GSP Coordinating Committee

Coordinating Committee Meeting – November 26, 2018

Merced Irrigation-Urban GSA
Merced Subbasin GSA
Turner Island Water District GSA-1

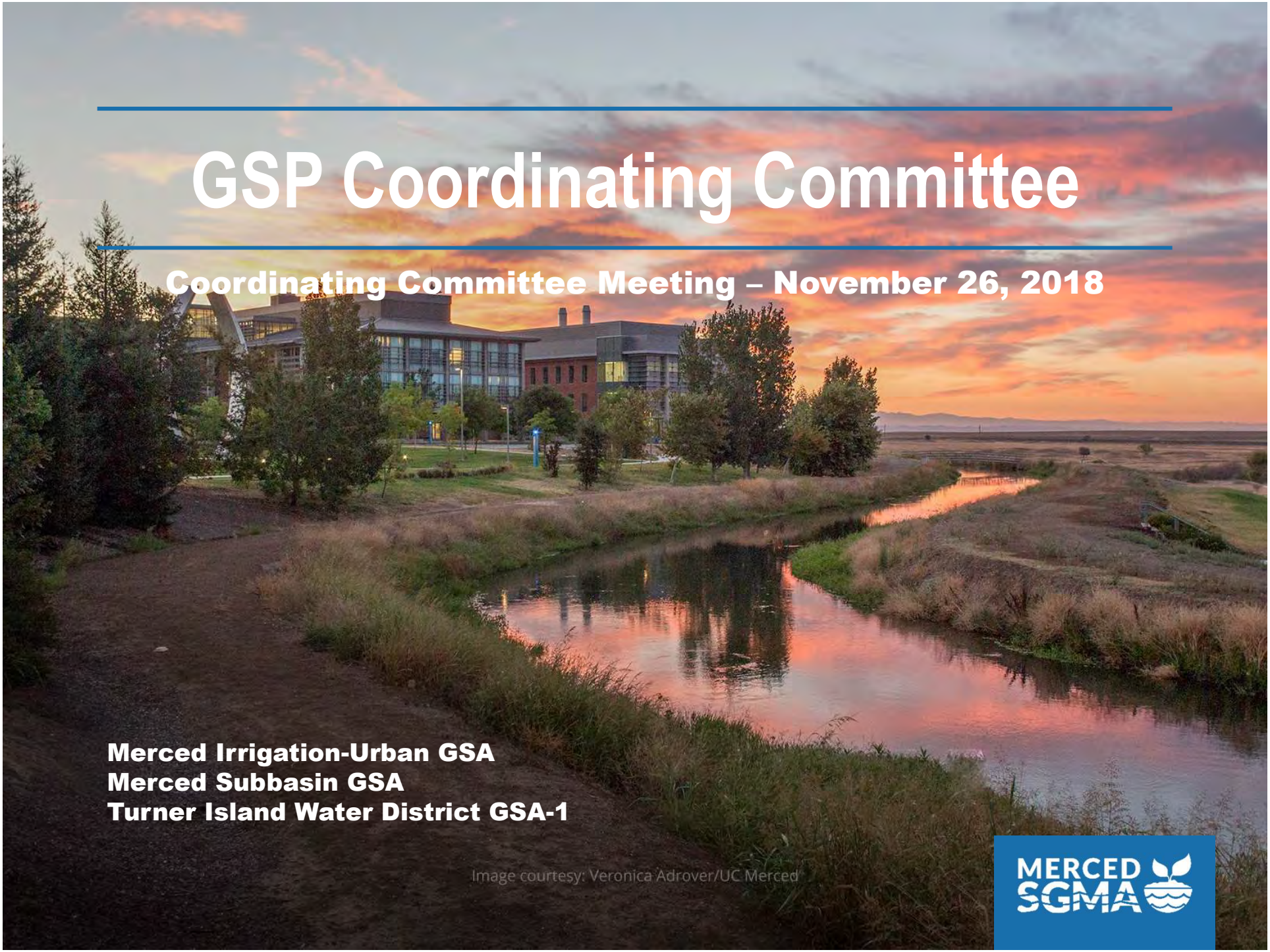

Image courtesy: Veronica Adrover/UC Merced

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Agenda

1. Call to order
2. Approval of minutes for October 22, 2018 meeting
3. Stakeholder Committee update
    1. Update from November 26 morning meeting
4. Presentation by Woodard & Curran on GSP development
    1. Next Steps in GSP Development
    2. Water Allocation Frameworks
    3. Projects and Management Actions
    4. Other Updates
5. Flood-MAR

Image courtesy: Veronica Adrover/UC Merced

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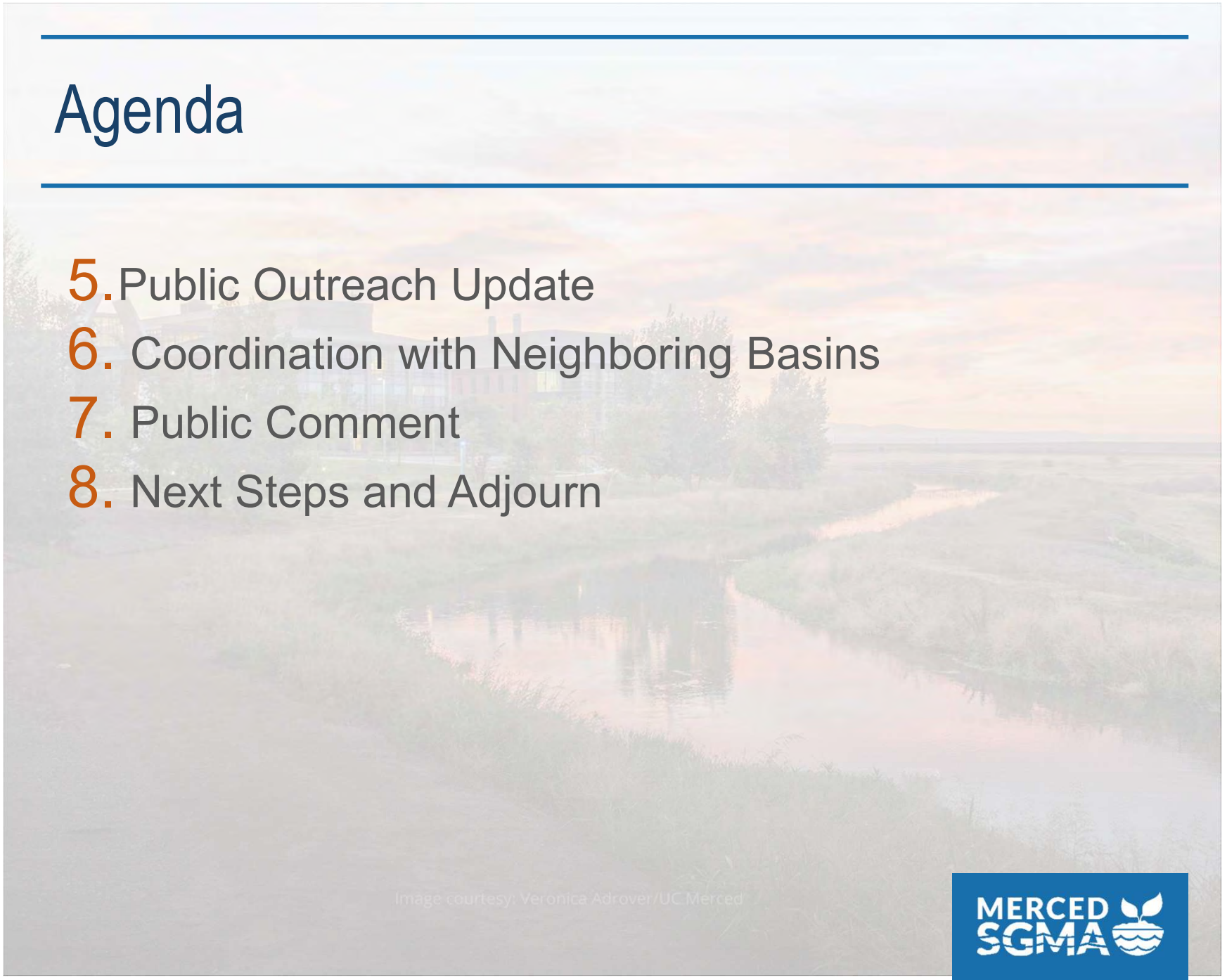
Agenda

5. Public Outreach Update
6. Coordination with Neighboring Basins
7. Public Comment
8. Next Steps and Adjourn



Approval of Minutes

Image courtesy: Veronica Adrover/UC Merced

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Stakeholder Committee Update

Image courtesy: Veronica Adrover/UC Merced

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Next Steps in GSP Development

