Telephonic Meeting of the
Delta-Mendota Subbasin Coordination Committee

Monday, May 11, 2020, 9:30 AM

Call-in Number: (425)436-6366; Access Code: 353368#
Join the online meeting: https://join.freeconferencecall.com/sethharris

Meeting Minutes

Coordination Committee Members and Alternates Present

Vince Lucchesi – Patterson Irrigation District/Northern Delta-Mendota Region
Ben Fenters – San Luis Water District/Central Delta-Mendota Region
Lacey McBride – Merced County/Central Delta-Mendota Region
Jarrett Martin – Central California Irrigation District/SJREC
Alejandro Paolini – San Luis Canal Company/SJREC
Jim Stilwell – Farmers Water District
Augie Ramirez – Fresno County
Ric Ortega – Grassland Water District
Joe Hopkins – Aliso Water District/Provost & Pritchard

San Luis & Delta-Mendota Water Authority Members Present

Seth Harris
Claire Howard – Provost & Pritchard

Others Present

Antonio Solorio – Westlands Water District
Chris Rogers – Central California Irrigation District/SJREC
Kyle Hill – Central California Irrigation District/SJREC
Will Halligan – Luhdorff & Scalmanini
Anthea Hansen – Del Puerto Water District
Lauren Layne – Baker Manock & Jensen
Leslie Dumas – Woodard & Curran
Ellen Wehr – Grassland Water District
Rick Iger – Provost & Pritchard

1. **Call to Order/Roll Call**

Ben Fenters/SLWD called the meeting to order at 9:33 AM.

2. CLOSED SESSION

Conference with Legal Counsel – Existing Litigation – Existing Litigation Pursuant to Paragraph (1) of Subdivision (d) of Section 54956.9

California Sportfishing Protection Alliance v. All Persons Interested in the Matter of the Validity of the Northern and Central Delta-Mendota Regions Groundwater Sustainability Plan, et al., Stanislaus County Superior Court, Case No. CV-20-001748 [Delta-Mendota Subbasin SGMA Challenge]

3. REPORT OUT OF CLOSED SESSION

No reportable action was taken during closed session.

4. **Committees to Consider Corrections to the Agenda of Items, as authorized by Government Code Section 54950 et seq.**

No corrections were made to the agenda of items.

5. **Opportunity for Public Comment**

No public comment was received during this item.

6. **Committee to Review and Take Action on Consent Calendar, Harris**
   a. **Minutes for the April 13, 2020 Special Telephonic Meeting of the Delta-Mendota Subbasin Coordination Committee**
   b. **March 2020 Budget to Actual Report**

The Committee discussed the structure of the presented budget to actual report. This report is the first for Fiscal Year 2021; not many expenses have been logged thus far in FY21. Seth Harris/SLDMWA explained that the Subbasin's coordinated expenses are split equally between SLDMWA Funds 64 and 65, which correspond with the Northern and Central Management Committees, respectively. The Committee requested that the budget to actual structure be updated to reflect a single number for coordinated expenses. This change will be reflected in the budget to actual report shared next month.

Augie Ramirez/Fresno provided the motion to approve the consent calendar and Ric Ortega/GWD seconded. The Committee voted by roll call; the motion was approved unanimously.

7. **Committee to Consider Approval of Proposition 68 Grant Administration Proposal from Woodard & Curran, Harris/Dumas**

Seth Harris/SLDMWA and Leslie Dumas/W&C provided an update on the Proposition 68 grant administration proposal from Woodard & Curran. The meeting materials supporting this agenda item also provide a breakdown of Delta-Mendota Subbasin Sustainable Groundwater Management (SGM) funding, detailing funds for both Proposition 1 and 68 programs. Leslie explained that Components 4-9 under the Proposition 68 grant provides each GSP group $41,666 for Supplemental GSP Development Funding. This amount for each GSP group includes an equal split of the $10,000 component administration budget line. Leslie shared that Woodard & Curran will provide a template for each GSP group to ensure compliance and consistency.

The version of the Proposition 68 grant administration proposal presented in this meeting ncludes line items for a grant agreement amendment and contingency based on input shared from the Northern and Central Management Committees. Leslie noted that the contingency item is in case additional reports or coordination are needed. Expenditure of this category will require

prior authorization from the Northern and Central Management Committees and Coordination Committee.

The Committee also discussed Note 4 included in the proposal, "RMC reserves the right to adjust its hourly rate structure and ODC markup at the beginning of the calendar year for all ongoing contracts." Since the grant administration role will extend beyond this calendar year, the Committee requested that this note be amended to require authorization prior to any adjustments to the hourly rate schedule and include confirmation that the overall budget will not be impacted.

The Committee considered approval of the grant administration proposal with required approval of rate changes and contingency incorporated into the task order. Vince Lucchesi/PID provided the motion and Jarrett Martin/SJREC seconded. The Committee voted by roll call; the motion passed unanimously.

8. Committee to Consider Approval of Outgoing Adjacent GSP Comment Letters, Harris/Howard

Seth Harris/SLDMWA reminded the Committee that the DWR public comment period closes May 15th for GSPs submitted by the January 31st deadline. Based on previous discussions with the Coordination Committee, comment letters for three GSPs adjacent to the Delta-Mendota Subbasin were developed for review and final consideration prior to submission: Chowchilla Subbasin GSP, Merced Subbasin GSP, and McMullin Area GSA (MAGSA) GSP.

Claire Howard/P&P provided an overview of the Chowchilla and Merced letters, and explained that the content was based largely on comment letters submitted by SJREC during the public draft comment period in the fall of 2019 and input from the Northern and Central Management Committees. The MAGSA GSP comment letter was drafted by Will Halligan/LSCE and Jim Stilwell/Farmers, focusing on concerns and impacts specific to the Farmers WD GSP area. Jarrett Martin/SJREC expressed concern regarding the comments on the hydrologic period included in the MAGSA GSP letter. Will and Jarrett will coordinate following the meeting to determine an agreed level of detail for this letter.

The Committee discussed revisions for the letters. Each will include the Delta-Mendota SGMA logo and a signature from Ben Fenters/SLWD as the current chair of the Coordination Committee. The MAGSA GSP letter will be amended to include an introductory statement consistent with the Chowchilla and Merced letters: "Representatives from the Delta-Mendota Subbasin (DM Subbasin) have coordinated a comment letter in response to the final McMullin Area GSA (MAGSA) groundwater sustainability plan (GSP), located in the Kings Subbasin."

Augie Ramirez/Fresno requested that the Committee consider approval for the MAGSA GSA comment letter separately. The Committee first considered approval of the comment letters for the Chowchilla and Merced GSPs pending inclusion of the Delta-Mendota Subbain SGMA logo and Ben's signature. Ric Ortega/GWD provided the motion and Vince Lucchesi/PID seconded. The Committee voted by roll call; the motion was approved unanimously.

The Committee considered approval of the MAGSA GSP comment letter pending discussion between Jarrett and Will regarding the hydrologic period and inclusion of the aforementioned introductory statement, Delta-Mendota SGMA logo, and Ben's signature. Jim Stilwell/Farmers provided the motion and Ben Fenters/SLWD seconded. The Committee voted by roll call. Augie abstained due to Fresno County's representation in MAGSA. All other Committee members approved the letter.

Final versions of the three letters will be recirculated to the Committee prior submission by the May 15th deadline.

9. **Committee to Determine Cost Share and Approval of Delta-Mendota Subbasin Coordinated Legal Fees, Layne/Harris**

Lauren Layne/BMJ presented the legal cost estimate presented during the April 13th Coordination Committee meeting for litigation with the California Sportfishing Protection Alliance. Seth Harris/SLDMWA shared that the Northern and Central Management Committees approved the cost estimate and a one-sixth split of these coordinated expenses. Jim Stilwell/Farmers shared that he is not in favor of sharing this coordinated cost at the GSP level, but explained that he is aware of the need to confirm these costs. He requested that a discussion item is included in next month's agenda to discuss future coordinated cost sharing. The Committee considered approval of this cost estimate and an equal cost share between the six GSP groups. Ric Ortega/GWD provided the motion and Jarrett Martin/SJREC seconded. The Committee voted by roll call; the motion was approved unanimously.

10. **Committee to Discuss Approach for Proposition 68 Well Census and Inventory Projects, Harris**

The Committee discussed funding for the Proposition 68 well census and inventory projects. This category of the grant has $100,000 budgeted, $90,000 of which is specific to the well census and inventory (the remaining $10,000 is for component administration, stakeholder engagement/outreach and access agreement templates). Given that each GSP group has differing needs for the well census and inventory projects, the Committee discussed how to best split this grant budget. An equal one-sixth split of the well census and category would provide each GSP group with $15,000 for this project.

Jarrett Martin/SJREC reminded the Committee of the original intent of the Proposition 68 grant: developing an internal approach to addressing Subbasin-wide subsidence. Jarrett suggested that funding for the well census and inventory category be prioritized to focus efforts on areas in the Subbasin with significant subsidence. The Committee members discussed their respective GSP area's needs. Augie Ramiresz/Fresno, Jim Stilwell/Farmers, Joe Hopkins/Aliso, and Ric Ortega/GWD shared that their respective GSP areas do not have as high of a need or anticipated cost to complete a well inventory, and likely don't need $15,000 to complete this project. If this category is apportioned to GSP groups based on well census need rather than using a six-way split, the Committee expressed concern of not being able to equitably balance out the remaining funding categories within the Prop 68 budget.

Vince Lucchesi/PID and Ben Fenters/SLWD explained that the Northern and Central Management Committees will discuss their plan for this project in more detail, noting that the Northern and Central Regions have distributed landowner letters to gather well location and construction information that can be incorporated into the Northern and Central Regions' well census and inventory.

This item will be revisited next month to further detail potential cost share between the six GSP groups for the well census and inventory category.

