

GROUNDWATER MANAGED: CALIFORNIA TAKES ITS FIRST STEP TOWARDS GROUNDWATER SUSTAINABILITY

I. INTRODUCTION

In the United States, farmers have relied on groundwater to irrigate their crops; in particular, California uses more groundwater than any other state.¹ California farmers have used a combination of surface water and groundwater for over a century and have turned California's Central Valley into one of the most efficient agricultural regions in the world.² For instance, California's Central Valley accounts for one percent of the nation's farmland and produces twenty-five percent of the United States' table food.³ California farmers have always had a largely unrestricted right to pump water from the ground: they are permitted to pump an unregulated amount of groundwater without a permit so long as the water is put to a reasonable and beneficial use.⁴ However, farmers' reliance on groundwater is becoming more problematic due to recent severe drought conditions and increased environmental regulations.⁵ California officials have reported that groundwater in twenty-one basins, several of which are in the Central Valley, have dropped to critical levels.⁶ As the state approaches its fifth consecutive

¹ Devin Galloway & Francis S. Riley, *San Joaquin Valley, California, Largest Human Alteration of the Earth's Surface*, U.S GEOLOGICAL SURVEY, <http://pubs.usgs.gov/circ/circ1182/pdf/06SanJoaquinValley.pdf>.

² *Id.*; see also Kenneth W. Umbach, *A Statistical Tour of California's Great Central Valley*, California Research Bureau, California State Library, <http://www.library.ca.gov/crb/97/09/> (The Central Valley is found in the center of California and encompasses all or part of 18 California Counties).

³ Galloway & Riley, *supra* note 1.

⁴ Matt Weiser, *California Poised to Restrict Groundwater Pumping*, SACRAMENTO BEE (Sep. 15, 2014), <http://www.sacbee.com/news/local/article2609723.html>; Cal. Const. art. X, § 2 (2015).

⁵ California Department of Water Resources, *Agricultural Water Use*, <http://www.water.ca.gov/wateruseefficiency/agricultural/> (last visited Feb. 14, 2016).

⁶ Matt Stevens, *21 California Groundwater Basins in Critical Condition, State Panel Says*, L.A. TIMES (Aug. 19, 2015), <http://www.latimes.com/local/lanow/la-me-ln-groundwater-basins-overdraft-20150819-story.html>.

year of drought, state representatives have begun to take increased measures to prevent further depletion of groundwater resources.⁷

California residents have been adversely affected by the diminished groundwater levels.⁸ In just two years, the town of Stratford in Tulare County has experienced significant land subsidence of one hundred feet due to excessive groundwater pumping.⁹ This has caused damage to local infrastructure.¹⁰ In the city of Porterville, California, 1,000 of the town's 7,300 inhabitants do not have running water because wells have run dry.¹¹ It has become increasingly clear that groundwater is a limited resource and underground aquifers need to be managed sustainably.¹² As a result of this awareness, the California Legislature took unprecedented action and passed the Sustainable Groundwater Management Act ("SGMA") in 2014 to reduce overdraft in the State's groundwater aquifers.¹³ Prior to SGMA, there was no legislation in place to regulate California's groundwater.¹⁴ Groundwater management

⁷ Richard Howit, Duncan Macewan, Josue Medellin-Azuara, Jay Lund & Daniel Sumner, *Economic Analysis of the 2015 Drought for California Agriculture*, UC Davis Center for Watershed Sciences, https://watershed.ucdavis.edu/files/biblio/Final_Drought%20Report_08182015_Full_Report_WithAppendices.pdf.

⁸ Diana Marcum, *Scenes from California's Dust Bowl*, L.A. TIMES (Dec. 10, 2014), <http://www.latimes.com/local/great-reads/la-me-cl-drought-timeline-20141210-html-htmlstory.html>; See also Claudia C. Faunt, Randall T. Hanson, Kenneth Belitz, & Laurel Rogers, *California's Central Valley Groundwater Study: A Powerful New Tool to Assess Water Resources in California's Central Valley*, U.S. Geological Survey, <http://pubs.usgs.gov/fs/2009/3057/pdf/fs20093057.pdf>.

⁹ Marcum, *supra* note 8; Subsidence is the sinking of a large area of land. See U.S. Geological Survey, Land Subsidence, <http://water.usgs.gov/edu/earthgwlandsubside.html> (last visited Feb. 14, 2016).

¹⁰ Marcum, *supra* note 8.

¹¹ *Id.*

¹² California Department of Water Resources, *Groundwater*, <http://www.water.ca.gov/groundwater/> (last visited Jan. 10, 2016).

¹³ Alfred Smith, Water Rules California's Sustainable Groundwater Management Act Provides a Comprehensive Set of Tools for Local Agencies to Implement Groundwater Management Plans, L.A. Law., February 2015, at 18.

¹⁴ California Department of Water Resources, *The 2014 Sustainable Groundwater Management Act: Approach and Options for New Governance*, http://www.water.ca.gov/cagroundwater/docs/WEFSGMA_Approaches_and_Options_for_New_Governance_00282995xA1C15.pdf.

is critical to the success of agriculture and mismanagement of the groundwater will have detrimental consequences.¹⁵

The undesirable results of groundwater mismanagement has been experienced internationally.¹⁶ In the 1970s, farmers and landowners in Saudi Arabia had the unrestricted ability to pump water from underground aquifers to irrigate their land.¹⁷ Mining groundwater permitted Saudi Arabia to produce agricultural crops for several decades in a desert.¹⁸ When the water table dropped, the farmers responded by drilling deeper wells until the water eventually ran out.¹⁹ Saudi Arabia's agricultural production has consistently declined since the early 1990s and it is unlikely the country will be able to replenish the underground aquifers.²⁰ Today the precious underground aquifers beneath Saudi Arabia have been nearly depleted and the agricultural economy has collapsed.²¹ As a result, Saudi Arabia is now in the process of attempting to divert surface water from other regions.²²

Similarly, the world's top irrigators, China, India, Pakistan and the United States are currently over-drafting and reducing the amount of available groundwater.²³ In India researchers discovered that from 2002 to 2012 farmers were pumping eight percent more water from the ground than was recharged.²⁴ Ninety-five percent of all open wells are now dry in India.²⁵ Not only will the depletion of groundwater levels restrict agricultural growth, it will also reduce the availability of surface water surrounding the underground aquifer.²⁶

This Comment will address the manner in which SGMA will impact the farmer's ability to use groundwater to irrigate crops. It will also

¹⁵ Nathan Halverson, *What California can learn from Saudi Arabia's Water Mystery?*, REVEAL NEWS, (Apr. 22, 2015), <https://www.revealnews.org/article/what-california-can-learn-from-saudi-arabias-water-mystery/>.