Image courtesy: Veronica Adrover/UC Merced

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GSP Development

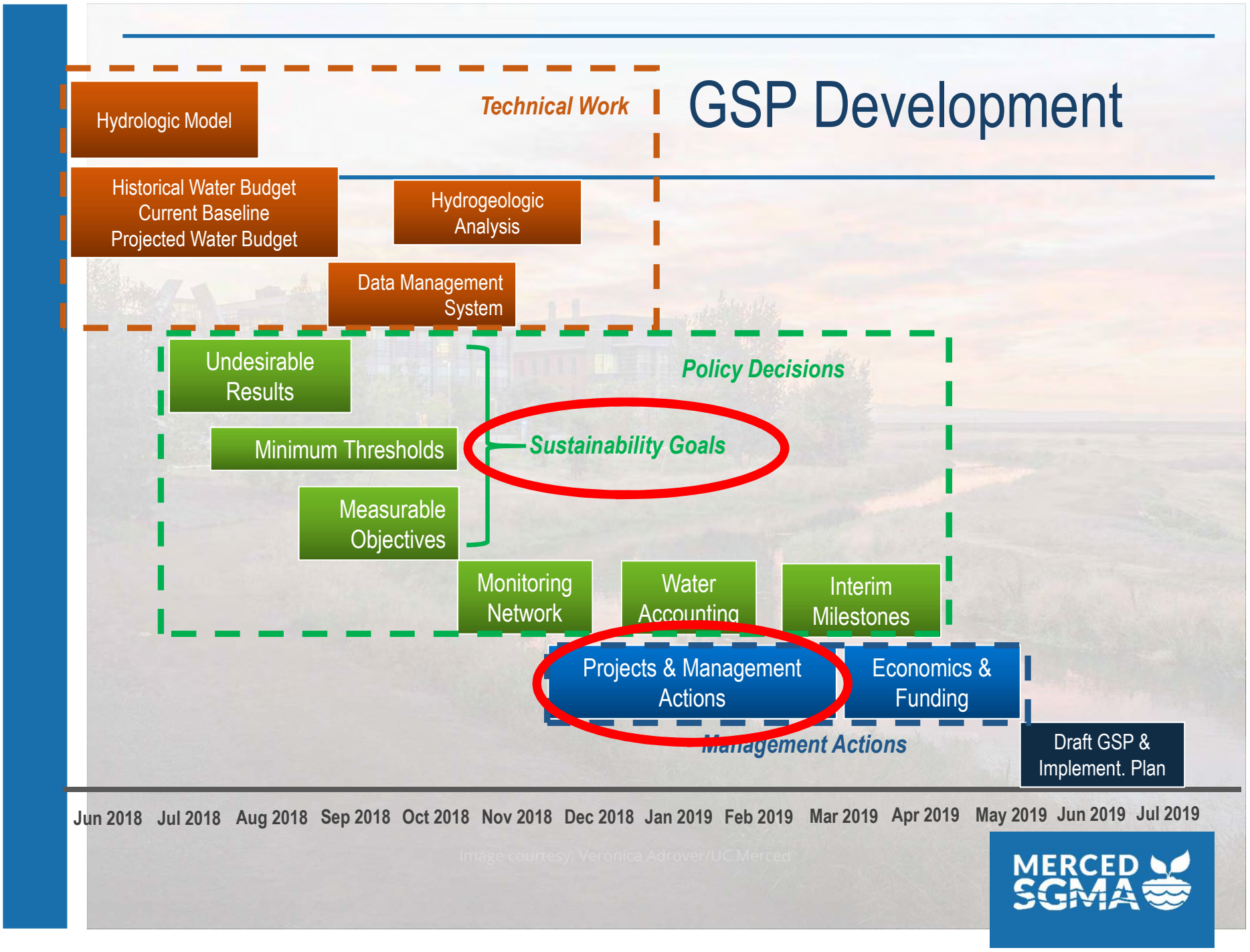

Image courtesy: Veronica Adrover/UC Merced

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Next Steps: Hydrogeologic Conceptual Model

- Reminder: Comments for Hydrogeologic Conceptual Model (HCM) section from Coordinating Committee
- Deadline: **November 30th**

Merced Subbasin
Groundwater Sustainability Plan
Hydrogeologic Conceptual Model
Draft

November 2018

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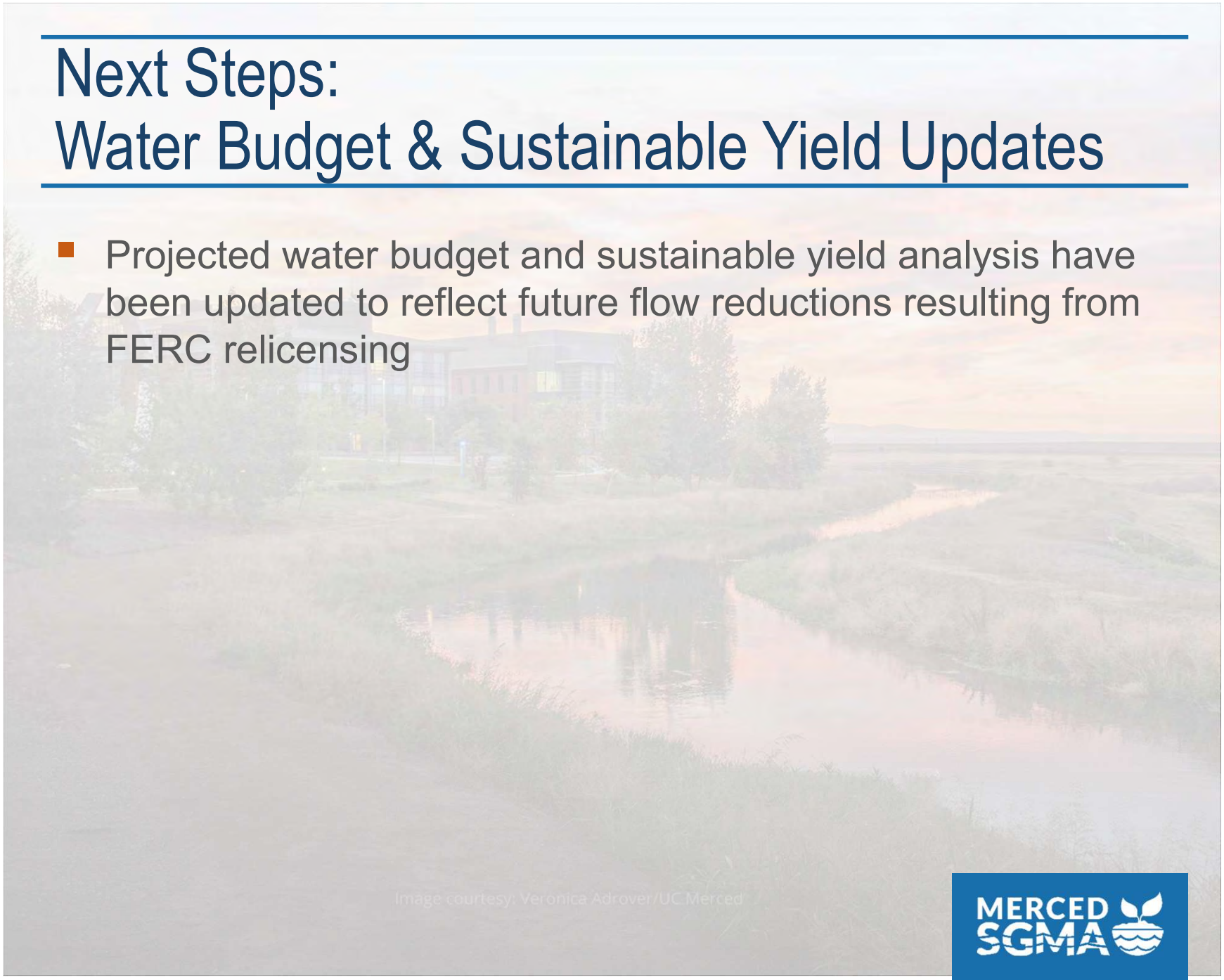
Next Steps:
Water Budget & Sustainable Yield Updates

- Projected water budget and sustainable yield analysis have been updated to reflect future flow reductions resulting from FERC relicensing



Groundwater Budget

[Projected Conditions Baseline – Updated to Reflect FERC Flows]