11. **Committee to Discuss Reimbursement Process for Coordinated Costs, Harris**

The Committee revisited the Delta-Mendota Sustainable Groundwater Management (SGM) Grant Funding table to discussed remaining coordinated costs in the Subbasin's funding, focusing on Proposition 1 funds. Leslie Dumas/W&C shared that reimbursements for coordinated expenses can be applied retroactively for costs incurred starting June 1, 2017. Seth Harris/SLDMWA shared that all SLDMWA staff expenses, including Claire Howard's time since she joined Provost & Pritchard in August, have been submitted for reimbursement.

Jarrett Martin/SJREC asked if coordinated legal fees, including the litigation fees, are eligible for reimbursement. Following this meeting, Leslie reached out to DWR regarding eligibility of legal fees, and she shared with the Committee that these costs cannot be covered by the Proposition 1 or Proposition 68 funds. Leslie shared that eligible expenses that can be covered under the Technical Assistance Services category of Proposition 1 include stakeholder engagement, such as informational meetings, collecting data, and outreach. She reminded the Committee that written documentation is required to submit reimbursements. The Committee was encouraged to consider any past incurred expenses that could be covered through this category. This topic will be revisited in future meetings to ensure necessary information is collected and shared for reimbursement.

12. Committee to Discuss Coordination of Subbasin-wide Monitoring Efforts, Harris

a. Subsidence

b. Water Quality

Seth Harris/SLDMWA briefly discussed coordination of Subbasin-wide monitoring efforts. He reminded the Committee that the water quality monitoring period has started (May-July). Leslie Dumas/W&C noted that this time window is essential to collecting necessary data for the Water Year 2020 Annual Report, which will be submitted to DWR by April 1, 2021.

13. Committee to Discuss Subbasin-wide Implementation Tracking, Harris

The Committee discussed tracking implementation efforts across the Subbasin to ensure necessary tasks are fulfilled as presented in the Subbasin's GSPs. The Committee will revisit the topic of tracking implementation targets and efforts. Seth Harris/SLDMWA noted that a GSP implementation tracking tool is under development for the Northern & Central GSP group, and could provide a template for other GSPs' use as well.

14. Committee to Discuss Frequency of Technical Working Group and DMS Working Group Meetings, Howard

Claire Howard/P&P noted that Houston Engineering Inc (HEI) is finalizing the data management system (DMS). The DMS has been refined on final data incorporated into the Consolidated Annual Report. HEI will provide a demonstration to GSA staff and supporting consultants. A Doodle poll will be shared to schedule this demonstration. The Committee also discussed scheduling a standing meeting for the Technical Working Group, and the Committee expressed interest in re-establishing these meetings.

15. Next Steps

- The budget to actual report will be revised to share a single value for coordinated budget and expenses
- The task order for the Proposition 68 grant administration will require authorization for rate adjustments and expenditure of the contingency line item

- The three outgoing comment letters will be revised based on Committee members' input. Updated versions will be shared with the Committee for final review prior to submission to the DWR SGMA Portal
- The coordinated legal fees incurred through current litigation will be shared equally between the six GSP groups. Next month the Committee will discuss coordinated cost share for future expenses.
- The well census and inventory category will be revisited to discuss cost share and deliverables

16. Reports Pursuant to Government Code Section 54954.2(a)(3)

Seth Harris/SLDMWA shared that he has accepted a new position within the SLDMWA, and will be transitioning out of his current role within the SGMA program over the next six weeks. SLDMWA will continue to provide support to the Coordination Committee moving forward. The Committee will discuss this transition in more detail next month.

17. ADJOURNMENT

The meeting was adjourned at 11:35 AM.

SAN LUIS & DELTA-MENDOTA WATER AUTHORITY
MARCH 1, 2020 - FEBRUARY 28, 2021
SUSTAINABLE GROUNDWATER MANAGEMENT ACT SERVICES AGREEMENT
Coordination Committee Budget to Actual

Report Period 3/1/20 -4/30/20
Committee Meeting 6.8.20

EXPENDITURES	Annual Budget	Paid/ Pending	Additional Pending	Total Expenses	Amount Remaining	% of Amt Remaining
Legal:						
Outside Counsel	$ 46,080			$ -	$ 46,080	100%
Other Professional Services:						
Contracts	$ 1,188,082			$ -	$ 1,188,082	100%
Other:						
Program Mgr/Sr. Engineer/Water Policy Dir.	$ 146,112	$ 1,896		$ 1,896	$ 144,216	99%
SCADA Engineer	$ 4,616	$ -		$ -	$ 4,616	100%
Water Resources Coordinator	$ 68,143	$ 9,956		$ 9,956	$ 58,187	85%
Assistant Engineer 1	$ 67,486	$ -		$ -	$ 67,486	100%
Accounting	$ 11,297	$ -		$ -	$ 11,297	100%
Hydrotech 3	$ 40,176	$ 5,686		$ 5,686	$ 34,490	86%
License & Continuing Education	$ 500			$ -	$ 500	100%
Conferences & Training	$ 10,000			$ -	$ 10,000	100%
Travel/Mileage	$ 10,000			$ -	$ 10,000	100%
Group Meetings	$ 1,000			$ -	$ 1,000	100%
Telephone	$ 2,500	$ 290		$ 290	$ 2,210	88%
Equipment and Tools	$ 8,350			$ -	$ 8,350	100%
Software	$ 8,650			$ -	$ 8,650	100%
Coordinated Costs:						
Salaries	$ 52,152	$ 2,828	$ -	$ 2,828	$ 49,324	95%
Outside Counsel	$ -	$ -	$ 851	$ 851	$ (851)	0%
Other Professional Services	$ -	$ -	$ -	$ -	$ -	0%
Group Meetings	$ -	$ -	$ -	$ -	$ -	0%
Travel/Mileage	$ -	$ -	$ 28	$ 28	$ (28)	0%
Telephone	$ -	$ -	$ -	$ -	$ -	0%
Total Expenditures	$ 1,612,992	$17,828.0	$ -	$17,828	$1,595,164	98.89%

June 8, 2020
Report Item 5

Delta-Mendota Coordination Committee

Review of Coordinated Expenses Cost Shares

Cost Share Agreement

Exhibit A of Cost Share Agreement

- Attachment 1: Equal 6-way equal split of Coordinated Expenses (16.7% for each GSP group)

Proposition 1

Application

- Cost agreement letter: equal split of application cost by 15 non-DAC GSAs

Benefit

- Attachment 2: Proposition 1 breakdown (combination of equal and apportioned budgets)

Proposition 68

Application

- Cost agreement letter: equal split of application cost by 15 non-DAC GSAs

Benefit

- Attachment 3: Proposition 68 breakdown (currently equal split of components)

June 8, 2020
Report Item 5

Delta-Mendota Coordination Committee

Review of Coordinated Expenses Cost Shares

Cost Share Agreement

Exhibit A of Cost Share Agreement

- Equal 6-way equal split of Coordinated Expenses (16.7% for each GSP group)

Proposition 1

Application

- Cost agreement letter: equal split of application cost by 15 non-DAC GSAs

Benefit

- Proposition 1 breakdown (combination of equal and apportioned budgets)

Proposition 68

Application

- Cost agreement letter: equal split of application cost by 15 non-DAC GSAs

Benefit

- Proposition 68 breakdown (currently equal split of components)

EXHIBIT A – GSP Groups and Responsible Agencies to Invoice

	Groundwater Sustainability Plan Group	Responsible Agency to Invoice / Address	Participation Percentage
1	**Northern / Central Delta-Mendota Region – 2 Representatives** Central DM Subgroup – 1 Member representing the following: Central Delta-Mendota Multi-Agency GSA Oro Loma Water District GSA Widren Water District GSA Northern DM Subgroup – 1 Member representing the following: City of Patterson GSA DM-II GSA Northwestern Delta-Mendota GSA Patterson Irrigation District GSA West Stanislaus Irrigation District-GSA 1	San Luis & Delta-Mendota Water Authority (for invoices) P.O. Box 2157 Los Banos, CA 93635 Attn: Andrew Garcia West Stanislaus Irrigation District (for other notices) 116 E Street P.O. Box 37 Westley, CA 95387 Attn: Robert Pierce	16.7%
2	**San Joaquin River Exchange Contractors – 2 Representatives** City of Dos Palos GSA City of Firebaugh GSA City of Gustine GSA City of Los Banos GSA City of Mendota GSA City of Newman GSA Madera County GSA Merced County Delta-Mendota GSA San Joaquin River Exchange Contractors GSA Turner Island Water District-2 GSA	San Joaquin River Exchange Contractors 541 H Street P.O. Box 2115 Los Banos, CA 95363 Attn: Steve Chedester	16.7%
3	**Farmers Water District – 1 Representative** Farmers Water District GSA	Farmers Water District 4460 W. Shaw Ave., #219 Fresno, CA 93722 Attn: Jim Stillwell	16.7%
4	**Aliso Water District – 1 Representative** Aliso Water District GSA	Aliso Water District 10302 Avenue 7-1/2 Firebaugh, CA 93622 Attn: Roy Catania	16.7%
5	**Grassland Water District – 1 Representative** Grassland Water District GSA Grassland WD and Grassland Resource Conservation District Merced County Delta-Mendota GSA	Grassland Water District 200 W. Willmont Ave. Los Banos, CA 93635 Attn: Ricardo Ortega	16.7%

6	**Fresno County Management Area A & B – 1 Representative** Fresno County Management Area A GSA Fresno County Management Area B GSA	County of Fresno Department of Public Works and Planning 2220 Tulare St., 6th Floor Fresno, CA 93721 Attn: Division of Water and Natural Resources	16.7%

