

A WATER PLAN



FOR ALL OF

CALIFORNIA

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LETTER FROM
**CONGRESSMAN
JOHN GARAMENDI**



Dear Friends,

We need to think in a comprehensive way about water in California. The controversial California Water Fix, formerly known as the Bay Delta Conservation Plan (BDCP), is an outdated and destructive plumbing system. It does not create any new water nor does it provide the water and the ecological protection that the Golden State must have. California and the federal government must set aside this big, expensive, destructive plumbing plan and immediately move forward with a comprehensive approach that includes:

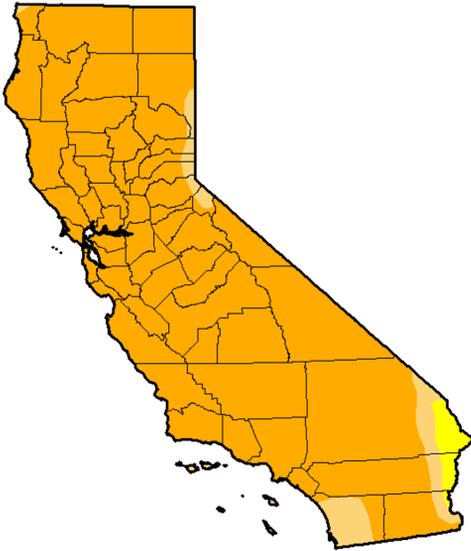
- 1. Conservation,**
- 2. Recycling,**
- 3. Creation of New Storage Systems,**
- 4. Fix the Delta**
- 5. Science driven process,**
- 6. Protection of existing water rights**

A handwritten signature in blue ink that reads "John Garamendi".