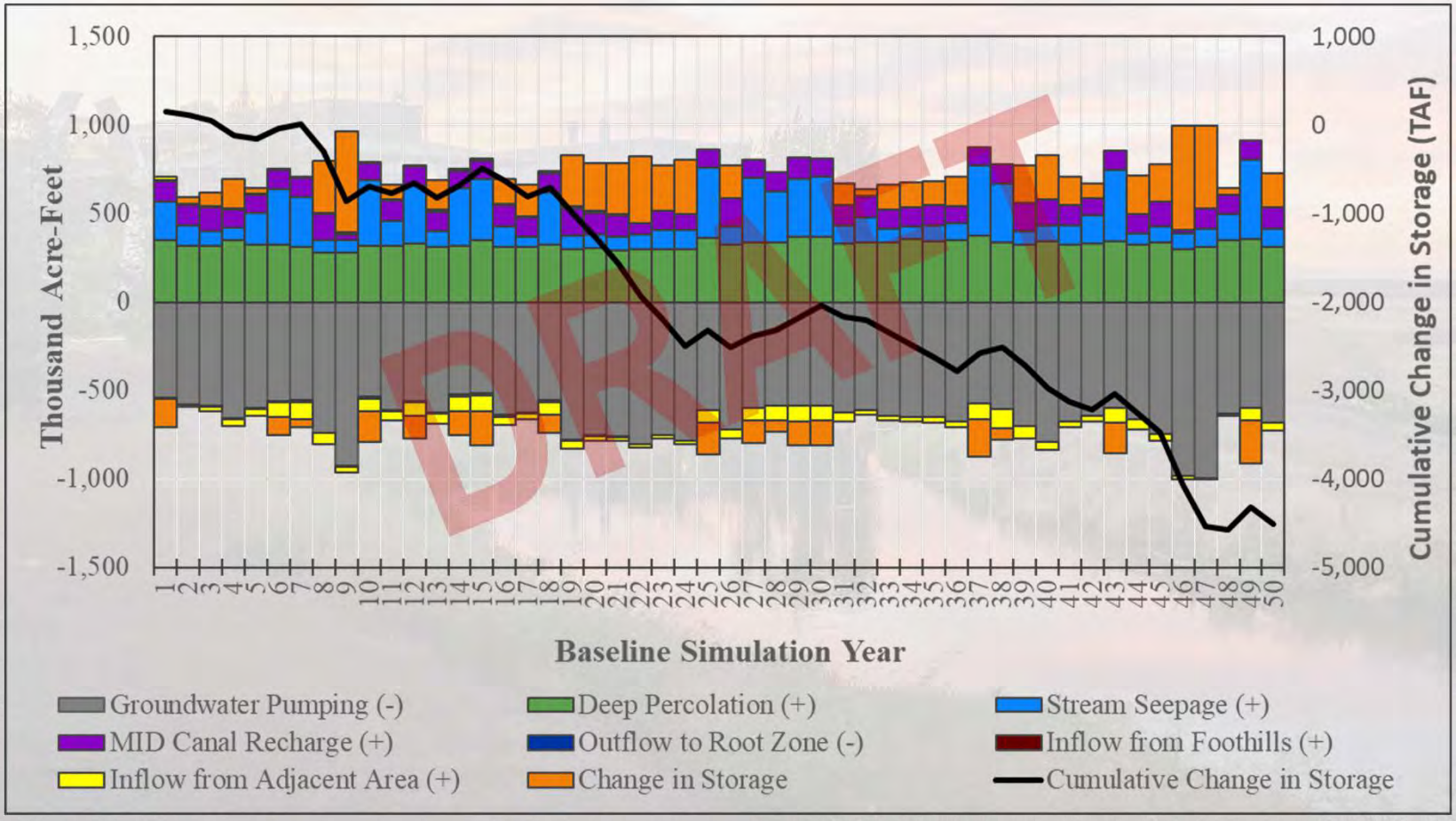


Image courtesy: Veronica Adrover/UC Merced

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Groundwater Budget

[Projected Conditions Baseline – Updated to Reflect FERC Flows]

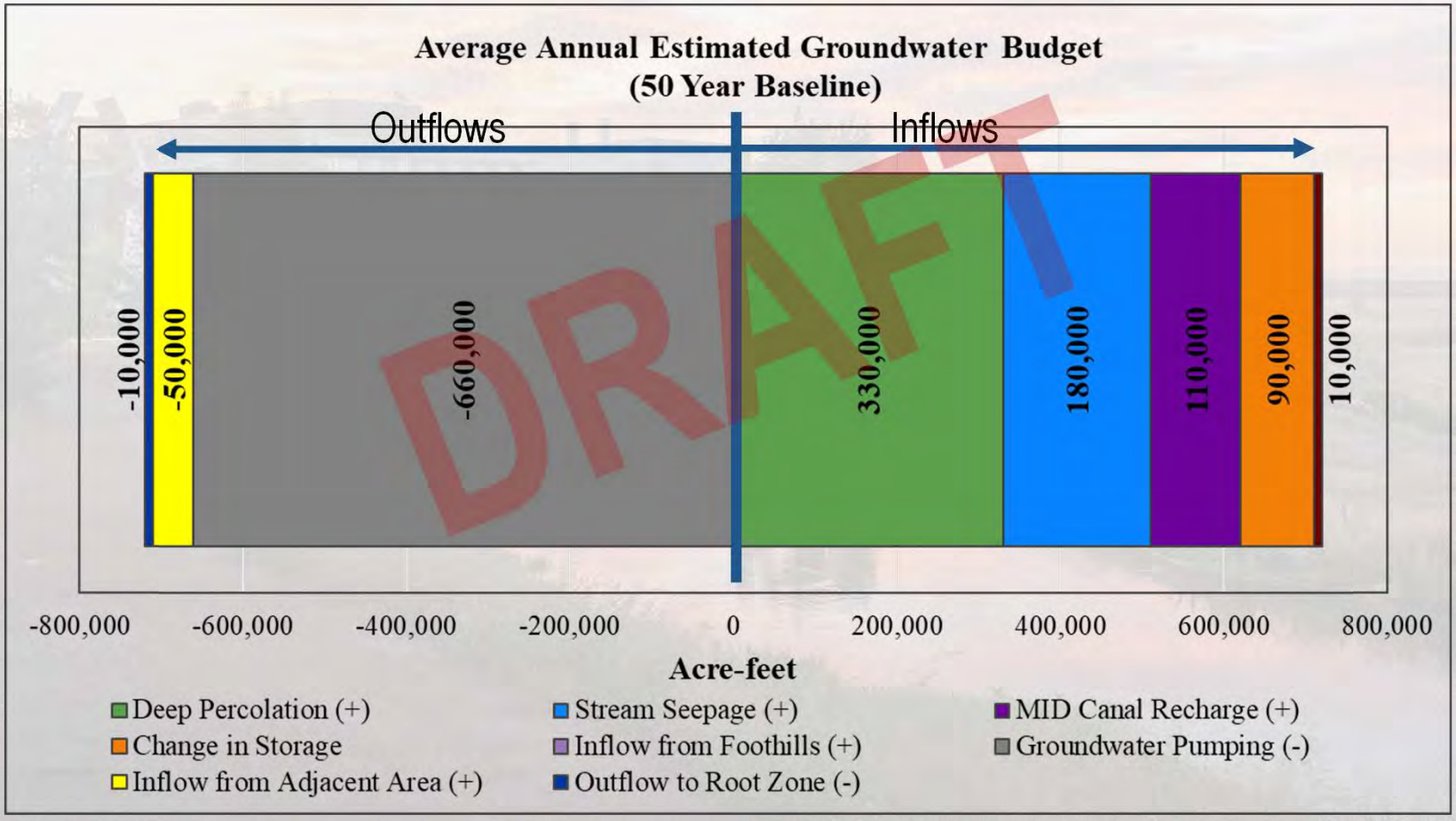

Image courtesy: Veronica Adrover/UC Merced

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Sustainable Yield – Modeling Analysis

- Modeling Approach
  - Lower groundwater production through reduced agricultural and urban demand across the model domain
- Assumptions
  - 25-Year Implementation Period: operations will remain consistent, and groundwater levels will continue to decline until 2040
  - Inter-Subbasin Flows: adjoining subbasins will operate similarly to Merced, whereas subsurface flows will remain similar to long-term average historical conditions

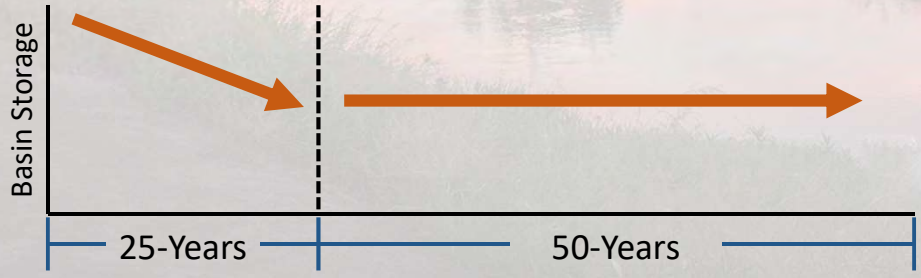

Image courtesy Veronica Ackroyd/UC Merced

DRAFT Results: Initial simulations only address subbasin yield, analysis is needed to gauge effect on ensure minimum thresholds.

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Groundwater Budget

[Sustainable Yield Analysis – Updated to Reflect FERC Flows]

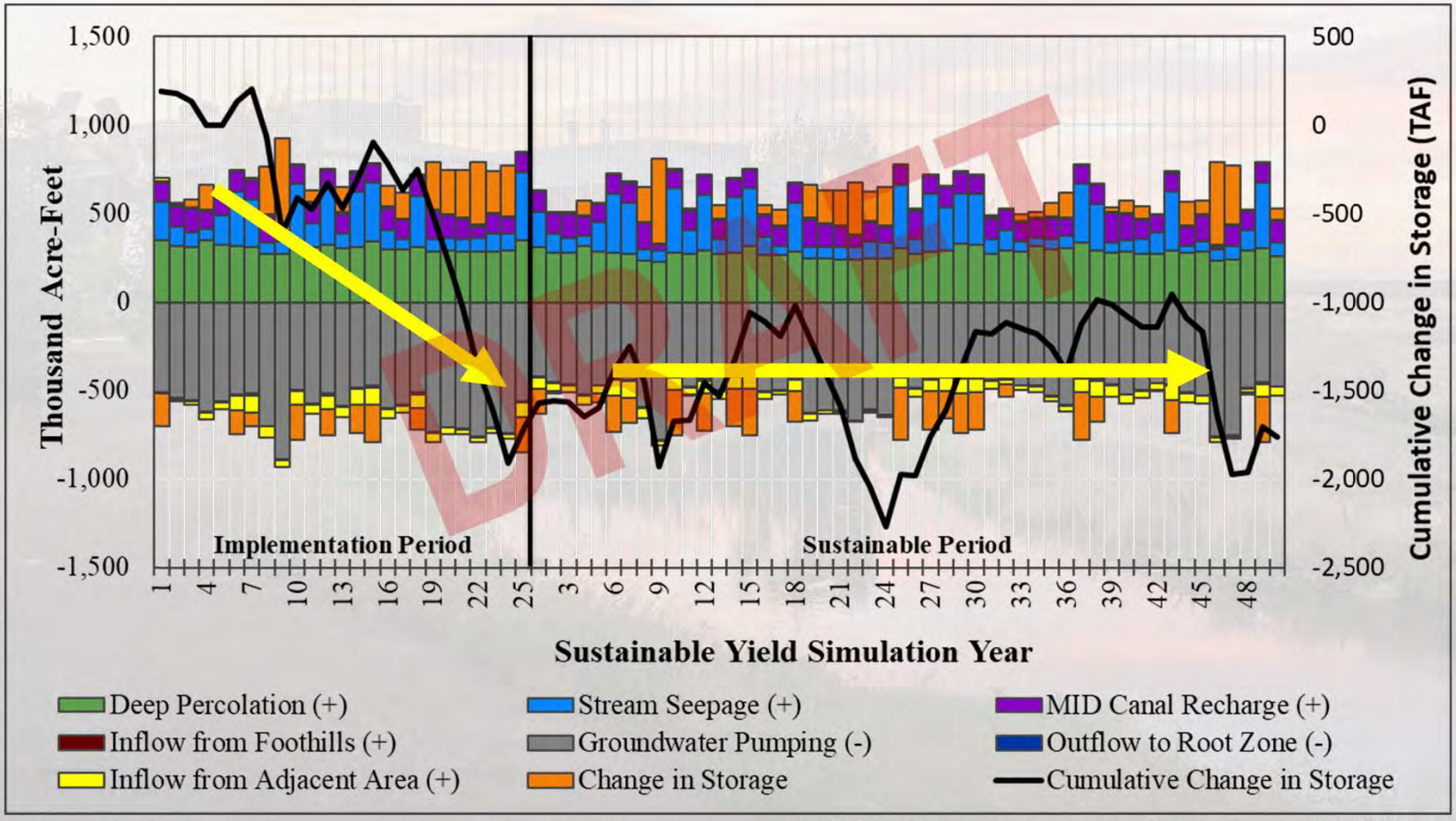

Image courtesy: Veronica Adrover/UC Merced

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Groundwater Budget

[Sustainable Yield Analysis – Updated to Reflect FERC Flows]

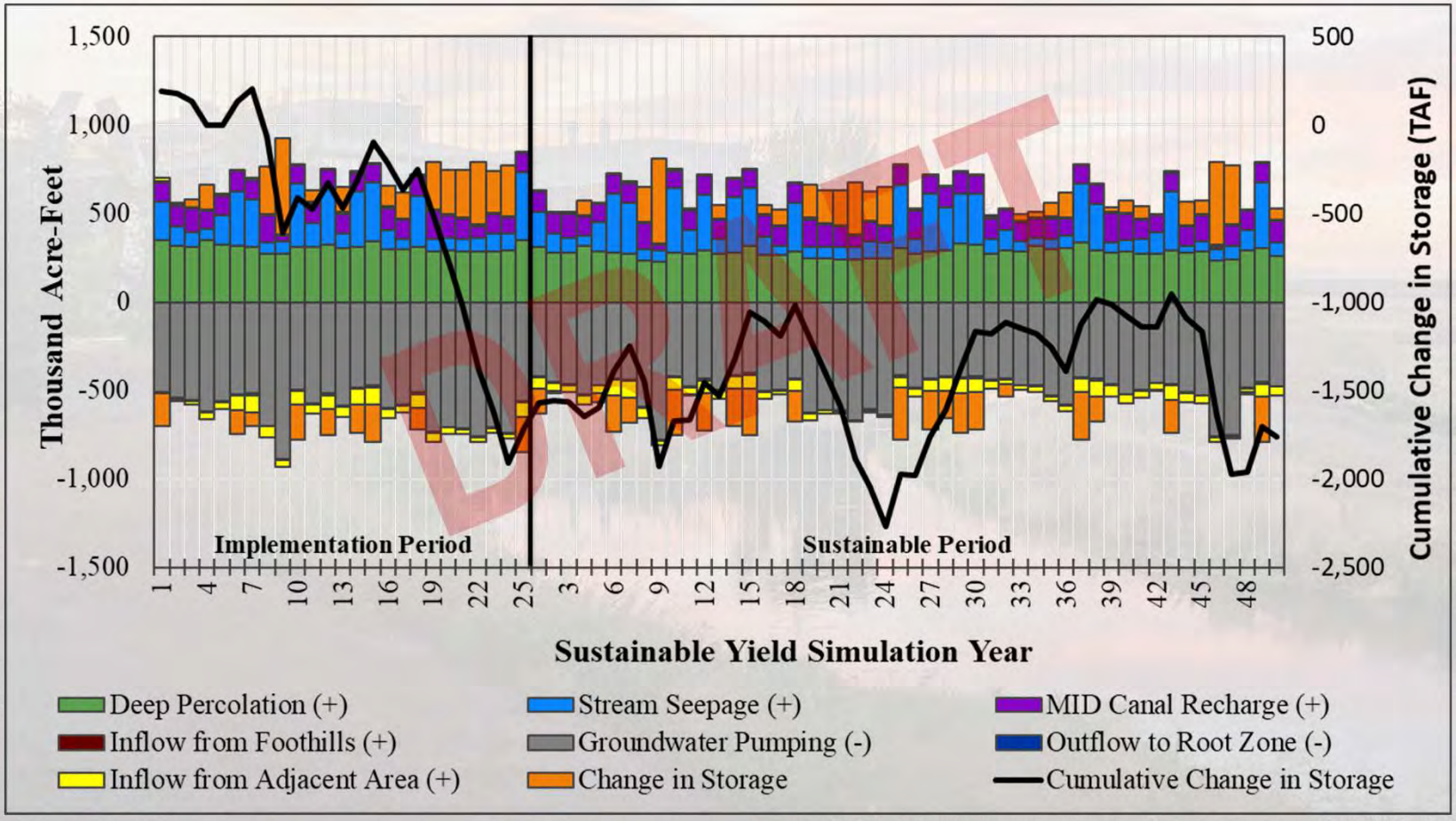

Image courtesy: Veronica Adrover/UC Merced

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Groundwater Budget

[Sustainable Yield Analysis – Updat ows]

160,000 AFY (~25%) less pumping than projected water budget

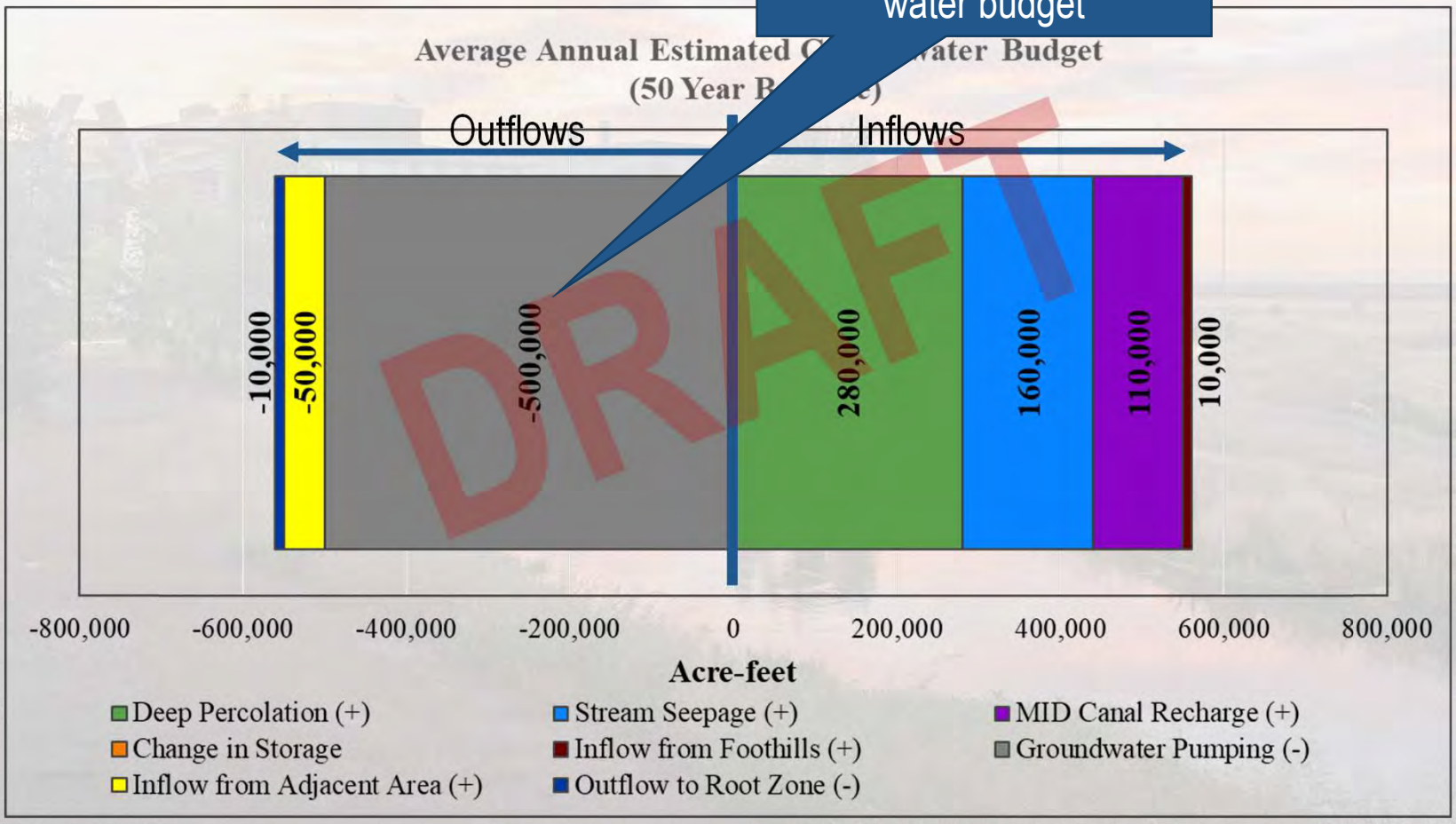

Image courtesy: Veronica Adrover/UC Merced

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Water Allocation Framework

Image courtesy: Veronica Adrover/UC Merced

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How do the pieces fit together?

GW allocation approach determine how we share what GW is available for pumping	Projects and Management Actions will Help to Address Need for Additional Supply	Allocation Approach and Ps&MAs Combined will Affect Thresholds and Objectives	Allocation Approach, Ps&MAs, and Thresholds May Require Management Areas
Depending on what we decide, some GSAs may be impacted more than others (for example, if everyone has the same amount of GW available per acre, and some have less "other" supplies, they may need more new supplies to reduce the impact on demands compared to someone else who has access to surface water, etc)	*Projects and Management Actions need to be focused on areas with greatest need based on allocation approach*	*Once a preliminary approach has been agreed upon, we need to confirm we will not create undesirable results between 2020 and 2040; this means revisiting the preliminary thresholds and objectives for each sustainability indicator and adjusting the thresholds, objectives, allocation approach, and Ps&MAs if needed*	*Depending on the thresholds and objectives, we may need to establish management areas where GW must be managed in a specific, different way compared to the rest of the basin (e.g., subsidence area may require a different approach or implementation timeline than other areas in the basin). GSAs retain Mgmt authority.*

Decision-Making Timeline

Major Focus for Today

November	December	January	February	March	April
• CC and SC discuss potential allocation approaches	• CC recommends preliminary allocation approach to GSA Boards	• GSA Boards consider recommended allocation approach	• GSA Boards approve allocation approach		
• CC and SC consider values around approach to Ps&MAs	• CC and SC consider potential Ps&MAs to meet needs	• CC identifies recommended Ps&MAs	• CC considers changes to Ps&MAs	• CC recommends Ps&MAs to GSA Boards	• GSA Boards consider / approve Ps&MAs
		• CC and SC review benefits / impacts of Ps&MAs and make necessary adjustments	• CC considers changes to thresholds and objectives • CC considers need for management areas	• CC recommends thresholds, objectives, and management areas to GSA Boards	• GSA Boards consider / approve thresholds, objectives, and management areas

Allocation Framework Discussion

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

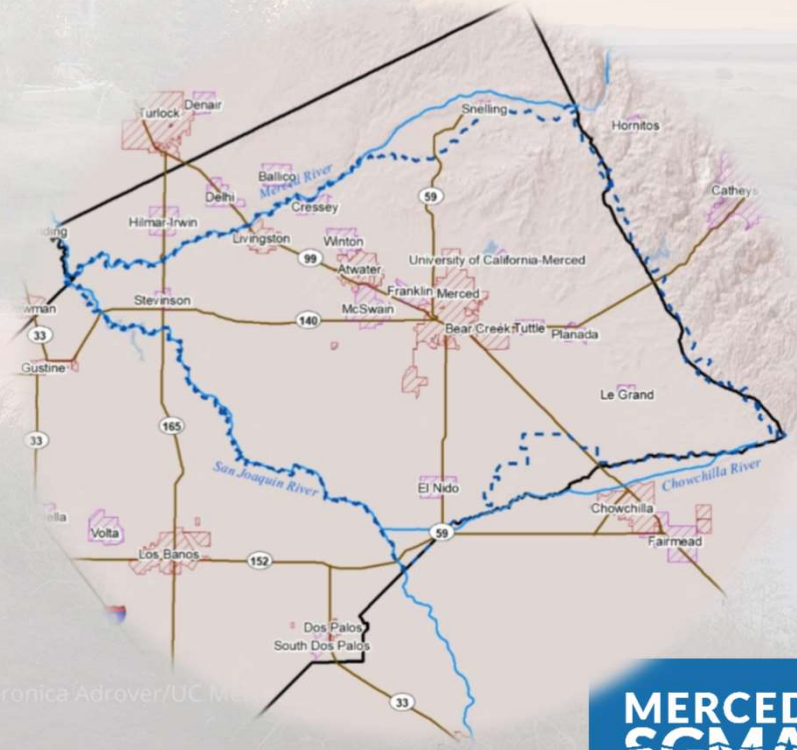

Image courtesy: Veronica Adrover/UC M

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Examples of Allocation Methods

Method	Description	Advantages	Disadvantages
Pro Rata Allocation per Overlying Acre	Divides available groundwater proportional to property size	• Recognizes correlative nature of groundwater rights • Simple in approach and calculation	• Creates inequities for those who have invested in use of groundwater • Ignores legal limitations on use
Pro Rata Allocation per Irrigated Overlying Acre	Allocates each irrigated acre a specific quantity of groundwater	• Acknowledges existing pumping • Simple in approach and calculation	• Does not consider unexercised groundwater rights • Does not recognize historic use • Ignores legal limitations on use
Allocation Based on Fraction of Historic Pumping	Allocates water based on historic groundwater use	• Potential to reduce conflict among existing pumpers	• Requires data re historic use (not always available) • Ignores correlative nature of groundwater rights • Ignores disproportionate impacts on basin
Comprehensive Allocation Method	Allocates groundwater based on CA law to extent practical and preserves relative priority of water users	• Consistent with CA groundwater law • Best chance of surviving judicial scrutiny	• Complicating and time-consuming • Requires substantial stakeholder engagement

Source: Brad Herrema Presentation to Merced GSP CC&SC 10-22-18

Example Application of Allocation Methods to Merced Subbasin – Pro Rata

- Take 500,000 AF (sustainable yield) divided by total basin acreage (516,000 acres) ~ 1 AF/ac
- GSAs can modify implementation and allocation within GSA, but establishes basis for basin-wide management

Advantages	Disadvantages
• Simple • Recognizes correlative nature of GW rights	• Does not explicitly account for appropriators / prescriptive rights • Allocates same amount to irrigated and unirrigated acres

***Numbers presented are preliminary draft estimates for discussion purposes only and require additional review and vetting*

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Example Application of Allocation Methods to Merced Subbasin – Pro Rata (Irrigated Acres)

- Take 500,000 AF (sustainable yield) divided by irrigated and urban acres in basin (~300,000 acres) ~ 1.7 AF/irrigated ac
- GSAs can modify implementation and allocation within GSA, but establishes basis for basin-wide management

Advantages	Disadvantages
• Simple • Acknowledges existing pumping	• Does not explicitly account for appropriators / prescriptive rights • Does not account for unexercised GW rights

***Numbers presented are preliminary draft estimates for discussion purposes only and require additional review and vetting*

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Example Application of Allocation Methods to Merced Subbasin – Historic Pumping

- Review historic use for prescriptive users such as cities, water purveyors (roughly 15%, or 75,000 AFY) and "everyone else" (roughly 85%, or 425,000 AFY)
- Overlying users could be allocated on a per-acre basis, with (~0.85 AF/ac) or without (1.6 AF/ac) irrigated areas, OR based on historic use if that information is available (comprehensive approach)
- GSAs can modify implementation and allocation within GSA, but establishes basis for basin-wide management

Advantages	Disadvantages
• Less likely to result in conflict among users • Explicitly accounts for appropriative use / prescriptive rights	• Requires more data • If unirrigated acres are excluded, does not account for unexercised GW rights

***Numbers presented are preliminary draft estimates for discussion purposes only and require additional review and vetting*

Image courtesy Veronica Addiver/UC Merced

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Example Application of Allocation Methods to Merced Subbasin – Comprehensive

- Review historic use for prescriptive users such as cities, water purveyors (roughly 15%, or 75,000 AFY) and “everyone else” (roughly 85%, or 425,000 AFY)
- Overlying users allocated on historical use (information generally not currently available)
- GSAs can modify implementation and allocation within GSA, but establishes basis for basin-wide management

Advantages	Disadvantages
• Less likely to result in conflict among users • Explicitly accounts for appropriative use / prescriptive rights	• Requires data that is not currently available • Does not account for unexercised GW rights • Significant outreach and engagement required

***Numbers presented are preliminary draft estimates for discussion purposes only and require additional review and vetting*

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Key Decisions

- Explicitly address prescriptive rights?
- Consider all acres or only irrigated acres (can develop approach to bring on users currently not exercising GW rights in the future if needed)?
- Base all use on historic pumping (need significant additional information and an approach to bring on users currently not exercising GW rights in the future if needed)?
- Date range for prescriptive period and / or historical use determination (preliminary draft estimates for discussion purposes only reflect average values from 1996-2015)?

Image courtesy: Veronica Adrover/UC Merced

Projects and Management Actions

Image courtesy: Veronica Adrover/UC Merced

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Projects and Management Actions Overview

- The Groundwater Sustainability Plan will include:
  - Projects and management actions to achieve sustainability over time
  - Implementation plan
  - Thresholds and objectives to measure progress
  - 5-year updates to adapt as needed.
- The goal: Implement projects to help achieve sustainability and minimize impacts to groundwater beneficial users
- Projects and Management Actions can increase supply availability and / or reduce demand for groundwater
  - Evaluate supply-side options and their effect on yield
  - Evaluate various governance options (water market, etc.)
  - Evaluate demand reduction options

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Projects and Management Actions: Discussion

Question 1

- **For the Merced Subbasin, what do you think is a realistic, achievable ratio of approaches to achieve long-term balance?**
  - Reducing total water demand
  - Increasing surface water supplies

Image courtesy: Veronica Adrover/UC Merced

Projects and Management Actions: Discussion

Question 2

- **Prior brainstorming identified many supply actions. Should there be more work to develop demand reduction actions?**

Examples from Past Meeting Brainstorm Activities

- Find ways to recharge the groundwater
- Increase groundwater banking
- More surface water is needed
- Capture urban runoff & harvest rainwater/stormwater in urban areas
- Capture Merced River flood flows
- Consider use of groundwater credits
- Put recharge areas in subsidence areas
- Supply surface water to subsidence areas
- Improve land use & use groundwater model for land use decisions
- More education about water use efficiency is needed
- Water transfers out of the Merced Subbasin not desirable

Projects and Management Actions: Discussion

Question 3

- **Do these projects reflect a sufficient range of project types for the implementation plan?** Are there specific project types we should be focusing on?

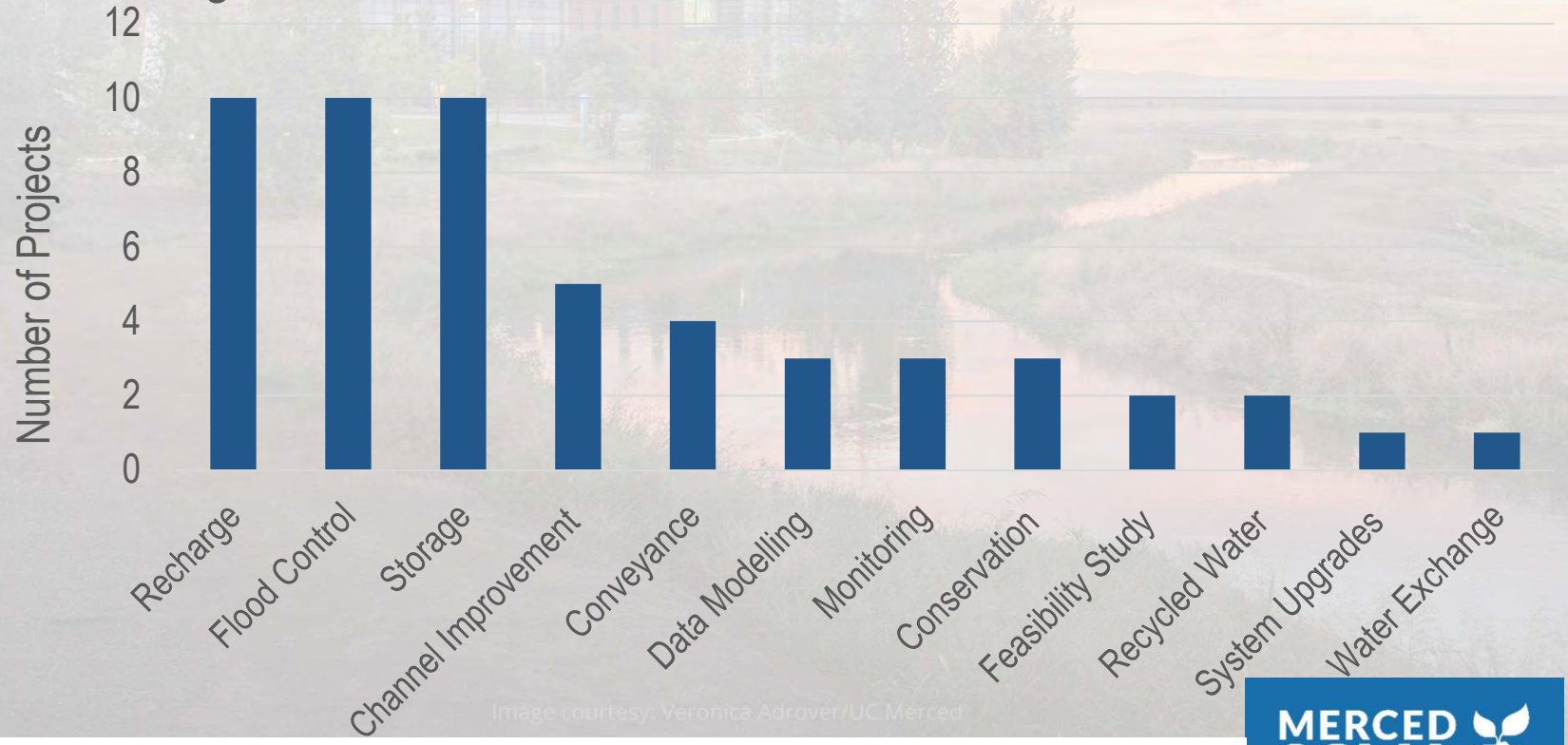

Image courtesy: Veronica Adrover/UC Merced

Many projects are relevant for several of the above. Placeholder & example projects not included.

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Projects and Management Actions: Discussion

Question 4

- **What do you think is most practical/workable for the Merced Subbasin?**
  - Large projects to address regional needs
    - Potentially longer lead times, coordination and agreement needs
  - Small or medium sized projects with localized implementation
    - Likely quicker to implement, but more needed to address full basin needs

Image courtesy: Veronica Adrover/UC Merced

Projects and Management Actions: Discussion

Question 5

- **What criteria should we use to assess projects?**
  - **Yield:** total acre-feet yield of project
  - **Unit cost:** dollars per acre-foot (excluding regulatory compliance costs)
  - **Location:** project benefits are located in an area of known groundwater elevation issues
  - **DAC benefits:** addresses disadvantaged community needs
  - **Environmental benefits / impacts:** benefits and impacts on the environment from the project (divided into different types)
  - **Feasibility and status:** difficulty or ease of implementation (e.g. technical or regulatory complexity, public acceptance)
  - **Water Quality:** negative or beneficial impact to water quality
  - **Others?**

Image courtesy: Veronica Adrover/UC Merced

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Next Steps

- Determine recommended allocation approach and identify areas of greatest need for projects and management actions
- Develop and apply criteria to assess and evaluate projects
- Determine effects of projects / management actions on basin conditions (sustainability indicators)
- Identify projects for inclusion in the GSP implementation plan
- Review and revise thresholds and projects as required; consider need for management areas
- Revise implementation plan as needed to achieve groundwater sustainability and threshold compliance

Image courtesy: Veronica Adrover/UC Merced

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Other Updates

Image courtesy: Veronica Adrover/UC Merced

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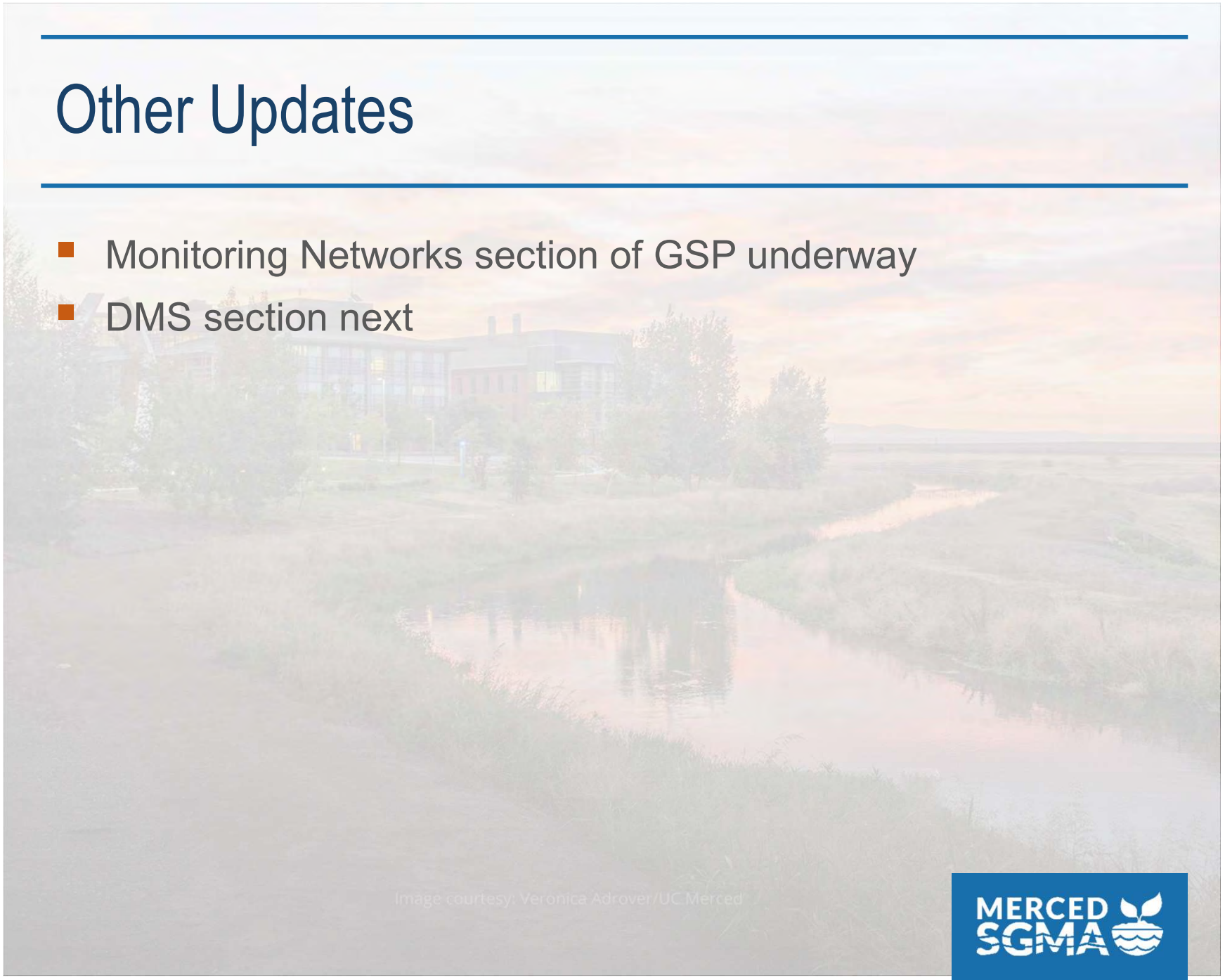
Other Updates

- Monitoring Networks section of GSP underway
- DMS section next



Flood-MAR

Image courtesy: Veronica Adrover/UC Merced

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Public Outreach Update

Image courtesy: Veronica Adrover/UC Merced

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Public Outreach: Upcoming Events

Community Outreach Workshops

- **Planada Community Center**: Tuesday, December 4, 6:00 to 8:00 p.m., Planada Community Center, Main Hall, 9167 Stanford St., Planada, CA 95365
- **Franklin Elementary School**: Thursday, December 13, 6:00 to 8:00 p.m., Franklin Elementary School, Multipurpose Room, 2736 Franklin Rd, Merced, CA 95348

Focus of outreach workshops:

- Purpose, goals, and timeline for the Groundwater Sustainability Plan
- What the preliminary water budgets show about groundwater overdraft in the Merced Subbasin
- Possible management actions and projects to offset groundwater deficits

Image courtesy: Veronica Adrover/UC Merced

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Public Outreach: Upcoming Events

- Links and flyers available for upcoming workshops on Merced SGMA website:
  - http://www.mercedsgma.org/meetings.html (Meetings page)

- Notices are available in English and Spanish:
  - Workshop Notice (English)
  - Aviso de taller público (Español)

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Merced Subbasin Groundwater Sustainability Agencies to Host Two Community Workshops

Merced Subbasin Groundwater Sustainability Planning Continues
Get Involved Now to Learn and Provide Input about the Future of Groundwater

The three groundwater sustainability agencies (GSAs) in the Merced Subbasin (Merced Subbasin Groundwater Sustainability Agency, Merced Irrigation-Urban Groundwater Sustainability Agency, and Turner Island Groundwater Sustainability Agency) will host **two public workshops** to discuss the Groundwater Sustainability Plan the agencies are developing for the Merced Subbasin.

Tuesday, December 4, 2018
6 p.m. to 8 p.m.
Planada Community Center
Main Hall
9167 Stanford Ave., Planada, CA 95365

Thursday, December 13, 2018
6 p.m. to 8 p.m.
Franklin Elementary School
Multipurpose Room
2736 Franklin Rd, Merced, CA 95348

All interested community members, ranchers, farmers, landowners, business owners, and residents with private wells are encouraged to attend. The workshops are an opportunity to learn more about groundwater management and discuss, ask questions, and provide input on the following discussion topics:

- **Where we are in the GSP Process**
- **What the preliminary water budgets show about groundwater overdraft in the Merced Subbasin**

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Las Agencias del Manejo Sostenible de Agua Subterránea de la Subcuenca Merced Llevaran a Cabo Dos Talleres Comunitarios

Continúa la planificación del manejo sostenible del agua subterránea en la subcuenca de Merced.
Participe ahora para aprender más e influía el futuro del agua subterránea.

Las tres agencias del manejo sostenible de agua subterránea (GSA's, por sus siglas en inglés) en la subcuenca Merced (Agencia de Manejo Sostenible de Agua Subterránea de la Subcuenca de Merced, la Agencia del Manejo Sostenible de Agua Subterránea de Irrigación de Merced y la Agencia del Manejo Sostenible de Agua Subterránea de Turner Island) llevaran a cabo **dos talleres públicos** para analizar el Plan de Sostenibilidad de Agua Subterránea (GSP) que desarrollan las agencias de la Subcuenca Merced.

martes, 4 de diciembre del 2018
6 p.m. to 8 p.m.
Centro Comunitario de Planada
Main Hall
9167 Stanford Ave., Planada, CA 95365

jueves, 13 de diciembre del 2018
6 p.m. to 8 p.m.
Franklin Elementary School
Multipurpose Room
2736 Franklin Rd., Merced, CA 95348

Animamos a todos los miembros de la comunidad, rancheros, granjeros, propietarios de tierras, empresarios y residentes con pozos privados, que tiene interés en aprender más a que participen en estos talleres. Los talleres son una oportunidad para aprender más sobre el manejo del agua subterránea y para discutir, hacer preguntas y proporcionar información sobre los siguientes temas de discusión:

- **Donde estamos en el proceso del desarrollo de GSP**
- **Que demuestran los presupuestos preliminares de agua sobre el sobregiro de agua subterránea en la subcuenca de Merced**

Image courtesy: Veronica Adrover/UC Merced

Coordination With Neighboring Basins Update

Image courtesy: Veronica Adrover/UC Merced

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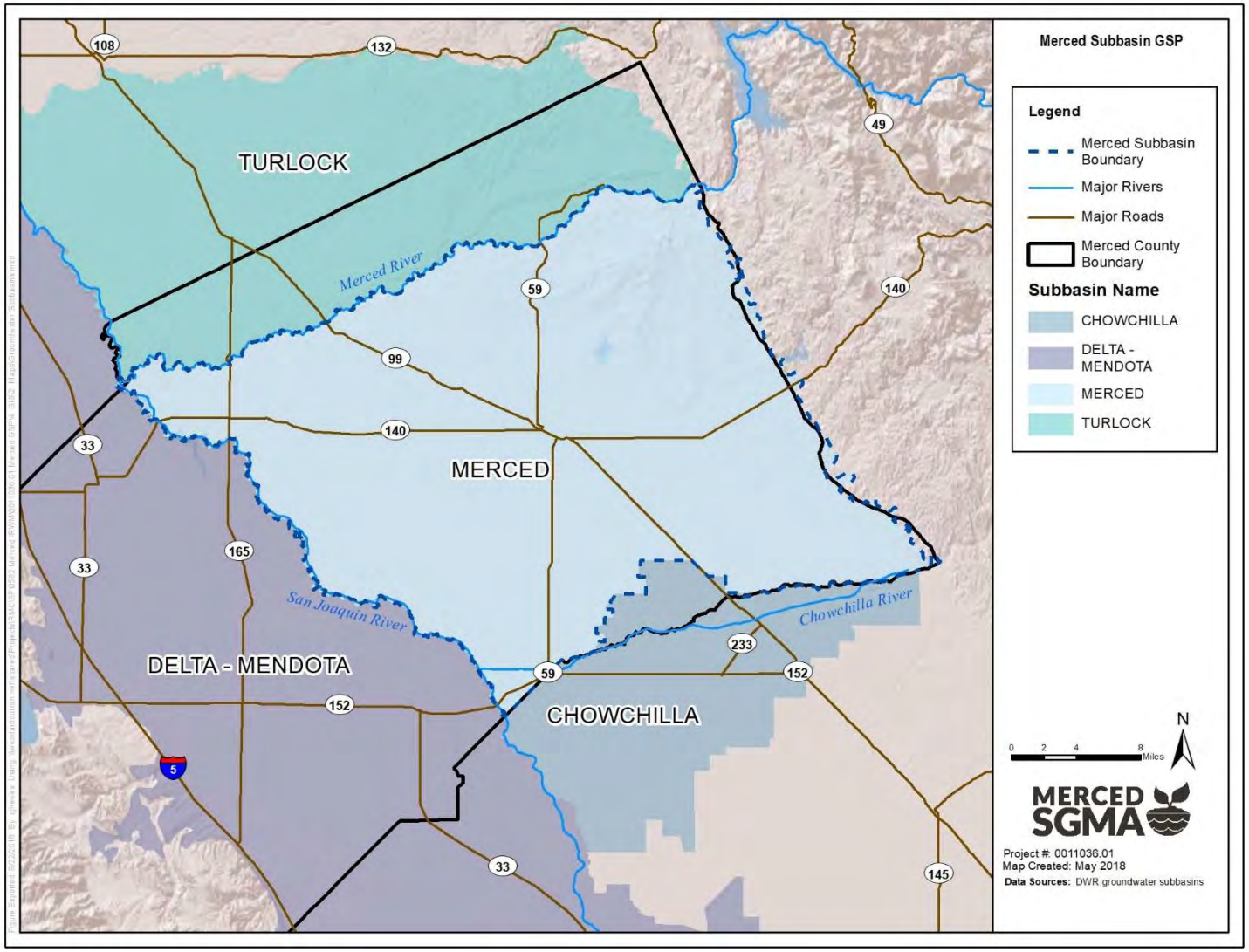
Coordination with Neighboring Basins



Questions/Comments from Public

Image courtesy: Veronica Adrover/UC Merced

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Next Steps

Image courtesy: Veronica Adrover/UC Merced

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What's coming up next?

- GSP Development Items:
  - Water Budgets summary memo being provided for review and approval by GSAs
  - Assess projects and management actions
- Focus for December meeting
  - Allocation approaches (continued)
  - Projects and management actions (continued)
- Adjourn to next meeting (Adjourn to December 17th @ 1:30 PM, location Castle Airport)

Image courtesy: Veronica Adrover/UC Merced

GSP Coordinating Committee

Coordinating Committee Meeting – November 26, 2018

Merced Irrigation-Urban GSA
Merced Subbasin GSA
Turner Island Water District GSA-1

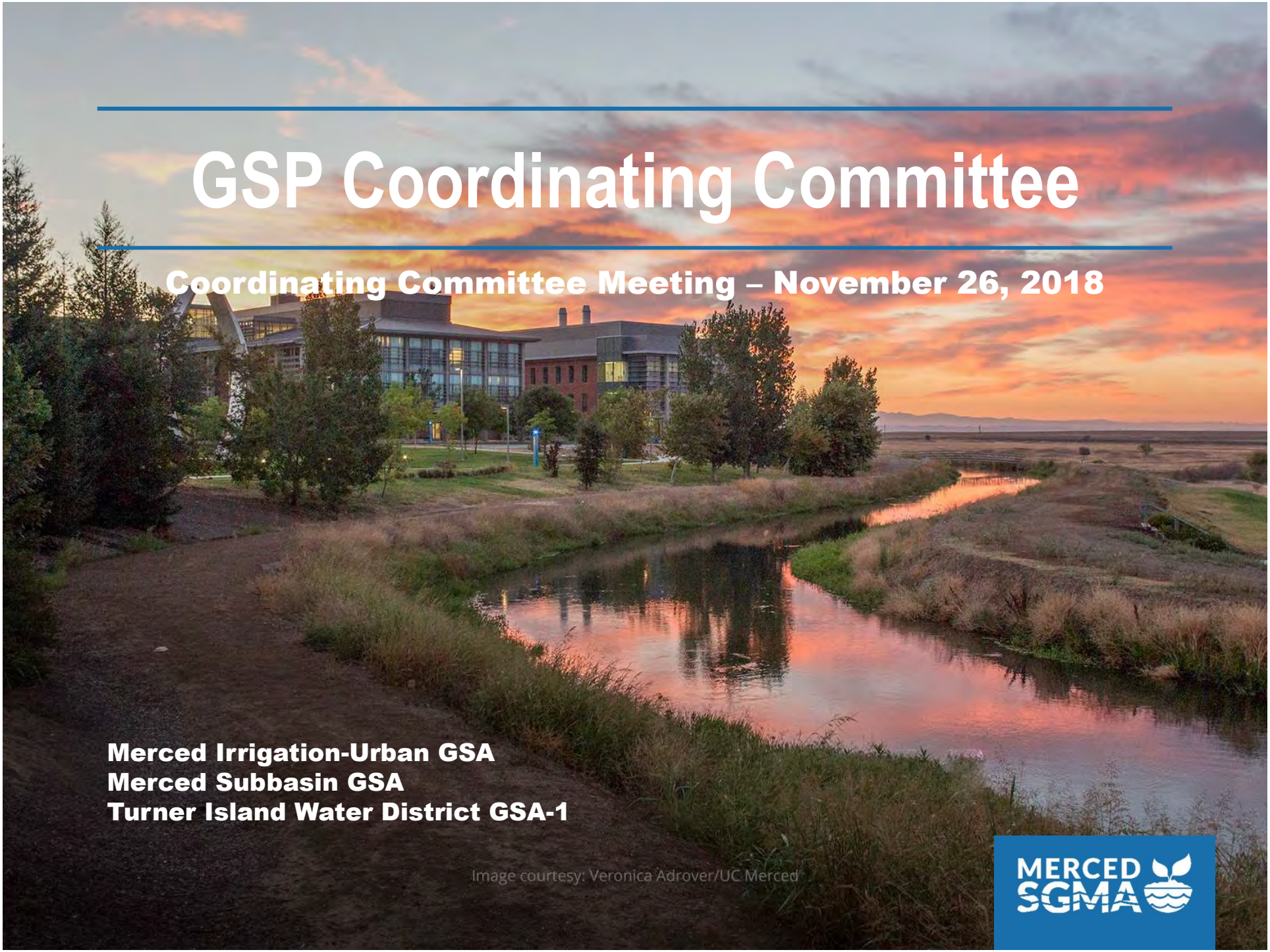

Image courtesy: Veronica Adrover/UC Merced

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