policy suggestion will be voted on consistently with the Phase 2 and Phase 3 agreement provisions for Program Committee member voting as defined below.

Previously Banked Water - PC vote on recognizing full remaining (in-basin) previously banked water (cont.)

Program Committee vote on a policy that recognizes full remaining (in-basin) previously banked water, subject to the Sacramento Regional Water Bank (SRWB) Water Accounting System (WAS) safeguards

- This policy includes fully crediting of the remaining in-basin PBW volume (post-loss adjustment) as the starting balance of the SRWB.

- o NASb = 248,300 AF
- o SASb = 222,300 AF

Agency	PBW (AF)	In-Basin PBW (AF)
California American Water Company	17,100	9,100
City of Sacramento	90,000	47,800
Carmichael Water District	91,900	48,800
Sacramento Suburban Water District	268,500	142,600
Noth American Subbasins - Subtotal	467,500	248,300
Golden State Water Company	215,200	110,800
Sacramento County Water Agency	216,300	111,500
South American Subbasins - Subtotal	431,500	222,300
TOTAL	899,000	470,600

- Volumes incorporated in WAS, with annual loss percents applied of 6% (NASb) and 8% (SASb) starting in 2025 until 5 year updated modeling is completed

Previously Banked Water - PC vote on recognizing full remaining (in-basin) previously banked water (cont.)

Program Committee vote on a policy that recognizes full remaining (in-basin) previously banked water, subject to the Sacramento Regional Water Bank (SRWB) Water Accounting System (WAS) safeguards

Starting PBW balance is no different than newly banked water, subject to all SRWB provisions, including but not limited to:

- **Recharge before recovery** - Only operating with a positive balance via verified deposits (in-lieu & direct recharge)
- **Banking Losses Tracking** - Periodic calculation of contributions to streams and other basins accurately calculate recoverable balances
- **Leave Behind Requirements** - Application of leave behind when surface water is transferred
- **Geographically Balanced Recharge/Recovery** - Recharge and extraction from the same basin and area
- **Enhanced Monitoring Plan** - Expanded monitoring of groundwater conditions, with use of sentry wells around the banking area to track operations
- **Adaptative Management** - Specific provisions that consider hydrological conditions to guide operations and support groundwater sustainability. This includes:
 - Annual Planning and Coordination – Annual Operations Plans and GSA Notification and Coordination
 - Monitoring and Early Warning – Regular Groundwater Monitoring and Trigger Based Assessment
 - Response Actions for areas with Minimum Threshold (MT) Exceedances with GSAs
 - Response Actions for Areas Approaching MT Exceedances:
 - Adaptive Management Review
- **Dispute Resolution** - Process to advance equitable solutions if issues arise

Banked Water Provides Multiple Benefits

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

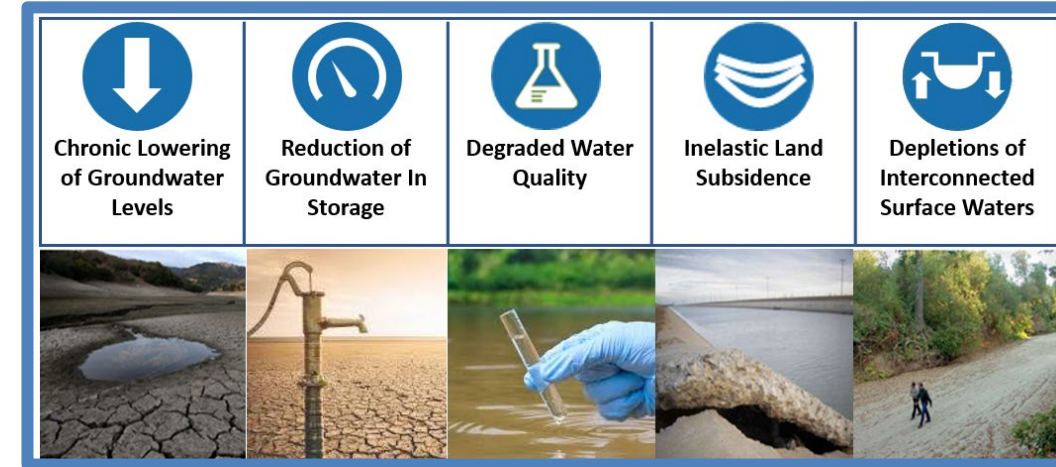
Connected
streams

Adjacent
Basins

Contribution to
Streams

Subsurface Flow

Remaining
“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.

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

Single Year Groundwater Substitution Transfers

Layer 4 – Mitigation Plan
(Identifies process to
evaluate impacts after they occur)

Layer 3 – Monitoring Plan
(Monitoring groundwater conditions)

Layer 2 – SDF
(Recharge occurs through a
quasi technically reduction)

Layer 1 – Historic lows
(No pumping if historic low
groundwater levels reached)

Sacramento Regional Water Bank

Layer 7 – Dispute Resolution
(Process to advance equitable solutions if issues arise)

Layer 6 – Adaptative Management
(Specific provisions that consider hydrological conditions to
guide operations and support groundwater sustainability)

Layer 5 – Enhanced Monitoring Plan
(Expanded monitoring of groundwater conditions, with use of
sentry wells around the banking area to track operations)

**Layer 4 - Geographically Balanced
Recharge/Recovery**
(Recharge and extraction from the same basin and area)

Layer 3 – Leave Behind Requirements
(Application of leave behind when
surface water is transferred)

Layer 2 – Banking Losses Tracking
(Periodic calculation of contributions to streams and other
basins accurately calculate recoverable balances)

Layer 1 - Recharge before recovery
(Only operating with a positive balance
via verified deposits (in-lieu & direct recharge)

