

**Water Education Foundation
Water Leaders Class of 2010**

Groundwater Governance



©

Edition

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I. BACKGROUND

1. Introduction

California is often talked about, both positively and negatively, for having a highly regulated and centralized government. Political leaders, pundits, reporters, and citizens alike, all have something to say about the state's role in the fundamental elements of government, including education, health and safety, and transportation. But, what about the state's role with regards to water? Is water over-regulated, under-regulated, or just right?

In this report, the Water Education Foundation's (WEF) 2010 Water Leaders Class (Class) aims to explore these questions, focusing on California's groundwater and the governance of the resource. Groundwater programs may not excite people like a large water infrastructure project, such as the State Water Project (SWP) or the Central Valley Project (CVP), but groundwater is a fundamental part of California's water supply.

Groundwater is arguably the unsung hero of the state's water supply, providing roughly 30 percent of California's water annually and 40 percent in dry years. In fact, for many Californians, it is their only source of drinking water. Moreover, the WEF notes that Californians as a whole consume more groundwater than is "replaced naturally or artificially." While not all groundwater aquifers are in overdraft, those that are can create serious concerns. Some issues include lower water tables and increased energy costs for pumping, land subsidence, dry wells, contamination from sea water intrusion or toxic contaminants, and a reduction in the storage capacity of some basins (WEF, 2008).

Additionally, water agencies across the state depending on source water originating from the Sacramento-San Joaquin River Delta (Delta) are now facing uncertain reliability in the future. As a result, they are increasing their dependency on local sources, such as groundwater.

Unlike surface water, groundwater in California is not governed or managed in a centralized manner and, until recently, has not been subject to any significant state oversight. In fact, it was not until last year that the Legislature approved a bill that requires statewide groundwater monitoring.

Compared to surface water, little is known statewide about the nature and extent of California's subterranean water resources and how they are governed. As a result, groundwater is a subject that presents a certain amount of mystery. In this report, the 2010 Class will attempt to shed some light on groundwater governance in California.

2. Water Leaders and Mentors

Each Water Leader was paired up with a mentor (water professionals from a variety of backgrounds) as a way to expand the range of perspectives available in assessing the topic of groundwater governance. The Class' mentors represent a diverse group, with tremendous collective expertise, covering a wide-range of industry and stakeholder interests.

Each Water Leader was tasked with shadowing their mentor for a day to learn about their particular position in the water world. The Water Leaders developed a list of

questions for their mentors regarding groundwater governance in California. Each Water Leader conducted an interview with their mentor, using identical questions. The Class then compiled the responses and analyzed the results for trends, commonalities, and differences.

A complete list of the interview questions is provided in Appendix 1. Appendix 2 lists each of the Water Leaders and their respective mentors.

3. Methodology

Like the mentors, the 2010 Class represents a diverse group of professionals. This group represents a variety of the professions that exist in the water field, as well as the range of varying opinions and perspectives found within that field. Throughout the year, the Class participated in a variety of workshops and tours that exposed it to various opinions regarding groundwater governance in California.

During the Bay-Delta Tour in July, the Class heard from Ellen Hanak of the Public Policy Institute for California (PPIC). Ms. Hanak presented the PPIC's 2009 report entitled "California Water Myths" and discussed the challenges for water resource management in California and the need to overcome some of the rhetoric surrounding major water issues in the state.

A myth, as defined by Webster's Dictionary, is a "popular belief that has grown up around someone or something." According to the PPIC, "...myths serve the rhetorical purposes of particular stakeholders. And they persist because public policy debates are not sufficiently grounded in solid technical and scientific information about how we use and manage water."

The idea of overcoming myths, stereotypes, and rhetoric associated with long-standing issues resonated with the Class. Inspired by this idea, the Class decided to take a page out of the PPIC's playbook, combine it with the popular Discovery Channel show "Myth Busters," and create its own take on California Water Myths as they relate to groundwater governance.

The following report explores several myths or statements that the Class has encountered throughout the year. A combination of open source research and mentor interview responses was used to either "confirm" or "bust" the myths surrounding groundwater governance in California.

II. MYTHS AND FINDINGS

The Myths – The following table is a summary of the groundwater governance myths and a brief explanation of the Class' findings.

Myth	Finding
1. Groundwater rights are clearly defined.	Plausible.
2. There is no groundwater governance in California.	Busted! It might not be centralized, but governance does exist.
3. No one wants governance because it is not needed.	Busted! Yes, governance is necessary and people do want it.
4. Creating a groundwater governance structure is impossible.	Busted! It may be difficult, but it is not impossible.
5. When it comes to management, locals know best.	Confirmed. It's recognized that local agency involvement is key to appropriate groundwater management.
6. Good governance = Problem Solved.	Busted! There are multiple other factors involved.

Myth 1: Groundwater Rights are Clearly Defined.

Basis of the Myth – Existing rules and conventions developed from the early days of California’s statehood up to the present day comprehensively govern and define existing groundwater rights in California. This is an opinion expressed by some in the water field and the basis for Myth 1. To confirm or dispel this myth, the Class explored the system of groundwater rights and looked to the mentors’ responses for an explanation.

Groundwater Rights in California

In most areas of California, overlying landowners may extract percolating groundwater and put it to beneficial use without approval from the State Water Resources Control Board (SWRCB) or a court. Overlying, appropriative, and prescriptive rights are common law property rights and govern groundwater in California in much the same way riparian, appropriative and prescriptive rights govern rights to surface water.

Overlying rights attach to lands situated within a basin where groundwater is extracted and applied to beneficial use. Overlying rights to groundwater, like riparian rights to surface water, are “co-relative,” meaning they are shared proportionately among all overlying users in the basin. Overlying rights may be exercised at any time and cannot be lost through non-use.

California does not have a permit process for the regulation of groundwater use and, in a legal sense, groundwater use in California is generally disconnected from surface water use. A narrow exception exists for groundwater pumping from wells connected to the “underflow” of a surface water body, or water flowing in a “known and definite channel” of a “subterranean stream.” In contrast to so-called “percolating groundwater,” such “jurisdictional groundwater” is potentially subject to permitting by the SWRCB under a four part test of “hydrologic connectivity” (the *Garrapata* test).

Unlike overlying rights, appropriative rights to groundwater (similar to appropriative rights to surface water) are established on the basis of priority in time, and attach through beneficial use to lands outside of the basin. Overlying rights are superior to appropriative rights, except where an appropriative right has ripened into a “prescriptive right” through adverse possession over a five year period.

A groundwater user’s exercise of an appropriative right becomes adverse when a basin’s safe yield is consistently exceeded and the basin tips into overdraft. Overdraft occurs when the total amount of water extracted on an annual basis regularly exceeds the annual recharge of the basin. In such a situation, rights within the basin can be adjudicated in court. Basin adjudications can result in quantification of groundwater rights and court-ordered management of the basin, which can eliminate uncertainty and stabilize declining groundwater. Groundwater adjudications can be very expensive, complex, and time consuming.

In areas without adjudicated rights, overlying and appropriative rights govern groundwater use under local management. Historically, there has been a strong preference for local control among groundwater users throughout California. Local users typically coordinate management of local groundwater resources at varying levels of sophistication, depending on the particular needs of the basin. For example, the data and management needs of a densely populated urban area in a water scarce basin with little natural recharge may be very different from the needs of a predominantly

agricultural basin in a wetter portion of the State. While new statewide requirements under SBX7 6 (Chapter 1, Statutes of 2009) now requires monitoring of groundwater level, this and other information (including water quality and groundwater extraction data) may or may not be maintained at the local level.

Public Trust vs. Private Property Right

The discussion regarding groundwater rights leads directly to the question of whether groundwater falls under the public trust doctrine, or if it is a private property right. The Class' mentors were posed this exact question.

It turns out, this is a trick question. While groundwater rights in California are perfected and maintained through application to a beneficial use, groundwater, like all water resources in California, is ultimately a public trust resource, subject to the California Constitution's prohibition on waste and unreasonable use.

Consistent with this dual conception, a majority of the mentors responded that groundwater is a private property right. On the other hand, many mentors who expressed concern for the protection of existing property rights, as well as a strong preference for continued local and regional management, also acknowledge the need for some change to ensure long-term sustainability of the resource and protection of the public trust.

Several mentors explained that the line between public trust and private property is potentially crossed when private use of the resource collides in some unacceptable manner with the public's interest in the state's groundwater resources. However, most of the mentors continued to prefer local and regional approaches to such problems and continued to emphasize the importance of protecting established property rights and past precedents.

