

Advancing the Next Generation of Groundwater Management in California

David Guy
President, Northern California Water Association

The past four dry years in California have brought into sharp focus the importance of groundwater resources for farmers, cities and rural communities throughout the state. The California Department of Water Resources (DWR) has found that “groundwater is a vital resource in California, providing close to 40 percent of the state’s water supply in an average year. In some regions of the state, groundwater accounts for as much as 60 percent of the supply during dry or drought years.” In the past several years, certain parts of the state have received no surface water, instead relying upon groundwater for 100 percent of supplies.

Extended drought conditions typically result in an increase of groundwater well activity and pumping to compensate for surface water supply shortages. Increased groundwater pumping can lead to adverse conditions including dry wells, land subsidence, water quality impacts, seawater intrusion, and stream depletion.

In the midst of this recent drought, the California Legislature passed and the Governor signed into law on September 16, 2014 the Sustainable Groundwater Management Act, now being referred to as SGMA or pronounced as “Sigma.” The passage of SGMA raises some fundamental questions for California’s farmers and ranchers and the rural areas throughout the state as they plan for the future. The central question is whether farmers and ranchers, as well as the various overlying local agencies (water districts and counties), will step up and take the actions that are truly necessary for sustainable groundwater management.

In some parts of the state, it is generally acknowledged that there is overdraft as shown by the map on page 12, which suggests that groundwater pumping is out of balance and exceeds the available

supplies. To bring these basins back into balance will require aggressive water management strategies (both surface and groundwater), an adjudication of the rights to pump groundwater, more stringent land use policies, or some combination of these measures.

In other areas, the groundwater is currently in balance and the available supplies exceed pumping. Here, the strategy will be for local agencies to manage the surface and groundwater resources to keep and maintain the balance.

For all areas, SGMA provides a process and guidance for how local agencies can develop groundwater sustainability plans, but the real question is whether there will be local leadership to drive a cultural change that will be necessary for sustainable groundwater management. For success, the next generation of groundwater management will require a different mindset where farmers and other landowners look beyond the borders of their land and recognize the need to work collectively as the best way to protect and manage the groundwater resources for their benefit and the long-term value of their land and the various functions it supports. In the alternative, there are many adjudicated basins in California and there will continue to be adjudications in areas where SGMA and these cultural shifts do not take form.

What is Sustainable Groundwater Management?

Although sustainability is a difficult term to define with any precision, SGMA has a sustainability goal for groundwater management and planning to avoid “undesirable results” that include:

“(1) Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon. Overdraft during a period of drought is not sufficient to establish a chronic lowering of groundwater levels if extractions and groundwater recharge

are managed as necessary to ensure that reductions in groundwater levels or storage during a period of drought are offset by increases in groundwater levels or storage during other periods.

(2) Significant and unreasonable reduction of groundwater storage.

(3) Significant and unreasonable seawater intrusion.

(4) Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies.

(5) Significant and unreasonable land subsidence that substantially interferes with surface land uses.

(6) Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.”

Organizing: Forming Groundwater Sustainability Agencies (GSAs)

The first task under SGMA is for local public agencies or a combination of local public agencies overlying a groundwater basin to decide whether to become a Groundwater Sustainability Agency (GSA). This is a big decision as local agencies look at the tremendous responsibility and potential costs that will inevitably come with GSAs. As local agencies consider whether to declare as a GSA it will be important that they fully understand the requirements for developing a Groundwater Sustainability Plan that is the heart of SGMA, as described in more detail below.

The requirements in SGMA apply to basins designated as high and medium priority that have not been adjudicated, as shown on the map on page 13. In some areas there is already a local or regional agency that can serve as the GSA. In areas where multiple agencies overlie a groundwater basin, multiple agencies may come together and act as a single GSA through a memorandum of agreement (MOA), a joint powers agreement (JPA), or other legal agreement. In addition to public agencies, SGMA also

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allows a water corporation regulated by the Public Utilities Commission or a mutual water company to participate in a GSA through similar agreements with the local public agencies.