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ *Id.*

²¹ *Id.*

²² *Id.*

²³ Sandra Postel, *India's Food Security Threatened by Groundwater Depletion*.

NATIONAL GEOGRAPHIC (Feb. 3, 2015),

<http://voices.nationalgeographic.com/2015/02/03/indias-food-security-threatened-by-groundwater-depletion/>.

²⁴ *Id.*; Recharge is the Hydrolytic process by which surface water becomes groundwater. See Umbach, *supra* note 2.

²⁵ Postel, *supra* note 23.

²⁶ *Id.*

discuss the benefits of implementing groundwater regulation in California. Part II will introduce the need for groundwater management in California and demonstrate why California's current approach to groundwater is unsustainable. Part III will describe California's approach to groundwater prior to SGMA and how groundwater rights are determined. Part IV will introduce SGMA and discuss the role of Groundwater Sustainability Agencies, Groundwater Sustainability Plans, and the State in groundwater management. Part V will discuss the concerns surrounding the imposition of fees and restrictions on groundwater extraction for farmers. In Part VI, recommendations will be made for ensuring sustainable groundwater management in agriculture. Finally, this Comment will conclude that sustainable groundwater management is necessary to ensure farming thrives in California.

II. BACKGROUND

A. *Groundwater Use in California*

Groundwater is found beneath the earth's surface and accumulates between rock, soil, and sediment.²⁷ There are 515 groundwater basins in California.²⁸ In a typical cycle, farmers pump water from the ground for their crops in the spring and summer, causing the groundwater levels to drop.²⁹ Then, in the winter, surface water sources such as rain, streams, rivers, lakes and irrigation should replenish groundwater levels.³⁰ Groundwater over-draft results when more groundwater is removed from the ground than is recharged.³¹ A 2009 study by the U.S. Geological Survey demonstrated that groundwater in the Central Valley has been depleted by almost sixty million acre-feet ("MAF") since 1960, which is enough water to supply every resident of California with

²⁷ Danielle Blacet, Tim Parker & David Aladjem, *Sustainability From the Ground Up: Groundwater Management in California*, Association of California Water Agencies, <http://www.acwa.com/sites/default/files/post/groundwater/2011/03/groundwater-book.pdf>.

²⁸ Brett Walton, *California Groundwater Law Test State's Capacity to Oversee a Vital Resource*, Circle of Blue, (Sep. 16, 2015), <http://www.circleofblue.org/waternews/2015/world/california-groundwater-law-tests-states-capacity-to-oversee-a-vital-resource/>.

²⁹ California Department of Water Resources, *Agricultural Water Use*, *supra* note 5.

³⁰ *Id.*

³¹ CAL. WATER CODE §§ 121-318 (West).

water for eight years.³² For years, Californians have consistently over-drafted groundwater which has resulted in environmental harm.³³

It is undisputed that agriculture consumes much of the state's water supply.³⁴ In California, agriculture accounts for about eighty percent of all water used by humans.³⁵ In an average year, agriculture irrigates 9.6 million acres of farmland and uses thirty-four MAF of water.³⁶ In comparison, California cities, suburbs, and residences combine to use 8.9 MAF of water.³⁷ When considering the total amount of freshwater available for use in the state, agriculture consumes forty percent of the water.³⁸ Fifty percent is used for environmental purpose while ten percent is used by cities, suburbs, and residences.³⁹ Groundwater serves as an essential source of freshwater in California and supplies thirty-five of the state's water needs in a typical year.⁴⁰ In dry years, groundwater may supply sixty percent of California's water needs.⁴¹

1. The Status Quo is Unsustainable

Farmers began pumping groundwater in California at the beginning of the twentieth century.⁴² Shortly thereafter, groundwater levels dropped as much as 400 feet in certain regions.⁴³ In response, California and the federal government began building a network of dams, reservoirs, and canals to transport water from Northern California to the southern part

³² Faunt ET AL., *supra* note 8.

³³ Julie Schmit, *In California, Demand for Groundwater Causing Huge Swaths of Land to Sink*, NATIONAL GEOGRAPHIC, (March 25, 2014), <http://news.nationalgeographic.com/news/2014/03/140325-california-drought-subsidence-groundwater/>.

³⁴ See Faunt ET AL., *supra* note 8.

³⁵ Jeffrey Mount, Emma Freeman & Jay Lund, *Water Use in California*, Public Policy Institute of California, (July, 2014), http://www.ppic.org/main/publication_show.asp?i=1108.

³⁶ California Department of Food and Agriculture, *Water & the California Farmer*, <https://www.cdfa.ca.gov/drought/docs/Water&CalFarmer2014.pdf>.

³⁷ Blacet ET AL., *supra* note 27.

³⁸ Mount ET AL., *supra* note 35.

³⁹ *Id.*

⁴⁰ Blacet ET AL., *supra* note 27.

⁴¹ *Id.*

⁴² The University of Texas at Austin News, *Groundwater Depletion in Semiarid Regions of Texas and California Threatens U.S. Food Security*, (May, 29 2012), <http://news.utexas.edu/2012/05/29/groundwater>.

⁴³ *Id.*

of the Central Valley.⁴⁴ The 1960 Burns-Porter Act increased the amount of surface water available to farmers by funding a network of canals that transported water from Northern California to Southern California.⁴⁵ As a result, groundwater pumping decreased and groundwater levels began to rise.⁴⁶ The effects of the Burn-Porter Act demonstrate how the availability of surface water significantly decreases the farmer's reliance on groundwater.⁴⁷

As a result of the recent drought conditions and environmental restrictions, the availability of surface water has decreased.⁴⁸ In the early 1990s and 2000s, California realized environmental restrictions needed to be placed on the movement of surface water.⁴⁹ The 2009 Delta Legislation is a prime example of how recent environmental restrictions have decreased the availability of surface water to farmers.⁵⁰ This legislation was passed in response to concerns arising out of the degradation of the environment surrounding the San Joaquin-Sacramento Delta in Northern California.⁵¹ Two man-made canals, the Central Valley Project and the California Aqueduct, transport water from the Delta to farmers south of the Delta.⁵² The legislation reduced the amount of water transported through the canals, and, consequently, farmers increased their reliance on groundwater in recent years.⁵³

Farmers have responded to California's environmental restrictions on surface water by drilling more wells.⁵⁴ In many regions the water table as dropped over fifty feet in the decade.⁵⁵ The groundwater levels will

⁴⁴*Id.*

⁴⁵ Richard Frank & David Aladjem, *Sharing Groundwater: Legal Issues and Challenges*, UC Davis Groundwater Policy Seminar, (January 26, 2015), <http://groundwater.ucdavis.edu/SGMA/>.

