MAVEN'S NOTEBOOK

CIVICWELL
Transforming Local Vision into Action
Formerly Local Government Commission (LGC)

Groundwater EXCHANGE

SGMA Review

Achieving Groundwater Access for All & Visual Data Tool Demonstration

The Nature Conservancy

Union of Concerned Scientists
Science for a healthy planet and safer world

CLEAN WATER ACTION

Audubon CALIFORNIA

Welcome to today's webinar!

MAVEN'S NOTEBOOK

Groundwater EXCHANGE

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- To ask a question, enter it in the Q&A box.
- If you see a question that you want to know the answer to, give it a thumbs up.
- You can also email questions to maven@mavensnotebook.com
- Look for links to resources and other information in the chat box

Speakers

J. Pablo Ortiz
Union of Concerned Scientists

Ngodoo Atume
Clean Water Action

Geoff McGhee
Interactive Designer

Melissa Rohde
Rohde Environmental Consulting

Caitrin Chappelle, The Nature Conservancy

Overview of Study

Melissa M. Rohde

Stakeholder integration predicts more equitable groundwater sustainability policy

Debra Perrone, Melissa M. Rohde, Courtney Hammond Wagner, Rebecca Anderson, Samantha Arthur, Ngodoo Atume, Meagan Brown, Lauren Esaki-Kua, Martha Gonzalez, Kelly Garvey, Katherine Heidel, William D. Jones, Sara Khosrowshahi Asl, Carrie Munill, Rebecca Nelson, J. Pablo Ortiz-Partida, E.J. Remson

WATER FOUNDATION

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Union of Concerned Scientists
Science for a healthy planet and safer world

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CLEAN WATER ACTION

Research Questions

1. Are stakeholders **equally integrated** into the Plans?

1. Does each plan's management criteria **balance and protect the needs of water access** for all?

1. Does **integration of stakeholders** into the GSP result in **better protection**?

Access the paper with this QR code:

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Article

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Stakeholder integration predicts better outcomes from groundwater sustainability policy

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Check for updates

Debra Perrone[1,16], Melissa M. Rohde[2,3,4,16], Courtney Hammond Wagner[5,6,16], Rebecca Anderson[7,8], Samantha Arthur[9], Ngodoo Atume[10], Meagan Brown[11], Lauren Esaki-Kua[6], Martha Gonzalez Fernandez[1], Kelly A. Garvey[6,11], Katherine Heidel[12], William D. Jones[1,5], Sara Khosrowshahi Asl[6,13], Carrie Munill[12], Rebecca Nelson[14], J. Pablo Ortiz-Partida[15] & E. J. Remson[2]

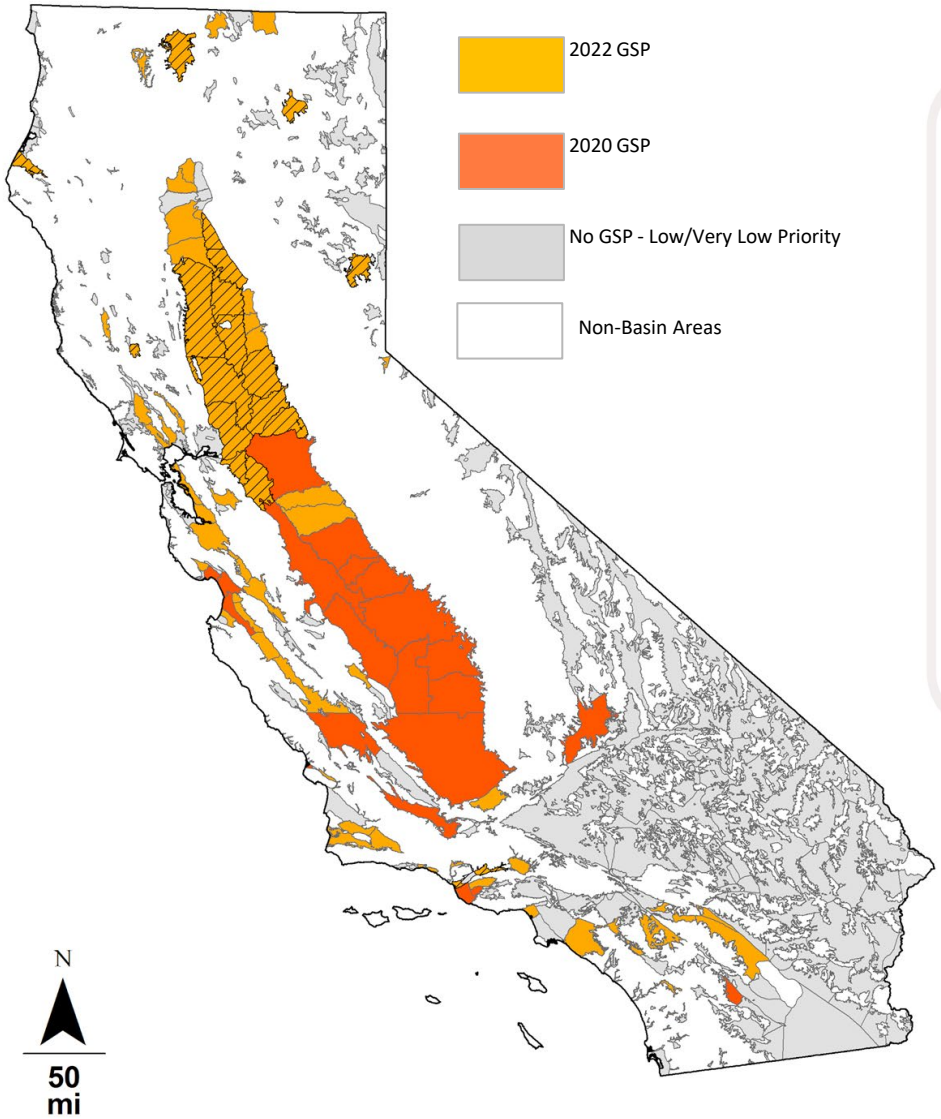
Natural resources policies that promote sustainable management are critical for protecting diverse stakeholders against depletion. Although integrating diverse stakeholders into these policies has been theorized to improve protection, empirical evidence is lacking. Here, we evaluate 108 Sustainability Plans under California's Sustainable Groundwater Management Act to quantify how well stakeholders are integrated into plans and protected from groundwater depletion. We find that the majority of Sustainability Plans do not integrate or protect the majority of their stakeholders. Nevertheless, our results show that when stakeholders are more integrated into a Sustainability Plan, they are more likely to be protected, particularly for those that lack formal access to decision-making processes. Our findings provide strong empirical evidence that integrating diverse stakeholders into sustainability planning is beneficial for stakeholders who are vulnerable to the impacts of natural resource depletion.