Importantly, in areas that are not covered by local water agencies acting as a GSA (generally referred to as “white spaces”), the county will be presumed to be the GSA for these areas unless it formally notifies DWR that it will not take on this responsibility. County participation in SGMA and coordination with local water agencies may be very difficult: yet, it may be the most important element of forming meaningful GSAs that can effectively work towards sustainable groundwater management.

After a local agency submits a formal GSA notification to DWR, the agency is presumed to be the exclusive GSA in the area covered by the notification if no other local agency submits a notification within 90 days for all or any portion of the same area. For additional details regarding the current GSA formation notifications submitted to DWR, visit the following website: http://www.water.ca.gov/groundwater/sgm/gsa_table.cfm

So what happens if local agencies do not submit the formal process for GSA? The simple answer is that this provides an opportunity for state intervention. Under SGMA, when local or regional agencies cannot or will not manage their groundwater sustainably in a medium- or high-priority groundwater basin, SGMA provides for state intervention until the local agencies are prepared to assume responsibility. The State Water Resources Control Board (SWRCB) may intervene if a GSA is not formed or if a GSA fails to adopt or implement compliant plans by certain dates. Thus, if no GSA is established by June 30, 2017 for all or a portion of a high- or medium-priority basin, the basin may be designated as a probationary basin by the SWRCB. This is the first date where the state can intervene and may develop an interim plan for managing the basin until the local agencies can reach agreement and identify a GSA or GSAs. If the basin is designated as probationary, there are reporting requirements for groundwater pumpers and the state may also assess fees to provide funding required to develop an interim plan.

There are many resources to assist local agencies in this process. To assist in coordinating GSA formation, DWR has provided facilitation services to support local public agencies. Further information on facilitation services is available at: http://www.water.ca.gov/irwm/partnership/facilitation_services.cfm. Additionally, there is more information on the DWR website regarding formation: http://www.water.ca.gov/groundwater/sgm/pdfs/GSA_Notification_Requirements_v2_2016-01-06.pdf. The Water Education Foundation has a handbook available at: <http://www.watereducation.org/publication/2014-sustainable-groundwater-management-act>. and the California Water Foundation has a guide: http://waterfoundation.net/wp-content/uploads/2015/09/CF_GSA_Guide_09.30.15_web.pdf.

Planning: Developing the Groundwater Sustainability Plan (GSP)

Following GSA formation, the next step is for the GSA(s) to develop a Groundwater Sustainability Plan (GSP).

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For high- and medium-priority basins that are not critically over-drafted, the GSPs are due by January 1, 2022. For areas with critical overdraft (see map), the GSPs are due on January 31, 2020. Where multiple agencies agree to form a single GSA through a legal agreement, the agencies may develop a single GSP. However, multiple GSAs may also coordinate to develop a single GSP or multiple GSPs for a single groundwater basin or sub-basin. In groundwater basins where there will be more than one GSP, the responsible GSAs must coordinate management of the basin through a single coordination agreement that covers the entire basin.

On May 18 the California Water Commission (Commission) approved DWR's GSP regulations.

