



Stanislaus & Tuolumne Rivers Groundwater Basin Association
Groundwater Sustainability Agency
1231 11th Street | Modesto, CA 95354
Email: strgba@mid.org

Management Actions Workshop

July 16, 2025, 1:30 p.m.

<https://us02web.zoom.us/j/87002976335>

By phone: 1-669-900-9128

Webinar ID: 8700 297 6335

PUBLIC PARTICIPATION

The public may participate in this meeting in the three ways described below.

Instructions for Participating in the Workshop via Zoom Webinar or Phone

On your desktop/iPad or tablet/laptop:

1. To join the webinar, click the link published in the agenda for the current meeting about 5 minutes before the webinar begins.
2. Follow the on-screen instructions to install and/or launch the Zoom application.
3. If prompted, enter the webinar ID published on the agenda.
4. All public attendees will enter the meeting muted.
5. If you wish to speak under Business from the Public, or after the Chairman calls for public comment, click on the "Raise Hand" button to request to speak.

On your phone:

1. To attend the meeting by phone, call the number published in the agenda for the meeting.
2. Enter the webinar ID published in the agenda, then hit the # symbol.
3. All public attendees will enter the meeting muted.
4. If you wish to speak under Business from the Public, or after the Chairman calls for public comment, press *9 on your phone to "Raise Hand" or simply request to speak.

In person: Modesto Irrigation District Board Room, 1231 11th Street, Modesto

To view a physical copy of the agenda, please visit the Modesto Irrigation District office at 1231 11th Street, Modesto. A complete copy of the agenda packet is also available on www.strgba.org



Stanislaus & Tuolumne Rivers Groundwater Basin Association
Groundwater Sustainability Agency
1231 11th Street | Modesto, CA 95354
Email: strgba@mid.org

AGENDA

1. Call to Order/Welcome and Introductions
(Four agencies are needed for a quorum)
2. Business from the Public
Who: Public
Expected Outcome: Interested persons are welcome to introduce any topic within the GSA's jurisdiction. Matters presented under this heading may be discussed but no action will be taken by the GSA at this meeting. It is not required, but speakers may provide their name and address. Public Comments will be limited to five minutes per speaker.
3. Topic: Management Actions – Draft Groundwater Allocation Recommendations
[Action item]
Who: Woodard & Curran, Committee
Expected Outcome: Approval
4. Next meeting
TBD
5. Committee Comments/Reports



MODESTO SUBBASIN GSP

STRGBA WELL MITIGATION PROGRAM & MANAGEMENT ACTIONS

JULY 16, 2025

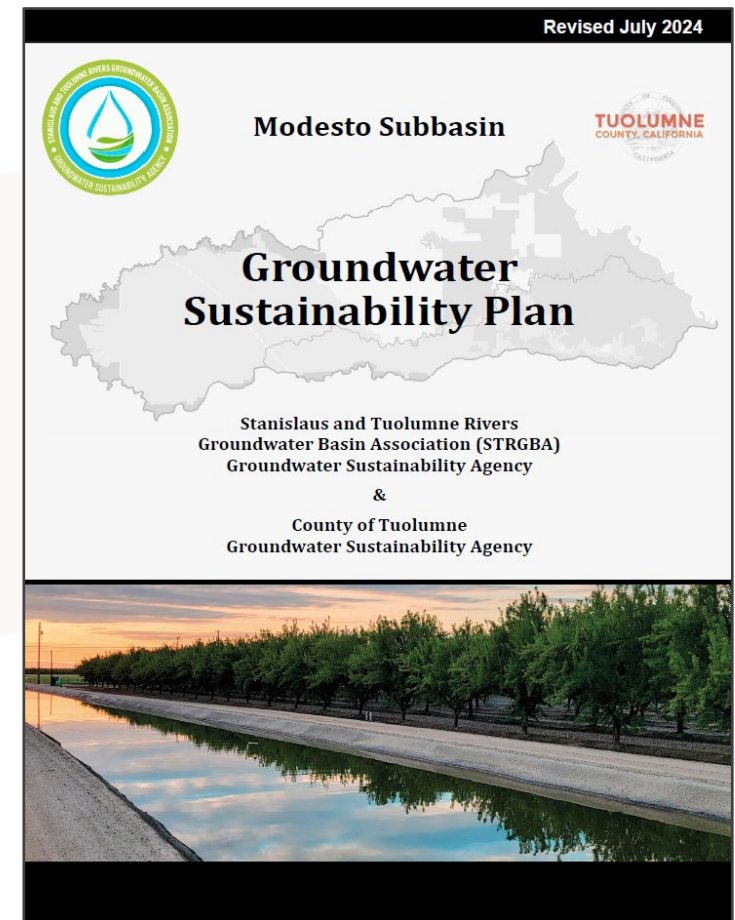


TODD
GROUNDWATER

AGENDA - STAKEHOLDER WORKSHOP

Groundwater Management Program

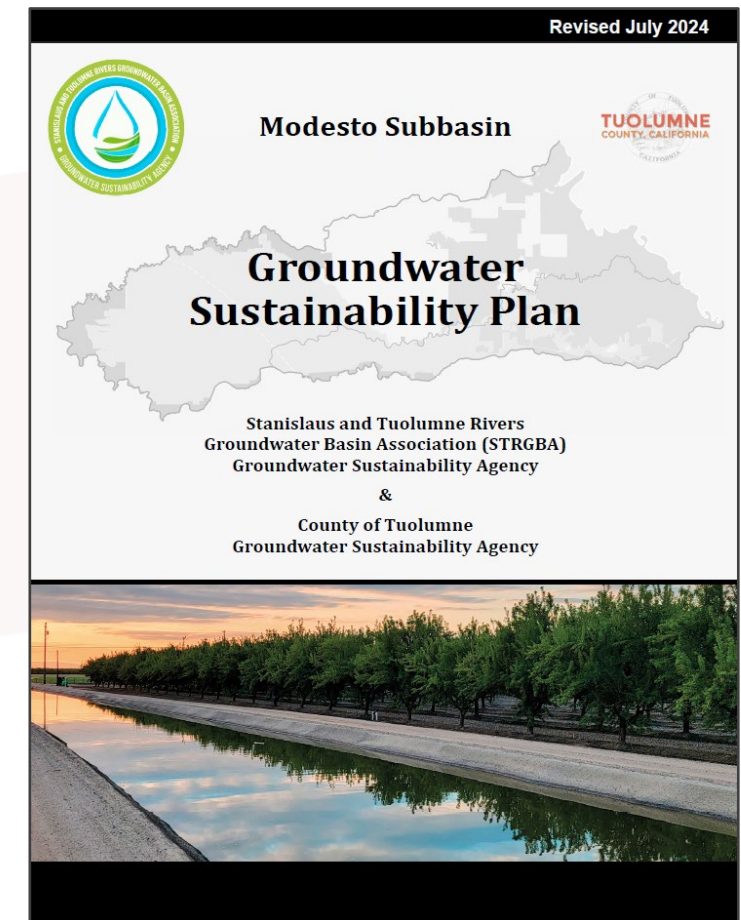
- **Background**
 - SGMA and the Modesto GSP
 - Projects and Management Actions
 - Goals and Objectives
- **Allocation Framework**
 - Introduction
 - Management Factors
 - Example Program



SGMA AND THE MODESTO GSP

■ The Modesto GSP

- Submitted the *original* GSP to DWR in January 2022
 - Received an incomplete determination in January 2024
 - **Deficiency 2:** The GSP does not include sufficient details of projects and management actions to mitigate overdraft in the subbasin or provide a feasible path to achieve sustainability.
- Submitted the *revised* GSP to DWR in July 2024
 - Approved and deemed complete as of in February 2025
 - **Deficiency 2:** The 2024 GSP has provided details for planned demand reductions strategies and a pumping management framework which include groundwater allocation, extraction fees, and a credit trading program.