EXHIBIT B
BUDGET

Agreement Total Project Budget Summary Project Title: 2017 Sustainable Groundwater Planning Grant for the Delta-Mendota Subbasin					
COMPONENT		**Grant Amount**	**Required Cost Share (non-state source)***	**Other Cost Share****	**Total Cost**
1	Grant Administration	$26,599	$0	$0	**$26,599**
2	Technical Assistance Services	$1,000,000	$0	$0	**$1,000,000**
3	Generic Data Management System	$178,500	$0	$0	**$178,500**
4	Northern and Central Delta-Mendota Region GSP Development	$492,624	$0	$976,899	**$1,469,523**
5	Grassland Water District GSP Development	$157,451	$0	$176,249	**$333,700**
6	Farmers Water District GSP Development	$125,135	$0	$429,865	**$555,000**
7	Aliso Water District GSP Development	$155,988	$0	$197,442	**$353,430**
8	Fresno County Management Area A & B GSP Development	$207,505	$0	$371,441	**$578,946**
9	San Joaquin River Exchange Contractors GSP Development	$334,698	$0	$376,302	**$711,000**
	TOTAL Project	**$2,678,500**	**$0**	**$2,528,198**	**$5,206,698**

NOTES:

** Grantee received a 100% cost share waiver.*
*** Other Cost Share from local contributions and local agency general funds.*

Table 5B

Budget Categories	(a) Requested Grant Amount	(b) Local Cost Share: Non-State Fund Source[2]	(c) Total Cost
Component 1: Grant Agreement Administration	$50,000	$0	$50,000
Component 2: Well Census and Inventory	$100,000	$0	$100,000
Component 3: Subsidence Characterization and Project Feasibility Determination	$100,000	$0	$100,000
Component 4: Supplemental GSP Development Funding	$250,000	$0	$250,000
Grand Total	**$500,000**	**$0**	**$500,000**

Table 6B for Component 1: Grant Agreement Administration

Budget Categories	(a) Requested Grant Amount	(b) Local Cost Share: Non-State Fund Source[2]	(c) Total Cost
(a) Direct Project Administration	**$50,000**	**$0**	**$50,000**
Task 1. Project Management and Communications	$50,000	$0	$50,000
Grand Total	**$50,000**	**$0**	**$50,000**

Table 6B for Component 2: Well Census and Inventory

Budget Categories	(a) Requested Grant Amount	(b) Local Cost Share: Non-State Fund Source[2]	(c) Total Cost
(a) Component Administration	**$4,300**	**$0**	**$4,300**
Task 1. Project Management and Communications	$4,300	$0	$4,300
(b) Stakeholder Engagement/Outreach	**$3,200**	**$0**	**$3,200**
Task 1. Stakeholder Outreach and Communications	$3,200	$0	$3,200
(c) GSP Development	**$92,500**	**$0**	**$92,500**
Task 1. Access Agreement Template	$2,500	$0	$2,500
Task 2. Well Census and Inventory	$90,000	$0	$90,000
(d) Monitoring/ Assessment	**$0**	**$0**	**$0**
Grand Total	**$100,000**	**$0**	**$100,000**

Table 6B for Component 3: Subsidence Characterization and Project Feasibility Determination

Budget Categories	(a) Requested Grant Amount	(b) Local Cost Share: Non-State Fund Source[2]	(c) Total Cost
(a) Component Administration	**$4,400**	**$0**	**$4,400**
Task 1. Project Management and Communications	$4,400	$0	$4,400
(b) Stakeholder Engagement/Outreach	**$1,600**	**$0**	**$1,600**
Task 1. Stakeholder Outreach and Communications	$1,600	$0	$1,600
(c) GSP Development	**$94,000**	**$0**	**$94,000**
Task 1. Well Inventory Analysis	$36,400	$0	$36,400
Task 2. Composite Well Investigation	$10,800	$0	$10,800
Task 3. Identification and Analysis of Projects and Management Actions	$11,200	$0	$11,200
Task 4. Characterization of Findings	$17,200	$0	$17,200
Task 5. Feasibility Determination of Projects and Recommended Remediation Alternatives	$18,400	$0	$18,400
(d) Monitoring/ Assessment	**$0**	**$0**	**$0**
Grand Total	**$100,000**	**$0**	**$100,000**

Table 6B for Component 4: Supplemental GSP Development Funding

Budget Categories	(a) Requested Grant Amount	(b) Local Cost Share: Non-State Fund Source[2]	(c) Total Cost
(a) Component Administration	**$10,000**	**$0**	**$10,000**
Task 1. Funding Coordination	$10,000	$0	$10,000
(b) Stakeholder Engagement/Outreach	**$0**	**$0**	**$0**
(c) GSP Development	**$240,000**	**$0**	**$240,000**
Task 1. Northern and Central Delta-Mendota Region GSP Development	$40,000	$0	$40,000
Task 2. Grassland Water District GSP Development	$40,000	$0	$40,000
Task 3. Farmers Water District GSP Development	$40,000	$0	$40,000
Task 4. Aliso Water District GSP Development	$40,000	$0	$40,000
Task 5. Fresno County Management Area A & B GSP Development	$40,000	$0	$40,000
Task 6. San Joaquin River Exchange Contractors GSP Development	$40,000	$0	$40,000
(d) Monitoring/ Assessment	**$0**	**$0**	**$0**
Grand Total	**$250,000**	**$0**	**$250,000**

Component 10: Well Census and Inventory
Category (a): Component Administration
Complete administrative responsibilities associated with the Well Census and Inventory, such as managing consultants/contractors. Retain consultants as needed to collect information related to management of the GSP Development component and the Completion Report.

Deliverables:
- Invoice backup documentation
- Component Completion Report

Category (b): Stakeholder Engagement/Outreach
Inform stakeholders, the general public, and other interested parties about Project progress and how the resulting well census will be utilized in the context of GSP development. Develop Outreach materials and outreach activities for stakeholders and landowners to disseminate information regarding the well census.

Deliverables:
- Component-specific outreach materials

Category (c): GSP Development
Conduct a well census and develop a well inventory for the Delta-Mendota Subbasin which shall consist of the following: Analyze DWR's online well completion report database and existing geophysical logs to identify wells in the Delta-Mendota Subbasin not previously identified as part of GSP Development. Determine well construction features, including well screen intervals and depth, through a review of well logs. Identify wells in each of the principal aquifers. Conduct video surveying in up to twenty (20) wells as necessary to confirm screened intervals. Summarize the results in a report that shows the locations of existing wells in the Subbasin, basic well construction information, and an analysis of identified wells to define active and inactive wells for use in other analyses. Incorporate the well inventory into the Delta-Mendota Subbasin Data Management System.

Deliverables:
- Well Census and Inventory Report

Memorandum

To: Leslie Dumas
Woodard & Curran

From: Brian Fischer
Houston Engineering, Inc.

Subject: Delta-Mendota DMS Contract – Cost to Finish Estimate

Date: May 20th, 2020

Project: R010246-0001

This memorandum is to serve as communication on a cost to finish the tasks under our subcontract. As of 5/16/20 we have spent $140,000 out of the $150,000 contracted budget. We are projecting to go over the contracted amount to finish off the requirements of the contract. The primary reason for the over-run is the extra number of hours it took to aggregate and re-aggregate on numerous revisions to the historic data required in the annual report generation. There were also significant extra hours iterating on the programming and formatting of the annual report. This also meant added extra meetings we participated in to discuss the requirements of the annual report.

These are the tasks left to complete by June 1st:

- A few revisions to the annual report to get the tables and charts to match the data we were provided
- Refactoring some of the code to handle larger datasets, like the surface water monitoring sites time series data and improve performance
- Clean up import page instructions
- Aggregate final historic data for Interconnected monitoring sites, load the data and testing
- Load water level contour GIS layers
- Minor revisions to the layout on some screens
- Testing, prepare for demonstration and provide demonstration

These are the tasks left to complete by June 19th:

- Setup and deploy the Santa Nella County Water District's version of the DMS
- Meeting and training with Santa Nella County WD
- Critical revisions to DMS based on comments from demonstration
- Setup logins for each user
- Final project closeout meeting with SLDMWD and Woodard & Curran
- Invoice for web hosting to cover from start of contract thru 12/31/20 ($4,000)

To finish up all these tasks we are projecting needing to spend $15,000 over our contracted amount which would put the total contract up to $165,000. This amount includes the web hosting.

Delta-Mendota Sustainable Groundwater Management Grant Funding

Grant Program	Component No.	Component Name	Admin Funding Available	Expected Admin Funding Available after Submittal 6	Project Funding Available	Expected Project Funding Available after Submittal 6	Total Funding Available	Expected Total Funding Available after Submittal 6	Expected DMS charges after Submittal 6	Remaining Total Budget after Expected DMS Charges	Notes
1	1	Grant Admin	$0	$0	$0	$0	$0	$0			
1	2	Technical Assistance Services					--				
		Component Admin	$40,300	$32,200			$40,300	$32,200		$32,200	
		Stakeholder Engagement	--	--	$100,000	$93,000	$100,000	$93,000		$93,000	
		Technical Assistance Services	--	--	$241,000	$125,000	$241,000	$125,000	$24,000	$101,000	*Once Component 3 funds are exhausted, DMS expenses would be submitted here. Shifting the additional DMS costs to Component 2 leaves around $100k for Technical Assistance Services.*
1	3	Generic DMS					--				
		Component Admin	$6,100	$3,000			$6,100	$3,000	$3,000	$0	*Remaining DMS charges will first be reimbursed under Component 3.*
		Stakeholder Engagement	--	--	$32,800	$1,000	$32,800	$1,000	$1,000	$0	
		DMS Development	--	--	$7,900	$0	$7,900	$0		$0	
1	4	NCDM GSP Development	$0	$0	$0	$0	$0	$0		$0	
1	5	Grassland GSP Development	$0	$0	$0	$0	$0	$0		$0	
1	6	Farmers WD GSP Development	$0	$0	$0	$0	$0	$0		$0	
1	7	Aliso WD GSP Development	$0	$0	$0	$0	$0	$0		$0	
1	8	Fresno Co. GSP Development	$0	$0	$0	$0	$0	$0		$0	
1	9	SJREC GSP Development	$0	$0	$0	$0	$0	$0		$0	
Total			**$46,400**	**$35,200**	**$381,700**	**$219,000**	**$428,100**	**$254,200**	**$28,000**	**$226,200**	

Comparison of Comment Letters on Delta-Mendota Subbasin GSP

Comment Letters	NCDM	Aliso	Farmers	Fresno	Grassland	SJREC
CDFW	X	X	X	X		X
NOAA Fisheries	X	X	X	X	X	X
Audubon California	X			X		
The Nature Conservancy	X			X	X	X
Bureau of Reclamation, SJRRP	X	X	X	X	X	X
CA Poultry Federation	X					
American Rivers	X					
The Nature Conservancy, Audubon California, Clean Water Action, Clean Water Fund, American Rivers, Union of Concerned Scientist and the Local Government Commission	X			X	X	
Central Valley Flood Protection Board	X	X	X	X	X	X
CA Sportsfishing Protection Alliance	X	X	X	X	X	X
Kirstin Dobbin, UC Davis	X	X	X	X	X	X
CA DWR Div of Flood Mgt	X					
DWR SWP CA Aqueduct Subsidence Program	X					

PPIC PUBLIC POLICY INSTITUTE OF CALIFORNIA

A Review of Groundwater Sustainability Plans in the San Joaquin Valley

Public comments submitted to the California Department of Water Resources
May 14, 2020

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1. Introduction

The San Joaquin Valley—California's largest farming region—has the largest groundwater overdraft in the state. This makes the valley ground zero for implementing the Sustainable Groundwater Management Act (SGMA). PPIC has done extensive work on what SGMA means for this region, including analyzing promising solutions to bring basins into balance.