SGA Staff Board Recommendations

REGIONAL WATER AUTHORITY

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

Version 1

March 17, 2025



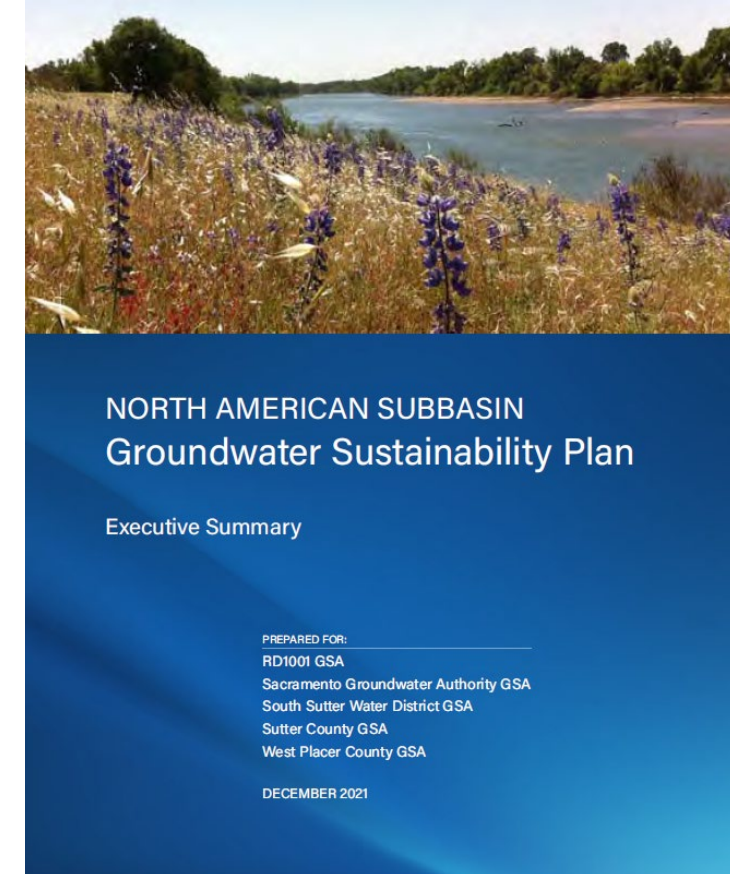
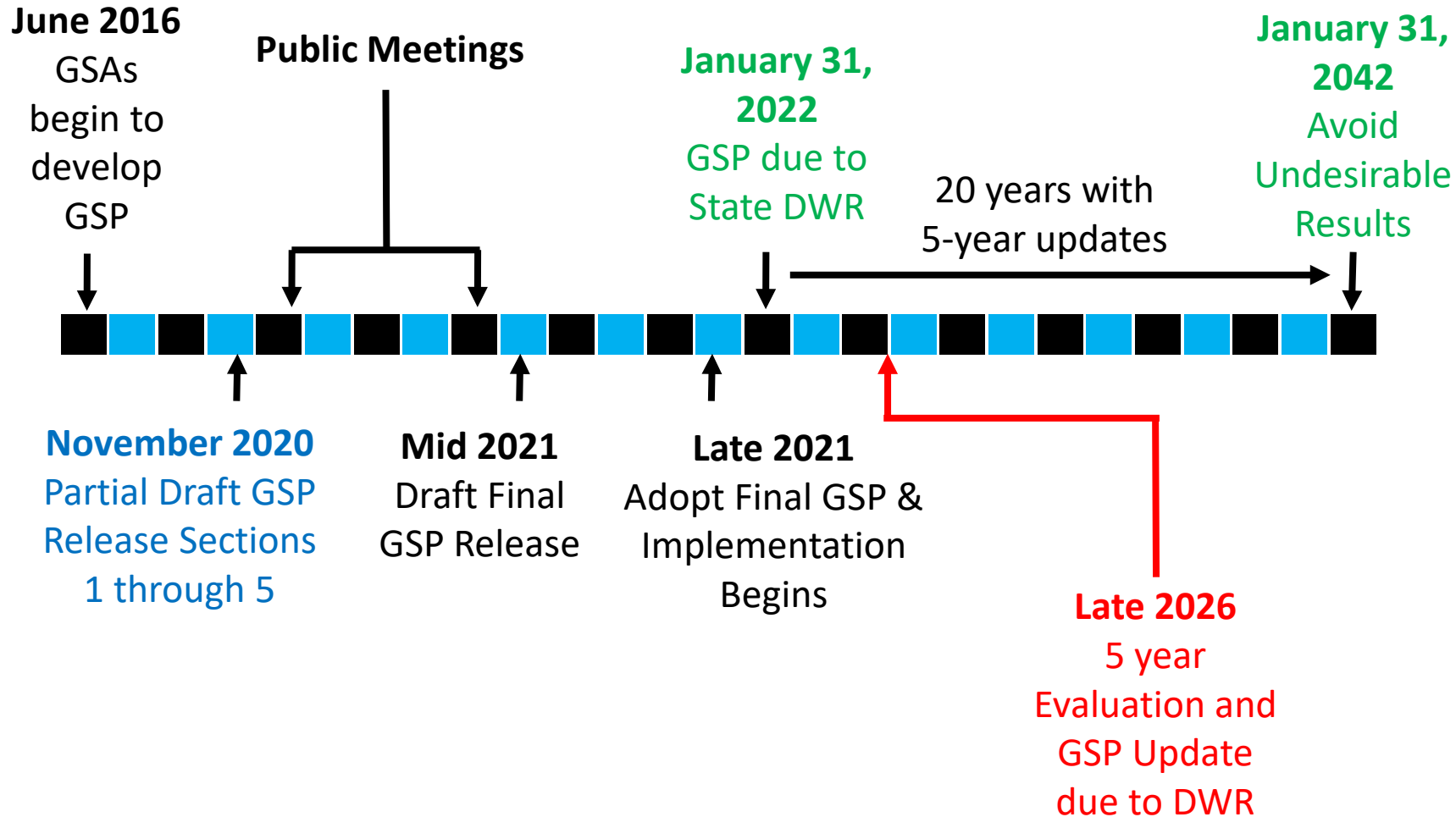
1. The Board should support Water Bank starting balance of 53% of documented WAF amount consistent with September 17, 2025, SRWB Program Committee policy decision.
2. The Board of Directors should:
 - “Pilot” use of the WAS immediately, transferring in-basin volumes and application of annual loss factors for all SGA water banking and conjunctive use activities consistent with the WAS/WAF methodology; AND
 - “Freeze” use of the WAF until an environmental document is completed and adopted for the Water Bank.
3. After the Regional Water Authority has completed and adopted an environmental document for the Water Bank, the Board of Directors should sunset the WAF and framework document and fully commit to the WAS.