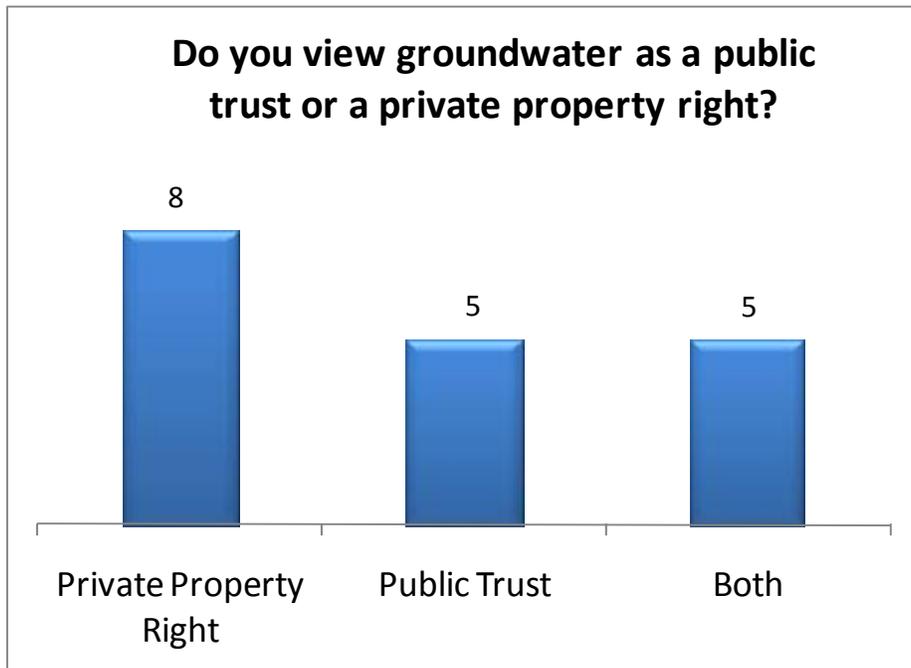


Figure 1: Public Trust or Private Property Right

A minority of mentors mentioned the possibilities of groundwater permitting and legal integration of surface water and groundwater as a potential solution, while an opposing minority favored simple continuation of integrated regional management planning efforts, local groundwater management plans, and regulation of groundwater at the local level.

Several mentors pointed out the need for potential state intervention or an alternate governance structure to compel locals to address local management failures. Similarly, some mentioned existing basin adjudication and local and regional management approaches as ways to accomplish this. Other mentors were willing to consider more significant departures from the existing governance structures, such as active management areas.

In terms of groundwater rights, however, the near unanimous mentor response seemed to be that existing water rights should remain generally intact, regardless of the proposed changes in terms of required monitoring or reporting and future approaches to governance.

Some mentors discussed the limitations of California's groundwater rights system with regards to its separate treatment of groundwater and surface water, the uncertainties associated with unexercised rights and overlying rights, the uncertain bounds of the public trust versus private property rights, or the inefficiencies and enormous costs of groundwater adjudications.

While it is true that many saw room for potential improvement, particularly in terms of differing approaches to governance, monitoring, and reporting, the majority of the mentors were in general agreement that the state's existing water rights system is an adequate, if sometimes awkward, vehicle for regulation and management of the state's groundwater resources.

Finding – Plausible.

While many mentors pointed to the efficacy of existing laws and regulations and emphasized the importance of ensuring continuity with the existing legal system, many also alluded to certain limitations of the existing system and the ability of this system to ensure long-term sustainability and protection of California's groundwater resources.

Myth 2: There is No Groundwater Governance in California.

Basis of the Myth – It is understandable that many Californians agree that there is no groundwater governance in the state. According to the Legislative Analyst’s Office (LAO), California does not have a “comprehensive state-managed groundwater use permitting and groundwater rights system.” Does that mean that groundwater is completely unregulated throughout the state? To dispel or confirm this myth, we explored the historical and current groundwater management practices and the roles of local, state, and federal governing entities, as well as the court system.

What are the Past Practices?

Groundwater management is the intentional and comprehensive monitoring, operation, and administration of a groundwater basin or portion of a basin with the overall goal of water supply sustainability. Looking back through history, there are examples of groundwater management dating back to the late 19th and early 20th century. According to the WEF’s Lapperson’s Guide to Groundwater, farmers and communities in California began to tap into groundwater significantly for the first time during the drought of the 1880s. At turn of the 20th century, technology, such as the invention of the deep-well turbine, enabled Californians to tap more extensively into larger groundwater resources located deeper beneath the surface. In the early 20th century, when existing conditions permitted, many agencies would recharge the groundwater with excess surface water to supplement their overall supply (WEF, 2003).

During the middle of the 20th century, Californians used an estimated nine to ten million acre-feet of groundwater. As the 21st century began, the use of groundwater inflated to fifteen million acre-feet, bringing about a need for increased management.

How Do Local Agencies Currently Play a Role in Groundwater?

While there is no comprehensive statewide program for managing and regulating the use of groundwater, that does not mean groundwater management does not exist. Groundwater management in California has historically been a local function. A variety of local governance structures have been created to manage groundwater basins. In some cases these have been very successful, while in others they have not.

There are three main structures in which local groundwater management exists:

- Management by local agencies under authority granted in the California Water Code or other applicable state statutes.
- Local government groundwater ordinances, joint powers agreements, and special districts.
- Court adjudications; a lawsuit is filed and groundwater rights are appropriated through a court ruling.

Local Agency Management

According to the Department of Water Resources’ (DWR) Groundwater Bulletin 118, Update 2003, no law requires that any of these forms of management be applied in a basin. Management is often instituted after local agencies or landowners recognize a specific groundwater problem. The extent to which groundwater is managed in any basin or sub-basin is often dependent on water demand and available supply (DWR, 2003).

According to DWR, there are currently more than 20 types of local agencies authorized by statute to provide water for various beneficial purposes – some of which may also have groundwater management authority. In addition, there are more than 20 counties that have adopted groundwater ordinances, and there are 22 adjudicated groundwater basins in California – most of which are in Southern California (DWR, 2010). The map in Appendix 4 gives an overall view of the status of local groundwater management in California.

The intent of most ordinances enacted by city and county governments has been to hold project proponents accountable for impacts that may occur as a result of proposed export projects. Several ordinances currently exist in the state with the majority being adopted after 1990. California courts have upheld the right of cities and counties to regulate groundwater under their authority. Although there have been arguments that the ordinances are preempted by state law, the Court of Appeals rejected such disputes. The court pronounced that State law does not occupy the field of groundwater management and does not prevent cities and counties from adopting ordinances.

Another method for local agency management is through a Groundwater Management Plan. The Local Groundwater Management Assistance Act of 2000 (AB 3030) provides procedures for local agencies to develop groundwater management plans. In essence, AB 3030 provides an agency with the power of a replenishment district allowing the agency to collect revenue to pay for the management of the groundwater basin.

Substantial funding has been allocated to assist local agencies with groundwater management. DWR has made significant efforts to provide technical and financial assistance, improving both local and regional water supply reliability. Under AB 3030, DWR administers grants for local agency groundwater studies. The funding has improved the overall understanding of basins and has advanced monitoring efforts.

Court Adjudications

Some groundwater basins in California have been adjudicated. Most of these basins are in Southern California. As the demand for groundwater exceeded the supply, users filed lawsuits leaving the courts to decide how much water can rightfully be extracted by each owner. Groundwater studies are conducted by the courts to evenly distribute available supplies. Both the time and cost associated with this process can be extensive, but this also makes adjudications one of the strongest forms of groundwater management in the state.

Watermasters are assigned by the court and given the authority to regulate the amount of groundwater extracted. Watermasters also manage groundwater quality within an adjudicated basin.

How Do State Agencies Currently Play a Role?

According to the LAO, groundwater regulation is not the main mission of any state or federal agency. However, there are several state agencies with overlapping task areas related to quality, supply, and contamination issues, as you can see in Table 1.

Table 1: State Agencies Involved in Groundwater (LAO, 2010)

	Water Supply	Regulate to Protect Water Quality	Science & Monitoring	Cleanup	Local Financial Assistance
California Public Utilities Commission	X	X			
Department of Food and Agriculture			X		X
Department of Pesticide Regulation		X	X		
Department of Public Health		X	X		X
Department of Toxic Substances Control		X	X	X	X
Department of Water Resources (DWR)	X		X		X
Integrated Waste Management Board		X			
Office of Environmental Health Hazard Assessment			X		
Pollution Control Financing Authority					X
State Water Resources Control Board		X	X	X	X

How Do Federal Agencies Currently Play a Role in Groundwater?

Under the Clean Water Act, the federal government does not “directly administer programs to regulate the quality of groundwater as it does with surface water.” In most cases, the responsibility is delegated to the state (LAO, 2010). Table 2 below explains how the three main agencies to play a role in regulating and governing California’s groundwater.

Table 2: Key Federal Agencies and Roles

Agency	Role
U.S. Environmental Protection Agency	Works with California Department of Public Health to ensure that groundwater drinking water supply sources comply with mandated federal drinking water programs and standards. Administers grant and loan programs for water treatment and cleanup.
U.S. Geological Survey	Conducts studies and provides groundwater monitoring for the SWRCB’s Groundwater Ambient Monitoring and Assessment Program. Monitors national water use and conducts scientific studies.
U.S. Department of the Interior, Bureau of Reclamation	Monitors the impact of surface water on groundwater basins in areas of the CVP, a surface water distribution project similar to the SWP.

Finding – Myth Busted.

Based on the information above, there are numerous ways that groundwater in California is governed or managed. While it's true there is no comprehensive state governance structure, it does not mean that groundwater is wholly unregulated.

Myth 3: No One Wants Groundwater Governance Because It's Not Needed.