We recently reviewed the 36 new groundwater sustainability plans (GSPs) in the region's 11 critically overdrafted basins. Our goal is to help build shared understanding of how well these plans tackle several core objectives: assessing the extent of groundwater overdraft; developing a realistic portfolio of projects and management actions to close this gap by 2040; and effectively addressing undesirable results of overdraft, with a focus on dry drinking water wells and land subsidence.

Here we provide some highlights from this analysis, and some suggestions for DWR's own review of these plans, as well as several priority actions the state can take to support effective SGMA implementation. At the end, we provide links to a series of short articles that provide further details, along with related data sets. To provide some context, we begin with a brief summary of key findings from our earlier research.

We appreciate the opportunity to share these observations, and would be happy to follow up as needed.

2. Background: Key findings from PPIC's earlier research

In *Water and the Future of the San Joaquin Valley*, we estimated that the region's annual groundwater overdraft for the 1988-2017 period was nearly 2 million acre-feet (maf), or 11% of net water use. As the region's main water user (nearly 90% of net water use), the agriculture sector will need to lead on adaptation efforts. About a quarter of the deficit could be met by augmenting water supplies at a cost farmers can afford—mainly by expanding groundwater recharge efforts. The balance will likely need to be met by managing demand—i.e., using less groundwater.

How the region implements these strategies has major implications for the regional economy. In particular, flexible demand management is key to minimizing negative impacts on the economy. We estimate that water trading can significantly lower the costs of managing demand—by enabling water to go to the most productive farmlands. Figure 1 presents several economic measures of SMGA impacts, including changes in crop revenues as well as GDP and jobs generated on farms and in related food and beverage processing. Local trading of both

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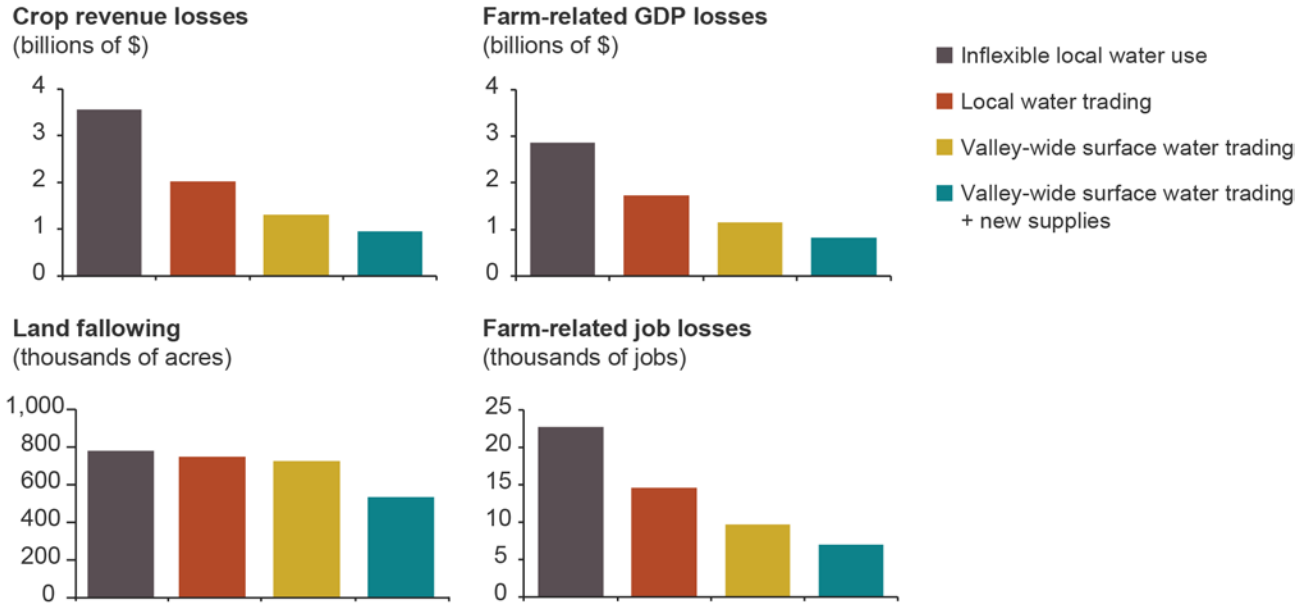
groundwater and surface water within basins can reduce the costs of adjustment by about 40 percent, and expanding surface water trading across basins within the region can reduce costs by about 60 percent. A portfolio of water trading plus investments in cost-effective new supplies can bring costs down to less than one-third the level they would be with no new supplies and inflexible water management. Augmenting supplies can also reduce the amount of land fallowing required to end overdraft from roughly 750,000 to 535,000 acres.

Successful implementation of this mixed portfolio will require substantial coordination among parties both within and across basins—both to develop water trading and recharge agreements and to expand shared infrastructure needed to support these actions, such as regional water conveyance. Although SGMA has brought many parties together for groundwater sustainability planning, institutional fragmentation will pose challenges to developing the level of coordination required.

FIGURE 1

Water trading and cost-effective supplies would significantly reduce the economic burden of ending overdraft



SOURCE: Updated by the authors using data and methods described in Technical Appendix C of *Water and the Future of the San Joaquin Valley* (Medellín-Azuara, Escriva-Bou, and Jezdimirovic, 2019).

NOTES: Estimates of regional farm-related GDP and job losses include crops and several downstream sectors that depend on crops as inputs, including dairy, beef, and food and beverage processing. For crops, beef, and dairy, these estimates include direct farm employees and contract labor.

3. How realistic are the plans' assessments of groundwater overdraft?

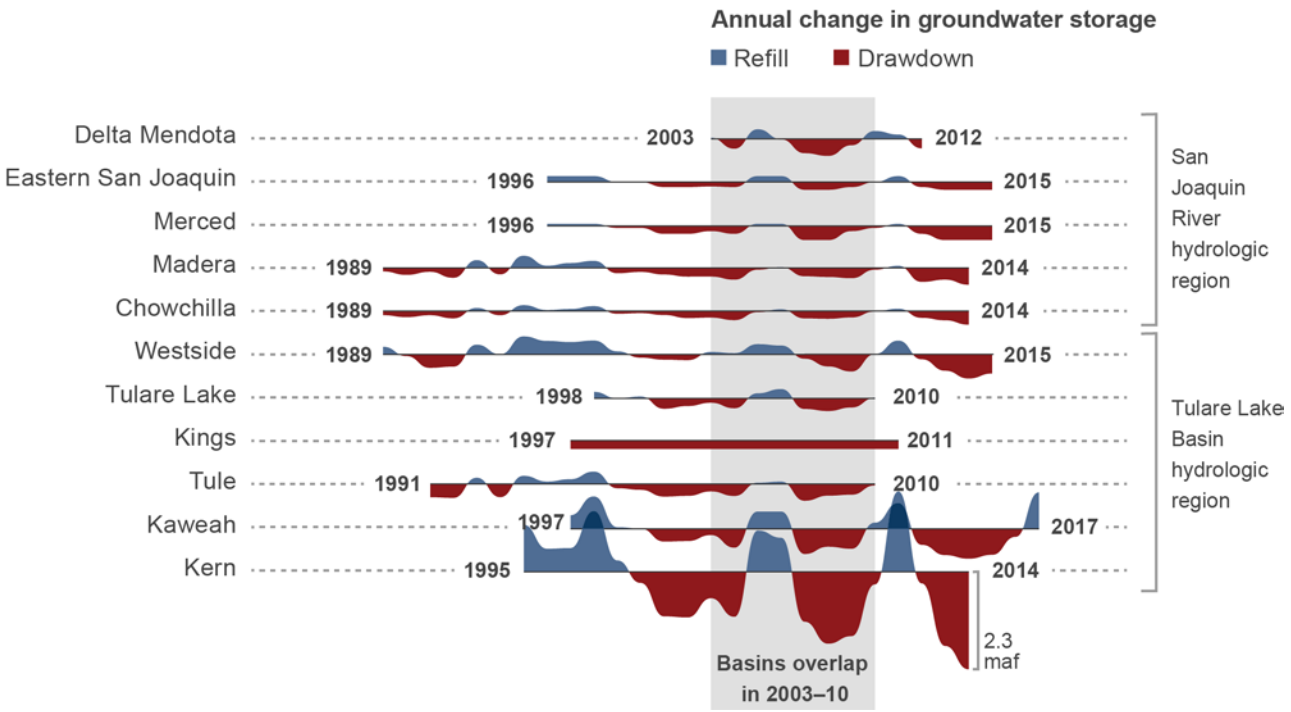
The regulations require groundwater sustainability plans to include three types of water budgets—historical, current, and projected—but allow substantial flexibility on the specifics. Historical budgets only need to include 10 continuous years of data, including the most recent years available for that basin. Current budgets need to show present-day conditions, and projected budgets need to look ahead 50 years and consider anticipated changes in population, climate, and other factors that could affect water supplies and demands. The plans can then choose which budget to emphasize for addressing overdraft.