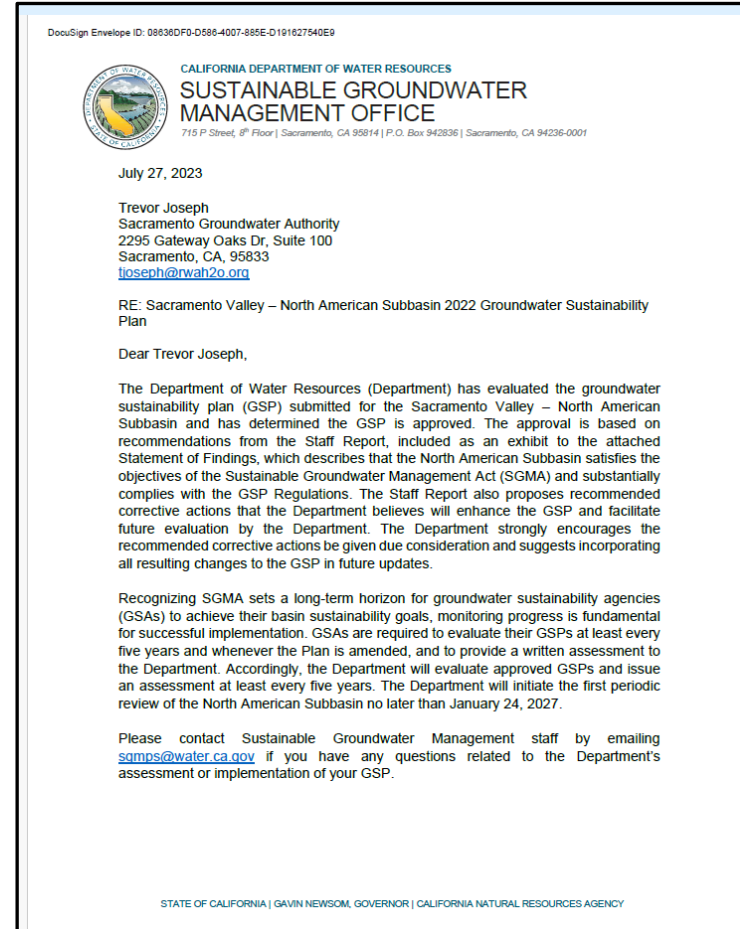
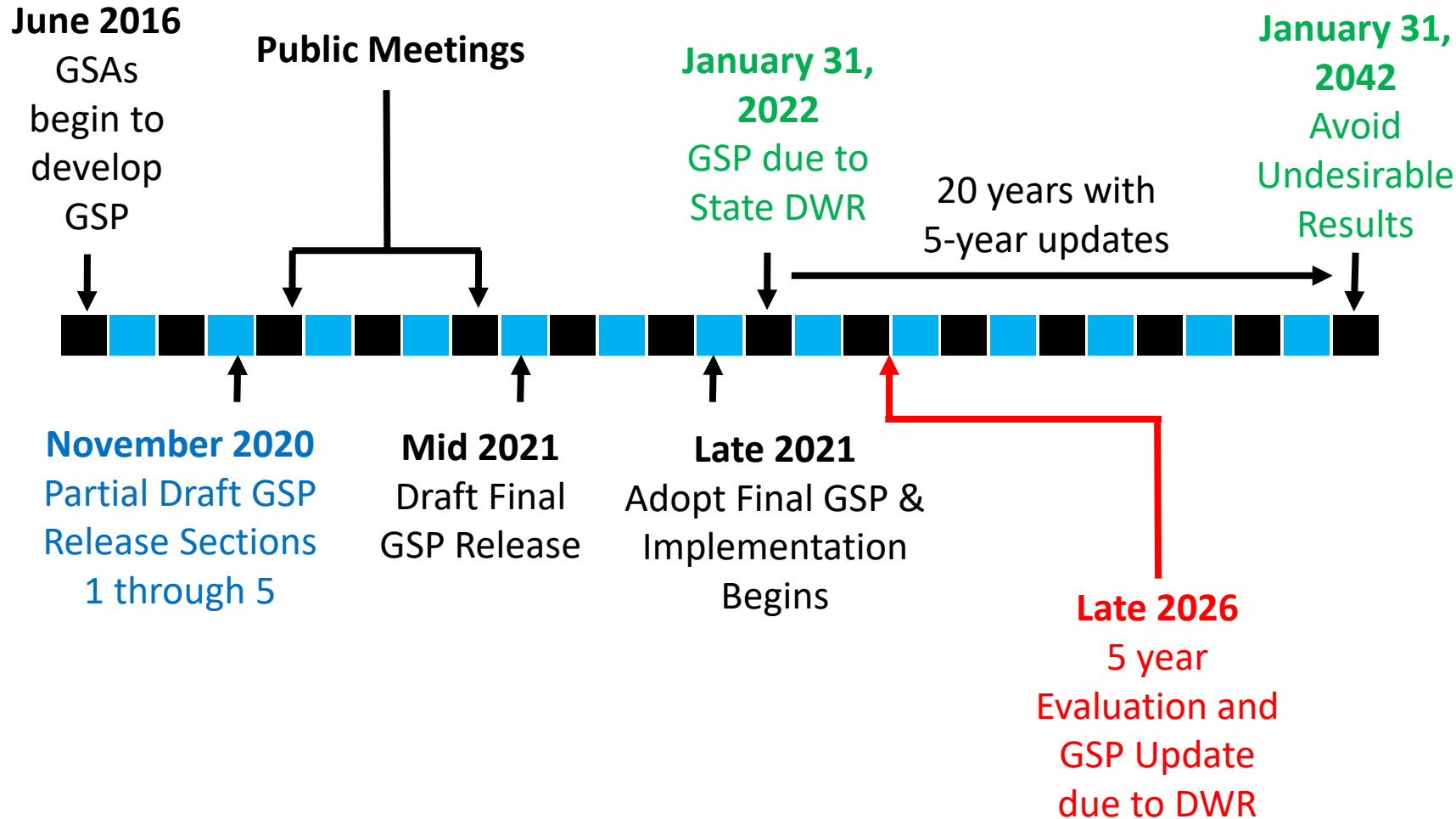
Agenda Item 5

