

The Man-Made Drought: How Water Policy Affected the California Drought

Honors Thesis

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Abstract

The average person never has to think about water, they turn on the faucet and it's there. Yes, we drink it, shower in it, clean our clothes and dishes in it, but it seems like there is an endless supply available. Unfortunately, that is not the case. While it may seem that water is always plentiful it is one of the most precious resources we use. Like other resources there are competitors for water, but who are they? Essentially, everyone is a competitor for water from a farmer who needs to irrigate crops, to a city which must provide clean water to its citizens, to the environment where it provides a unique ecosystem. Water rights provide us with the ability to determine the allocation of water between these competitors.

Unfortunately, water policy is fragmented and inconsistent throughout the states. Federal policy outlines standards, but it allows the states to use their own discretion to meet this standard. Under normal circumstances, it might seem like a nonissue, but under long and strenuous drought conditions, like those of California, policy can make all the difference.

Introduction

It is a well-known fact that the state of California is currently in one of the longest and worst droughts recorded in state history. According to the California Department of Water Resources drought can be defined as “a condition of water shortage for a particular user in a particular location” (Drought Background, 2015). The biggest question the state must answer is who has the rights to the scarce water? The California State Water Resource Control Board (SWRCB) is the chief authority on water rights and enforcer of water policy. The SWRCB has put “Emergency Water Conservation Regulations” which detail the uses of water that are prohibited. Like other resources there are competitors for water, but who are they? Essentially, everyone is a competitor for water from a farmer who needs to irrigate crops to a city who must provide clean water to its citizens to the environment where it provides a unique ecosystem. Water rights provide us with the ability to determine the allocation of water between these competitors.

The Problem

The biggest source of the problem is the lack of rain. The current drought isn't the State's first drought but it certainly is one of the worst. Drought factors have led to a seemingly simple supply and demand problem. The demand for water has become far greater than its supply, which would lead some to believe the easy answer is to just raise the cost. Unfortunately, this supply problem is anything but easy. Water is a naturally occurring resource, and we have yet to discover how to sustainably produce it. By March 2015, rain and snow precipitation was less than 45% of the historical averages. “Without a melting snowpack during the late spring and summer months, reservoir storage will likely remain inadequate” (News Archive, 2015). In order to relieve

the drought, the state would have to receive double the yearly rainfall it normally does. “That kind of record rainfall — something that has occurred three times in the past 135 years — only would lift the state from the bottom 20 percent of precipitation totals, the lowest possible rainfall accumulation that no longer qualifies as drought by the NOAA Climate Prediction Center” (Scauzillo, 2015). With conditions not improving, or taking years to improve, new regulation and policies are the state’s only hope.

With unyielding drought conditions comes the need for regulations. California is the number one agricultural producing state in the United States while also being the most populous state. California is constantly having to decide between urban actors and agricultural actors to receive the state’s remaining water. As the remaining water becomes more scarce the need for better regulation increases. Throughout the past three years of the drought, California has used almost all of its water reserves, including snowpack which is down to a record 6% of capacity (Green, 2015). While the lack of precipitation is the obvious cause, it has only been exacerbated by the failure of the current regulations and policies in place.

It’s no secret that less water means fewer jobs. Most of the job loss happens in the agricultural sector, though it’s not the only sector impacted by the lack of water. In California, agriculture is not just important, it’s the cornerstone of the state’s economy. California is the United States’ largest agricultural exporter and approximately two-thirds of the country’s fruit and nuts are produced there (Kearny, 2014). The University of California, Davis published an economic analysis of California’s drought in 2015. The state has been able to mitigate damages by substituting ground water for surface water. However, even with the substitution, the state is still seeing billions of dollars and thousands of jobs lost.

Table 1: Summary of Impacts of the 2015 California Drought

Description	Impact	Base year levels	Percent change
Surface water shortage (million acre-ft)	8.7	18.0	-48%
Groundwater replacement (million acre-ft)	6.0	8.4	72%
Net water shortage (million acre-ft)	2.7	26.4	-10%
Drought-related idle land (acres)	540,000	1.2 million*	45%
Crop revenue losses (\$)	\$900 million	\$35 billion	2.6%
Dairy and livestock revenue losses (\$)	\$350 million	\$12.4 billion	2.8%
Costs of additional pumping (\$)	\$590 million	\$780 million	75.5%
Direct costs (\$)	\$1.8 billion	NA	NA
Total economic impact (\$)	\$2.7 billion	NA	NA
Direct job losses (farm seasonal)	10,100	200,000 [#]	5.1%
Total job losses	21,000	NA	NA

* NASA-ARC estimate of normal Central Valley idle land.

[#] Total agriculture employment is about 412,000, of which 200,000 is farm production.

The table above shows how the drought impacts California by breaking down the economic impact into revenue and job losses. It shows the direct impact that the surface water shortage is having on the state's economy.

While the state may have been able to lessen the impact with groundwater replacement, the groundwater will be unable to continue to support the state's economy for an extended period of time. One news source reports, "So much water was pumped from underground last year that more than one thousand residential wells went dry in the San Joaquin Valley, leaving

thousands of families without running water” (Walton, California Drought Cuts Farm Water Allocation to Zero for Second Consecutive Year).

Entities Involved

Like other resources there are competitors for water, but who are they? Essentially, everyone is a competitor for water from a farmer who needs to irrigate crops to a city who must provide clean water to its citizens to the environment where it provides a unique ecosystem. Recently, Governor Brown ordered a 20% reduction in urban use statewide, a slight decrease from the previous 25% mandate which was California’s first mandatory statewide reductions. Unfortunately, urban actors only use a small 10% of the water resources available, while agricultural actors use 40% and environmental actors use 50%. Environmental actors mostly include federally protected streams and wetlands that are necessary for wildlife and the surrounding ecosystems. The most well-known example of an environmental actor is the delta smelt. The small fish caused a huge outcry over diverting more water from the Delta Bay in 2010. In the past regulations and policies have not always planned for environmental use leading environmentalists to hold up many water resource projects.

California Water Rights

Before we can attempt to solve the drought, we must understand how the already existing water is governed. The technical definition of water rights given by the State Water Resources Control Board is “a legal entitlement authorizing water to be diverted from a specified source and put to beneficial, non-wasteful use” (State Water Resources Control Board). These rights provide a system for the allocation of water which is especially important when the state

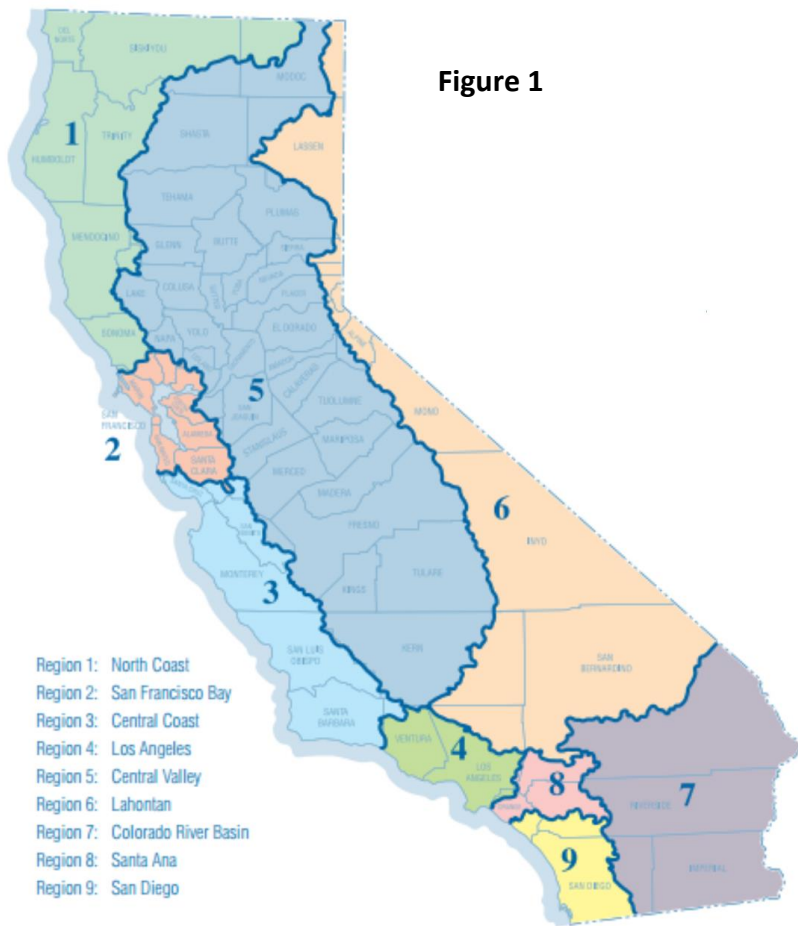
is suffering from a drought. The authorities on the state's water can be broken into three separate levels; federal, state, and judicial.

Federal Level

Traditionally the federal government has focused largely on the construction and maintenance of waterways while leaving the allocation of the water to the states. Early federal legislation can be seen as economically focused, but towards the middle of the 20th century policy shifts to a conservation focus. There are few major acts that govern the allocation of water. In fact, the vast majority of federal water policy “sets standards while states are largely in charge of establishing plans and policies for meeting those standards” (Reimer). These standards are most notably outlined in the Clean Water Act (CWA), the National Pollution Discharge Elimination System (NPDES), and the Safe Drinking Water Act (SDWA), all of which focus on maintaining water quality. The CWA is probably the most recognizable policy and most important, in terms of federal water law. It establishes “national standards for water quality, with the goal of making most waters of the U.S. swimmable, fishable, and drinkable” (Reimer) as well as requiring states to categorize bodies of water by intended use. The NPDES is a subset of the CWA. It allows states to regulate entities that release pollution into bodies of water through a permitting process. The SDWA on the other hand regulates drinking water sources and is the chief authority in this specific area. As water policy continues towards conservation, there is a trend of increasing collaboration between the federal and state governments. One paper from the National Agricultural and Rural Development Policy Center states that the CWA and the NPDES has “forced the states to become better equipped to tackle water quality and conservation issues on their own” (Reimer).

State Level

Today, California’s water is governed by the State Water Resources Control Board (SWRCB) at the state level. The SWRCB was created in 1967 by the State Legislature to protect water quality and oversee the nine regional water boards (Figure 1). These nine boards issue permits and make the critical water decisions for their region. The SWRCB is also solely responsible for allocating surface rights. Their mission statement is:



“To preserve, enhance, and restore the quality of California’s water resources, and ensure their proper allocation and efficient use for the benefit of present and future generations” (State Water Resources Control Board).

The SWRCB consists of five members who are from various backgrounds, from attorneys to engineers, all qualified in water quality or water rights.

There are three types of water, two of which are surface waters, which the SWRCB regulates. Standing water and stream water, both types of surface water, are the only type of

water that can be “owned”. The third type of water, groundwater, is largely governed by case law.

There are two systems of water rights that govern the United States allocation of surface water. California uses a hybrid of these systems to distinguish water rights. The first type of water rights is riparian rights. “Riparian” is a term used to reference the bordering landowners. They have the right to divert but not store the surface water. Water must be used on a riparian, or bordering, piece of land. There is no priority with riparian rights holders. When there is a water shortage all users adjust their use so everyone can use an equal amount of the water supply. Traditionally the riparian doctrine does not require you to use your rights to keep them because you are granted the right with ownership of your land, however, Article X, Section 2 of the California Constitution requires all use of water to be “reasonable and beneficial” (State Water Resources Control Board).

The second is appropriative rights. Appropriative rights developed out of a need to allocate water on public land. Priority is given on a “First in time is first in right” basis. The person who first put the water to beneficial use has the right and the person who has had appropriative rights the longest may not change the determined use for a newer appropriator. Priority is given by the issue date of the permit. The permit for the acquisition of appropriative rights is issued by the SWRCB. Appropriative rights may be sold or transferred.

Permits are not required for those who hold riparian rights or ground water users. However, anyone who isn’t a riparian rights holder that would like to use water must apply to the SWRCB for a permit unless you are using purchased water or you use water from springs or

standing pools lacking natural outlets on the land where they are located. Permits provide the specifics of a water project such as the amounts and conditions.

The Permit Process

In order to get a permit, you must complete the six following steps outlined on the SWRCB's website. Appendix A contains a flowchart that diagrams the steps of the permit process:

1. File an application

This step signals the beginning of the permit process. The application is how the applicant will tell the SWRCB the intended purpose of the water, the point or points of diversion, the quantity of water needed, and other pertinent information to the project as well as submitting the application fee. The application requirements are found in Water Code §1260.

2. Notice of acceptance

The SWRCB will notify the applicant within thirty days from when the application was submitted if their application was accepted. If the application is incomplete the applicant has sixty days to correct the errors.

3. Environmental review

Before all permits are issued the California Environmental Quality Act requires the SWRCB to consider and assess all environmental effects of the proposed project. This step helps to keep the affected habitats integrity intact. If the proposed project could damage or harm the ecosystem environmental protections and/or conservation measures will be put in place.

4. Public notice

The State Board issues a public notice for the applicant to post or publish and allows the public to comment. Any protests must be answered by the applicant.

5. Protest resolution

A protest is resolved when both parties, the applicant and the protestor, are able to reach an agreement on mutually acceptable conditions. If an agreement is not reached and the project is not small enough for an engineering field investigation report a formal hearing is held before members of SWRCB.

6. Permit issuance

A permit is issued when the Board determines that the proposed water use meets the following two requirements: unappropriated water is available and the appropriation is in the public interest. The maximum amount of water needed and for as long as the project, or beneficial use, takes to be completed measure appropriative rights.

A license provides the final confirmation of the right. The appropriator may receive a license when the project is completed and all terms of the permit have been met.

California Water Projects

California has two water systems that provide additional water to various entities across the state. The State Water Project which distributes water across the state and the Central Valley Project which distributes water to the Central Valley and the San Francisco Bay Area. Both projects use multiple reservoirs and aqueducts to deliver water from the northern part of the state where rainfall is more abundant, to the arid southern part of the state. The SWP is a state

built project, falling under the authority of the California Department of Water Resources, whereas the CVP is federally built and operated under the Bureau of Reclamation. Both projects are able to use their discretion to decide how much water they are able to supply. When the projects decide to cut back or not supply water their agencies do not go without water but are instead forced to rely on the local storage facilities.

The State Water Project is the nation's largest state built water project with the capacity to store up to 5.8 million acre-feet of water. The main purpose of the project is to store and distribute water to urban and agricultural water suppliers. Currently the project contracts with 29 different agencies across the state, delivering water to approximately 25 million California residents, two-thirds of the state's population, and 750,000 acres of farmland. Only 30% of the project's water is distributed to agricultural entities. This past December the project planned to meet only 10% of the requests for water deliveries, leaving many without a reliable source of water. In March 2016 the State Water Project released its plan to meet 45% of the requests, the largest since the drought began. While the increase is a welcome change, more farmers rely on the deliveries from the Central Valley Project.

The Central Valley Project is a large federal irrigation system that provides many areas in the Central Valley, including cities and farms, with water. Figure two, shown to the left, illustrates the areas that Central Valley Project services. It is made up of two major watersheds, the Sacramento River and the San Joaquin River, and manages approximately 9 million acre-feet of water. The majority of the water managed by the project goes to agricultural land, enough to

Water Resources has until 2016 to adopt rules for evaluating the local groundwater plans. The legislation leaves the term “sustainable groundwater,” as well as how to achieve it, up to the local agencies.

Case Law

Much of the case law in California water law focuses on groundwater. Since there is very little statutory regulation, the courts oftentimes are left to interpret ownership. In 1903 the California Supreme Court decided *Katz v. Walkinshaw* in which the doctrine of reasonable use was most notably applied to groundwater. The court decided that even though a landowner had no riparian right to the water that was under his land, the reasonable use doctrine was applicable. The reasonable use doctrine states, “landowner may make a reasonable use of the waters, as long as that use does not interfere with the reasonable use of another downstream riparian landowner” (National Agricultural Law Center). The decision in *Katz* led to the determination of two types of groundwater rights; overlying and appropriative. Overlying rights, similar to riparian, allow the owner of the overlying land to extract the groundwater and put it to reasonable use. Their use of the water is only restricted by the use of other overlying rights holders. Appropriative rights are acknowledged when available water is taken and used outside of the basin. Much like surface water rights, overlying rights are prioritized above appropriative (Sawyers).

The case *California v. United States*, which was decided by the Supreme Court in 1978, held that a state is able to “impose any condition on “control, appropriation, use or distribution of water” in a federal reclamation project that is not inconsistent with clear congressional directives respecting the project” (*California v. United States* 438 U.S. 645 (1978)). In other words,

the Court held that a state was allowed to impose regulations on a federal entity if the regulation didn't conflict with any statutes or congressional orders.

Analysis

So what happens when there is no water? The law above accounts for cutbacks, but the current policy was unprepared for the severity and length of the drought California is currently facing. One drawback of the hybrid surface right system currently in place is the inconsistency between riparian rights holders and appropriative. As the water supply dwindles, so does appropriators claim to their water. In 2015 the SWRCB cut back rights for many junior appropriators which highlighted the systems tendency to "reward those who got here first and underpins agriculture's position as the state's dominant water user" (Los Angeles Times). Besides the numerous lawsuits that resulted from that ruling another chief problem within the California water rights system came to light; lack of water use data. Due to the inconsistency within the surface rights system it is difficult to find any data beyond estimates on who is actually using water and how much they're actually using.

Inconsistency isn't just found at the state level. A lack of coordination between both state and federal agencies has led to more confusion and ineffective measures. The Public Policy Institute of California's Water Center recommends shifting drought response to a more distributed authority by using interagency teams and aligning multiagency efforts "at the scale of large river basins and the watersheds within those basins" (PPIC). Had there been more multiagency collaboration, the drought response would have been much more successful.

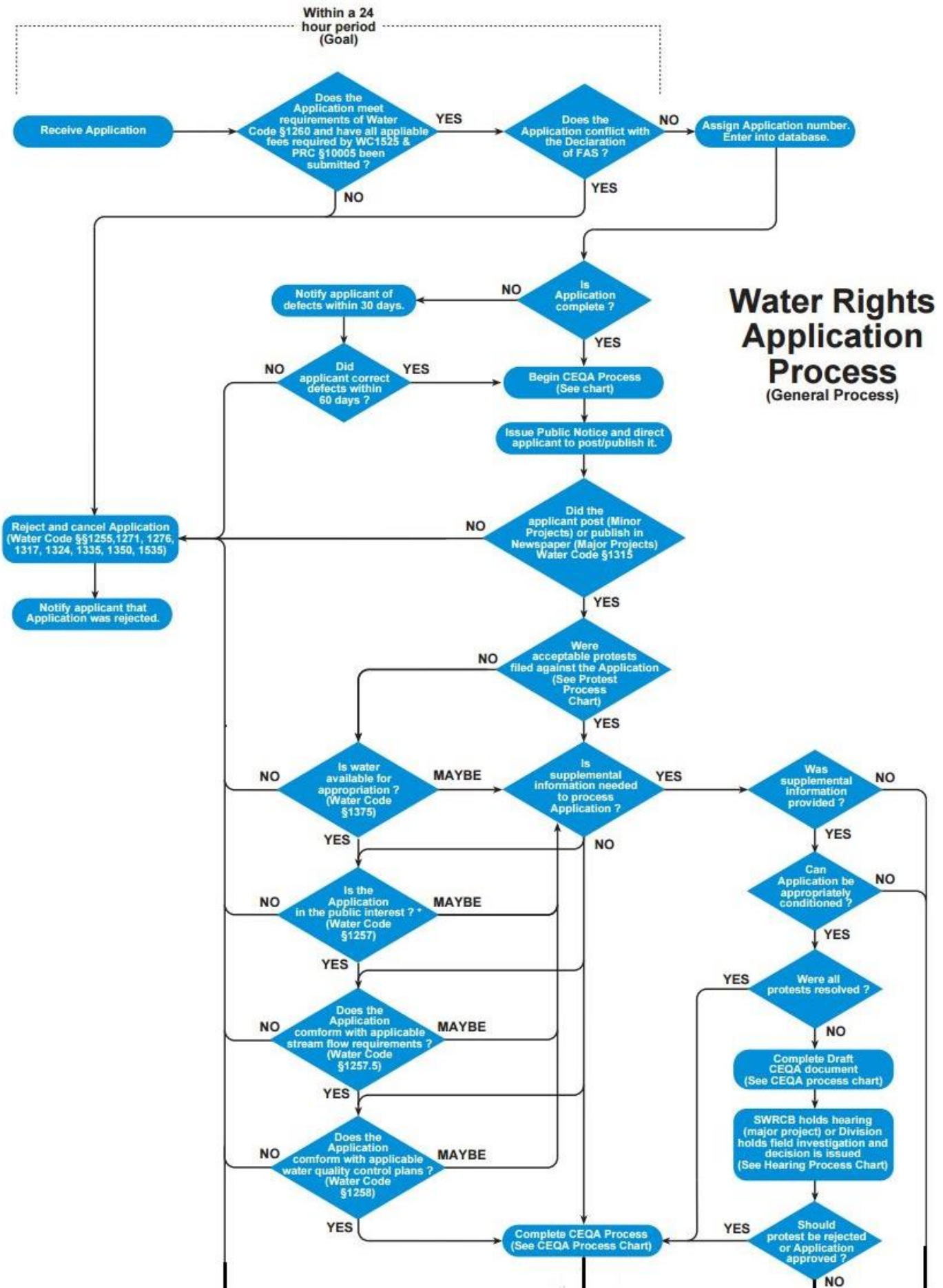
California has always been on the forefront of water policy, but the drought has highlighted how archaic the state's system is. It has been almost 50 years since the last water project was put into place, and since then California has faced major population growth. The systems were not put into place to handle the use that is seen today and coupled with drought the consequences are only deepened. Mark Cowin, Deputy Director of the California Department for Water Resources, believes that water deliveries from these systems has become decoupled from weather resulting in "an overall declining trend of water deliveries that erodes the value of the projects themselves. As deliveries decline, water shortages, like the drought we're in now, can undermine the larger state economy" (Cowin). Frankly, the system wasn't prepared for water shortages and if the results continue to be the same as the past 4 years, not only the farmers will suffer, but all of California's economy will become unstable. In order to fix the drought, at least as much as possible without rain, changes need to be made. Californians are already conserving more water than ever before, but as soon as it begins to rain, conservation is abandoned. As the past few months have brought more rain than some parts of California have seen in years, and as a result conservation measures are already relaxing, given by the Governor's recent mandate to allow 25% of past years' consumption, a 5% increase from last year.

Conclusions

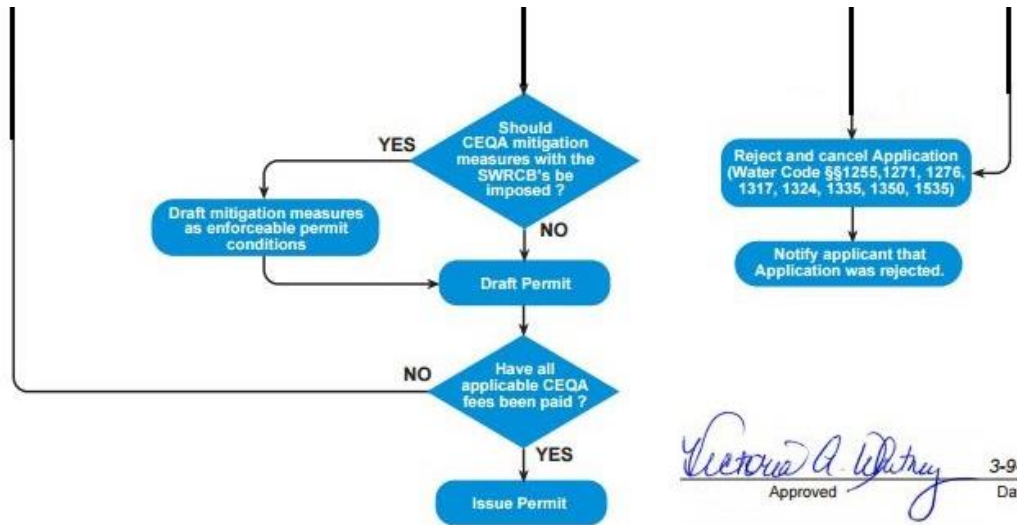
Water rights provide a definite system for allocation which allows a majority of people to simultaneously benefit. The average person may not think of water rights and of its importance or how it may affect their lifestyle but that doesn't mean it's not significant. Whether you are a farmer or not water is essential to all. This system holds the most value in times of need, such as the current drought. It is also in these times of need that it is easiest to see the areas in which

the system is failing or needs improvement. Due to the archaic nature and inconsistency of California's current policy, the current drought has only been exacerbated and the effects have been longer standing than they would have been, had the system been properly equipped to handle such a disaster. It seems unreasonably extreme to expect Californians to only use 25% of the water they once enjoyed freely. The only way to avoid drastic measures of conservation is to have water policy that works in both wet and dry years.

Appendix A



* Applications in the public interest will be consistent with the law and regulations, with the State Water Plan and other coordinated or general plans, and will not unreasonably affect public trust resources or the environment.



Victoria A. Whitney 3-9-06
Approved Date

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