Basis of the Myth – With the passage of SBX7 6 and several articles on the depletion of groundwater resources, discussions erupted all over the state concerning groundwater governance. To analyze this myth, the Class looked to the mentors' responses and explored the reasoning behind why groundwater governance is, or is not, needed in California.

Need and Responsibility of Governance and Regulation

There are varying opinions on what type of groundwater governance is needed. However, the majority of the mentors agreed that there is a need for governance and it should be handled at the local and regional level, with some suggesting that state guidance is needed.

Some type of groundwater regulation is necessary to ensure an adequate and reliable supply of groundwater for the state. Depending on the type of water year, groundwater accounts for 30 percent to 40 percent of California's water supply. Without any type of regulation or governance in place, California cannot protect the long-term integrity of this supply.

The mentors agreed that regional/local levels of governance were essential for any type of regulation to be successful. Whether it be local- or state-level governance, it was made clear that some level of governance is needed.

Impacts of No Regulation

The mentors identified several negative impacts associated with the lack of groundwater governance. They identified impacts such as poor water quality, decrease in supplies and sustainability, subsidence, infrastructure damage, improper management, and overdraft. Problems identified that were specific to overdraft include a loss of storage capacity, loss of habitat, impacts to downstream users, flooding, increased pumping costs and energy use, unsustainable agriculture, and saltwater intrusion. These negative consequences have expensive costs associated if they are not prevented by some type of regulation. Proposed solutions included data collection, safe yield calculations, increased supplemental supplies, banking, conservation, water-use efficiency, groundwater management plans, and incentives for decreased pumping.

Although the mentors easily identified the negative impacts associated with a lack of regulation, some pointed out the negative impacts that could result from regulations themselves – the most prominent example being the infringement on private water rights. According to two mentors:

"Regulations tend to penalize those who are successfully implementing groundwater management. Therefore, no regulation is a positive."

"If local or regional management plans are not working, I cannot foresee the state resolving a region's particular problems through statewide regulation."

Water Quality and Regulation

The majority of the mentors agree that the protection of groundwater quality needs to be considered in groundwater pumping regulations. Consistent with answers related to governance, 86 percent of the mentors felt that if groundwater quality was linked to

groundwater or pumping regulations, locals should be the entities to implement them. However, as shown in Figure 2, many of those same experts thought that the federal and state government should bear the financial burden of cleaning contaminated groundwater resources if a specific polluter could not be identified.

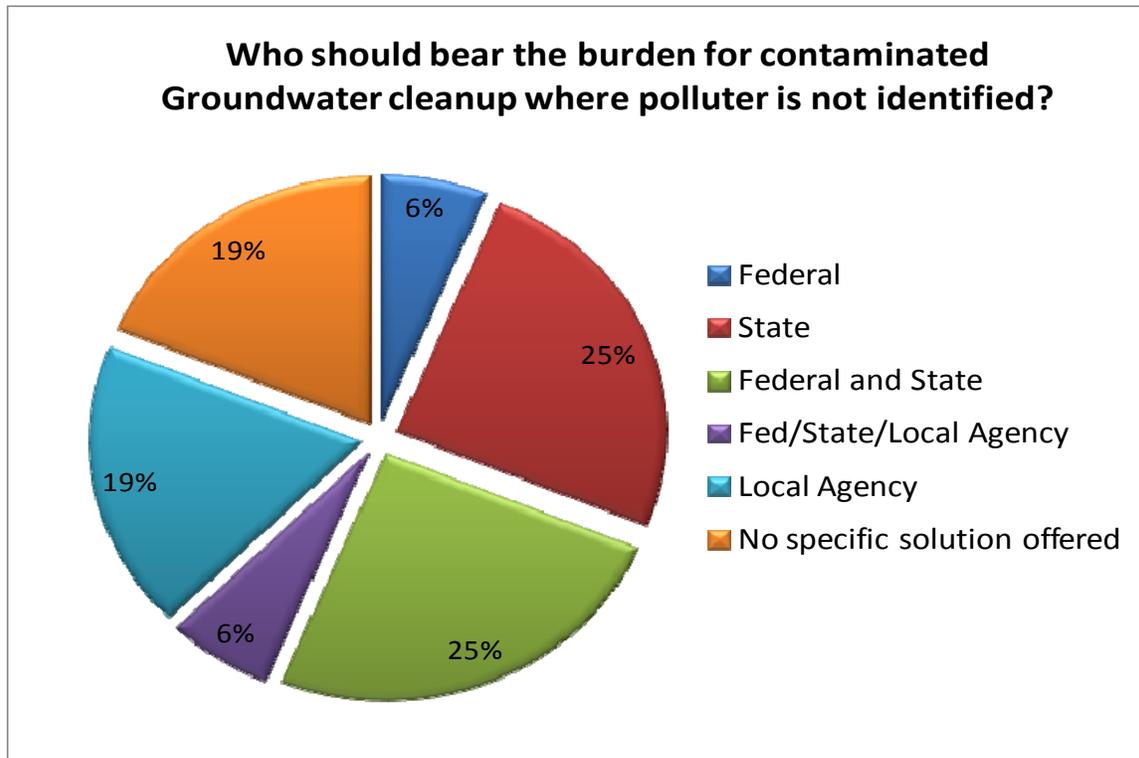


Figure 2: Who Should Bear the Burden for Contaminated Groundwater Cleanup?

Data Management Use and Regulation

Currently, there is a lack of accessible, comprehensive, and standardized groundwater data in California. Several mentors expressed the concern that non-standardized data collection could lead to a lack of consistency and could present difficulties when determining groundwater solutions. To assess whether a regulation or requirement is useful, one needs success indicators embedded into relevant data.

Figures 3 and 4 depict what the mentors deemed as relevant data for collection and whether this data should be public information.

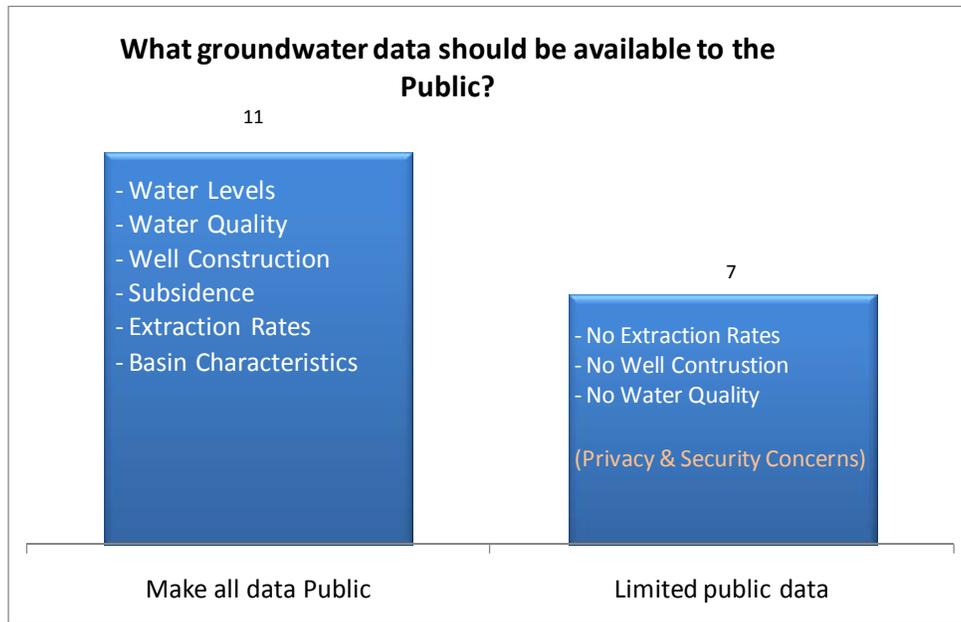


Figure 3: What Groundwater Data Should Be Made Public?

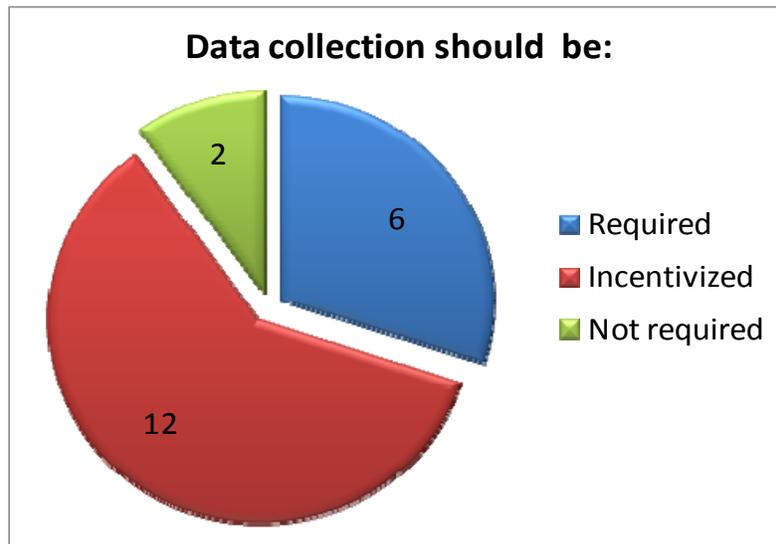


Figure 4: Should Groundwater Data Collection Be Required?

Finding – Myth Busted.

