Human Right To Water Scorecard for the Review of Groundwater Sustainability Plans

	Review Criteria *(All Indicators Must be Present in Order to Protect the Human Right to Water)*	**Yes/No**
A	**Plan Area**	
1	**Does the GSP identify, describe, and provide maps of all of the following beneficial users in the GSA area?**[11] a. Disadvantaged Communities (DACs). b. Tribes. c. Community water systems d. Private well communities.	
2	**Land use policies and practices:**[12] Does the GSP review all relevant policies and practices of land use agencies which could impact groundwater resources? These include but are not limited to the following: a. Water use policies General Plans and local land use and water planning documents b. Plans for development and rezoning c. Processes for permitting activities which will increase water consumption	
B	**Basin Setting (Groundwater Conditions and Water Budget)**	
1	Does the **groundwater level conditions** section include past and current drinking water supply issues of domestic well users, small community water systems, state small water systems, and disadvantaged communities?	
2	Does the **groundwater quality conditions** section include past and current drinking water quality issues of domestic well users, small community water systems, state small water systems, and disadvantaged communities, including public water wells that had or have MCLs exceedances?[13]	
3	Does the **groundwater quality conditions** section include a review of all contaminants with primary drinking water standards known to exist in the GSP area, as well as hexavalent chromium, and PFOs/PFOAs?[14]	
4	**Incorporating drinking water needs into the water budget:**[15] Does the Future/Projected Water Budget section explicitly include both the current and projected future drinking water needs of communities on domestic wells and community water systems (including but not limited to infill development and communities' plans for infill development,	

[11] 23 CCR § 354.8(a) and (b)
[12] 23 CCR § 354.8(f)
[13] 23 CCR § 354.16(d)
[14] 23 CCR § 354.16(d)
[15] 23 CCR § 354.18(c)(2)(b)

	installation of additional services, and housing growth in disadvantaged communities), taking into account increased climate variability due to climate change ?	
C	**Sustainability Goal**	
1	Does the **sustainability goal** explicitly include considerations about the needs of drinking water users?[16]	
D	**Sustainable Management Criteria (SMC) for Groundwater Levels**	
1	**Evaluation of drinking water impact:** Does the GSP include an analysis of how many drinking water wells (municipal wells, community water system wells, and domestic wells) might go fully or partially dry if groundwater levels reach the Undesirable Results (URs),[17] Measurable Objectives (MOs) and Measurable Objectives (MTs),[18] including a map of wells that will go fully and partially dry at the MOs and MTs? Does this include Does the GSP include estimates of the increased pumping costs from additional lift needed to pump water from lower elevations if the URs,[19] MOs and MTs[20] were to be reached?	
2	**Considering drinking water impacts in creating SMC:**[21] Does the GSP explicitly state how it considered drinking water impacts in shaping URs, MOs, and MTs for groundwater levels? For example, the GSP could state how its well impact analysis supported on setting stricter MTs and MOs near at risk communities.	
3	**Incorporating new drinking water data into SMC:**[22] Does the GSP include a description of how data gaps and uncertainties of its drinking water well impact assessment will be addressed and serve to reassess the sustainable management criteria, projects and management actions in accordance with new data?	
4	**Implementing DAC and drinking water user input into SMC:**[23] Does the GSP discuss how stakeholder input from DAC community members was considered in the development of URs, MOs, and MTs? For example, the GSP could state how they took the results of the well impact assessment to the public through meetings, workshops, or Advisory Committees, and together with stakeholders decided how to change SMC to protect drinking water, or other programs to implement to mitigate these impacts.	

[16] 23 CCR § 354.24: Sustainability goal must "culminate in the absence of undesirable results within 20 years."
[17] 23 CCR § 354.26(c)
[18] 23 CCR § 354.28(b)(4)
[19] 23 CCR § 354.26(c)
[20] 23 CCR § 354.28(b)(4)
[21] Water Code § 10723.2
[22] 23 CCR § 354.38(e)(3)
[23] 23 CCR § 354.10(d); DWR Guidance Document for Groundwater Sustainability Plans: Stakeholder Communication and Engagement, p.1.

5	**Avoiding a disparate impact:**[24] Are the MOs and MTs for groundwater levels established in such a way that prevents a disproportionately negative ("disparate") impact from occurring on communities of color in the GSP area? For example, the GSP should ensure that the same MT methodology across the GSP area will not lead to disproportionately more wells going dry for residents of color than for white residents.	
E	**Sustainable Management Criteria for Groundwater Quality**	
1	**Evaluation of drinking water impact:** Does the GSP include an analysis of how drinking water wells (municipal wells, community water system wells, and domestic wells) might be affected by the Undesirable Results (URs),[25] Measurable Objectives (MOs) and Measurable Objectives (MTs)?[26]	
2	**Does the GSP set MOs and MTs at all representative monitoring wells for the following contaminants?**[27] a. Contaminants with primary drinking water standards, b. PFOs/PFOAs and chrome-6, which are contaminants known to be very harmful to human health, AND c. Contaminants like Uranium which are known to increase due to groundwater management practices.	
3	**Strive to remediate:** Does the GSP state that the GSA will strive to remediate groundwater quality wherever feasible, through projects, management actions and policies?	
4	**Description of when minimum threshold is triggered:** Does the GSP trigger a violation of a minimum threshold after *one* test shows that there has been an increase in contamination since January 1st, 2015?	
5	**Implementing DAC and drinking water user input into SMC:**[28] Does the GSP discuss how stakeholder input from DAC community members was considered in the development of URs, MOs, and MTs?	