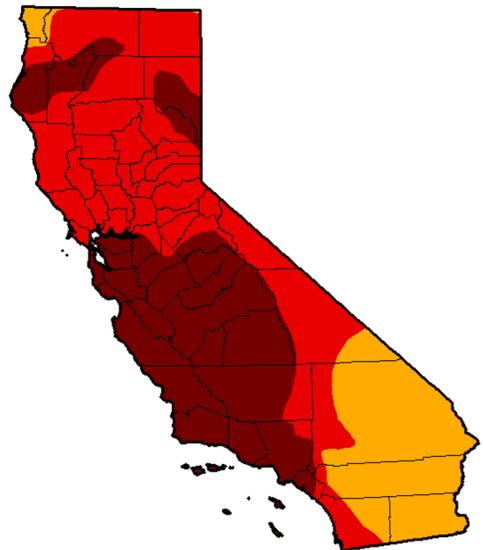
John Garamendi
Member of Congress, CD-3

DROUGHT COMPARISON

JULY 2, 2013



JULY 1, 2014



INTENSITY

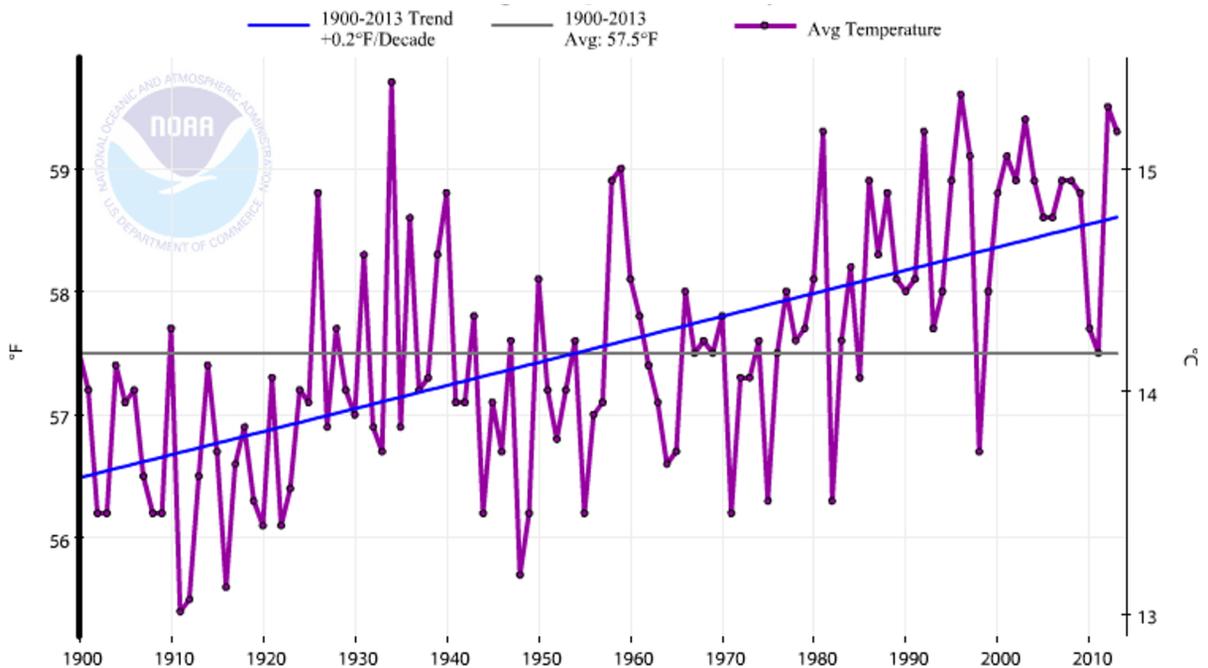


The Drought Monitor focuses on broad-scale conditions. Local conditions may vary.

The entire state of California is facing substantial drought conditions. While immediate water conservation is absolutely essential, we must all plan for the future. Garamendi's Water Plan for All California anticipates future years of drought and future years of flooding. Anything less is shortsighted.

CALIFORNIA AVERAGE TEMPERATURE

CALIFORNIA, AVERAGE TEMPERATURE, JANUARY - DECEMBER



As climate change continues to cause a gradual warming in California, our water supply is impacted in many ways. California must prepare for a hotter and drier future. Garamendi's Water Plan for All California is designed with future climate conditions in mind and calls on agencies and lawmakers to rely on the best science to guide our decisions.



A WATER PLAN FOR ALL OF CALIFORNIA U.S. REPRESENTATIVE JOHN GARAMENDI (CA-03) JUNE 11, 2015

“A classic California water brawl is in full bloom”

We need to think in a comprehensive way about water in California. The controversial California Water Fix, formerly known as the Bay Delta Conservation Plan (BDCP)¹, is an outdated and destructive plumbing system. It does not create any new water nor does it provide the water and the ecological protection that the Golden State must have. California and the federal government must set aside this big, expensive, destructive plumbing plan and immediately move forward with a comprehensive approach that includes:

- 1) Conservation,
- 2) Recycling,
- 3) The creation of new storage systems,
- 4) Fix the Delta - right sized conveyance, levee improvements, and habitat restoration, 5) Science driven process,
- 6) Protection of existing water rights.

This combination of projects constitutes a comprehensive water plan for the state.

Through a comprehensive plan that brings all stakeholders to the table, California can solve its water needs, and it can avoid the continuous water wars that have long divided our state. Unfortunately, California is once again embroiled in a bitter water war brought about by the California Water Fix (BDCP), the most recent attempt to fix California's water supply. After more than five years of study and over \$200,000,000 spent on consultants, the process has become bogged down and turned into another battle pitting north vs. south, water exporters vs. environmentalists, and senior water right holders vs. new comers. A classic California water brawl is in full bloom.

The governor's water plan for California is to take water out of the Sacramento River just south of Sacramento and put it into two tunnels each 40 miles long, 40 feet in diameter and with a potential capacity of moving 15,000 cubic feet per second (cfs). While the current proposal is set up to move 9000 cfs, the twin tunnels have a much larger capacity therefore setting the system up for future expansion. Pumping would also continue directly from the southern Delta at the Tracy pumps. The system will be able to deliver up to 5.3 million acre feet of water to the pumps in Tracy and then on to the San Joaquin Valley farmers and Los Angeles.

So what is wrong with the Water Fix (BDCP)? It is not a water plan for California. It does not create one gallon of new water. It does not solve the long term needs of the state. With a minimum estimated construction and operating cost over 50 years of \$24.5 billion, it is an extraordinarily expensive plumbing system dressed up with a coating of habitat restoration. The plan simply takes water from one region and delivers it to another while tearing up acres of prime agricultural farm land in the process. All of this while stoking the fire of divisiveness over water that has plagued our state for years.

A quick look at the water flow in the Sacramento River over the last two decades shows that approximately six months out of the year there is somewhere between 15 and 20 thousand cubic feet per second (cfs) of water flowing in the Sacramento River. The proposal has the potential to suck the river dry and destroy the largest delta estuary on the west coast of the Western Hemisphere. Critical habitat for dozens of fish species like salmon, striped bass, and sturgeon would be threatened. These fish and the water they live in are crucial for jobs, agriculture and fishing businesses, and the region's economy.

