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SGMA in the Field: Early Efforts at Defining Sustainability in California's Critically Overdrafted Basins

Rebecca R.A. Smith

Partner, Downey Brand LLP

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SGMA in the Field: Early Efforts at Defining Sustainability in California’s Critically Overdrafted Basins

Rebecca R.A. Smith*

I. INTRODUCTION.....	549
II. HISTORIC EFFORTS AT GROUNDWATER MANAGEMENT.....	550
III. ALONG CAME SGMA	552
A. <i>Local Action, with a State Backstop</i>	553
B. <i>The GSP as a Scaffolding for Sustainability Determinations</i>	555
C. <i>Bringing Teeth to Sustainable Management</i>	557
IV. EARLY EFFORTS IN DEFINING SUSTAINABILITY UNDER SGMA.....	559
A. <i>Broadly Defined Sustainability Goals</i>	560
B. <i>Sustainable Yield (. . . For Now)</i>	561
C. <i>Reductions in Groundwater Levels as a Hallmark of Undesirable Results</i>	563
D. <i>Locally Managed Allocations & Demand Reductions</i>	564
V. CONCLUSION.....	565

I. INTRODUCTION

The 2014 Sustainable Groundwater Management Act (“SGMA”) ushered in a new era in groundwater management in California. In signing SGMA into law, then-Governor Edmund J. Brown wrote of the State’s “recognition that groundwater management in California is best accomplished locally. Local agencies will now have the power to assess the conditions of their local groundwater basins and take the necessary steps to bring those basins in a state of chronic long-term overdraft into balance.”¹ Like the parent who cautions warring children to “sort it out . . . don’t make me come in there,” SGMA offers local entities a choice: tackle the problem of sustainability within your basin or face the unsavory prospect of State Water Resources Control Board (“SWRCB”) intervention.

For better or worse, the state’s critically overdrafted basins will be the proving ground in which the tensions between SGMA’s admonition to sustainability and parallel bar on the alteration of water rights plays out. This Article evaluates the current status of SGMA compliance in these critically

* Partner, Downey Brand LLP; B.A. University of California, Davis; J.D. University of Notre Dame. The author thanks her colleagues in the Downey Brand water and natural resources group for their constant collaboration and intellectual curiosity. They deserve ample credit for any wisdom expressed here, and bear no blame for any errors, omissions, or oversights. The views expressed in this article are solely those of the author.

1. Signing message from Edmund G. Brown Jr., Governor of California, to Members of the California Legislature (Sept. 16, 2014) (on file with the *University of the Pacific Law Review*).

overdrafted basins and key questions yet to be answered in the next phase of SGMA implementation.

II. HISTORIC EFFORTS AT GROUNDWATER MANAGEMENT

In an average year, groundwater provides approximately 40% of California's total water supply, with annual extractions estimated at sixteen million acre-feet.² Despite that fact, for most of California's history groundwater was minimally regulated, and disputes over its use and the extent of an individual right were settled in court.³ To date, there exists no single database in which claims to groundwater might be documented, evaluated, or quantified. There is likewise "no statewide system for allocating rights in groundwater."⁴ Instead, the allocation and policing of groundwater rights has been left to local government or adjudication by the courts.⁵

Broadly speaking, rights to groundwater are classified as overlying, appropriative, or prescriptive.⁶ The overlying right is a correlative right associated with the ownership of land and determined by evaluating overlying rights holders' present and prospective reasonable beneficial use upon the land.⁷ As a general rule, overlying landowners each enjoy a correlative right to share in a portion of the groundwater basin's safe yield, which is defined as the maximum amount of water that may be extracted from a basin without causing an undesirable result.⁸ That right does not extend to extractions *beyond* the basin's safe yield, however.⁹ On the other hand, appropriative rights are not tied to land ownership and depend upon the affirmative taking of water.¹⁰ As between each

2. CAL. DEP'T OF WATER RES., CALIFORNIA WATER PLAN UPDATE 2018, at 2–3 (2019).

3. Ruth Langridge & Christopher Ansell, *Comparative Analysis of Institutions to Govern the Groundwater Commons in California*, 11 WATER ALTERNATIVES 481, 484 (2018). For a detailed retrospective of pre-SGMA groundwater adjudications, see WILLIAM BLOMQUIST, *DIVIDING THE WATERS: GOVERNING GROUNDWATER IN SOUTHERN CALIFORNIA* (1992).

4. *City of Santa Maria v. Adam*, 211 Cal. App. 4th 266, 278 (2012).

5. *O.W.L. Found. v. City of Rohnert Park*, 168 Cal. App. 4th 568, 587–88 (2008); Langridge & Ansell, *supra* note 3, at 509–10.

6. *City of Barstow v. Mojave Water Agency*, 5 P.3d 853, 863 (Cal. 2000); *Katz v. Walkinshaw*, 74 P. 766, 772 (Cal. 1903). California has long embraced a legal fiction dividing surface and groundwater. These three categories of right belie a much more complicated water rights legal scheme, the extent of which is beyond the scope of this article. For a thoughtful discussion of the competing water rights considerations at play when implementing SGMA, see Eric Garner et al., *The Sustainable Groundwater Management Act and the Common Law of Groundwater Rights – Finding a Consistent Path Forward for Groundwater Allocation*, 38 UCLA J. ENVTL. L. & POL'Y 163, 174 (2020).

7. *City of Santa Maria*, 211 Cal. App. 4th 266.

8. *City of Pasadena v. City of Alhambra*, 33 Cal. 2d 908, 929 (1949).

9. *Id.* at 928–29, 931–32 (recognizing an injury that consisted "of the continual lowering of the level and gradual reducing of the total amount of stored water, the accumulated effect of which, after a period of years, would be to render the supply insufficient to meet the needs of the rightful owners." That action "necessarily interfered with the future possibility of pumping by each of the other parties by lowering the water level.").