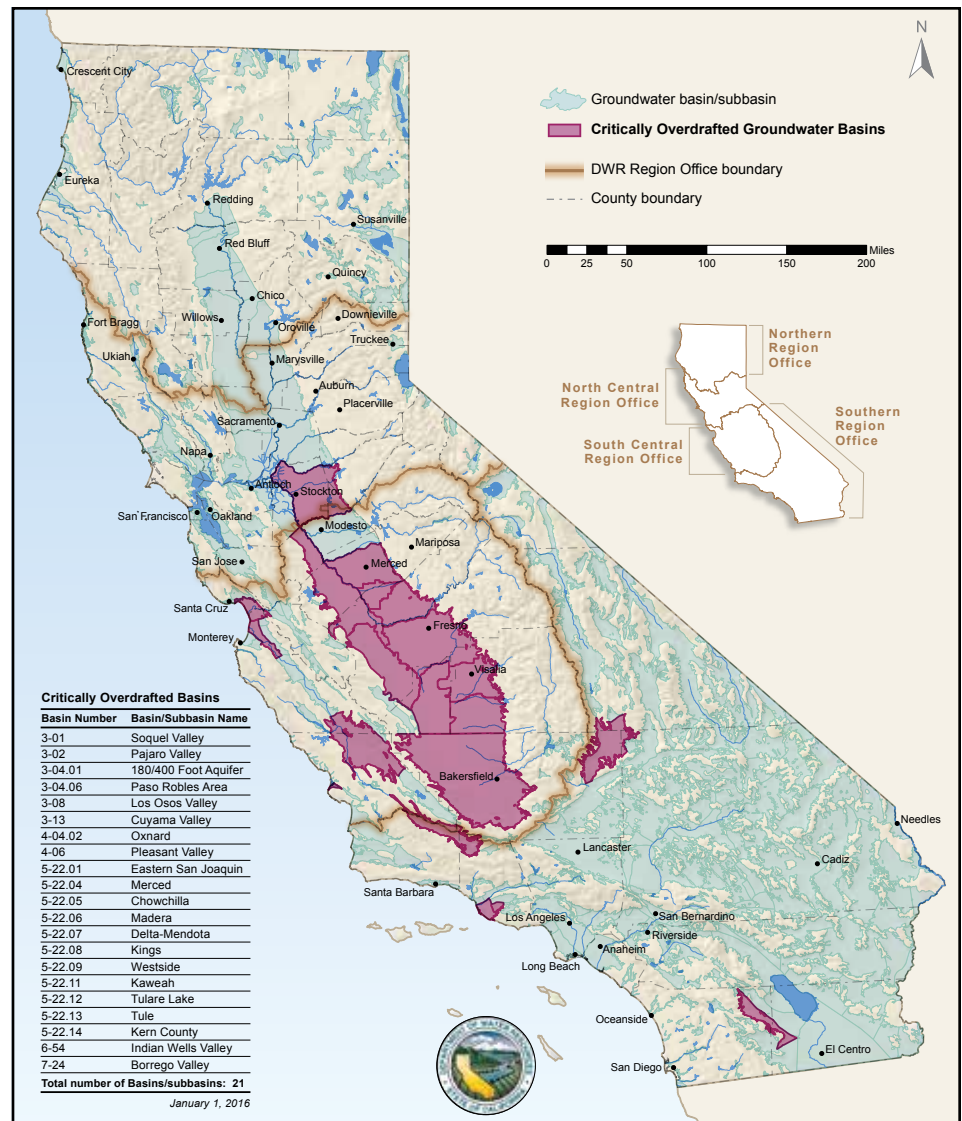
The regulations specify the components of GSPs, acceptable alternatives to GSPs, and coordination agreements among local agencies. The regulations also describe the methods and criteria used by DWR to evaluate those plans, alternatives, and coordination agreements, and information that DWR requires for evaluation, which is to be based on a substantial compliance standard provided that the objectives of SGMA are satisfied.

In sum, a local agency "shall have the responsibility for adopting a GSP that defines the basin setting and establishes criteria that will maintain or achieve sustainable groundwater management." DWR will "have the ongoing responsibility to evaluate the adequacy of the GSP and the success of its implementation." A GSP will be evaluated, and its implementation assessed with the objective that a basin be sustainably managed within 20 years of GSP implementation without adversely affecting the ability of an adjacent basin to implement its GSP or achieve and maintain its sustainability goal over the planning and implementation horizon.