The mentors overwhelmingly agreed that some form of groundwater governance is needed. Although they did not all agree on a specific approach, they all expressed a firm assertion that groundwater governance, be it legislated, regionally coordinated, or driven by local entities, is necessary to maintain the state’s groundwater supplies, quality, and sustainability.

Myth 4: Creating a Groundwater Governance Structure is Impossible.

Basis of the Myth – Like too many straws dipped into one drink, many would argue there are too many interests competing for the same resource to ever reach an agreed-upon groundwater governance structure. Because California is so diverse and the demand for water is so great, it is easy to understand why this myth has become popular. The Class looked at the mentor responses, as well as examples of governance structures in other states to examine this myth.

What Did the Mentors Think?

According to the responses from the mentors, a groundwater governance structure is possible and could be implemented in a variety of ways. As previously stated, the majority of mentors believe the primary governing responsibility should occur at the basin or local Level.

Of these responses, none of the mentors stated that a uniform statewide governance structure is the best solution. However, they were split as to whether the governance structure should consist of strictly local governance that would vary from basin to basin addressing individual basin issues, or a combination of state and local governance that would consist of framework or structure guidelines at the state level.

All mentors agreed that there are challenges to creating and implementing groundwater governance. Some of the commonly mentioned challenges include:

- Private Property Rights – How do we govern something that has historically been seen as a private property right?
- There is no “one size fits all” approach – How do we address unique issues specific to each basin?
- Funding – What will be the source of funding to create and implement a system of groundwater governance?
- Legal Challenges/Adjudication – How do we avoid legal challenges?

Several themes emerged from the mentors’ responses, including the important point that there is no one solution or perfect example of a governance structure that will work for all basins because each basin has specific issues and challenges and some basins are already adjudicated.

What About Other Governance Structures?

A review of the 2010 LAO report on groundwater indicates that the majority of other western states have some form of permitting system for the use of groundwater (LAO, 2010). Other western states have developed governance frameworks that address some of the shortfalls in California's groundwater management, including:

- Groundwater use is permitted in Arizona, Colorado, and New Mexico.
- Active management areas have been set up that help address inter-political boundary groundwater basins in Arizona, Texas, Colorado, and New Mexico.

- Statewide groundwater-use metering, level measuring, and public reporting requirements exist in Arizona, Colorado, and New Mexico.

The LAO report also identifies the many challenges that California faces in the future of state water planning and management of groundwater resources. Some of these issues include:

- Water is currently characterized as either surface water, subterranean stream, or percolating groundwater.
- The use of "percolating groundwater" use does not require a water right, while the other two characterizations do require water rights.
- Groundwater surrounding some major rivers has been classified by the SWRCB as subterranean streams to help address this problem.
- The end result is that litigation is often necessary to adjudicate water rights conflicts.

Data gaps make water supply planning, investments in, and policy changes to California's water system extremely difficult:

- Groundwater management plans prepared by local districts under AB 3030 are voluntary, not standardized, and variable in their completeness and have not been useful in DWR's planning efforts.
- DWR's 2009 California Water Plan Update expressed that there exists a lack of data to indicate what potential role groundwater can play in addressing the state's water needs.
- SBX7 6 develops a more standardized, statewide pathway to obtaining and disseminating groundwater-elevation data to the public. This law could help water supply planners overcome current data gaps.

Finding – Myth Busted.

The Class has determined that it may be difficult, but not impossible, to create and implement a groundwater governance structure in California. This is based on information obtained from interviews with the mentors regarding the need for groundwater governance and a review of existing governance structures in other western states and challenges faced with implementing a new governance structure.

Myth 5: Local Entities Know What's Best.

Basis of the Myth – This myth is based on the widely held idea that local entities are best equipped to govern/manage their own resources. To examine this myth, the Class looked at the larger question of who really is best equipped to govern groundwater in California.

Who Should Manage Groundwater in California?

More than an empirical question answered by scientific methods or research, the question of who should manage groundwater in California is a political one.

The mentors were posed the following question: Assuming groundwater governance is necessary, where should the primary responsibility lie for governing or regulating groundwater use: local level (town/city), regional level (county or basin), state level, or private citizens? Why?

The overwhelming response by the mentors was that the responsibility should lie at the basin level.

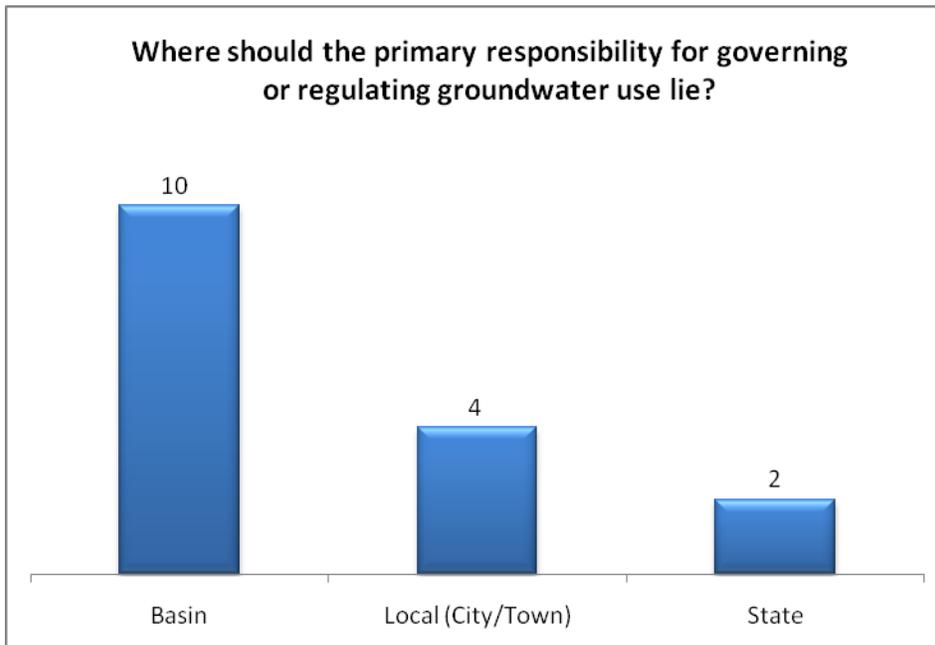


Figure 5: Where should the responsibility for governing groundwater lie?

What Did the Mentors Think?

Who should manage groundwater in California? This question did not divide the mentors into different camps based on their position or affiliations, but showed a broad agreement that management is most effective when done at the basin level with adequate input from local entities. The general agreement among the mentors is indicative that there is some level of consensus as to the most appropriate level at which to regulate groundwater in California.

As illustrated by existing local management strategies, it is recognized that local agency involvement is key to determining appropriate management of a specific groundwater

basin. The reason is that no two groundwater basins are the same and the needs of each basin vary significantly based on the physical characteristics. As a result, solutions for one place may differ from another and local involvement is necessary to understand the nuance of each particular basin.

According to the majority of respondents, groundwater management is best done at the basin level. Since there is no real conforming political structure to water basins, multiple local or regional governance options are plausible. According to one mentor, "Regional governing bodies would need to consist of multiple counties and water districts, working cooperatively."

Despite the overwhelming response that groundwater governance should be at the regional level with local input, the majority of the mentors also agreed that there is a role for the state in groundwater regulation. According to another mentor, "There is a disconnection between surface water and groundwater management."

This mentor contends that the state cannot continue to maintain that groundwater and surface water are separate. And, the regulation of both surface and groundwater cannot be effectively regulated independently. Therefore, there is a strong need for a state role in groundwater governance. According to several other mentors, the state should maintain some level of oversight but delegate the first level of regulation to the region or at the basin level. Another mentor stated that a statewide framework on top of local regulation would provide for oversight and some level of consistency.

However, some mentors did feel that the state's intervention into groundwater regulation should only be in the case where local regulation fails or where there is a lack of local participation.

What About New Legislation?

California has perhaps already taken a step in this direction. A series of legislative bills enacted in the 2009 legislative session attempted a comprehensive reform of California's water policy. While the focus of the package was on addressing problems in the Delta system, SBX7 6 was solely dedicated to groundwater. This bill amended the California Water Code to require regular and systematic monitoring and public reporting of groundwater elevations in all groundwater basins and sub-basins in California, on or before January 1, 2012 (DWR, 2009).

The objective of this legislation is to provide for the collection of data that would assist entities to better manage the groundwater resource during both normal water years and during drought conditions. While this legislation is a first step in monitoring groundwater, it is not regulation of groundwater. The collection of data is intended to help enable better groundwater management.

Specifically, SBX7 6 requires the following:

- On or before January 1, 2011, an entity must apply to be designated by the DWR as the local groundwater monitoring entity (designated entity) that is responsible for monitoring groundwater elevations in all or part of a basin or sub-basin and reporting to DWR.