⁴⁶ Galloway & Riley, *supra* note 1.

⁴⁷ *See id.*

⁴⁸ *See* Frank & Aladjem, *supra* note 45.

⁴⁹ *Id.*

⁵⁰ *Id.*

⁵¹ Joel Bourne, *California's Pipe Dream: A Heroic System of Dams, Pumps, and Canals can't starve off a Water Crisis*, NATIONAL GEOGRAPHIC, (Apr., 2010), <http://ngm.nationalgeographic.com/2010/04/plumbing-california/bourne-text>.

⁵² *Id.*

⁵³ Frank & Aladjem, *supra* note 45.

⁵⁴ Brian Howard, *California Drought Spurs Groundwater Drilling Boom in Central Valley*, National Geographic, (August, 16 2014), <http://news.nationalgeographic.com/news/2014/08/140815-central-valley-california-drilling-boom-groundwater-drought-wells/>.

⁵⁵ Justin Gillis & Matt Richtel, *Beneath California Crops, Groundwater Crisis Grows*, N.Y. TIMES, (April 6, 2015),

continue to drop if California farmers do not reduce their use of groundwater.⁵⁶ Wells have run shallow or dry, and many poor communities have lost access to groundwater.⁵⁷ Currently, California is growing crops that require more water than is available from rain and snow, even in wet years.⁵⁸ In fact, studies have shown that even during relatively wet years growers are pumping more groundwater than can be concurrently recharged.⁵⁹

2. Land Subsidence and Environmental Harm

Groundwater over-drafting has caused the water table to substantially decrease and has caused parts of California land to subside.⁶⁰ Subsidence has the potential to damage infrastructure such as bridges, aqueducts, roads, and flood control systems.⁶¹ For instance, the flood control system in Dos Palos, California has become damaged and is now unable to contain floodwater.⁶² The Delta-Mendota Canal, which transports water from Northern California to the western part of the Central Valley, required renovations due to extensive land subsidence.⁶³ As the land beneath the canal subsided, the canal structurally deteriorated.⁶⁴ Currently, the majority of the land subsidence occurring in the United States is in California's Central Valley, the nation's most productive agricultural region.⁶⁵

Land subsidence in the Central Valley "has been integrally linked to the development of agriculture and the availability of water for

http://www.nytimes.com/2015/04/06/science/beneath-california-crops-groundwater-crisis-grows.html?_r=0; The Water Table is the depth at which the ground beneath the surface is saturated with water. More specifically, it is the depth underneath the ground where percolating water is found. See U.S. Geological Survey, *The Water Cycle*, <http://water.usgs.gov/edu/watercyclegwstorage.html> (last visited Jan. 27, 2016)

⁵⁶ Gillis & Richtel, *supra* note 55.

⁵⁷ *Id.*

⁵⁸ *Id.*

⁵⁹ *Id.*

⁶⁰ Science Daily, *California Drought Causing Valley Land to Sink*. Science Daily, www.sciencedaily.com/release/2015/08/150820083230.htm, (last visited Feb. 14, 2016).

⁶¹ Schmit, *supra* note 33.

⁶² *Id.*

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ *Id.*

irrigation.”⁶⁶ A National Aeronautics Space Administration (“NASA”) subsidence study revealed that land near Corcoran, California has sunk thirteen inches in eight months’ time.⁶⁷ On average, land in the San Joaquin Valley is subsiding about two inches per month.⁶⁸ This is especially concerning because when groundwater levels drop, underground clay deposits move closer together and the available space for groundwater storage is lost.⁶⁹

B. *The Right to Use Groundwater*

California owns all of the groundwater in the state as a trustee for the people and has the power to supervise and regulate water use.⁷⁰ California residents cannot privately own water, but instead are given the right to take and use water.⁷¹ Unlike rights to real property which are absolute, water rights are usufructuary, or in other words, limited and uncertain.⁷² All California courts classify water rights in underground basins as either overlying, appropriative, or prescriptive.⁷³

An overlying right gives a landowner the ability to take groundwater underneath his land.⁷⁴ An overlying right is based on the ownership of the land and is appurtenant to the land.⁷⁵ For example, a farmer pumping groundwater from a well on his property and using the water for his crops is exercising an overlying right.⁷⁶ The overlying right is superior and paramount to the other groundwater rights.⁷⁷ Between overlying owners, the rights to groundwater are correlative.⁷⁸ This means that each overlying owner has a common right to take all of the water he can beneficially use on his land when there is a sufficient water supply.⁷⁹

⁶⁶ Galloway & Riley, *supra* note 1.

⁶⁷ Science Daily, *supra* note 60.

⁶⁸ *Id.*

⁶⁹ Schmit, *supra*, note 33.

⁷⁰ *City of Santa Maria v. Adam*, 211 Cal. App. 4th 266, 278 (2012), *as modified on denial of reh'g* (Dec. 21, 2012).

⁷¹ *Id.*

⁷² *Id.* at 296.

⁷³ *City of Barstow v. Mojave Water Agency*, 23 Cal.4th 1224, 1240 (2000).

⁷⁴ *Id.*

⁷⁵ *Tehachapi-Cummings County Water Dist., v. Armstrong*, 49 Cal.App.3d 992, 1001 (1975).

⁷⁶ *City of Barstow v. Mojave Water Agency*, 23 Cal.4th at 1237.

⁷⁷ *See Armstrong*, 49 Cal.App.3d at 1001.