10. *City of Santa Maria*, 211 Cal. App. 4th at 279.

other, the rights of each of these landowners are correlative: each “may use only his reasonable share when water is insufficient to meet the needs of all.”¹¹ Appropriators, in contrast, operate under a first-in-time, first-in-right priority system in the event of insufficient supply.¹² Finally, an appropriation might ripen into a prescriptive right when an appropriator continues pumping during times of overdraft. “An appropriative taking of water which is not surplus is wrongful and may ripen into a prescriptive right where the use is actual, open and notorious, hostile and adverse to the original owner, continuous and uninterrupted for the statutory period of five years, and under claim of right.”¹³ Overlying users of native groundwater retain priority over prescriptive users, but lose amounts not pumped.¹⁴

Where demand outstrips supply, these competing rights holders must be organized in some sort of priority. Although an appropriator is entitled to take groundwater that the overlying landowner does not need, the appropriator is limited to the remainder of the “safe yield” of the basin.¹⁵ Accordingly, when the safe yield “is insufficient to satisfy the reasonable and beneficial needs of all users, those with overlying rights take precedence.”¹⁶ In the same vein,

Any water not needed for the reasonable beneficial use of those having prior rights is excess or surplus water and may rightly be appropriated on privately owned land for non-overlying use, such as devotion to public use or exportation beyond the basin or watershed. When there is a surplus, the holder of prior rights may not enjoin its appropriation.¹⁷

Whether above ground or below, water in California is not privately owned. Consistent with this principle, water rights holders “have the right to ‘take and use water,’ but they do not own the water and cannot waste it.”¹⁸ Article X, § 2 of the California Constitution lays out this key animating principle:

[T]he General welfare requires that the water resources of the State be put to *beneficial use to the fullest extent of which they are capable*, and that the *waste or unreasonable use or unreasonable method of use of water be prevented*, and that the conservation of such waters is to be

11. Cal. Water Serv. Co. v. Edward Sidebotham & Son, Inc. (*California Water Service*), 224 Cal. App. 2d 715, 725 (1964).

12. *Id.* at 726.

13. *Id.* at 725–26.

14. Hi-Desert Cty. Water Dist. v. Blue Skies Country Club, Inc., 23 Cal. App. 4th 1723, 1730–31 (1994).

15. City of Los Angeles v. City of San Fernando, 14 Cal. 3d 199, 214 (1975).

16. City of Santa Maria v. Adam, 211 Cal. App. 4th 266, 279 (2016).

17. *California Water Service*, 224 Cal. App. 2d at 725.

18. CAL. WATER CODE § 102 (West 2021); Cent. & W. Basin Water Replenishment Dist. v. S. Cal. Water Co., 109 Cal. App. 4th 891, 905 (2003); State of California v. Superior Court, 78 Cal. App. 4th 1019, 1023, 1025 (2000) (“[A]t least since 1928 when the predecessor to article X section 2 of the California Constitution was adopted, there [has been] no private ownership of groundwater.”).

2021 / Early Efforts at Defining Sustainability in California's Critically Overdrafted Basins

exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare. The right to water or to the use or flow of water in or from any natural stream or water course in this State is and shall be limited to such water as shall be *reasonably required for the beneficial use to be served*, and *such right does not and shall not extend to the waste* or unreasonable use or unreasonable method of use or unreasonable method of diversion of water.¹⁹

As to groundwater, “[p]ublic interest requires that there be the greatest number of beneficial users which the supply can yield, and water may be appropriated for beneficial use subject to the rights of those who have a lawful priority.”²⁰

III. ALONG CAME SGMA

It was against this backdrop that SGMA was enacted in 2014. The 2014 California Water Action Plan laid the groundwork, setting out the Governor’s intent to:

[W]ork with the Legislature to ensure that local and regional agencies have the incentives, tools, authority and guidance to develop and enforce local and regional management plans that protect groundwater elevations, quality, and surface water-groundwater interactions . . . to define local and regional responsibilities and to give local and regional agencies the authority to manage groundwater sustainably.²¹

That publication goes on to caution that “when a basin is at risk of permanent damage, and local and regional entities have not made sufficient progress to correct the problem, the state should protect the basin and its users until an adequate local program is in place.”²²

Indeed, the Legislature was explicit in its intention to empower local agencies to bring relief to the State’s struggling basins, while respecting

19. CAL. CONST. art. X, § 2 (emphasis added); see CAL. WATER CODE § 100 (West 2021); City of Barstow v. Mojave Water Agency, 5 P.3d 853, 863 (Cal. 2000) (right extends “to reasonable and beneficial uses” of the water.); WELLS A. HUTCHINS, THE CALIFORNIA LAW OF WATER RIGHTS 11 (1956) (“The policy inherent in State water law is to utilize all water available. . .and to require the greatest number of beneficial uses that the water supply can yield. The limited quantity of water available necessitates careful economy in its use.”).

20. *California Water Service*, 224 Cal. App. 2d at 725.

21. STATE OF CAL., CALIFORNIA WATER ACTION PLAN 14 (2014), https://resources.ca.gov/CNRALegacyFiles/docs/california_water_action_plan/2014_California_Water_Action_Plan.pdf (on file with the *University of the Pacific Law Review*).

22. *Id.*

California's long-held system of water rights and priorities.²³ In bill analyses on the Senate floor, staff noted that “[w]hile California uses more groundwater than any other state, it is the last in the Union to lack an enforceable set of statewide groundwater management standards.”²⁴ On the Assembly Floor, Representative Roger Dickinson urged support, noting that the bill was crafted over nine months with extensive input from stakeholders: “This bill is built on local control . . . It is an opportunity for local entities to decide how to approach and devise a plan to get to groundwater sustainability.” The consequences of inaction had to be addressed: “What are the consequences if we fail to act . . . If not now, then when? If not us, then who?”

Six years later, the first round of Groundwater Sustainability Plans (“GSPs”) were submitted to the California Department of Water Resources (“DWR”) for review, and SGMA’s lofty goals were met with the practical challenge of implementation.