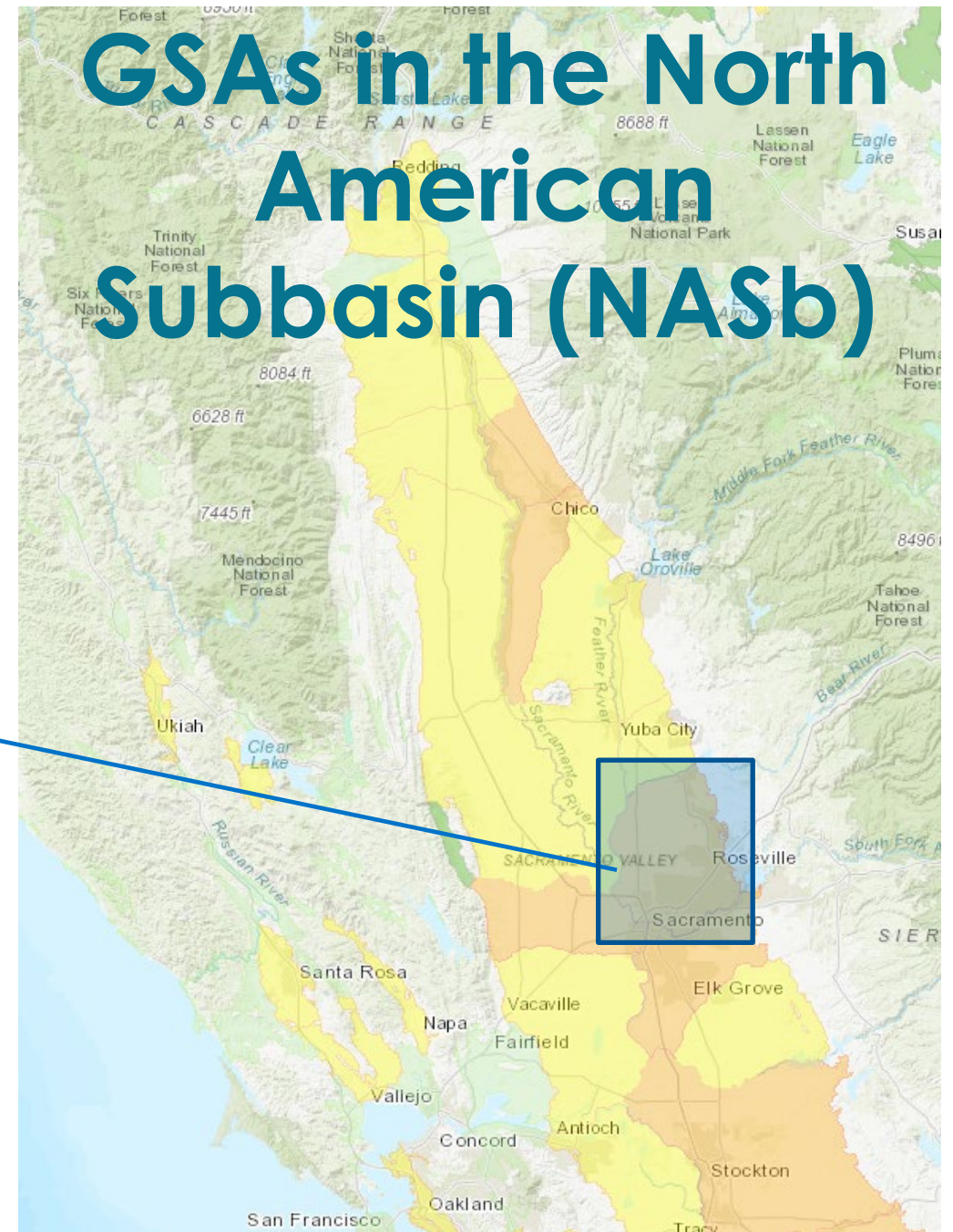
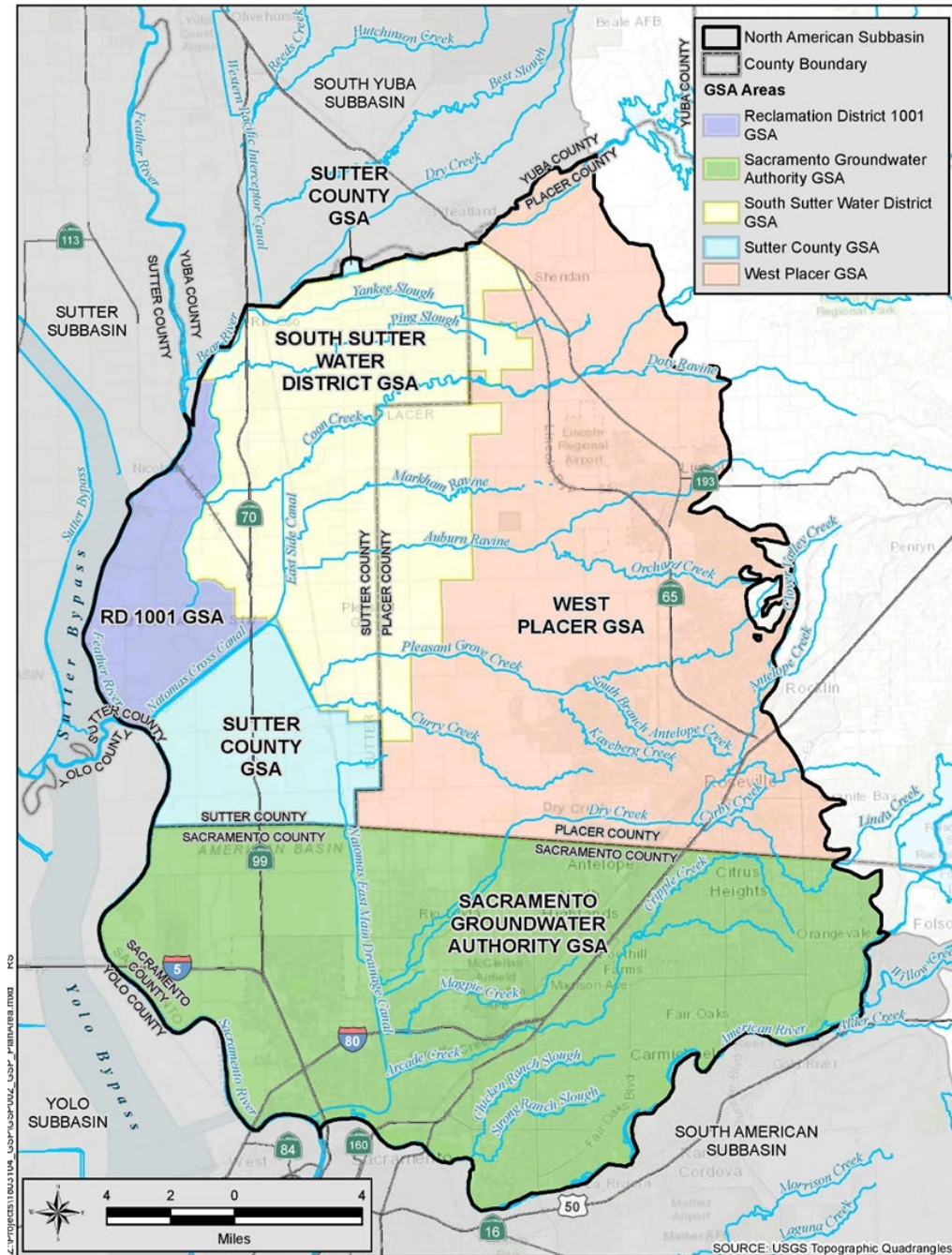
North American Subbasin (NASb) Groundwater Sustainability Plan (GSP) 5-Year Evaluation and Update