⁷⁸ *Id.*

⁷⁹ *Id.*

When the water supply is insufficient to meet the needs of all overlying owners, each owner is limited to his or her fair share of the total amount available water, depending on the owner's current reasonable need.⁸⁰

Appropriative rights arise when the groundwater is taken and the water is not used on the overlying land.⁸¹ An example of an appropriation would be when a public entity takes groundwater and sells it to the public or uses for other municipal purposes.⁸² Appropriators may take groundwater that the overlying landowner does not need; specifically, the appropriator's right to take groundwater is limited to the taking of a safe yield.⁸³ "The safe yield is 'the maximum amount of water that could be extracted annually, year after year, without eventually depleting the underground basin.'"⁸⁴ An appropriative taking is not permitted when the amount of available groundwater is not in surplus unless the appropriator has established a prescriptive right.⁸⁵ Prescriptive rights are gained through the wrongful taking of water by an appropriator.⁸⁶ This requires an adverse, open, and hostile taking of non-surplus water.⁸⁷ In other words, an appropriator who continues to take groundwater beyond a safe yield and satisfies the adverse, open, and hostile requirements develops a prescriptive right.⁸⁸

The courts have determined that public policy permits the greatest number of beneficial users be able to use water, so long as the supply of water is not harmed.⁸⁹ However, "when the safe yield is insufficient to satisfy the reasonable and beneficial needs of all users, [the] users with overlying rights have precedent."⁹⁰ The state requires all groundwater rights to be limited by the reasonable and beneficial use doctrine.⁹¹

⁸⁰ *Id.*

⁸¹ *City of Barstow v. Mojave Water Agency*, 23 Cal.4th 1224, 1240 (2000).

⁸² *City of Pasadena v. City of Alhambra*, 33 Cal.2d 908, 927 (1949).

⁸³ *City of Santa Maria v. Adam*, 211 Cal. App. 4th 266, 279 (2012), *as modified on denial of reh'g* (Dec. 21, 2012).

⁸⁴ *Id.*

⁸⁵ *City of Pasadena v. City of Alhambra*, 33 Cal.2d at 908.

⁸⁶ *Id.* at 926.

⁸⁷ *City of Barstow v. Mojave Water Agency*, 23 Cal.4th 1224, 1240 (2000).

⁸⁸ *Id.* at 1241-1244.

⁸⁹ *Id.*

⁹⁰ *City of Santa Maria v. Adam*, 211 Cal. App. 4th 266, 279 (2012), *as modified on denial of reh'g* (Dec. 21, 2012); *see also* 23 No. 4 Miller & Starr, Real Estate Newsalert37.

⁹¹ Cal. Const. art. X, § 2 (2015).

1. Reasonable and Beneficial Use Doctrine

California groundwater regulation is based on the reasonable and beneficial use doctrine.⁹² Article X of the California Constitution prevents the unreasonable use of water and requires the use of water to be beneficial.⁹³ The doctrine is implemented by the California Legislature through enactments in the water code and administered by the Department of Water Resources (“DWR”) and the State Water Resources Control Board (“State Board”).⁹⁴ The State Board has the authority to rule on the question of whether the use of water is reasonable.⁹⁵ Whether water use is reasonable and beneficial is a question of fact that is determined by examining the circumstances in each particular case.⁹⁶ The reasonableness and benefits a particular use of water provides may change depending on the circumstances at that time.⁹⁷

In determining the reasonableness of a water use the State Board and the courts consider the following factors: the conformity of use with the land, the nature of the use, the method by which the water was diverted, and local customs.⁹⁸ The use of water is not reasonable simply because of the fact that the use of the water provides a benefit to land or provides a profit to the user.⁹⁹ Additionally, when the natural supply of water is not sufficient to be allocated amongst other individuals with the right to use the water, each individual is entitled to take only a proportional share of the water supply.¹⁰⁰ It is an unreasonable use of water when an individual extracts a disproportional amount of water and injures the water rights of others.¹⁰¹ For instance, in *City of Pasadena v. City of Alhambra*, 33 Cal.2d 908, the California Supreme Court held that it was unreasonable for an extractor to take more than their proportional share

⁹² *Id.*

⁹³ *Id.*

⁹⁴ *Santa Clarita Water Co. v. Lyons*, 161 Cal.App.3d 450, 462 (1984); *See also* California Department of Water Resources, *Groundwater*, *supra* note 12 (The Department of Water Resources will be responsible for implementing SGMA).

⁹⁵ *Imperial Irrigation Dist. v. State Wat. Res. Control Bd.*, 225 Cal. App. 3d 548, 569, *reh'g denied and opinion modified* (Dec. 12, 1990).

⁹⁶ *Joslin v. Marin Municipal Water Dist.*, 67 Cal.2d 132,139 (1967).

⁹⁷ *See Environmental Defense Fund, Inc. v. East Bay Municipal Utility District*, 26 Cal.3d 183 (1980).

⁹⁸ CAL. WATER CODE, § 100.5 (2015).

⁹⁹ *Joslin v. Marin Municipal Water Dist.*, 67 Cal.2d at 143.

¹⁰⁰ *See City of San Bernardino v. City of Riverside*, 186 Cal. 7, 15 (1921).

¹⁰¹ *See id.*

of groundwater when the underground basin carried an insufficient amount of water to meet the public's demand.¹⁰²

Beneficial use requires that the amount of water extracted be necessary to achieve some useful purpose.¹⁰³ For example, this element may be satisfied when the water provides a benefit to the land or an economic benefit to the extractor.¹⁰⁴ In *Hillside Water Co. v. City of Los Angeles*, 10 Cal.2d 677, the California Supreme Court deemed the use of groundwater by an overlying owner for farming operations to be a beneficial use.¹⁰⁵ The water added value to the land by permitting farming to flourish and enabled the extractor to make use of his property.¹⁰⁶ Similarly, in *Tulare Irrigation District v. Lindsay-Strathmore Irrigation District*, 3 Cal.2d 489, the Court found that using water to support natural grasses, alfalfa, grain, and fruit in areas where landowners traditionally have grown crops was a beneficial use of surface water and groundwater.¹⁰⁷ The courts will also consider whether the water taken has interfered with another's beneficial use of water.¹⁰⁸ In *Drake v. Tucker*, 43 Cal.App.2d 460 the California First District Court of Appeal held that it was not proper for the defendant to take water from a creek and resell it to the County, because the defendant's use of the water deprived the plaintiff of the ability to use the creek water for domestic purposes.¹⁰⁹ In *City of Los Angeles v. Aitken* the California Third District Court of Appeal held that it was not an appropriate use of lake water to flood a duck preserve for the purpose of hunting wild animals.¹¹⁰ The court provided that flooding the duck preserve would interfere with the beneficial use of maintaining the lake in a natural condition.¹¹¹

¹⁰² *City of Pasadena v. City of Alhambra*, 33 Cal.2d 908, 924 (1949).

¹⁰³ 62 Cal. Jur. 3d Water § 324 (west).

¹⁰⁴ *Id.*

¹⁰⁵ *Hillside Water Co. v. City of Los Angeles*, 10 Cal. 2d 677, 686 (1938).