A. Local Action, with a State Backstop

SGMA applies to all groundwater basins and subbasins described in DWR’s *California’s Groundwater: Bulletin 118*.²⁵ DWR is tasked with prioritizing each of these basins along a continuum from very low- to high-priority, and with identifying those basins that are subject to critical conditions of overdraft.²⁶ Although all basins are “encourage[d] and authorize[d]” to develop groundwater sustainability plans under SGMA, the law’s requirements are mandatory for those basins designated as medium- or high-priority by DWR.²⁷ In its 2019 Basin Prioritization process, ninety-four state basins were designated by DWR as medium- or high-priority. An additional twenty-one of basins were designated as critically overdrafted.²⁸

23. CAL. WATER CODE § 10720.1 (West 2021); *see also* SB 1168, 2014 Leg., 2013–2014 Sess. (Cal. 2014) and AB 1739, 2014 Leg., 2013–2014 Sess. (Cal. 2014) (uncodified findings and declarations) (observing that “failure to manage groundwater to prevent long-term overdraft infringes on groundwater rights;” that groundwater is “most effectively managed at the local or regional level,” and that those local entities “need to have the necessary support and authority to manage groundwater sustainably.”).

24. Senate Rules Committee, Committee Analysis of SB 1168 (Aug. 29, 2014).

25. CAL. WATER CODE § 10721(b) (West 2021) (defining “basin” as a basin or sub-basin designated in *Bulletin No. 118*). First published in 1975, *Bulletin 118* is a descriptive document cataloging California’s groundwater resources by basin; it took on new regulatory significance with SGMA’s passage.

26. CAL. WATER CODE § 10722.4 (West 2021).

27. The State’s adjudicated basins are generally exempt from SGMA’s requirements. CAL. WATER CODE § 10720.8 (West 2021). In addition, basins that are operated under a DWR-approved alternative to a GSP are deemed to have met this initial plan preparation requirement. CAL. WATER CODE § 10733.6 (West 2021).

28. DWR’s internal guidance offers that “[a] basin is subject to critical overdraft when continuation of present water management practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts.” For an overview of the basin prioritization process, as well as maps and supporting information, *see* Basin Prioritization, CAL. DEP’T WATER RESOURCES, <https://water.ca.gov/Programs/Groundwater-Management/Basin-Prioritization> (last visited Feb. 28, 2021) (on file with the *University of the Pacific Law Review*).

2021 / Early Efforts at Defining Sustainability in California's Critically Overdrafted Basins

Once they are prioritized, SGMA sets out a timeline within which basins must meet certain benchmarks along the path to sustainable management. Failing to do so puts the basin at risk of being designated as probationary and subject to state intervention by the SWRCB. The first of these benchmarks (i.e., inclusion within one or more coordinated Groundwater Sustainability Agencies, or “GSAs”) occurred on June 30, 2017, and passed by largely without incident.²⁹ The second benchmark (i.e., submission of GSPs for basins designated as critically overdrafted) rolled out in January 2020, and the submitted plans are currently under review by DWR.³⁰ By January 2022, the last of the state’s remaining regulated basins are to be operated under a GSP.³¹

A GSP is the lynchpin of an agency’s sustainability efforts within a basin. Each GSP must set out sustainability goals for a basin, culminating in the absence of undesirable results in the basin within twenty years of the plan’s implementation, and the managing GSAs must report regularly back to DWR with their progress toward attaining that goal.³² SGMA and the regulations promulgated under it provide extensive guidance about what a GSP must include, all of which is oriented around the “sustainability goal” that the GSA, through a GSP, has established for the basin. A GSP must define the sustainability goal for the basin and explain the actions that will be taken to achieve that goal within twenty years of the plan’s implementation.³³

Submission of the GSP is not the finish line for these basins: GSPs are then evaluated by DWR to determine whether the plan “conforms with [Water Code] Sections 10727.2 and 10727.4 and is likely to achieve the sustainability goal for the basin.”³⁴ GSPs are evaluated by DWR based on a substantial compliance standard, provided that the sustainability goals of SGMA are satisfied.³⁵ DWR will consider whether the interests of the beneficial uses and users of groundwater have been adequately considered, the feasibility of the actions contemplated by the GSP, and the GSA’s legal and financial ability to implement

29. CAL. DEP’T OF WATER RES., *supra* note 2.

30. CAL. WATER CODE § 10735.2(a) (West 2021).

31. WATER § 10735.2(a)(4).

32. CAL. WATER CODE § 10733(a) (West 2021). Plan development and review is governed in part by DWR’s SGMA implementing regulations, which were adopted in 2016 and codified in Title 23, Division 2, Chapter 1.5 of the California Code of Regulations. The regulations “identify the necessary plan components specified in [SGMA] and other information that will assist local agencies in developing and implementing groundwater sustainability plans and coordination agreements.” They also “identify appropriate methodologies and assumptions for baseline conditions concerning hydrology, water demand, regulatory restrictions that affect the availability of surface water, and unreliability of, or reductions in, surface water deliveries to the agency or water users in the basin, and the impact of those conditions on achieving sustainability. The baseline for measuring unreliability and reductions shall include the historic average reliability and deliveries of surface water to the agency or water users in the basin.” CAL. WATER CODE § 10733.2(b)(2) (West 2021).

33. CAL. CODE REGS. tit. 23, § 354.24 (2016); *see* CAL. WATER CODE § 10727.2(b) (West 2021).

34. WATER § 10733(a); *see* CAL. WATER CODE § 10733.4(a) (West 2021).

35. CAL. CODE REGS. tit. 23, § 350.4(c) (2021).

the GSP, among other factors. After their initial adoption, plans will be reviewed by DWR at no less than five-year intervals, and whenever amended, to determine the plan's continued compliance with SGMA and the regulations.

To be designated as "adequate," a GSP must be submitted within the appropriate statutory timeframe, include all of the information required by SGMA and the regulations (including a coordination agreement, as necessary), cover the entire basin, and have any deficiencies addressed by DWR in its review addressed and remedied within the appropriate timeframe.³⁶ "The assessment may include recommended corrective actions to address any deficiencies identified by the department."³⁷ If a GSP is deemed inadequate, or if sufficient progress toward sustainability is not maintained, the basin may be at risk for State intervention.³⁸

As of this Article's publication, forty-seven GSPs, representing twenty-two separate groundwater basins, have been submitted to DWR for assessment.³⁹ DWR must evaluate these plans and issue an assessment within two years of their submittal. For most critically overdrafted basins, then, this assessment is due in January 2022.

