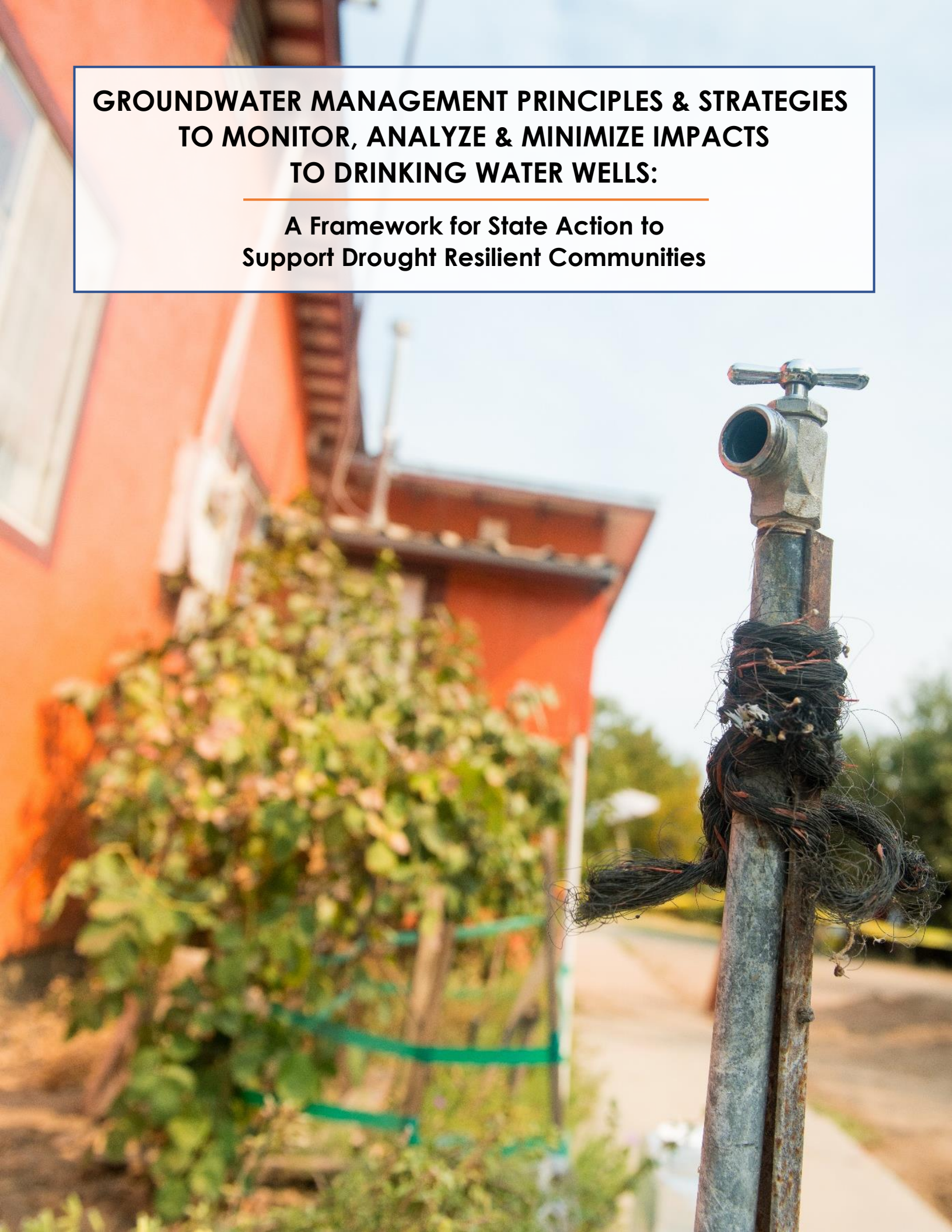


**GROUNDWATER MANAGEMENT PRINCIPLES & STRATEGIES
TO MONITOR, ANALYZE & MINIMIZE IMPACTS
TO DRINKING WATER WELLS:**

**A Framework for State Action to
Support Drought Resilient Communities**



December 2021

This document was developed by a state work team of staff from the California Department of Water Resources in coordination with the State Water Resources Control Board. The State hosted three listening sessions, a public workshop on draft concepts, and a 30-day public comment period and formal public webinar to gather public input on the final document.