- DWR will perform the groundwater monitoring and reporting functions for those regions for which no entity has agreed to perform the groundwater monitoring functions. Furthermore, if the designated entity fails to implement a monitoring program and/or fails to provide the required reports, DWR may implement the groundwater monitoring for that region.
- The designated entity will begin monitoring and reporting groundwater elevations in all or part of a basin or sub-basin on or before January 1, 2012.
- The designated entities can determine how best to set up their groundwater monitoring program, crafting the program to meet their local circumstances. DWR will work cooperatively with each designated entity to determine the manner in which groundwater elevation information should be collected and reported to DWR, including deferring to existing monitoring programs if those programs result in information that demonstrates seasonal and long-term trends in groundwater elevations.
- On or before January 1, 2012, DWR will establish a priority schedule for monitoring groundwater basins, reviewing groundwater elevation reports, and making recommendations to the designated entities to improve the monitoring programs.
- DWR will investigate the state's groundwater basins and report its findings to the Governor and the Legislature no later than January 1, 2012, and thereafter in years ending in 5 or 0.
- SB X7 6 provides landowners with protections from trespass by state or local entities. It also specifies that the failure of entities to implement a local groundwater monitoring program will result in the loss of eligibility for state grant funds by the county and the designated entities.

The bill allows for flexibility at the local level to determine who will take on the monitoring responsibilities, but there is a penalty involved. This is a new approach to groundwater management.

Finding – Myth Confirmed.

The responses received from the mentors and current statutes reinforce the idea that “locals know best” and there should be strong local involvement in any groundwater governance scheme.

Myth 6: Good Governance = Problem Solved!

Basis of the Myth – Sound groundwater governance is the solution to California's groundwater problems. To dispel or confirm this myth, the Class first examined the meaning of "good governance." It then examined potential problems that must be addressed in the management of groundwater.

What is Good Governance?

To determine if "good governance" can address existing problems, one must first ask what general characteristics a "good governance" system should have. From the various mentor responses, it appears that there is at least a general consensus that a desirable groundwater governance structure should meet a few basic criteria.

First, there was near-universal agreement among mentors interviewed that good governance should afford local entities and users sufficient flexibility and autonomy to craft solutions and approaches that meet the unique needs and conditions existing in each basin or region. At the same time, however, there was also broad agreement that delegation of governance functions, management, and control to local or regional entities, should carry with it an expectation of responsibility and also a certain level of accountability. In addition, most mentors agreed that there is a role for state policy, standards, and assistance to help ensure at least some minimal level of responsible stewardship at the local or regional level.

In general, good governance was described as a structure that preserves maximal local or regional autonomy, while at the same time ensuring local responsibility and fulfillment of basic statewide objectives. Added to this, many of the mentors emphasized the importance of respecting or acknowledging the water rights system upon which, not only existing uses around the state, but also large segments of the state's economy depend. In contrast to this often-repeated concern for continuity with existing uses and rights, there was also the common view that "good" governance should perhaps place at least some checks on private or local groundwater use.

In addition, effective governance must include adequate and sustainable funding mechanisms and appropriate resourcing at both state and local levels to withstand external economic forces. In addition, good groundwater governance requires ongoing management and effort, as well as periodic adjustment and modernization in response to changing conditions over time (for example, in an adjudicated or urbanizing basin).

The Problems We Face

There are three core issues when dealing with a groundwater system that any governance system must seek to address. Any successful management of a groundwater basin must ensure that the supply it is managing is appropriately used in relation to its recharge rate to ensure that a usable supply is available. It also must ensure that contaminants are kept out of the aquifer so that the overall quality of the water they are providing is maintained. Finally, the basin must be managed in such a way that ensures its water users can count on the availability of that supply consistently.

However, the solutions to these problems lie in many different areas. The use of emerging technologies in well design and irrigation systems can solve many of the problems associated with shortages in water. In addition, to conserve groundwater supplies, individual users must also take individual action to reduce use to protect the

overall supply. Furthermore, water users in many cases also must cooperate with scientists for land access for the purpose of data collection. Also, there are specific solutions that are not available to certain basins based on the region they are in and the specific conditions of their aquifer. Finally, there are outside environmental factors that can and will affect all three of the main issues that a management system will face. The most important thing to note about these different solutions and factors affecting the three main questions of groundwater management is that none of them directly relate to governance. They can be affected and encouraged by governance, and governance must respond to them, but the governance structure of a region does not ensure that any of these things will turn out a specific way. It takes the work and ingenuity of scientists to invent, the initiative of water users to conserve, and the flexibility to adjust to new situations as they arise. It requires communication with and cooperation of individual property owners to assist scientists and governing agencies in the data collection needed to understand the outside factors and adapt to them.

Finding – Myth Busted.

There is no question that the method of governance is important, however it is not the only necessary component. Good governance will be needed to acquire funding and direct that funding to obtaining the resources needed to deal with problems that will arise. It is also vital for conflict resolution in a system where lawsuits are a common tool for settling disputes. However, the work of scientists and water users cannot be assured through a governance structure alone, and the set of circumstances that may be presented may not lend itself to a “model” solution. Governance is important, but other outside factors will always affect the outcome.

III. Conclusion

After researching and interviewing the mentors on groundwater governance, the following conclusions were developed:

- There are numerous ways that groundwater in California is governed or managed. However, there is no comprehensive governance structure that establishes enforceable statewide performance standards for local groundwater management;
- Effective groundwater governance is critical for the long-term sustainability of California's groundwater resources and to address current challenges of overdraft, water quality, subsidence, habitat impacts, and future climate change;
- Recognize the limitations of treating groundwater as a private property right or as a pure public trust. However, certain changes to existing laws and regulations may be needed to address the linkage to surface water rights, third-party impacts, and other inefficiencies;
- Basin-scale management with local involvement and control is preferable for effective groundwater governance;
- There is no one perfect groundwater management model that fulfills all local and regional needs in California, but one is needed. A flexible governance structure that accommodates multiple management models is the best approach for California;
- Good groundwater governance can go a long way toward addressing various challenges. However, external social, economic, regulatory, and environmental factors and stressors, such as population growth, droughts, climate change, and emerging contaminants can continue to impact the sustainability of groundwater resources.

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Appendix One

WATER LEADERS QUESTIONS - GROUNDWATER GOVERNANCE

I. Need for Groundwater Governance

- a. Is groundwater regulation necessary to ensure an adequate and reliable source of water for our state?
- b. Can you foresee any impacts (positive and/or negative) to the state if we don't regulate groundwater?

II. Governance Structure – Local, State, Federal

- a. Assuming groundwater governance is necessary: Where should the primary responsibility for governing or regulating groundwater use lie, local (town/city), regional level (county or basin), state level, or private citizens? Why?
- b. What type of groundwater policy/regulation would you recommend; a uniform statewide policy or individualized regional policies? Or other?

Interaction with other Physical Systems

- c. Do you think that climate change adaptation strategies should be figured into any attempt to regulate California's groundwater?

Implementation Challenges

- d. What are the biggest hurdles/challenges faced in creating a regulatory framework for governing the use of groundwater?

III. Regulatory Considerations

Water Rights

- a. From your perspective, do you view groundwater as a public trust or a private property right?
- b. What type of model for a groundwater rights system would you recommend, if any?

Overdraft

- c. What do you see as the biggest problems resulting from overdrafting groundwater?
 - o What solutions would you recommend to mitigate those problems?

Water Quality

- d. Should the protection of groundwater quality fit into the regulation of groundwater pumping? Why? And if yes, what regulations would you suggest?
- e. Who should bear the financial burden of cleaning contaminated groundwater? Specific polluters through parcel tax assessments or another financial mechanism that would directly link the cost of pollution to the cause? Or other?

Data Management and Use

- f. Should agencies such as the State Water Resources Control Board, the Department of Health Services, and the Department of Water Resources improve the scope and quality of their groundwater data? What actions would you recommend for doing so?
- g. What information regarding groundwater should be collected and monitored? What information, if any, should be made available to the public?
- h. Should pumping data from private users and sovereign nations (tribes) be required or incentivized? What requirements/incentives would you suggest and should that information be made available to the public?

IV. Example Groundwater Governance Models

- a. Do you know of existing governance models, either locally or regionally within California or in other states or parts of the world that would be useful to look at?

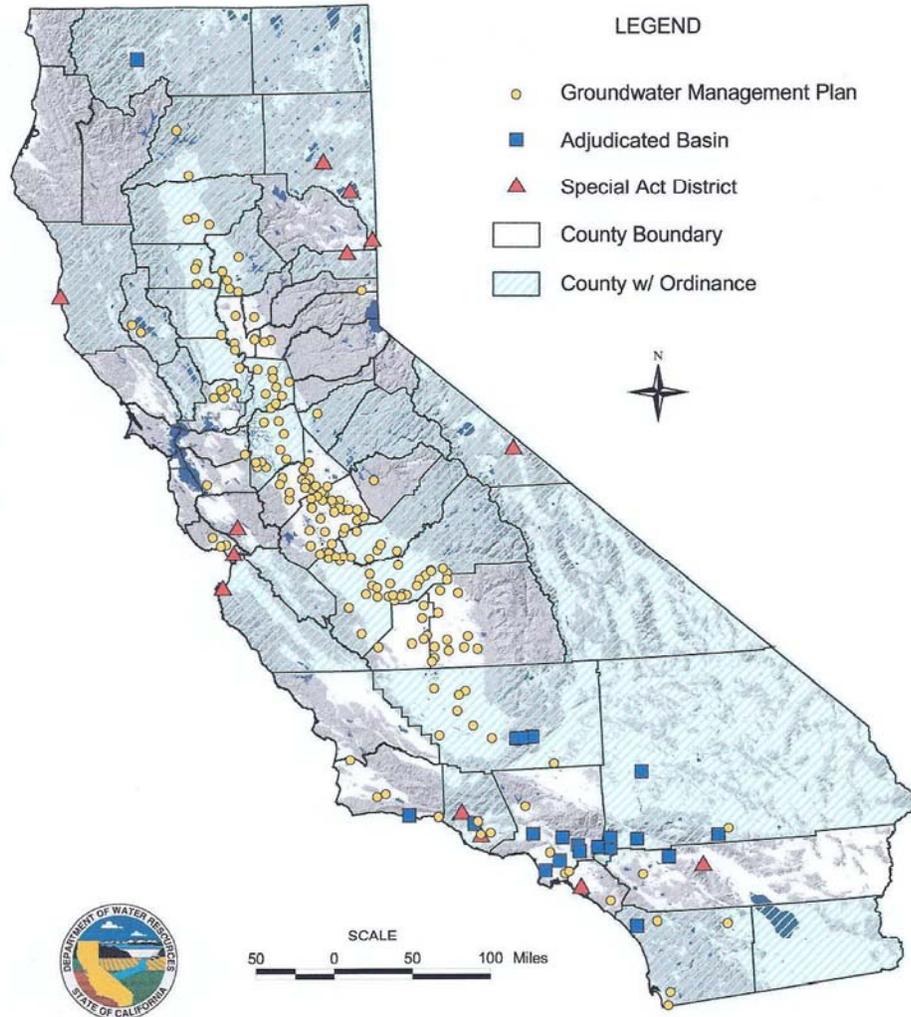
Appendix Two

Water Leader	Mentor
Tamara Alaniz Water Conservation Manager Mojave Water Agency	Chris Brown Executive Director California Urban Water Coalition
Whitney Benzian Director of Special Projects City of San Diego	Catherine Freeman Senior Fiscal and Policy Analyst Legislative Analyst Office
Kevin Booker Principal Engineer Sonoma County Water Agency	Dennis O'Conner Principal Consultant Senate on Natural Resource & Water
John Drury Lead Treatment Operator East Valley Water District	Dan McManus Hydrogeologist California Department of Water Resources
Anona Dutton Water Resources Planner Bay Area Water Supply and Conservation Agency	Antonio Rossmann Rossmann and Moore, LLP
Megan Fidell Water Resources Engineer California Department of Water Resources	Tim O'Halloran General Manager Yolo County Flood Control & Water Conservation District
Paul Frank Project Engineer NewFields	Mary Scruggs Engineering Geologist California Department of Water Resources
Justin Fredrickson Environmental Policy Analyst California Farm Bureau Federation	John Rossi General Manager Western Municipal Water District
Shay Humphrey Project Associate CirclePoint	Chris Scheuring Managing Counsel, Natural Resources California Farm Bureau
Ibrahim Khadam Supervising Engineer MWH Global Inc	Kirby Brill General Manager Mojave Water Agency
Sheri Looper Water Conservation Team Leader Bureau of Reclamation	Will Boshman General Manager Semitropic Water Storage District
Cara Martinson Legislative Analyst California State Association of Counties	Enrique Lopez-Calva Principal CDM
Raffi Moughamian Assistant Water Resources Specialist East Bay Municipal Utility District	Tim Parker CEO Parker Groundwater
Christopher Nelson Customer Service Supervisor Carmichael Water District	Eric Miller Senior Project Manager MPM Engineering
Sarah Powell Staff Biologist Padre Associates Inc.	Paul Bartkiewicz Attorney Bartkiewicz, Kronick & Shanaham
Matthew Robinson Legislative Analyst Department of Finance	Vickie Newland Assistant Director Butte County Water and Resource Conservation
Arturo Salaices Legislative Aide Office of Assembly Member Mariko Yamada	Jeff Sutton General Manager Tehama-Colusa Canal Authority
Oscar Serrano Senior Water Engineer Colusa Indian Community Council	Pamela Creedon Executive Officer Central Valley Regional Water Quality Control Board
Roy Sianez Legislative Director Office of Assembly Member Mary Salas	Michael Markus General Manager Orange County Water District
Kelley Weaver Water Resources Engineer CDM	Dean Wiberg Program Manager NASA

Appendix Three

Map of Groundwater Management in California

Status of Groundwater Management in California



Status of Groundwater Management in California
(as of December 2004)

Water Education Foundation's Water Leaders Class of 2010

Groundwater Governance:



Edition

2010 Water Education Foundation Water Leaders Class

- The Cast
- The Experts
- The Objective



2010 Water Leaders and Mentors

Water Leader	Mentor
<p>Tamara Alaniz Water Conservation Manager Mojave Water Agency</p>	<p>Chris Brown Executive Director California Urban Water Conservation Council</p>
<p>Whitney Benzian Director of Special Projects City of</p>	<p>Catherine Freeman Senior Fiscal and Policy Analyst Legislative Analyst Office</p>
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2010 Water Leaders and Mentors

Water Leader	Mentor
<p>Sheri Looper Water Conservation Team Leader Bureau of Reclamation</p>	<p>Will Boshman General Manager Semitropocic Water Storage District</p>
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<p>Arturo Salaices Legislative Aide Office of Assembly Member Mariko Yamada</p>	<p>Jeff Sutton General Manager Authority</p>
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<p>Kelley Weaver Water Resources Engineer CDM</p>	<p>Dean Wiberg Program Manager NASA</p>

Groundwater Governance Myths

1. Groundwater rights are clearly defined.
2. There is no groundwater governance in California.
3. No one wants governance; it is not needed.
4. Creating a groundwater governance structure is impossible.
5. When it comes to management, locals know best!
6. Groundwater Governance = Problem Solved.



Myth #1

Groundwater
rights are
clearly
defined.



Photo Courtesy legaljuice.com

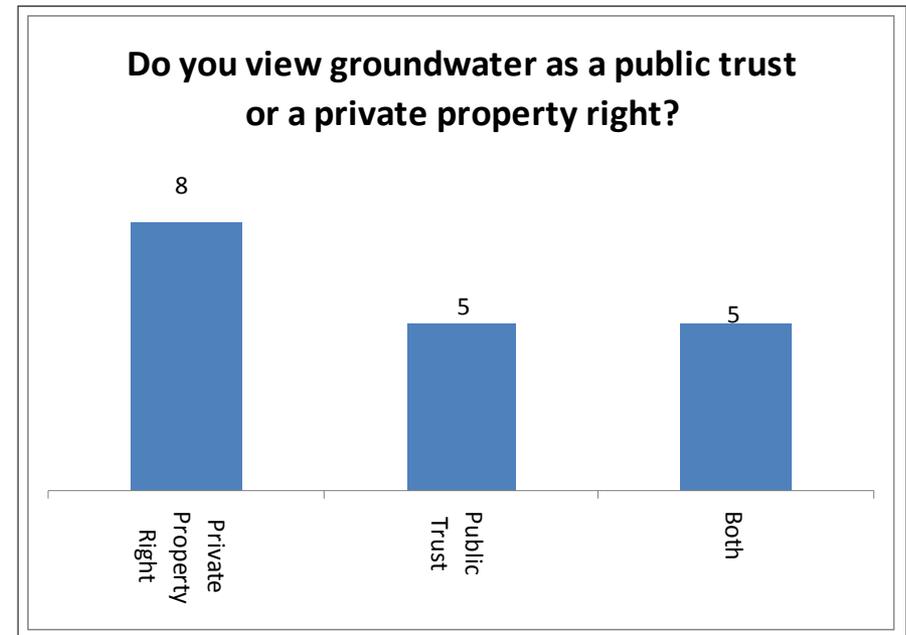
Findings

- Types of Basins:
 - Adjudicated vs. Non-adjudicated;
 - Urban vs. Ag;
 - South vs. North.
- Types of Groundwater:
 - Percolating vs. ‘Subterranean Streams’
- Approaches to Water Rights:
 - Non-Adjudicated: Overlying, appropriative, prescriptive
 - Adjudicated
- Approaches to Management:
 - Court decree
 - Local & regional

Mentor Responses

- Private Property vs. Public Trust

- Trick Question!
- Where to draw the line?



Mentor Responses

- Governance:
 - Existing water rights system & local/regional control, BUT
 - Don't forget **The People** and **The Critters**
- Some standards needed
- Governance alternatives or reforms?