Timeline – GSP development and adoption

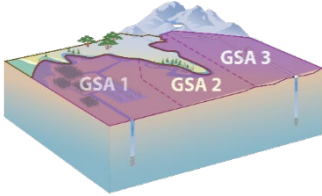
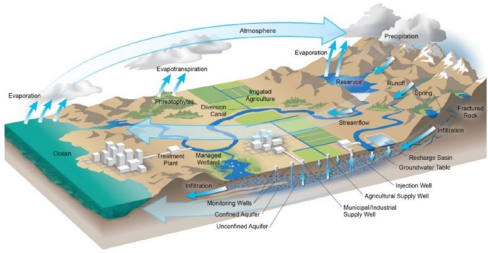
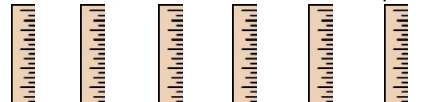
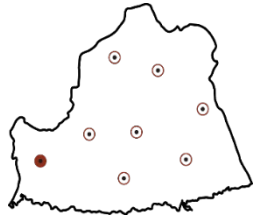
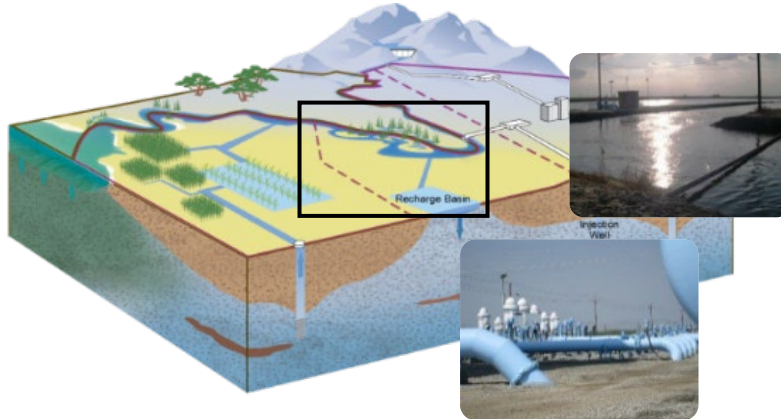


Timeline – GSP development and adoption





GSP Regulations & NASb GSP Sections

GSP Development Phases	1. Understand existing basin conditions	2. Develop water levels that consider beneficial uses and users	3. Develop management actions and/or projects to ensure basin is sustainable
GSP Regulation Requirements	Who - Administrative Information -  What - Basin Setting - 	Where - Sustainable Management Criteria -  Lowering GW Levels Reduction of Storage Seawater Intrusion Degraded Quality Land Subsidence Surface Water Depletion  - Monitoring Network - 	How - Projects & Management Actions - 
NASb GSP Draft Sections	Draft Release Sections Section 1 – Introduction Section 2 – Agency Information Section 3 – Description of Plan Area Section 4 – Hydrogeologic Setting Section 5 – Groundwater Conditions	Current Section Topics Sustainable Management Criteria Representative Monitoring Network Water Budgets	Current Section Topics Projects and Actions