¹⁰⁶ *See id.*

¹⁰⁷ *Tulare Irr. Dist. v. Lindsay-Strathmore Irr. Dist.*, 3 Cal. 2d 489, 520 (1935).

¹⁰⁸ *Drake v. Tucker*, 43 Cal. App. 53, 58 (Cal. Ct. App. 1919) (A riparian owner could not irrigate his land, because doing so would interfere with another riparian owner's ability to use water for domestic purposes).

¹⁰⁹ *Id.* at 59.

¹¹⁰ *City of Los Angeles v. Aitken*, 10 Cal. App. 2d 460, 467,474 (1935).

¹¹¹ *Id.*

C. Sustainable Groundwater Management Act

1. Intent of the Legislature

The record low aquifer levels and degradation of the groundwater quality in the Central Valley were the driving force behind the enactment of SGMA.¹¹² The primary goal of SGMA is to achieve groundwater sustainability, or more specifically, maintain sustainable yields in groundwater basins.¹¹³ SGMA does not directly regulate groundwater use or determine the rights of groundwater users, but instead establishes guidelines for managing groundwater pumping.¹¹⁴

The SGMA is set forth in three bills: SB 1168 instructs local agencies to create management plans, AB 1739 establishes when the state can intervene if the local authorities do not satisfactorily comply with the legislative directives, and SB 1319 works together with AB 1739 to establish new authority for the State Water Board.¹¹⁵

The legislature recognized that the State of California has an overriding responsibility to ensure that groundwater basins are sustainable.¹¹⁶ SGMA demonstrates the State's intent to treat groundwater as a limited resource.¹¹⁷ The legislature has expressly requested that local agencies develop groundwater sustainability plans ("GSPs") to mitigate over-draft and prevent future harm.¹¹⁸ SGMA requires the local agencies to sustainably maintain underground water in 127 basins throughout the state.¹¹⁹ The legislature intends SGMA to regulate basins at the local level by Groundwater Sustainability Agencies ("GSAs") in hopes to minimize the potential of state intervention.¹²⁰

¹¹² Frank & Aladjem, *supra* note 45.

¹¹³ *Id.*

¹¹⁴ *Id.*

¹¹⁵ Smith, *supra* note 13.

¹¹⁶ See Governor's Office of Planning and Research, Sustainable Groundwater Management Act, Uncodified Findings, https://www.opr.ca.gov/docs/2014_Sustainable_Groundwater_Management_Legislation_092914.pdf.

¹¹⁷ *See id.*

¹¹⁸ CAL. WATER CODE § 10727.2 (2015).

¹¹⁹ Wesley A. Miliband, *Regulating Groundwater in California: Will Groundwater Sustainability Agencies Change the Landscape?*, 45 *Envtl. L. Rep. News & Analysis* 11104, 11106 (2015).

¹²⁰ CAL. WATER CODE § 10720.1 (2015).

2. Groundwater Sustainability Agencies

The legislature has required that groundwater basins be maintained at a local level as opposed to by state authorities.¹²¹ Thus, local public agencies are entrusted with developing and implementing groundwater management programs.¹²² Local agencies overlying a groundwater basin have the ability to elect to become GSAs by June of 2017.¹²³ The GSAs will then have to implement GSPs.¹²⁴ In implementing a GSP, the GSA may adopt rules and regulations, or conduct investigations that are necessary or proper to carrying out the purposes of the SGMA.¹²⁵

3. Groundwater Sustainability Plans

California Water Code section 10723.2 provides the interests that should be considered by GSAs in implementing GSPs.¹²⁶ This includes the interests of farmers, disadvantaged communities, and environmental users, among others.¹²⁷ SGMA specifically mandates the GSPs to include the following: information describing the characteristics of the basin's aquifer system, measurable objectives in achieving groundwater sustainability, details on how groundwater levels of the basin will be managed, and the monitoring protocols that are designed to detail changes in groundwater conditions.¹²⁸ The GSA must periodically evaluate the GSP to assess changing conditions in the basin and modify the GSP if appropriate.¹²⁹ Additionally, in pursuit of achieving groundwater sustainability the GSP may impose groundwater use fees and pumping limits.¹³⁰ A GSP must not adversely affect the ability of an adjacent basin to achieve sustainability goals.¹³¹

¹²¹ Governor's Office of Planning and Research, *supra* note 116.

¹²² Frank & Aladjem, *supra* note 45.

¹²³ CAL. WATER CODE § 10723(a) (2015).

¹²⁴ *Id.* § 10727.2.

¹²⁵ *Id.* § 10725.

¹²⁶ *Id.* § 10723.2.

¹²⁷ *Id.*

¹²⁸ *Id.* § 10727.4.

¹²⁹ *Id.* § 10728.2.

¹³⁰ David Orth, *Groundwater Management Practices for Local Sustainability*, UC Davis Groundwater Policy Seminar (February 9, 2015), <http://groundwater.ucdavis.edu/SGMA/>.

¹³¹ CAL. WATER CODE § 10733(c) (2015).

SGMA requires the GSP to be effective in achieving groundwater sustainability.¹³² SGMA defines sustainability as the maintenance of groundwater aquifers in a manner that will not cause undesirable results.¹³³ Undesirable results include: the continued lowering of groundwater levels, significant reduction in groundwater storage, seawater intrusion, degraded water quality, land subsidence and depletions in interconnected surface water.¹³⁴ In the hopes of managing groundwater sustainably, the goal of SGMA is to cause the State's basins to be operated within a sustainable yield.¹³⁵ As previously noted SGMA defines a sustainable yield¹³⁶ as the maximum amount of water that can be withdrawn annually from the groundwater supply without causing an undesirable result.¹³⁷ In summary, the GSP must ensure that a basin could be operated within a sustainable yield by 2040 and the plan must ensure that efforts are taken to prevent undesirable results.¹³⁸ It is then the State's role to determine whether the GSP will lead to groundwater sustainability.¹³⁹

4. *The Role of The State*

The State Board must review the GSPs and evaluate whether the plan conforms to the guidelines of SGMA.¹⁴⁰ It may intervene when the GSAs are unable to implement or develop suitable groundwater management programs.¹⁴¹ The GSAs are given broad discretion in developing and implementing the groundwater management programs.¹⁴²

The State Board is required to adopt guidelines for reviewing and evaluating GSPs.¹⁴³ Once the State Board has determined that GSAs have not implemented or enforced a proper GSP pursuant to SGMA, the

¹³² Orth, *supra* note 130.