Summing Up

- Water Rights:
 - Keep ‘em: They’re old, they’re creaky, but basically they work....
- And, yet, not perfect....
 - Majority say leave intact
- Room for improvement
- Enormous cost for GW adjudication



Myth #1

PLAUSIBLE

Myth #2

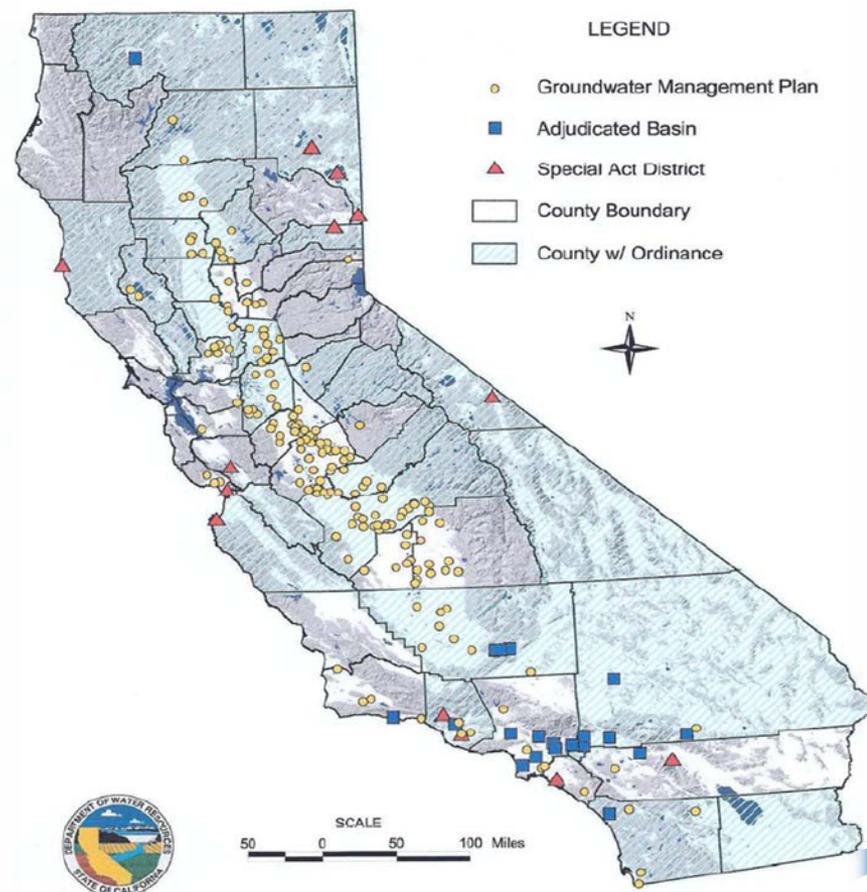
There is no
groundwater
governance in
California



Findings

- Local Groundwater Governance Models
 - Local Agency Management, per the CA Water Code or other statute
 - Local GW Ordinances, JPAs, and Special Districts
 - Court Adjudications

Status of Groundwater Management in California



Status of Groundwater Management in California
(as of December 2004)

Findings

- State Agency Role in Managing Groundwater

Agency	Water Supply	Water Quality	Science & Monitoring	Cleanup	Financial Assistance
CPUC - CA Public Utilities Comm.	X	X			
DFA - Dept. of Food & Agriculture			X		X
DPR - Dept. of Pesticide Regulation		X	X		
DPH - Dept. of Public Health		X	X		X
DTSC - Dept. of Toxic Substances Control		X	X	X	X
DWR - Dept. of Water Resources	X		X		X
IWMB - Integrated Waste Mgmt Board		X			
OEHHA - Office of Env. Health Hazard Assessment			X		
PCFA - Pollution Control Financing Authority					X
SWRCB - State Water Resources Control Board		X	X	X	X

Findings

- Federal Agency Role in Managing Groundwater

Agency	Role
EPA US Environmental Protection Agency	Coordinates with DPH: <ul style="list-style-type: none"> • Drinking water standards • Financing for water treatment & Cleanup
USGS United States Geological Survey	Supports SWRCB's Groundwater Ambient Monitoring and Assessment Program
BOR US Dept. of the Interior, Bureau of Reclamation	Monitors impact of surface water on groundwater in the CVP place of use

Summing Up

- Groundwater governance in California – It may not be comprehensive but some forms of management exist

GROUNDWATER
MANAGEMENT



Myth #2

MYTH BUSTED

Myth #3

No one wants
groundwater
governance:
it's not
needed



Findings

- Need and Responsibility of Governance and Regulation
 - Regulation/governance is needed to ensure reliable supply
 - Local or regional with state oversight

Mentor Responses

- Impacts of no regulation
 - Overdraft
 - Water quality
 - Sustainability
 - Subsidence
 - Infrastructure damage

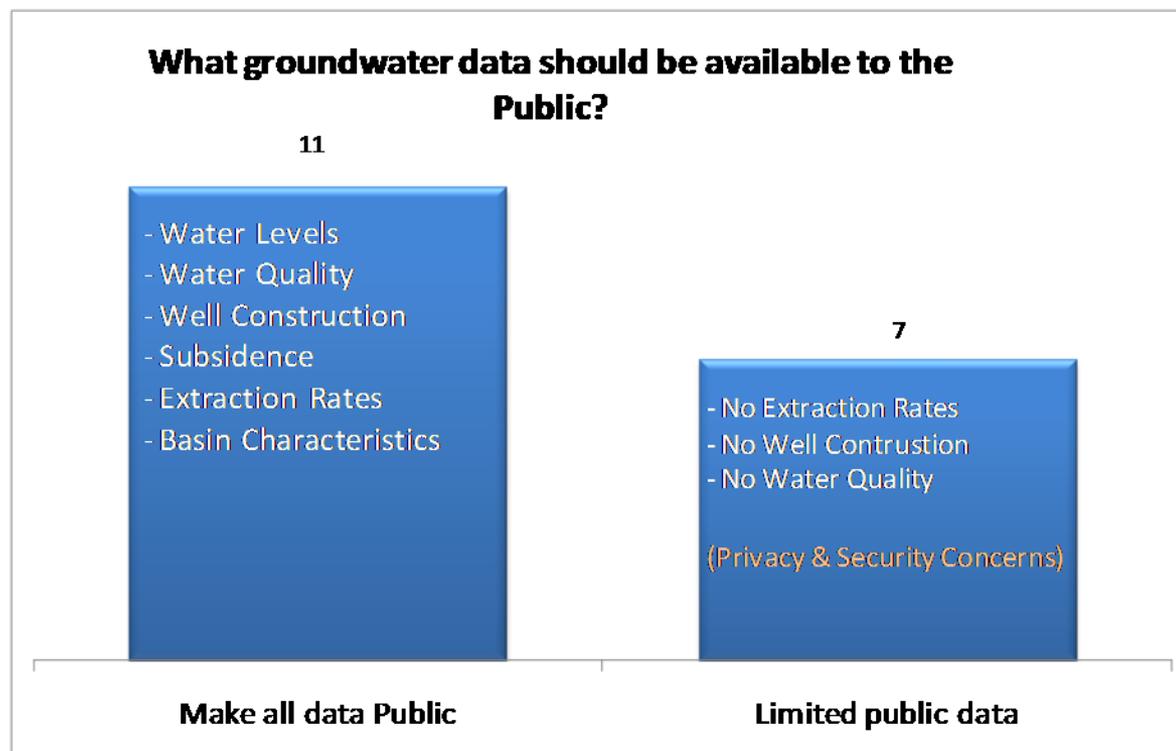
Photo Courtesy aquiforma.com



Photo Courtesy USGS.gov

Mentor Responses

•Data Management



Summing Up

- Governance Is Needed!
 - Consequences of inaction are too high
- But what is the right approach?

Myth #3

MYTH BUSTED

Myth #4

Creating a groundwater governance structure is impossible!



Photo Courtesy bygoneTV.com

Findings

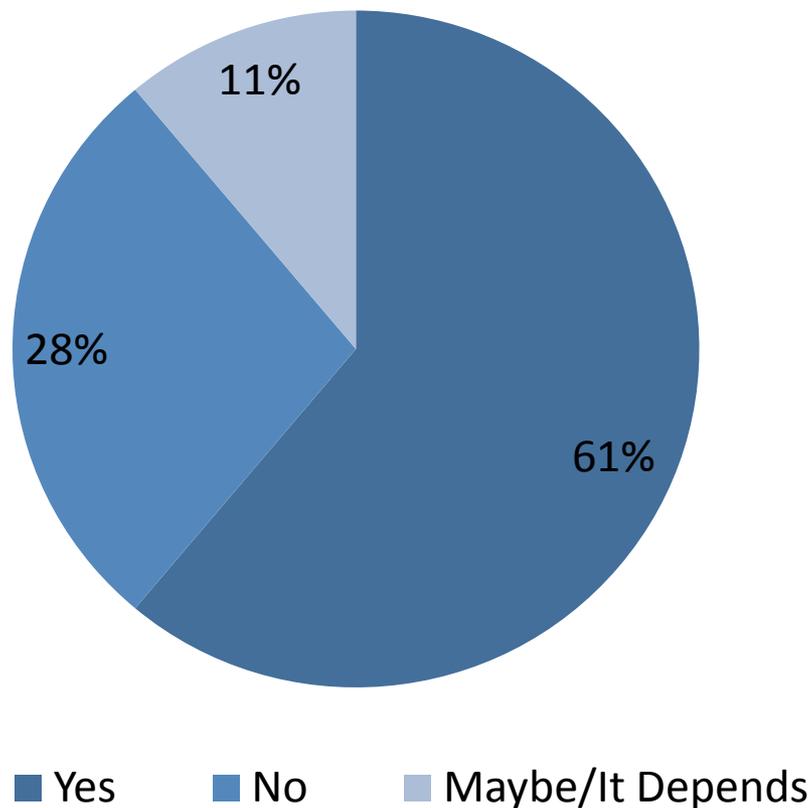
- Groundwater governance in other states

Groundwater Management Components:	CA	AZ	TX	CO	NM
Statewide groundwater use permitting		X		X	X
Active management areas		X	X	X	X
Statewide policy—well data made public		X	X	X	X
Statewide policy—metering, measurement, and reporting requirements	a	X		X	X

^a SBX7 6 provides for statewide measurement (at the basin level), but not metering of water extraction.