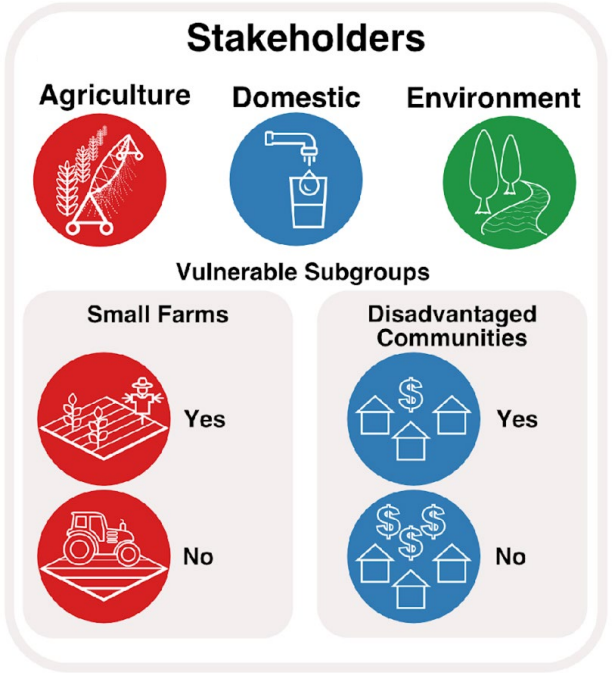
Groundwater is an essential resource for supporting sustainable food systems, healthy communities, and ecosystems. Nevertheless, groundwater depletion is becoming one of the most prominent natural resource challenges facing society[1,2], with thousands of researchers and practitioners calling for more sustainable management[3,4]. In theory, sustainable groundwater management ensures that current and future societal, ecological, and economic needs of all user groups are met or protected[5], but in practice, some user-groups' needs may be overlooked. Globally, the 21st century has seen nations and subnational units moving away from unmanaged natural resources through the development of policies to guide and constrain resource use[6]. The exact approaches to management are as varied as their outcomes[7], but the incorporation of stakeholders, their knowledge, and needs – herein stakeholder integration – into natural resource policy processes has been posited to result in better outcomes among user groups[8–11]. In fact, natural resource policies around the globe are

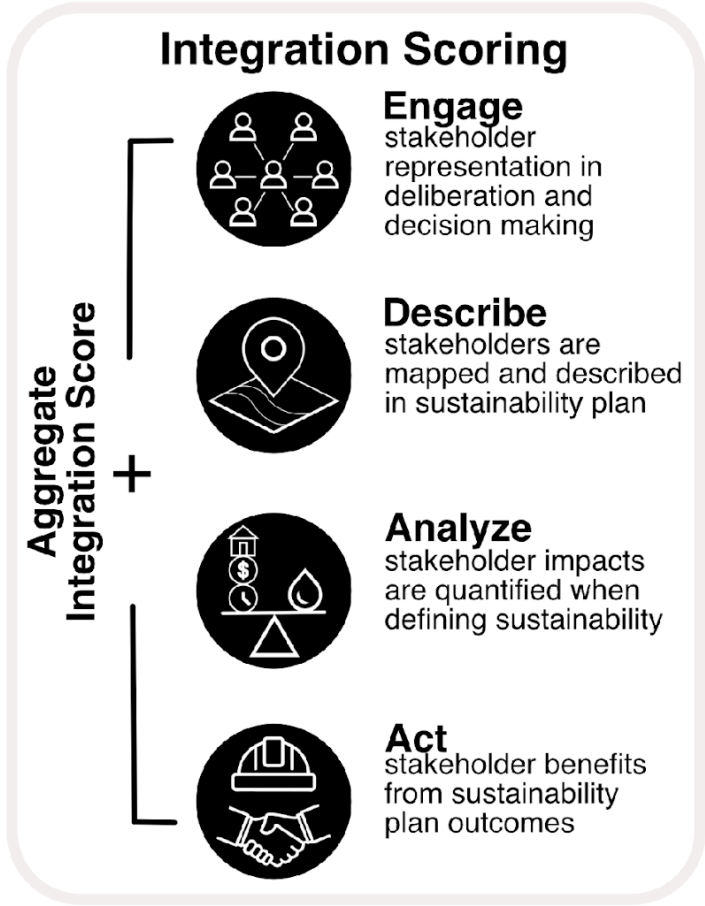
[1]Environmental Studies, University of California Santa Barbara, Santa Barbara, CA, USA. [2]California Water Program, The Nature Conservancy, Sacramento, CA, USA. [3]SUNY College of Environmental Science and Forestry, Syracuse, NY, USA. [4]Rohde Environmental Consulting, LLC, Seattle, WA, USA. [5]USDA Agricultural Research Service, Food Systems Research Unit, Burlington, VT, USA. [6]Water in the West, Stanford University, Stanford, CA, USA. [7]Independent Consultant, Portland, OR, USA. [8]WaterNow Alliance, San Francisco, CA, USA. [9]Audubon California, Sacramento, CA, USA. [10]Clean Water Action, Oakland, CA, USA. [11]Bren School of Environmental Science and Management, University of California Santa Barbara, Santa Barbara, CA, USA. [12]Tetra Tech, Lafayette, CA, USA. [13]Department of Environmental Science, Policy, and Management, University of California, Berkeley, CA, USA. [14]Melbourne Law School, University of Melbourne, Melbourne, VIC, Australia. [15]Union of Concerned Scientists, Oakland, CA, USA. [16]These authors contributed equally: Debra Perrone, Melissa M. Rohde, Courtney Hammond Wagner. e-mail: perrone@ucsb.edu; melissa@rohdeenvironmental.com; courtney.hammond-wagner@usda.gov

GSP Review Process

Reviewed 108 GSPs
(162,943 pages)







Protection Analysis

Unit of Analysis:

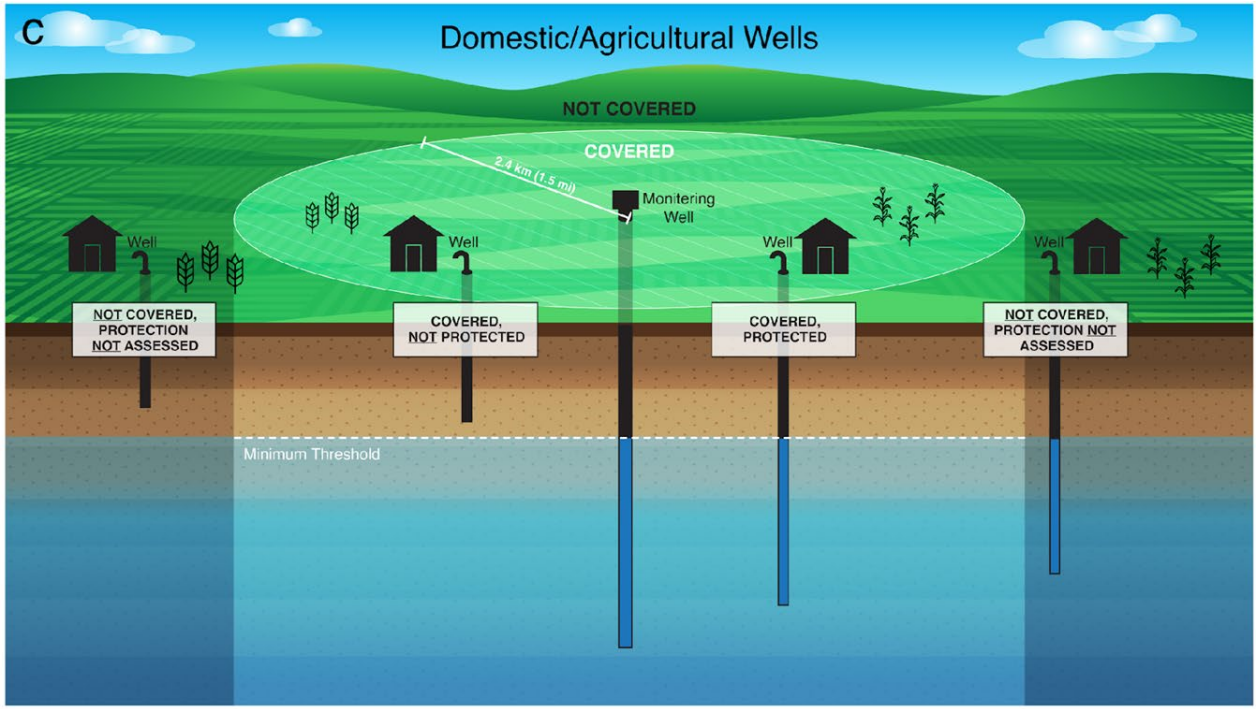
- Individual wells (agriculture & domestic)
- Groundwater-dependent ecosystems (Natural Communities Commonly Associated with Groundwater dataset)

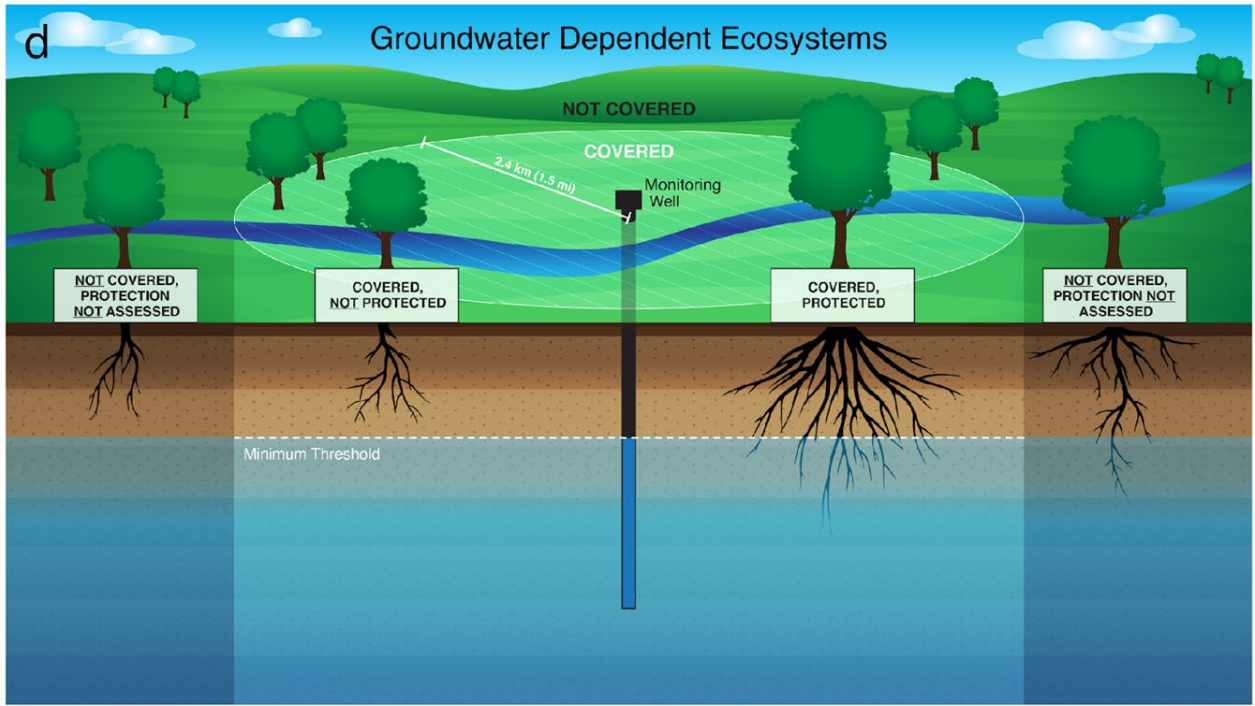
COVERAGE

within 1.5 miles from Representative Monitoring Well

PROTECTION

Minimum thresholds **is shallower** than user's access (total well depth for wells & rooting depth for ecosystems)