¹³³ CAL. WATER CODE §10721 (2015).

¹³⁴ *Id.*

¹³⁵ *Id.*

¹³⁶ *See id.* The legislature has defined sustainable yield instead of relying on the Court's definition of safe yield. *Id.*

¹³⁷ *Id.*

¹³⁸ Orth, *supra* note 130.

¹³⁹ Cal. Wat. Code § 10733 (2015).

¹⁴⁰ *Id.*

¹⁴¹ Frank & Aladjem, *supra* note 45.

¹⁴² *Id.*

¹⁴³ CAL. WATER CODE §10733.2 (a) (2015).

State must implement an interim plan for the basin.¹⁴⁴ The State's interim plan must identify the actions that are necessary to correct the groundwater conditions and describes the monitoring necessary to be undertaken.¹⁴⁵ If it is necessary for the State Board to implement an interim plan the State will have the discretion in determining the rules and restrictions placed on a basin.¹⁴⁶

III. SGMA'S IMPACT ON AGRICULTURE

SGMA is the first legislation in California that addresses how the state will regulate groundwater.¹⁴⁷ The legislation has expressly given the authority to GSAs to impose and enforce these restrictions.¹⁴⁸ These restrictions will inhibit the region's farmers from acquiring water for their crops, but without imposing mandatory restrictions, SGMA will only monitor groundwater basins.¹⁴⁹ It permits local agencies to: (1) impose and enforce fees, (2) require groundwater well registration and to measure groundwater extractions, (3) impose well spacing requirements and limit groundwater extractions, (4) enforce and implement groundwater sustainability plans, and (5) investigate and determine the sustainable yield of a groundwater basin.¹⁵⁰

A. Groundwater Use Fees

Prior to SGMA, certain regions of California have required users of groundwater to pay a fee.¹⁵¹ However, agencies operating in farming communities have not imposed fees for groundwater extraction in order to encourage agricultural growth.¹⁵² For instance, no agency in the Central Valley has imposed fees for using groundwater when it is being used for irrigation.¹⁵³ Section 10730.2 permits a GSA to impose fees for the extraction of groundwater from the basin to fund the costs of the

¹⁴⁴ CAL. WATER CODE §10735.8 (2015).

¹⁴⁵ *Id.*

¹⁴⁶ § 10736.

¹⁴⁷ Smith, *supra* note 13.

¹⁴⁸ Frank & Aladjem, *supra* note 45.

¹⁴⁹ *Id.* (Local agencies operating in basins with the high overdraft will have to eventually impose restrictions on groundwater extractors).

¹⁵⁰ CAL. WATER CODE § 10727.2 (2015).

¹⁵¹ Orth, *supra* note 130.

¹⁵² *Id.*

¹⁵³ *Id.*

groundwater management.¹⁵⁴ The GSA may impose fixed fees, and, depending on the GSP, each groundwater user could pay the same flat fee or a volumetric fee.¹⁵⁵ Section 10730.6 further permits the GSAs to collect such fees and enforce section 10730.2.¹⁵⁶ It is arguable that these sections conflict with Proposition 218.¹⁵⁷

In 1996, California voters passed Proposition 218.¹⁵⁸ The purpose of Proposition 218 was to protect taxpayers by limiting the methods by which local government could exact revenue from taxpayers without their consent.¹⁵⁹ Generally speaking, the proposition requires majority stakeholder approval of any fee, assessment, or charge that is related to property ownership.¹⁶⁰ Article XIII D of the California Constitution (“Article 13D”) was adopted as part of Proposition 218.¹⁶¹ Article 13D provides that property-related fees may only be enforced after certain procedural requirements are met.¹⁶² Specifically, each of the following must be satisfied prior to imposing fees for groundwater pumping: “identification of affected parcels, notice to their owners, a public hearing, and approval of either a majority of property owners or two thirds of voters within the district.”¹⁶³ Thus, if the groundwater fees fall within the protection of Article 13D, the GSAs will need majority approval and meet other procedural requirements in order to impose fees.¹⁶⁴

Courts have held that many regulatory fees are not subject to the protection of Article 13D because they provide a property related service.¹⁶⁵ A property related service is a public service having a direct or incidental relationship to property ownership.¹⁶⁶ In other words, the

¹⁵⁴ CAL. WATER CODE §10730.2 (2015) .

¹⁵⁵ *Id.*

¹⁵⁶ *Id.* § 10730.6 (2015).

¹⁵⁷ Orth, *supra* note 130.

¹⁵⁸ 1 Tax. Cal. Prop. § 2:39 (4th ed).

¹⁵⁹ 51 Cal. Jur. 3d Property Taxes § 10.

¹⁶⁰ 1 Tax. Cal. Prop., *supra* note 158.

¹⁶¹ Great Oaks Water Co. v. Santa Clara Valley Water Dist., 242 Cal. App. 4th 1187, 1205 (2015), *review filed* (Jan. 20, 2016); (hereinafter *Great Oaks* in text).

¹⁶² *See id.*

¹⁶³ Pajaro Valley Water Mgmt. Agency v. Amrhein 150 Cal.App.4th 1364, 1379 (2007); (hereinafter *Amrhein* in text).

¹⁶⁴ Orth, *supra* note 130.

¹⁶⁵ Kelly J. Salt, *Two California Appellate Court Rulings Demonstrate that Groundwater Pumping Fees are in the Eye of the Beholder*, Best Best & Krieger (March 31, 2015), <http://www.bbklaw.com/?t=40&an=38550>.

¹⁶⁶ CAL. CONST. art. 13D, § 2.

GSAs may bypass the majority vote requirement when the fees are related to providing a water service.¹⁶⁷ Section 10720.2 attempts to serve as a majority protest provision by permitting GSAs to impose fees in order to provide a service to groundwater users.¹⁶⁸ The water service fee may not exceed the reasonable cost of providing services for the activity for which the fee is charged and for carrying out the purpose of the regulation.¹⁶⁹

In *Pajaro Valley Water Management Agency v. Amrhein*, 150 Cal.App.4th 1364, the Sixth District Court of Appeal concluded that a groundwater augmentation charge to well operators was a fee imposed upon a person as an incident of property ownership that required compliance with Article 13D.¹⁷⁰ Therefore, the fee would require majority approval to be valid.¹⁷¹ The court reasoned that “a fee for ongoing water service through an existing connection is imposed ‘as an incident of property ownership’ because it requires nothing other than normal ownership and use of property.”¹⁷² This is because the overlying owner of land possesses special rights to the reasonable use of the groundwater under his land and a charge on groundwater use infringes on the exercise of that right.¹⁷³ *Amrhein* further stated that the extraction of water is an activity intimately connected with property ownership.¹⁷⁴ In this respect, a charge imposed on groundwater extraction is closely connected to the ownership of property.¹⁷⁵

In *Great Oaks Water Company v. Santa Clara Water District*, 242 Cal.App.4th 1187, Great Oaks Water Company challenged a groundwater extraction fee imposed by the Santa Clara Water District.¹⁷⁶ The Sixth District Court of Appeal held that overlying and appropriative rights to groundwater were rights in real property.¹⁷⁷ The court reasoned that the right to groundwater is incidental to property

¹⁶⁷ See Orth, *supra* note 130.