[24] Gov. Code § 11135 ["No person in the State of California shall, on the basis of sex, race, color, religion, ancestry, national origin, ethnic group identification, age, mental disability, physical disability, medical condition, genetic information, marital status, or sexual orientation, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered by the state or by any state agency, is funded directly by the state, or receives any financial assistance from the state."]; Gov. Code § 65008 [Any discriminatory action taken "pursuant to this title by any city, county, city and county, or other local governmental agency in this state is null and void if it denies to any individual or group of individuals the enjoyment of residence, land ownership, tenancy, or any other land use in this state…"]; Government Code §§ 12955, subd. (l) [unlawful to discriminate through public or private land use practices, decisions or authorizations].

[25] 23 CCR § 354.26(c)

[26] 23 CCR § 354.28(b)(4)

[27] 23 CCR § 354.34(b)(2) and (f)(3)

[28] 23 CCR § 354.10(d); DWR Guidance Document for Groundwater Sustainability Plans: Stakeholder Communication and Engagement, p.1.

6	**Incorporating new drinking water data into SMC:**[29] Does the GSP include a description of how data gaps and uncertainties of its drinking water well impact assessment will be addressed and serve to reassess the sustainable management criteria, projects and management actions in accordance with new data?	
7	**Avoiding a disparate impact:**[30] Are the minimum thresholds for groundwater quality established in such a way that prevents a disproportionately negative ("disparate") impact from occurring on communities of color in the GSP area? For example, the GSP should ensure that the same MT methodology across the GSP area will lead to disproportionately more wells go dry for residents of color than for white residents.	
F	**Monitoring Network for Groundwater Levels**	
1	**Accurately detecting impacts on drinking water users and DACs:**[31] Does the groundwater level monitoring network include *representative* monitoring wells *in or near DACs*, and placed in a way that detects impacts to the *vast majority* of drinking water users in the GSP area? If not, does the GSP contain a concrete plan to fund and implement new representative monitoring wells to ensure that vulnerable communities' drinking water resources are monitored? Such a plan could include testing of domestic wells in the interim.	
2	**Clearly showing representative monitoring well locations in relation to DACs:**[32] Are the representative monitoring wells (RMWs) for groundwater levels presented on maps and in tables that identify which set of MTs/MOs will be applied to which RMWs? Do these maps clearly identify the locations of DACs, small water systems and other sensitive users?	
3	**Identifying and addressing other drinking water data gaps:**[33] Does the GSP clearly identify any other gaps in data regarding impacts to drinking water users? Does the GSP contain a clear plan to fill data gaps regarding impacts to drinking water users?	
G	**Monitoring Network for Groundwater Quality**	
1	**Does the GSP plan to measure the following contaminants at all representative monitoring wells?**[34] a. Contaminants of concern with primary drinking water standards b. PFOs/PFOAs and chrome-6, which are contaminants known to be very harmful to human health c. Contaminants like Uranium which are known to increase due to groundwater management practices	
2	**Clear description of effective monitoring for drinking water impacts:** Does the GSP include a description of how the GSA(s) will monitor groundwater contamination that	

[29] 23 CCR § 354.38(e)(3)
[30] Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l).
[31] 23 CCR § 354.34(b)(2) and (f)(3)
[32] 23 CCR § 354.34(b)(2) and (f)(3)
[33] 23 CCR § 354.38(e)(3)
[34] 23 CCR § 354.34(b)(2) and (f)(3)

	could affect drinking water in the GSA area? Are the representative monitoring wells (RMWs) for groundwater quality presented on maps and in tables, and do the maps of RMWs clearly identify the locations of DACs, small water systems and other sensitive users?	
3	**Accurately detecting impacts on drinking water users and DACs:**[35] Does the groundwater quality monitoring network include *representative* monitoring wells (RMWs) *in or near all DACs* AND placed in a way that detects impacts to the *vast majority* of drinking water users in the GSP area, including domestic well users? If not, does the GSP contain a concrete plan to fund and implement new representative monitoring wells to ensure that vulnerable communities' drinking water resources are monitored? This plan could include testing of domestic wells in the interim.	
4	**Baseline contaminant levels:** Does the GSP identify the current contaminant levels, MTs and MOs at each RMW, so that it is clear to the public how the contamination will change at each RMW site?	
5	**Frequent monitoring:** Does the groundwater quality monitoring network test for contaminants of concern frequently, in a way that avoids persistent drinking water contamination?	
6	**Collaboration with other agencies:**[36] Does the GSP explain how the GSA(s) will share data with and collaborate with other groundwater quality regulatory programs, such as ILRP, IRWM, and CV SALTS, in order to build better regional understanding of groundwater quality issues and better respond to groundwater quality impacts caused by groundwater management?	
H	**Projects and Management Actions**	
1	**Does the GSP describe the potential drinking water impacts of each project or management action?** Example of impacts are provided below: a. **Recharge and on-farm recharge projects:** Carefully designed and implemented recharge projects can simultaneously increase groundwater storage and levels, as well as dilute contaminant plumes and improve groundwater quality. However, if not properly designed, recharge projects, in particular on-farm recharge, may mobilize nitrates, pesticides, fertilizers, and naturally occurring contaminants, which can lead to the further degradation of groundwater quality, negatively impacting drinking water wells. Even relatively unpolluted water used for recharge, such as most purchased water or streamflow, may contain constituents of concern and/-or mobilize contaminants. Therefore GSAs must consider potential impacts to water quality when planning groundwater recharge projects.[37] b. **Groundwater market management action:** Groundwater markets are very likely to put drinking water resources at risk for communities and residents who do not	