We should never build a water system that has such destructive potential. It is never safe to assume that ecological concerns will trump greed and thirst. We should keep in mind that in 2012 the U.S. House of Representatives voted on H.R. 1837, the euphemistically titled Sacramento-San Joaquin Valley Reliability Act. The bill passed by a vote of 246 to 175 and swept away all environmental protections for the Delta while stealing 800,000 acre feet of water from the aquatic environment. Luckily, the legislation was derailed in the U.S. Senate, but H.R. 1837 in one form or another is likely to return in future legislative battles.

California must move beyond a patched plumbing system. We need to think about what California really needs, and what it needs is a comprehensive water plan. Big changes are coming that threaten our water supply and our economy. A short list of these challenges include: climate change and related weather events, population growth, world food supplies, and earthquakes.

Climate change is real and its effect on California will be significant. The Colorado River Basin is in a prolonged drought, and likely to be much drier in the future. Based on today's water flows, the water in the Colorado River is oversubscribed by a third and projections indicate less water in the future. This is a big, big problem for the seven states that rely on the river, and especially for Southern California.

The Sierra Nevada Mountains, the Central Valley, and the coastal ranges will also be drastically impacted by climate change. We know that the timing of the precipitation is going to change and the snow is already melting earlier. As a result, the snowpack is moving up the mountains and while it may be deeper at the higher altitudes, the amount of land it covers is greatly reduced.

It's the lower snowpack that has the greatest volumes of water and if that continues to recede, we will have less and less water. The 2009 "California Water Plan," published by the California Department of Water Resources, estimates that the snow pack will decrease 25-40 percent by 2050.² We must also anticipate more severe storms and flooding. All of this means the natural and man-made storage systems will hold less water. Putting the denial of scientific facts aside, California has to deal with the reality of climate change and its water policy implications.

We know California's population will continue to grow and therefore, the demand for water will increase. We know the world will be very hungry in the future, and we know that the role of agriculture in California is going to be exceedingly important. California agriculture not only fills our own desire for diverse and nutritious foods, but it will also continue to meet basic food needs for people around the world and will continue to serve as an essential component of our nation's economy.

We know the Delta is in serious trouble. The fish species are threatened with extinction and a total collapse of the estuary ecosystem is possible if the current water pumping program continues. Rising sea levels and deferred maintenance threaten the Delta levees which protect nearly 500,000 people, thousands of acres of valuable farm land, and miles of critical highways, gas and water transmission lines, and water delivery channels. Major upgrades are needed.

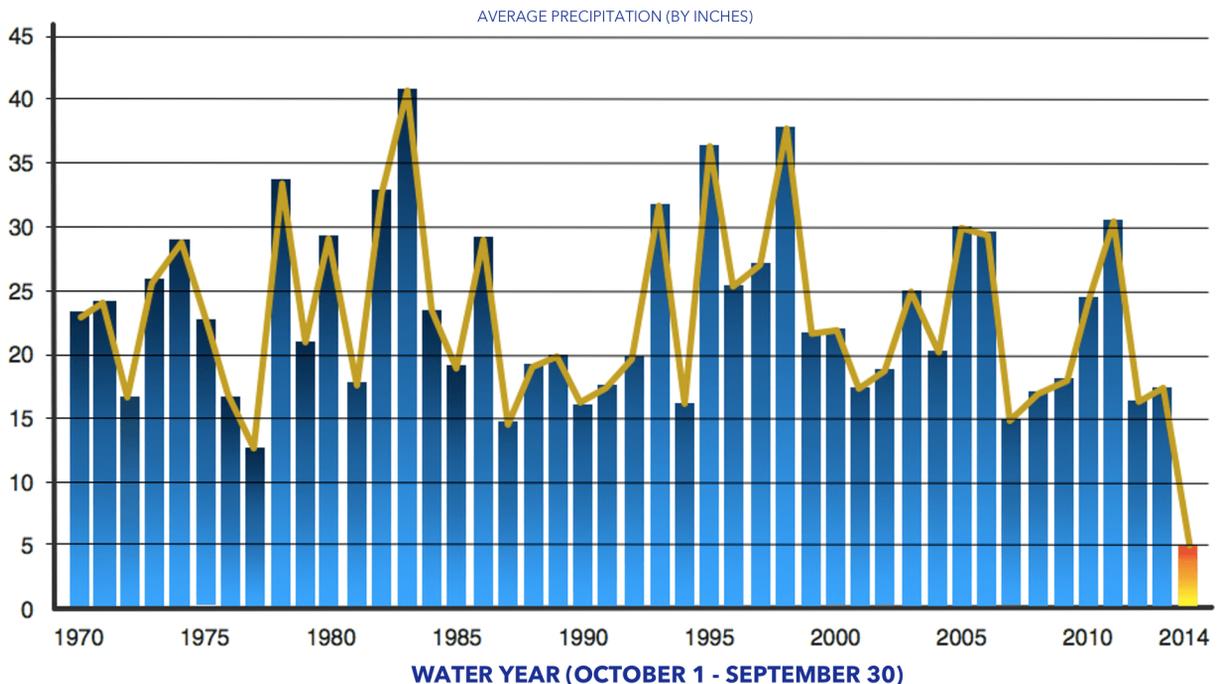
For these reasons, California must take off its blinders and expand its scope when thinking about ways to manage its water supply. It must be a holistic approach that is applied to every project that will impact the water needs of all Californians.