PREAMBLE

As California's climate conditions continue to intensify and become more variable, and droughts become more frequent and severe, the State acknowledges that less snowpack, precipitation, and surface water is leading to an increased reliance on groundwater. However, our groundwater resources in some areas of California have been overdrafted for decades, where many users, including agriculture, business, people, and the natural environment, rely on groundwater. Rural communities that are highly dependent on groundwater for drinking water typically rely on wells located in the shallow portions of groundwater aquifers, increasing exposure to potential impacts from intensifying changes in climate and groundwater use. Such circumstances can leave many Californians with dry wells and few options for identifying alternative water sources. These principles and strategies provide a framework to guide State action, including immediate and long-term drought-related groundwater management actions by the California Department of Water Resources (DWR) and the State Water Resources Control Board (Water Board). Taking these actions can improve the water supply reliability for many Californians and communities who use groundwater wells for drinking water and household purposes now and into the future.

The State has experienced several drought cycles in the last decade. As documented in the most up-to-date statewide groundwater report – [California's Groundwater \(Bulletin 118\)](#) published by DWR and the recent [Drinking Water Needs Assessment](#) authored by the Water Board, the following conditions provide a clear need for developing these drinking water well principles and strategies:

- Droughts are extreme and climate change is exacerbating drought impacts to be more frequent and severe.
- Groundwater acts as a drought buffer and helps lessen the water supply impacts of our changing climate – groundwater provided nearly 60 percent of the State's total water supply in 2015 during the peak of the 2012 to 2016 drought.
- Approximately 82 percent of Californians – 33 million people – rely on groundwater for some portion of their drinking water or other household uses and nearly six million Californians are entirely dependent on groundwater for drinking water supplies.
- Nearly 1.5 million Californians rely on domestic wells and one-third of community water systems rely on only one well for drinking water and other potable uses.
- Approximately 53 percent of domestic wells are found in non-basin (fractured rock) areas, outside of the alluvial groundwater basins.

- The drinking water needs of some communities historically have not been prioritized, in part because members of these communities have sometimes been excluded from decision-making roles or other forms of participation on the basis of land tenure, property size, race, language, economic status, or other factors.
- Some communities where drought threatens drinking water supplies, quality, access, or affordability historically also have experienced higher environmental burdens and now are among the most vulnerable to pollution and climate impacts.
- An estimated 3,500 domestic wells in the San Joaquin Valley, and hundreds more in the rest of the state, went dry leaving households and communities without water during the 2012 to 2016 drought. From January to October 2021, approximately 900 wells were reported dry to the State. Based on climate projections, continued groundwater overdraft, and unmanaged groundwater extractions, more wells are anticipated to go dry in certain areas.
- It is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes (Water Code §106.3). Safe and reliable water are critical to human health.

For the purposes of this document drinking water well users are identified as *domestic well owners, individuals, Tribal governments, or water systems that use wells for drinking water needs.*



Water Supply Project

❖ Two Phases –

- Emergency Water Tank Replacement Project (Phase 1)
 - Well C-1
 - First 70 connections to existing pipe
 - Remaining Dry Well residents that consent to connect
 - Upgrade to Booster Pumps and routing
- Long-term Project (Phase 2)
 - Remaining residents that consent to connect to the new system

BACKGROUND

On April 21, 2021, Governor Newsom signed an Emergency Proclamation and declared a State of Emergency for certain parts of California where record drought conditions continued to worsen after two consecutive dry years. The Emergency Proclamation ordered various State actions, including Action 11:

To ensure the potential impacts of drought on communities are anticipated and proactively addressed, the Department of Water Resources, in coordination with the Water Board, shall develop groundwater management principles and strategies to monitor, analyze, and minimize impacts to drinking water wells.

The DWR¹ and Water Board² stand strongly committed to the Human Right to Water³ – that all Californians have a right to safe, clean, affordable, and accessible water, including those who rely on groundwater for drinking water and household purposes.