Sustainability Indicators

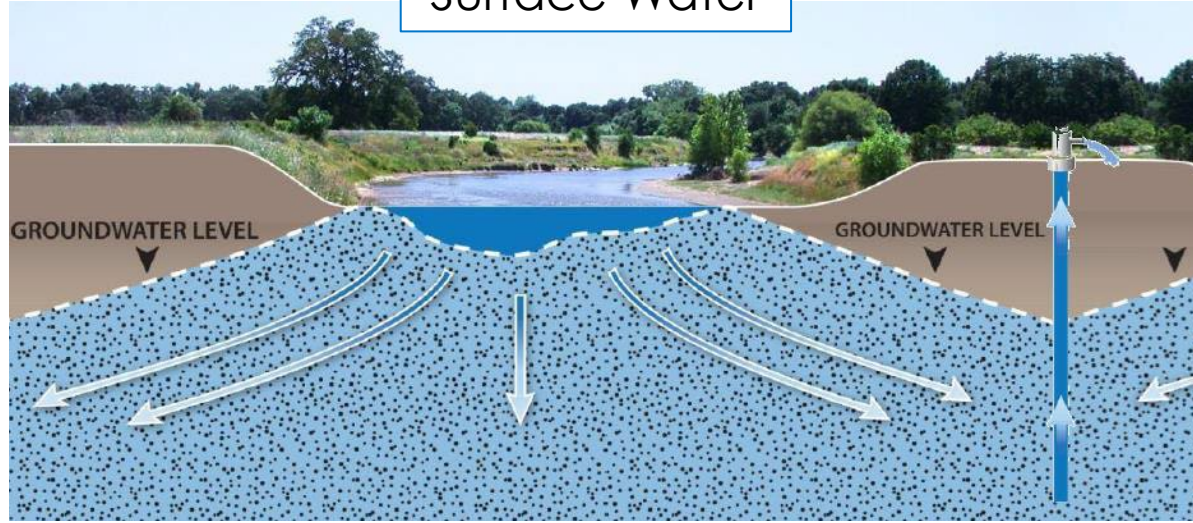
“effects caused by groundwater conditions throughout the basin that, when significant and unreasonable, cause undesirable results...”