B. The GSP as a Scaffolding for Sustainability Determinations

DWR's evaluation of the GSP considers, among other criteria, whether the plan is "likely to achieve the sustainability goals for the basin."⁴⁰ But SGMA does not offer any numeric prescription for the amount of water that may be extracted from each basin, or the precise way that sustainability must be defined in a given basin. Instead, it sets a scaffolding upon which the managing GSAs can construct their plans, leaving the most crucial substantive decisions (e.g., the specific parameters that constitute an undesirable result) to the decision-making authority of the local entity.

Development of these plans is a comprehensive and data-intensive endeavor. Together, SGMA and its implementing regulations direct that the GSP *shall* include the following key elements:

36. CAL. CODE REGS. tit. 23, § 355.4 (2021).

37. WATER § 10733.4(d).

38. CAL. WATER CODE §§ 10727.2, 10727.4 (West 2021); CAL. CODE REGS. tit. 23, § 355.2 (2021).

39. Submitted plans may be found on DWR's SGMA portal, located at <https://sgma.water.ca.gov/portal/gsp/all>. Of the submitted plans, all but 4 (the Castac Lake Valley (5-029); the Sacramento Valley North and South Yuba Subbasins (5-021.60 & 5-021.61); the Las Posas Valley (4-008)) are from basins designated as critically overdrafted. Cal. Dep't of Water Res., *SGMA Portal*, CA.GOV, <https://sgma.water.ca.gov/portal/> (last visited Mar 7, 2021) (on file with the *University of the Pacific Law Review*).

40. CAL. CODE REGS. tit. 23, § 355.4.

2021 / Early Efforts at Defining Sustainability in California's Critically Overdrafted Basins

- A water budget and quantified sustainable yield for the basin.⁴¹
- A description of the physical setting and characteristics of the aquifer system underlying the basin.⁴²
- Quantifiable, numeric minimum thresholds for each of six sustainability indicators, the presence of which indicates an undesirable result in the basin.⁴³
- Monitoring protocols for relevant sustainability indicators, designed to detect changes in groundwater levels, groundwater quality, and subsidence (among other factors).⁴⁴
- One or more measurable objectives for each sustainability indicator, together with five-year interim milestones to measure progress toward the objective.⁴⁵

The plans are oriented around the identification, evaluation, and response to six sustainability indicators (SGMA's "six deadly sins") that the GSP must evaluate in determining the presence or absence of undesirable results in a basin. These include: (1) chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the fifty-year planning and implementation horizon;⁴⁶ (2) reduction of groundwater storage; (3) seawater intrusion; (4) degraded water quality, including the migration of contaminant plumes that impair water supplies; (5) land subsidence that substantially interferes with surface land uses; and (6) depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.⁴⁷

In addition to minimum thresholds for each of these indicators, the plan must describe the cause of the groundwater conditions that lead to the undesirable result; the criteria, "based on a quantitative description of the combination of

41. WATER § 10727.2.

42. *Id.*

43. The agency may establish criteria and objectives that are specific to unique "management areas" within a basin, and may apply different criteria and establish different definitions of the groundwater conditions giving rise to undesirable effects in those areas, provided that the interests of beneficial uses and users of groundwater have been adequately considered and the GSA demonstrates that the use of different criteria in management areas does not adversely affect its ability to achieve the sustainability goal for the basin. CAL. CODE REGS. tit. 23, §§ 351(r), 354.20, 354.26(b) (2021).

44. WATER § 10727.2.

45. WATER § 10727.2(b)(1); CAL. CODE REGS. tit. 23, § 354.30 (2021). Measurable objectives must be measured along the same values and monitoring sites as minimum thresholds under which undesirable effects are identified, and must be sufficiently above the undesirable effects threshold so as to "provide a reasonable margin of operational flexibility under adverse conditions." CAL. CODE REGS. tit. 23, § 354.30(b).

46. Overdraft during a drought is specifically exempted from this definition, provided that groundwater levels are managed appropriately during other periods. CAL. WATER CODE § 10735(a) (West 2021).

47. CAL. WATER CODE § 10721(x) (West 2021).

minimum threshold exceedances that cause significant and unreasonable effects in the basin”; and the potential effects on the beneficial uses and users of groundwater that may occur from the specified undesirable result.⁴⁸ SGMA’s implementing regulations recognize that a GSA may need to evaluate multiple thresholds, across multiple basin monitoring sites, to determine whether an undesirable result is occurring.⁴⁹

C. Bringing Teeth to Sustainable Management

Finally, SGMA empowers GSAs to take action to bring wayward portions of their basins into compliance with the sustainability mandate. To that end, GSPs must contain descriptions of the projects and management actions adopted to meet measurable objectives and prevent undesirable results, as well as contingency projects or actions that will be implemented in the event that groundwater conditions do not adequately respond to measures provided in the GSP or certain measures become infeasible, and criteria for triggering those actions.⁵⁰ For example, where pumping exceeds the sustainable yield of the basin, GSAs will need to look to supply augmentation projects, reductions in pumping, or a combination of these strategies to bring the basin back into balance.

To achieve SGMA’s sustainability mandate, GSAs are endowed with considerable enforcement authority. Those powers are overlaid onto the existing authorities of the GSA—each of which is a public agency or combination of public agencies with water planning responsibilities within their basins.⁵¹ Of particular note in overdrafted basins, GSAs have explicit authority to control the method, frequency, and volume of groundwater extraction.⁵² This includes the authority to:

Regulate, limit, or suspend extractions from individual wells or from groundwater wells in the aggregate and to require extractors to operate on a rotation basis.⁵³

Regulate new well construction, enlargement of existing wells, or reactivation of abandoned wells.