[35] 23 CCR § 354.34(b)(2) and (f)(3)
[36] 23 CCR § 354.34(e)
[37] State Water Boards, Water Quality Frequently Asked Questions document: https://www.waterboards.ca.gov/water_issues/programs/gmp/docs/sgma/sgma_water_quality_faq.pdf

	have the financial, political and technical power to participate equally in a market. Groundwater markets have the potential to seriously aggravate existing lack of equity in access to critical groundwater resources. We therefore recommend that GSAs do not include groundwater markets as a potential management action. In particular, local groundwater markets are not a viable option where the potential impacts of trading are not well understood, where trading rules cannot sufficiently address negative externalities, or where the expected benefits of a market do not outweigh the burdens and uncertainties associated with designing and implementing it. If GSAs wish to consider groundwater markets, a well-designed trading program requires a fair and adequate allocation of groundwater for drinking water uses, an additional margin for future growth prior to allocating water for trading purposes, and trading rules that avoid undesirable results as well as avoid or mitigate potential impacts to communities and ecosystems dependent on groundwater. If these components are missing, the market can have significant negative impacts upon a community's drinking water supply and the environment. Some impacts include, but are not limited to: localized drying of community and domestic wells, increased contamination levels, or unaffordable water rates.[38] c. **Funding mechanisms/Delinquent fees management action:** Any fee and/or extraction penalties structure should take into consideration that small communities have fewer economic opportunities, have a small role in overall groundwater pumping percentage, and are burdened with lower technical, managerial, and financial capacity for operations and maintenance. Overall, small drinking water systems should be exempted from GSA's fees or financial penalties for over-use to support their efforts on providing affordable safe water according to AB 685. If exemption is not viable, the GSA should create special considerations such as discounts, reduced costs, rebates, or other to ensure drinking water affordability. Alternatively, small drinking water systems should receive warnings prior to financial penalties tied to an appeal process. Doing so may allow these communities to explain why the overuse occurred, providing mechanisms for transparency and support on addressing the problems. d. **Groundwater allocation management action:** Any groundwater allocation scheme must protect all current and future drinking water needs for disadvantaged communities.	
2	**Drinking water protection and mitigation program:** Does the GSP contain a drinking water protection program to prevent impacts to drinking water users and mitigate the drinking water impacts that occur? Such a program should also identify the following: a. How it will be funded. b. An estimate of how much it will cost. c. How program beneficiaries will be eligible to participate. d. How it will be designed in collaboration with impacted stakeholders. e. What type of mitigation measurements it will provide. f. Timeline for program implementation.	

[38] Community Water Center et al., *Groundwater Markets: Recommendations to Ensure Drinking Water Protection for Communities* (guidance document to be published soon)

	Please refer to the attached **Framework and Guidance for Developing a Drinking Water Well Impact Mitigation Program for a more in-depth description of what an effective drinking water mitigation program should look like.*	
3	**Demand reduction:** Does the GSP contain robust demand reduction management actions? Plans that depend mainly on imported surface water (supply augmentation through recharge projects) do not clearly demonstrate a path towards sustainability, since climate variability puts these resources at risk.	
4	**Accurate measurement of groundwater extraction:** Does the GSP include management actions to measure groundwater extraction using the most scientifically accurate method?	
5	**Avoiding a disparate impact:**[39] Do the GSP's projects and management actions, taken as a whole, prevent a disproportionately negative ("disparate") impact from occurring on communities of color in the GSP area? Projects and management actions may not cause disproportionately more dry wells and contaminated water for residents of color than for white residents in the GSA area.	
I	**Public Participation and Transparency**	
1	Is a **Stakeholder Communication and Engagement Plan** included in the GSP?	
DAC and drinking water user engagement during GSP development[40]		
2	**Description of DAC engagement:** Does the GSP specifically identify how DAC beneficial users were engaged in the planning process?	
3	**Notice:**[41] Did the GSA provide clear notice to the public about GSA meetings to develop the GSP, posted in ways that all stakeholders were made aware of the meetings, and translated into all languages spoken by at least 5 percent of the public served by the agency, who do not speak English or are unable to effectively communicate in English?[42]	

[39] Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l).

[40] Water Code § 10723.2; Water Code § 10727.8(a) The groundwater sustainability agency shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the groundwater basin prior to and during the development and implementation of the groundwater sustainability plan.

[41] Government Code § 54954(a).