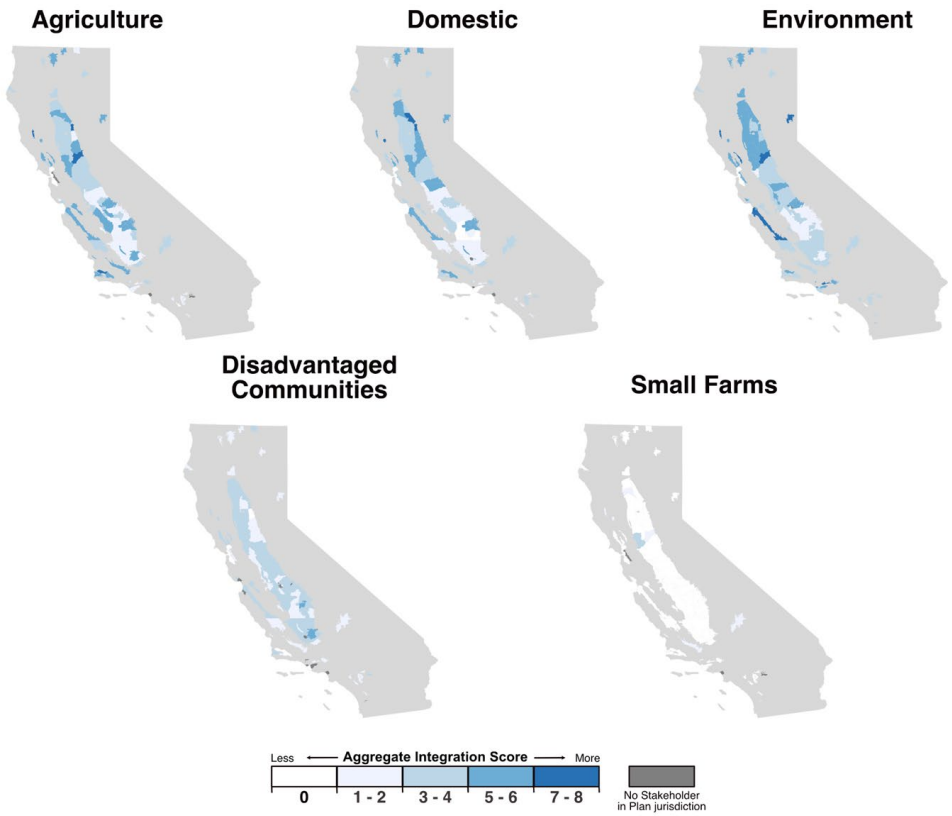


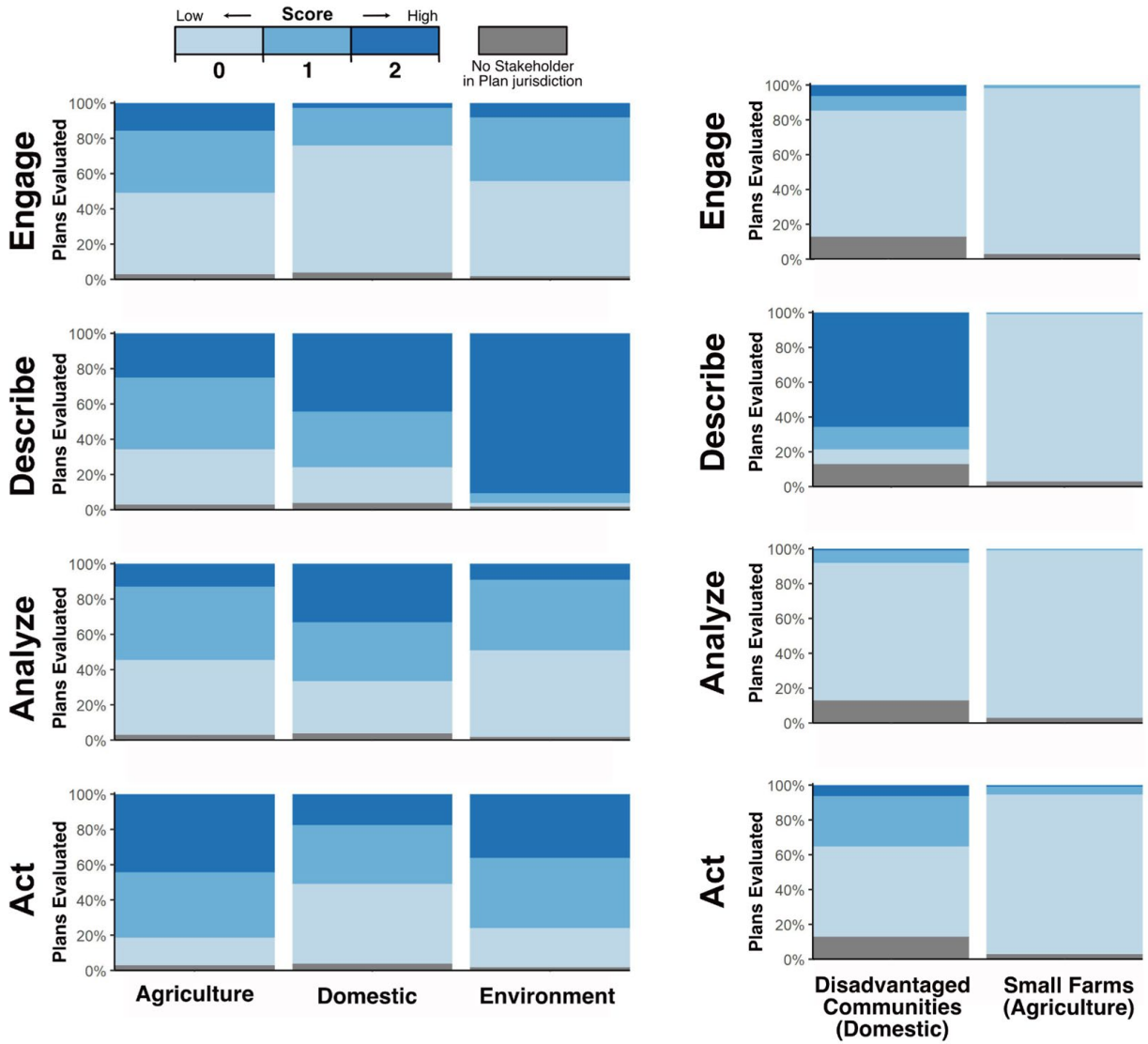


Are stakeholders equally integrated into Groundwater Sustainability Plans?