48. CAL. CODE REGS. tit. 23, § 354.26(b) (2021).

49. CAL. CODE REGS. tit. 23, § 354.26(c).

50. CAL. CODE REGS. tit. 23, § 354.44 (2021).

51. Note that however broad these authorities may be, GSAs cannot supersede local land use planning: CAL. WATER CODE § 10726.8(f) (West 2021) (“Nothing in this chapter or a groundwater sustainability plan shall be interpreted as superseding the land use authority of cities and counties, including the city or county general plan, within the overlying basin.”). At this early stage of implementation, it is not clear how a conflict between GSPs and county ordinances addressing groundwater issues, well construction standards, *et cetera* would be resolved.

52. Most of a GSA’s powers, with the exception of some limited fee functions, are keyed to the GSA’s submission of a groundwater sustainability plan (GSP) to DWR. Practically speaking, this means that the terms of the GSP will in most cases define the way in which the GSA exercises these authorities.

53. CAL. WATER CODE § 10726.4(a)(2) (West 2021).

2021 / Early Efforts at Defining Sustainability in California's Critically Overdrafted Basins

Establish groundwater allocations and associated accounting rules and “authorize temporary and permanent transfers of groundwater extraction allocations within the agency’s boundaries.”⁵⁴

Levy both fixed and volumetric fees, “including, but not limited to, fees that increase based on the quantity of groundwater produced annually, the year in which the production of groundwater commenced from a groundwater extraction facility, and impacts to the basin.”⁵⁵

GSA also enjoy the authority to adopt rules, regulations, ordinances, and resolutions;⁵⁶ acquire and sell real property, including water rights;⁵⁷ require registration, reporting, and metering of groundwater extraction facilities within the GSA’s management area;⁵⁸ and perform “any act necessary or proper to carry out the purposes of” SGMA.⁵⁹ GSAs may impose—either administratively or through the filing of an action in the superior court—civil penalties on persons who: (1) extract groundwater in excess of the amount authorized under a rule, regulation, ordinance, or resolution; or (2) violate any rule, regulation, ordinance, or resolution adopted by the GSA to carry out SGMA.⁶⁰ These powers are a supplement to the existing authority already exercised by the agency serving as a GSA.⁶¹

Section 10720.5 limits these broad authorities, providing in relevant part that groundwater management pursuant to SGMA “shall be consistent with Section 2 of Article X of the California Constitution.”⁶² Under that section, the rule of

54. *Id.* at (a)(2)–(4).

55. CAL. WATER CODE § 10730.2(d) (West 2021).

56. CAL. WATER CODE § 10725.2(b) (West 2021).

57. CAL. WATER CODE § 10726.2 (West 2021). This includes the specific authority to “appropriate and acquire surface water or groundwater and surface water or groundwater rights, import surface water or groundwater into the agency, and conserve and store within or outside the agency that water . . .” WATER § 10726.2(b); and to “purchase, transfer, deliver, or exchange water or water rights of any type with any person . . .” WATER § 10726.2(d).

58. CAL. WATER CODE § 10725.6 (West 2021); CAL. WATER CODE § 10725.8(a), (c), (e) (West 2021).

59. WATER § 10725.2(a).

60. CAL. WATER CODE § 10732(a)–(b) (West 2021). For extractions of groundwater above authorized amounts, the penalty may not exceed \$500 per acre-foot extracted in excess of the amount authorized. WATER § 10732(a)(1). For violations of any rule, regulation, ordinance, or resolution adopted by the GSA to carry out the Act, the penalty may not exceed \$1000, plus \$100 for each additional day on which the violation continues if the person fails to comply within 30 days after notice of the violation. WATER § 10732(a)(2). Penalties imposed under Section 10732 are to be paid to the GSA and may be expended by the GSA solely for purposes of the Act, and in general cannot be imposed on de minimis extractors. WATER §§ 10732(c); 10730(a).

61. *See, e.g.*, CAL. WATER CODE § 10725 (West 2021) (“A groundwater sustainability agency may exercise any of the powers described in this chapter in implementing this part, in addition to, and not as a limitation on, any existing authority.”) (emphasis added); CAL. WATER CODE § 10726.8(a) (West 2021) (“This part is in addition to, and not a limitation on, the authority granted to a local agency under any other law.”) (emphasis added).

62. WATER § 10725; CAL. WATER CODE § 10720.1(b) (Legislative intent in SGMA is “[t]o enhance local management of groundwater consistent with rights to use or store groundwater and Section 2 of Article X of the California Constitution. It is the intent of the Legislature to preserve the security of water rights in the

reasonable use applies to all water rights enjoyed or asserted in the state, whether these rights are grounded on the riparian right or the right, analogous to the riparian right, of the overlying land owner, or the percolating water right, or the appropriative right.⁶³ Article X, § 2 further provides that it shall not be interpreted “[a]s depriving any appropriator of water to which the appropriator is lawfully entitled.” Likewise, nothing in SGMA, or “in *any groundwater management plan adopted pursuant to [SGMA]*, determines or alters surface water rights or groundwater rights under common law or any provision of law that determines or grants surface water rights.”⁶⁴

While the principle of preserving water rights is sound, its application in the face of imperfect information, disproportionate demand for water, and local disputes about the timing and extent of rights is practically challenging. When it comes to limits on extraction, caselaw offers some general principles but little meaningful refuge. Less than seventy published cases make specific findings about the priorities of rights in an overdrafted (or potentially overdrafted) basin, and in each the court cautions that the determination and appropriate solution is a basic-specific one.⁶⁵ In contrast, a Westlaw search for published cases relating to the appropriation of surface water (one category of many in the surface water management legal regime) turns up more than 5,700 published cases.