The full text of the GSP regulations and additional information are available at: <http://www.water.ca.gov/groundwater/sgm/gsp.cfm>

The Importance of Surface Water for Sustainable Groundwater Management

Although SGMA focuses upon groundwater, successful implementation



of SGMA and sustainable groundwater management will rely upon the availability, utilization and integration of surface water.

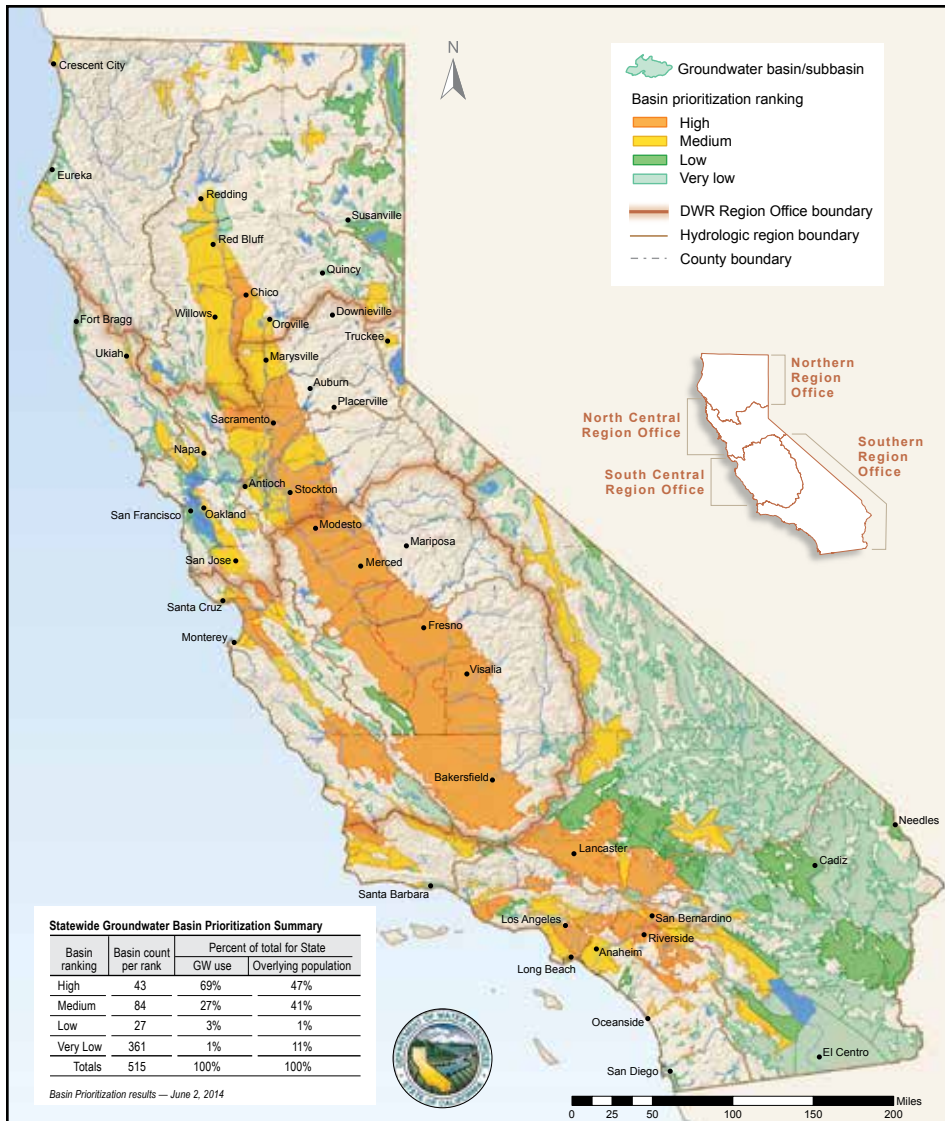
Under SGMA, DWR was directed to prepare a report on water available for replenishment. DWR has prepared a White Paper to provide an initial response to the "water available for replenishment" requirements under SGMA, including background information and next steps for completing the analysis. This White Paper is available for public review and comment at: <http://water.ca.gov/groundwater/sgm/wafr.cfm>. The report will be completed by December 31, 2016.