“We know California's population will continue to grow and therefore, the demand for water will increase”



CALIFORNIA AVERAGE PRECIPITATION

STATEWIDE AVERAGE PRECIPITATION - BY WATER YEAR



California's precipitation level is the lowest in modern times. Our severe drought presents a stark reminder that California must invest in a long term water infrastructure that stores water in times of plenty to use in times of want.

“There were good years, when the rainfall was plentiful, but there were also very bad years. The water came in a thirty-year cycle. There would be five or six wet, wonderful years followed by six or seven good years. Then came the dry years when the earth dried and cracked and the streams stopped. The grass was scarce, the cattle grew thin, and a hot, dry wind blew dust down the valley. ... Some families would sell out for nearly nothing and move away. During the dry years, the people forgot about the rich years, and when the wet years returned, they lost all memory of the dry years. It was always that way.”

-- **John Steinbeck, *East of Eden***



SIX BUILDING BLOCKS FOR CALIFORNIA'S WATER FUTURE

To achieve this comprehensive approach, here are six specific actions to provide a foundation for California's water future. If California does all of these, we will create new water supplies and better use the resources we already have:

- 1) Conservation,
- 2) Recycling,
- 3) The creation of new storage systems,
- 4) Fix the Delta - right sized conveyance, levee improvements, and habitat restoration
- 5) Science driven process,
- 6) Protection of existing water rights



CONSERVATION

The quickest and cheapest source of new water is to stretch our current supplies by conserving what we have. Californians have been at this for years in our cities, in our industries, on the farm, and in our homes. We have engaged in serious water conservation, yet more can and should be done everywhere.

There are many conservation strategies. One conservation strategy is to use devices that measure the moisture in the soil to provide real time monitoring of the exact amount of water needed for ideal growing conditions. These devices are connected to a computer that automatically turns on just the right amount of water. These systems are in use and conserve at least ten percent with a financial payback in less than one year. If they were deployed widely perhaps at least 1 percent of the 30 million acre feet of water consumed by agriculture could be saved each year (300,000 acre feet).³

All of us are going to do a lot more water conservation, not just the agriculture community. The water conservation mandate set by the state is a 20 percent reduction per capita by 2020 which equals 1,600,000 acre feet.⁴ In a very real way conservation can create new water that was not previously available for use. To be on the conservative side, let us assume that just one quarter of the State's goal could be obtained in the next decade, thereby adding 400,000 acre feet of new water to our supplies each year.



“We have engaged in serious water conservation, yet more can and should be done”