Undesirable Results

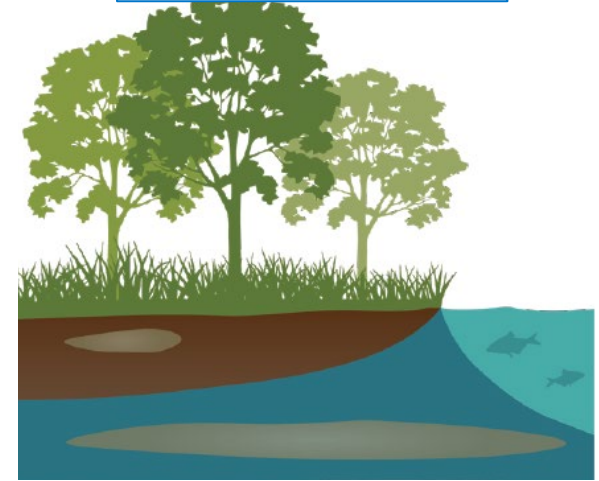


Beneficial Uses and Users

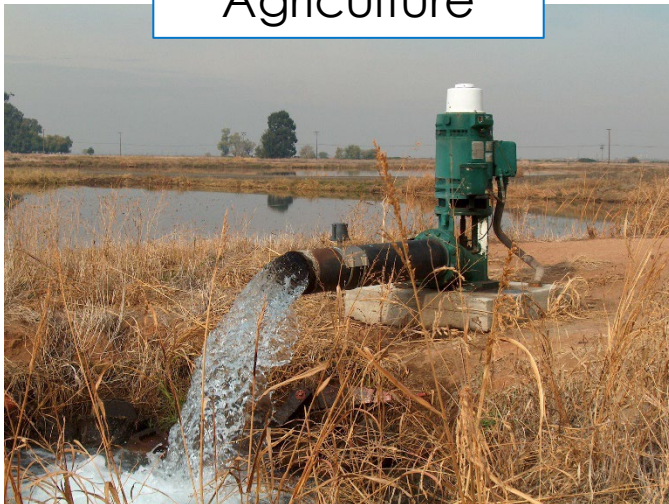
Surface Water



Environment



Agriculture



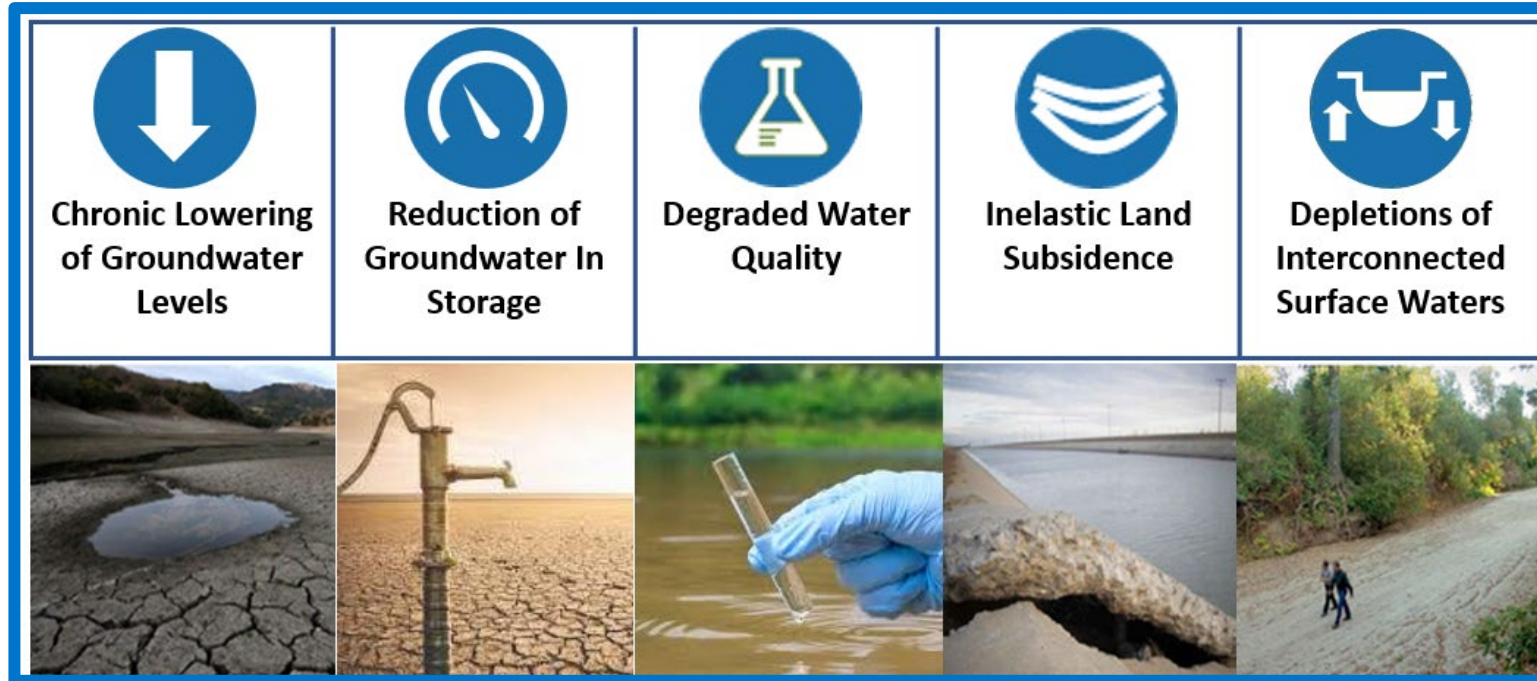
Municipal



Domestic



Demonstrating Sustainability Under SGMA

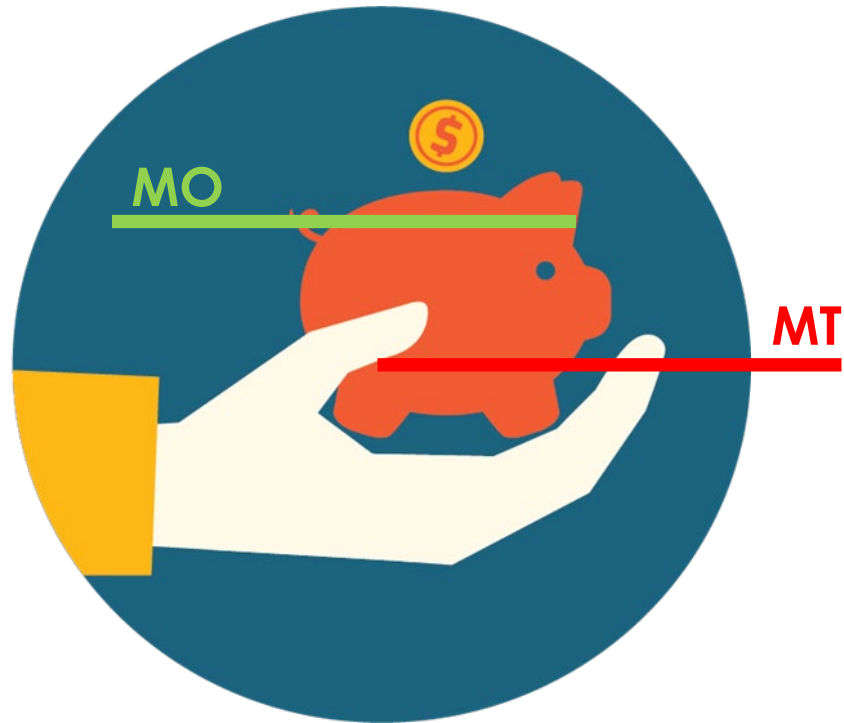


Define ***significant and unreasonable*** undesirable results for six indicators (five in our case)

- In consideration of beneficial uses and users
- Establish criteria to track progress (measurable objectives and minimum thresholds)
- Develop a representative monitoring network

Measurable Objectives and Minimum Thresholds

Measurable Objective (MO) = levels that reflect desired conditions...that enable GSA to achieve sustainability