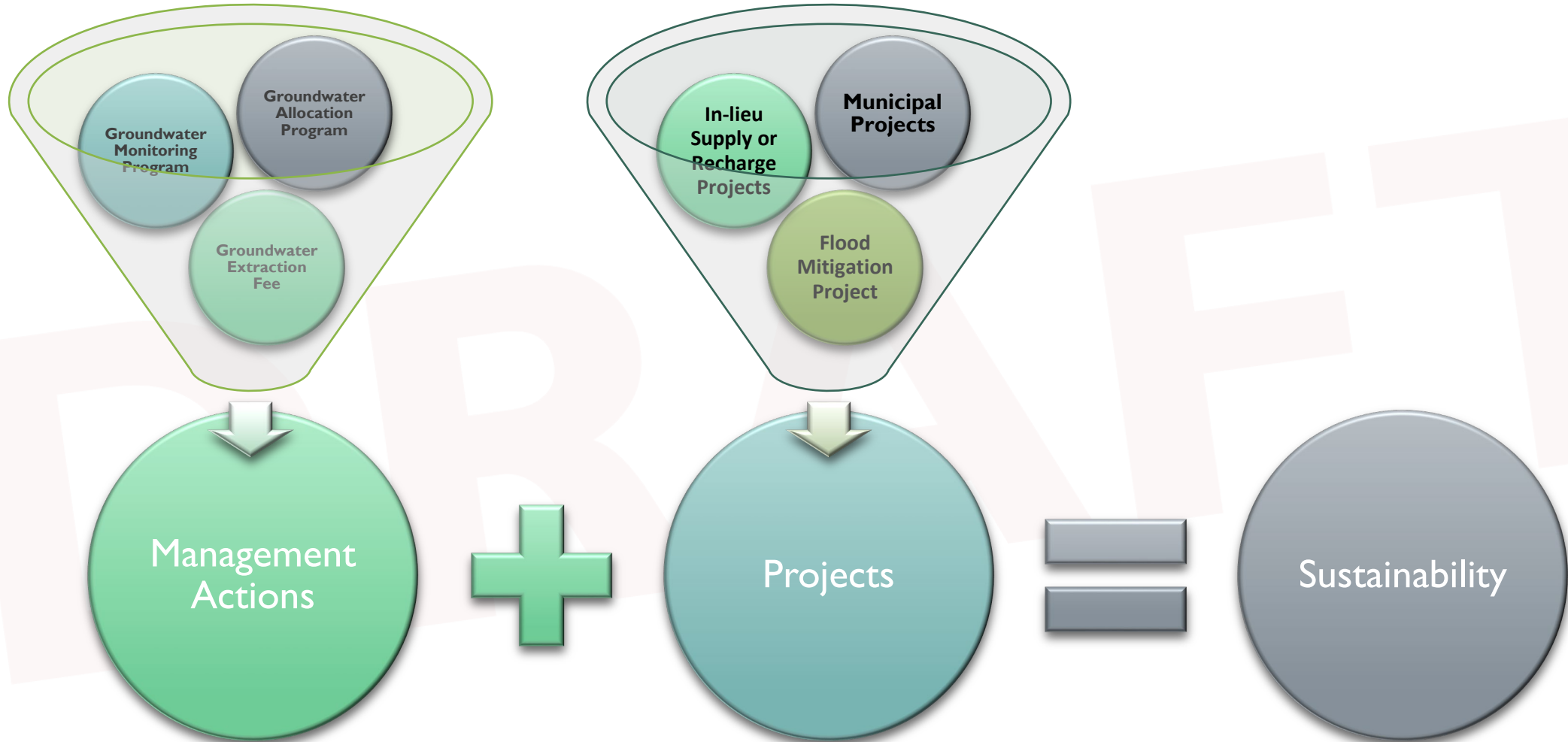
CORRECTIVE ACTION #2

KEY TAKEAWAYS FROM DWR DETERMINATION

- The GSA needs the tools to manage if groundwater conditions are unsustainable and/or if projects do not perform as expected.
- Paradigm Shift:
 - Management actions as the **primary** tool to **guarantee** sustainability.
 - Actions will empower the STRGBA GSA to act effectively and efficiently.
 - Used as a backstop to account for uncertainty (hydrology, implementation, etc).
 - Shall present methods, triggers, impacts, and escalating contingencies.
 - Will be offset with projects, dependent on implementation and effectiveness.

CORRECTIVE ACTION #2

SUSTAINABILITY PATH





GROUNDWATER MANAGEMENT PROGRAM

ALLOCATION FRAMEWORK



WHAT IS A GROUNDWATER ALLOCATION?

If the groundwater system is a bank account for water, an allocation is like a budget designed to fairly distribute water use, so we don't run out.

An allocation is a spending plan that decides:

- **Who** can take water
- **How** much they can take
- **When** they can take it

This helps make sure:

- **Farmers** have water for crops
- **Cities** have water for homes and businesses
- **Nature** has water for rivers and wetlands
- **Future generations** will have access to a sustainable water supply.

GROUNDWATER ALLOCATION OVERVIEW

LOCAL AUTHORITY AND DISCRETION

GSAs have broad authority to develop and implement GSPs that reflect local conditions, priorities, and management objectives.

- **California Water Code § 10725:** *"A groundwater sustainability agency may perform any act necessary or proper to carry out the purposes of this part."*
- **California Water Code § 10726.4(a)(2):** *"A groundwater sustainability agency shall have the authority to control groundwater extractions by regulating, limiting, or suspending extractions from individual wells or from groundwater extraction facilities within a basin."*
- **California Water Code § 10726.8(b):** *"Nothing in this part shall be construed to authorize a [GSA] to make a binding determination of the water rights of any person or entity."*

This includes the power to allocate resources to meet sustainability goals while balancing the needs of its users and protecting existing legal rights.

EXAMPLE ALLOCATION FRAMEWORK

- ✓ Determine **sustainable yield** of the Subbasin
2. Account for special considerations to obtain allocatable water
 - **Legal Exemptions** (federal & tribal lands, adjudicated areas, developed supplies)
 - **Local Management** (economically distressed areas, small-scale users, etc.)
3. Allocate remaining sustainable yield of native water
 - **Overlying Users** (Land-based Rights)
 - **Appropriative Users** (Permit-Based Rights)
4. **Establish framework** as basis for basin-wide management.
 - Determine triggers, impacts, or conditions to mitigate or intensify PMAs

GROUNDWATER ALLOCATION OVERVIEW

LEGAL EXEMPTIONS

Recovery of Developed Supply - Water that is intentionally sourced, controlled, and made available for use through human-made systems.

1. **Imported Water:** Surface water brought into the basin from external sources, such as through canals, pipelines, or water transfers.
2. **Recycled Water:** Wastewater or other non-traditional water sources that are treated to meet specific quality standards for reuse.
3. **Artificial Recharge Projects:** Groundwater replenishment efforts using intentionally captured and injected water.

GROUNDWATER ALLOCATION OVERVIEW

LEGAL EXEMPTIONS

Recovery of Developed Supply - Water that is intentionally sourced, controlled, and made available for use through human-made systems.

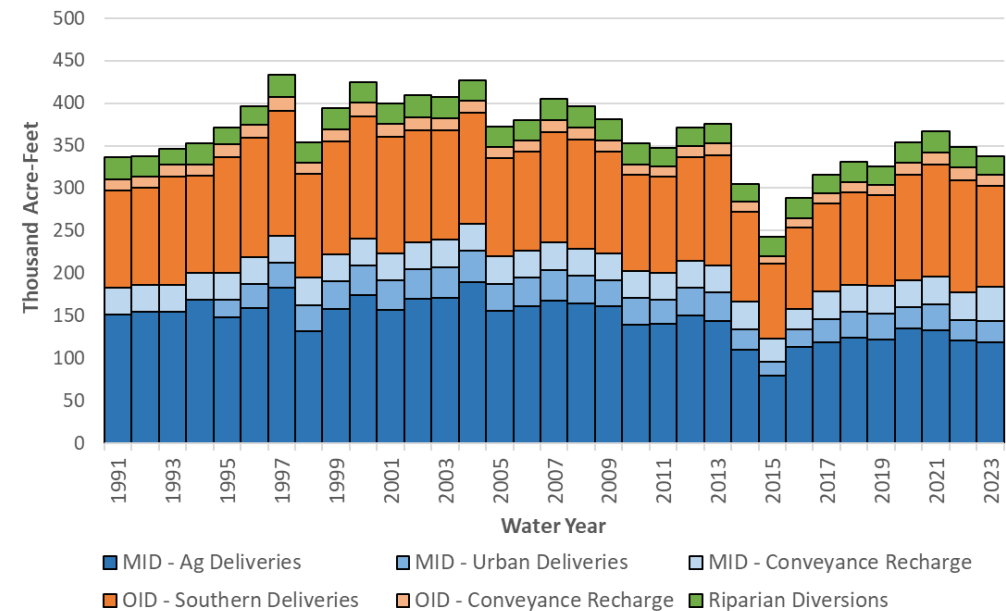
Modesto Subbasin 44,100 AFY

1. Modesto Irrigation District

- Reservoir Seepage 23,600 AFY
- Canal Seepage 8,000 AFY

2. Oakdale Irrigation District

- Canal Seepage 12,500 AFY



GROUNDWATER ALLOCATION OVERVIEW

LOCAL MANAGEMENT OBJECTIVES

Local Management Factors - SGMA grants GSAs flexibility to implement local groundwater management objectives, including the ability to provide special treatment in groundwater allocations.

- Management Zones
- De Minimis Water Use
- Small-Scale Agriculture
- Disadvantaged Communities
- Urban Growth and Conservation
- Developed vs Undeveloped Land
- Water Accounting, Credits, and Trading

Brainstorm Activity:

Are there any other special considerations that should be considered or evaluated

GROUNDWATER ALLOCATION OVERVIEW

LOCAL MANAGEMENT OBJECTIVES

Local Management Factors - SGMA grants GSAs flexibility to implement local groundwater management objectives, including the ability to provide special treatment in groundwater allocations.

Allocation of	Consumptive Use	Pumping	Other
Spatial Extent	Subbasin Wide	Management Zones	Other
Pro Rata Allocation per	Overlying Area	Developed Area	Historical Water Use
De Minimis Water Use	Exempt	Limited	Full
Municipal Users	Exempt	Limited	Full
Small-Scale Agriculture	Exempt	Limited	Full
Water Accounting, Credits, & Trading	Prohibited	Limited	Allowed

UP NEXT – GROUNDWATER ALLOCATION PROGRAM

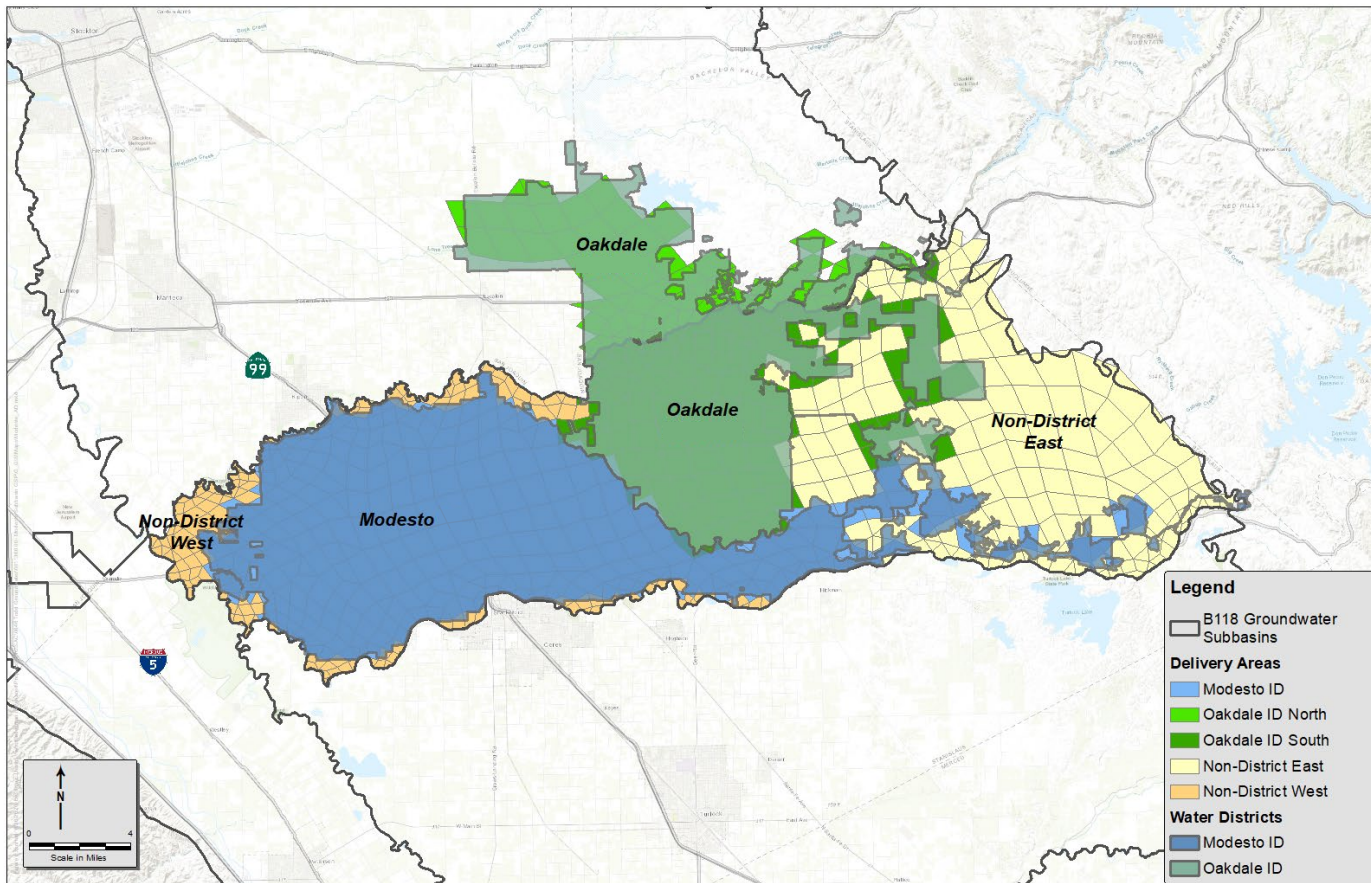
ALLOCATION METHOD

Allocation Basis	Description
Consumptive Use	Water rights are based on the amount consumed, not returned to the basin.
Pumping	Water is allocated based on the total volume extracted.
Other	Allocation is based on metrics, such as crop type, economic value, or negotiated agreements.

Spatial Extent	Description
Subbasin	Rules apply uniformly across the entire groundwater subbasin.
Management Zones	Water use rules differ across defined management areas.
Other	Custom zones or boundaries dictate water use policies.

GROUNDWATER ALLOCATION OVERVIEW

ALLOCATIONS AT THE SUBBASIN-SCALE



Modesto Subbasin Stewards (GSA Board)

Modesto Area

- Modesto Irrigation District
- City of Modesto
- City of Waterford

Oakdale Area

- Oakdale Irrigation District
- City of Oakdale

Non-District West

- Stanislaus County
- City of Riverbank

Non-District East

- Stanislaus County

GROUNDWATER ALLOCATION OVERVIEW

ALLOCATIONS AT THE SUBBASIN-SCALE

Stewardships of Management Areas

- Allocations granted to Management Areas.
- Stewards may be responsible for:
 - Local management
 - Pooling resources
 - Assigning credits
 - Facilitating trades
 - Distribution of allocation
 - Assessing use (metering)

Modesto Subbasin Stewards (GSA Board)

Modesto Area

- Modesto Irrigation District
- City of Modesto
- City of Waterford

Oakdale Area

- Oakdale Irrigation District
- City of Oakdale

Non-District West

- Stanislaus County
- City of Riverbank

Non-District East

- Stanislaus County

UP NEXT – GROUNDWATER ALLOCATION PROGRAM

ALLOCATION METHOD

Proportional Allocation	Description
Overlying Area	Distribution based on the total area.
Developed Area	Distribution based on the area that is irrigated.
Historical Use	Distribution based on past groundwater use patterns.
Comprehensive Methods	A basin-wide approach that formalizes groundwater rights - <i>often through adjudication</i> - and may incorporate overlying area, developed area, or historical use as part of its formula

Reason for “overlying area” as recommendation for proportional allocation:

- **Simplicity** – comprehensive methods, like an adjudication, are expensive and time consuming.
- **Optimization** – facilitates resource pooling in the areas most reliant on groundwater.
- **Equity** – All overlying users should share in the costs and benefits of groundwater management.

Note: An example of an allocation based on overlying vs developed area will be presented in a later slide

UP NEXT – GROUNDWATER ALLOCATION PROGRAM

ALLOCATION METHOD

Municipal Users	Description
Exempt	Not subject to regulation.
Limited	Municipal users may face some restrictions. (consistent pumping and continued metering)
Full	All municipal users must fully comply with groundwater rules.

Reason for “limited” recommendation on municipal users:

- **Conservation Requirements** – Mandated efficiency reflecting “conservation-as-a-way-of-life”.
- **Growth Obligations** – Mandated housing and population growth targets drive water demand.
- **Public Service Constraints** – Not-for-profit entities; operate with limiting flexibility in pricing.
- **Supply Limitations** – Current supply is capped; meeting future demand will require surface water development, recharge projects, additional conservation, or purchased credits.

UP NEXT – GROUNDWATER ALLOCATION PROGRAM

ALLOCATION METHOD

De Minimis	Description
Exempt	Not subject to regulation.
Limited	Small domestic users may face some restrictions.
Full	All domestic use must fully comply with groundwater rules.

Small-Scale Agriculture	Description
Exempt	Not subject to regulation.
Limited	Small farms have partial regulation, or delayed implementation.
Full	All agricultural use must fully comply with groundwater rules.

UP NEXT – GROUNDWATER ALLOCATION PROGRAM

ALLOCATION METHOD

Water Accounting, Credits, & Trading	Description
Prohibited	No trading or crediting of groundwater.
Limited	Trading is allowed under strict conditions
Allowed	No limitations on groundwater trading systems.

Trading limitations :

- Trading will only be allowed within management areas.
- Trading may be limited based on response-level actions.
- Trading may be suspended at the discretion of the GSA.

GROUNDWATER ALLOCATION OVERVIEW

LOCAL MANAGEMENT OBJECTIVES

Local Management Factors - SGMA grants GSAs flexibility to implement local groundwater management objectives, including the ability to provide special treatment in groundwater allocations.

Allocation of	Consumptive Use	Pumping	Other
Spatial Extent	Subbasin Wide	Management Zones	Other
Pro Rata Allocation per	Overlying Area	Developed Area	Historical Water Use
De Minimis Water Use	Exempt	Limited	Full
Municipal Users	Exempt	Limited	Full
Small-Scale Agriculture	Exempt	Limited	Full
Water Accounting, Credits, & Trading	Prohibited	Limited	Allowed

EXAMPLE ALLOCATION FRAMEWORK

- ✓ Determine **sustainable yield** of the Subbasin
- ✓ Account for special considerations to obtain allocatable water
 - **Legal Exemptions** (federal & tribal lands, adjudicated areas, developed supplies)
 - **Local Management** (economically distressed areas, small-scale users, etc.)
- 3. Allocate remaining sustainable yield of native water
 - **Overlying Users** (Land-based Rights)
 - **Appropriative Users** (Permit-Based Rights)
- 4. **Establish framework** as basis for basin-wide management.
 - Determine triggers, impacts, or conditions to mitigate or intensify PMAs

I. DETERMINE SUSTAINABLE YIELD OF BASIN

Sustainable Yield = long term average annual groundwater pumping sustainable without causing undesirable results

Note¹: This analysis was performed using the 2015-2024, 10-year historical period.

Note²: The numbers presented are based on historical use rather than the location of production



267,000 AF

***Estimated using C2VSimTM model simulations. Future refinements will consider effects to minimum thresholds and undesirable results.**

2. ACCOUNT FOR SPECIAL CONSIDERATIONS

Developed Supply (44,100 AFY) – Recovery of surface water that has been made available and imported through human-built infrastructure.

De Minimis Use (13,800 AFY) – Individuals that extract two acre-feet per year or less, such as household use or small-scale irrigation.

Municipal Use (35,000 AFY) – Water use referring to the provision of water for residential, commercial, and public services within a city.

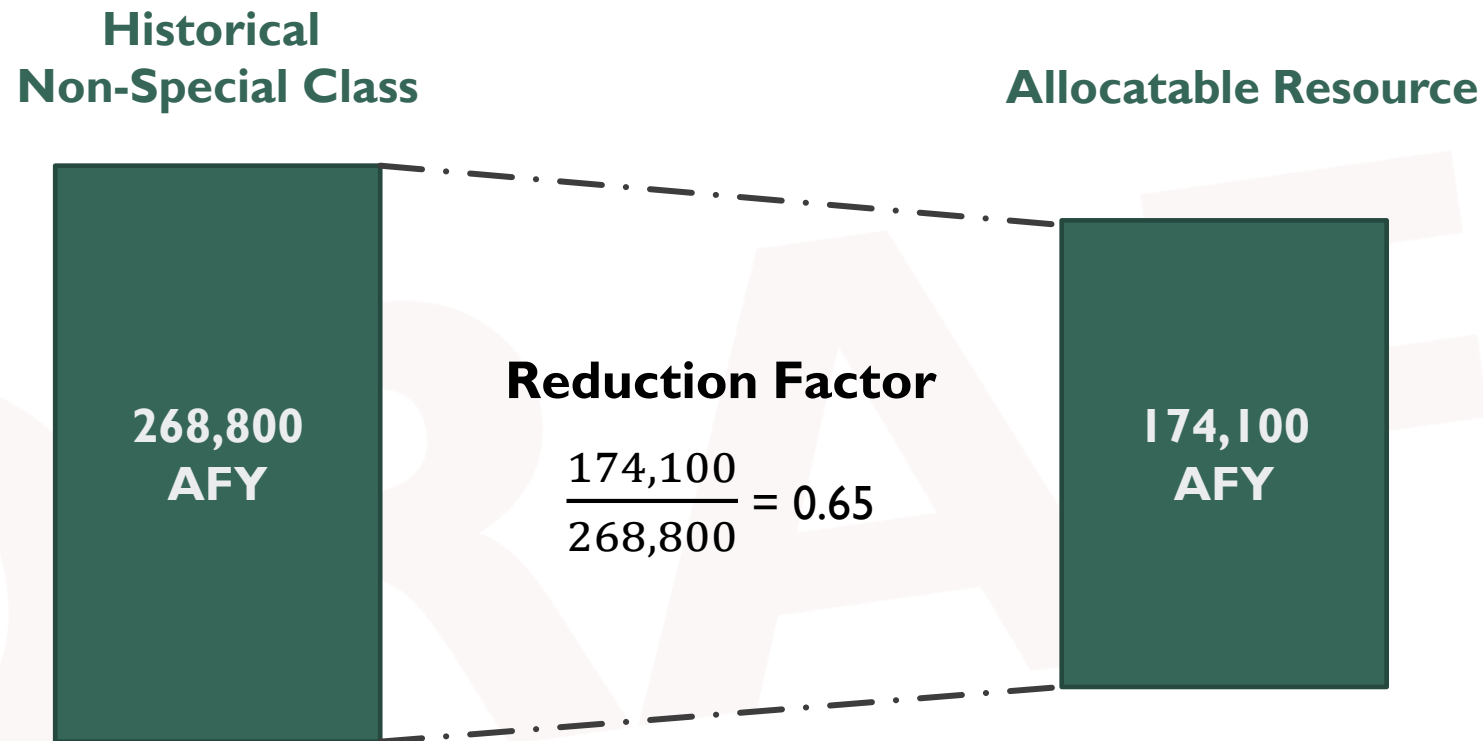
Non-allocatable yields are estimated at **92,900 AFY**

2. ACCOUNT FOR SPECIAL CONSIDERATIONS



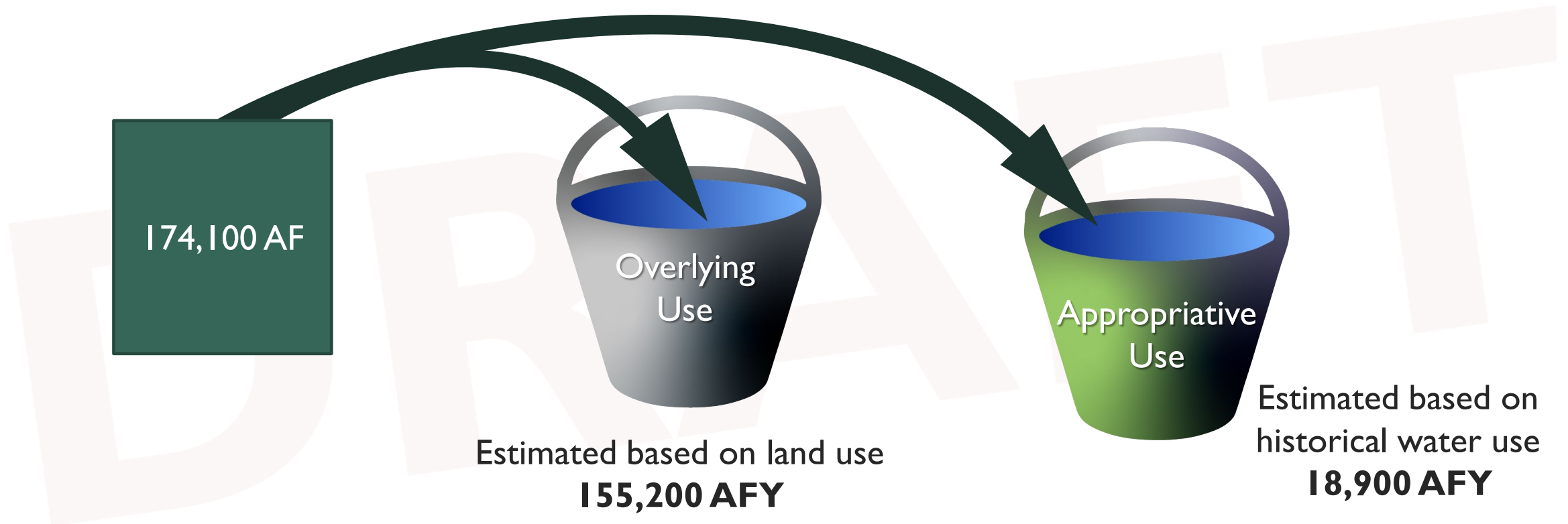
Note: This analysis was performed using 10-year (2015-2024) historical period.

3. APPORTION SUSTAINABLE YIELD BETWEEN OVERLYING AND APPROPRIATIVE USERS BASED ON HISTORICAL USE



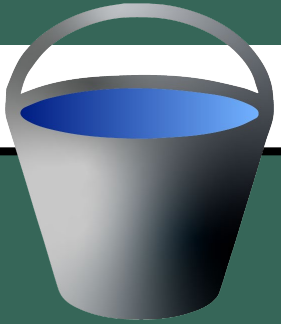
Note: This analysis was performed using 10-year (2015-2024) historical period.

3. APPORTION SUSTAINABLE YIELD BETWEEN OVERLYING AND APPROPRIATIVE USERS BASED ON HISTORICAL USE



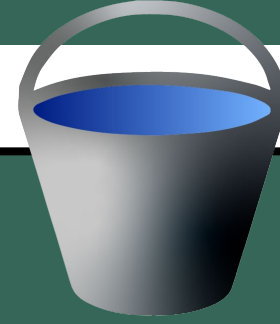
Note: This analysis was performed using 10-year (2015-2024) historical period.

3B. SUMMARY OF OVERLYING WATER USE



per Overlying Area

	Subbasin TOTAL	Modesto Area	Oakdale Area	NDW Area	NDE Area
Total Area (acres)	245,900	106,100	55,200	14,500	70,100
Percent of Subbasin	100%	43%	22%	6%	29%
Overlying Allocation (feet)	0.63	0.63	0.63	0.63	0.63
Overlying Allocation (acre-feet)	155,200	67,000	34,800	9,200	44,200
Overlying Hist. Use (acre-feet)	241,400	115,300	27,400	9,500	89,200
Reduction Required (acre-feet)	86,200	48,300	0	300	45,000
% of Historical	65%	58%	127%	97%	50%

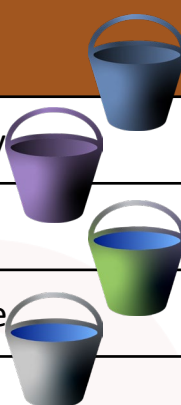


per Developed Area

	Subbasin TOTAL	Modesto Area	Oakdale Area	NDW Area	NDE Area
Total Area (acres)	130,000	59,400	38,900	7,700	24,000
Percent of Subbasin	100%	46%	30%	6%	18%
Overlying Allocation (feet)	1.19	1.19	1.19	1.19	1.19
Overlying Allocation (acre-feet)	155,200	70,900	46,400	9,200	28,700
Overlying Hist. Use (acre-feet)	241,400	115,300	27,400	9,500	89,200
Reduction Required (acre-feet)	86,200	44,400	0	300	60,500
% of Historical	65%	61%	169%	97%	32%

Note: This analysis was performed using 10-year (2015-2024) historical period.

ALLOCATION SUMMARY

	Subbasin TOTAL	Modesto Area	Oakdale Area	NDW Area	NDE Area
Developed Supply 	44,100	31,600	12,500	0	0
Special Cases	48,800	33,700	8,900	6,200	0
Appropriative Use	18,900	16,400	2,500	0	0
Overlying Use	155,200	67,000	34,800	9,200	44,200
Total Allocation	267,000	148,700	58,700	15,400	44,200
Total Historical Pumping	317,600	173,000	39,800	15,100	89,700
Reduction Required	50,600	24,300	0	0	45,500
Total Allocation (% Hist)	84%	86%	147%	102%	50%

Summary

- Sustainability can be met with management actions.
- Projects will mitigate the need for reductions.
- Resource optimization and may further mitigate impacts; redistributions would require formal approval by the GSA and management area stewards.

Note: This analysis was performed using 10-year (2015-2024) historical period.

ALLOCATION SUMMARY

	Subbasin TOTAL	Modesto Area	Oakdale Area	NDW Area	NDE Area
Base Allocation	267,000	148,700	58,700	15,400	44,200
Excess Allocation	0	0	18,900	300	0
Redistributed Allocation	0	12,600	-18,900	-300	6,600
Optimized Allocation	267,000	161,300	39,800	15,100	50,800
Total Historical Pumping	317,600	173,000	39,800	15,100	89,700
Reduction Required	50,600	11,700	0	0	38,900
Overlying Allocation (% Hist)	84%	93%	100%	100%	57%

Sample Optimization

- Developed supplies remain under the control of the importing agency.
- Unused allocations may be redistributed at the discretion of the GSA.
- In this **example** the excess allocation is equally distributed based on historical pumping.

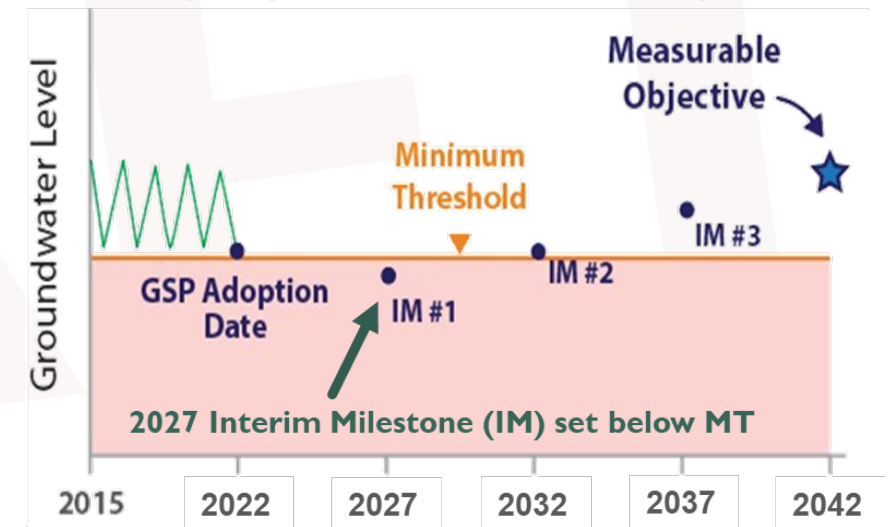
Note: This analysis was performed using 10-year (2015-2024) historical period.

IMPLEMENTATION OF MANAGEMENT ACTIONS

Goals:

- Achieve sustainability as outlined in the GSP
 - Mandated as **primary** tool to **guarantee** sustainability.
 - Will be offset with projects, dependent on implementation and effectiveness.
- A framework for groundwater management
 - First step, is significant but not overly conservative
 - Incorporate a ramping implementation period
 - Driven by observed groundwater level data
 - Supported though adaptive management

SGMA allows GSAs to define *Interim Milestones* as a “glide path” to sustainable management



IMPLEMENTATION OF MANAGEMENT ACTIONS

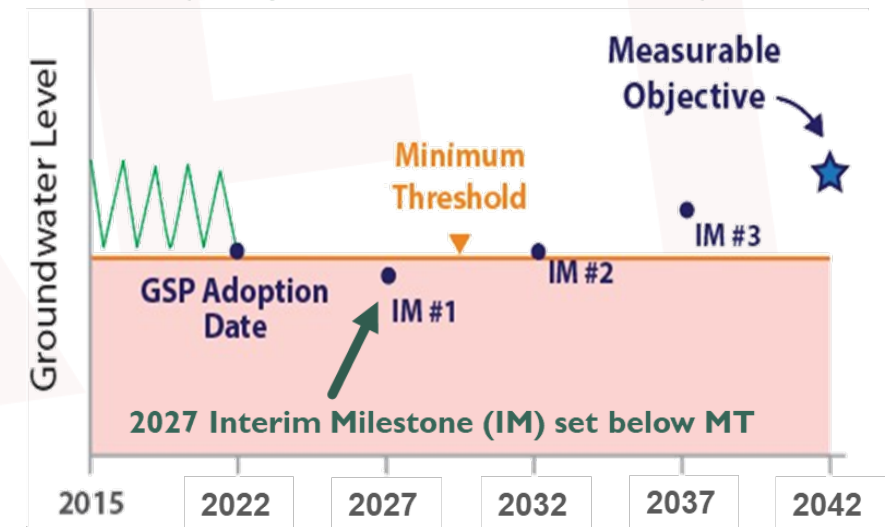
Interim Milestones Timeline

- **2027** - Arrest overdraft and GWL decline
- **2032** - Raise GWLs to minimum thresholds
- **2037** - Raise GWLs to halfway between minimum thresholds and measurable objectives
- **2042** - Raise GWLs to measurable objectives

Implementation Timeline

- **2027 – 2031** 50% of target allocation
- **2032 – 2036** 75% of target allocation
- **2037 – 2042** 100% of target allocation

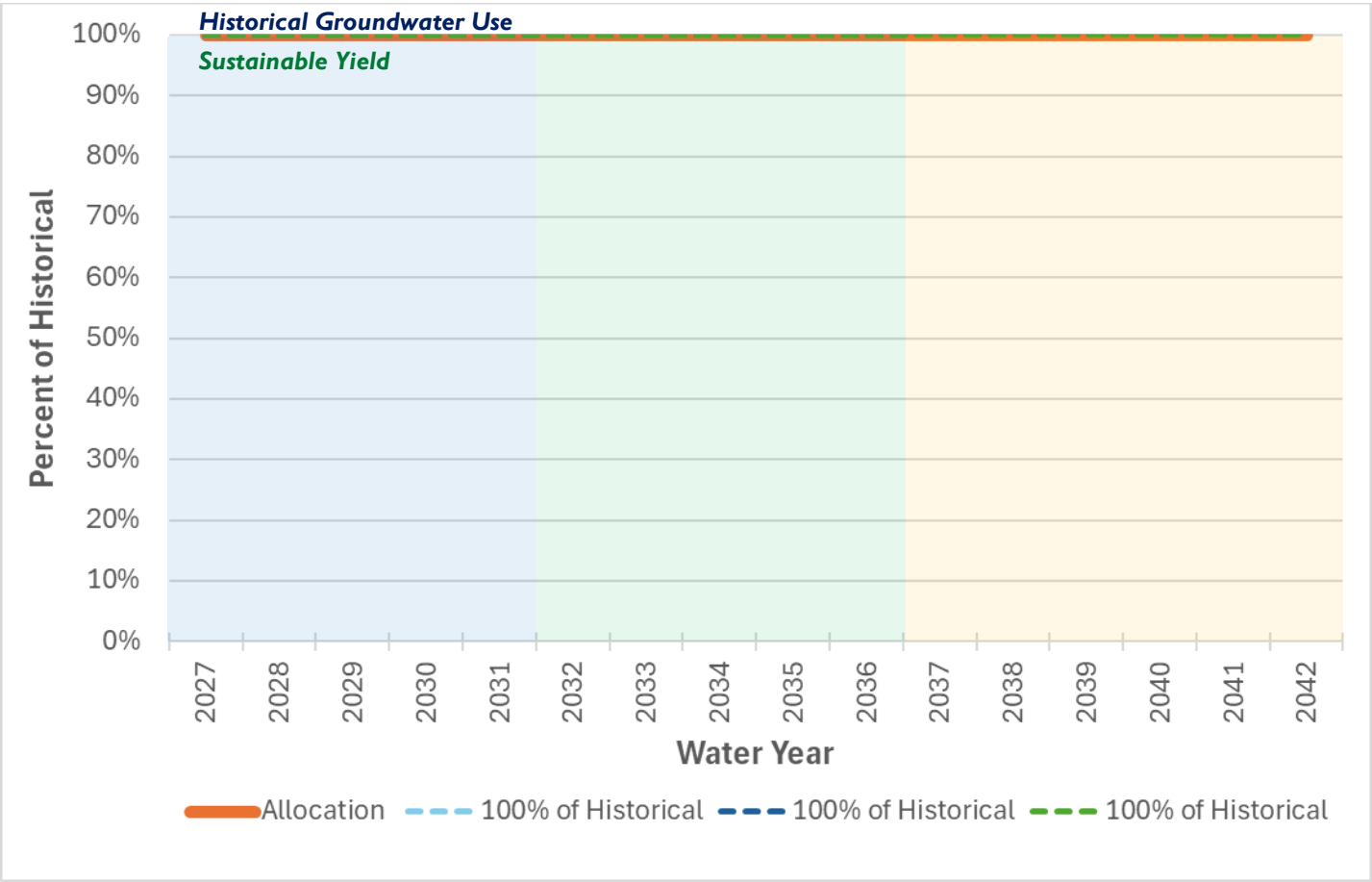
SGMA allows GSAs to define *Interim Milestones* as a “glide path” to sustainable management



IMPLEMENTATION

OAKDALE & NON-DISTRICT WEST AREAS

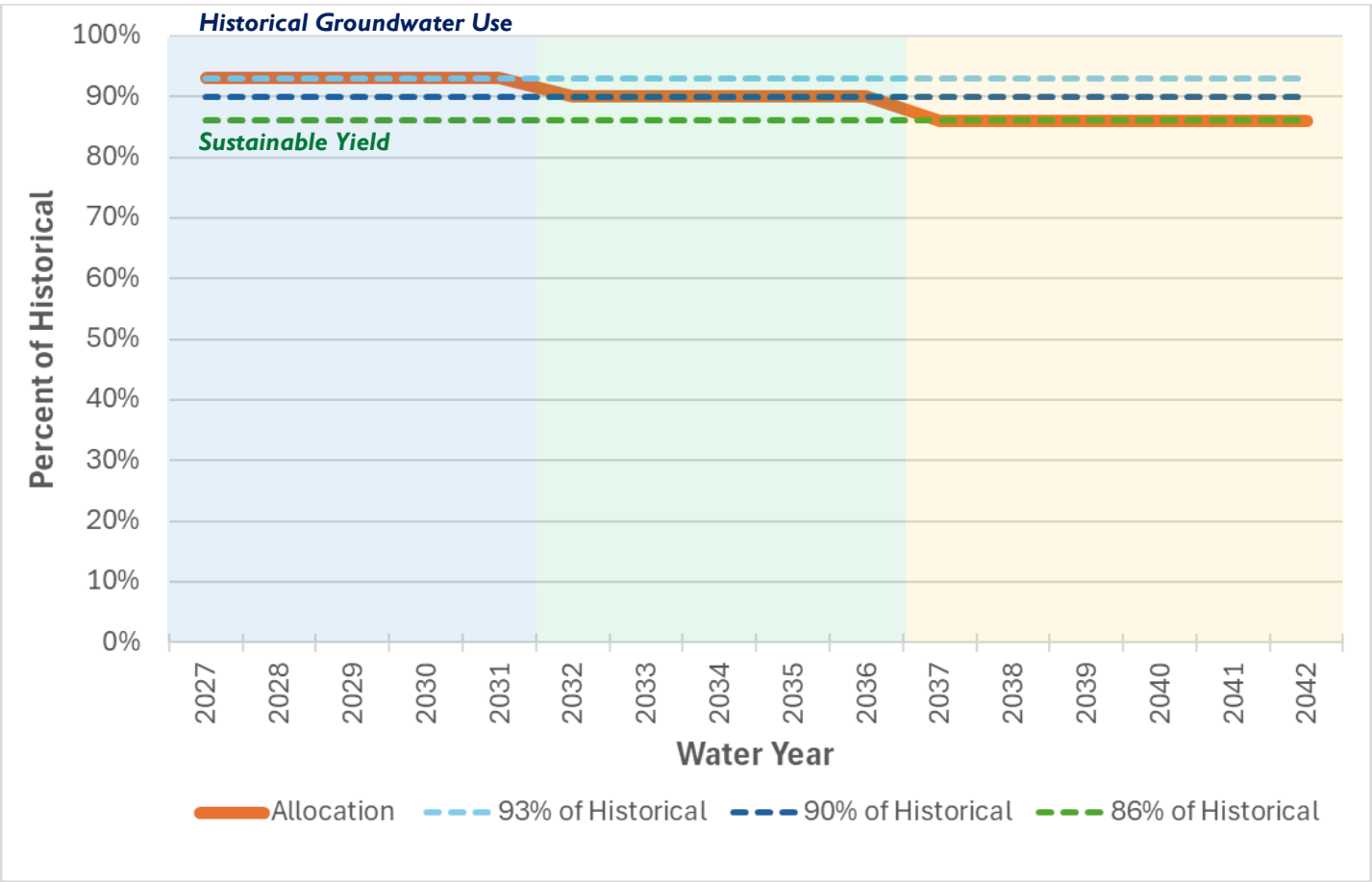
Oakdale and NDW Areas		
Year	Base Reduction (acre-feet)	Optimized Reduction (acre-feet)
2027-2032	N/A	N/A
2033-2037	N/A	N/A
2038-2042	N/A	N/A



IMPLEMENTATION

MODESTO AREA

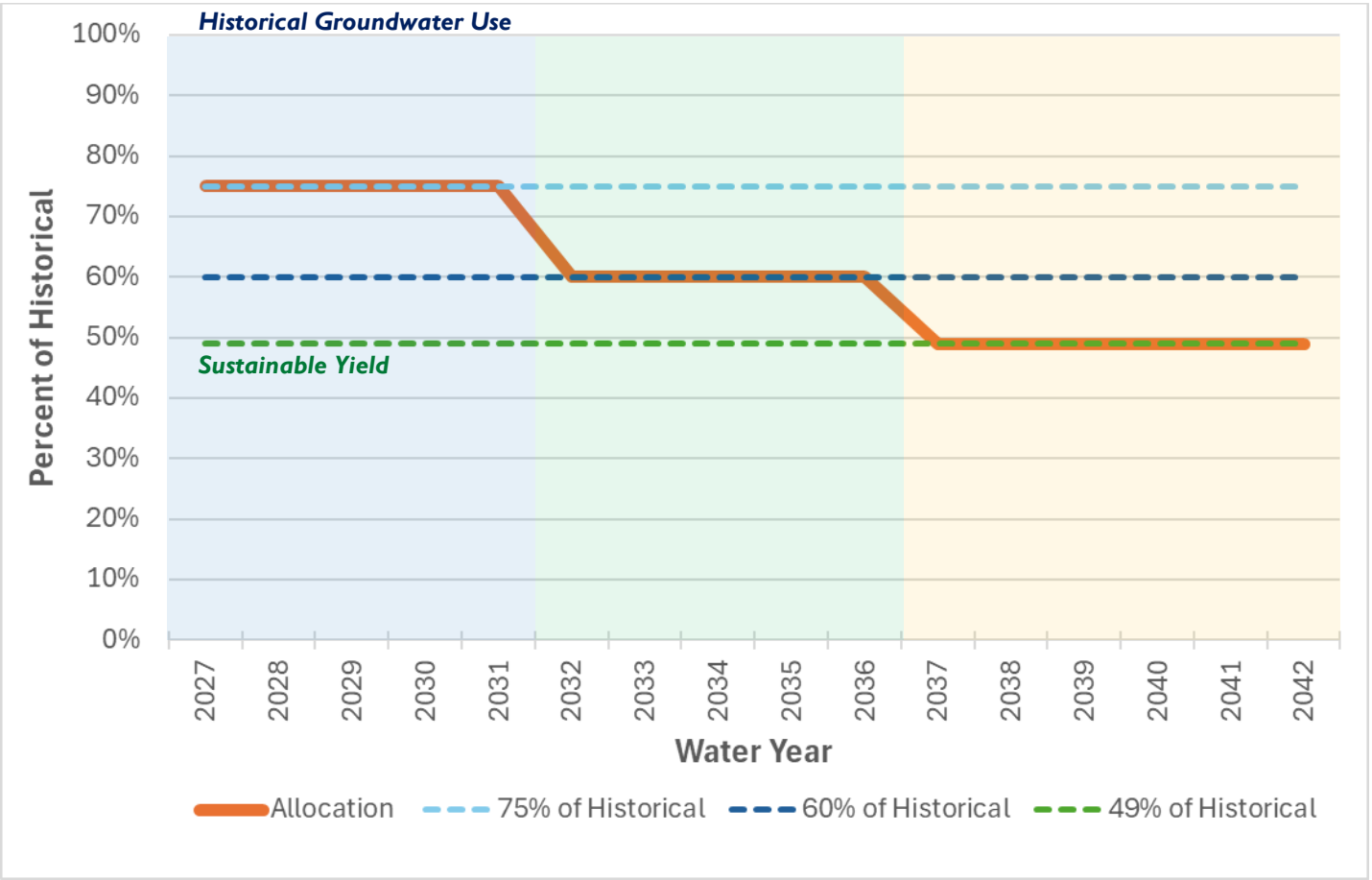
Modesto Area		
Year	Base Reduction (acre-feet)	Optimized Reduction (acre-feet)
2027-2032	12,100 (7%)	6,900 (4%)
2033-2037	17,300 (10%)	10,400 (6%)
2038-2042	24,300 (14%)	11,700 (7%)



IMPLEMENTATION

NON-DISTRICT EAST AREA

NDE Area		
Year	Base Reduction (acre-feet)	Optimized Reduction (acre-feet)
2027-2032	22,400 (25%)	22,400 (25%)
2033-2037	35,900 (40%)	31,400 (35%)
2038-2042	45,500 (50%)	38,900 (43%)



GROUNDWATER ALLOCATIONS

MANAGEMENT AREA SUMMARY

Base Reduction

	Reduction from Historic Use		
	2027-2032	2033-2037	2038-2042
Oakdale	0%	0%	0%
NDW	0%	0%	0%
Modesto	7%	10%	14%
NDE	25%	40%	51%
Subbasin	11%	17%	22%

Optimized Reduction

	Reduction from Historic Use		
	2027-2032	2033-2037	2038-2042
Oakdale	0%	0%	0%
NDW	0%	0%	0%
Modesto	4%	6%	7%
NDE	25%	35%	43%
Subbasin	9%	13%	16%

IMPLEMENTATION OF MANAGEMENT ACTIONS

Goals:

- Achieve sustainability as outlined in the GSP
 - Mandated as **primary** tool to **guarantee** sustainability.
 - Will be offset with projects, dependent on implementation and effectiveness.
- A framework for groundwater management
 - First step, significant but not overly conservative
 - Incorporate a ramping implementation period
 - Driven by observed groundwater level data
 - Supported though adaptive management

SGMA allows GSAs to define *Interim Milestones* as a “glide path” to sustainable management