Timeframes used to estimate overdraft vary widely across basins

In basins with multiple GSPs, the plans must use a common timeframe and a common overall budget. But there's no requirement for consistency across neighboring basins. Figure 2 shows the budget timeframes that the valley's plans use for their preferred estimates of overdraft. These timeframes vary widely. Basins in the wetter northern part of the valley (the San Joaquin River hydrologic region) are more likely to include the recent drought than are the basins in the drier, more groundwater-dependent southern valley (the Tulare Lake Basin hydrologic region). Budgets with more wet years will look more favorable than budgets with more dry years.

FIGURE 2

Timeframes used to estimate overdraft vary across basins



SOURCE: Jezdimirovic et al. (PPIC Blog, March 11, 2020). Author estimates based on groundwater sustainability plans submitted to the Department of Water Resources. For details, see data set: PPIC San Joaquin Valley GSP Water Budgets.

NOTES: Maf is million acre-feet. The figure shows timeframes used for estimating preferred water budgets. In the Kings basin we report average overdraft for each year, since estimates of annual change in storage were not available. In the Merced basin the preferred water budget used a shorter timeframe (2006–15) than the period shown here.

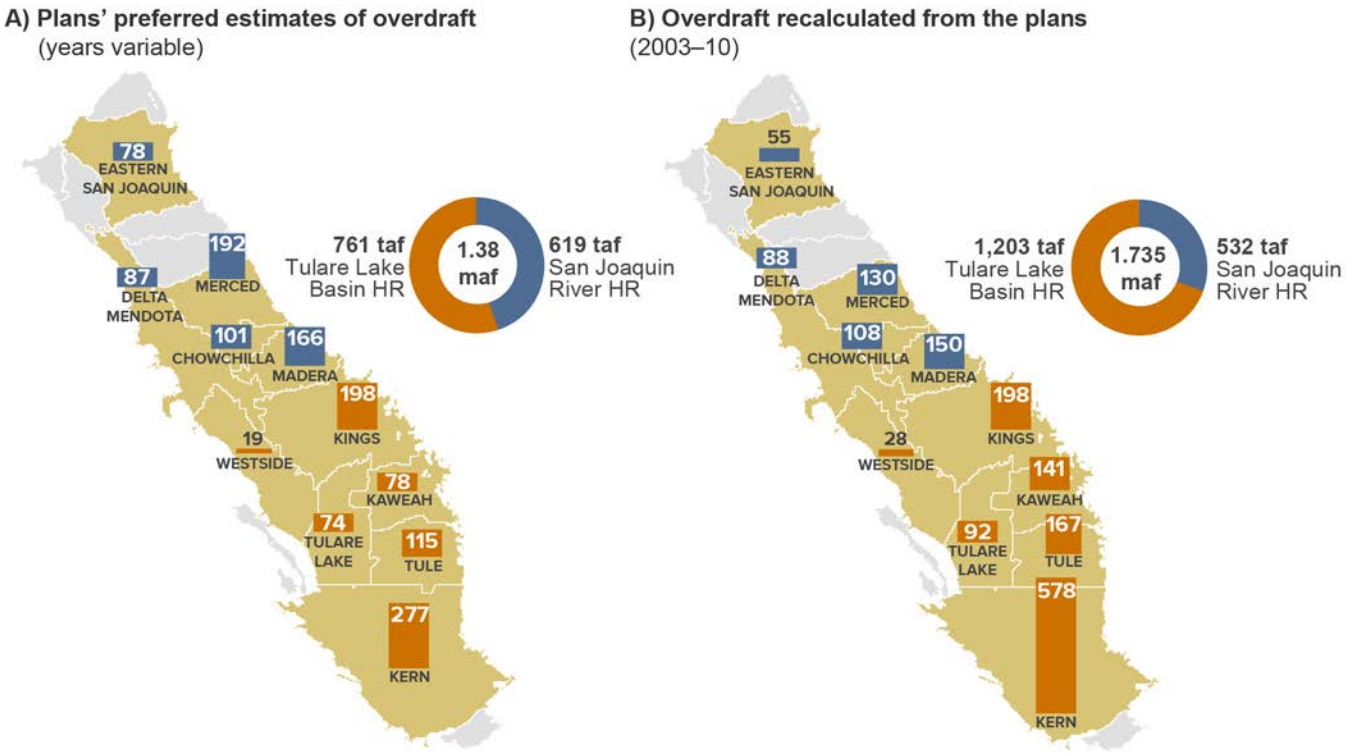
Plans acknowledge significant overdraft…

As Figure 3 shows, the plans report a considerable amount of overdraft—around 1.4 maf per year. But since they cover different timeframes, it's misleading to simply add up the totals reported. To compare apples to apples, we looked at the eight years that are included in all of the budgets: 2003–10. This short period is instructive, because it includes both wet and dry years. The plans estimate around 1.7 maf of annual overdraft in these years—fairly close to our valley-wide estimate of 1.9 maf for the same period. Overall, the plans are telling a story that is broadly consistent with the regional water balance in this period. This comparison also reduces the wet-year bias in many of the Tulare Lake Basin budgets.

…but some basins are likely underestimating the problem

Even so, some basins—including those that do not cover the recent drought—are probably underestimating overdraft. And if the future is drier than the past, the overall challenge for the valley could be greater. We found, for instance, that the region-wide overdraft for 2003–17 (a period that included a record-breaking five-year drought) was 2.4 maf/year—a good deal higher than the 30-year average of 1.8 maf.

FIGURE 3
Plans acknowledge significant overdraft



SOURCE: Jezdimirovic et al. (PPIC Blog, March 11, 2020). Author estimates based on groundwater sustainability plans submitted to the Department of Water Resources. For details, see data set: PPIC San Joaquin Valley GSP Water Budgets.

NOTES: HR is hydrologic region. Maf is million acre-feet, taf is thousand acre-feet. Most plans use historical or current budgets for their preferred estimate of overdraft. The Eastern San Joaquin basin uses a higher, projected number. In several basins with multiple plans (Delta Mendota, Tule, Kern) there are some discrepancies for the total preferred estimates of basin overdraft.

4. How realistic are the plans' proposals to end overdraft?

SGMA requires water users to bring their groundwater basins into long-term balance over the next two decades. Although there are no easy solutions, the math is simple: bringing these basins into balance will require expanding water supplies, reducing water demands, or a combination of these two approaches. Plans must present quantitative estimates of the anticipated yield from water supply projects and demand management actions needed to address overdraft.

Plans present solutions that would more than address the anticipated level of overdraft…

Most plans follow these SGMA requirements (exceptions include the Merced basin, where the plan does not estimate the yield of supply projects; and Tule, where several plans are vague on how they will fill the gap between projected supplies and overdraft). In aggregate, the plans present over 2.2 maf/year of supply and demand solutions—more than enough to address the level of overdraft they are anticipating.

… but they emphasize solutions on the supply side, and relatively little on the demand side…

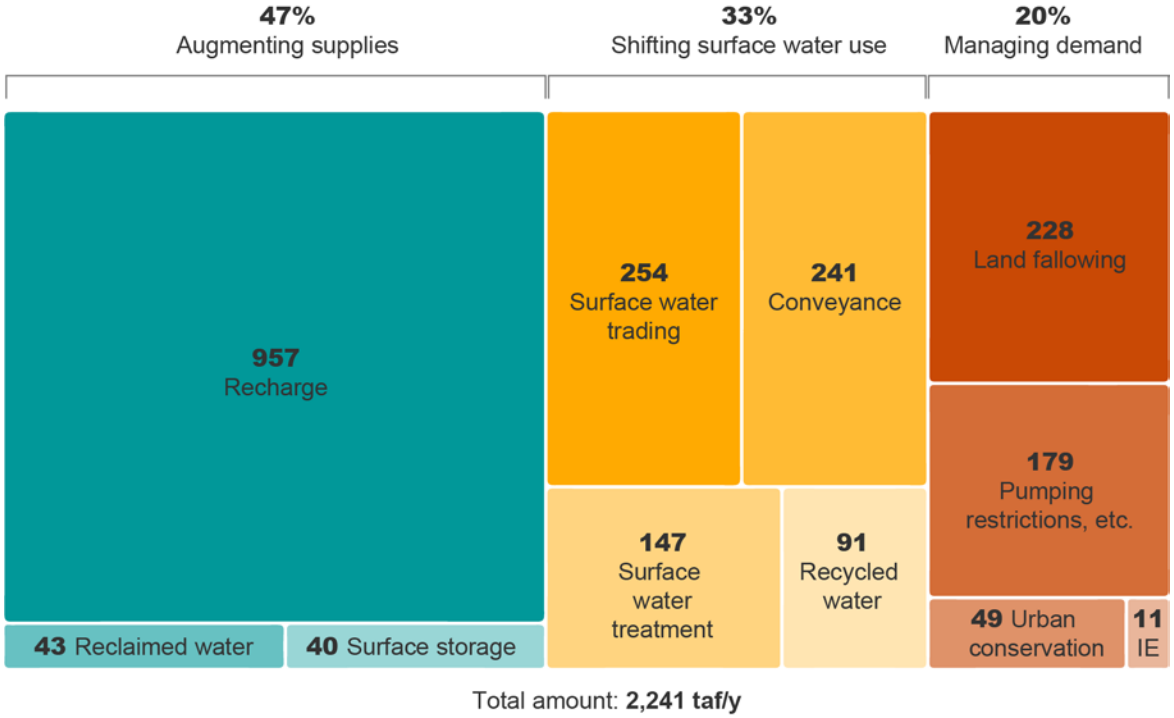
The plans assume that new supplies will fill more than three-quarters of the total overdraft gap in their jurisdictions, while demand management will save less than one-quarter. This is the inverse of our estimates, which considered both the costs and the amount of water that might be physically available from a wide range of sources. We found that it would be difficult to increase supplies by more than half a million acre-feet (See Chapter 2 in *Water and the Future of the San Joaquin Valley*).