Stakeholder decision-making hinges upon local discretion in the absence of state directives

91% of GSPs failed to comprehensively integrate stakeholders.





Does each plan’s management criteria **balance and protect the needs of water access** for all?

AGRICULTURE

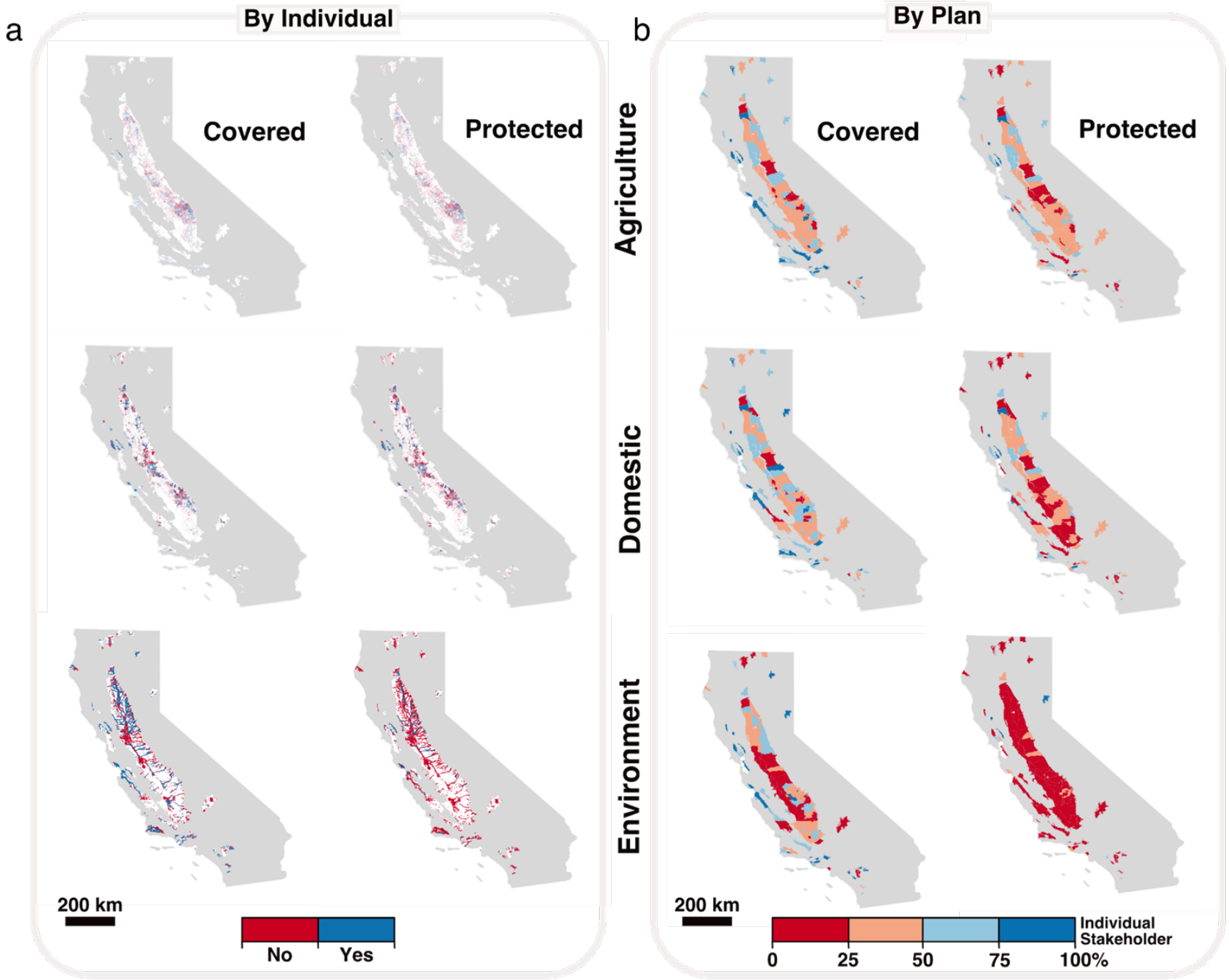
Covered: 49% (18,520 wells)
Protected: 40% (14,964 wells)

DOMESTIC

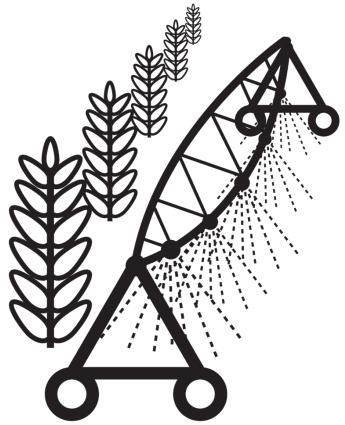
Covered: 49% (42,716 wells)
Protected: 37% (32,449 wells)

ENVIRONMENT

Covered: 42% (645 square km)
Protected: 9% (138 square km)