Mentor Responses

Mentor responses:



Should groundwater use be regulated in CA?

YES, but there are Challenges.

Mentor Responses

Governance Challenges:

- What about Property rights
- No “one size fits all” approach
- Funding
- Legal challenges/Adjudication



Photo Courtesy wpclipart.com

**PRIVATE
PROPERTY
NO
TRESPASSING**



Photo Courtesy Time.com

Summing Up

- Governance is possible
- Implementation may be challenging
- Four Western States prove that it can be done

Photo Courtesy canyonvilla.com

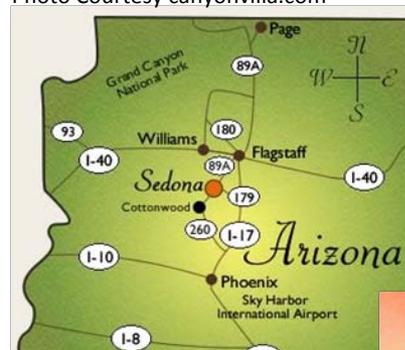
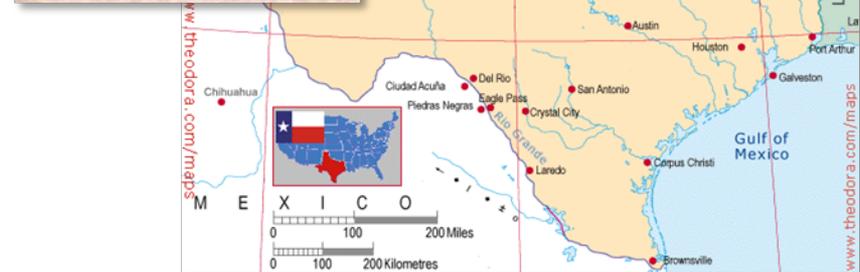
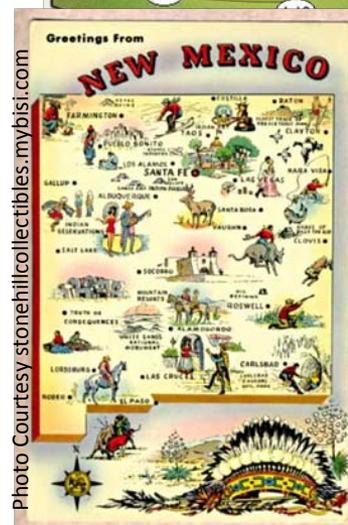
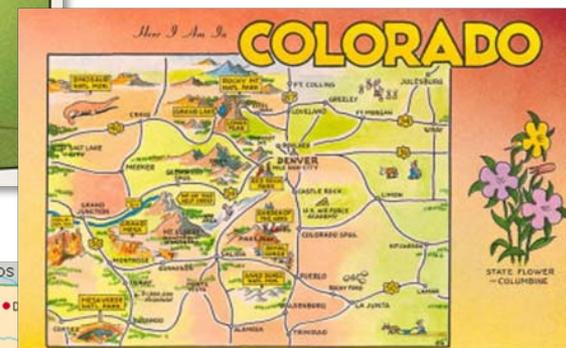


Photo Courtesy montesanoenterprises.com



Myth #4

MYTH BUSTED

Myth #5

Local Entities
Know
Groundwater
Best!



Findings

- What About New Legislation?

- Objective of this legislation

- SB 6 requires:

- Designation as the local groundwater monitoring entity

- Designated entities can determine how best to set up their program

- SB X7-6 provides landowners with protections from trespass by state or local entities.

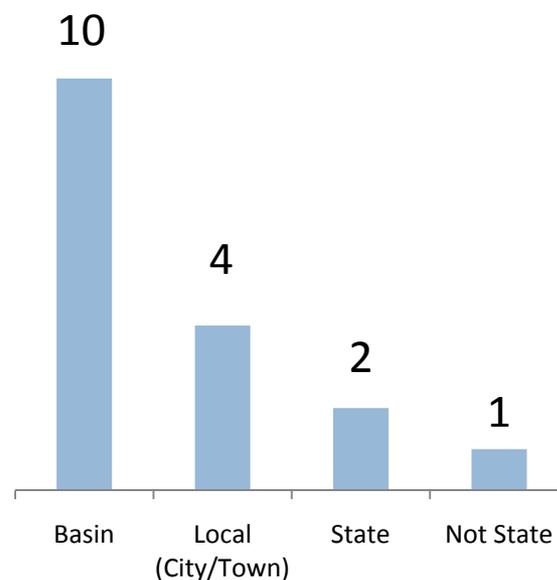
- SB X7-6 also specifies that failure to implement a program will result in the loss of grant funds



Mentor Responses

- General Agreement amongst mentors:
 - No uniform statewide governance structure
 - Governance should occur at the basin or local level
 - State could provide oversight or framework for local implementation

Mentor Responses:
Where should the
responsibility for
governing
groundwater use lie?



Myth #5

CONFIRMED

Myth #6

Groundwater
Governance =
Problems
Solved!



Findings

Problems

- Water supply
- Water quality
- Water reliability

Solutions

- Flexibility – adaptive management approach
- Improved technology/data gathering
- Communication and reporting

Summing Up

- Good governance will help; but it won't completely solve the problems

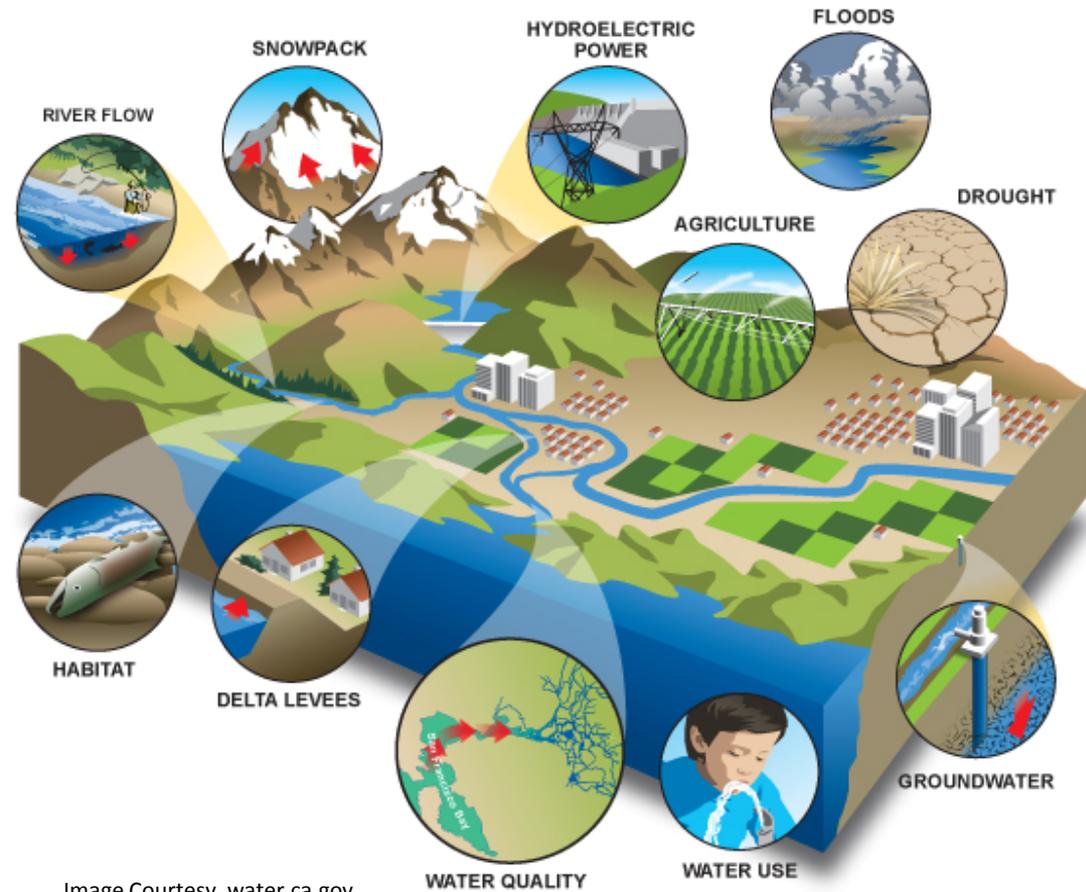


Image Courtesy water.ca.gov

Myth #6

MYTH BUSTED

Thoughts from the Water Leaders

- Focus on areas of agreement; even if they are hard to find
- Communication and coordination is key
- A framework is needed for consistency
- Maintain local autonomy
- Don't address groundwater as a single problem; it's part of the whole water picture

THANK YOU!