IV. EARLY EFFORTS IN DEFINING SUSTAINABILITY UNDER SGMA

The state’s critically overdrafted basins provide the first public test of SGMA’s organizational structure. Groundwater management in California has long been limited by the concept of a “safe yield” for the basin. SGMA, however, differs in that it asks GSAs to act preemptively in setting thresholds beyond which conditions may not degrade. In an optimistic view, this approach affords all basin stakeholders an opportunity to identify and plan for the specific change in conditions that would indicate a condition of overdraft, without first resorting to expensive litigation. In a more pessimistic one, it places the burden of setting those parameters (and the attendant risk of litigation) squarely on the GSAs, many of whom face data and funding gaps that complicate their ability to arrive

state to the greatest extent possible consistent with the sustainable management of groundwater.”); *see also* SB 1168, 2014 Leg., 2013–2014 Sess. (Cal. 2014) (uncodified findings) (“It is, therefore, the intent of the Legislature to . . . respect overlying and other proprietary rights to groundwater, consistent with Section 1200 of the Water Code.”). A limited exception exists in basins designated as medium- or high-priority, in that extractions during the period between SGMA’s effective date and a plan’s adoption and approval in the basin may not be used as evidence to establish or defend against a claim of prescription. CAL. WATER CODE § 10720.5(a) (West 2021).

63. *City of Barstow v. Mojave Water Agency*, 5 P.3d 853, 863 (Cal. 2000) (referring to Cal. Const. art. X, § 2).

64. WATER § 10720.5(b) (emphasis added).

65. *See also* Cal. Water Serv. Co. v. Edward Sidebotham & Son, Inc., 224 Cal. App. 2d 715, 724 (1964) (“The question of who shall bear the burden of curtailing the overdraft, and in what proportion, depends upon the legal nature and status of the particular water right held by each party.”).

2021 / Early Efforts at Defining Sustainability in California's Critically Overdrafted Basins

at final parameters.⁶⁶

On June 3, DWR issued the first results of its review of the critically overdrafted basins. Two (the Santa Cruz Mid-County GSP and the 180/400 Foot Aquifer GSP) were approved, another two (the Paso Robles Area GSP and Cuyama Valley GSP) were issued initial consultation letters seeking further dialogue between their respective GSAs and DWR regarding possible areas of GSP deficiency. The remaining plans remain under review as of the date of this Article's publication. Given that timeline, medium- and high-priority basins may take some lessons from the current round of submittals but should expect that the final review of the initial critically overdrafted GSPs will be released at too late a date to make meaningful responsive changes prior to their January 2022 submission deadlines. Still, a few themes stand out in this initial round.

A. Broadly Defined Sustainability Goals

By law, each GSP is oriented toward the pursuit and attainment of a basin-specific "sustainability goal." SGMA defines a sustainability goal, rather amorphously, as "the existence and implementation of one or more groundwater sustainability plans that achieve sustainable groundwater management by identifying and causing the implementation of measures targeted to ensure that the applicable basin is operated within its sustainable yield."⁶⁷ In turn, sustainable yield is the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin, including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result.⁶⁸

A GSA will demonstrate that it has achieved the sustainability goal by "demonstrating that the management and use of groundwater in the basin can be maintained through the [fifty-year] planning and implementation horizon without causing undesirable results."⁶⁹ However, SGMA does not direct GSAs to return the basin to its undeveloped status or eliminate historic conditions of overdraft (though they are certainly free to take steps toward that end). GSAs are entitled to use 2015 as a baseline and are *only* required to address those undesirable

66. There have been some efforts to improve upon this data gap. For example, the Open and Transparent Water Data Act is intended to "seize upon" the opportunity provided by improvements in technology and open-source platforms "to integrate and increase access to existing water data." CAL. CAL. WATER CODE § 12401(b) (West 2021). The centerpiece of AB 1755 is a statewide integrated data platform through which DWR, SWRCB and CDFW are directed to "coordinate and integrate existing water and ecological data." CAL. WATER CODE §§ 12405, 12410 (West 2021). The purpose of that integration includes, but is not limited to, "providing adequate information to implement [SGMA], improving the management of the state's water resources, and bringing greater transparency to water transfers and the market." WATER § 12405.

67. CAL. WATER CODE § 10721(u) (West 2021).

68. WATER § 10721(w).

69. WATER § 10721(r); CAL. CODE REGS. tit. 23, § 354.24 (2021).

results that occurred after SGMA's effective date.⁷⁰

A real-time example is illustrative. The East Kaweah GSP defines its sustainability goal as follows:

The Kaweah Subbasin's sustainability goal is for each GSA to manage groundwater resources to preserve the viability of existing agricultural enterprises of the region, domestic wells, and smaller communities that provide much of their job base in the Subbasin, including the school districts serving these communities. The goal will also strive to fulfill the water needs of existing and amended county and city general plans that commit to continued economic and population growth within Tulare County and portions of Kings County.⁷¹

The GSP then identifies a specific sustainable yield for the basin (between 660,000 and 720,000 acre-feet) and a series of projects and management actions that will be implemented to meet the sustainability goal within twenty years of the plan's implementation. These actions will continue the GSP's sustainable management through the fifty-year planning and implementation horizon identified by SGMA.⁷²

B. Sustainable Yield (. . . For Now)

SGMA defines sustainable yield as "the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result."⁷³ Though it is not synonymous with the common law concept of safe yield, there is some overlap: within case law, "safe yield" is defined as the maximum quantity of water that can be withdrawn annually from a groundwater supply under a given set of conditions without causing an undesirable result.⁷⁴ The types of undesirable results to be considered in computing safe yield under the common law recognize similar indicia to those called out in SGMA, including depletion of groundwater supply, dependability of annual replenishment, storage capacity of the underground reservoir, extent to which the water table may safely be lowered, whether pumping will gradually lower groundwater levels resulting eventually in depletion of the supply, and the risk of water quality degradation⁷⁵

70. CAL. WATER CODE § 10727.2(b)(4) (West 2021).

71. E. KAWEAH GSA, GROUNDWATER SUSTAINABILITY PLAN, at ES 1.3 (2020).

72. *Id.*

73. WATER § 10721(w).

74. *City of Los Angeles v. City of San Fernando*, 14 Cal. 3d 199, 278 (1975) (quoting *City of Pasadena v. City of Alhambra*, 33 Cal.2d 908, 929 (1949)), (disapproved of on other grounds by *City of Barstow v. Mojave Water Agency*, 5 P.3d 853 (Cal. 2000)).

75. *Id.*; *Allen v. Cal. Water & Tel. Co.*, 29 Cal. 2d 466, 475 (1946); *see also Hudson v. Dailey*, 156 Cal.