¹⁶⁸ *Id.*

¹⁶⁹ 51 Cal. Jur. 3d Public Improvements § 4.

¹⁷⁰ *Pajaro Valley Water Mgmt. Agency v. Amrhein* 150 Cal.App.4th 1364, 1370 (2007).

¹⁷¹ Orth, *supra* note 130.

¹⁷² *Amrhein*, 150 Cal.App.4th at 1387.

¹⁷³ *Id.* at 1391.

¹⁷⁴ *Id.* at 1392.

¹⁷⁵ *Id.*

¹⁷⁶ *Great Oaks Water Co. v. Santa Clara Valley Water Dist.*, 242 Cal. App. 4th 1187, 1205 (2015), *review filed* (Jan. 20, 2016).

¹⁷⁷ *Id.* at 1207-1208.

ownership because it is exercised to benefit the land and is based on the ownership of land.¹⁷⁸ However, the court further provided that the charge was for a water service.¹⁷⁹ This was because the water was indirectly delivered to the groundwater extractors.¹⁸⁰ The court provided that replenishing the groundwater basin or taking measures to reduce groundwater demands in the basin amounted to a “water service” that was given to the groundwater extractors.¹⁸¹

Based on the reasoning in *Great Oaks*, the groundwater use fees permitted by SGMA must be subject to the procedural requirements in Article 13D unless the fees relate to a water service.¹⁸² This is because a farmer’s right to pump groundwater is incidental to the ownership of the land and GMA enforcement of fees will burden the farmer’s right to pump groundwater.¹⁸³ SGMA authorizes fees to fund the cost of groundwater management.¹⁸⁴ This will be considered a water service because groundwater extractors will be indirectly benefiting from replenishing groundwater basins and other groundwater management practices.¹⁸⁵ Therefore, the local GSAs will be able to impose fees on farmers without being restricted by the procedural requirements of Article 13D as long as the fee is reasonable in relation to the service provided.¹⁸⁶ In order to monitor or reduce groundwater use the local agencies in charge of a groundwater basin will have to implement methods to measure groundwater use by farmers.¹⁸⁷

B. *Limiting Groundwater Extractions and Groundwater Monitoring Requirements*

California’s water resources are of transcendent importance and the State has a duty to ensure water resources are used appropriately.¹⁸⁸ The State has the ability to exercise its power to regulate the use of water because the conservation of its water promotes the general welfare and

¹⁷⁸ *Id.* at 1207-08, 1210.

¹⁷⁹ *Id.* at 1215.

¹⁸⁰ *Id.*

¹⁸¹ *Id.*

¹⁸² *Id.* at 1205.

¹⁸³ *Id.*

¹⁸⁴ CAL. WATER CODE § 10730 (2015).

¹⁸⁵ *See Great Oaks Water Co.*, 242 Cal.App.4th at 1215.

¹⁸⁶ *See id.*

¹⁸⁷ *See Cal. Water Code* § 10727.2 (2015).

¹⁸⁸ *Gin S. Chow v. City of Santa Barbara*, 217 Cal. 673, 702 (1933).

serves a public purpose.¹⁸⁹ Therefore, public agencies have the power and duty to ensure groundwater is used appropriately and that groundwater basins are managed sustainably.¹⁹⁰

The role of the GSA is to ensure that groundwater basins maintain a sustainable yield and groundwater extraction does not produce undesirable results.¹⁹¹ It is appropriate for agencies to monitor the amount of groundwater each farmer takes in order to determine whether water is being used reasonably and beneficially.¹⁹² This will require farmers to register and meter wells.¹⁹³ Once undesirable results occur, the supply of groundwater is insufficient and groundwater extractions must be limited.¹⁹⁴ In order to prevent farmers from interfering with other individuals' groundwater rights, the agencies may enforce well spacing limits and limit a farmer to extracting a certain amount of groundwater. The local agencies will determine the degree of restrictions placed on the farmers based on the circumstances surrounding the nature of the underground basin.¹⁹⁵

For instance, the Kings River Conservation District has been involved in determining the appropriate GSA and GSP for two high priority basins: the Kings Basin and the Tulare Lake Basin.¹⁹⁶ The Kings Basin encompasses the majority of Fresno County and is approximately 976,000 acres.¹⁹⁷ There is currently an estimated ninety-three MAF of groundwater below this area.¹⁹⁸ Between 1964 and 2013 there was an approximate 6.5 MAF reduction of available groundwater in the Kings Basin.¹⁹⁹ In essence, the Basin has lost about 6.5 percent of available groundwater in the last fifty years.²⁰⁰ However the over-draft in the Kings Basin continues to be a major long term problem.²⁰¹ The Kings

¹⁸⁹ *Tulare Irr. Dist. v. Lindsay-Strathmore Irr. Dist.*, 3 Cal. 2d 489, 529 (1935).

¹⁹⁰ *Orth*, *supra* note 130.

¹⁹¹ *Frank & Aladjem*, *supra* note 45 (A key component of SGMA is avoiding undesirable results).

¹⁹² *See* CAL. CONST. art. X, § 2 and §100.

¹⁹³ *See* CAL. WATER CODE § 10727.2 (2015)

¹⁹⁴ *Id.* §10721.

¹⁹⁵ *Id.* §10933.

¹⁹⁶ *Orth*, *supra* note 130.

¹⁹⁷ *Id.*

¹⁹⁸ *Id.*

¹⁹⁹ *Id.*

²⁰⁰ *Id.*

²⁰¹ Kings River Service Area Annual Groundwater Report: For the Period Covering 2009-2011, Kings River Conservation District, http://www.krcd.org/_pdf/Groundwater%20Report%20Final%202009-2011.pdf.