This framework was developed in response to the Governor's directive and build upon the State's drought response, as well as long-term water management efforts, to provide direction and deliver solutions to support groundwater-dependent communities for drinking water purposes to ensure that the potential impacts of drought are anticipated and proactively addressed. Existing programs that complement this framework and are integrated in the strategies include:

- State Drought Funding Programs (DWR and the Water Board)
- California Office of Emergency Services' Drinking Water Procurement Plan and DGS Master Service Agreement for bottled water
- Water Conservation and Drought Planning (AB 1668 and SB 606, 2018)
- Drought Planning Legislation (SB 552, 2021)
- The Sustainable Groundwater Management Act (SGMA)
- The Safe and Affordable Funding for Equity and Resilience (SAFER) Program
- Irrigated Lands Regulatory Program (ILRP)
- Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS)

While these State programs provide DWR and the Water Board authorities to support local water management improvements, there are some realities that need to be recognized by existing State regulatory and funding programs. For example, counties have authority over local emergency services, well permitting, and local land use; groundwater sustainability agencies and water systems monitor conditions and manage water resources locally; and property owners may have overlying water rights to groundwater. Further aligning State programs, improving local agency coordination, and addressing data gaps are included in the strategies presented below to help anticipate and proactively address drought impacts on communities.

The following principles and strategies provide a framework for State actions to continue anticipating impacts and enhancing drought management efforts. Additional Executive action, legislation, funding, and guidance may be required to fully implement these strategies.

¹ DWR formally adopted a Human Right to Water (HR2W) Policy in its Department Administrative Manual, which outlines how the HR2W should be included in DWR decision-making, program activities, and public engagement.

² The Water Board adopted a HR2W Resolution, recognizing HR2W as a core value and directing its implementation across programs and activities.

³ California Water Code §106.3

PRINCIPLES & STRATEGIES

1. Achieve Drinking Water Resilience: Implement ongoing drought planning and responses and other groundwater management programs to effectuate necessary changes with the goal to achieve drought resilience for drinking water well users.

1.1 Establish a standing interagency drought and water shortage task force, in partnership with interested parties, to facilitate proactive state planning and coordination, both for predrought planning and post-drought emergency response, including but not limited to needs of drinking water well users, as intended by SB 552.

1.2 Coordinate available assistance, including from federal agencies and work with the Governor's Office of Emergency Services and the local Offices of Emergency Services within county jurisdictions, to provide drinking water well protections and relief through emergency funding, loans, grants, and other assistance programs.

1.3 Engage with counties and water systems to complete drought assessments and water shortage contingency plans in alignment with the 2018 Water Conservation and Drought Planning legislation and the 2021 Drought Planning legislation, analyzing drought risks for drinking water well users, and encourage alignment with general plans, other local hazard mitigation plans (LHMP) and Emergency Operations Plans, and ensure that water systems under 1,000 service connections are monitored and addressed as part of these planning efforts.

1.4 Engage with local and regional agencies, Tribes, and non-governmental organizations (NGOs) to spotlight best practices of drought management efforts that support drinking water well users.

1.5 Ensure long-term groundwater sustainability planning and implementation, including projects and actions supporting drinking water well users, can minimize the impacts of future droughts, through the implementation of SGMA.

1.6 Provide assistance, support, and oversight through state drinking water and water quality programs and continue considering, where feasible and appropriate, consolidation and water partnerships to develop technical, managerial, and financial capacity of water systems and communities.





2. Integrate Equity: Recognize equity needs to be integrated in drought-related planning processes to inform positive outcomes, as well as ensure there is equitable access to available drought assistance where barriers may exist for drinking water well users.

2.1 Widely distribute educational materials and comprehensive data and information on management and well maintenance responsibilities, potential drought risks associated with drinking water wells, and funding and assistance for drinking water well users to be able to make informed decisions regarding well infrastructure.

2.2 Develop programs to support and protect the reliability of wells or facilitation of interties, when feasible, appropriate, and as needed, to allow for emergency operations of water supplies during times of limited groundwater supply.

2.3 Create flexibility for groundwater trading to occur within basins with appropriate safeguards for drinking water well users to support a safe and reliable water supply.

2.4 Work with relevant state agencies, counties, and local permitting agencies to develop guidance to avoid the indiscriminate or retaliatory red tagging of homes based on prior water shortages, dry wells, or water quality contamination, without first considering the impacts to drinking water well users.

2.5 Provide guidance to local agencies on how to engage community members in local groundwater decision-making and solution-development and track improvements over time.

2.6 Use common platforms for public meetings at preferred times, when feasible, to improve communication on State, federal and local planning, and available assistance to drinking water well users.

2.7 Provide translation services, as appropriate, to empower communities to engage in their preferred language during local decision-making processes.

2.8 Apply the “polluter pays” principle, so that the costs of solutions that benefit drinking water well users don’t fall on those users but fall on the parties that have caused issues in groundwater basins, to the degree possible or appropriate.