2021 / Early Efforts at Defining Sustainability in California's Critically Overdrafted Basins

In high-stakes basins like those first identified as critically overdraft by DWR, no GSA's determination of sustainable yield is likely to be unassailable. A specific charge by the GSA that an individual pumper reduce its draw on the basin invites litigation; unfortunately, failure to levy such restrictions may do the same, by inviting the SWRCB to designate the basin as probationary for its failure to achieve sustainability. At the same time, SGMA also directs that it shall not alter existing rights or priorities or water and must be interpreted consistent with Article X, § 2, which requires that "the water resources of the State be put to beneficial use to the fullest extent of which they are capable." A decision by a GSA reflecting a more conservative sustainable yield than the analogous standard for a court's determination of safe yield risks presents challenges too, as dissatisfied water right holders jostle for priority position in the face of a limited supply.

In response to these uncertainties in application, many GSAs have deferred judgment on individual water rights and extractions, taking great pains to reserve flexibility for themselves as they gather more data about the basin. The analysis in the coordinated Kern County GSPs is emblematic of this approach:

The C2VSimFG-Kern estimates of sustainable and native yield presented here are based on available data and the current level of model calibration. Therefore, these estimates are considered appropriate as guides to SGMA planning. However, the C2VSimFG-Kern sustainable and native yield estimates are *initial water budget estimates* that are *not intended for determination of individual landowner allocations or groundwater rights*. Additional technical and legal analysis, along with stakeholder involvement, is necessary to fully quantify the sustainable and native yields.⁷⁶

Still, other GSPs acknowledge the potential for a distinction between basin safe yield and sustainable yield pursuant to SGMA. In the Kaweah subbasin, the safe yield "is estimated to be about 720,000 AF, which amount includes net sub-surface inflow. As defined in SGMA however, the Subbasin's sustainable yield may be additionally impacted when considering undesirable results for other sustainability indicators."⁷⁷

The coordinated Kaweah Subbasin GSPs also reserve flexibility for the future: in their 2020 Coordination Agreement, the GSAs stipulated that although safe yield of the basin might be higher, sustainable yield "may be something less

617 (1909).

76. KERN COUNTY SUBBASIN COORDINATION AGREEMENT app. 2, at 21 (2020), <https://groundwaterexchange.org/wp-content/uploads/2020/07/Kern-Coordination-Agreement-with-Appendixes-1-2020-Updated.pdf> (on file with the *University of the Pacific Law Review*) (emphasis added).

77. KAWEAH SUBBASIN COORDINATION AGREEMENT, app. 3 (2020), <https://www.midkawah.org/documents> (on file with the *University of the Pacific Law Review*).

and have agreed that the total groundwater inflow of 660,000 AF identified in Table 3.2.” That number “will continue to be revised pursuant to the monitoring of sustainability indicators and avoidance of undesirable results.”⁷⁸

This reserved flexibility is generally consistent with SGMA’s direction that a GSP should identify and respond to data gaps, updating as necessary. However, that flexibility may present on-the-ground operational challenges, particularly in coordination within and between basins when an undesirable result looms, and the responsible agencies are forced to respond to those conditions with limits on extractions or by expending funds on projects and management actions.

C. Reductions in Groundwater Levels as a Hallmark of Undesirable Results

The six sustainability criteria overlay many of the indicia of overdraft already recognized in common law, though without the specificity that SGMA now demands of its GSPs.⁷⁹ However, whereas in the common law the determination of overdraft was left to the court, SGMA prods GSAs to act preemptively by requiring that the GSP establish a quantifiable, numeric threshold for each sustainability criteria, beyond which that particular condition shall be deemed an undesirable result as a matter of law.⁸⁰

Herein lies an important procedural distinction in a GSA’s calculation of undesirable results and sustainable yield versus a court’s evaluation of whether the safe yield of a basin has been exceeded, resulting in conditions of overdraft. For purposes of developing and evaluating the sufficiency of a GSP, the minimum threshold selected by the GSA “refers to a *numeric value for each sustainability indicator* used to define undesirable results,” identified in advance and tracked and enforced by the GSA.⁸¹ Exceeding these thresholds triggers intervention by the managing GSA, typically characterized as projects or management actions in the GSP.⁸²

So for example, California Water Code § 10721(x)(1) identifies “chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the [fifty-year] planning and

78. *Id.*

79. See Garner et al., *supra* note 6, at 174 (“Although the scope of ‘undesirable results’ is mainly undefined in case law, the common law principle is at least as broad as SGMA’s definition. Indeed, the specific undesirable results addressed in an adjudication have historically only been those raised by the pleadings of the litigants. The courts have not rejected any of the SGMA-specific undesirable results; some simply have not yet been fully litigated.”).

80. CAL. WATER CODE § 10721(x) (West 2021); CAL. CODE REGS. tit. 23, §§ 354.22, 354.26, 354.28 (2021). Compare this approach to the common law tradition of naming and responding to overdraft that has already occurred: *see, e.g.*, *City of Santa Maria v. Adam*, 211 Cal. App. 4th 266, 278, 291 (2016) (in determining whether Basin was in overdraft, court looked for “physical manifestations of overdraft and, finding none (other than some subsidence in the Nipomo area, which the court concluded did not demonstrate Basin-wide overdraft), the court was satisfied that the Basin had not been in overdraft . . .”).

81. CAL. CODE REGS. tit. 23, § 351(t) (2021) (emphasis added).

82. CAL. CODE REGS. tit. 23, § 354.44 (2021).

2021 / Early Efforts at Defining Sustainability in California's Critically Overdrafted Basins

implementation horizon” as an undesirable result under SGMA. That definition is similar to the “gradual lowering of the ground water levels resulting eventually in depletion of the supply” recognized as an undesirable result and indicia of overdraft in *San Fernando*.⁸³ But, in basins implementing SGMA, the GSA is entrusted with the threshold decision of exactly how much depletion of supply rises to the level of “significant and unreasonable” such that a response is merited.