…and the supply numbers do not add up

The supply solutions can be broken into two groups—projects that would augment overall supplies available in the region, and projects that would shift surface water supplies from one water user to another (Figure 4). Most basins look to both kinds of solutions (Figure 5). At the regional scale, neither category reflects a realistic assessment of the potential for these solutions to end overdraft.

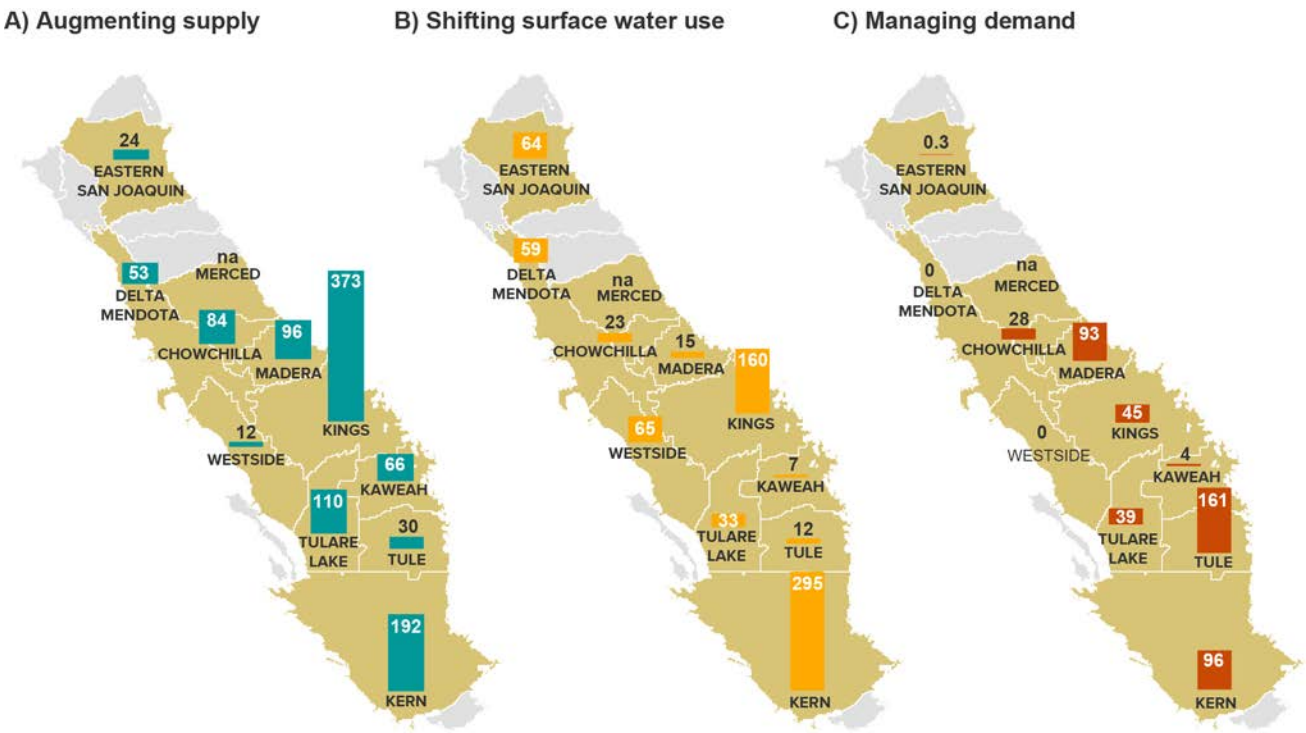
FIGURE 4

Plans' overdraft reduction portfolios emphasize accessing new supplies



SOURCE: Author estimates based on groundwater sustainability plans submitted to the Department of Water Resources. For details, see the data set: PPIC San Joaquin Valley GSP Supply and Demand Projects.
NOTES: The amounts are shown in thousand acre-feet per year (taf/y). IE is irrigation efficiency. The pumping restrictions category also includes groundwater allocations, water metering, pricing incentives, and groundwater trading. Reclaimed water includes desalinated brackish groundwater and water produced by oil extraction.

FIGURE 5
Portfolio approaches vary across basins



SOURCE: Author estimates based on groundwater sustainability plans submitted to the Department of Water Resources. For details, see the data set: PPIC San Joaquin Valley GSP Supply and Demand Projects.

NOTES: The amounts are shown in thousand acre-feet per year (taf/y). Estimates of volume for projects were not available in Merced. For the Tule basin, the list of projects is downloaded from the Basin Setting appendix, which listed groundwater sustainability agency projects for inclusion in the projected water budget modelling. We assume that the full size of demand management for Pixley ID and Lower Tule River ID is the historical overdraft in those agencies, though this is not explicitly stated in the appendix.

The "augmenting supply" category includes nearly 1 maf of groundwater recharge, plus small amounts of surface storage and reclaimed brackish and oilfield water. The emphasis on recharging groundwater basins with unclaimed floodwater is consistent with our finding that recharge is the most promising new supply option. But the anticipated volumes do not appear realistic. Although this total might be physically available for recharge, there are serious capacity constraints to getting this water underground. A central challenge is moving very large volumes of water to storage sites quickly. Addressing this challenge is likely to require regional investments in conveyance, and greater efforts to coordinate the management of surface and groundwater storage infrastructure in order to expand their combined impact—actions not now anticipated by the plans. Even then, it is probably not feasible to capture all available water in very wet years. So water users will be competing for floodwater that can be feasibly captured—likely a much smaller volume.

The "shifting surface water use" category includes surface water trading, local conveyance projects to extend or expand surface water deliveries, water treatment projects to enable urban areas to shift from groundwater to surface water, and recycled wastewater projects that redirect water that was contributing to downstream supplies or groundwater recharge to other users. These projects would generally increase the supplies within an individual GSP's territory without changing the region's (or in some cases the basin's) water balance. Our analysis shows that shifting surface water use can be an important tool for reducing the costs of SGMA implementation. But

plans need to account for these transfers on *both* sides of the equation, and there is little evidence that they considered the "minus" side—that is, subtracting water from the balances of the places that would be supplying it.

Few plans explore incentives for more flexible demand management

For the most part, the plans fall short on their analysis of demand management. Since reducing water use in this region largely means reducing the amount of irrigated cropland, there's been reluctance to seriously consider the demand side at this early stage of SGMA implementation. And most plans that acknowledge the need to manage demand do not yet consider flexible tools that could reduce the economic costs—for example, groundwater trading, fees tied to volumes pumped, and monetary incentives for land fallowing.

5. How well do plans address undesirable results?

GSPs must show how they are avoiding six undesirable results of excess groundwater pumping: lowered water levels, reduced water storage, seawater intrusion, degraded quality, land subsidence, and surface water depletion (which can affect both downstream surface water users and groundwater-dependent ecosystems). Groundwater sustainability agencies (GSAs) must set minimum thresholds to avoid effects that are "significant and unreasonable," which can vary with local conditions, or develop programs to mitigate these effects.

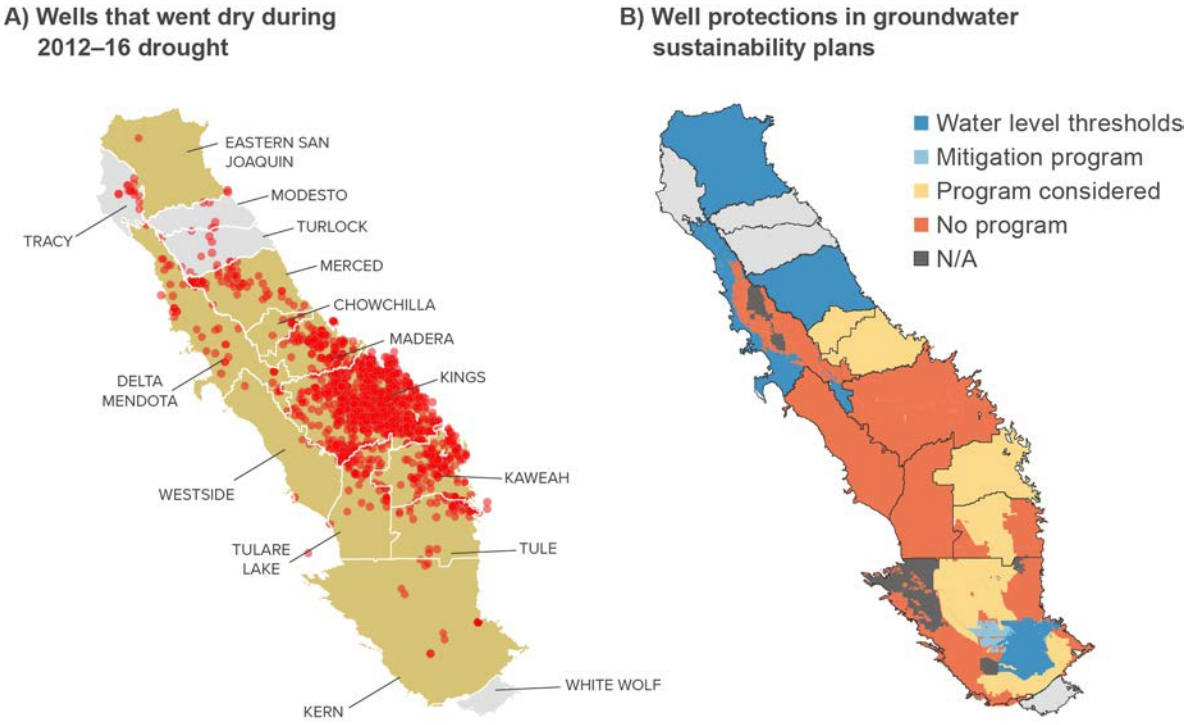
We reviewed how the plans address two important undesirable results within this region—the lowering of water levels, which has caused shallow drinking water wells to run dry; and land subsidence, which is damaging critical infrastructure. While plans in some basins are making strides in addressing these concerns, others still have major gaps.