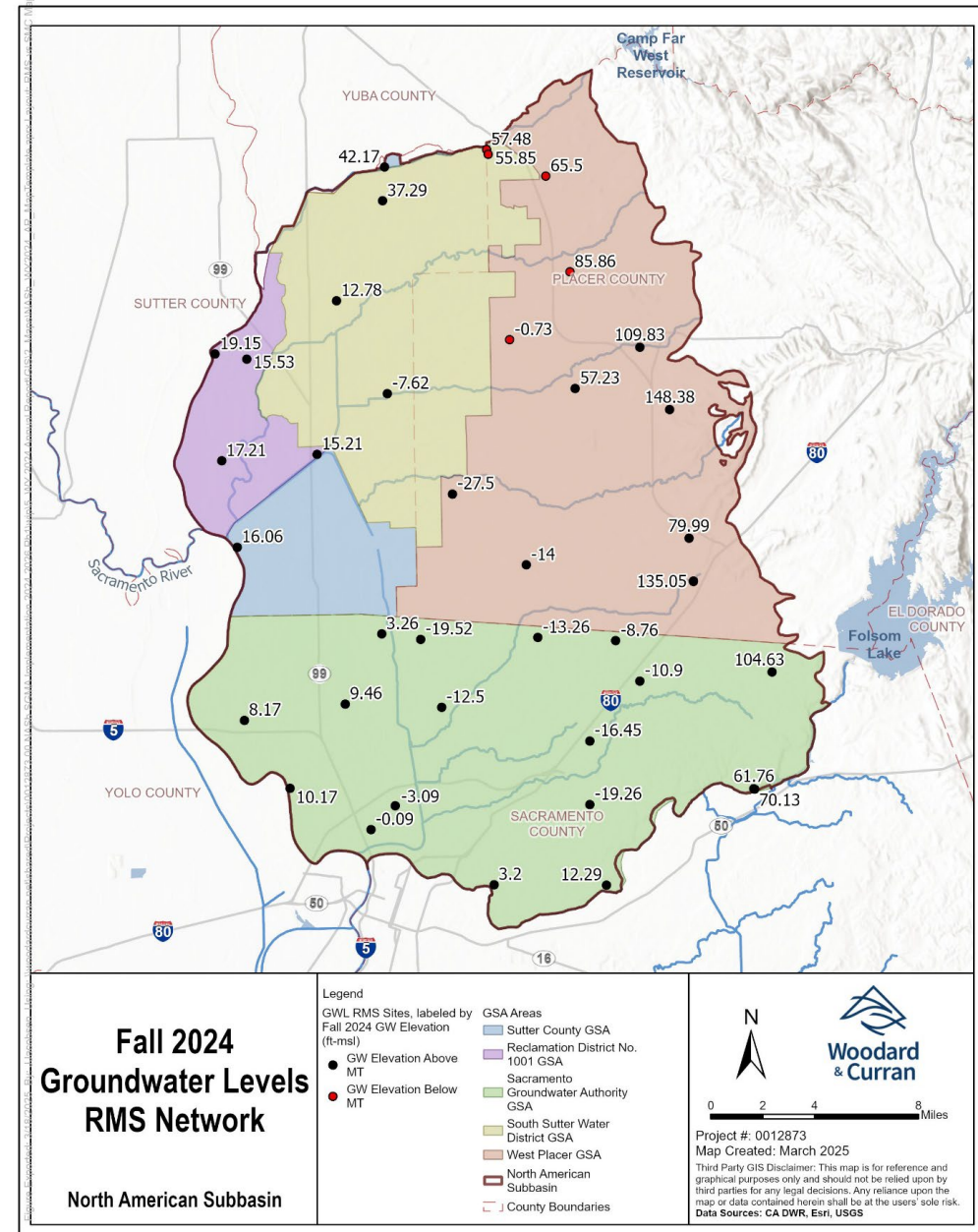


Minimum Threshold (MT) = levels at a site that when exceeded, either individually or at a combination of sites, may cause undesirable results

Chronic Lowering of Groundwater and Reductions of Groundwater in Storage

- 40 wells analyzed in WY 2024
 - MT: Varies based on well
 - MO: Varies based on well
 - Minimum: -27.50 ft.
 - Maximum: 148.38 ft.
- 5 out of 40 representative monitoring wells exceeded the MT
 - 4 of these wells observed consecutive fall MT exceedance
 - See hydrographs on following slides
- An undesirable result is not occurring

Note: An undesirable result occurs if 20% of representative monitoring network wells exceed their MTs



Chronic Lowering of Groundwater Levels



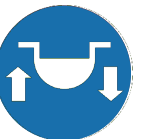
Reduction of Groundwater In Storage



Degraded Water Quality



Inelastic Land Subsidence



Depletions of Interconnected Surface Waters

Groundwater Budget from Model

Model Scenario	Groundwater Use (acre-feet)	Change in Storage (acre- feet)
Current Conditions	303,300	14,900
Projected Conditions	325,300	5,400
Projected Conditions with Climate Change	345,100	-3,500

Estimated sustainable yield = 336,000 acre-feet per year

Task	2025					2026		
	August	September	October	November	December	January	February	March
Task 1: Project Management & Coordination								
1.1 Kick Off Meeting (Completed)								
1.2 Coordination Meetings								
1.3 Intrabasin GSA Coordination Meetings								
1.4 Interbasin Coordination Meetings								
1.5 Contract Administration								
Task 2: Outreach & Communications - 2025 & 2026								
2.1 Public Meetings								
2.2 Sustainable Management Criteria Outreach								
2.3 Website Migration and 1 Year Hosting (Completed)								
2.4 Website Updates								
2.5 DMS Needs Assessment (Completed)								
2.6 DMS Upgrade								
Task 3: Periodic Evaluation								
3.1 Periodic Evaluation Development								
Task 4: GSP Amendment								
4.1 NASb GSP Amendment								
4.2 Technical Analyses								
4.3 Draft Amended GSP Compilation & Preparation								
4.4 Respond to GSA Comments on Amended GSP								
4.5 Public Comment & Final GSP Preparation								
Task 5: Annual Report								
5.1 Water Year 2025 Annual Report								
Task 6: Groundwater Monitoring								
6.1 Water Level Data Collection & Water Quality Sampling								
6.2 Water Quality Sampling & Technical Memorandum								
Task 7: Technical Analysis Support								
7.1 Interconnected Surface Water and GDE Analyses								
7.2 Adjacent Subbasins Impacts Analysis								
Task 8: SGMA Activities Support								
8.1 Representative Monitoring Guidebook								
8.2 Well Permitting Support								
8.3 Land Use Agency Coordination								
Component 7: CoSANA Model Enhancements								
Task 2 Model Calibration and Refinements to IWRM								
Task 3 Update Model Baselines and Sustainability Scenarios								