[42] Government Code sec. 7296.2: Dymally-Alatorre Bilingual Services Act, stating that local agencies providing services to the public must provide translated materials and interpretation when it serves a substantial number of non-English-speaking people. The law defines a "substantial number of non-English-speaking people" as "members of a group who either do not speak English, or who are unable to effectively communicate in English because it is not their native language, and who comprise 5 percent or more of the people served by the statewide or any local office or facility of a state agency." This is because "effective maintenance and development of a free and democratic society depends on the right and ability of its citizens and residents to communicate with their government and the right and ability of the government to communicate with them."

4	**Translation of materials:**[43] Did the GSA translate materials into all languages spoken by at least 5 percent of the public served by the agency, who do not speak English or are unable to effectively communicate in English?	
5	**Interpretation:**[44] Did the GSA(s) provide interpretation services at board meetings, committee meetings and workshops into all languages spoken by at least 5 percent of the public served by the agency, who do not speak English or are unable to effectively communicate in English?	
6	**Accessible workshops:** Did the GSA(s) host workshops held at accessible times and locations for disadvantaged community residents?	
7	**DAC representation on advisory committee:** Did the GSA(s) develop the GSP with an advisory committee that contained representatives from DACs?	
8	**DAC representation on GSA board:** Did the GSA(s) develop the GSP with a Board that contained representatives from DACs?	
9	**Partnership with local community based organizations:** Did the GSA partner with community based organizations and nonprofits on outreach and engagement?	
10	**Public Comment Period:** Did the GSA provide a robust public comment period of at least 60 days, with opportunity for the public to discuss comments and proposed agency responses with staff and the GSA before GSP approval?	
11	**Incorporation of stakeholder input:** Does the GSP explicitly describe how stakeholder input was incorporated into the GSP process and decisions?	
DAC and drinking water user engagement during GSP implementation		
12	**Description of DAC engagement:** Does the GSP describe how ongoing engagement will be conducted during GSP implementation, including but not limited to engagement regarding: decisions about projects, management actions, modifying sustainable management criteria, changes to monitoring networks, and conducting GSP updates?	
13	**Notice:**[45] Does the GSP state that ongoing engagement will include clear notices about GSA meetings and workshops that are posted in ways that all stakeholders were made aware of the meetings, and translated into all languages spoken by at least 5 percent of the public served by the agency, who do not speak English or are unable to effectively communicate in English?[46]	

[43] Government Code sec. 7296.2.
[44] Government Code sec. 7296.2.
[45] Government Code § 54954(a).
[46] Government Code sec. 7296.2.

14	**Translation of materials:**[47] Does the GSP state that ongoing engagement will include translation of materials into all languages spoken by at least 5 percent of the public served by the agency, who do not speak English or are unable to effectively communicate in English?	
15	**Interpretation:**[48] Does the GSP state that ongoing engagement will include interpretation services provided at board meetings, committee meetings and workshops into all languages spoken by at least 5 percent of the public served by the agency, who do not speak English or are unable to effectively communicate in English?	
16	**Accessible workshops:** Does the GSP state that ongoing engagement will include workshops held at accessible times and locations for disadvantaged community residents?	
17	**DAC representation on advisory committee and board:** Does the GSP state that ongoing engagement will include advisory committees and Boards containing representatives from DACs?	
18	**Partnership with local community based organizations:** Does the GSP state that ongoing engagement will include partnership between GSA and community based organizations and nonprofits?	
19	**Engagement on key decisions:** Does the GSP state that ongoing engagement will include strategies to keep the public informed and engaged during and prior to critical decisions about the GSP, including but not limited to the five year GSP review, modification of sustainable management criteria, design and adoption of any projects and management actions, and development and adoption of the programs to assist with impaired wells?	
20	**Engagement on financial issues:** Does the GSP state that it will conduct outreach to DACs before approving operating budgets and enacting groundwater fees?	

[47] Government Code sec. 7296.2.
[48] Government Code sec. 7296.2.

Framework and Guidance for Developing a Drinking Water Well Impact Mitigation Program [Working Draft]

Management Action Name:
Drinking Water Well Impact Mitigation Program

Potential Implementing Organization(s):
Groundwater Sustainability Agencies (GSAs) in partnership with project participants.

Purpose Statement:
The purpose of this document is to be utilized by GSAs to mitigate, prevent, and address any adverse effects on drinking water wells caused by pumping volume or location, conjunctive management, or any other forms of active management as part of Groundwater Sustainability Plan (GSP) implementation. By doing so, GSAs can better achieve the goals of the Sustainable Groundwater Management Act (SGMA), avoid jeopardizing access to safe water in vulnerable communities, and also avoid violating California laws that establish a state-wide Human Right to Water and that protect access to safe water. Adverse effects can include both issues with access to safe drinking water due to increased contamination, as well as issues with sustained access to water due to changes in groundwater levels.

This document provides a framework of elements to consider when GSAs are developing a drinking water well impact mitigation plan. Every community and every GSA will have to evaluate their own needs and particular considerations in order to develop a mitigation program that works best for all users. This document is broken down into the following sections:

1) Importance of drinking water well mitigation programs;
2) Framework for developing program / key elements to consider;
3) Cost considerations for short term and long term solutions and potential funding sources; and
4) Four local case studies of existing drinking water well mitigation programs.

Section 1. Importance of a Drinking Water Well Impact Mitigation Program:

How can GSP implementation impact domestic wells and small community wells?