2.9 Align the use of different state funding programs and local fee authorities to maximize support for drinking water well users.

2.10 Recognize the state’s policy that domestic water use is the highest use of water (California Water Code §106) and reflect this policy in drought plans and programs to avoid disproportionate impacts of drought on domestic well users.

3. Address Underlying Challenges: Deliver targeted drought assistance by addressing the underlying challenges drinking water well users face to provide near-term relief, resolve fundamental issues, and anticipate and mitigate future drought impacts.

3.1 Improve Procurement: Improve contracting and procurement processes to assist with supply chain challenges to repair or rehabilitate dry wells, ensuring pumps, tanks, and drilling contractors are available in times of emergency response.

3.2 Efficient Water Use: Encourage counties to establish ordinances and requirements in areas not served by a water system to further address water use restriction needs and define appropriate water use during droughts; coordinate with local jurisdictions to identify and enforce where there are inappropriate uses of groundwater.

3.3 Coordinated Land Use Planning: Engage with the Office of Planning and Research, counties, groundwater sustainability agencies (GSAs), and water agencies to align land use planning in general plans and groundwater sustainability planning efforts to promote access to safe, affordable, and reliable water supply for drinking water well users as land use changes occur.

3.4 Informed Well Permitting: Engage with relevant land use and county environmental health divisions, and groundwater sustainability agencies to develop guidance for how locals should implement well permits and avoid water supply or water quality issues when permitting new wells or new housing development.

3.5 State Program Alignment: Provide guidance to drinking water well users that recognizes the unique parallels between state drinking water and groundwater regulatory and funding programs and further align state efforts to ensure water supply and water quality impacts on drinking water well users are addressed.

3.6 Energy Incentives: Work with state energy agencies and other entities to further understand the net effects of energy policies as it relates to groundwater pumping practices and incentivizes time-of-use pumping when energy demand is lower and impacts to drinking water wells can be avoided.

3.7 Sustainable Land Use Practices: Work with the California Department of Food and Agriculture, and other agricultural and land use experts to identify guidance on crop conversion, and farming and land use practices that may impact groundwater conditions and drinking water well users.

3.8 Economic Development: Provide assistance and opportunities for capacity building, in partnership with other state agencies, where there may be potential economic impacts due to changes in groundwater conditions to communities or drinking water well users.





4. Lead with Best Available Data: Prioritize the alignment, centralization, and accessibility of available well data and information to clearly identify emerging and existing groundwater and drinking water issues for improved drought management.

4.1 Improve data acquisition and monitoring of groundwater level, subsidence, and water quality conditions, including degradation from both natural and anthropogenic sources, in all basins and non-basin areas year-round to track current drought impacts and identify hot spot drought areas to help direct funding to local entities or non-governmental organizations to minimize drought impacts.

4.2 Promote the metering of wells or use of evapotranspiration data to more accurately capture the use of groundwater to improve long-term groundwater management and to safeguard drinking water well users by tracking real-time water use.

4.3 Work with local entities to publicly disclose well and water quality information, including when land or property is transferred.

4.4 Develop an information management system that builds off of existing platforms to inventory and centralize a statewide census of active well information.

4.5 Increase access to and provide user-friendly guidance on data platforms and datasets that are most relevant for drinking water well users to ensure access to available information, including data on well infrastructure, water levels, water quality, and areas of exceedances of drinking water standards, including the high risk aquifer maps and needs assessment developed under the SAFER Program.

4.6 Encourage the increased frequency of groundwater level, subsidence, and water quality monitoring within existing networks and provide additional guidance and support to groundwater sustainability agencies and other entities to enhance the density of these groundwater monitoring networks to reflect and benefit drinking water well users.

4.7 Encourage groundwater sustainability agencies and counties to work with drinking water well users to use existing wells as part of monitoring networks to collect relevant data and improve the accuracy of the legacy well completion reports within Online System for Well Completion Reports (OSWCR).

5. Build Trusted Relationships: Emphasize that prioritizing and building trusted relationships with drinking water well users create opportunities for effective coordination, communication, and decision-making.

5.1 Recognize community members as experts about their own community and encourage opportunities for drinking water well users to meaningfully engage in the development of solutions.

5.2 Provide state agencies with relevant training and partner with Tribal governments, non-governmental organizations, and local agencies to identify operational skill gaps, build capacity, and provide technical assistance to support drinking water well users in both alluvial basin and fractured rock, non-basin areas.