SIERRA SNOWPACK

JANUARY 2013



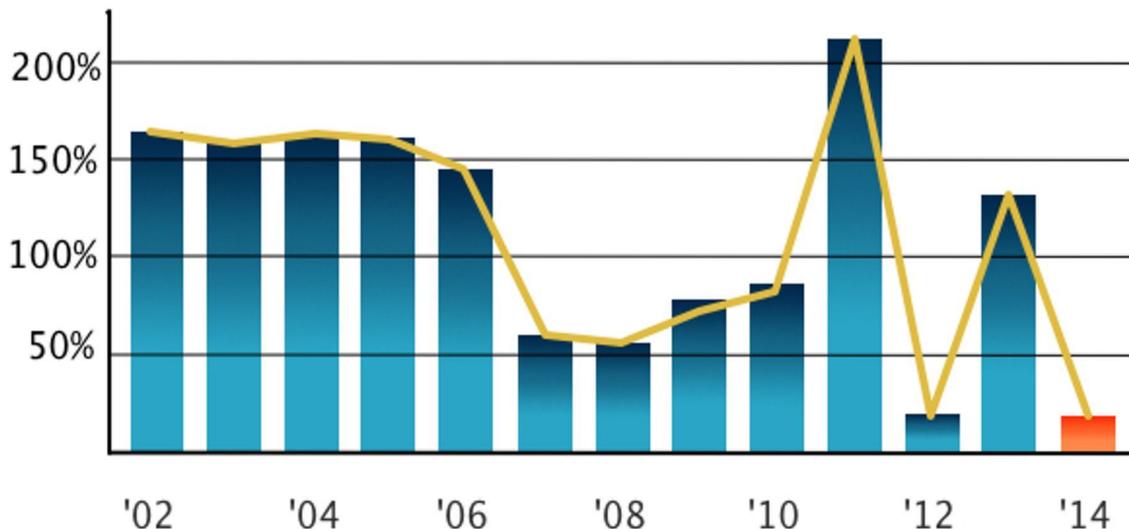
JANUARY 2014



The Sierra Snowpack is more than 80 percent below average in 2014. Severe drought conditions, exasperated by the climate crisis, is wreaking havoc on this vital source of fresh water for the state.

LOW SIERRA SNOW LEVELS

Percent of normal statewide snowpack by January 3rd





RECYCLING

“We need to think seriously about recycling, not just in Southern California, but everywhere”

Can you name the fifth biggest river on the west coast of the Western Hemisphere? It’s the water that flows out of the sanitation plants in Southern California and is dumped into the Pacific Ocean.

Why would any sane government take water from the Sacramento River, pump it 500 miles south, lift it 5,000 feet in the air, clean it, use it once, clean it to a higher standard than the day it arrives in Southern California, then dump it in the ocean? That is what California does with over 3.5 million acre feet of water each year.

We need to think seriously about recycling, not just in Southern California, but everywhere.

The state currently recycles approximately 650,000 acre feet of water each year. However, WaterReuse California estimates that by using existing technologies, a serious recycling program could increase that total to 1.5 million acre feet of new water in Southern California by 2020, and 2.5 million acre feet by 2030.⁵

Another option is desalination of ocean. While this is feasible and used extensively throughout the world, it is not a viable option for all communities and it costs about 40 percent more to desalinate sea water than to recycle water using current technology. However, technological advances are being pursued for both recycling and desalination that could lower the costs of both.

In the next ten years, conservation and recycling in California can create approximately 2.2 million acre feet of new water to use each year, and that can increase to 3.2 million acre feet in twenty years. This is new water that is not available today because it is wasted or pumped out to sea. It can be developed at a reasonable cost when compared to all other alternatives that might be out there. Conservation and recycling are steps one and two in a comprehensive water program for California.

CREATE NEW STORAGE

Water storage south of the Delta is possible and necessary. The capacity of the great Delta pumps near Tracy is 15,000 cubic feet per second. They are designed to meet maximum demand south of the Delta. They do not operate year round, only when there is sufficient water in the Delta, when threatened fish are not near the pumps, and when there is agricultural and urban demand south of the Tracy pumps. There is very limited water storage capacity south of the Delta. We must build more. San Luis and Los Vaqueros reservoirs could be expanded. New dams could be built at Los Banos Grandes, Temperance Flats, and numerous smaller off stream sites throughout the San Joaquin Valley. There are extensive and numerous aquifers throughout the San Joaquin Valley that may prove suitable to store additional water that would be used in a conjunctive water management system. With these water storage facilities in place and a smaller cross Delta facility operating year round, the need for havoc causing, excessive pumping in the Delta could be avoided.

When coupled with recycling, the underground aquifers in Southern California are another key to our water future. The underground aquifers of the Santa Ana River in Orange County, the San Fernando Basin, Chino Basin, San Bernardino, San Gabriel Basin, and others have a combined capacity larger than Shasta Reservoir, the largest man made reservoir in the state. Today, some recycled water is put into the underground water basins to be stored for those inevitably dry years. When needed, it is pumped out, used, cleaned and returned to storage. On a larger scale this recycling system could create as much as 2.5 million acre feet of new water⁶, and thereby reduce the need for shifting Colorado River supplies and imports from the Sacramento River.

Surface and underground storage should be used in a conjunctive water management program. Use the rivers when there is lots of water and use the reservoirs when there is little. Another way to describe this strategy is “big gulp” and “little sips.” When there are low flows in the Delta the system would take a little sip. When there is excessive water in the Delta, the system would take a big gulp, but there must be some place to put that water when the big gulp is taken. Therefore, the surface and sub-surface reservoirs south of the Delta become an essential element in a California water plan.