Across the state, critically overdrafted basins have developed Groundwater Sustainability Plans (GSPs) to manage groundwater resources sustainably under the Sustainable Groundwater Management Act (SGMA). Many GSPs have developed sustainable management criteria, including minimum thresholds (MTs) and measurable objectives (MOs), that if reached, would cause significant impacts to access to safe

and affordable drinking water for vulnerable communities. GSP implementation, including management actions and projects, can cause changes in groundwater levels and groundwater quality that could lead to:

- Completely dewatered wells;
- Partially dewatered wells:
    - needing to lower the well pump,
    - needing to clean the well screen,
    - needing to drill deeper;
- An increased movement of contaminant plumes;
- An increase in the concentration or release of contaminants;
- An increase in salinity due to sea water intrusion in coastal wells;
- Higher energy costs from having to drill or pump from a deeper depth; and
- Emotional, psychological, and health impacts related to not having access to safe water.

If GSP sustainable management criteria are developed in a way that could potentially cause significant impact on drinking water users, the GSP must also include a robust drinking water well impact program to prevent and mitigate the drinking water impacts that occur. In some GSAs, up to 85% of domestic wells are at risk of being dewatered or partially dewatered. In these same GSAs, rural domestic and small water system demand does not contribute substantially to the overdraft conditions, yet the risks imposed on these drinking water users are overlooked and neglected, creating a disproportionate impact on already vulnerable communities.

What are the drinking water challenges of disadvantaged communities?

Without an adequate groundwater sustainability plan that is protective of groundwater sources near or within communities, more drinking water wells will run dry or be unable to provide safe, potable water to residents. This will further jeopardize the livelihood of California's most vulnerable communities. Vulnerable communities, including severely disadvantaged communities (SDACs), disadvantaged communities (DACs), small water systems, and domestic well owners, have limited technical, managerial, and financial capacity to respond to drinking water challenges.

Climate change further exacerbates drinking water challenges with more frequent, longer and more severe droughts and flood periods expected. Small water systems and rural communities reliant on domestic wells are, and will continue to be, the most adversely impacted and most at risk of experiencing water shortages and/ or having to rely on contaminated drinking water supplies. In order to increase water system resiliency, the golden rule is to protect current water sources— especially if the quality of the water is meeting safe drinking water standards. Other ways to increase resiliency are to secure more than one water source, assist communities with maintenance and operation costs, and ensure water affordability. A drinking water well mitigation program is key to increasing water resilience through minimizing risks of both short-term and long-term impacts. Having adequate plans and policies to support drinking water resilience in the face of climate change is essential to reducing the amount of emergency funding needed to respond to a water shortage emergency and to prevent human health crises. A carefully designed and implemented well impact mitigation program can support efforts to ensure all communities have long-term and sustainable access to clean, safe, and affordable drinking water.

How does California law prioritize drinking water?

A GSP which lacks a mitigation program to curtail the effects of projects and management actions on the safety, quality, affordability, or availability of domestic water, violates both SGMA itself and the Human Right to Water law. The Human Right to Water (AB 685) (HR2W) was signed in 2012 and added § 106.3 to the California Water Code, declaring, "the established policy of the state that every human being has

the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes."[49] The HR2W applies to all state agencies, requiring that they "...shall consider this state policy when revising, adopting, or establishing policies, regulations, and grant criteria when those policies, regulations, and criteria are pertinent to the uses of water…".[50] With this passage of AB 685, relevant state agencies, including the State Water Resources Control Board (SWRCB) and the Department of Water Resources (DWR), are now required to consider this state policy when revising, adopting, or establishing policies, regulations, and grant criteria that may impact the uses of water for domestic purposes. These agencies must consider how state actions may impact the Human Right to Water. To ensure compliance with the legislature's long established position and accordance with 23 CCR §350.4, the HR2W requires that DWR must consider the effects on domestic water users when reviewing and approving GSPs.[51] The SWB should be consulted as part of GSP review as part of the Board's expertise on water quality matters.

Further, the California legislature has recognized that water used for domestic purposes has priority over all other uses since 1913.[52] Reserving top priority for domestic water use was later codified in 1943, in Water Code § 106, which declares it the, "established policy of this State that the use of water for domestic purposes is the highest use of water and that the next highest use is for irrigation."[53] Further, the passage of the Safe and Affordable Drinking Water Act by Governor Newsom[54] indicates a clear state-level commitment to providing safe and affordable drinking water to California's most vulnerable residents. Poor implementation of SGMA would threaten the success of the Safe and Affordable Drinking Water Fund and would run counter to Governor Newsom's vision of providing safe water to all.

A carefully designed and implemented Drinking Water Well Impact Mitigation Program can support a statewide goal of ensuring DACs' access to clean, safe, reliable, and affordable drinking water. Including this type of program in a GSP also helps to create a groundwater management plan that understands DACs' unique social and economic vulnerabilities, is sensitive to their drinking water needs, and avoids causing a further disparate impact on low-income communities.