River Conservation District has suggested that additional structures need to be built to counter the demand for groundwater.²⁰² It is likely that the GSA in charge of the basin will not implement groundwater extraction restrictions in the early stages of SGMA.²⁰³ Moreover in the Tulare Lake basin, over-drafting of groundwater has caused increased subsidence and environmental concerns.²⁰⁴ The Tulare Lake basin is currently experiencing the undesirable results SGMA attempts to prevent.²⁰⁵ Local agencies in the Tulare Lake Basin will have to implement stricter groundwater restrictions because the Basin's current groundwater use is unsustainable.²⁰⁶

IV. RECOMMENDATIONS

In order for farming to continue to thrive in California's future, the State must ensure that groundwater use is sustainable.²⁰⁷ The majority of groundwater extraction in the Central Valley is for irrigating farmland.²⁰⁸ In order to quantify the amount of groundwater extracted from a basin, the GSAs operating in high priority basins must require farmers to meter and register their wells.²⁰⁹ The cost of the metering will burden the farmer, but will be necessary to appropriately regulate groundwater.²¹⁰ The farmer will be required to install meters which will cost a few thousand dollars to install and maintain.²¹¹ However, the meters will enable the GSAs to determine exactly how farmers are using groundwater and determine the appropriate sustainable yield for the

²⁰² *Id.*

²⁰³ *See Orth, supra* note 130.

²⁰⁴ California Department of Water Resources, Tulare Lake Hydrologic Region Report,

http://www.waterplan.water.ca.gov/docs/cwpu2013/Final/Vol2_TulareLakeRR.pdf.

²⁰⁵ CAL. WATER CODE §10721(w) (2015).

²⁰⁶ *See* Tulare Lake Hydrologic Region Report, *supra* note 204.

²⁰⁷ *See Eric Garner on Sustainable Groundwater Management Act: History in the Making or another Dead End?*, Maven's Notebook, (Jan. 5, 2015), <http://mavensnotebook.com/2015/01/05/eric-garner-on-the-sustainable-groundwater-management-act-history-in-the-making-or-another-dead-end/>.

²⁰⁸ *See* Galloway & Riley, *supra* note 1 ("The history of land subsidence in the San Joaquin Valley is integrally linked to the development of agriculture and the availability of water for irrigation.")

²⁰⁹ *See* Weiser, *supra* note 4.

²¹⁰ *Id.*

²¹¹ *Id.*

basin.²¹² The GSAs will be unable to monitor groundwater levels without knowing where the wells are and how much water the groundwater wells are extracting.²¹³

Additionally, the GSA must impose fees upon farmers that extract groundwater, because the GSA will be improving and monitoring groundwater basins; which will ultimately benefit farmers.²¹⁴ These fees must be proportional to the services the GSA provides.²¹⁵ The GSA may impose further taxes if necessary only if the procedural requirements of Article 13D are met.²¹⁶

The legislature should further define what constitutes a reasonable and beneficial use of groundwater.²¹⁷ The reasonable and beneficial use doctrine is the cornerstone of California water law and must be thoroughly defined by the legislature.²¹⁸ The California courts have provided that it is appropriate for farmers to use the amount of water necessary to farm their land.²¹⁹ Many of the state's high priority basins have been over-drafted for years and are unable to meet the demands of the groundwater extractors.²²⁰ This would permit the public to have a better understanding of their water rights.²²¹

V. CONCLUSION

California, as trustee for the people, owns all of the groundwater in the state and has the power to regulate the use of water within the state.²²² The wellbeing of residents of California depends upon the

²¹² See Juliet Chirstian-Smith & Moira Burke, *Viewpoints: Farmers want Reasonable Groundwater Regulation, too*, SACRAMENTO BEE (Aug. 15, 2014), <http://www.sacbee.com/opinion/oped/article2606712.html>.

²¹³ *Id.*

²¹⁴ Kelly J. Salt, *Two California Appellate Court Rulings Demonstrate that Groundwater Pumping Fees are in the Eye of the Beholder*, Best Best & Krieger (March 31, 2015), <http://www.bbklaw.com/?t=40&an=38550>.

²¹⁵ Orth, *supra* note 130.

²¹⁶ *Id.*

²¹⁷ See CAL. WATER CODE §100; CAL. CONST. art. X, § 2.

²¹⁸ CAL. CONST. art. X, § 2; see generally *Santa Clarita Water Co. v. Lyons*, 161 Cal.App.3d 450, 462 (1984) (“[This] policy is implemented by the legislature through enactments contained in the California Water Code.”)

²¹⁹ See *Hillside Water Co. v. City of Los Angeles*, 10 Cal. 2d 677, 686 (1938).

²²⁰ See generally Tulare Lake Hydrologic Region Report, *supra* note 204.

²²¹ Frank & Aladjem, *supra* note 45.

²²² *City of Santa Maria v. Adam*, 211 Cal. App. 4th 266, 279 (2012), as modified on denial of reh'g (Dec. 21, 2012).

conservation and appropriate use of water within the state.²²³ Californians have over-drafted groundwater for the past century, which has decreased the amount of fresh groundwater available for use.²²⁴ SGMA is the first step towards ensuring that groundwater is regulated and used appropriately.²²⁵ Although SGMA may restrict a farmer's ability to irrigate his or her farmland, it will help ensure farming thrives in California's future.²²⁶ Environmental restrictions have decreased the availability of surface water to California farmers, which in turn has increased reliance on groundwater.²²⁷ Groundwater is not an unlimited resource and appropriate groundwater management is necessary.²²⁸ In order to adequately assess California's groundwater needs, farmers must be required to meter and register their wells.²²⁹ In addition, the groundwater extractors should pay reasonable fees which will further permit the local agencies to manage their underground basins.²³⁰

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²²³ *Gin S. Chow v. City of Santa Barbara*, 217 Cal. 673, 701 (1933).

²²⁴ Graham Fogg, *Overview of California Groundwater*, UC Davis Groundwater Policy Seminar (January 5, 2015), <http://groundwater.ucdavis.edu/SGMA/>.

²²⁵ Smith, *supra* note 13.

²²⁶ Christian-Smith & Burke, *supra* note 212.

²²⁷ Frank & Aladjem, *supra* note 45.

²²⁸ Fogg, *supra* note 224.

²²⁹ See Frank & Aladjem, *supra* note 45. (The biggest defect in SGMA is that individual extractors in a basin are not required to report their groundwater use).

²³⁰ Orth, *supra* note 130.

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