Water storage north of the Delta is also important, and three proposals are on the books today. An off stream reservoir at Sites, located west of Williams, has great promise for storage and for creating greater flexibility in managing the Sacramento River for salmon runs, water demand, and Delta outflow. This reservoir can deliver 500,000 acre feet of annual yield and the additional flexibility that it offers can under some scenarios save another 500,000 acre feet of water that would otherwise be released into the river systems.⁷ Raising Shasta Dam is also possible, as is better conjunctive management of the many aquifers in the Sacramento Valley. State and federal agencies have already commenced studies for these projects. A quick completion of these studies is essential.



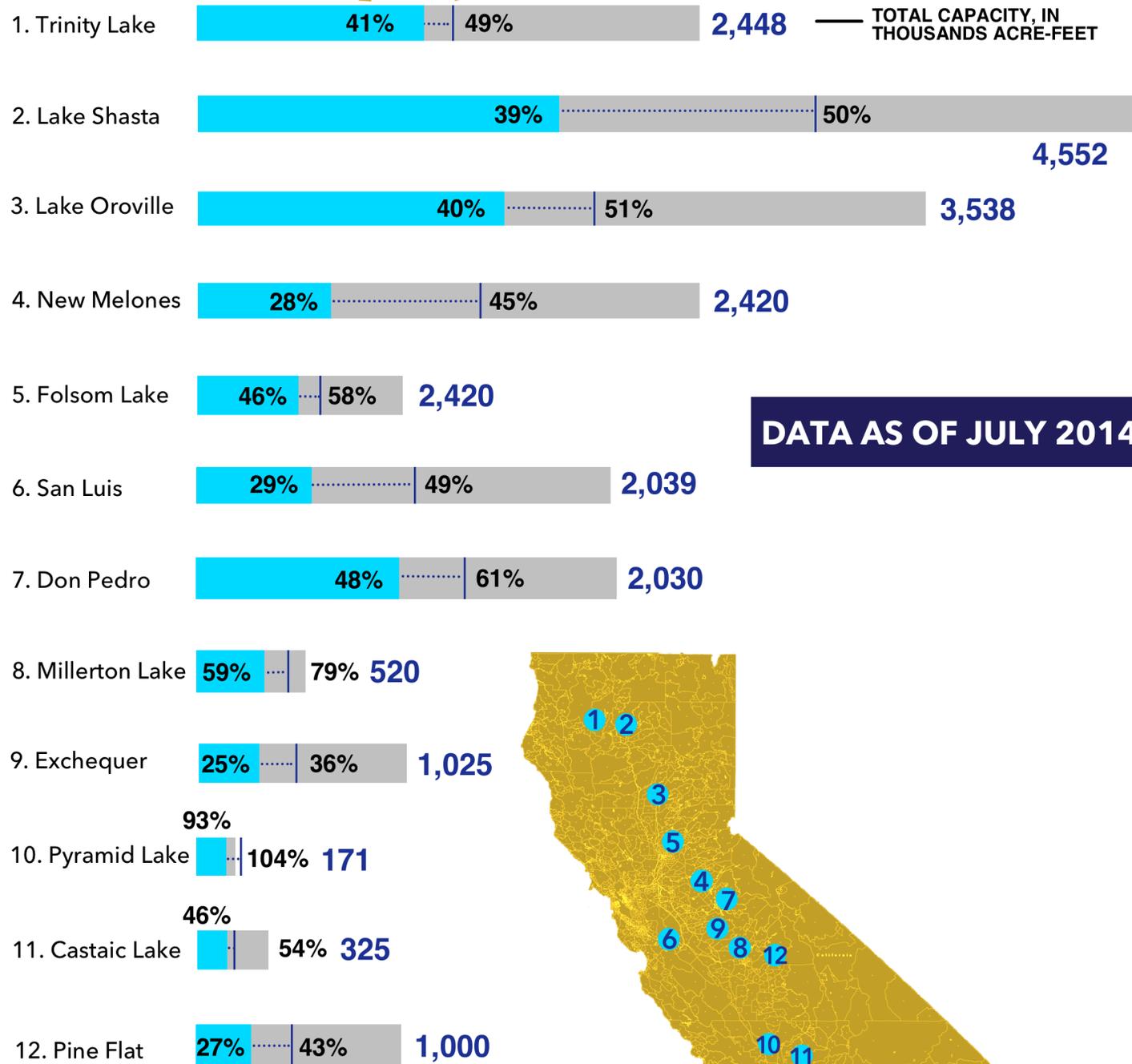
“There is very limited water storage capacity south of the Delta. We must build more”

FALLING WATER LEVELS IN CALIFORNIA

Many of the state's major reservoirs are well below average water levels and dropping.