Section 2. Key elements and a framework for developing a Drinking Water Well Mitigation Program:

This section provides a framework of elements to consider when GSAs are developing a drinking water well impact mitigation plan. This section is broken down into the following categories:

i. Drinking water well monitoring network;
ii. Adaptive management and trigger system;
iii. Drinking water well impact tool/model;
iv. Public outreach and education;
v. Mitigation measures;
vi. Program eligibility.

i. Drinking water well monitoring network: As required by GSP Regulation, Section 354.34, GSAs must describe how potential impacts to groundwater users and uses will be monitored. It must be recognized

[49] WAT § 106.3 (a).
[50] WAT § 106.3(b).
[51] *See generally,* WAT § 106.3 (b).
[52] California Water Commission Act of 1913 § 20.
[53] WAT§ 106; This policy is also noted in the Legislative Counsel's Digest for AB 685.
[54] SB 200, Monning (2019).

that most public water systems have wells deeper than domestic wells, thus monitoring networks must be able to capture impacts to deeper public water system wells as well as shallow domestic wells. The following approach will allow GSAs to comply with GSP regulations and take a proactive approach to protect DACs' and domestic well owners' access to safe and affordable drinking water:

- Map and assess drinking water well vulnerabilities to better understand:
  (1) Locations and depth of drinking water wells (both domestic and public supply wells);
  (2) Whether changes in groundwater levels and quality may be exacerbated in specific areas by pumping volume or location, conjunctive management (i.e. groundwater recharge projects) or other forms of active management as part of GSP implementation;
  (3) The proximity of potentially impacted wells to nearby existing public water systems; and
  (4) If there are areas with a high density of likely impacted wells.

  Assessment should acknowledge that not all existing and utilized wells may be documented in available resources from DWR or Counties.

- Designate key monitoring wells to assess impacts to drinking water wells: Based on the drinking water well vulnerability assessment, identify which wells from the GSP proposed monitoring network are critical to assess impacts to drinking water wells caused by changes to groundwater levels and quality. Expand and improve the monitoring network to assess potential impacts in particular for groundwater conditions near DACs, areas with high density of private domestic wells, and water systems serving schools. The monitoring network needs to be representative of conditions in all aquifers in general, including the shallow aquifer upon which domestic wells rely. The water quality monitoring network needs to routinely monitor for all contaminants that could impact public health (not only nitrate, but also chromium-6, arsenic, 123-TCP, uranium, and DBCP). This will allow the GSA to better comply with GSP regulations Section 354.34, which requires GSAs to describe how potential impacts to groundwater users and uses will be monitored, and to take a proactive approach to protect DACs and domestic well owners' access to safe and affordable drinking water.

ii. Develop an adaptive management/trigger system: Develop a protective warning system, also referred to as an adaptive management approach. Such an approach can alert groundwater managers when groundwater levels and groundwater quality are dropping to a level that could potentially negatively affect drinking water users. These "triggers" are essential for groundwater management and can be adjusted to fit the needs of different management actions as well as the basin as a whole. The table below provides an example of what a warning system might look like, using green, yellow, and red light indicators or triggers, and some potential corrective actions groundwater managers can take to remedy the problem. Ultimately, this approach allows for the evaluation of current conditions in order to respond accordingly to prevent or mitigate negative impacts.

Triggers	Groundwater Status	Potential Corrective Actions
Green-light	Groundwater levels and quality are stable.	No action required
Yellow-light	Groundwater levels and quality are approaching concerning levels and impacts may occur or are occurring at a low rate. Some corrective actions are needed.	- Undertake an analysis to pinpoint the cause; - Undertake water quality testing for selected domestic and public supply wells; - Provide immediate support to groundwater users experiencing impacts; - Reassess pumping allocation and pumping patterns. Consider restricting or limiting groundwater extraction near the impacted area.

Red-light	Time to stop groundwater pumping and management actions and mitigate as significant impacts are imminent or are occurring.	- Reassess pumping allocation and pumping patterns. Consider further restricting or limiting groundwater extraction near the triggered area or reevaluating minimum thresholds or measurable objectives; - Provide interim emergency solution while working with impacted groundwater users to pursue a permanent, long-term solution.

iii. Drinking water well impact tool/model: Develop a tool or model tied to the monitoring network and the adaptive management framework (trigger system) to evaluate groundwater levels and predict potential groundwater impacts to drinking water wells. Update model regularly and develop a prediction of the potential groundwater impacts to drinking water wells. Results of this assessment should be incorporated into an annual GSP progress report to domestic well owners and DACs water systems. The tool or model could be used to:

- Monitor and forecast changes in groundwater levels and quality;
- Monitor and forecast any localized areas for special attention and/or monitoring;
- Attempt to identify domestic wells or small public supply wells at risk of impacts, and;
- Determine if triggers have been met based on the adaptive management framework.

iv. Public outreach and education: Develop public outreach and educational materials to increase awareness of groundwater management activities within the GSA. This outreach could inform groundwater pumpers of the rules, restrictions, and impacts of groundwater over-pumping. This outreach could also inform residents about the potential well impacts that could occur based on groundwater management actions, describe potential options available for well mitigation, and include information for who to contact in the event their wells experience negative impacts. This outreach could take place in the form of pamphlets, mailers, additions to the public website, or radio announcements. This information can also be included in regular GSA updates. To ensure that this program can benefit S/DAC residents, information about the program must be disseminated widely, and such materials must be translated into all threshold languages. The GSA should work with local agencies, organizations and associations to spread materials about the program. The GSA should work with local agencies and organizations to ensure that residents with impacted wells are referred quickly to the GSA for assistance. GSAs should conduct regular, door-to-door outreach (in partnership with other outreach experts as needed) to ensure that communities — particularly for communities location in areas the trigger system identifies within the yellow and red-light ranges— are aware of the well mitigation program and know who to contact in times of emergency.