5.3 Engage with well owners to connect with local county emergency services for drought response and other drinking water well users, such as Tribes and water systems that may have limited managerial resources to participate in mutual aid organizations, such as California Water/Wastewater Agency Response Network (CALWARN), to have access to technical assistance and emergency water operators.

5.4 Provide opportunities to engage government to government with Tribes and with the federal Indian Health Services in drought preparedness, management, and emergency response efforts to address underlying challenges.

5.5 Employ and promote best practices for public engagement when working with communities and drinking water well users.

5.6 Engage with drinking water well users on training efforts to understand how to measure water levels and test water quality.



6. Implement Lasting Solutions: Recognize that there are no one-size-fits-all solutions to address drinking water well challenges and that solutions need to be specific, effective, and lasting with clear commitments to engage, empower, and support drinking water well users.

6.1 Deploy funding incentives to local agencies and counties to coordinate with Tribal governments, underrepresented communities, and other non-governmental organizations to mitigate known violations of drinking water standards, further degradation of water quality, or dewatering of drinking water wells.

6.2 Develop guidance for local agencies to collaborate on mitigation strategies and actions to offset impacts of groundwater pumping and management on drinking water well users in partnership with local agencies and NGOs.

6.3 Report on progress being made to manage groundwater sustainably through existing state regulatory programs, including SAFER, SGMA, CV-SALTS, IRLP, and other pollution prevention and mitigation efforts, including programs under the federal Clean Water Act and the state Porter-Cologne Water Quality Control Act.

6.4 Encourage regionalization and consolidation of drinking water systems as a potential solution to avoid future impacts and improve economies of scale to provide a more resilient water supply for drinking water well users.

6.5 Promote tools that identify communities and drinking water well users in need of solutions to help prioritize funding, such as the Drinking Water Needs Assessment under the SAFER Program; promote tools to identify communities reliant septic systems and on drinking water wells to help prioritize funding and technical assistance to protect groundwater quality.

6.6 Pilot alternative water supply projects, such as treatment and cleanup of water sources and regional recycled water projects to benefit small communities reliant on wells for drinking water.

6.7 Work with county representatives to ensure consistency and improve the identification, reporting, and proper decommissioning of abandoned drinking water wells to prevent the potential spread of pollution and water quality contamination.

6.8 Promote the availability of drinking water and water rights data to assess the feasibility of recharge projects near shallow aquifers to benefit drinking water well users.

6.9 Incentivize recharge projects, including in-lieu recharge, flood flows, and other waters as appropriate – designed to improve conditions or protect drinking water well users where there are emerging or existing hot spots where drinking water wells are impacted by drought.



GLOSSARY OF TERMS

Drinking water well users – for the purposes of this document drinking water well users are identified as domestic well owners, individuals, Tribal governments, or water systems that use wells for drinking water needs

Interties – an interconnection permitting passage of utility service (e.g., water or electricity) between two or more systems, such as electric and water utility systems

In-lieu recharge – to store water by utilizing surface water "in-lieu" of pumping groundwater, thereby storing an equal amount in the groundwater basin

Red tagging – a colloquial term used to identify that a structure has been deemed unsafe, damaged or uninhabitable, typically due to natural disasters or emergencies

Regionalization – a process where several local public water systems work together to form a combined public water system. It can also be used to describe a situation where several public water systems will be subsumed into one large water system. Regionalization is consolidation on a larger scale that has benefits on a much larger scale for its customers

Tribal governments – includes California Native American Tribe or State Indian Tribes defined in Water Code §79712(a) as Indigenous Communities of California, which are on the contact list maintained by the Native American Heritage Commission, including those that are federally non-recognized and federally recognized, and those with allotment lands, regardless of whether they own those lands

Water systems include the following:

- **Community water systems** – means a public water system that serves at least 15 service connections used by yearlong residents or regularly serves at least 25 yearlong residents of the area served by the system (Health and Safety Code 116275(i))
- **Public water systems** – means a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year (Health and Safety Code 116275(h))
- **Small community water system** – means a community water system that serves no more than 3,300 service connections or a yearlong population of no more than 10,000 persons (Health and Safety Code 116275(z))
- **State small water systems** – means a system for the provision of piped water to the public for human consumption that serves at least five, but not more than 14, service connections and does not regularly serve drinking water to more than an average of 25 individuals daily for more than 60 days out of the year (Health and Safety Code 116275(n)).