Many plans do not consider protections for domestic wells

In the San Joaquin Valley, groundwater is the primary source of drinking water. While groundwater levels in the valley have generally been declining for decades, the problem of overdraft—which can cause shallow wells to run dry—is particularly acute during droughts as surface water supplies for irrigating crops are limited. This especially affects domestic wells and small community wells, which tend to be shallower than those used for irrigation or large urban water systems. During the 2012–16 drought, 2,600 well-dependent households reported water shortages across the state; almost 80 percent of these were in the San Joaquin Valley. We estimate that the valley's total number of dry domestic wells was likely higher (Figure 6, panel A). Many small community wells also faced shortages.

In several basins, plans set water level thresholds to protect domestic wells from going dry (Figure 6, panel B). Some other plans acknowledge that their thresholds might cause some wells to go dry, and they already have a mitigation program in place or propose considering mitigation in the future. Plans in the remaining basins either do not discuss the potential impacts their thresholds have on domestic wells or do not consider these impacts to merit action. This includes the Kings Basin—home to a dense network of well-dependent communities—where three plans acknowledge that roughly 600 domestic wells may go dry, but do not consider this a significant and unreasonable impact of continued overdraft.

FIGURE 6
Many plans do not consider protections for domestic wells



SOURCES: Jezdimirovic et al. (PPIC Blog, May 14, 2020). 2012–16 dry domestic wells: author estimates based on well completion records and groundwater elevation data downloaded from the Department of Water Resources. Domestic well protections: author estimates based on groundwater sustainability plans submitted to the Department of Water Resources.

NOTES: Analysis of dry domestic wells includes wells built after 1981; excludes wells where groundwater elevation data not available. Roughly 2,300 domestic wells went dry in San Joaquin Valley, with 2/3 in Kings Basin. Mitigation programs exist at Kern Water Bank, Rosedale Rio Bravo, Pioneer Project. Areas marked N/A have few or no domestic wells. Basins in grey (Modesto, Turlock, Tracy, White Wolf) are not critically overdrafted and have not yet completed sustainability plans.

Plans allow significant subsidence to continue

Subsidence due to groundwater pumping has been occurring in the San Joaquin Valley for almost a century, but it accelerated during the 2012–16 drought. Subsidence has damaged some critical water conveyance arteries, including the Friant-Kern Canal (40% of capacity lost in some stretches), and the California Aqueduct (more than 20% of capacity lost). Bridges over these and other canals are sinking, a local dam can't hold water anymore, and stretches of the high-speed rail track have been designed to prevent damage from future subsidence.

Subsidence can also permanently reduce the capacity of aquifers to store water. Valley aquifers may have lost as much as 3.25% of their capacity from soil compaction during the 2012–16 drought.

This infrastructure damage doesn't just affect the individual farms or water agencies that are pumping groundwater—it affects other parties, both locally and many miles away. Mitigating damage will cost many millions, if not billions, of dollars.

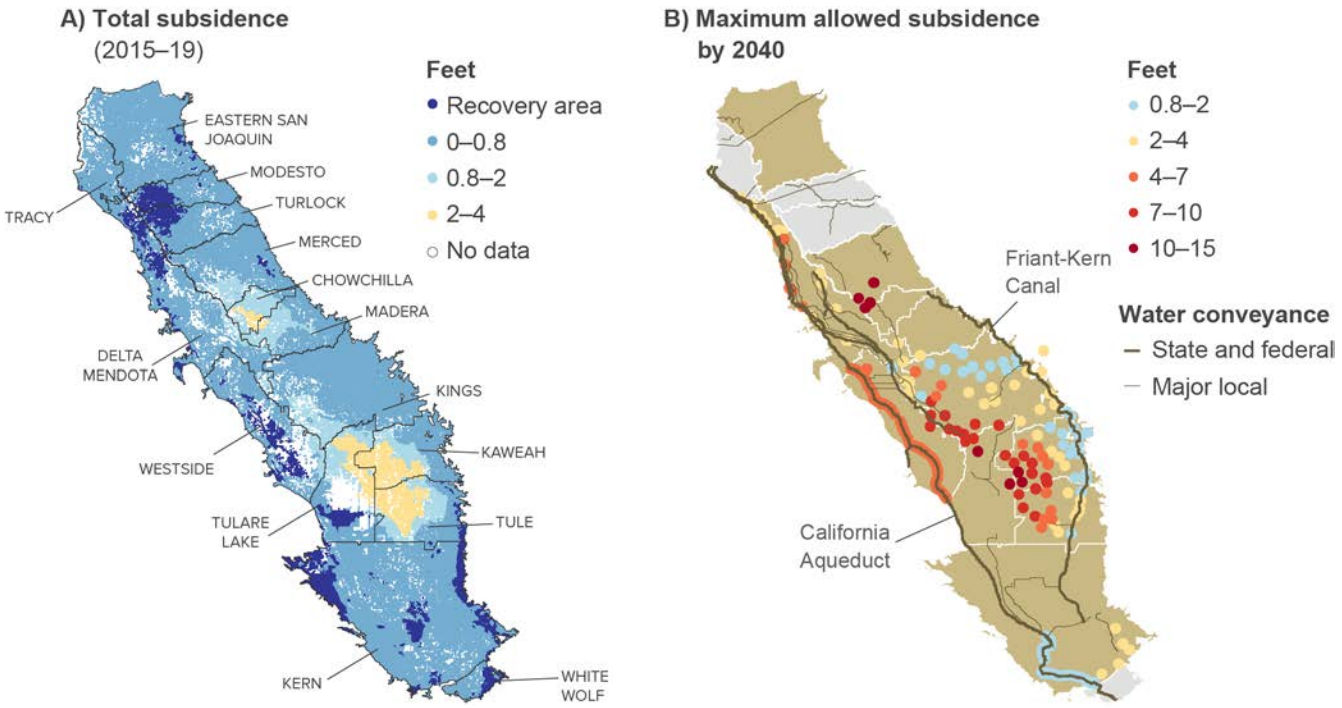
The plans vary widely in their approaches to addressing subsidence. In several areas where infrastructure has already been damaged, agencies are setting thresholds to avoid additional subsidence. For instance, in the Chowchilla basin and parts of Delta Mendota, goals include avoiding further damage to local conveyance

infrastructure and to levees that provide flood protection. But most plans set thresholds that are not tied to specific past or future impacts. And many of these thresholds are quite high—allowing the rates of land subsidence observed during the recent drought. This raises the risk of future harm, even in areas that have not yet experienced damage.

Figure 7 shows subsidence rates over the past five years—which included both wet and dry years—alongside the cumulative amount of subsidence that the plans would allow over the next two decades. Recent subsidence rates are measured using satellite data, funded by the Department of Water Resources. Many plans are giving themselves a lot of leeway over the next 20 years, in some cases accepting 10–15 feet of additional subsidence. Even the lower thresholds in some sensitive areas might not end infrastructure problems and conflicts. For instance, the Friant Water Authority has warned that plans in the Tule basin will further reduce capacity in the Friant-Kern Canal, significantly affecting downstream water users. Similarly, the Department of Water Resources found that an additional 2.1 feet of subsidence in some sections of the California Aqueduct could further harm downstream water users. This is roughly one-third of the maximum amount allowed in the vicinity of the aqueduct by the Westside basin plan (6 feet).

FIGURE 7

Plans allow significant subsidence to continue



SOURCES: Escriva-Bou et al. (PPIC Blog, May 14, 2020). 2015–19 subsidence: Tre Altamira InSAR Subsidence Data, downloaded from the Department of Water Resources. Subsidence allowed by 2040: author estimates based on groundwater sustainability plans submitted to the Department of Water Resources.

NOTES: Ft is feet. Recovery areas include those where land elevations have increased since 2015 (up to 0.3 feet). The dots in panel B are monitoring sites where GSPs will measure subsidence. This includes long stretches along the California Aqueduct in the Westside basin. The Chowchilla, Madera, and Eastern San Joaquin basins do not set explicit subsidence thresholds, instead using groundwater levels as an indicator. In addition to monitoring sites shown on the map, the Westside basin uses groundwater levels to track subsidence in some areas. Plans in the Kern basin have set some preliminary thresholds in sensitive areas, pending an ongoing comprehensive analysis. Basins shown in grey (Modesto, Turlock, Tracy, White Wolf) are not critically overdrafted and have not yet completed groundwater sustainability plans.

6. How do existing conditions affect potential SGMA solutions?

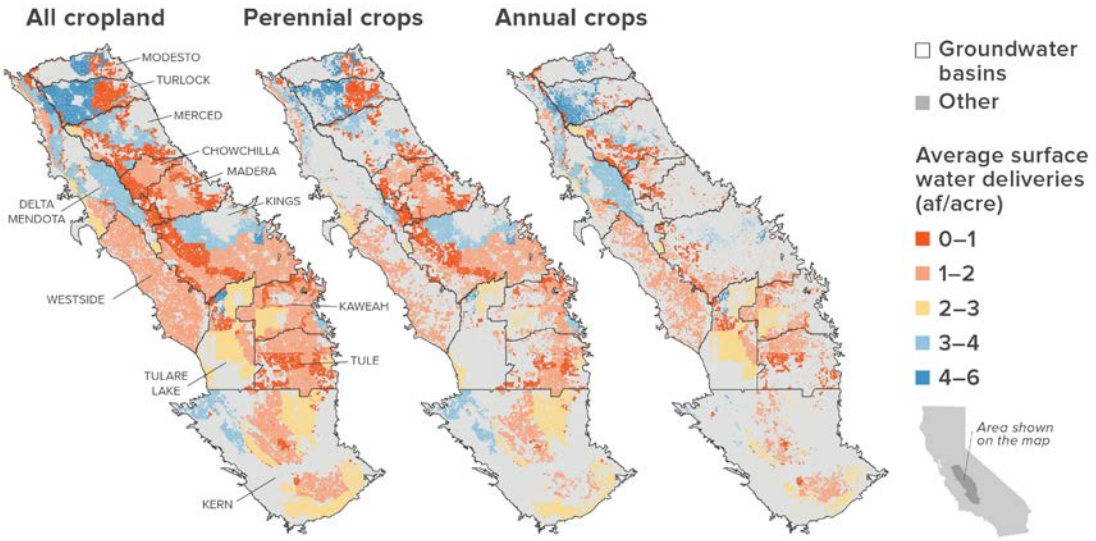
Water scarcity is not experienced equally across the San Joaquin Valley. Some areas receive abundant surface water to support cropland irrigation and drinking water supplies. Most others supplement their use with groundwater. Still others have no surface water access and depend entirely on groundwater. Water users in these groundwater-only areas are particularly vulnerable to pumping restrictions under SGMA.