v. Mitigation measures: Mitigation measures should be implemented as soon as the trigger system reaches its yellow light indicator. Groundwater should be managed in a way that prevents or avoids reaching the red light indicator and before wells become unusable. This will allow communities working with the GSA to access funding and develop a long-term plan that protects community member access to drinking water. The mitigation program should be designed to be proactive, rather than reactive to public health harms. When mechanical failures or other operational problems have occurred, or are likely to occur, due to declining water levels or deteriorating groundwater quality, mitigation should be provided as described below:

- **Third Party Determination of Causality:** Work with an objective third party to establish whether their policies and actions caused the drinking water impact. Based on a field inspection and discussion with the residents impacted, define the level of mitigation that is necessary. Verify well construction information and pump setting information, if possible;

- **Interim Drinking Water Supply Solution:** Provide short-term drinking water supply while a permanent solution is pursued. Short-term interim solutions serve to address the immediate impacts and ensure access to both water suitable for consumptive and other domestic needs, such as sanitation. Short-term emergency supplies shall be provided as soon as reasonably possible and can include bottled water, bottled water paired with tanked water, or another combination. For groundwater quality issues, bottled water may be an acceptable interim solution but if the issue is lack of access to water, providing bottled water is not an adequate interim solution and would require a combination of solutions as well as a long-term sustainable plan.
- Since short-term solutions are expensive over a prolonged period of time, it would be important to quickly identify potential long-term solutions. As an example, GEI's feasibility study for East Porterville at the height of the drought in 2016 estimated tank and bottled water programs cost $633,500 per month just for East Porterville, which has an estimated population of 7,331 residents.
- Long-term water supply can include (where appropriate):
    - Providing funding to lower a well pump and/or deepen the well;
    - Financial and technical support to complete a connection to a nearby municipal and/or industrial water provider;
    - Providing an equivalent water supply from an alternate source;
    - Providing funding to replace the affected well with a deeper well;
    - Providing funding to treat contaminated water;
    - Reducing or adjusting pumping near the impacted drinking water well as necessary to avoid the impact; and/or
    - Providing other acceptable mitigation through a collaboration with the affected drinking water well users.

  Note that lowering the pump and/or deepening the well will increase operational costs of the well and may require additional monitoring to ensure the well is not dewatered again. Further, these solutions may not address water quality concerns, depending upon aquifer conditions and screen depths.
- For a long-term water supply option, connecting current domestic well users to a nearby public water system should be pursued whenever possible. In areas with a high density of domestic wells, the establishment of a new small public water system may also be feasible. Public water systems have an obligation to test water quality for water served, and although some public water systems have limited resources, they do have a greater ability to install treatment systems to address water quality impacts, recoup funds for litigated contamination such as 1,2,3-TCP, and apply for and receive grant funding for beneficial projects. Because of this, public water systems, including small community water systems, often provide a more reliable drinking water source than privately-owned domestic wells. It should be noted that once a resident is connected to a public water system, they are then subject to water bills that will likely be higher than the operation costs of the well. As these long-term solutions are being developed, the community should be engaged in the process to learn about the benefits of a public water supply in terms of water reliability and water quality, and should also be informed of why water bills may be more costly. It is possible that some residents may request some sort of stipend to assist with the monthly water bills associated with their new water connection.

xi. Eligibility: Eligible beneficiaries should include communities that quality as DAC or SDAC, and households who qualify as low income. S/DAC residents should not be required to undertake burdensome actions or overcome other barriers to entry in order to benefit from the program. For example, residents should not be required to register before impacts occur in order to benefit from the program, and

beneficiaries should not be required to prove that the GSA's activities or lack of action caused impacts. Instead, the GSA should proactively identify all well locations and information. When the GSA is notified of an impacted well, it should use the well information collected to rapidly evaluate the cause of the impact and provide adequate mitigation measures. Some questions GSAs could consider when determining eligibility are:

- What is the process for determining eligibility?
- Who determines if the well is eligible?
- What documentation does the well owner need to demonstrate eligibility? Is there an unreasonable onus on the owner to demonstrate past use that would constitute a barrier to access?
- When a well is found to have been constructed in a way that is not consistent with current regulations, is it still eligible?
- If a well is poorly constructed, does the program address replacing or repairing the well rather than just deepening it?

Section 3. Costs and Potential Funding Sources:

Costs: Costs are dependent on many factors including: how protective the GSA defines its sustainability goal and related sustainability criteria, the number of vulnerable wells, the condition of the vulnerable wells, proximity to existing public water systems, the depth of the aquifer, local contractor costs, fluctuations in material costs, etc. For comparison purposes, the San Antonio well mitigation project materials include the following average costs:

- Perform well diagnostics ($2,700);
- Lower pump ($4,000);
- Drill/outfit/connect replacement well ($58,000);
- Water purveyor connection ($5,000), and close existing well ($4,500).