In addition to the DWR report, there is new thinking and more concerted efforts around groundwater recharge opportunities and the ability to recharge groundwater is receiving increased at-

tention in California. The Legislature in SGMA found that "sustainable groundwater management in California depends upon creating more opportunities for robust conjunctive management of surface water and groundwater resources. Climate change will intensify the need to recalibrate and reconcile surface water and groundwater management strategies." Furthermore, the Legislature expressed its intent "to increase groundwater storage and remove impediments to recharge." (Water Code §10720.1)(g).)

Looking forward, sustainable groundwater management will thus be dependent in large part on the effective management of surface and groundwater supplies in an integrated manner. This includes the recharge of groundwater--either directly or through in-lieu opportunities--by maximizing the availability and use of surface water supplies.

CASGEM Groundwater Basin Prioritization



In other words, sustainable groundwater management will largely depend upon sustainable surface water management.

In November 2015, the Governor issued an Executive Order encouraging new recharge opportunities: “To demonstrate the feasibility of projects that can use available high water flows to recharge local groundwater while minimizing flooding risks, the State Water Resources Control Board and California Regional Water Quality Control Boards shall prioritize temporary water right permits, water quality certifications, waste discharge requirements, and conditional waivers of waste discharge requirements to accelerate approvals for projects that enhance the ability of a local or state agency to capture high precipitation events this winter and spring for local storage or recharge, consistent with water rights priorities and protec-

tions for fish and wildlife.” Several areas took advantage of this opportunity, including the Yolo County Flood Control and Water Conservation District.

There are also several other programs underway to explore and encourage groundwater recharge opportunities. This includes:

A recent study conducted by scientists with University of California, Davis and the University of California Cooperative Extension, where they investigated the value deliberate winter flooding of fields during rainy years would have in recharging groundwater in California. According to the study, “flooding agricultural land during fallow or dormant periods has the potential to increase groundwater recharge substantially. The study identified 3.6 million acres of agricultural land statewide as having Excellent or Good potential for ground-

water recharge. The index provides preliminary guidance about the locations where groundwater recharge on agricultural land is likely to be feasible. A variety of institutional, infrastructure and other issues must also be addressed before this practice can be implemented widely.” <http://californiaagriculture.ucanr.edu/landingpage.cfm?article=ca.v069n02p75&fulltext=yes>.

A recent study by RMC that “evaluates the potential benefits of recharging groundwater through flooding of agricultural lands using excess winter river flows, focuses on a portion of the east side of the San Joaquin Valley in Merced, Madera, and Fresno counties.” [http://waterfoundation.net/wp-content/uploads/2015/09/Creating%20an%20Opportunity%20On%20Farm%20Recharge%20Summary%20Report%20\(00306326xA1C15\).pdf](http://waterfoundation.net/wp-content/uploads/2015/09/Creating%20an%20Opportunity%20On%20Farm%20Recharge%20Summary%20Report%20(00306326xA1C15).pdf).

The Almond Board of California is working with Sustainable Conservation to work with San Joaquin Valley farmers to accept flood flows from storms to help replenish groundwater, California’s underground “savings account,” for dry seasons. See: <http://plantingseedblog.cdfa.ca.gov/wordpress/?p=9570>.

Water resources managers throughout the state have and will continue to explore various ways to recharge groundwater and conjunctively manage water in this manner.

Conclusion

Sustainable groundwater management is and will be hard work and require new levels of collaboration. The passage of SGMA now provides an opportunity for local leaders to come together to develop plans and implementation strategies that will help advance sustainable water management in California. In places where sustainable local groundwater management does not emerge, there will be regulatory (i.e., SWRCB action) or judicial (adjudication) actions leading to sustainable groundwater management.

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