JULY 2014 LEVEL

HISTORICAL AVERAGE FOR JULY



DATA AS OF JULY 2014



FIX THE SACRAMENTO - SAN JOAQUIN DELTA

“The twin tunnel proposal is a large scale, destructive project...”

The current plan for the California Water Fix (BDCP) is a dual use facility with the main focus on the twin tunnels with a capacity of 15,000 cubic feet per second, and the continued use of the Delta channels for moving water from the Sacramento and San Joaquin rivers to the Tracy pumps. This dual use system adds another layer of risk to the eco-system and agricultural economy of the Delta with the potential for the massive tunnels to suck the Delta dry from the north and from the south with the thirsty pumps. In scale, the cost and destructive potential of this project will rival the Three Gorges Dam on the Yangtze River in China. The twin tunnel proposal is a large scale, destructive project that does not create one gallon of new water for a thirsty California.

The location of the intakes for the twin tunnels is in the heart of the rich farm lands of the northern Delta, near the small community of Courtland. Thousands of acres of valuable farmland essential to California agriculture production will be destroyed during construction of the project, and, following completion, a vast industrial zone of pumping stations, fish screens, reservoirs, and electrical stations will impede on one of California's great agricultural regions. Along the forty mile route of the twin tunnels the construction process will produce a total of 22 million cubic yards of tunnel muck. This combination of soil and conditioning agents will have to be stored and managed and the latest draft of the plan calls for storage areas along the tunnel ranging in size from 100 to 570 acres. The amount of muck extracted would be enough to cover 100 football fields to a height of roughly 100 feet, and in the end will destroy close to 1600 acres of farm land while disrupting domestic and agricultural water wells.

SOLUTION FOR THE DELTA

Go forward carefully; start small; use science to evaluate each step; then proceed to the next step. Remember the Delta is a unique and precious environmental asset. We must take care of it. A narrowly focused plumbing system like the California Water Fix/BDCP will not achieve progress in creating a water supply sufficient for California's future. We must pursue a holistic, comprehensive approach that will achieve a bigger bang for our buck.

First, reduce demand on the Delta with steps one, two and three: water conservation, recycling, and strategic use of storage facilities. Use the "Big Gulp, Little Sip" pumping strategy. Move forward with the flood plain and fresh and saltwater marsh habitat improvements. Repair and improve the key Delta levees. Evaluate the effect on the Delta as these projects come on line. Then, and only if necessary, proceed with a conveyance system that is much smaller and with a reduced capacity to destroy.

A much smaller facility with a capacity of no more than 3,000 cubic feet per second could be built to deliver water from the Sacramento River to the Tracy pumps. With the normal minimum flows in the Sacramento River above 15,000 cfs, a small 3,000 cfs facility could operate at least 300 days in most years, delivering approximately two million acre feet of water south to the pumps at Tracy where it would be pumped south to the new and expanded storage facilities.

There are several alternative ways to build this smaller system. One alternative is found with a careful look at the Delta map which reveals that two thirds of this Delta friendly system is already built. Two miles from the State Capital is the Port of Sacramento and the shipping channel that ends 25 miles south near Rio Vista. From there it is thirteen miles to existing channels and the Tracy pumps. The Federal Government already owns the land along the river where an intake and fish screen could be built, allowing 3000 cfs of Sacramento River water to enter the channel and flow south to a shipping lock at the southern end of the channel. Then, pumps could deliver the water into a short 12-mile pipe beneath the Sacramento and San Joaquin Rivers and into the existing Delta channels that lead to the Tracy Pumps. The threatened Delta fish could be protected by sealing the channel from the Delta. Such a smaller facility is less costly than two 40-foot diameter, 40-mile long tunnels that devastate large swaths of the Delta and put the entire Delta at risk.

It is correct that this smaller facility like the twin tunnels is insufficient to quench the thirst of the Southern water contractors. This is where the southern reservoirs and the "Little Sip, Big Gulp" strategy comes into play. In normal water years there is sufficient water in the Delta to allow the pumps to take a big gulp of two million acre feet of water. This amount together with the two million acre feet delivered through the 3,000 cfs facility and the new water developed from conservation and recycling efforts could add up to six million acre feet. This plan would create far more new water than will ever be available with the current California Water Fix (BDCP) plan, which in its current state creates nothing new, except new destruction.



“There are several alternative ways to build this smaller system”



IMPROVE DELTA LEVEES

“The Delta levees **MUST** be upgraded and maintained...”