But SGMA also allows a GSP to use groundwater elevation as an effective proxy for other sustainability indicators where the GSA “can demonstrate that the representative value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence.”⁸⁴ A number of GSPs have incorporated this approach. So for example, California Water Code § 10721(x)(2) provides that significant and unreasonable reduction of groundwater storage is an undesirable result. In the Tulare Lake basin, reductions in groundwater storage are considered significant and unreasonable when groundwater levels exceed the minimum threshold in more than 45% of all monitored wells within a consecutive three-year period.⁸⁵ If that threshold is exceeded, the GSAs would engage in management actions to bring the basin back into sustainability, including supply augmentation projects, fees for groundwater extraction, limitation or regulation of groundwater extraction, water banking, and increases to storage capacity.⁸⁶

D. Locally Managed Allocations & Demand Reductions

Even pre-SGMA, a right holder’s extraction was not absolute: whether appropriate, prescriptive, or overlying, it is tied to the overall safe yield of the basin and the presence or absence of overdraft.⁸⁷ SGMA introduces a new twist: whether through voluntary action or by exercising their regulatory powers, GSAs are directed to bring overdrafted basins back into a condition of sustainability, curbing overdraft to ensure the appropriate balance can be struck for both water right holders and basin stakeholders. Data from the initial GSP submissions suggests that the GSAs recognize the near-universal need to engage in some measure of demand reduction in these basins. At the same time, the GSAs acknowledge that information about the individual claims of right in the basin is complicated and often imperfect. California’s Central Valley is heavily represented in this initial round of submissions, and its challenges in groundwater

83. *City of Los Angeles v. City of San Fernando*, 14 Cal. 3d 199, 278 (1975).

84. CAL. CODE REGS. tit. 23, § 354.28(d) (2021).

85. TULARE LAKE SUBBASIN GROUNDWATER SUSTAINABILITY PLAN, at 4-17, § 4.3.3.2 (2020), <http://www.midkingsrivergsa.org/assets/tulare-lake-subbasin-groundwater-sustainability-plan%2c-january-2020.pdf> (on file with the *University of the Pacific Law Review*).

86. *Id.*

87. *City of Barstow v. Mojave Water Agency*, 5 P.3d 853, 863 (Cal. 2000).

management are well-documented. In the Madera basin, for example, the GSP aims for 90,000 annual acre-foot reduction in groundwater extractions as a result of a Crop Water Use Reduction Program, on top of an additional 15,900 acre-foot reduction as a result of converting presently irrigated lands into recharge facilities.⁸⁸

Following SGMA's locally focused ethos, the Tulare Lake GSP does not prescribe responses to a minimum threshold exceedance but rather notes that the five GSAs responsible for implementing the plan in the basin each "have the flexibility to choose which types of projects and management actions they would like to pursue in attaining sustainable management. . . . [D]ecisions regarding projects and policies will depend on conditions and management of the GSA at the board level."⁸⁹

That approach is not unusual among the submitted GSPs, and likely to be appealing to future planners for its ability to lend basin-wide flexibility, and to imbue local management authorities with a more direct voice in the reduction, extraction, and spending decisions likely to impact their constituents. See, for example, the Tule Basin Coordination Agreement, which offers that for purposes of establishing a water budget, the GSAs "have agreed that the Sustainable Yield for the Subbasin shall be divided amongst the GSAs. . . . The water budget, as divided amongst the GSAs, is not an allocation or final determination of any water rights (including without limitation any claimed appropriative or prescriptive rights)."⁹⁰ Each GSA is then responsible for implementing projects and management actions within its own area consistent with the overarching goals of the GSP.⁹¹

V. CONCLUSION

California's groundwater challenges have evolved over its more than 150-year history, and it would be naive to assume they could be solved in the initial salvo of GSP submissions. For better or worse, some of the greatest challenges and innovations brought about by SGMA will play out in California's agriculture-rich Central Valley, whereby some estimates agricultural water use exceeds available groundwater supply by two million acre-feet annually, or 11%

88. MADERA SUBBASIN JOINT GROUNDWATER SUSTAINABILITY PLAN, at ES-9 (2020), https://www.maderacountywater.com/wp-content/uploads/2020/02/Madera_GSP_2020_FinalReport.pdf (on file with the *University of the Pacific Law Review*).

89. TULARE LAKE SUBBASIN GROUNDWATER SUSTAINABILITY PLAN, *supra* note 85 at 6-12, § 6.3.3.6; *see generally id.* ch. 6.

90. TULE SUBBASIN COORDINATION AGREEMENT 47 (2020), https://groundwaterexchange.org/wp-content/uploads/2020/07/5-022.13-Tule_Coordination-Agreement_Updated.pdf (on file with the *University of the Pacific Law Review*).

91. *Id.* at 49 ("Projects and management actions will be implemented by each GSA in order to decelerate and arrest chronic lowering of local groundwater levels within the Tule Subbasin by 2040.").

2021 / Early Efforts at Defining Sustainability in California's Critically Overdrafted Basins

of total water use for the region.⁹² The critically overdrafted basins offer a series of test cases for this effort and clearly reflect an effort to reserve maximum flexibility in management while the GSAs scramble to meet SGMA's sustainability mandates. Their future success, however, hinges on the GSAs' ability to answer preemptively the question that to date has always been retrospective: when imperfect claims of right meet overwhelming demand, where does the resource get allocated? For many basins, the answer is still murky.

92. CAL. DEP'T OF WATER RES., *supra* note 2, at 2–3 (estimating that between spring 2005 to spring 2010, Central Valley aquifers experienced a net depletion of stored groundwater of approximately 13 million acre-feet, or approximately 4 times the total storage of Lake Oroville); ELLEN HANAK ET AL., PUB. POL'Y INST. CAL., WATER AND THE FUTURE OF THE SAN JOAQUIN VALLEY 10 (2019), <https://www.ppic.org/wp-content/uploads/water-and-the-future-of-the-san-joaquin-valley-february-2019.pdf> (on file with the *University of the Pacific Law Review*) (further noting that 11 of the San Joaquin Valley's fifteen groundwater basins have been designated by the State as critically overdrafted).