The table below provides examples of interim and long-term solution costs based on Self-Help Enterprises' experience in providing solutions to disadvantaged communities in the San Joaquin Valley during the 2012-2014 drought. Costs are provided for illustrative purposes only and should be considered as rough estimates.

Solution	Problem	Options	General Overview of Pros and Cons	Estimate of Costs[1]
Interim solution	Water quality	Point-of-Use (POU)	Treats water for one tap within the household. While this option does provide safe drinking water in the home, if everything is perfect, maintenance is less likely to be carried out and assistance must be provided until a long-term solution is implemented. Costs estimates include initial capital costs (installation, treatment system, monitoring system) and also ongoing operation, maintenance, routine monitoring, and waste disposal costs.	$1000 to $1500 / unit per home.
		Bottled water	Bottled water provides an effective and reliable source of safe drinking water and may be the only option available	$30 to $50 per month per house, includes delivery.

			depending upon contaminant concentrations. However, bottled water can be expensive over a long period of time and can come with distribution challenges.	
	Access to water	Water tank program with bottled water	Tank water can meet basic sanitation needs but should not be used to meet drinking water needs, as tank water is susceptible to bacteriological or other issues making it unsafe for consumptive purposes. Instead, the program must be paired with delivery of bottled water to meet drinking water needs.	- 2,600 gallon water tank and materials roughly $2100.00. - Labor and tank installation $1500.00, does not include mileage. - Electrical permit $80.00, depending on the county. - Tank water between $300 to $500 depending on delivery charge by water hauler, per load or per hour. - $30 to $50 per month per house, includes delivery.
Permanent solution	Water quality	Water treatment system	Technical, managerial, and financial capacity of the community should be considered when assessing water treatment options.	Costs vary depending on the technology, water contaminant, and number of households.
		Alternate supply source	Options include surface water, construction of a new well, and consolidation with a nearby water system.	Costs vary depending on the desired solution, technology, and number of households.
	Access to water	Lowering of well pump	Less expensive long-term solution, if conditions allow. The following factors should be taken into account: lowering of a pump in the well is limited by the depth of the well, proximity of pump to the base of the well increases energy consumption, may require more frequent screen cleaning, and water quality may be degraded due to sediments that are drawn in.	Less than $10K, maybe around 5K.
		Drill a new deeper well	A well test is necessary to assess yield capacity and water quality on deeper levels.	Build a new private well: $20k to $45k. Build a new well for a water systems: up to $1.5 million.
		Alternative water supply source	Options include surface water or consolidation with a nearby water system. Recommend considering consolidation when households understand and agree with the	Costs vary depending on the desired solution, technology, and number of households.

			advantages and disadvantages of connecting to a local water system.	

Potential Funding Sources: A secure and reliable funding source and mechanism for the implementation of this type of mitigation program needs to be identified in the GSP. While grant or emergency funding could potentially be available to support a mitigation program, the availability of these funds is not certain. Therefore, the GSA should plan to establish a more secure, on-going funding mechanism that accrues funds that would be available as water levels decline in the future. Funding for these types of programs should be considered as an operational cost of the GSA and funded with other ongoing costs such as administration and monitoring and should be included in the annual budget for the GSA. The following are potential other sources of funding to consider:

- Service or land-based fee assessments using Proposition 26 or Proposition 218;
- State Water Resource Control Board programs such as Proposition 1 Groundwater Grant Program and Prop 68 Groundwater Treatment and Remediation Grant Program;
- Department of Water Resources funding programs for groundwater projects and technical assistance programs to aid SGMA implementation;
- Central Valley Basin Plan Amendment (BPA) project funding: The BPA for the regulation of salts and nitrates has been approved by the SWRCB and implementation may result in additional funding sources for nitrate contaminated aquifers. If appropriate, GSAs should consider coordinating with nitrate dischargers forming Management Zones in order to comply with the BPA in order to streamline administrative costs and leverage resources;
- United States Department of Agriculture (USDA) Rural Development Utilities funding (if available).

Note that any well mitigation projects should be coordinated with the SWRCB's Safe and Affordable Drinking Water Fund Program (which will be seeking to implement short and long-term drinking water solutions within vulnerable communities) via the SWRCB's Division of Drinking Water. Funding from the SWRCB's Safe and Affordable Drinking Water Fund Program should not be utilized to ameliorate negative impacts to safe drinking water access in vulnerable communities that are a result of implementation of the GSPs.

Mitigation measures should not put a financial burden on S/DAC residents and communities. Where feasible, coordinate with relevant agencies to procure funding for cost-effective and affordable solutions. Solicit stipends and grants from agencies where there will be an added cost on residents.
Wherever consolidation is possible, the GSA should assist in pursuit of feasibility studies and assist in negotiations with public water systems. GSAs should also assist in pursuit of grants/funds to ensure that this water is affordable. This work must be initiated with community involvement, oversight, and leadership during "yellow light" phase. GSAs play a unique role in regional groundwater management and the ability to convene multiple agencies to leverage multiple funding sources can support both long-term access to safe and affordable drinking water while also supporting sustainable groundwater management.

For questions or for more information about the scorecard or the mitigation program, please contact:
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