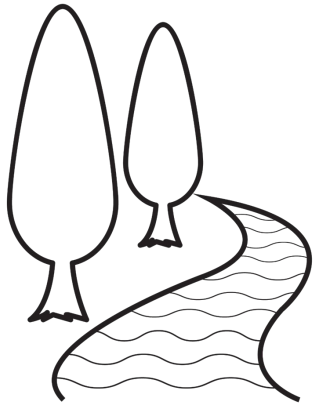


Protection is inequitable and burdens vulnerable groups



60%

63%



91%

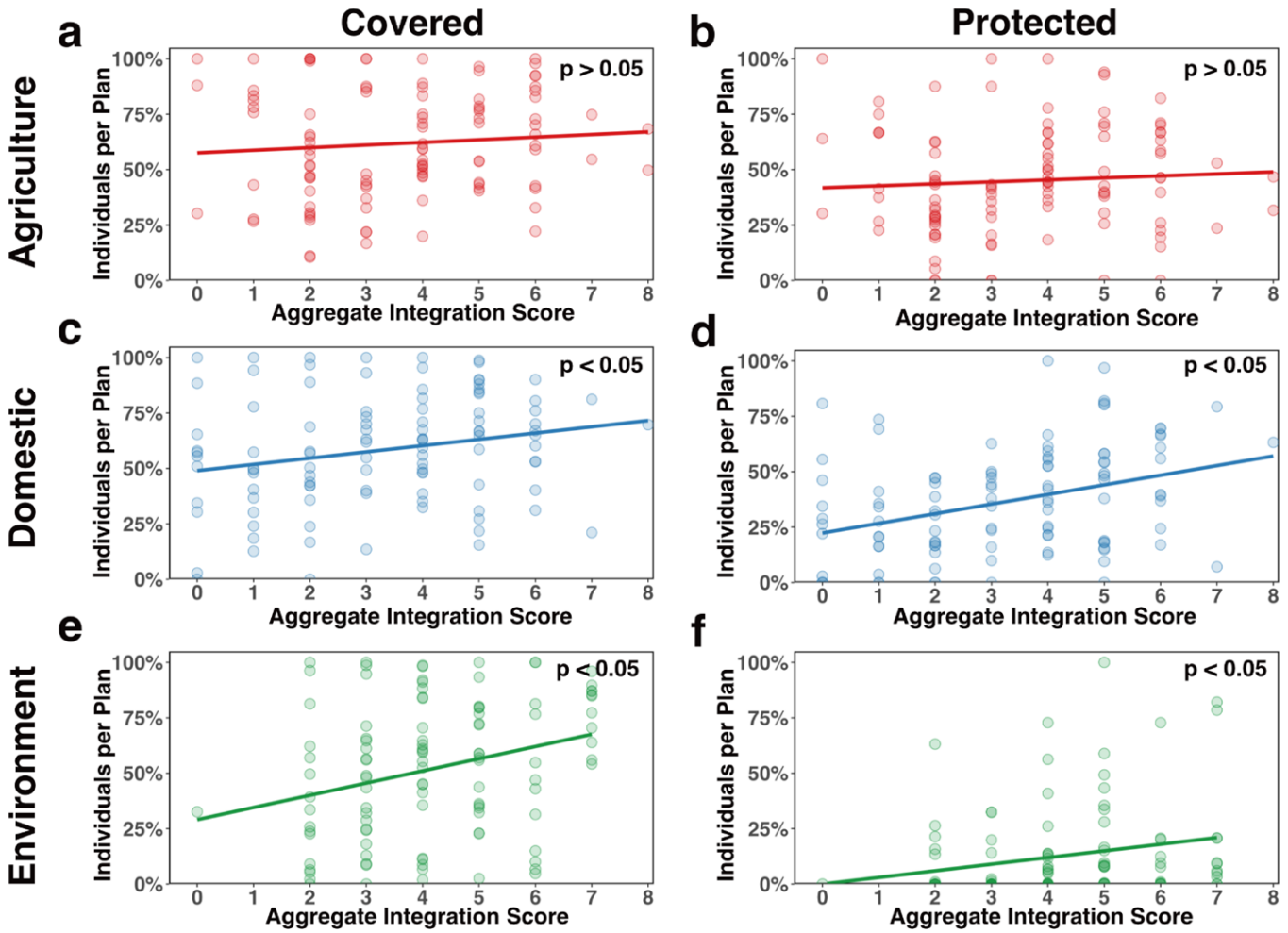
OUTSIDE SGMA:
40% of wells
87% of groundwater-dependent ecosystems

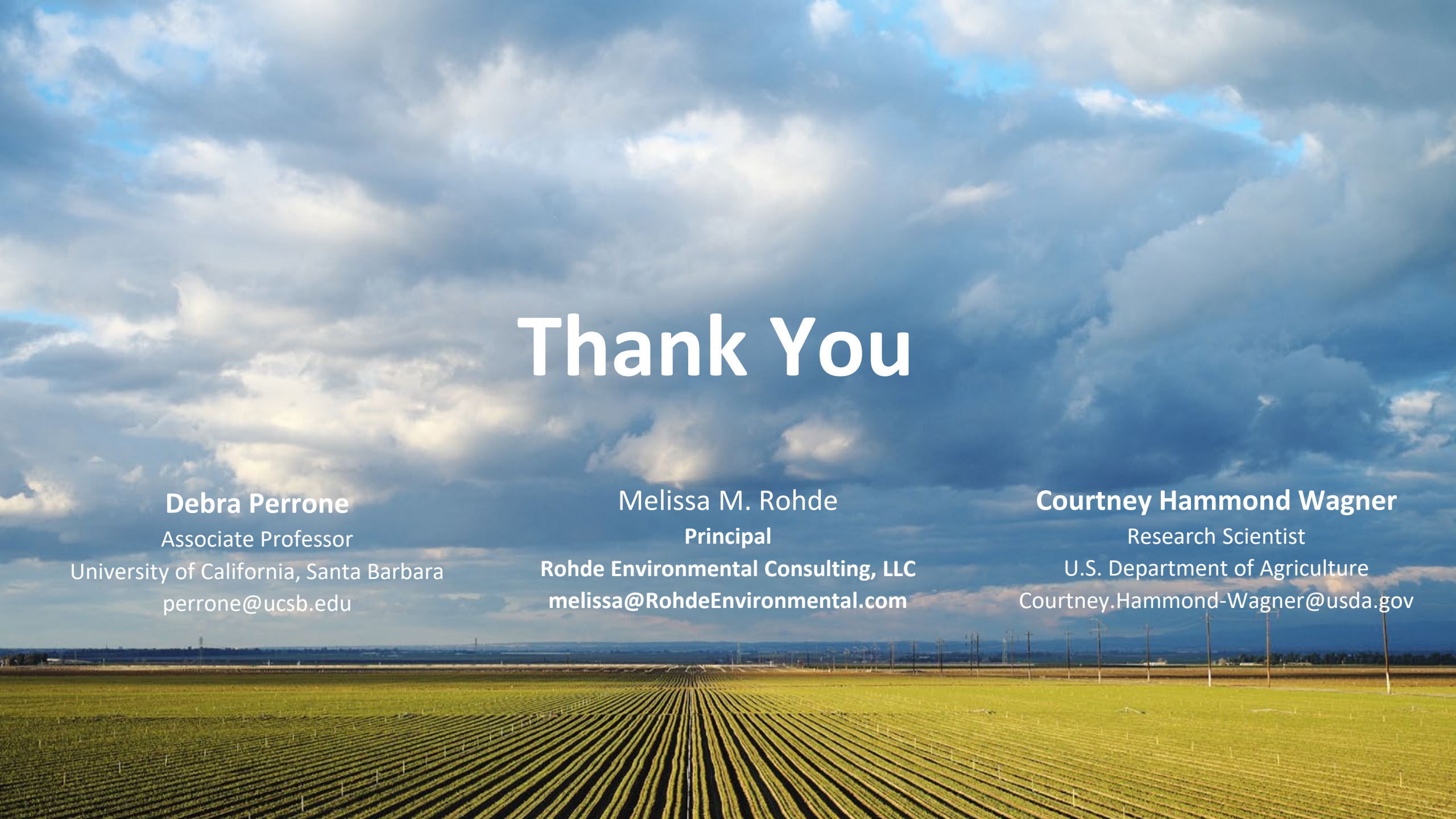
Does stakeholder integration into GSPs result in better protection for users?