This small 3,000 cfs proposal and the current twin tunnel proposal envision the continued use of the existing Delta levee system as water conveyance channels for the delivery of water to the big pumps at Tracy. However, the California Water Fix (BDCP) has neither a plan nor funding for the maintenance of the levees that are crucial for their proposed water conveyance system. The Delta levees must be upgraded and maintained if water is to be transported through the Delta and if the Delta agriculture, infrastructure, ecology and people are to be protected.

No sane homeowner would go fifty years without maintaining their plumbing system. For more than fifty years, the Bureau of Reclamation and the California Department of Water Resources have used the Delta levees as a plumbing system to deliver water from the Sacramento River to the Tracy pumps. Yet, they have spent virtually no money maintaining these critical levees, the failure of which could shut down water deliveries for an extended period of time. The Federal and State agencies have relied upon the local reclamation agencies to do the repairs, literally giving the exporters a free ride. When a levee does give way and an island is flooded, it is the local agency and federal and state governments that foot the bill to repair the levees, often at a much greater cost than would have been necessary with basic maintenance.

Legislation is necessary to require that the Federal and State water contractors, who have for years and will continue for even more years depended upon the Delta levees for the delivery of water to their fields and cities, pay a part of the levee maintenance cost.

PROTECT WATER RIGHTS

Soon after gold was discovered in California, the miners discovered that water could be used to separate gold from gravel and soon after, the right to the water flowing in the rivers became as valuable as the gold. Today, water is California's gold. The classic water war in California is usually about one group attempting to take another group's water. It is reasonable to view the current twin tunnels conflict in this way: southern exporters taking water belonging to northern water right holders and water necessary for the aquatic river environment. Any water plan that ignores the prior and existing water rights is destined to be embroiled in a vicious and contracted water war. If a project is to be built, then existing rights must be honored.



“All this will require careful attention to science, and a careful balance between competing goals”



HABITAT RESTORATION

The California Water Fix (BDCP) envisions restoring flood plains and the salt and freshwater marsh habitat of the Delta in an effort to restore the fisheries. However, a series of questions are raised: where to do it, how much to do, what type, at what cost and who is to pay for the restoration? Those who have created the ecological problem should pay for the restoration of the problem. All this will require careful attention to science, and a careful balance between competing goals. Current science indicates that no amount of habitat restoration can compensate for the damage done to fish from excessive water exports.

“If a project is to be built, then existing rights must be honored”



CONCLUSION

California must develop a comprehensive water program. The current California Water Fix (BDCP) is an outdated and destructive plumbing system. It does not create any new water. It does not provide the water and the ecological protection the Golden State must have. California and

the federal government must set aside the big, expensive, destructive plumbing plan and immediately move forward with a comprehensive program that includes:

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California is once again embroiled in a water war. The California Water Fix (BDCP) is not a comprehensive plan; it is a plumbing system that seeks to extract water from one part of the state and deliver it to another part. If history is any indication, water wars are expensive and fruitless. Only by embracing a comprehensive plan that creates new water for the entire state can we avoid gridlock and a water war. This paper presents a plan that emphasizes using the best available science and a portfolio of water projects to create a positive solution to the water challenge facing California. It's time to move forward and ensure a reliable water supply for the entire state.

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SOURCES

1. California, Department of Water Resources and Natural Resources Agency, The Bay Delta Conservation Plan Draft Chapters, March 2013
<http://baydeltaconservationplan.com/Library/DocumentsLandingPage/BDCPDocuments.aspx>.
2. California, Department of Water Resources, California Water Plan Update 2009, Integrated Water Management Bulletin 160-09, 2009 < <http://www.waterplan.water.ca.gov/cwpu2009/index.cfm>>.
3. PureSense: Real Time Irrigation Management, New Technologies to Enhance Agricultural Water Management, March 2013 <<http://www.puresense.com/>>.
4. California, State Water Resources Control Board, 20X2020 Agency Team Questions and Answers, 2 June 2008,
<http://www.swrcb.ca.gov/water_issues/hot_topics/20x2020/docs/questions_answers.pdf>.
5. WaterReuse Research, Meeting California's Water Needs and Goals through an Unprecedented Initiative: Advancing Direct Potable Reuse, Capitol Hill briefing materials, March 2013. California, Department of Water Resources, California Water Plan Update 2009, Integrated Water Management Bulletin 160-09, Vol. 2, Chapter 11, 2009 < <http://www.waterplan.water.ca.gov/cwpu2009/index.cfm>>.
6. WaterReuse Research, Meeting California's Water Needs and Goals through an Unprecedented Initiative: