
Merced Groundwater Sustainability Plan

Public Meeting – May 29, 2019

Image courtesy: Veronica Adrover/UC Merced





Welcome, Introductions, and GSP Overview

Image courtesy: Veronica Adrover/UC Merced



Agenda

1. Welcome, Introductions, and GSP Overview

1. Sustainable Groundwater Management Act and Groundwater Sustainability Plan
2. Current and Projected Groundwater Conditions
3. Groundwater in the Atwater Area
4. Discussion & Questions



2. Sustainable Management for the Merced Subbasin Groundwater

1. Sustainable Management Criteria
2. Sustainable Yield and Projects and Management Actions
3. Next Steps for GSP Adoption

3. Wrap-up and Next Steps

Image courtesy: Veronica Adrover/UC Merced

Sustainable Groundwater Management Act and Groundwater Sustainability Plan

Common Abbreviations:

- SGMA = Sustainable Groundwater Management Act
- GSA = Groundwater Sustainability Agency
- GSP = Groundwater Sustainability Plan (developed and implemented by GSAs)

Image courtesy: Veronica Adrover/UC Merced

Guidelines for Successful Meetings

- Creativity is encouraged.
 - Think outside the box and welcome new ideas.
 - Build on the ideas of others to improve results.
 - Disagreements are problems to be solved rather than battles to be won.
- Efficiency is important.
 - Participate fully, without distractions.
 - Respect time constraints and be succinct.
 - Let one person speak at a time.
- Civility is required.
 - Treat one another with courtesy and respect.
 - Be honest, fair, and as candid as possible.
 - Be respectful of all viewpoints

Image courtesy: Veronica Adrover/UC Merced

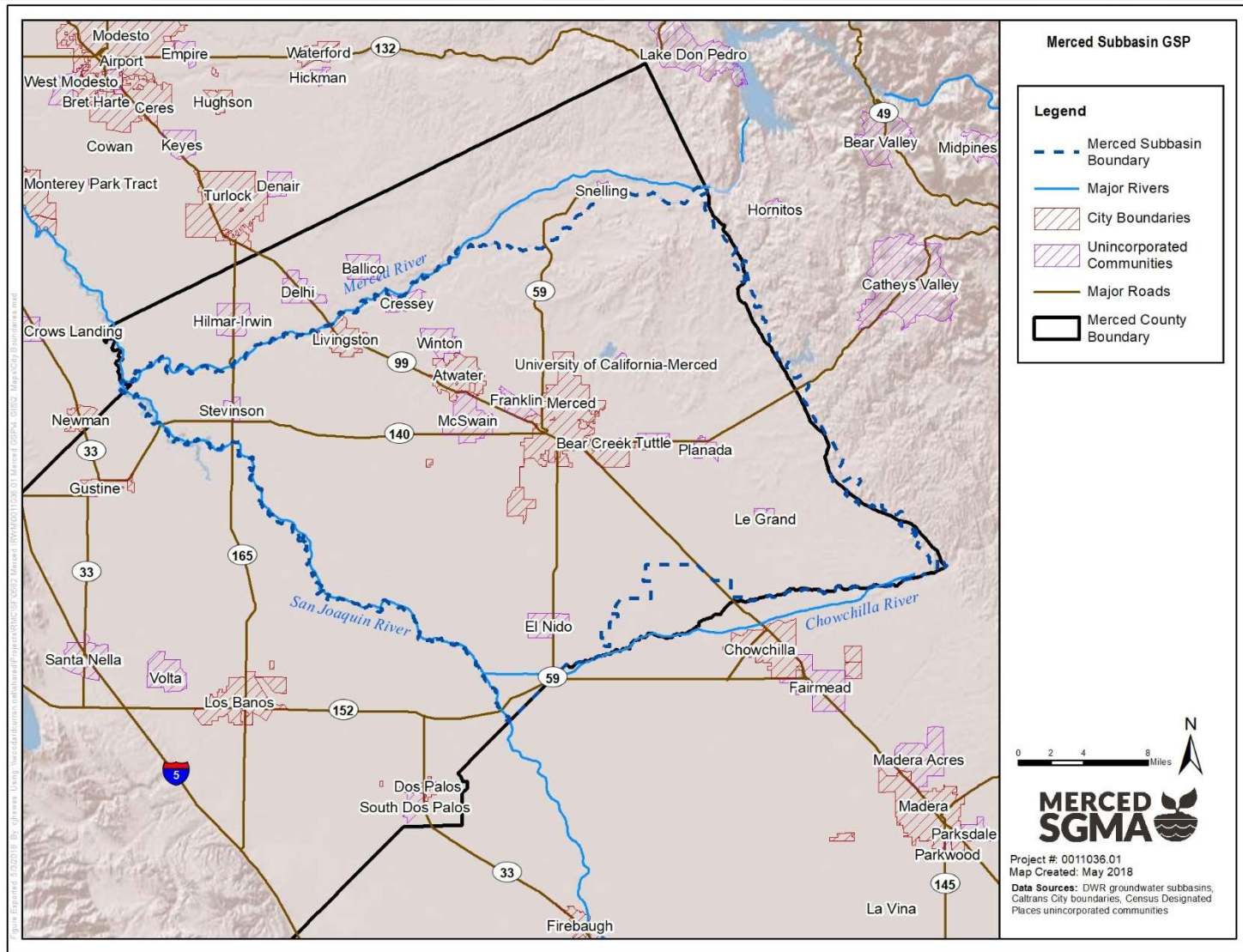


Sustainable Groundwater Management Act and Groundwater Sustainability Plan

Image courtesy: Veronica Adrover/UC Merced



Merced Subbasin Boundaries



Sustainable Groundwater Management Act and Groundwater Sustainability Plan

- The Merced Subbasin was identified by the State as a “**critically overdrafted**” basin
 - Critical overdraft means that “continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts.”

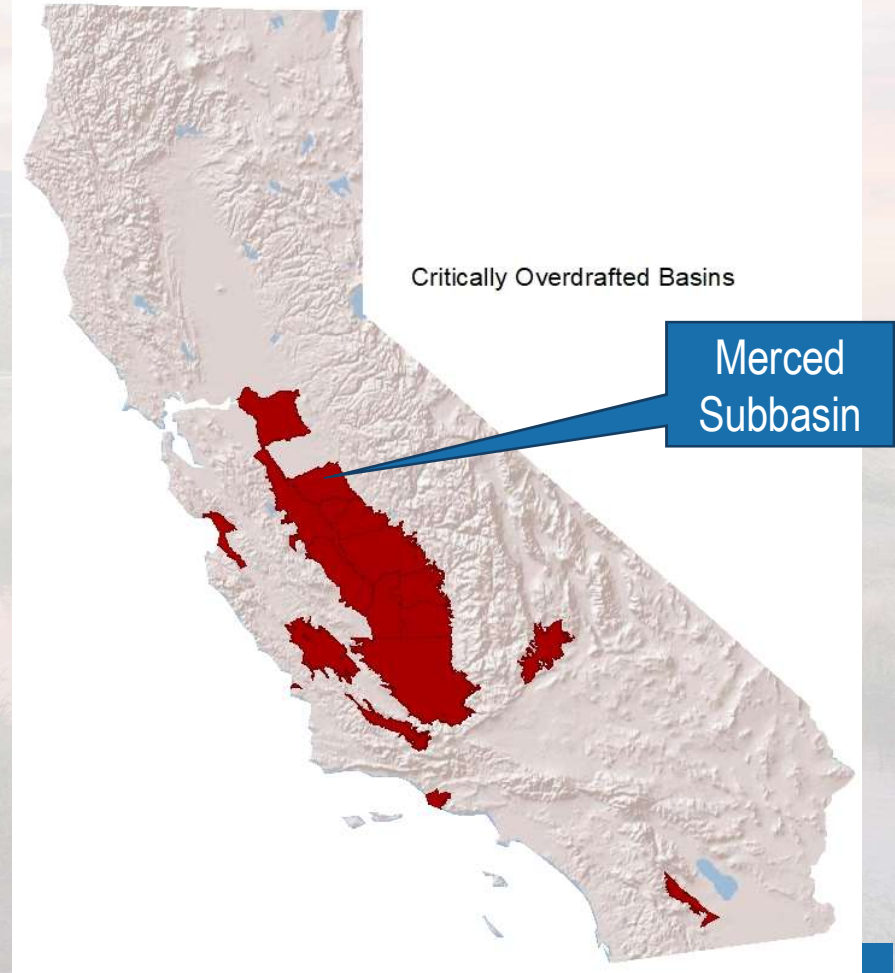


Image courtesy: Veronica Adrover/UC Merced

Sustainable Groundwater Management Act and Groundwater Sustainability Plan

The Sustainable Groundwater Management Act was passed in 2014 and requires the following:

- Groundwater Sustainability Agencies (GSAs) must be formed
- A Groundwater Sustainability Plan (GSP) must be prepared and submitted by
 - **January 2020 for critically overdrafted basins**
 - January 2022 for remaining high and medium priority basins
- GSPs must include measurable objectives and milestones in increments of five years to achieve sustainability within 20 years of GSP adoption
- GSP development must be open and transparent, with stakeholder and public input

Image courtesy: Veronica Adrover/UC Merced

Sustainable Groundwater Management Act and Groundwater Sustainability Plan

Merced Subbasin:
3 GSAs, 1 GSP

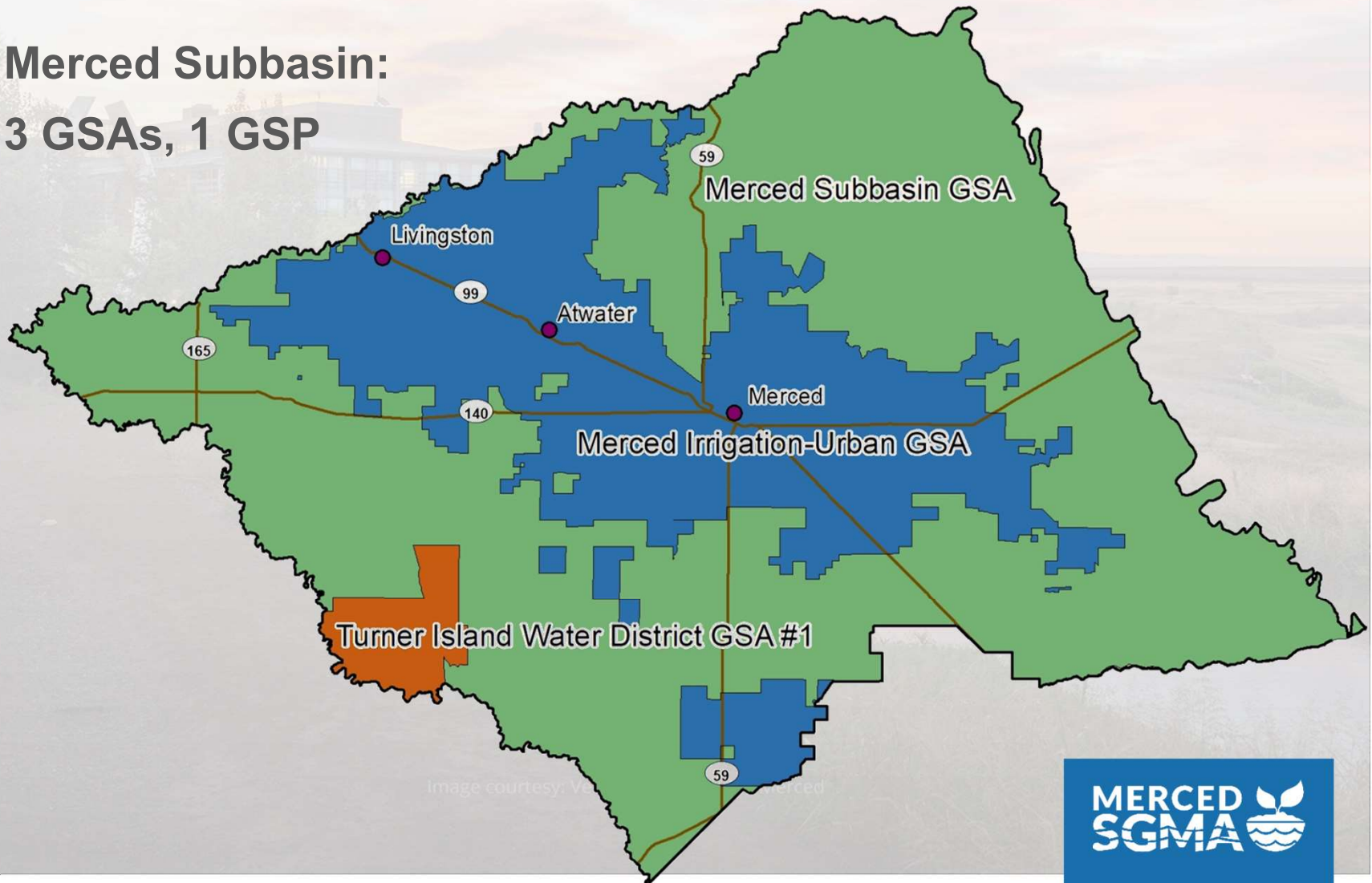


Image courtesy: Veris



SGMA Focuses on Halting Overdraft While Protecting Basin Health

■ SGMA has two main focus areas:

- Halt the overdraft by “balancing the water budget” (basin inputs = basin outputs)
- Establish objectives for six “sustainability indicators”



Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply



Significant and unreasonable degraded water quality



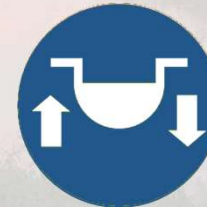
Significant and unreasonable reduction of groundwater storage



Significant and unreasonable land subsidence



Significant and unreasonable seawater intrusion



Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water

Image courtesy: Veronica Adrover/UC Merced

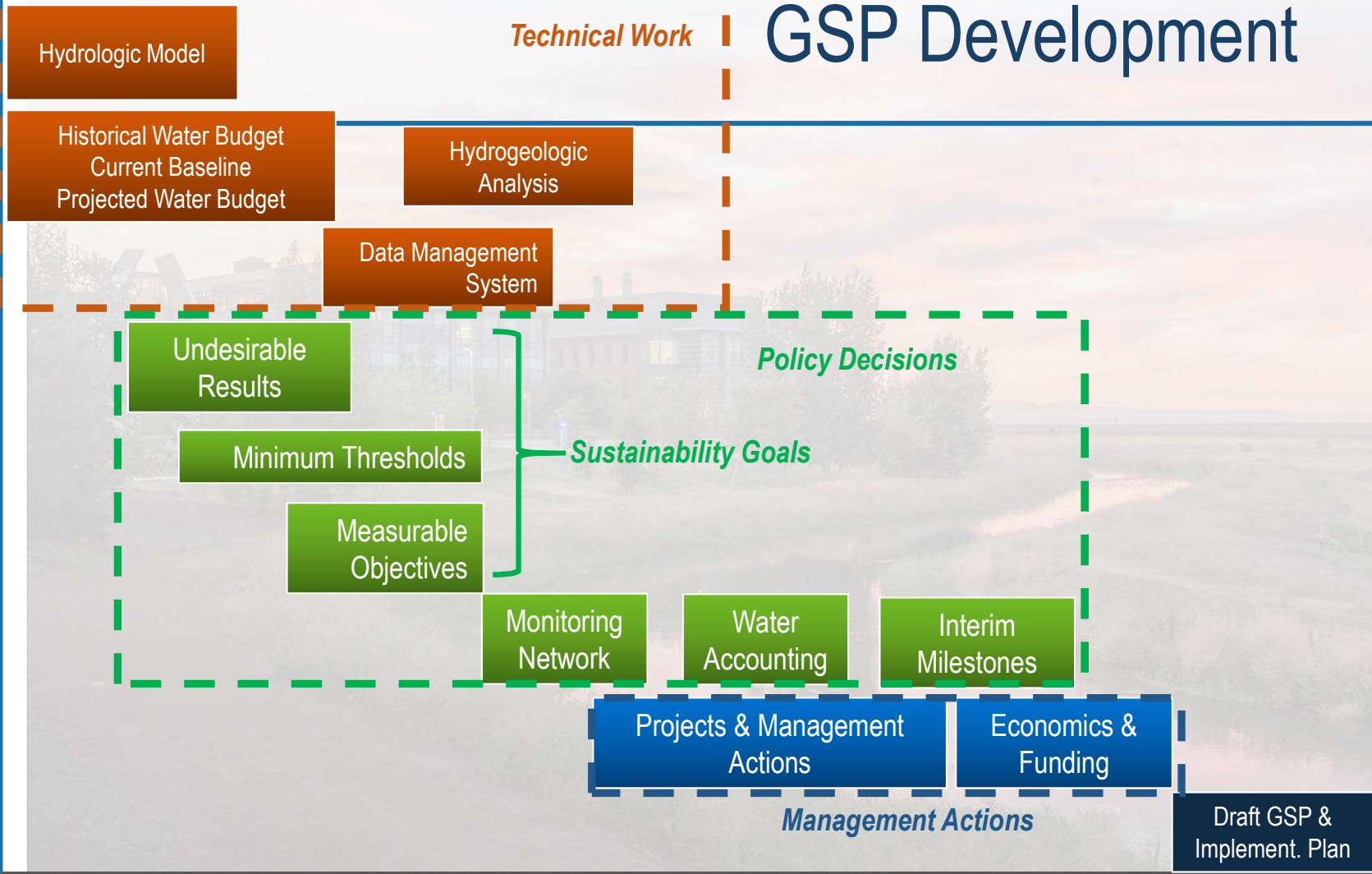
Merced GSP Outreach Structure

- *GSA Leadership* – Overall authority for decision-making, GSP development, and implementation
- *Coordinating Committee* – Advise on plan development and make recommendations to decision-makers
- *Stakeholder Committee* – Represent diverse stakeholders in basin and provide input to inform plan development
- *Public workshops* – Building awareness and understanding; emphasis on engagement of DACs



Image courtesy: Veronica Adrover/UC Merced

GSP Development



Jun 2018 Jul 2018 Aug 2018 Sep 2018 Oct 2018 Nov 2018 Dec 2018 Jan 2019 Feb 2019 Mar 2019 Apr 2019 May 2019 Jun 2019 Jul 2019

Image courtesy: Veronica Adrover/UC Merced





Current and Projected Groundwater Conditions

Image courtesy: Veronica Adrover/UC Merced



Historical and Projected Water Budgets

Summarize Basin Conditions

- Inputs and outputs – surface and groundwater supplies and demands
- Estimate the extent of overdraft now and in the future

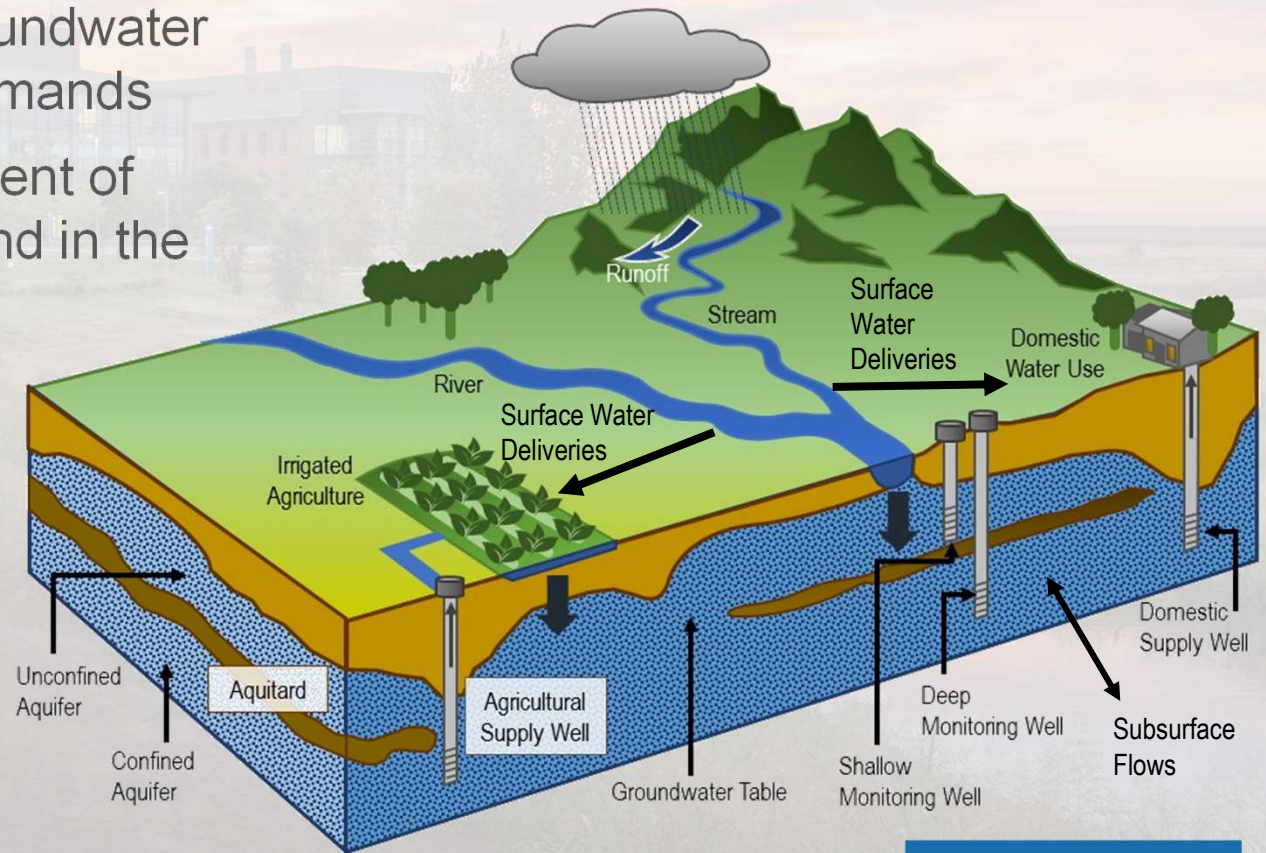


Image courtesy: Veronica Adrover/UC Merced

The Groundwater Model Shows How Much Water Flows Into and Out of the Groundwater Basin

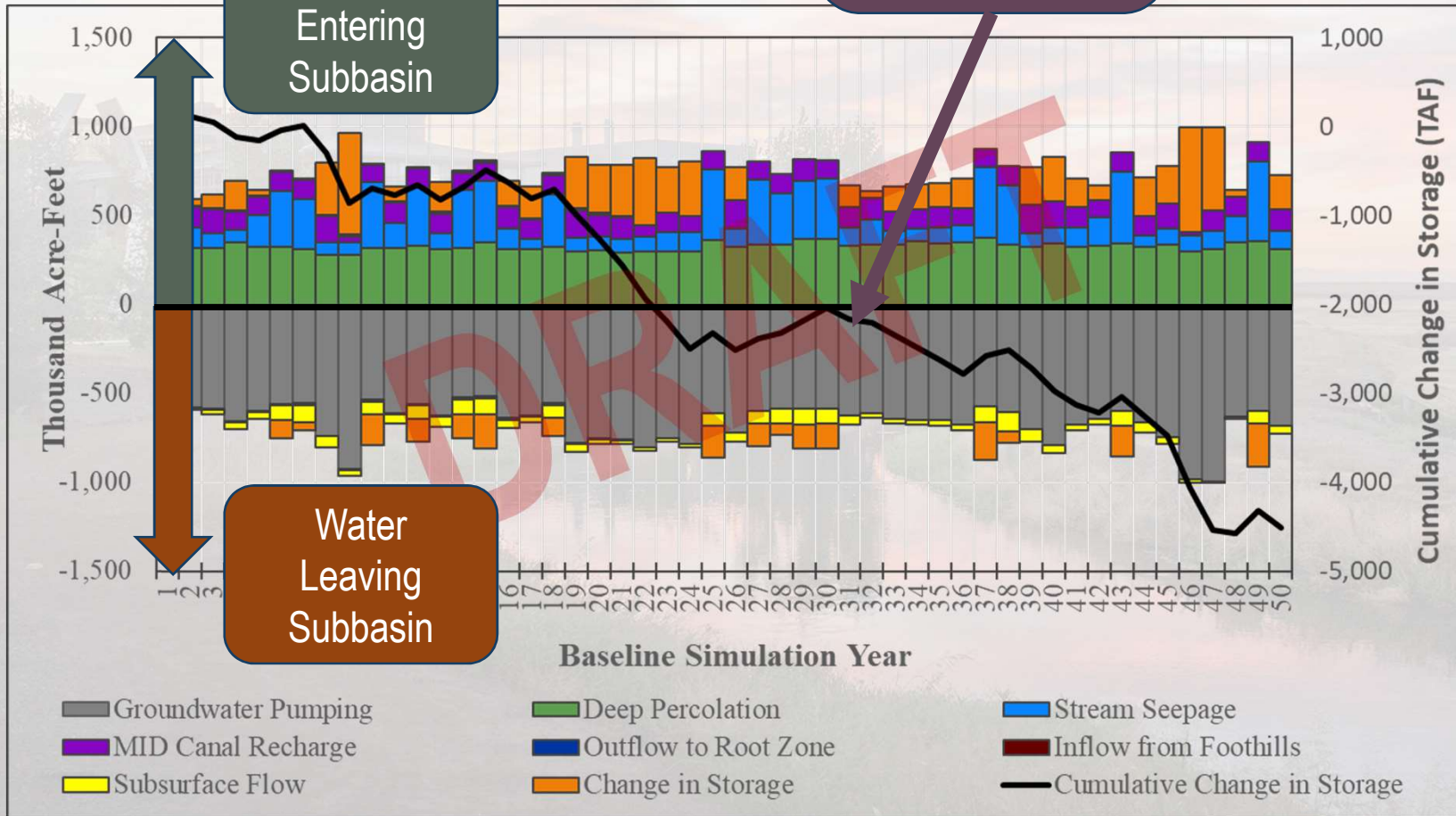


Image courtesy: Veronica Adrover/UC Merced

Water Conditions in the Atwater Area

- Overview of groundwater supplies and uses
- Groundwater challenges in Atwater area

Image courtesy: Veronica Adrover/UC Merced

Discussion & Questions

- Do you have questions about:
 - What SGMA requires and the agencies preparing the Groundwater Sustainability Plan?
 - The 50-year groundwater forecasts for the Merced Subbasin?
 - Local groundwater conditions?

Image courtesy: Veronica Adrover/UC Merced

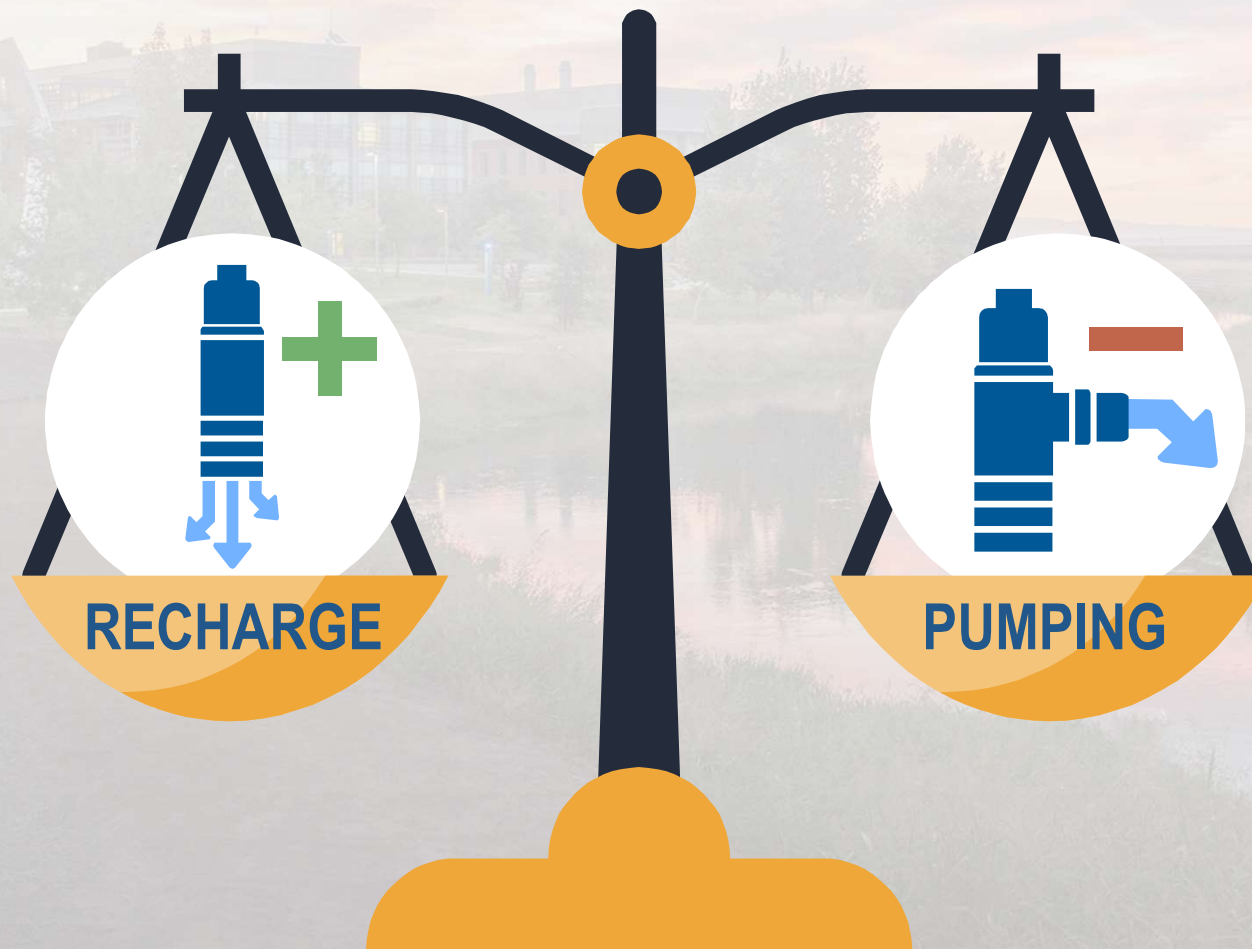


Sustainable Management for the Merced Subbasin Groundwater

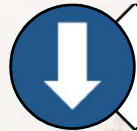
Image courtesy: Veronica Adrover/UC Merced



The ultimate goal of the GSP is to put the basin on a path toward sustainable groundwater management – where pumping is balanced by recharge over the long term



SGMA Requires Consideration of 6 Sustainability Indicators



Chronic Lowering of Groundwater Levels



Reduction in Groundwater Storage



Seawater Intrusion



Degraded Water Quality



Land Subsidence



Depletion of Interconnected Surface Water

Image courtesy: Veronica Adrover/UC Merced

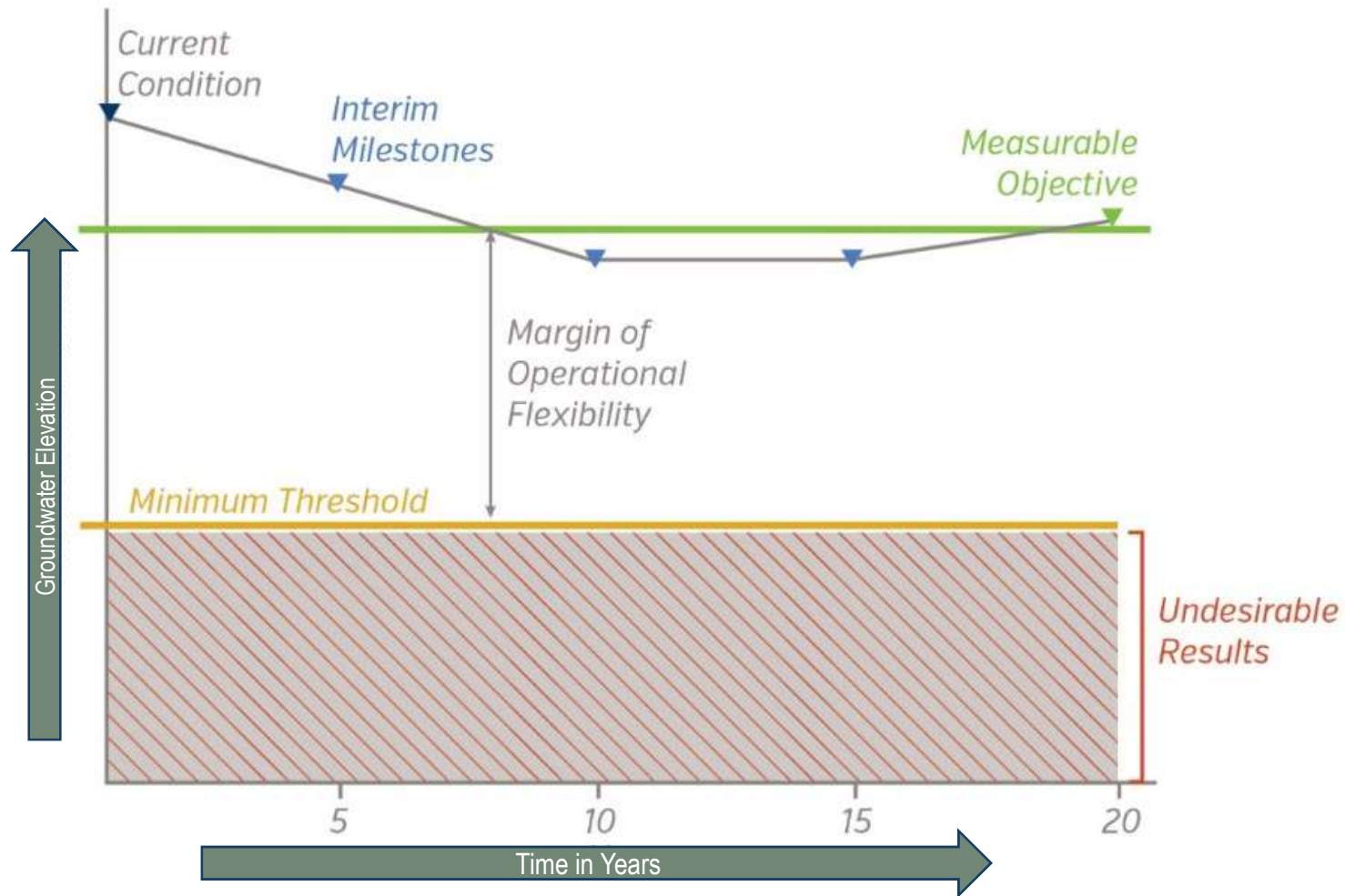
Establishing Sustainable Management Criteria for the Basin

For each indicator, the GSP must:

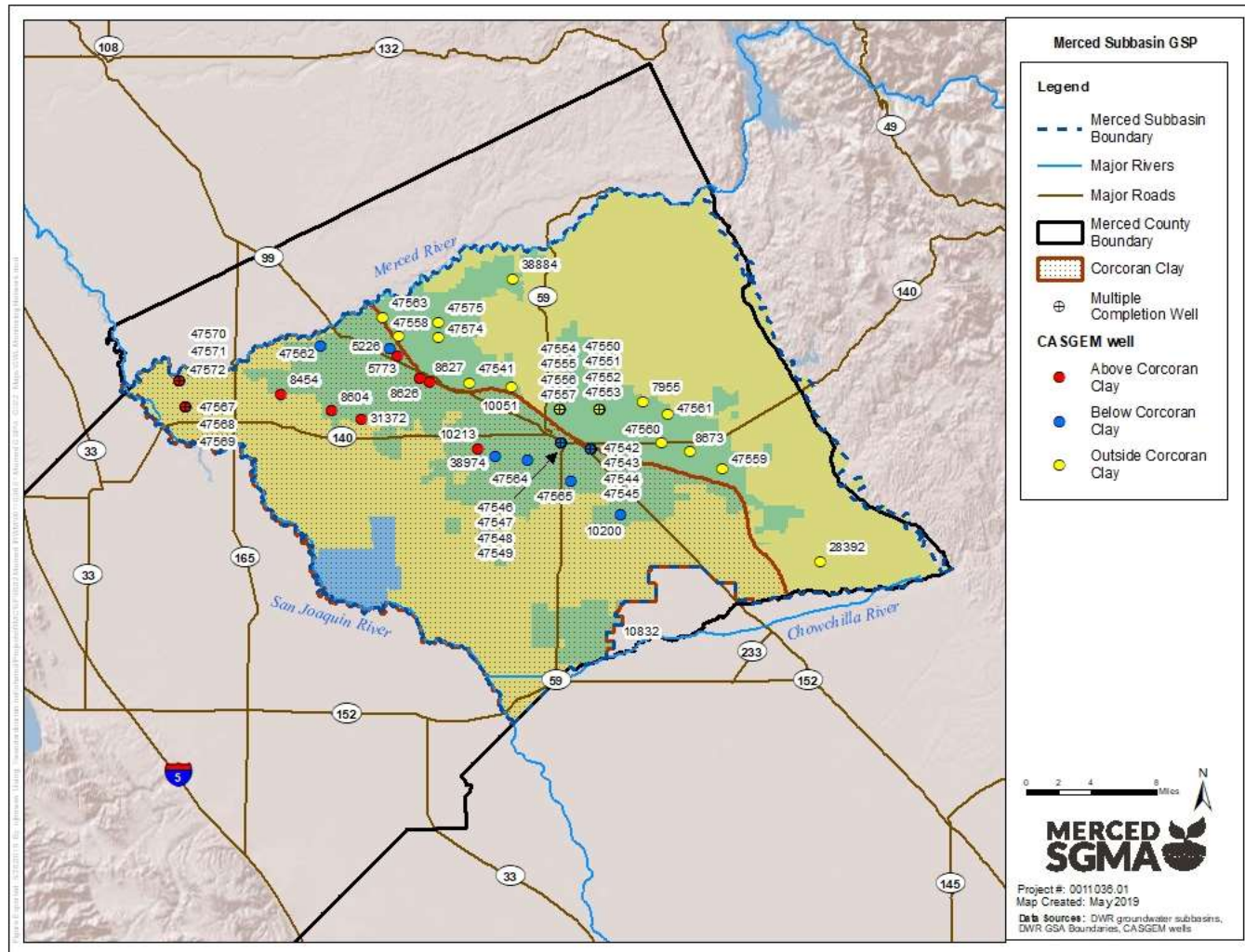
1. Define undesirable results for the basin (“significant and unreasonable” negative impacts) and determine if they could occur
2. Set sustainable management criteria that are intended to prevent undesirable results from occurring.
 - Minimum Thresholds
 - Measurable Objectives
 - Interim Milestones
3. Establish a monitoring network

Image courtesy: Veronica Adrover/UC Merced

Relationship of SGMA sustainable management criteria: Groundwater Levels example



Representative wells will monitor water levels, water quality, and subsidence



Merced GSP Sustainable Management Criteria Summary

Sustainability Indicator	Minimum Threshold	Measurable Objective	Undesirable Result
Groundwater Levels	Based on depths of shallowest domestic wells	Projected GW level under sustainable conditions	More than 25% of representative wells fall below MT in 2 consecutive non dry/critical years
Groundwater Storage	Not Applicable – Subbasin has sufficient storage, access is the issue		
Sea Water Intrusion	Not Applicable – Subbasin is too far from Pacific Ocean		
Degraded Water Quality	Total Dissolved Solids – Based on State Guidelines (1,000 mg/L TDS)	Total Dissolved Solids – Based on State Recommendations (500 mg/L TDS)	More than 25% of representative wells exceed MT for 2 consecutive years
Land Subsidence	Based on recent rates of subsidence that have not caused undesirable results	Based on recent subsidence rates	Exceedance of MT at 3 or more representative sites for 2 consecutive years
Depletions of Interconnected Surface Waters	Groundwater levels used as a proxy for this sustainability indicator		

Sustainable Yield = How much can be sustainably pumped

- **What is sustainable yield?**

- Per SGMA, sustainable yield is “the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result.”

- **How do we develop this?**

- We have estimated this using a groundwater model, modifying conditions to balance out the change in stored groundwater over time

Image courtesy: Veronica Adrover/UC Merced

An “Allocation Framework” is Simply a way to Share the Basin’s Sustainable Yield

- Under SGMA, GSAs have authority to establish groundwater extraction allocations
- SGMA and GSPs adopted under SGMA cannot alter water rights

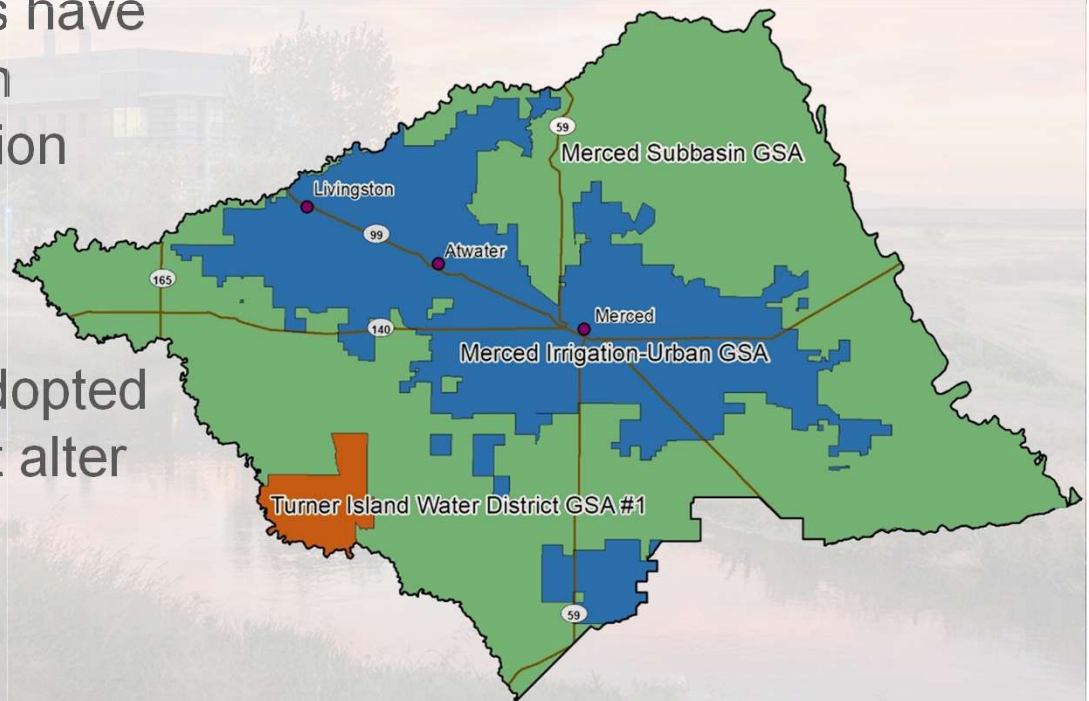


Image courtesy: Veronica Adrover/UC Merced

Within each GSA, major groundwater users will have an allocation



Cities

Will be allocated a % of their historical use and will work with customers to reduce water use as needed



Agricultural Users Agricultural Districts

Ag users will likely get a pumping allocation based on acreage (e.g. AF/irrigated acre)



De Minimis Users

(Well owners that pump 2 af/yr or less for domestic use)
Cannot require metering.

Projects and Management Actions will be Considered to Provide Additional Water

Groundwater recharge projects: increase stored groundwater to allow increased pumping for participating agencies

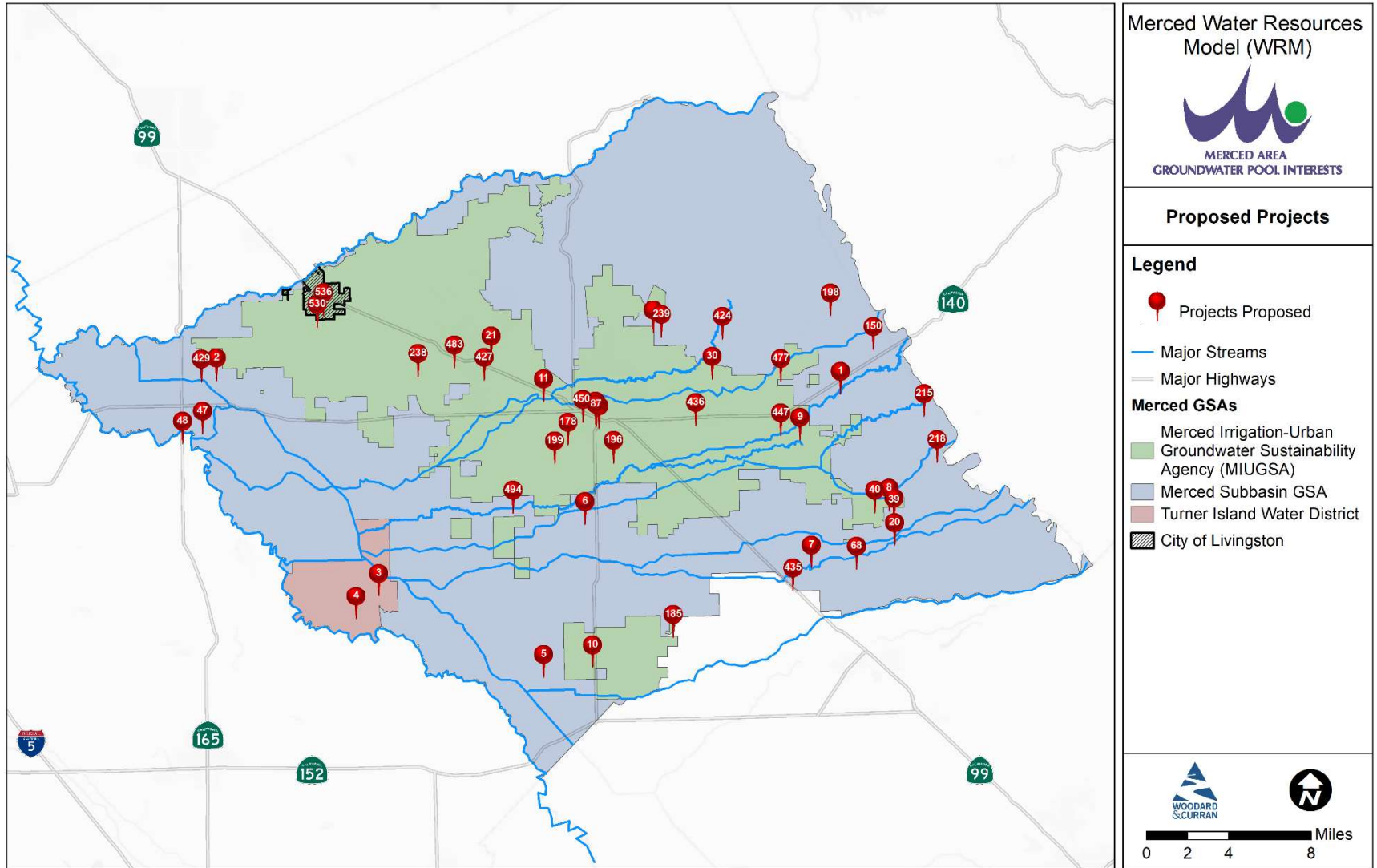
Surface water projects: increase availability of surface water to meet water demands (e.g., flood/stormwater management)

Projects to reduce demand: decrease water use to reduce need for water beyond available groundwater and surface water (e.g., improved water use efficiency)

Image courtesy: Veronica Adrover/UC Merced

Projects & Management Actions:

Currently more than 40 Projects on Draft List



Discussion

- What questions or recommendations do you have about the Sustainable Management Criteria?
 - Groundwater Levels
 - Groundwater Storage
 - Sea Water Intrusion
 - Degraded Water Quality
 - Land Subsidence
 - Depletions of Interconnected Surface Waters
- What questions or recommendations do you have about sustainable yield, pumping allocations, and supply projects?

Image courtesy: Veronica Adrover/UC Merced

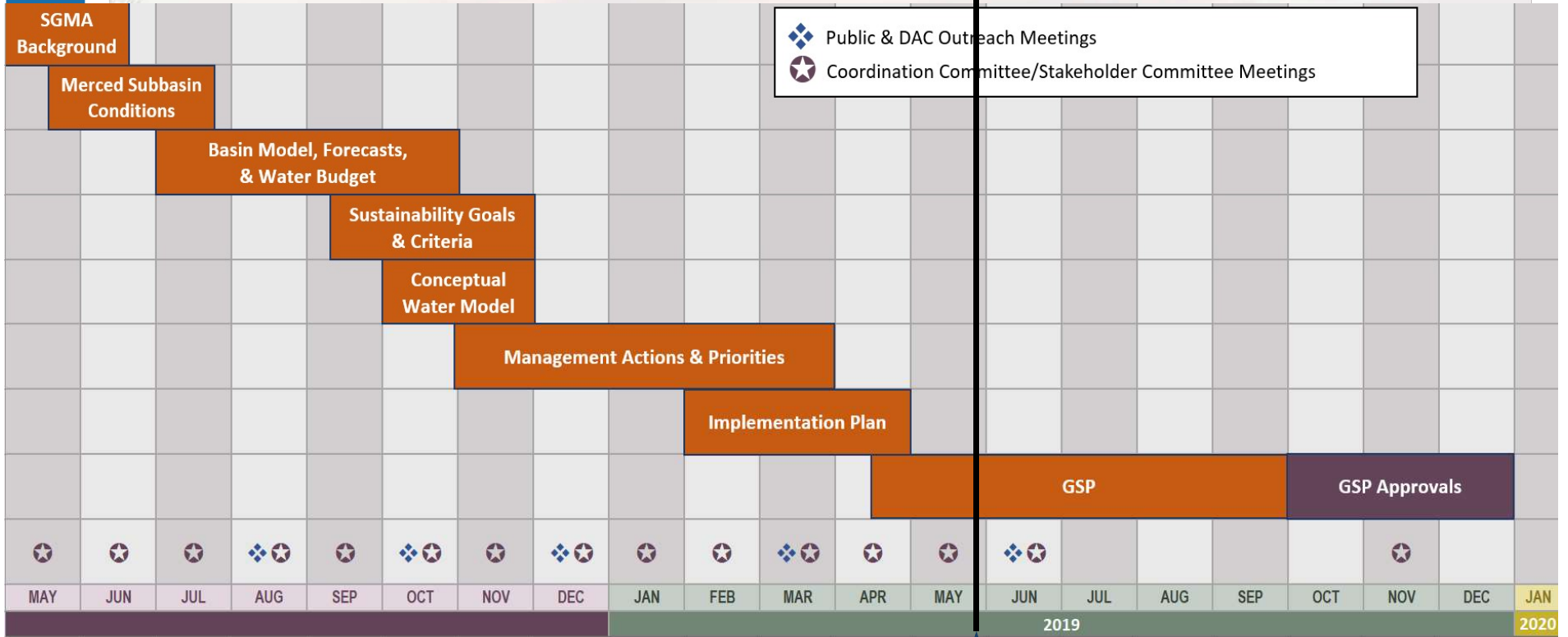


GSP Adoption and Implementation

Image courtesy: Veronica Adrover/UC Merced



Timeline




 **We Are Here**

Image courtesy: Veronica Adrover/UC Merced



Next Steps

- Stakeholder and Coordinating Committees review draft GSP sections (ongoing)
- Full GSP released for public review (Summer 2019)
- GSAs Notice Intent to adopt GSP
- GSAs adopt GSP (Fall 2019)
- GSAs submit to DWR for acceptance (January 2020)
- GSP Implementation

Image courtesy: Veronica Adrover/UC Merced

Conceptual GSP Implementation Timeline

Implementation will be phased over 20 years, with 5-yr updates.

2020	2025	2030	2035	2040
Monitoring and Reporting <ul style="list-style-type: none"> • Establish Monitoring Network • Install New Wells • Develop Metering Program • Extensive public outreach • Funded and smaller projects implemented 	Preparation for Allocations and Low Capital Outlay Projects <ul style="list-style-type: none"> • GSAs conduct 5-year evaluation/update • Planning/ Design/ Construction for small to medium sized projects • Monitoring and reporting continues • Metering program continues • Outreach continues • Allocation program may begin phase-in 	Prepare for Sustainability <ul style="list-style-type: none"> • GSAs conduct 5-year evaluation/update • Planning/ Design/ Construction for larger projects begins • Monitoring and reporting continues • Allocation program begins phase-in • Outreach continues 	Implement Sustainable Operations <ul style="list-style-type: none"> • GSAs conduct 5-year evaluation/update • Project implementation completed • Allocations fully implemented/enforced • Outreach continues 	

Discussion: Managing Groundwater for the Future

- What questions do you have about the overall GSP Plan and the next steps for public review and adoption?

Image courtesy: Veronica Adrover/UC Merced



Wrap-up and Next Steps

Image courtesy: Veronica Adrover/UC Merced



Ways to Stay Involved

- Stakeholder Committee and Coordinating Committee meetings
 - Fourth Monday of the month
 - Castle Conference Center, 1900 Airdrome Entry, Atwater, CA

- Merced SGMA Website
 - www.mercedsgma.org

- More (general) information resources:
 - CA DWR Groundwater Website:
<https://water.ca.gov/Programs/Groundwater-Management>
 - California Water Boards:
https://www.waterboards.ca.gov/water_issues/programs/gmp/sgma.html

Image courtesy: Veronica Adrover/UC Merced



Thank You!

Image courtesy: Veronica Adrover/UC Merced