Diverse stakeholder integration predicts more equitable stakeholder outcomes

(1) Agriculture stakeholder integration **is not linked to protection**, but are more protected by GSPs than domestic and environment groups.

(1) When domestic and environment groups are **integrated into GSPs**, stakeholders are **more protected** by the GSP's minimum thresholds.





Thank You

Debra Perrone
Associate Professor
University of California, Santa Barbara
perrone@ucsb.edu

Melissa M. Rohde
Principal
Rohde Environmental Consulting, LLC
melissa@RohdeEnvironmental.com

Courtney Hammond Wagner
Research Scientist
U.S. Department of Agriculture
Courtney.Hammond-Wagner@usda.gov

Visual Data Tool Demonstration

Geoff McGhee

SGMA Review Visuals

- https://sgmareview.org/

Policy Recommendations

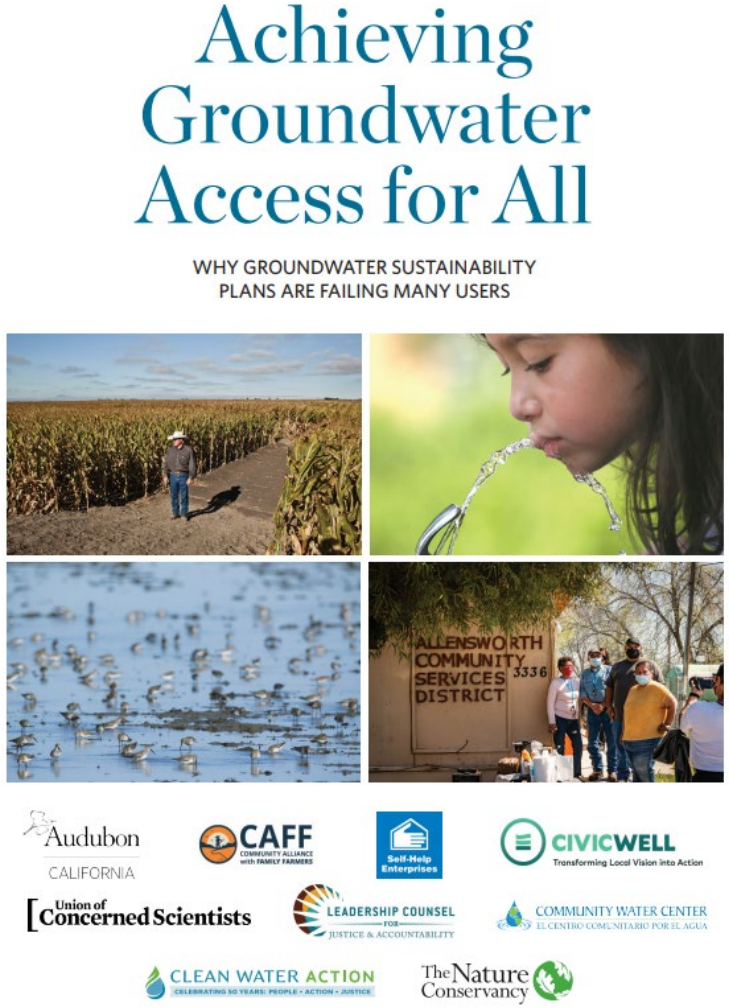
Ngodoo Atume
Caitrin Chappelle
J. Pablo Ortiz

Key Findings

- The majority of GSAs lack representation from disadvantaged communities, environmental interests, and tribes.
- Vulnerable groundwater users were rarely considered when establishing sustainable management criteria.
- When stakeholders are integrated into the planning process, they are more likely to be protected.
- Many Californians could lose access to drinking water under current definitions of “sustainability” in the plans especially with the lack of drinking water mitigation programs.
- California’s struggling natural world is unprotected by current plans.
- Major data gaps in the representative monitoring network of most plans.
- Demand management is minimized in most plans.
- Most groundwater plans do not adequately address climate change.

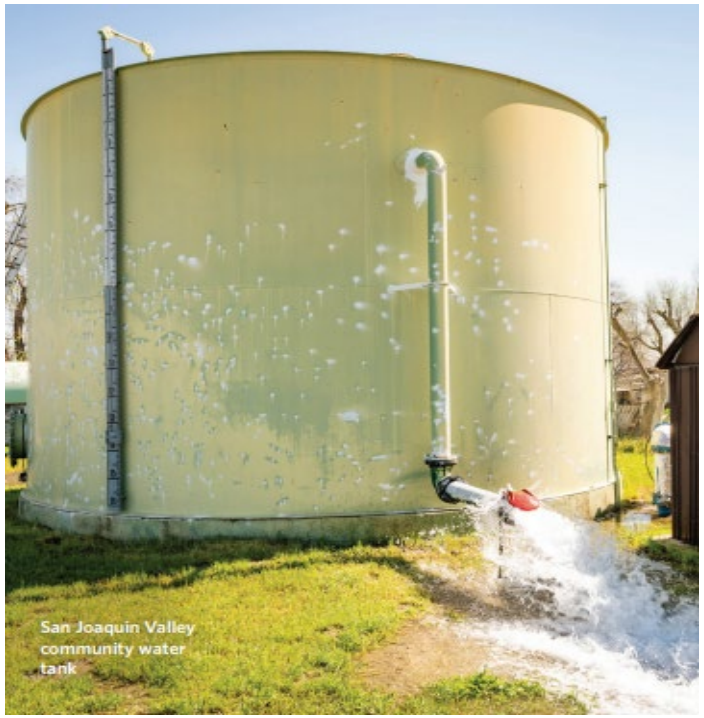
1. Leverage State Funding to Increase Stakeholder Integration

- Requirements for GSAs applying for state funding should ensure that vulnerable groups' needs are addressed in the plans;
  - Implementation grants include metrics that show GSAs are integrating vulnerable users.
  - Implementation funds be used to protect public benefits - mitigate groundwater impacts to drinking water users and ecosystem protection.
- Provide funding to enable vulnerable users to attend and engage in SGMA.
- Funding to improve monitoring well network. Require GSAs to establish a representative monitoring site in close proximity to disadvantaged communities and priority ecosystems.
- Expand funding for projects that focus on reducing pumping through land use change programs.