In addition to water scarcity, in many parts of the valley groundwater quality continues to decline, affecting drinking water supplies and agricultural productivity. And the valley's riverine, wetland, and upland ecosystems are limited to small pockets of habitat. These variable conditions call for regional cooperation, to tackle water supply, quality, and environmental challenges jointly.

A major challenge is encouraging flexibility to lessen the regional economic burden of reducing groundwater use. Perennial crops now occupy nearly 60 percent of irrigated lands in the valley, and more than 20 percent of perennial acreage is on groundwater-only lands (Figure 8). The expansion of orchards has benefitted the regional economy, enabling valley agriculture to generate more GDP and jobs than would have occurred if farmers had not made this shift. But perennials are less flexible, because they need to be watered every year to maintain the investment. With groundwater cuts looming, areas with little or no surface water are on the front line of the effort to bring basins into balance. Inflexible approaches to managing this transition could result in unnecessarily large, undesirable reductions in high-value crop acreage, regional employment, and GDP. But scaling up flexible approaches requires GSAs to look beyond their boundaries, and beyond basin borders.

FIGURE 8

Surface water availability varies within and across basins



SOURCES: Jezdimirovic et al. (PPIC Blog, April 21, 2020). Surface water deliveries are estimated by the authors from various sources. For details see data set: PPIC San Joaquin Valley Surface Water Availability. Cropland is from the Department of Water Resources 2016 land use layer.

NOTES: Af/acre is acre-foot per irrigated acre. Although irrigation requirements vary somewhat by crop, irrigation method, and other factors, areas with less than 3 af/acre of surface water will generally need to use some groundwater to meet crop water needs. Other includes urban areas, managed wetlands, and other open space in all maps; in the perennial crops map, other also includes annual crops, and in the annual crops map it also includes perennials. Surface water deliveries are averaged for 2001–15.

This coordinated regional approach is also beneficial to manage land use transitions for lands that will be fallowed to balance groundwater basins. Effectively addressing water scarcity and the resulting land use changes in the valley offers opportunities to put lands coming out of production to good use—and gain "more pop per drop" from limited water resources. Multiple-benefit approaches to water and land management can enhance groundwater recharge and improve air and water quality. They can also promote healthier soils, new recreational opportunities, additional flood protection, improved habitat, and new revenue streams for private landowners engaging in conservation-oriented management.

The fragmentation of existing management entities poses a continuing challenge to the formulation of coordinated actions. Such coordinated action can yield large benefits. However, reaching agreement across numerous groups with different resource management rules and in some cases different objectives can be costly. For example, restrictions on moving water out of existing irrigation districts may be beneficial for local water users but harmful for the overall regional economy—and SGMA implementation. Finding ways to chart a promising path forward for source water regions could ease these discussions.

7. Implications for state action

The new GSPs are an important milestone in the implementation of SGMA, reflecting significant effort by many local parties to collectively address a complex set of issues. These first plans reflect large investments in the development of water budgets and a basic understanding of the lay of the land. Because SGMA allows basins to attain sustainability incrementally between now and 2040, GSAs may have some time to refine their plans for addressing overdraft through supply and demand projects and actions.

What is concerning about the work to date is that many plans have major gaps regarding undesirable results, which could once again accelerate if the state experiences another drought. Another area of concern is that the plans are too local to successfully manage the transition to groundwater sustainability in ways that are protective of the economy, society, and the environment. In many areas—planning for recharge, addressing infrastructure needs, sharing water, and more—local entities will need to collaborate both within and across basins. This is an area where the state could play an important role. DWR needs some formal mechanism to assess not only how well individual GSPs comply the law, but also how GSPs within a region fit together. This is essential in a region like the San Joaquin Valley, where the sub-basins are contiguous and interconnected. It will be equally important in the Sacramento Valley, where the first plans are due in 2022.

Here we offer some additional suggestions for DWR's own review of these plans, as well as several priority actions the state can take to support effective SGMA implementation.

Analysis of overdraft:

DWR should promote more consistent approaches to the development and presentation of water budgets, both within and across basins, especially for the plan updates due in 2025:

- Require basins with multiple plans to explicitly show how the numbers add up and how their overdraft relates to the basin-wide total (an issue now in Tule and Delta Mendota).
- Require plans to provide annual water budget data (in Merced and Eastern San Joaquin, data were only provided by water year type, and in Kings annual data were not provided for the preferred model).
- Require plans to be more explicit about which of their required budgets—historical, current, or projected—they are using as a guide for management.

- Require plans to be more forward-looking in the development of budgets used to guide management. This includes considering events such as the 2012–16 drought, and how plans would respond to it.
- Encourage plans to standardize water budgets to ease cross-basin comparability. DWR's Draft Handbook for Water Budget Development (2020) is a useful resource for this purpose.

Supply and demand solutions:

DWR should promote more complete plan information, and assess the regional implications of proposed actions:

- Require plans that have not yet done so to be explicit about the expected yield of the projects and actions they are considering (an issue in Merced and Tule basins).
- Conduct a regional analysis of proposed supply projects, to understand where there are inconsistencies and overlap. The adding up problems that we identify on supply projects—with unrealistically high totals for new supplies, and inadequate consideration of the impacts on other users of shifting surface water to a plan area—reflect the fact that the plans are taking a local focus, without the benefit of a regional perspective.

DWR and other state agencies should also promote successful implementation of solutions:

- Establish a process to reduce conflict over access to water for recharge and ensure that it is allocated expeditiously to the most valuable uses. The State Water Board has recently improved the permitting process, but more needs to be done. An auction mechanism might be a preferable way to allocate these scarce supplies, rather than the traditional prior appropriation process.
- Promote and fund pilot projects to encourage agencies to take on new, untried efforts to manage demand, such as groundwater trading and stewardship of fallowed lands
- Promote and fund a regional assessment of cost-effective infrastructure solutions to support groundwater recharge and water trading. This matters greatly given that the most suitable areas for recharge, and the areas with greatest demand, are often not in the areas most closely connected to high-flow waters. It also matters for water trading that will support regional employment and income.

Addressing undesirable results:

We examined two of the six undesirable results, and found significant gaps. DWR should promote increased attention to undesirable results of groundwater overdraft:

- Require plans to provide more extensive analyses of undesirable results and more proactive responses.
- Require plans to more explicitly link their setting of thresholds to water budgets and planned projects and management actions. At present, the thresholds in some basins seem very lax relative to the stated objectives of augmenting supplies and managing demands to bring basins into balance.
- Continue supporting improved data collection for decision making (e.g., wells, subsidence).
- Support innovative mitigation solutions, which can sometimes be much less costly than setting stringent pumping restrictions.
- Where relevant, encourage discussion with stakeholders outside the plan area who have interest in addressing these undesirable results (e.g., those who depend on cross-basin infrastructure)
- Encourage joint consideration of drinking water supply and quality solutions where both problems exist. Where relevant, plans should link their efforts on drinking water supply mitigation to water quality solutions that the state is pursuing through other efforts.

We recognize that this is a challenging moment for local actors as well as the state, in light of pandemic-related restrictions on how people work, and economic impacts that are likely to affect budgets for some time to come. Yet it is important to maintain the momentum on SGMA implementation to safeguard California's future well-being. Wherever possible, the state should continue to lend strategic support to local efforts.

Additional resources

San Joaquin Valley GSP review articles on the PPIC blog

- "A Reality Check on Groundwater Overdraft in the San Joaquin Valley" (March 11, 2020)
- "What's the Plan to End Groundwater Overdraft in the San Joaquin Valley?" (April 6, 2020)
- "Water Availability for San Joaquin Valley Farms: A Balancing Act" (April 21, 2020)
- "Allocating Floodwaters to Replenish Groundwater Basins" (April 21, 2020)
- "Will Groundwater Sustainability Plans End the Problem of Dry Drinking Water Wells?" (May 14, 2020)
- "Sinking Lands, Damaged Infrastructure: Will Better Groundwater Management End Subsidence?" (May 14, 2020)

San Joaquin Valley data sets

- PPIC San Joaquin Valley GSP Water Budgets
- PPIC San Joaquin Valley GSP Supply and Demand Projects
- PPIC San Joaquin Valley Surface Water Availability
- PPIC San Joaquin Valley Water Balance 1988-2017

Other PPIC analysis on the San Joaquin Valley

Reports:

- *Water and the Future of the San Joaquin Valley* (February 2019)
- *Replenishing Groundwater in the San Joaquin Valley* (April 2018)
- *Water Stress and a Changing San Joaquin Valley* (March 2017)

Blog posts:

- "Got Surface Water? Groundwater-Only Lands in the San Joaquin Valley" (July 8, 2019)
- "Testimony: Water Supply and Quality Challenges in the San Joaquin Valley" (April 30, 2019)
- "A Winning Approach for Managing Groundwater in the San Joaquin Valley" (March 7, 2019)
- "Reducing Drought Risks in Rural Communities" (January 10, 2019)
- "How Much Water Is Available for Groundwater Recharge?" (June 14, 2018)