2. Update and Expand Guidance to GSAs

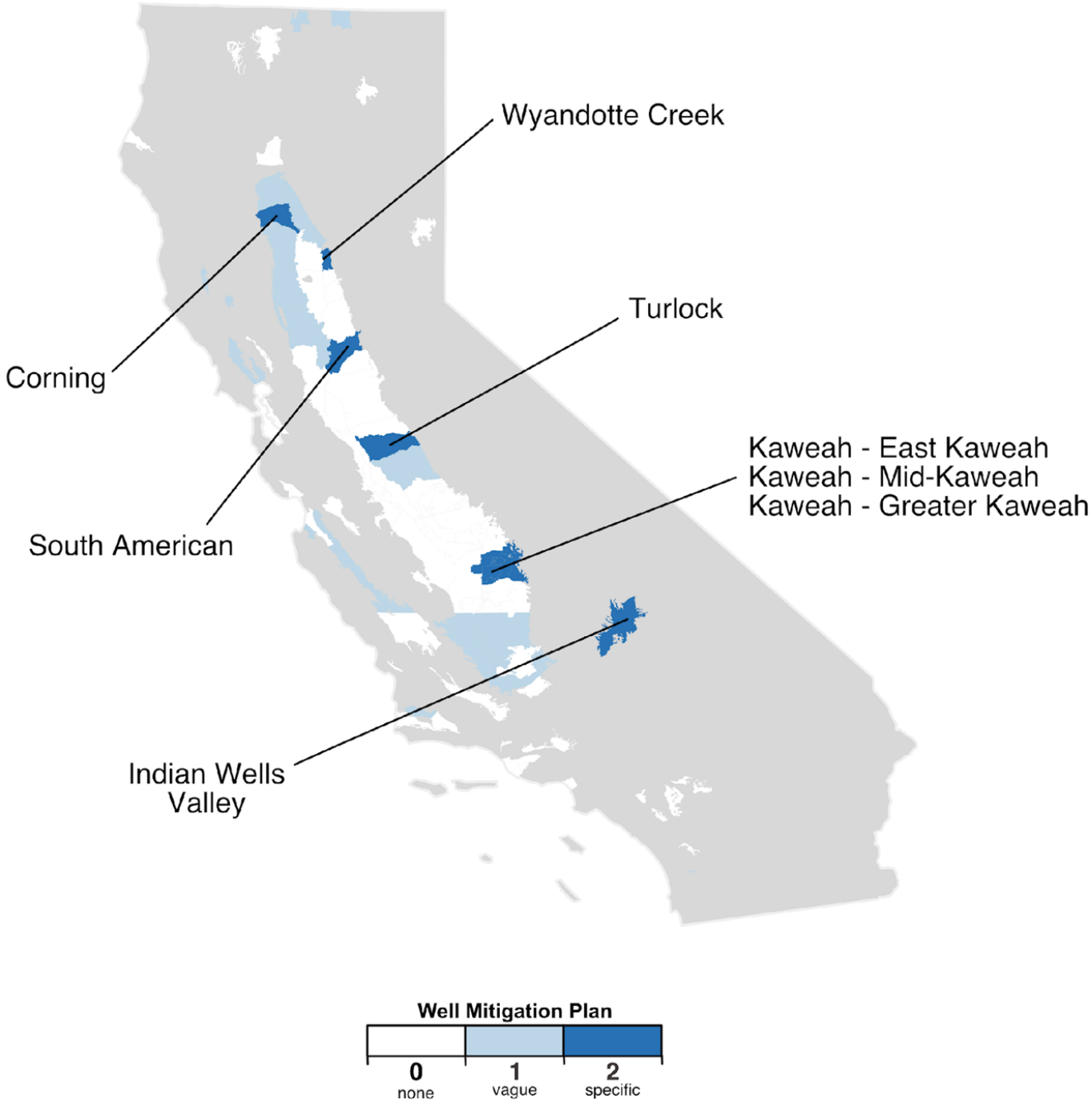
1. Update guidance document on stakeholder communication and engagement as well as on engagement with tribal governments to include engagement during the GSP implementation phase.
2. Require Annual reports to include dry well data, update on stakeholder engagement, water quality data.
3. Improve guidance on SMCs and how analyze impacts of MTs on vulnerable groundwater users.
4. Improve well-completion reports (e.g., by including well locations and well depth) to support GSAs in expanding and improving monitoring networks.



Recommendations for protecting Drinking Water users

1. Conduct robust and inclusive stakeholder engagement.
2. Utilize SWRCB SGMA groundwater monitoring tool to identify groundwater quality contaminants and monitor.
3. Consider and analyze potential impacts from implementation of PMAs.
4. Update representative monitoring well network to capture impacts to vulnerable domestic well owners and DACs.
5. Include a drinking water well impact mitigation plan.

GSPs with proposed Well Mitigation Plans



Recommendations for protecting nature

- Conduct robust and inclusive stakeholder engagement and integrate feedback into plan updates and management actions.
- Increase state capacity to help GSAs develop ecosystem monitoring and protection, and design effective projects that improve conditions for nature
- Provide technical guidance on how to identify interconnected surface waters and quantify groundwater pumping effects on surface water systems
- Enact and enforce instream flow requirements

Recommendations for considering Climate Change

Climate guidance for groundwater planning must require the integration of extreme climate change scenarios.

Close Information Gaps- Climate Change

1. Help low-capacity GSAs secure federal funding (e.g. Inflation Reduction Act funds or Bipartisan Infrastructure Law) to improve climate resilience, including for safe drinking water.
2. The state should complete their update of extreme climate scenarios (including data from the most recent drought and extreme precipitation events) and help local agencies access and navigate climate change data relevant to their region.

Thank you!