THE 2016 CALIFORNIA WATER SUPPLY OUTLOOK DURING THE EL NIÑO AND THREE YEARS OF RESTRICTED WATER DELIVERIES

OVERSIGHT HEARING

BEFORE THE

SUBCOMMITTEE ON WATER, POWER AND OCEANS

OF THE

COMMITTEE ON NATURAL RESOURCES
U.S. HOUSE OF REPRESENTATIVES

ONE HUNDRED FOURTEENTH CONGRESS

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OVERSIGHT HEARING ON THE 2016 CALIFORNIA WATER SUPPLY OUTLOOK DURING THE EL NIÑO AND THREE YEARS OF RESTRICTED WATER DELIVERIES

Wednesday, February 24, 2016
U.S. House of Representatives
Subcommittee on Water, Power and Oceans
Committee on Natural Resources
Washington, DC

The subcommittee met, pursuant to notice, at 10:10 a.m., in room 1324, Longworth House Office Building, Hon. John Fleming [Chairman of the Subcommittee] presiding.

Present: Representatives Fleming, Gosar, McClintock, Duncan, LaMalfa, Denham, Newhouse; Huffman, Costa, Ruiz, Lowenthal, and Torres.

Dr. FLEMING. The Subcommittee on Water, Power and Oceans will come to order. The Water, Power and Oceans Subcommittee meets today to hear testimony on an oversight hearing entitled, "The 2016 California Water Supply Outlook During the El Niño and Three Years of Restricted Water Deliveries." We will begin with opening statements, starting with myself.

STATEMENT OF THE HON. JOHN FLEMING, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF LOUISIANA

Dr. FLEMING. Today, the Subcommittee on Water, Power and Oceans meets to assess California's water supplies in light of ongoing drought and the related water cutbacks while the state has been partially drenched with powerful El Niño storms. Today's hearing not only impacts California, but also taxpayers and food consumers nationwide.

Four years of drought have now gone by, and Californians are finally getting some rain and snow. But, will there be any difference to those suffering in the San Joaquin Valley and elsewhere? Will a 3-inch fish continue to be more important than people? So far that answer is yes.

[Chart]

Dr. FLEMING. Unfortunately, as this chart says, twice the amount of water is flowing out into the ocean compared to last year, but even less water is being sent to farms, due in part to Federal endangered species regulations. As you can see by the chart, in blue you have the Delta outflow, and then in red, exports. So, as you can see, the exports remain pretty much even, while the outflow is increasing. So that is not a good ratio.

To illustrate how sad this situation has become, here is a picture of imported carrots from China being handed out to a food line in the San Joaquin Valley, which was one of the most agriculturally

productive areas of the world. In more prosperous times, the people in these food lines helped provide food to all of us.

[Chart]

Dr. FLEMING. As this chart indicates, California produces over two-thirds of the fruit and nuts in the United States. I know that is hard to read, but you can see the percentages are very high in virtually every one of those categories.

And yes, it used to produce 83 percent of domestic carrots. The area went from a salad bowl to a dust bowl. This has implications for all of us who shop at grocery stores throughout the Nation. And we, as a Nation, pay for social services for the people who just want jobs and water, not handouts.

In fact, three of the five most impoverished counties in the Nation are located in the Central Valley of California. The town of Mendota is experiencing 34 percent unemployment, and nearly half of its population lives below the poverty line, as a result of water cutbacks. By contrast, of course, the Washington, DC area has one of the highest-per-capita incomes, if not the most.

Most would like to think there is light at the end of this tunnel. But, according to water experts, 500,000 acre-feet of water, or 162 billion gallons, have already been diverted from Southern California during this wet year in the name of the Delta smelt.

We will hear today of a very real scenario that these communities could face another year of zero water, even in the face of above-normal snowpack. We have the power to right these wrongs. Sure, Mother Nature can play a role in reversing this situation, but let's face it: loss of 162 billion gallons of water in 2 months is a man-made problem deserving of a man-made solution.

In the same way that we heard 2 weeks ago that it was within Congress' power to reduce predation on endangered fish, we have the same power to ensure that farming communities do not become an endangered species as well.

Today is about marching toward administrative and legislative solutions that help California and the Nation. I look forward to today's hearing, and welcome our witnesses.

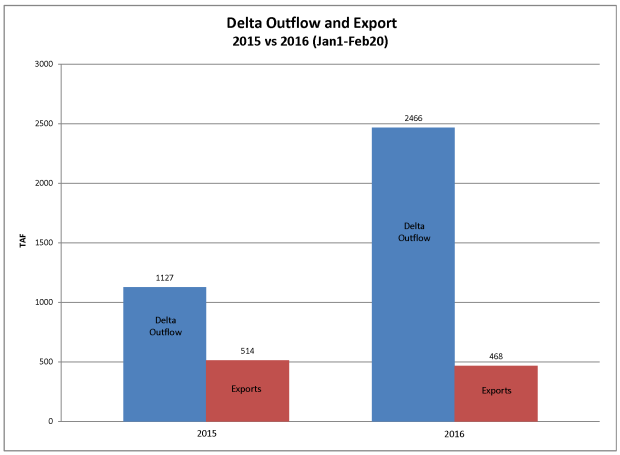
[The prepared statement of Dr. Fleming follows:]

PREPARED STATEMENT OF THE HON. JOHN FLEMING, CHAIRMAN, SUBCOMMITTEE ON WATER, POWER AND OCEANS

Today, the Subcommittee on Water, Power and Oceans meets to assess California's water supplies in light of ongoing drought and the related water cutbacks while the state has been partially drenched with powerful El Niño storms. Today's hearing not only impacts California but also taxpayers and food consumers nationwide.

Four years of drought have now gone by and Californians are finally getting some rain and snow. But, will there be any difference to those suffering in the San Joaquin Valley and elsewhere? Will a 3-inch fish continue to be more important than people?

So far, that answer is yes. Unfortunately, as the following chart says, twice the amount of water is flowing out into the ocean compared to last year but even less water is being sent to farms due, in part, to Federal endangered species regulations.



To illustrate how sad this situation has become, here is a picture of imported carrots from China being handed out to a food line in the San Joaquin Valley, which was one of the most agriculturally productive areas of the world.

In more prosperous times, the people in those food lines helped provide food to all of us. As the following chart indicates, California produces over two-thirds of the fruit and nuts in the United States. And yes, it used to produce 83 percent of domestic carrots. The area went from a salad bowl to a dust bowl. This has implications for all of us who shop at grocery stores throughout the Nation.

California #1 in U.S. Production – Vegetables

Crop	% of U.S. Production
Artichokes	100
Asparagus	76
Broccoli	96
Carrots	83
Cauliflower	89
Celery	95
Garlic	98
Head Lettuce	72
Leaf Lettuce	85
Romaine Lettuce	72
Onions, dry	31
Bell Peppers	60
Chili Peppers	69
Spinach	70
Processing Tomatoes	96

http://www.ers.usda.gov/topics/in-the-news/california-drought-farm-and-food-impacts/california-drought-crop-sectors.aspx

And, we as a Nation pay for social services for the people who just want jobs and water, not handouts. In fact, three of the five most impoverished counties in the Nation are located in the Central Valley of California. The town of Mendota is experiencing 34 percent unemployment and nearly half of its population lives below the poverty line as a result of water cutbacks.

Most would like to think there's light at the end of this tunnel. But, according to water experts, 500,000 acre-feet of water—or 162 billion gallons—have already been diverted from Southern California during this wet year in the name of the Delta smelt. We will hear today of a very real scenario that these communities could face another year of zero water even in the face of above-normal snowpack.

We have the power to right these wrongs. Sure, Mother Nature can play a role in reversing this situation, but let's face it: the loss of 162 billion gallons of water in 2 months is a man-made problem deserving of a man-made solution. In the same way that we heard 2 weeks ago that it was within Congress's power to reduce predation on endangered fish, we have the same power to ensure that farming communities do not become an endangered species.

Today is about marching toward administrative and legislative solutions that help California and the Nation. I look forward to today's hearing and welcome our witnesses.

Dr. FLEMING. At this time, I yield to the Ranking Member, Mr. Huffman.

STATEMENT OF THE HON. JARED HUFFMAN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. HUFFMAN. Good morning and thanks, Mr. Chairman. Welcome, everyone. If there was any doubt, I think it is safe to say we are now officially in election season. Like election years past, today we are having a partisan one-sided hearing aimed at bashing the Administration and rehashing the same tired old narratives, blaming the drought on environmental protection, instead of focusing on real drought solutions.

We are here, instead of that, to wage yet another ideological battle against the Endangered Species Act, against the 3-inch lowly Delta smelt, and to tell people that there is a man-made drought caused by environmental protections, which is simply bunk.

Never mind that experts say we are likely experiencing the worst hydrologic drought in 1,200 years, or the fact that California's 2014 and 2015 water years were the warmest on record. Let's also forget that ESA protections accounted for a mere 2 percent of the Central Valley Project's water supply reduction in 2014, and that the State Water Board estimates that in 2015 only 2 percent of all runoff in the Bay-Delta watershed flowed to San Francisco Bay solely for environmental protection. Only 2 percent, and yet still that is some kind of a political outrage here in Washington today.

No, this hearing is not about looking at the actual facts, it is about trying to score political points pursuing an agenda that my Republican colleagues have pursued for many years now, to weaken the Endangered Species Act, to gut fisheries protections that support thousands of jobs in my district and across the Pacific Coast, and to redirect water from one region of the state to another.

Mr. Chairman, I hope some day we can hold hearings to examine real drought solutions that Congress could be pursuing. I have introduced a bill, H.R. 2983, that includes many of these solutions, including the promotion of innovative de-salination technologies, water recycling and reuse, groundwater recharge, storm water capture, and reduced losses from evaporation. All of these are tools that we could be able to work on in advance on a bipartisan basis.

My bill also promotes water conservation through improved reservoir operations. And if we want to find something to be outraged about, let's consider that right now, water managers at Folsom Lake, one of California's major reservoirs, are releasing tremendous amounts of water, not for the Delta smelt, not for the Endangered Species Act, but because an outdated decades-old flood control manual tells them they need to do so because of the date on the calendar. This is based on backward-looking hydrology, and their refusal to look to the sky, where, since the 1950s, we have invented things called weather satellites that can tell us that storms are actually coming. We could be saving an awful lot of water. It is not controversial, it is not expensive, and that saving could start right away if we would focus on the right issues. This is the kind of solution water managers want.

Mr. Chairman, this is just one common-sense proposal, one of many in the bill that I and over 30 of my colleagues who are cosponsors have introduced. We could be talking about those things, but instead, we are rehashing this tired argument, discredited claims about the Endangered Species Act.

Additionally, despite repeated requests from Democratic members of this committee, the Majority has refused to hold a single hearing examining how best to prepare for future droughts, which we know are going to be more frequent and severe across the West if we continue to ignore the dangers of climate change.

We have also requested a hearing to look at how other arid regions of the world have managed their droughts, places like Israel and Australia, who have developed innovative new technologies and drought management practices. We could be learning from them. And things like that ought to be on the agenda for this committee.

Unfortunately, it seems that all my colleagues across the aisle want to talk about is how to roll back fishery protections that support thousands of fishing industry jobs from California and Oregon all the way to Washington State and Alaska.

Mr. Chairman, California's anadromous fisheries are hanging on by a thread. Just one example, Federal officials recently announced there was a 97 percent mortality rate for juvenile Sacramento winter-run salmon last year. The year before, it was a 95 percent mortality rate. If we further weaken fisheries protections, we need to think about what comes next.

A few years ago, we saw a complete closure of the West Coast salmon fisheries, for 2 years in a row. That meant $158 million in Federal disaster aid from Congress.

We also need to think about the fact that we have already—[microphone issues]—all right, I am just going to project, Mr. Chairman. We have already redirected millions of acre-feet of water away from environmental protections to water exports over the last couple years of this drought, and the scientists are starting to tell us that there is a real environmental cost to that. We cannot continue short-cutting this vital threat of environmental protection that we have for our salmon and other fisheries.

So, Mr. Chairman, I welcome this discussion, but I think in many respects we are having the wrong discussion. I look forward to the time when we can come together as a committee and talk about the many, many bipartisan solutions for California and the arid West that we could and should be pursuing together.

[The prepared statement of Mr. Huffman follows:]

PREPARED STATEMENT OF THE HON. JARED HUFFMAN, RANKING MEMBER, SUBCOMMITTEE ON WATER, POWER AND OCEANS

Mr. Chairman, if there was ever any doubt, I think it's safe to say we're now officially in election season. Like election years past, today we have a partisan, one-sided hearing aimed at bashing the Administration and rehashing the same tired arguments blaming the drought on environmental protections. Instead of focusing on real drought solutions, we're here today to wage yet another ideological battle against the Endangered Species Act and to tell people there is a "man-made" drought caused by environmental protections.

Never mind that experts say we're likely experiencing the worst hydrological drought in 1,200 years, or the fact that California's 2014 and 2015 water years were the warmest on record. Let's also forget that ESA protections accounted for a mere 2 percent of the CVP's water supply reduction in 2014 and that the State Water Resources Control Board estimates that in 2015, only 2 percent of all the runoff in the Bay-Delta watershed flowed to San Francisco Bay solely for environmental protection.

No, today's hearing is not about examining these and other facts. It's simply about trying to score political points and pursuing an agenda my Republicans colleagues have pursued for many years now to weaken the Endangered Species Act, head and gut fishery protections that support thousands of jobs in my district and across the Pacific Coast, and redirect water from one region of the state to another.

Mr. Chairman, I hope that someday we can hold hearings examining the many real drought solutions Congress could be pursuing. I have introduced a drought response bill, H.R. 2983, which includes many of these solutions, including the promotion of innovative de-salination technologies, water recycling and reuse, groundwater recharge, storm water capture, and reduced supply losses to evaporation.

My bill also promotes water conservation through improved reservoir operations. Right now, water managers at Folsom Lake—one of California's major reservoirs—are releasing tremendous amounts of water because of outdated, decades-old flood control regulations that don't take into account modern weather forecasting. That's right, these releases have nothing to do with environmental laws. My drought legislation would update these regulations, allowing water managers to use forecast-

based decisionmaking for flood control releases, so we can save precious water supplies during drought.

Mr. Chairman, this is just one common sense proposal—one of many in my bill. Yet the committee has so far refused to even have a hearing on it. Instead we're here today rehashing the same discredited claims about the Endangered Species Act. Time and again we hear testimony about the threatened and ecologically important Delta smelt, as if the Majority has forgotten that big fish eat little fish. Additionally, despite repeated requests from Democratic members of this committee, the Majority has also refused to hold a single hearing examining how best to prepare for future droughts, which we know will be more frequent and severe across the American West if we continue to ignore the dangers of climate change. We've also requested a hearing to look at how other arid regions of the world have managed droughts like the one we're facing. International allies like Israel and Australia have developed innovative new technologies and drought management practices that we should examine and learn from.

Unfortunately, all that my Republican colleagues seem to want to talk about is how to roll back fishery protections that support thousands of fishing industry jobs from California and Oregon all the way to Washington State and Alaska. Mr. Chairman, many of California's anadromous fisheries are hanging on by a thread. Just one example—Federal officials recently announced that there was a 97 percent mortality rate for juvenile Sacramento winter-run salmon in 2015. The year before, we had a 95 percent mortality rate.

We simply cannot weaken fishery protections any more. We know what will happen if we do. The closure of the West Coast salmon fishery in 2008 and 2009 is a recent illustration. The West Coast salmon closure caused significant job losses across the West Coast and required $158 million in fishery disaster aid from Congress. We've already redirected millions of acre-feet away from the environment to agricultural and municipal water users during the drought, according to the State Water Resources Control Board, and any further weakening of existing fishery protections could put many of California's fisheries on the path to extinction.

Beyond the lost fishery jobs, Californians simply do not support sacrificing California's environment primarily for the benefit of a small number of agricultural water users. Recent statewide polling shows that Californians overwhelmingly oppose weakening the state's environmental protections during the drought. What Californians *do* support in overwhelming numbers is boosting our water supplies though water recycling and reuse, storm water capture, and improving water use efficiency.

Local water districts are crying out for Congress to do something to prevent the hundreds of billions of gallons of water loss each year simply because of aging and inefficient infrastructure. They're asking for Congress' help in capturing the hundreds of thousands of acre-feet of wastewater that could be reused for agriculture, industry, even drinking water.

These shouldn't be controversial ideas. President George W. Bush's Reclamation Commissioner described the water we could tap from recycling and reuse as the next great river of the American West. Mr. Chairman, when we're done with the political games, I hope to work across the aisle to solve California's water problems through a thoughtful, science-based process instead of debating the same old proposals that create no new water and pit regions of the state against each other.

With that I yield back.

Dr. FLEMING. I thank the Ranking Member. As you can see, Washington really is running out of money, because we don't even have enough microphones today to serve everybody.

[Laughter.]

Dr. FLEMING. The Chair now recognizes Dr. Gosar, Vice Chair of the Subcommittee.

Mr. DENHAM. Mr. Chairman, my microphone works just fine. While I disagree completely with Mr. Huffman's statement, I would be more than happy to have him close to me over here, so that I can straighten out some of his misconceptions. There are great microphones on this side.

Dr. FLEMING. Mr. Denham, that is duly noted by the Chair.

Moving along, Dr. Gosar? Not working? Here we go.

STATEMENT OF THE HON. PAUL A. GOSAR, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ARIZONA

Dr. GOSAR. Thank you, Mr. Chairman, and good morning, everyone. We have an expression in the West that whiskey is for drinking and water is for fighting over. And, given that the hearing today is the first major hearing this year on California water, and that California and Arizona have a long history of fighting over water that dates back to at least the 1920s, I brought some whiskey. And before we get to fighting, I would like to propose a toast.

[Laughter.]

Dr. GOSAR. May God bless this hearing. May we make progress here today, so that Congress can finally provide some form of relief for drought conditions and from policies that are crippling western communities.

And finally, may the extreme environmental groups and others that are holding back common-sense solutions and comprehensive West-wide drought relief legislation that passed the House last July, finally put the interests of small businesses, farmers, and American families ahead of the interests of a 3-inch fish. Let the fighting begin. Cheers.

Now, today's hearing is about bringing sanity back to our Federal policies that have put thousands out of work, and fostering accountability to the Endangered Species Act and the bureaucracy charged with implementing it.

The Bureau of Reclamation's multi-purpose water projects made the West what it is today. Generations of our prior leaders focused on the need to capture water and deliver it to cities and fields. These were nonpartisan endeavors, as evidenced by the video that we are going to see with President John F. Kennedy dedicating the San Luis Dam in California.

[Video shown.]

Dr. GOSAR. While the Central Arizona Project came after President Kennedy, it continues to bring prosperity to Arizona cities, tribal communities, and ranches almost 50 years from its inception.

The Glen Canyon Dam and other projects affiliated with the Colorado River Storage Project provided the backbone of a regional economy that produced year-round water and emissions-free hydropower.

Lake Powell, the reservoir behind Glen Canyon, allowed for millions of dollars worth of recreational boating annually, and even provided the scenery for the astronaut crash landing in the 1968 science fiction classic, "The Planet of the Apes." For years, those bent on destroying the Glen Canyon icon tried the frontal assault, by trying to get it torn down.

The so-called environmental community has gotten much more creative by actively litigating against dams and the Federal agencies that operate them, with the goal of making them effectively useless. This is happening with the very dam that we just heard from in John F. Kennedy's dedication. The litigation tool in this case has been the Endangered Species Act and a little 3-inch fish called the Delta smelt is the subject today.

Biological opinions challenged by the environmental litigation industry have been made even worse by court actions and Federal agencies terrified of further litigation. These Federal plans have created a situation where communities who thought they were going to get more water in an El Niño year are now faced with potentially less water than last season's dry year. Meanwhile, Federal scientists have already killed at least 120 Delta smelt, more than the equivalent of 12 impacted by the Delta pumps this year alone, or 10 times more, and double the amount with the water being released to the ocean compared to last year.

And that is why this House passed comprehensive West-wide drought relief legislation last year. It helps California, but it also helps the entire West by ending the paralysis-by-analysis through regulatory streamlining to build more water storage, protecting state water rights and allowing water users to pre-pay what they owe to the Federal Government.

This effort was 4 years in the making, and we now have a chance to get it and other policies over the finish line, so that we can start returning to a policy of abundance. This hearing is part of that long-term goal, but it also serves as an immediate step to help those most in need in California. I welcome our panel of witnesses, and look forward to today's hearing.

With that, I yield back, Mr. Chairman.

[The prepared statement of Dr. Gosar follows:]

PREPARED STATEMENT OF THE HON. PAUL A. GOSAR, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ARIZONA

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While the Central Arizona Project came after President Kennedy, it continues to bring prosperity to Arizona's cities, tribal communities and ranches almost 50 years from its inception. The Glen Canyon Dam and other projects affiliated with the Colorado River Storage Project provided the backbone of a regional economy that produced year-round water and emissions-free hydropower. Lake Powell, the reservoir behind Glen Canyon allows for millions of dollars worth of recreational boating annually and even provided the scenery for the astronaut crash landing in the 1968 science fiction classic, the Planet of the Apes.

For years, those bent on destroying the Glen Canyon icon tried the frontal assault by trying to get it torn down. The so-called environmental community has gotten much more creative by actively litigating against dams and the Federal agencies that operate them with the goal of making them effectively useless. This is happening with the very dam that we just heard John F. Kennedy dedicate.

The litigation tool in this case has been the Endangered Species Act and the little 3-inch fish called the Delta smelt. Biological opinions challenged by the environmental litigation industry were made even worse by court actions and Federal agencies terrified of further litigation. These Federal plans have created a situation where communities who thought they were going to get more water in an El Niño year are now faced with potentially less water than last season's dry year. Meanwhile, Federal scientists have already killed at least 120 Delta smelt, more than the equivalent of 12 impacted by the Delta pumps this year alone—or 10 times more—and double the amount of water is being released to the ocean compared to last year. This begs the question of who's being accountable.

If it could happen in California, it could certainly happen in Arizona and elsewhere. Our Nation's forefathers had the vision and leadership to construct water and power projects that brought promise and hope to a desert wasteland. We are now watching those projects and the communities that rely on them being killed by

a thousand cuts. Rationing is now standard practice almost everywhere and the wasteland is slowly returning. That needs to change.

And that's why this House passed comprehensive west-wide drought relief legislation last year. It helps California, but it also helps the entire West by ending paralysis-by-analysis through regulatory streamlining to build more water storage, protecting state water rights and allowing water users to pre-pay what they owe to the Federal Government.

This effort was 4 years in the making and now we have a chance to get it and other policies over the finish line so that we can start returning to a policy of abundance. This hearing is a part of that long-term goal but it also serves as an immediate step to help those most in need in California. I welcome our panel of witnesses today and look forward to today's hearing.

Dr. FLEMING. OK, the gentleman yields back.

The Chair now recognizes Mr. Costa, our Democratic Vice Chair, for 5 minutes.

STATEMENT OF THE HON. JIM COSTA, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Mr. COSTA. Thank you very much, Mr. Chairman, Ranking Member, members of the committee, and those witnesses who will be testifying this morning, for this important hearing that we are holding this morning.

The devastating drought that has impacted California has been hardest hit in the San Joaquin Valley, the area that I represent with my colleagues, David Valadao and Jeff Denham. We have tried everything possible to try to, in effect, bring together a bipartisan effort to fix what is a broken water system in California. And, believe me, it is broken.

And this is not new. This 4 years of drought has highlighted the inability of the water system that we have in California, the Federal and the state water projects, to meet all of the demands that are now asked of them; but this was known 25, 30 years ago. Governor Brown, when he was last governor back in the early 1980s, tried to fix California's state water system. Governor Deukmejian tried, Governor Pete Wilson tried, Governor Gray Davis tried, Governor Schwarzenegger tried, and the reincarnation of Governor Brown again is trying to fix this broken water system.

Because it is understood that, to meet the demands of a growing state, when the initial water systems were developed, we had 20 million people. Today we have 40 million people. And we have much more intensive agriculture than we had back in the 1950s and 1960s. In addition to that, we have more demands placed upon the water system for environmental needs that are important, as well.

So, when you have continuous drought years as we have had—these last 4 years were perhaps the driest 4 years in over 1,200 years, climatologists have determined—you see the problems and the fault lines within the existing water system, and why we have to fix it. It is a Federal issue and it is a state issue, and we have to work together to make a difference.

In the last 4 years, we have seen people in my communities have a situation in which they have gotten a zero water allocation—zero—over the last 2 years. Communities on the east side and the west side, 15 communities have had their wells go dry, meaning no

water. We have had a situation in which it has had a disastrous impact as it relates to the ground water and subsidence. And clearly, the current situation is we are trying to hang in there, because we have over 600,000 acres that have gone fallow over the last several years, fallowing crops that we would normally grow—tomatoes, asparagus, melons, all sorts of good products that are healthy for Americans' diet go unplanted because they are trying to keep permanent crops alive. And that is just the nature of farming.

But we are doing so in a way that is unsustainable, because we are taking water out of the ground that in the long term just is not feasible to continue to stay in business. And now we are hearing that the El Niño conditions which we have been blessed with over the last 6 weeks are beginning to collapse. The high pressure ridge is coming back, and some climatologists are predicting that we will get an inverse condition in which next year will be a La Niña, which means we get less water, another drought condition.

Nothing could be worse for the people of the San Joaquin Valley, for the farmers, for the farm workers, and for the farm communities in which we have experienced 30–40 percent unemployment in recent years. These are people's lives that we are talking about, and it is also our ability to produce the food necessary for America's dinner table that is impacted.

And this is a combination of not just drought conditions, but regulatory controls that I don't think is using the best science. The biological opinions that we have operated under, frankly, have not taken into account the dramatic stress that is taking place.

Let's be clear. I mean we have been operating these projects during these drought conditions for one first priority only, and that is to try to protect the survivability of Delta smelt and other species. And we have put that priority over people. Whether you agree or disagree, that has been the effect.

And I would feel a little bit better about it if we were being successful. If we were propagating the Delta smelt and we were increasing the salmonoid, at least you could see a cause and effect. But I think you cannot see a cause and effect because the science and the biological opinions are flawed.

We will hear more from the witnesses about the testimony here, but let me just close with this thought. We could have maybe—I don't know, we are at 115 percent of normal, maybe we could have 150 percent of normal. We pray for rain and snow the next 2 months. If we have those conditions, we could have all of California having a better water supply, except the San Joaquin Valley, where we could still have zero allocation for water.

Let me tell you something. That is unacceptable, it is avoidable, and it is immoral. Thank you very much for the time, Mr. Chairman. I look forward to the witnesses' testimony.

[The prepared statement of Mr. Costa follows:]

PREPARED STATEMENT OF THE HON. JIM COSTA, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

I'd like to thank the Chair and the Ranking Member for holding a hearing on this topic of great importance to the people of the San Joaquin Valley of California.

As we have discussed in this subcommittee, California is experiencing its most serious drought since the 1977 drought, and by some accounts, the state's worst

drought in over 1,200 years. It has had its most serious impacts in the San Joaquin Valley.

In the last 4 years, agricultural water service contractors on the west side of the San Joaquin Valley received an average of a 15 percent allocation, and they received a zero percent allocation over the last 2 years. Impacts in the Friant Division, on the east side of the Valley, have been equally severe.

In 2014, for the first time since the creation of the Friant Division, Reclamation was unable to meet its obligations to the senior water rights holders by withdrawing water from the Sacramento-San Joaquin Bay-Delta.

Instead, the water that has historically been provided to the communities in the Friant Division was directed down the San Joaquin River to meet the needs of senior water rights holders. These factors resulted in significant reliance on groundwater pumping, ultimately leading to predictably disastrous groundwater overdraft and the wells for 15 communities going dry.

Hydrological conditions for the beginning of this water year have improved dramatically, though the last 2 weeks have been hot and dry and it is now predicted that next year will bring La Niña conditions, which exacerbate drought.

Today, tens of thousands of acre-feet of precious water will flow through the Sacramento-San Joaquin Bay-Delta and out into the ocean. Only a small amount of it will be pumped out of the Delta, to move south to irrigate the fields of the San Joaquin Valley and to assist communities across Southern and Central California in recovering from the pernicious drought we have faced for the last 4 years.

There are many times this year that the pumps could have been operated to their permitted capacity without impairing the water quality for communities within the Delta. The simple reason that they are not being operated to capacity is that regulatory controls will not allow it.

Some of those regulatory controls are designed to ensure that communities that draw water from the Delta do not draw brackish, salty water. No responsible party is trying to make that happen.

However, there are other regulatory controls in place to protect the Delta smelt and listed salmon runs that have serious impacts above and beyond the standards to protect Delta communities from brackish water. And it is these controls, known as Biological Opinions, that have resulted in a disconnect between water supply reliability and the underlying rainfall and snowpack falling in the state.

It is clear that the most serious impacts in the state over the last few years have been because of a lack of rainfall and snowpack. However, what is just as clear is that project operations this year, when rainfall and snowpack have been plentiful, are being severely impacted by regulatory controls.

A choice has been made—to take water away from communities in dire need of it—in order to provide uncertain benefits to species that have been harmed by a host of reasons, including being eaten by non-native species that humans have introduced into the ecosystem, as we learned 2 weeks ago in this subcommittee.

This is not the first drought California has faced . . . nor will it be the last. What we have to determine is what the future of California looks like?

Will we allow communities to dry up and blow away? Or will we come together and craft a solution that can improve conditions for everyone across the state, while focusing on drought recovery for those who have been most affected?

I continue to believe that government can still do great things, if we come together and focus on achievable solutions. I remain committed to working with my colleagues on both sides of the aisle to craft a solution that increases California's drought resiliency and provides water to those communities most impacted by this most recent drought.

Thank you, and I yield back the balance of my time.

Dr. FLEMING. I thank the gentleman. We are now ready for witness testimony.

I will remind the witnesses how our clock works. You have 5 minutes for your testimony. You will be under a green light for 4 minutes. When it turns yellow, that is a caution that you are within the last minute. When it turns red, if you haven't already concluded, we ask that you quickly conclude. Trust me, every word of your testimony will appear in the record, even if it is 10 minutes long. We just cannot hear but 5 minutes of it.

So, therefore, I will introduce our witnesses today. First is Mr. Brett Barbre, a Director of the Municipal Water District of Orange County, from Yorba Linda, California. And now I defer to Mr. LaMalfa for an introduction, as well.

Mr. LAMALFA. Thank you, Mr. Chairman. It is my pleasure to introduce today Thaddeus Bettner, who is the General Manager of the Glenn-Colusa Irrigation District. He has decades of experience with irrigation and water agencies in the planning, design, operation, and management of water delivery systems on the local, state, and Federal levels. He has worked for water agencies in Sacramento Valley, San Joaquin Valley, and Imperial Valley, and began serving as the Glenn-Colusa Irrigation District's General Manager in 2006.

He is actively engaged in the development, very importantly, of the Sites Reservoir, and plays a key role with the Sites Joint Powers Authority. He is a registered civil engineer with the state of California and holds a bachelor of science in Ag. from Cal Poly San Luis Obispo—go, Mustangs.

Thad's role as General Manager of GCID, which holds the most senior water rights in California, means that in the past few years he has balanced the needs of his district with its ability to aid its neighbors. While GCID is one of the few entities that has received Federal water deliveries, the district has worked the surrounding water suppliers to help its neighbors survive this drought.

Thad and GCID should be commended for this effort, and we welcome them all here today. Thank you.

Dr. FLEMING. OK. Next on the panel, Mr. Richard Pool, President and Owner of Pro-Troll Fishing Products, from Concord, California; Mr. David Murillo, Director of the Mid-Pacific Region of the Bureau of Reclamation in Sacramento, California—he is accompanied by Dr. Ren Lohoefener, Director of the Pacific Southwest Region of the U.S. Fish and Wildlife Service in Sacramento, California; and Mr. Thomas Birmingham, a General Manager of the Wetlands Water District, which is based in Fresno, California.

The Chair now recognizes Mr. Barbre for his testimony.

You have 5 minutes, sir.

STATEMENT OF BRETT BARBRE, DIRECTOR, MUNICIPAL WATER DISTRICT OF ORANGE COUNTY, YORBA LINDA, CALIFORNIA

Mr. BARBRE. Thank you very much, Chairman Fleming, Ranking Member Huffman, and members of the committee. It is indeed a pleasure to be here. My name is Brett Barbre. I am an elected director of the Municipal Water District of Orange County. We have 3.1 million residents in Orange County that depend on us importing water through the Metropolitan Water District of Southern California, of which I am also privileged to serve as a Director.

Southern California, as you know, is a wonderful place to live. It has wonderful weather. And it is basically an irrigated desert. We have been able to survive because of three things: we have developed substantial water storage, an abundant source of power, and the ability to provide sanitary conditions. And that is the definition of a first-world economy.

In Southern California—I want to talk a little bit about our history, and how we came to be, and just some critical thoughts that may be helpful.

If you look at the dam development of California, it all has to do with dams and water storage. The first major one was the O'Shaughnessy Dam in 1923, which gave us the pipeline, also known as Hetch Hetchy. Parker Dam, which Metropolitan paid to build, allows us to provide water for both Arizona and California, we built that in 1939. Shasta Dam, Central Valley Project, that came on board in 1945. It has 4½ million acre-feet of storage. Oroville Dam, part of the State Water Project, 3½ million acre-feet, that came on-line in 1968.

Since that time, there has been one major storage facility constructed in California, and that was the Diamond Valley Lake that Metropolitan Water District paid for themselves with ratepayer dollars. That came on-line in 1999.

So, if there is any reason why there is a shortage of water in California, it is because we do not have enough storage.

I think it is important to compare and contrast both the Colorado River and the State Water Project. The State Water Project has four times the flow that the Colorado does, yet has half the storage. The Colorado River, we have been in technical drought for 15 years, yet we have no shortage, because we have so much storage and we are able to balance it.

But I want to talk about 1977. Jerry Brown was governor then; things have not changed much to 2014. But in 1977, Metropolitan, which has an allocation of roughly 2 million acre-feet, decided to turn back their water. A little community of Marin was running out of water, so they had to jury-rig a pipe across the Richmond Bridge to get water into their reservoir. As it turned out, some of Met's water went into their reservoirs, and we were happy to do that. In the water business, we try to help everybody out.

So, Southern California decided we cannot really rely on the State Water Project. We know we are going to have growth in our area. In fact, in the last 25 years we have had a growth of over 5 million people and we are serving less water. So, we have become more efficient.

Between 1977 and 2014, we invested $14 billion of our ratepayer dollars. We built Diamond Valley Lake. We did substantial upgrades on our treatment plants. We developed water use efficiency, groundwater storage. In Orange County, we have the very first groundwater replenishment system, where we take a stream of water from the sanitation district, purify it, and put it back in the groundwater basin. We use the water over and over and over again.

In 2014, we had 5½ million acre-feet of capacity of storage. We had almost 2 million acre-feet in storage that we could draw on. And, do you know what Marin had to do that year? They had to jury-rig a pipe across the Richmond Bridge to get water into their reservoir.

So, Southern California is making the investments. At the Municipal Water District of Orange County we just completed a reliability study to determine is the Delta really all that important, because we hear from folks, "Oh, you can conserve your way, you

can do groundwater storage, you can do recycling." Without a Delta fix, we are reliable 3 out of every 10 years. That means we are in shortage 7 out of 10. With a Delta fix of some sort, it is 1 in 10 where we may have a challenge.

The final point I will make—and I am not going to blame this all on a fish, but in 1977, which was the driest year in history, the State Water Project was able to produce 400,000 acre-feet for Southern California, which we turned back. Last year only 100,000 acre-feet. So something needs to be fixed, and I encourage this committee to move forward on that. Thank you.

[The prepared statement of Mr. Barbre follows:]

PREPARED STATEMENT OF THE HON. BRETT R. BARBRE, DIRECTOR, MUNICIPAL WATER DISTRICT OF ORANGE COUNTY (MWDOC) AND DIRECTOR, METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA (MWD) REPRESENTING THE MUNICIPAL WATER DISTRICT OF ORANGE COUNTY

Chairman Fleming, Ranking Member Huffman, distinguished members of the committee, my name is Brett Barbre and I am an elected Director of the Municipal Water District of Orange County (MWDOC) and am an appointed Director of the Metropolitan Water District of Southern California (MET) as one of four representatives from MWDOC. I appreciate the opportunity to be here this morning to share a few thoughts regarding the impact on the Southern California water supply due to the lack of resolution with the Sacramento-San Joaquin Bay-Delta.

We have a water system in California that is broken under the weight of environmental problems and regulations, lack of investment and outright political obstructionism. When the rains finally returned to California this winter and the rivers began to rise in Northern California, our water system in the Bay-Delta had to decrease pumping rather than take advantage of the opportunity to store as much as possible for future use. In years past we started to face these kinds of restrictions after the projects began taking Delta smelt. However, this year the restrictions kicked in before the projects took a single smelt as the regulations this year say we could face even greater restrictions if we take 56 fish. That is right, 56 smelt. And bear in mind that more than 3,000 smelt are routinely taken for research and sampling purposes.

The California water system has been living off the investments of past generations, and the bill of inaction is coming due.

There have been significant investments over the past generation at the local level, most notably in Southern California within the Metropolitan Water District service area. But statewide the system is largely the same one we had more than a generation ago even though the state population has more than doubled. Keep in mind that the planning for the State Water Project began in 1956 and the first deliveries to Southern California occurred in 1971—nearly 45 years ago.

As a representative of an agency that receives water from both the Colorado River and the California State Water Project, it is fair to compare and contrast the experience on both systems.

While the California system has four times the flows of the Colorado River, it has less than half the storage. This disparity has significant and demonstrable impacts. The Colorado system has essentially been in drought conditions this entire century yet the system has gone for more than 15 years without any shortage conditions because its storage system can hold four times the average runoff of the basin. When big storms have occurred this century on the Colorado, the system can capture every drop. However, when big storms happen in Northern California, we have seen up to 80 to 90 percent of the water coming into the Delta going out to the ocean—not exactly a "beneficial use" of fresh water.

What we need in California is a new generation in investment and a new management ethic that does not look for reasons to deny water for the economy.

The design of the water system in the Delta needs to be improved so that water can be captured in the northern Delta and transported to the aqueduct system in the southern Delta. We must remember that this supply is vital for the economies of the Silicon Valley, the Central Valley and $1 trillion Southern California economy.

Versions of this improvement have been around for decades, and it is beyond time to make this system investment. As far back as 1973 when the Delta Environmental Advisory Committee was formed, it was determined that a properly designed facility

that eliminates the need to use the Delta as a conveyance facility would guarantee that the affected environments would be adequately protected.

Governor Jerry Brown's current administration is moving forward with this project, known as California WaterFix and while it is part of a solution, it is not THE solution. We simply need to regain our ability to capture water when it is wet so the economy has supplies when it is dry. We have lost that ability for various environmental and regulatory reasons and strangling the economy's water supply is not good for the environment; it is not good for anyone; it puts at risk our Nation's food security.

The basic reason for California WaterFix is straightforward. We need intakes in two different places in the Delta, north and south, in order to reliably divert water and avoid conflicts with endangered species; we need a flexible, modern system.

The California WaterFix would build three new intakes in the northern Delta and a tunnel pipeline system to move the water to the aqueducts. The California WaterFix does not solve all of the state's water problems but it would eliminate a bottleneck in the heart of the statewide system. California will need to continue to develop more local supplies such as what we have done in Southern California.

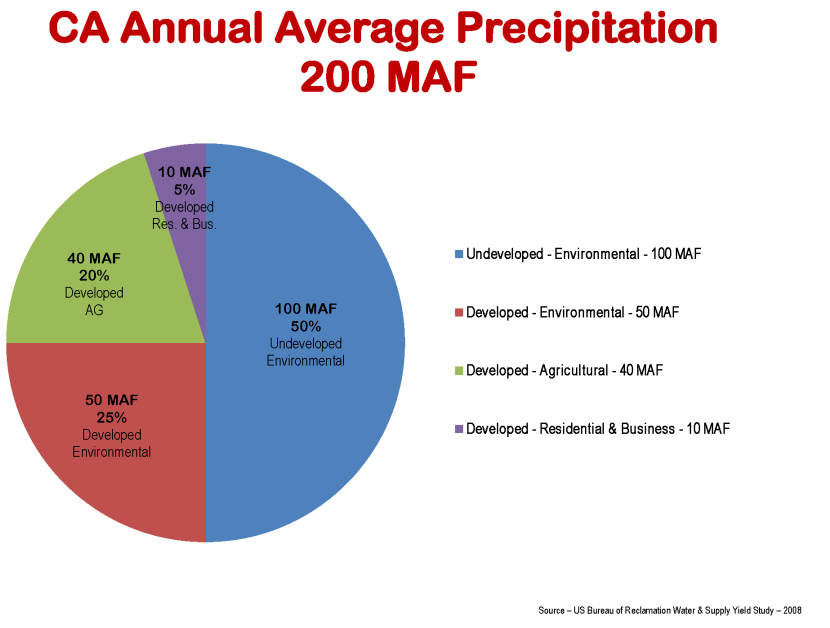
In 1977, which was the driest year on record, the State Water Project was able to deliver 400,000 AF of water to MWD; in 2014 we received 100,000. We seem to be going backwards. Just since January 1, 2016, over 200,000 AF of water has been allowed to flow out to the Pacific Ocean which ordinarily would be stored for later use. This is simply unacceptable.

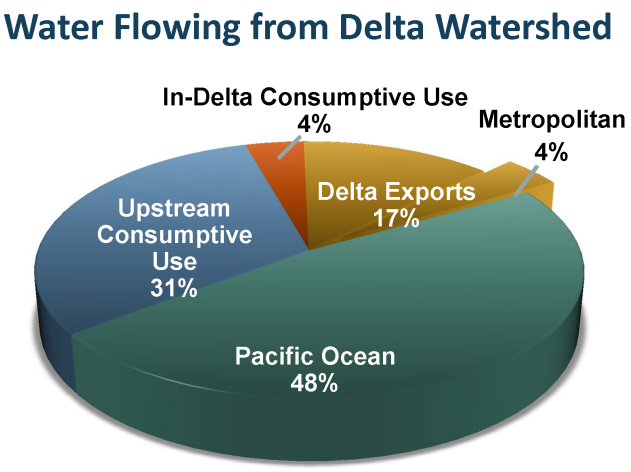
Across the state we need more storage, north of the Delta and south of the Delta. Storing water away in the wet years means more for both the economy and the environment in dry years. We have long tried to run this water system with inadequate storage and the problem reveals itself every time it stops raining. We need to stop fooling ourselves that we can be the 7th largest economy in the world without a world class water system that is up to today's challenges.

The Municipal Water District of Orange County supports both Mr. Valadao's H.R. 2898 and Senator Feinstein's S. 2533 in hopes that a FORMAL conference committee will be convened so an equitable solution to the benefit of all Californian's can be reached.

This concludes my statement and will be happy to respond to any questions.

Thank you.





Dr. FLEMING. Thank you.

Now Mr. Bettner, I recognize you for 5 minutes.

STATEMENT OF THADDEUS BETTNER, GENERAL MANAGER, GLENN-COLUSA IRRIGATION DISTRICT, WILLOWS, CALIFORNIA

Mr. BETTNER. Chairman Fleming, Ranking Member Huffman, and members of the subcommittee, thank you for the opportunity to present my testimony today, as well as the written testimony for your record. My name is Thaddeus Bettner. I am the General Manager of Glenn-Colusa Irrigation District, the largest district in Northern California.

The multi-year drought has significantly reduced natural inflows to reservoirs, including Lake Shasta, significantly affecting our water supplies, as well as the Central Valley Project. The drought has also complicated the management of the system to benefit species like the winter-run Chinook salmon. These pressures will continue to mount in dry years, and even in normal years.

For the 2016 water year, fishery agencies have already expressed concern that winter-run salmon losses in 2014 and 2015 have put the species at risk of extinction and, therefore, will necessitate even greater protection. As Member Huffman reported, only 5 percent of the winter-run Chinook salmon supposedly spawned in 2014, and only 3 percent are expected to this past year, in 2015.

Unfortunately, this factoid has now become the bumper sticker of the current state of winter-run salmon, without much critical evaluation of underlying data or science. The problem we have is that the monitoring data are faulty during high-flow events, which we experienced in 2014 and 2015, particularly in December and

January of those years. The modeling further shows that winter-run actually should have survived, but that modeling, which has been used for years, has now been rejected.

Improvements must be made in the monitoring locations and calculations to more accurately estimate fish survival rates, particularly if those estimates are used to impact the Central Valley Project, as well as our water supplies.

For the past 2 years, our district, as well as other districts, which we refer to as the settlement contractors, have voluntarily reduced our diversions in April/May in order to better align our diversions with the needs of winter-run. And we have also diverted far less than what our contract provided for in those years. We have also worked cooperatively with our neighbors and entities south of the Delta to try to do voluntary water transfers as a method to balance water in the state.

However, in 2016, the perceived poor 2014 and 2015 winter-run Chinook survival rates discussed earlier are leading the fishery agencies to make extremely proactive and protective decisions on the operations of the Central Valley Project (CVP) that will affect releases to the project, as well as our water supplies.

To date, the fishery agencies have focused solely on temperature management as a key factor, yet other factors that likely have a larger impact on salmon, from physical habitat improvements to predation, are not being considered or implemented.

For 2016, the settlement contractors are working closely with Reclamation—and, hopefully, David Murillo will report on that—on our diversions to maximize the efficient operation of the Central Valley Project and our supplies, as well.

Additionally, we are trying to work to meet more flows to the Delta to help with Delta operations and exports for our partners south of the Delta.

While that is of a critical nature, I do want to report some good news. We have been working very closely with our settlement contractors, Reclamation, and the Golden Gate Salmon Association (GGSA), on developing voluntary restoration projects in the Sacramento Valley. In addition to the $600 million that have been invested in the Sacramento Valley on our diversion structures and fish screens, we are also implementing voluntary restoration projects.

In my written testimony, I reported on four such projects that we are currently working on. We have completed two so far. One was a gravel restoration project for side stream channels last year, again, as partners with Reclamation and GGSA. Another settlement contractor completed a structure called Knights Landing Outfall Gates, which will prevent the strain of salmon historic drainage channels, therefore increasing the number of salmon moving upstream to spawn.

Currently, we are working on another gravel restoration project in the Sacramento River, putting about 8,500 cubic yards of gravel into the river to assist with winter-run and other salmon spawning activities. And last, there is significant work currently occurring in the Yolo Bypass in order to prevent stranding there.

As Congressman LaMalfa reported, we are also working on Sites Reservoir, which we believe is another vital piece of infrastructure

in the Sacramento Valley, which will improve the operations of the Central Valley Project, provide cold water for fishery when needed, and also provide additional winter water supplies available to other contractors.

In terms of recommendations, I have included five. As I reported earlier: (1) better monitoring needs to be done on winter-run Chinook salmon in the Sacramento Valley, particularly to address high-flow scenarios; (2) funding and permitting—we need expedited permitting to get our projects done. As I reported, four projects, where it took an enormous amount of time and cost in order to complete these projects; (3) predation and other factors impacting survival—needs to be addressed; (4) improved habitat; and (5) I addressed storage.

I thank you for the opportunity to present this testimony, and I look forward to your questions.

[The prepared statement of Mr. Bettner follows:]

PREPARED STATEMENT OF THADDEUS BETTNER, PE, GENERAL MANAGER, GLENN-COLUSA IRRIGATION DISTRICT

Chairman Fleming, Ranking Member Huffman and members of the subcommittee, I am Thaddeus Bettner, the General Manager of the Glenn-Colusa Irrigation District (GCID), the largest irrigation district in the Sacramento Valley. Thank you for the opportunity to provide GCID's perspective on the issue of how the Federal Government can help address the challenge of this coming 2016 water supply limitations and impacts of a multi-year drought in California.

GCID covers approximately 175,000 acres in Glenn and Colusa Counties, and is located about 80 miles north of Sacramento. Our district contains a diverse working landscape including a variety of crops such as rice, tomatoes, almonds, walnuts, orchards, vine seeds, cotton, alfalfa, and irrigated pasture. Just as important, we convey water to three Federal wildlife refuges totaling more than 20,000 acres, private wetland and habitat lands of approximately 1,500 acres, and in the fall and winter deliver water to more than 50,000 acres of seasonally flooded irrigated lands that also serve as surrogate wetlands for the Pacific Flyway. GCID is a Sacramento River Settlement Contractor and diverts water directly from the Sacramento River through the largest flat plate fish screen in the world. GCID's Settlement Contract was first entered into in 1964 and it resolved disputes with the United States related to the seniority of GCID's rights over those of the United States and, in fact, allowed the U.S. Bureau of Reclamation (Reclamation) to obtain water rights from the State Water Resources Control Board (SWRCB) for the Central Valley Project (CVP). GCID's water rights originated with a filing in 1883 for 500,000 miner's inches under 4 inches of pressure, one of the earliest and largest water rights on the Sacramento River.

Other water right holders on the Sacramento River also entered into Settlement contracts with Reclamation. The Sacramento River Settlement Contractors (SRSC), covering approximately 480,000 acres, are various irrigation districts, reclamation districts, mutual water companies, partnerships, corporations, and individuals situated in the Sacramento Valley, and formed under the provisions of California law. Among Reclamation's hundreds of CVP water supply contracts, the SRSC have a unique history and nature. The SRSC divert water from the Sacramento River, miles upstream from the Bay-Delta and the boundaries of the Delta habitat, under water rights that were vested under California law well before the construction of the CVP began. The SRSC own and operate their own diversion facilities, and their water rights are not dependent in any way upon the operations or facilities of the CVP. The SRSC every year manage water for various beneficial purposes in the Sacramento Valley, including farms, birds and the Pacific Flyway, cities and rural communities and fisheries. This requires creative management and trade-offs by water resources managers.

Notwithstanding the seniority of our water rights on the Sacramento River, the multi-year drought has significantly reduced natural inflow into reservoirs, including Lake Shasta, putting extreme pressure on our water supply and the CVP. The drought has also greatly complicated the management of the system to benefit endangered species, like winter-run Chinook salmon. These pressures will continue to mount in dry years and likely exist even in normal water years.

In this context, I want to focus on the following issues:

1. How winter-run salmon fishery monitoring limitations are affecting CVP operations;
2. A summary of CVP operations in 2014/2015 and the plan for 2016;
3. SRSC initiatives and experience in actions and restoration projects to benefit salmon; and,
4. Recommendations on how the Federal Government can help address the fishery-related water supply challenges of 2016 and beyond.

WINTER-RUN SALMON FISHERY MONITORING LIMITATIONS ARE AFFECTING CVP RESERVOIR OPERATIONS

For the 2016 water year, fishery agencies have already expressed concern that winter-run salmon losses in 2014 and 2015 have put this species at the risk of extinction and, therefore, will necessitate even greater protection. As stated in the National Oceanic, and Atmospheric Administration (NOAA) Fisheries *Species in the Spotlight*[1] document, "California's current drought began in 2012, and winter-run Chinook salmon are experiencing the consequences of low water storage and a limited volume of cold water in Shasta Reservoir. Monitoring data indicated that approximately 5.6 percent of winter-run Chinook salmon eggs spawned in the Sacramento River in 2014 survived to the fry life stage." For 2015, the fishery agencies are predicting only a 3 percent survival, again based on monitoring data only.

Unfortunately, this factoid has now become the "bumper sticker" of the current state of winter-run salmon, without much critical evaluation of the underlying data or science. The following discussion will focus on two main points:

- The estimated survival rates are based on interpreted fish trap monitoring data not temperature modeling; and
- Late-fall run salmon estimated survival comparison.

Fish Monitoring versus Temperature Modeling

The estimated high mortality of 95 percent for winter-run eggs in 2014 and the estimated 97 percent mortality for 2015 were not based on modeling of thermal impacts on eggs, but instead were based on comparing the estimated total numbers of eggs laid in the river gravels in upstream spawning areas near Keswick Dam to the numbers of fish captured 50 river miles downstream at Red Bluff Diversion Dam (RBDD), see Figure 1. The *Species in the Spotlight* document states, "The extremely limited production in 2014 *is hypothesized* [emphasis added] to be the result of warm water temperatures that caused egg and newly hatched fry mortality and low flows that led to increased predation." In fact, however, detailed analyses of water temperature effects on incubating winter-run Chinook eggs, using three independent models, revealed that some mortality did occur but was far less than hypothesized. Depending on the model, egg mortality from time of deposition to fry emergence from the river gravels, based solely on water temperatures, ranged only from 9 percent to 19 percent in 2014 and 2 percent to 18 percent in 2015. So, why the difference?

[1] *Species in the Spotlight*, http://www.nmfs.noaa.gov/stories/2016/02/docs/sacramento_winter_run_chinook_salmon_spotlight_species_5_year_action_plan_final_web.pdf.

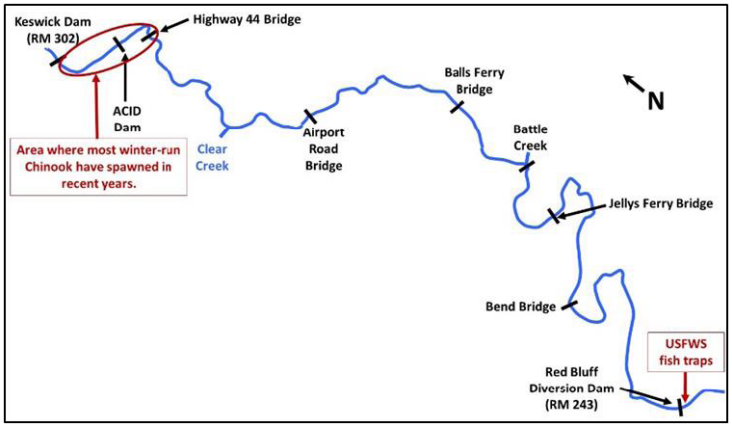


Fig. 1. The upper Sacramento River between Keswick Dam (River Mile 302) and Red Bluff Diversion Dam (River Mile 243)

These widely divergent egg mortality estimates are likely due to the manner in which the fishery agencies interpolate the downstream fish monitoring data. In this regard, the U.S. Fish and Wildlife Service (USFWS) operates three to four 8-foot diameter rotary screw traps at Red Bluff Diversion Dam (RBDD) that filter a small percentage of the Sacramento River flow, see Figure 2. The number of fish caught in the traps is then extrapolated to determine the total number of fish that would have passed in the river. While the traps function well during stable flows, the fish traps cannot operate during high-flow and turbid events due to debris and safety issues. GCID has its own fish trap at its screened diversion facility, and during very high flow events we also have to stop operating our trap due to safety and debris issues. Unfortunately, however, these events are when large numbers of juvenile winter-run Chinook would be expected to migrate downstream, particularly under hydrologic conditions present in 2014 and 2015.

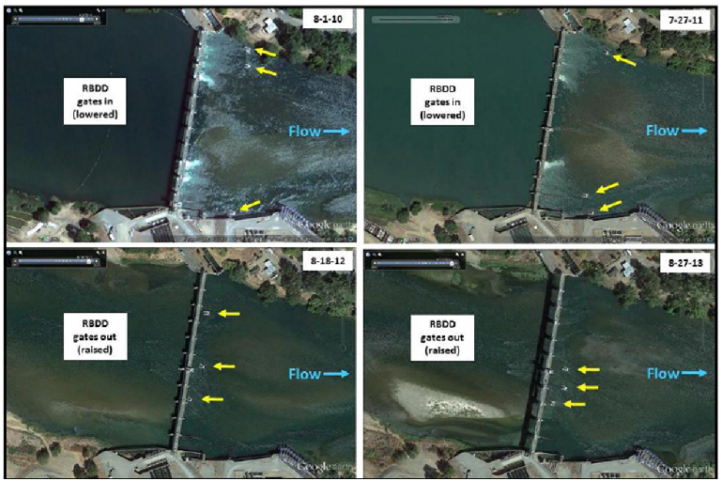


Fig. 2. Location of Rotary Screw Traps at Red Bluff Diversion Dam

This circumstance is problematic because large numbers of young winter-run salmon display a pattern of holding and rearing in upstream areas during summer and fall low-flow conditions then exhibit a large-scale, episodic out-migration when the first seasonal storms cause increased flows and turbidity. During 2014, when large numbers of winter-run salmon would be expected to migrate downstream during increased flows, the RBDD fish traps were not in operation much of the time and, undoubtedly, many fish passed RBDD undetected. To account for these data gaps, the USFWS estimates the numbers of fish not sampled (when traps are not in operation) by interpolating numbers of fish captured prior to and after unsampled time periods. This interpolation method to estimate the numbers of salmon migrating past RBDD during unsampled days is probably satisfactory *if* riverine conditions (e.g., flow and turbidity) are relatively stable, the period of consecutive unsampled days is short, and expansion factors are appropriate.

However, in December 2014, the upper Sacramento River experienced major storms and runoff leading to 24 unsampled days and just 7 sampled days (see Figure 3, which shows the daily flows (cfs) and turbidity (NTUs) measured at the Bend Bridge gauge upstream from RBDD during the periods when no fish sampling occurred at RBDD). The present interpolation method is likely to bias the estimates too low, possibly extremely low, because of large-scale salmon out-migration occurring during high, turbid flows. As a consequence, the overall estimates of fish survival were likely underestimated (or mortality overestimated). Additionally, factors used to expand the actual numbers of fish captured in the fish traps at RBDD to estimate total daily numbers of fish passing the dam possess questionable reliability and accuracy to compare annual fish survival estimates.

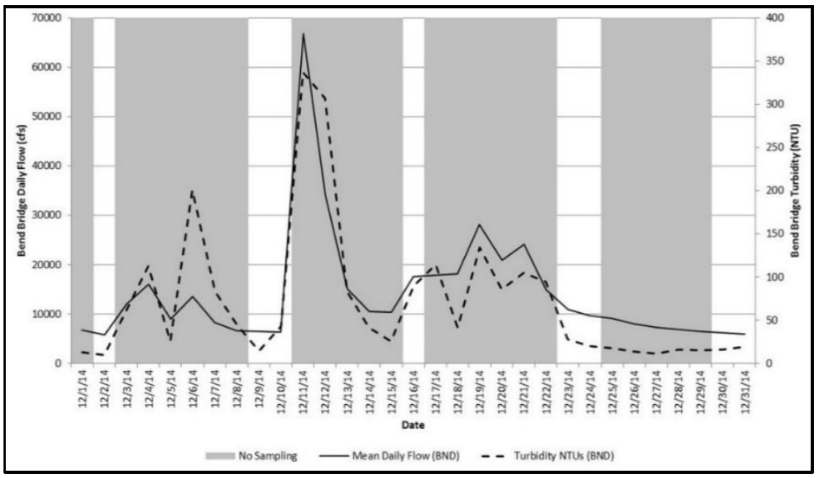


Fig. 3. Daily flows (cfs) and turbidity (NTUs) measured at the Bend Bridge gauge upstream from RBDD during December 2014 and the periods when no fish sampling occurred at RBDD (which is used to estimate juvenile salmon production)

Late-Fall Run 3 Percent Survival Example

The problem with the use of the existing RBDD fish trapping data to estimate fish survival is evident by comparing annual survival estimates for late-fall-run Chinook salmon with winter-run Chinook salmon. An examination of past estimates for late-fall-run Chinook survival revealed the 11-year average of survival from 2002 through 2012 was just 3 percent (lower than the purported winter-run survival in 2014 and 2015), see Table 1. If late-fall-run Chinook experienced such a consistent extremely high level of mortality in the earliest life stages solely in the reach upstream of RBDD for 11 consecutive years, it is doubtful the run would have persisted. Or conversely, since 3 percent survival is adequate for the existence of the late-fall run species, the concern of extinction for winter-run is unfounded. Further examination of the data, however, shows biologically implausible results. For example, the late-fall-run egg-to-fry survival in 2004 was only 1.2 percent (or 98.8 percent

mortality), yet 3 years later when most of that brood year would be expected to return and spawn, the numbers of adults increased enormously to 13,939 fish (Table 1). This indicates that the population survival cannot be this low and, as such, the monitoring data must not be providing an accurate enough escapement number at RBDD, which is the same issue on the low survivability of winter-run in 2014 and 2015. Improvements must be made in the monitoring locations and calculations to more accurately estimate fish survival rates, particularly if those estimates continue to impact how the CVP is operated to meet all project purposes.

Year	Late-Fall-Run Chinook			Winter-Run Chinook		
	Adult Estimate	Egg-to-Fry Survival	Egg-to-Fry Mortality	Adult Estimate	Egg-to-Fry Survival	Egg-to-Fry Mortality
2002	36,220	5.2 %	94.8%	7,337	27.4 %	72.6%
2003	5,513	3.8 %	96.2%	8,133	23.0 %	77.0%
2004	8,924	1.2 %	98.8%	8,635	20.9 %	79.1%
2005	9,610	1.0 %	99.0%	15,730	18.5 %	81.5%
2006	7,770	3.5 %	96.5%	17,205	15.4 %	84.6%
2007	13,939	2.7 %	97.3%	2,488	21.1 %	78.9%
2008	3,747	1.9 %	98.1%	2,850	17.5 %	82.5%
2009	3,792	4.3 %	95.7%	4,537	33.3 %	66.7%
2010	3,961	2.7 %	97.3%	1,533	37.5 %	62.5%
2011	3,777	1.4 %	98.6%	824	48.6 %	51.4%
2012	2,931	3.0 %	97.0%	2,581	26.6 %	73.4%
Average	9,108	2.8 %	97.2%	6,532	26.4 %	73.6%

Table 1. Annual estimates of late-fall-run and winter-run Chinook adult salmon upstream of RBDD and corresponding egg-to-fry survival estimates (data obtained from Poytress et al. 2014)

SUMMARY OF OPERATIONS IN 2014/2015 AND PLAN FOR 2016

2014 Summary

In 2014 and 2015, the SRSC and Reclamation continued coordination efforts related to diversions, water transfers, and general CVP operations through regular conference calls and meetings. As part of the water made available under the Settlement Contracts by Reclamation, the SRSC voluntarily committed to shift their diversion pattern to better align with the timing of releases for fishery needs. By voluntarily delaying SRSC diversions in April and May, Reclamation was able to conserve additional storage in Shasta Reservoir to benefit the cold water pool and the Upper Sacramento River temperature control operation for fishery needs. In addition to the meetings with Reclamation, the SRSC met with members of the SWRCB, Division of Water Rights staff, the National Marine Fisheries Service (NMFS), the California Department of Fish and Wildlife (CDFW), the Department of Water Resources (DWR), and other CVP contractors to discuss operations, including the technical details of Reclamation's forecasting modeling and Sacramento River temperature planning.

In 2014, the unprecedented effort undertaken by the SRSC to voluntarily reduce and minimize diversions in April and May, and the subsequent benefits to Shasta Reservoir levels and operations received from this effort, were substantial. The efforts by the SRSC coordination group shifted more than 125,000 acre-feet (AF) of diversions out of April and May, again, to benefit the fisheries by expanding the Shasta cold water pool and Upper Sacramento River temperature control operations. By delaying planting, this shifted the highest crop demand for water to later in the season to align with fishery releases. Our landowners were concerned about the delay in planting due to postponing harvest and the increased potential for precipitation causing complications, increased costs, and reduced crop yields. Nevertheless, throughout the period April through October, the SRSC were able to limit diversions to less than the scheduled diversions coordinated with Reclamation, except for October. In October, it was recognized that the remaining water supply was available to decompose rice straw while at the same time providing a valuable food source for migratory birds and the Pacific Flyway.

Related to the Settlement Contract provisions, 2014 was classified as a Critical Water Year for the Sacramento Valley, and the SRSC received a 75 percent Contract Supply. In addition to this 25 percent reduction in Contract Supply, the SRSC through careful management and coordination, diverted approximately 82 percent of their reduced 75 percent Contract Supply (or 61 percent of a full 100 per-

cent Contract Supply) for agricultural purposes and to incidentally benefit wildlife habitat during the period April through October. *Through these voluntary actions by the SRSC, the CVP was able to operate more efficiently and allowed for better management for the winter-run salmon.*

The SRSC also agreed to transfer approximately 113,400 AF to areas in need of water supplies. After accounting for losses and considering demands, approximately 35,500 AF was delivered to CVP water contractors in the Sacramento Valley on a similar pattern to which it was made available. Transfer water is typically conveyed through the Delta from July through September. However, this was not possible due to the restrictive operations required to address worsening drought conditions and cold-water pool management at Shasta Reservoir. Therefore, Reclamation entered into consultation with USFWS and NMFS, to propose modifications describing the drought response measures and requested extension of the period transfer water may be pumped at Jones Pumping Plant, allowing for delivery to the CVP water service contractors south-of-Delta. Reclamation received concurrence from the USFWS and NMFS, and water was transferred at a time that allowed for stabilizing river flows to help with fall-run salmon spawning and preventing red de-watering on the Sacramento River.

2015 Summary

In the spring of 2015, the SRSC again worked closely with Reclamation to voluntarily shift diversion patterns to better align with the timing of releases from Shasta and Keswick Reservoirs for fishery needs. Reclamation requested the total diverted quantity in April and May be similar to the total April and May quantity diverted during 2014, but be more evenly distributed between the 2 months. An increase of 10 percent above the total April and May quantities was believed to be needed due the even drier spring months experienced in 2015 compared to 2014. The SRSC developed estimated schedules to meet this goal to delay and minimize diversions for planting until later. The SRSC provided daily diversion schedules to Reclamation on a regular basis and held weekly coordination calls with Reclamation to closely monitor Keswick releases, Sacramento River flows (particularly at Wilkins Slough), and diversions, making adjustments as necessary.

In addition to the meetings with Reclamation, the SRSC met with members of the SWRCB, the NMFS, DWR, and CDWFW to develop an even more stringent plan for 2015.[2]

Due to the SRSC voluntarily delaying diversions from April and May, Reclamation was able to hold more water in Shasta Reservoir to benefit the cold-water pool and temperature management on the Upper Sacramento River. As in 2014, due to the effort voluntarily undertaken by the SRSC to reduce and minimize diversions in April and May, Reclamation allowed the rescheduling of water not diverted in April and May into later months including July, August, and September.

As in 2014, 2015 was classified as a Critical Water Year, and the SRSC received a 75 percent Contract Supply. In addition to this 25 percent reduction in Contract Supply, the SRSC coordinated the timing and reduction of diversions throughout the period of April through October. In total, the group diverted approximately 78 percent of their reduced 75 percent Contract Supply (or 58 percent of a full 100 percent Contract Supply) for agricultural purposes and to concurrently benefit wildlife habitat during the April through October period, and extending through December 10, 2015. Figure 4 shows the SRSC contract diversion rate, estimated/scheduled diversions, and actual diversions on a daily basis from April 1 through December 2015.

[2] Joint Agency Press Release on "Drought Conditions Force Difficult Management Decisions for Sacramento River Temperatures", http://www.waterboards.ca.gov/press_room/press_releases/2015/pr061615_shasta.pdf.

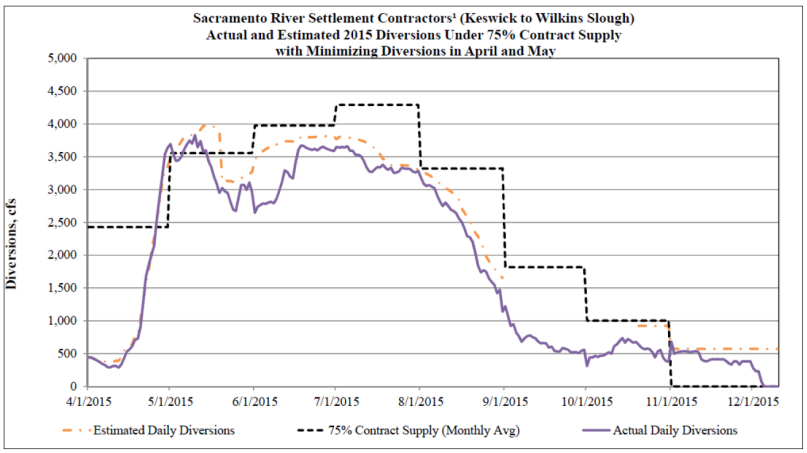


Fig. 4. Sacramento River Settlement Contractor Diversion Schedule

Additionally, at the request of Reclamation and the SWRCB, the SRSC agreed to pursue water transfers to areas of critical need through crop idling/shifting and groundwater substitution to further reduce spring diversions to maximize and preserve cold water in Shasta Reservoir. As a result, the SRSC transferred a total of approximately 207,000 AF to areas in need of water supplies, including the San Luis & Delta-Mendota Water Authority, the East Bay Municipal Utility District, and the Tehama-Colusa Canal Authority. Additionally, with limited diversion capacity from the Sacramento River in the summer to protect winter-run salmon, the SRSC also voluntary pumped groundwater to meet local demands. Later in the year, the SRSC again voluntarily deferred diversions to help Reclamation manage cold water and transferred water in Lake Shasta, while providing water for approximately 50,000 acres of critical bird habitat during the fall before the rains started.

2016 CVP Upstream Operations

According to Maria Rea, Assistant Regional Administrator of the NOAA Fisheries West Coast Region, "With the loss of two out of three cohorts of endangered wild winter-run, it is also critical that we develop cold water pool resources this winter and spring to support temperature management needed later in the year for this third wild winter-run year class."[3] The focus on perceived poor 2014 and 2015 survival rates is leading the fishery agencies to make extremely protective decisions on the operations of the entire CVP project, including releases from Shasta Reservoir, diversions by SRSC, flows in the Delta, and water available for export to south of Delta CVP contractors. To date, the agencies have solely focused on temperature management as the key factor, yet other factors that likely have a larger impact on salmon, from physical habitat improvements to predation, are not being considered or implemented. As an example, the *Salmon in the Spotlight* document states, "In addition to the drought, another important threat to winter-run Chinook salmon is a lack of suitable rearing habitat in the Sacramento River and Delta to allow for sufficient juvenile growth and survival."

For 2016, the SRSC are coordinating with Reclamation on diversions in order to maximize the efficient operation of the CVP while also protecting winter-run salmon. However, we are concerned that excess protections being requested by the fishery agencies could result in limited diversions in the spring, which will lead to mass fallowing of land within the SRSC service area. While not a drought impact, these actions by the Federal agencies will cause significant harm to this region, the local economies, and affect other species like the giant garter snake and the Pacific

[3] Letter from Maria Rea, NMFS to Ron Milligan, USBR. http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/winter-run_juvenile_production_estimate_jpe_-_january_28_2016.pdf.

Flyway. Additionally, this will result in decreased flows to the Delta impacting operations of the other CVP assets, and minimizing exports since most of the remaining flow will be Delta outflow or meet Delta consumption.

INITIATIVES AND EXPERIENCE IN ACTIONS AND RESTORATION PROJECTS TO BENEFIT SALMON

Working with our biologist, Dave Vogel, the SRSC and the Northern California Water Association (NCWA), with participation by several environmental groups, have developed a Salmon Recovery Program[4] for the Sacramento Valley. There has been tremendous progress on projects that have had a positive impact on salmon, yet more work is ahead. The Program focuses on fish passage improvements, remanaging flows, and habitat improvements. These priorities were originally developed as part of Dave Vogel's 2011 comprehensive report, *Insights into the Problems, Progress and Potential Solutions for Sacramento River Basin Native Anadromous Fish Restoration*.[5]

Unfortunately, we have seen few projects completed by the fishery agencies in the Upper Sacramento River that benefit winter-run salmon. The SRSC have completed fish screens on all larger diversions along the Sacramento River at a cost of nearly $600 million, which according to some, should have restored the winter-run salmon populations. In absence of projects being completed (or even initiated) by the fishery agencies, the SRSC have begun implementing the Salmon Action Plan, including funding the projects wholly or in part, securing all the necessary permits, and completing the restoration activities on our own. The SRSC have completed two projects and two new projects are currently underway, including the following:

- Painters Riffle—completed;
- Knights Landing Outfall Gates—completed;
- Market Street Spawning Habitat—under construction; and
- Wallace Weir Rescue Facility (Yolo Bypass)—planned for construction in July 2016

Painters Riffle

A unique partnership of GCID, Reclamation, Golden Gate Salmon Association, NCWA, CDFW, and the city of Redding developed and designed the Painter's Riffle restoration project, see Figure 5. With Reclamation staff's technical assistance and support from the Central Valley Project Improvement Act (CVPIA), GCID used its own staff and assets to obtain final permits and construct the proposed Painter's Riffle Project in December of 2014. Once the permits and agreements were received from numerous agencies including CDFW, U.S. Army Corps of Engineers (in consultation with NMFS and USFWS), Central Valley Regional Water Quality Control Board, Central Valley Flood Protection Board, California State Lands Commission, and the city of Redding, GCID staff spent over 500 hours preparing and moving approximately 8,000 cubic yards of gravel to re-establish the spawning habitat in the side channel. The cost of the project, including obtaining the permits, actual construction and completion tasks was approximately $300,000. Salmon are now spawning in this restored side channel.

[4] Sacramento Valley Salmon Recovery Program, http://www.norcalwater.org/wp-content/uploads/Salmon.version.FINAL-6.17.15.pdf.

[5] Vogel Report, http://www.norcalwater.org/wp-content/uploads/2011/07/vogel-final-report-apr2011.pdf.

Fig. 5. 2015 Diversions Painters Riffle Restoration Project completed by GCID. Video can be seen at http://www.gcid.net/#!painters-riffle-project/qs7o8

Knights Landing Outfall Gates

In 2015, Reclamation District 108 (RD 108) constructed a fish barrier at the Knights Landing Outfall Gates (KLOG) to prevent adult salmon from entering the Colusa Basin Drain (CBD) through the KLOG, see Figure 6. Before the barrier was constructed, adult salmon were able to enter the CBD through the KLOG when certain flow velocities were met that attracted migrating salmon. Once salmon enter the CBD, there is no upstream route for salmon to return to the Sacramento River and, absent fish rescue operations, the fish perish and are lost from production. To address this, RD 108 constructed a positive fish barrier with new concrete wing walls and metal picket weirs on the downstream side of the existing KLOG in the CBD, and placed a small amount of riprap on the right bank of the CBD immediately downstream of the KLOG to address levee erosion. Construction began in the latter part of August and was completed in November 2015. The total cost of the project was $2.454 million. Funding for the project was provided by Reclamation ($1.45M), DWR ($300,000), CDFW ($304,000), and the SRSC ($400,000).

Fig. 6. Knights Landing Outfall Gates (KLOG)

Market Street Spawning Habitat

Reclamation, in partnership with GCID, Western Shasta Resource Conservation District, DWR, and CDFW are currently placing salmonid spawning gravel in the Sacramento River, immediately below the Anderson Cottonwood Irrigation District Diversion Dam and Market Street Bridge, in Redding, see Figure 7. From February 15 through March 18, 2016, GCID will be placing approximately 8,500 cubic yards of gravel into the river to help improve spawning habitat for Chinook salmon and steelhead trout. The project is a continuing effort to help meet requirements of the CVPIA to restore and replenish spawning gravel and rearing habitat for salmonid species. Environmental documentation was recently completed for the project.[6]

Fig. 7. Market Street Gravel Placement Project for Salmon Spawning Habitat

Wallace Weir Rescue Facility

Under certain flow regimes, adult salmon migrating upriver are attracted to enter the CBD from the Yolo Bypass through the Knights Landing Ridge Cut (Ridge Cut), see Figure 8. Once salmon enter the CBD, there are no upstream routes to return to the Sacramento River and absent fish rescue operations, the fish perish and are lost from production. Each year at the confluence of the Yolo Bypass and the Ridge Cut, a temporary 450-foot long earthen berm, known as the Wallace Weir, is installed to create an irrigation backwater. This temporary berm blocks fish passage until it is compromised by flood flows each year. Once the weir is compromised, fish have free passage into the CBD via the Ridge Cut.

[6] http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=23758.

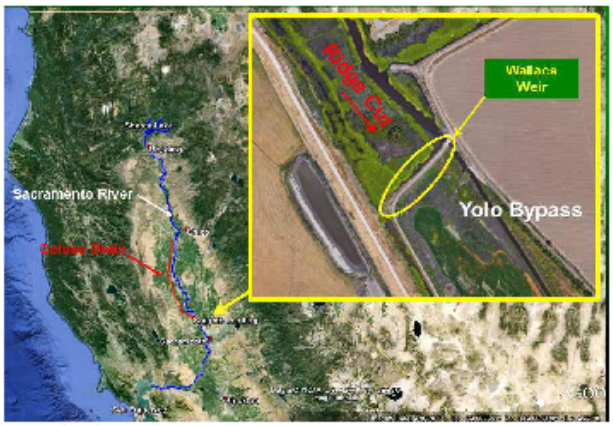


Fig. 8. Yolo Bypass Ridge Cut Project

This project proposes to replace the temporary berm with a permanent earthen weir that will be hardened to withstand winter floods. A fish rescue facility will be incorporated into the weir so fish that arrive at the Wallace Weir via the Yolo Bypass can be safely and effectively rescued and returned to the Sacramento River to resume their migration to upriver spawning grounds. An inflatable dam and positive fish barrier will also be incorporated into the new weir structure to better control water releases and fish attraction flows through the weir while blocking fish passage. The Wallace Weir Fish Rescue Facility will complement the Knights Landing Outfall Gate (KLOG) Fish Barrier Project completed in 2015 by RD 108.

Given RD 108's success in expediting implementation of the KLOG Fish Barrier project, DWR has requested that RD 108 take the lead in implementing the Wallace Weir Fish Rescue Facility on DWR's behalf. This project serves as a fish passage improvement action that will impede salmon entry into the CBD while also providing for safe and effective fish rescue. The project is one of several being pursued by DWR and others to be consistent with the NMFS's 2009 Operations Biological Opinion, Reasonable and Prudent Alternative Action, I.7. In addition to improving fish passage, the project will also be designed to maintain appropriate irrigation water surface elevations without impeding outflows during flood season. The weir, inflatable dam and fish barrier will be owned and operated by DWR with a construction cost of approximately $8,560,000.

WATER STORAGE

Finally, to help address the longer term water supply needs of our region and the state as a whole, we need new Federal assistance tools to help local agencies better manage and develop new water supplies critical to a more drought resilient economy.

Sites Reservoir, for example, is foundational to the long-term economic health of our region and the state. Sites will bring 1.8 million AF of new water storage to California. The Sites Project represents the kind of new, smart storage that our state needs, one that will not only create additional supplies behind the dam itself, but will allow significant additional water to be stored in other upstream reservoirs (Trinity, Shasta, Oroville and Folsom) due to coordinated operations and integration efficiencies. In a year like 2015, if Sites were in place, it is estimated there would have been an extra 400,000 AF of water in storage north of the Delta to meet the water needs of agriculture and our cities, as well help meet the Central Valley Project obligations for environmental water for fish and waterfowl. For 2016, DWR has estimated that an additional 346,000 AF of water could have been diverted during the storms through February 9.

GCID, SRSC, and NCWA strongly support the work of Rep. LaMalfa, working with Congressman Garamendi and others, through the introduction of H.R. 1060 and their work on other bills to advance the Sites Project. We support the work of this committee to seek new ways to streamline the environmental review process for new water supply infrastructure investments, such as the Sites Project, including the water infrastructure environmental review streamlining provisions included

in H.R. 2898, sponsored by Rep. Valadao. While delays in the water supply project environmental review and permitting process are due, in part, to the complexities associated with multiple state and Federal agencies being involved in the project, other delays are attributable to shifting environmental requirements.

H.R. 2898 seeks to address many of these challenges by establishing a lead agency to coordinate all Federal environmental reviews related to a surface water storage project and directing that a schedule be established and strictly adhered to by Reclamation for the completion of all environmental review processes. And, we appreciate that the environmental streamlining process proposed in H.R. 2898 includes projects, like the Sites Project, which are being developed by non-Federal entities in cooperation with Reclamation and other Federal agencies on non-Federal lands.

In addition, we encourage the committee to give favorable consideration to proposals like those included in S. 2533, introduced by Senator Dianne Feinstein, and other bills that seek to authorize new funding and financing opportunities to support non-Federal investments in needed water supply projects, like the Sites Project. Specifically, we strongly support language authorizing the Reclamation Infrastructure Finance and Innovation Act (RIFIA), which would provide local agencies with access to low-cost, long-term financing for much needed water infrastructure investments. If a RIFIA loan program were in place today, the program would provide water project sponsors with access to loans with a repayment period of up to 35 years at a rate of approximately 2.9 percent. For the Sites Project, this would drive down the cost of water by approximately $131 an acre-foot, dropping the cost from a projected $571 dollars an acre-foot to $440 an acre-foot, an overall 23 percent reduction in the cost of water from the project.

RECOMMENDATIONS

The perceived lack of survival of winter-run Chinook salmon in 2014 and 2105 has impacted every aspect of California's water system and caused friction in decisions made by Federal, state, and local agencies. More must be done to better understand the state of winter-run salmon, and ensure that the best available science is being utilized to determine what projects and actions should be taken to ensure the survival of winter-run in the managed system in which we operate. The following recommendations are actions that can be taken immediately:

1. *Monitoring*. If the RBDD fish sampling program will continue to be used to estimate fish survival, an improved method is necessary to account for fish passage during unsampled periods when flow and turbidity are high. Alternatively, an additional fish sampling site farther upstream where channel and riverine conditions are more stable would provide more-accurate estimates of fish survival, and would be more effective in monitoring annual winter-run survival and the effectiveness of salmon habitat restoration projects in the upper river.
2. *Funding and Permitting*. As stated previously, little if any salmon habitat restoration projects have been done by fishery agencies on the upper Sacramento River. The agencies need to prioritize funding and expedite permitting for local, state, and Federal efforts on the river.
3. *Predation and Other Factors Impacting Survival*. The agencies need to look at all factors that affect winter-run salmon like predation, lack of spawning habitat, lack of rearing habitat, timing of flows, etc. and not focus on temperature alone.
4. *Habitat*. The monitoring of physical habitats utilized by winter-run Chinook should be an important component of future monitoring programs. Additionally, there needs to be a concerted effort to improve rearing habitat quality for young winter-run Chinook salmon, which appears to be of poor quality and severely deficient.
5. *Storage*. The evaluation and construction of new water storage that can provide additional cold water benefits during normal and drought years needs to be expedited.

Dr. FLEMING. Thank you, sir. Next, Mr. Pool.
Five minutes, sir.

STATEMENT OF RICHARD POOL, PRESIDENT AND OWNER, PRO-TROLL FISHING PRODUCTS, CONCORD, CALIFORNIA

Mr. POOL. Thank you, Chairman Fleming, Ranking Member Huffman, and members of the subcommittee. My name is Richard Pool, and I am here today representing the salmon industry of California. This includes the commercial industry, the recreational industry, the charter boat industry, wholesalers, retailers, and all of the related businesses and communities that serve and derive their incomes from the salmon resources of California. My written testimony provides more on my background, but I have been heavily involved in salmon issues for 35 years.

The subject of this hearing is the impact of 3 years of drought on the water supply. I will address these issues as they relate to the salmon of the Central Valley. When the Central Valley runs are healthy, they support 20,000 jobs in California with an economic contribution of $1.4 billion. These same fish also support about half of those numbers in the state of Oregon.

Salmon runs are the backbone of the salmon industry. They support the coastal communities all the way from Morro Bay in California to Cape Falcon in northern Oregon. California fish also contribute to the Washington State fisheries. When the salmon industry suffers, these communities also suffer.

[Chart]

Mr. POOL. I have put up a chart that shows the returns of the fall-run fish that have returned to the Central Valley to spawn between 1991 and 2014. The fall-run fish is the run that we fish on in the fishing industry. As you can see, in 1991 the run was very, very low. All the runs were low that year. We had just finished a drought.

The up-sloping line shows what happened after the winter-run was listed. The Federal Government spent $1 billion in the right kind of fixes in the Sacramento River and all the runs responded. By 2002, over 700,000 fall-run fish returned to the Central Valley to spawn. On top of that, another 700,000 were harvested. Therefore, in 2002 we had 1.4 million fish in the ocean.

You then see the crash between 2002 and 2007. In 2004, pumping restrictions in the Delta were lifted, and when the pumping went up, the salmon runs went down. Then, in 2005 and 2006, the ocean conditions went very severely poor, and the survival, again, was very low.

By 2007, conditions were so bad the entire salmon industry was shut down for 2 years. It was devastating. Boats were scrapped, houses were foreclosed, nearly 100 salmon retailers, boat dealers, and others were forced to shut down.

Starting in 2009, things got better. The new Delta biological opinions were put in place, and the winters of 2010 and 2011 were very wet. We had a bump in 2013, and that is the bump up.

The drought started in 2012. A high percentage of the 2012 juvenile fish were destroyed by the drought. What happens when we lose the juvenile fish in the upper river and they do not get into the ocean, we are hurting bad.

There is a 3-year cycle between when the small fish go out to the ocean and the adults come back. We just recently got a report card. The number of returns recently were announced. We have some

meetings next year to get the details. The report card on 2012 returns were an all-time 15-year low. They were 70 percent below the average for the last 15 years.

The number of fish landed by the fishing industry was also down. The fishermen are now in a desperate financial condition, particularly since the crab season also closed. Most of the commercial fishermen in 2015 were unable to make enough money to pay their bills.

The drought years of 2013–2015 were even worse. Mr. Bettner reported that only 5 percent of the fish from the upper river survived in 2013, 2014, and 2015. To put that in perspective, when only 5 percent survive in the upper river, it takes 35 percent getting outside of the Golden Gate to have a sustainable salmon run.

So, we are in the process in 2015, 2016, 2017, and 2018—I think we are facing devastation in the salmon fishery. If you do not get them out of the upper river and into the ocean, 3 years later you will not recount it. I don't think that the magnitude of what we are facing in the industry is understood by hardly anyone, and I believe it is important for this committee at least to understand this.

There are things that can be done, and they are currently not underway. Mr. Bettner mentioned a few things. We have a host of projects we have been promoting. Most of them do not take more water. Habitat improvements for the salmon——

Dr. FLEMING. Mr. Pool, I am sorry, but time is up.

Mr. POOL. Let me conclude.

Dr. FLEMING. Sir, I am sorry.

Mr. POOL. All right.

Dr. FLEMING. Everything, I promise you, will be in the written record.

Mr. POOL. I think you got my message. Thank you very much.

[The prepared statement of Mr. Pool follows:]

PREPARED STATEMENT OF RICHARD POOL, REPRESENTATIVE OF THE CALIFORNIA SALMON INDUSTRY

INTRODUCTION

Good morning, Chairman Fleming, Ranking Member Huffman, and members of the subcommittee. My name is Richard Pool and I am here today representing the salmon industry of California. This includes the commercial industry, the recreational industry, the charter boat industry, wholesalers, retailers and all of the related businesses and communities that serve and derive their livelihoods from the salmon resources of California.

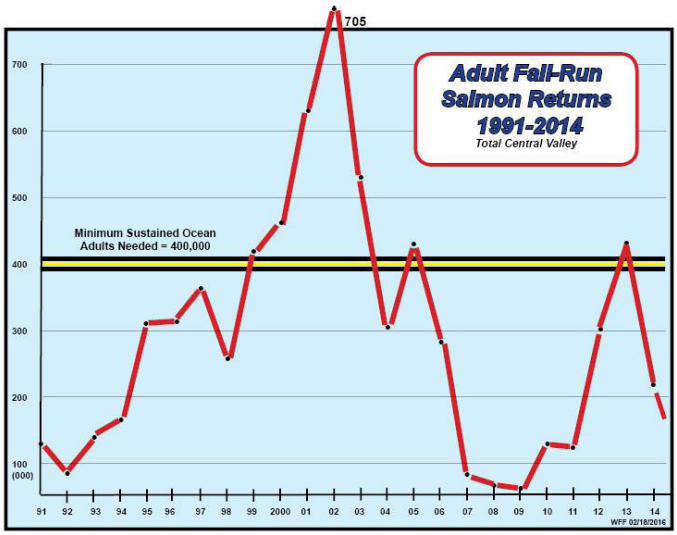
I am Secretary of the Golden Gate Salmon Association, President of Water4Fish, and past board member of American Sportfishing Association. I am also a member of the two primary California commercial salmon organizations (Pacific Coast Federation of Fishermen's Associations and Small Boat Commercial Salmon Fishermen's Association) and I am a member of the San Francisco based charter fleet association (Golden Gate Fisherman's Association). I have served on numerous state and Federal salmon advisory committees for over 35 years. I am a resident of Lafayette, California and my business is Pro-Troll Fishing Products, a manufacturer of salmon fishing equipment. We manufacture approximately 800 types of salmon lures, attractors and electronic devices for catching salmon. We sell all over the world but mainly in North America.

The subject of this hearing is the impact of 3 years of drought on the water supply. I will address these issues as they relate to the salmon of the Central Valley. In addition, I will discuss the impact the drought has had on the salmon and the impact it has had on those who derive their livelihoods from the harvest of salmon. Then, I would like to share with the committee some solutions to these serious problems and ask for your help.

IMPACTS OF DROUGHT ON SALMON RUNS AND THE INDUSTRY

When Central Valley salmon runs are healthy, they support over 20,000 jobs in the state with an economic contribution of $1.4 billion (Southwick Associates, August 9, 2012). These same fish also support about half of those same numbers in Oregon. Those salmon runs are the backbone of salmon fishing and are a major economic contributor for coastal communities all the way from Morro Bay California to Cape Falcon in northern Oregon. California fish also contribute to the Washington State salmon fleet. When the salmon industry suffers, these communities also suffer. Both are currently suffering a lot.

The drought impact on these salmon has been devastating. Some of the impact was unavoidable and some of it was man-made. Let me start with a little history. The chart on the screen shows the history of the returns of the fall-run salmon from the ocean to the freshwater from 1991 to 2014. There are four salmon runs in the Central Valley. The fall-run has been the largest by a wide margin and it is the only one that supports the commercial and recreational salmon industry. As you can see, in 1991 and 1992 the run was nearly gone. At that point all the runs were near total collapse. In 1992 only 191 winter-run fish returned to spawn. At that point, the winter-run was petitioned for an endangered species listing under the Endangered Species Act. It was listed and a result, the Federal Government spent $1 billion on four major recovery projects in the Sacramento River. It worked and all runs including the fall-run shown here, benefited.



You can see that by 2002, over 700,000 fall-run fish returned to spawn (Source: CDFW Ocean Salmon Fisheries Report 2009). That was a modern day record. On top of that, another 700,000 fall-run fish were harvested by the commercial salmon industry. That totals 1.4 million adult salmon that were in the ocean in 2002.

We then see the big slide in the returns between 2002 and 2007. There were two primary causes of that slide. First, from 2000 to 2006 average exports from the Delta increased to 6 million acre-feet—a 20 percent increase over the previous decade. This was made possible by the weakening of Federal protections for the Delta in 2004. The pumping went up, particularly in the springtime at a crucial time when all juvenile salmon migrate through the Delta. That impact took a heavy toll.

The second reason for this dramatic drop was that in 2005 and 2006 the ocean conditions for salmon survival were very poor. Very low numbers of fish came back. The result is what you see. By 2008 and 2009 the survival rate was so low that the entire salmon industry was shut down for those 2 years. The human impact of that shutdown was tragic. Fishing boats were scrapped because the owners could not pay the mooring fees. Homes were repossessed and nearly 100 coastal retail and service businesses failed. There were similar impacts on hotels, restaurants and other supporting businesses that relied on the salmon industry. My company lost money in those 2 years and also in the 2 following years until the runs recovered.

In 2009, the new biological restrictions on export pumping and upriver flow changes took effect and we began to see a recovery. Those changes, plus a very wet year in the winter of 2010 and the spring of 2011, allowed millions of additional juvenile salmon to avoid the losses and get to the ocean. The result was evidenced 3 years later when those fish matured and returned to freshwater in 2013.

We then come to the drought years of 2012 through 2018. The damage done to the salmon in these years is unparalleled. The main problems were lethal water temperatures, low river flows and extremely limited habitat, including spawning and rearing areas and the dewatering of redds (salmon egg nests) that were laid along the edges of the Sacramento River. Salmon laid their eggs when the flows were high, but when water flows were later cut, the redds were dried up causing high mortality.

If the water temperature in the spawning streams is 56 degrees Fahrenheit or lower, the salmon eggs are stressed but survive. But, above 56 degrees the eggs begin to die and at 62 degrees 100 percent of them die. Temperatures in 2014 and 2015 were over 62 degrees in almost every tributary in the Central Valley. The egg loss was near 100 percent (Sources: USBR CVO Temperature and Flow Reports, USGS National Water Information System Reports by Station).

The numbers of juvenile salmon migrating down the Sacramento River system are counted by the fish agencies with rotary screw traps near the city of Red Bluff. In 2014 the data showed that 95 percent or more of the juveniles that should have hatched and migrated to Red Bluff never showed up. This means survival was only 5 percent. The 2015 survival was worse yet. This represents a near complete loss of all four runs of the wild spawning salmon. A sustainable salmon fishery requires that in the order of 35 percent of the juveniles need to make it to the Golden Gate and out into the ocean. That did not happen and we have lost nearly 100 percent of all the wild spawning fish for 2 years running in all four of the Central Valley runs. That includes the severely depressed populations of the endangered winter-run. The bottom line of all of this is that in 2016, 2017 and in 2018, there will be an unsustainable low number of adult fish in the ocean. This will create another major disaster for the salmon industry.

Referring back to the chart, the yellow and black line near the center is at the ocean abundance figure of 400,000 fish. This represents the minimum number of adult salmon in the ocean that it takes for the commercial salmon industry to pay their bills and to make money. Normally they would harvest about half of these fish (200,000) and the other half would return to the freshwater to spawn. You can see that most of the recent years are well below that minimum. The 2015 commercial season is a good example. A high percentage of the commercial fishermen did not catch enough fish in 2015 to pay for fuel and other bills. For a good part of the season their boats remained tied up at the docks. They are in a desperate financial condition particularly since the crab season was also canceled. I am aware of some who have already had to sell their boats to survive. Because of the drought, the 2016, 2017 and 2018 results are destined to be even worse than those of 2014 and 2015.

The California Legislature has registered deep concern about the severe losses in the salmon populations. Senator Mike McGuire is Chairman of the California Joint Committee on Fisheries and Aquaculture. In a Sacramento committee hearing in early February, he said, "These are truly desperate times. Imagine losing 75 to 100 percent of your annual income, and trying to survive. I cannot say this more bluntly. We are facing a fishery disaster in California and families who have relied on the mighty Pacific for their livelihood are on the brink."

UNITING SALMON STAKEHOLDERS AROUND POTENTIAL SOLUTIONS

The salmon industry is obviously deeply concerned with this outlook for the next 3 years. Our future has been put very much in doubt. We have examined the issues carefully and worked hard to develop plans and actions that can turn this situation around. In 2011 we pulled all the key people in the industry together and created the Golden Gate Salmon Association (GGSA) to work on recovery. We then created a salmon rebuilding task force to develop strategies and actions that can rebuild the runs. The three fish agencies, along with the Bureau of Reclamation and the California Department of Water Resources, joined us in an advisory capacity.

GGSA now has 28 projects and a number of actions that the industry feels are very necessary to begin the turn around. We have shared them with some members of this committee and would hope you can support them. The following are some of our concerns and proposed actions:

- We believe a great deal of money has been misdirected by the U.S. Fish and Wildlife Service and Bureau of Reclamation on spending the approximate $25 million a year provided by the Central Valley Project Improvement Act

(CVPIA) Legislation of 1992. Many of the water contractors that provide the annual $25 million agree with us. We support the conclusions of the Listen to the River panel of 2008. This CVPIA program badly needs restructuring with a better management and better investment targets. There is an effort under way to do this and we urge Congress to help see that the CVPIA restructure is successful.

- In 2009, the National Marine Fisheries Service (NMFS) issued new biological opinions to make important changes to avoid extinctions. Several of these are languishing with little or no action. Some of them would be very helpful in arresting the declines. We urge more NMFS action.
- In recent years the annual water delivery plans of the Bureau of Reclamation and State Water Board have done damage to the winter and fall-run juveniles in the upper Sacramento River. These plans need to be better to avoid these damages. The agencies have admitted that to prevent additional damage to salmon, they must be more protective in 2016. With the loss of two out of three cohorts of endangered wild winter-run salmon (2014 and 2015) it is critical that we develop cold water pool resources in the winter and spring and then protect them to support the temperature management needed later in the year.
- There have been a number of Federal legislative proposals that one way or another would overturn the current biological opinions in the Delta. Maintaining those biological opinions intact is critical to avoiding the complete loss of the salmon. In 2009, when the opinions were first put in place several water contractors filed lawsuits in an effort to overturn them. After 2 years of conflicting science testimony, the court upheld the BOs. It also then ordered the litigating water contractors and NGOs to form a committee to study and collaborate on the science until they agreed. That committee was formed and has made progress on reaching agreements. Where there are science disagreements, it continues to sponsor science studies to fill the gaps. I sit on that committee representing the salmon industry.
- The 28 salmon rebuilding projects developed by the GGSA task force spell out engineering changes that will result in more ocean salmon abundance. They do this by proposing physical changes that improve juvenile survival, add spawning and rearing area and reduce predation. Many of these projects have no impact on water deliveries and are supported by the contractors. We will furnish the entire list to the committee and urge your support. Some of the highlights are:
  - — The plumbing from the Oroville Dam on the Feather River to the Thermalito Afterbay needs changing so that cold water can flow to the 20 miles below the Thermalito outlet. This can be a prime fall-run spawning area but its current temperature is lethal to eggs. DWR, water users and others agreed in 2006 that this retrofit was needed, but it has made little or no progress over the past decade.
  - — In the upper Sacramento River, there are very few places where the newly hatched fry can hide from predators and grow until they are strong enough to migrate downstream. The predator losses are very high. More side channel rearing areas are needed where these fish can hide and feed and grow. Floodplain restoration in the Yolo and Sutter bypasses also could significantly improve fitness and survival.
  - — In 2009, the National Marine Fisheries Service issued new biological opinions for the Delta pumps and the pump salvage system. Millions of out migrating juveniles are lost at these operations. The biological opinions call for major improvements here but they have never been enforced. NMFS needs to be more aggressive.
  - — In low water years, the upper Sacramento River is running very slow. The newly hatched salmon fry are not strong enough to swim and migrate down the river on their own. A high percentage of them are lost to predators. Pulse flows from the Shasta and Keswick reservoirs are needed to push the juvenile fish down the river to safer areas.
- Several of the water contractors agree with our concerns and some are already helping bring some of the projects about. In the upper Sacramento River, a former salmon spawning area called Painter's Riffle was identified by GGSA as a potential spawning area but it was blocked by a high gravel barrier. The Glenn-Colusa Irrigation District (GCID) and Mr. Thad Bettner who is the General Manager of the District stepped forward and agreed to

fund the project, offering their equipment and manpower at no charge to clear the barrier. GCID completed the project in 2014 and in the fall of 2015 the salmon successfully used it. Over a million new salmon fry are about now emerging from the area and beginning their migration. Mr. Bettner is present here today as a witness. We very much appreciate his help.

In the spring of 2015, a number of us from the fishing industry met with Chairman Hastings to discuss fishery issues in the different states. As the meeting progressed, I brought up the problems of the California salmon industry and asked for his help. Following his strong words about the salmon mess in California, we discussed some ideas that might be in the interest to all concerned. The Chairman asked that we send our ideas, which we did and continue to develop.

CONCLUSION

In summary, it is very clear the salmon industry has a very difficult future in 2016, 2017 and 2018. These may be the worst years ever. If the conditions continue to get worse, every water user in this room and many more will suffer. If we get busy on the things the salmon need, we can keep that from happening. What do they need? They need adequate flows and temperature protections, as well as ambitious habitat restoration actions and they will recover.

We hope the committee agrees that these actions are in everyone's interest. We are asking for the committee's support wherever you can provide it and we stand ready to work with you and lend our resources and expertise as needed.

Thank you for the opportunity to provide testimony today. I appreciate the subcommittee's time and attention to these important issues. I would be happy to answer any questions.

Dr. FLEMING. The Chair now recognizes Mr. Murillo.

STATEMENT OF DAVID MURILLO, REGIONAL DIRECTOR, MID-PACIFIC REGION, BUREAU OF RECLAMATION, U.S. DEPARTMENT OF THE INTERIOR, WASHINGTON, DC, ACCOMPANIED BY REN LOHOEFENER, DIRECTOR OF THE PACIFIC SOUTHWEST REGION OF THE U.S. FISH AND WILDLIFE SERVICE IN SACRAMENTO, CALIFORNIA

Mr. MURILLO. Thank you, Chairman, Ranking Member Huffman, and members of the subcommittee. My name is David Murillo, Regional Director of the Mid-Pacific Region of the Bureau of Reclamation. With me is Ren Lohoefener, Regional Director of the U.S. Fish and Wildlife Services, Pacific Southwest Region. We are pleased to appear today to discuss the current El Niño weather cycle and actions we are taking, together with the state of California, to deliver water and address persistent drought. My full written testimony has been submitted for the record.

For the past 4 years, we have seen reduced snowpack, reduced precipitation, significant groundwater withdrawals in much of the West, and in California, in particular. In the face of these conditions, carryover reservoir has been severely drawn down. And as we begin water year 2016, the Central Valley Project's carryover storage from 2015 into 2016 was 2.9 million acre-feet, which was 24 percent of capacity and 47 percent of the 15-year average for that date.

As of this time last month, storage in major CVP reservoirs was 963,000 acre-feet lower than the same time last year. These conditions have taken their toll on water users, the environment, the economy, and the communities across the state. In these situations, innovative local agreements, adaptive management, and sheer

resilience have been essential to the very survival of many farms and small communities.

The Department understands the urgency of this El Niño cycle. We appreciate the chance to discuss these efforts and to continue a dialogue with this subcommittee on how we can best meet the needs of the water users, environment, and larger communities we all serve.

Reclamation, the California Department of Water Resources, California Department of Fish and Wildlife, State Water Resources Control Board, National Marine Fisheries Service, and, of course, U.S. Fish and Wildlife Service, have coordinated CVP and State Project Operations at the highest level possible. This has enabled the State Board to support several joint Reclamation and Department of Water Resources (DWR) requests for modifications to requirements under State Water Right Decision 1641. Those actions have borne fruit with the conservation of approximately 880,000 acre-feet that otherwise would not have been conserved, if not for the jointly filed petition approved by the State Board.

As the subcommittee is aware, water delivery for farms and cities is not the only demand on operations of the CVP, or the State Water Project, for that matter. The CVP is authorized to serve multiple purposes, and it provides significant benefits for flood control, recreation, water quality, and power generation every year. Compliance with state water rights and environmental laws are, obviously, significant responsibilities, governing the operations of the CVP, along with the water delivery contracts in place with over 200 water user organizations in California.

It is true that the state and Federal facilities in the Delta have not operated at maximum capacity during these periods of elevated El Niño precipitation and runoff. The Bay-Delta is an estuary that is home to its own in-Delta farming community, many towns where water quality can be impacted by operations of the pumps, as well as dozens of threatened and endangered species.

While it is easy to attribute the state's water supply cutbacks entirely to the environmental regulations, it has been drought, extreme decline in annual precipitation, and snowpack in California since 2012, far more than any other factor that has constrained the ability of the state and Federal projects to deliver full allocations during these past 4 years.

So far during 2016, Reclamation's El Niño operations have been adaptive and strategic. To the extent that Reclamation and the state can maximize export pumping, particularly during surges in inflow to the Delta, we have done so and will continue to do so.

But we have also proactively reduced export pumping on some occasions to protect listed species, such as the Delta smelt, and we will continue to do so when warranted, because we strongly believe that not doing so would necessitate far more restrictive export levels days or weeks down the road. We want to manage expectations, even as we keep releases from Reclamation major storage facilities conservative in recognition of the fact that the preceding years of below-normal to critical dry hydrology have left carryover storage levels far below where we like to see them.

My written statement describes multi-faceted actions that the Department is taking to assist western communities impacted by

the drought. If sustained, we believe our efforts can build long-term drought resiliency, even accounting for what the El Niño may or may not bring in this and future years.

That concludes my written statement. In closing, Ren and I thank the subcommittee for its attention to this issue, and the working relationship with all the parties represented here today.

We would be pleased to answer any questions at the appropriate time. Thank you.

[The prepared statement of Mr. Murillo follows:]

PREPARED STATEMENT OF DAVID MURILLO, REGIONAL DIRECTOR, MID-PACIFIC REGION, BUREAU OF RECLAMATION, U.S. DEPARTMENT OF THE INTERIOR

Chairman Fleming, Ranking Member Huffman and members of the subcommittee, I am David Murillo, Regional Director in the Mid-Pacific Region of the Bureau of Reclamation (Reclamation). I am pleased to appear before the subcommittee today to discuss activities underway in California to adapt to the challenges and opportunities associated with the current El Niño weather cycle, and actions the Department of the Interior (Department) is taking together with the state of California and our partner agencies to mitigate the effects of persistent drought.

The past 4 years have been characterized by severely reduced snowpack, reduced precipitation and significant groundwater withdrawals in much of the West and in California in particular. Water Year (WY) 2015 was the 8th of 9 years with below-average runoff. Beginning with 2012, the last 4 years have been hydrologically classified as below normal (2012), dry (2013), and critically dry (2014 and 2015).[1] Under average conditions, a major source of California's water for cities and farms is runoff from snowpack in the Sierra Nevada and Cascade mountains (about one-third), and on April 1, 2015, California's Department of Water Resources measured statewide water content of Sierra snowpack at 5 percent of average for that date. These levels were lower than any year on record going back to 1950.[2] Moreover, California's 2014 and 2015 water years were also the warmest on record,[3] exacerbating the effects of the current drought.

In the face of these conditions, carryover reservoir storage has been severely drawn down during this drought, and as we began water year 2016 the Central Valley Project's (CVP) reservoir carryover storage from WY 2015 into WY 2016 (October 1, 2015) was 2.9 million acre-feet, which was 24 percent of capacity and 47 percent of the 15-year average for that date. As of January 19, 2016, storage in major CVP reservoirs was 963,000 acre-feet lower than the same time last year. These conditions have taken their toll on water users, the environment, the economy and communities across the state. And, against the backdrop of that complex water and precipitation picture, innovative local agreements, adaptive management, and resilience have been essential to the survival of many farms and small communities.

The El Niño-Southern Oscillation (ENSO) is characterized by year-to-year fluctuations in sea surface temperatures in the equatorial Pacific Ocean. The National Oceanic and Atmospheric Administration's Climate Prediction Center classifies present ENSO conditions as a strong El Niño, one which is expected to peak during the winter of 2015–16 with a transition to ENSO-neutral conditions expected during the late spring or early summer of 2016.

The Department understands the urgency this subcommittee, and numerous stakeholders in California, associate with questions about how agencies will operate during the current El Niño cycle, and whether the decisions made during this winter will meaningfully change the water supply picture in 2016 and beyond. We appreciate the chance to discuss these efforts, and we're glad to have an opportunity to continue a dialog with the members of this subcommittee on how we can best address the needs of the water users, environment and larger community we all serve.

Since December 2013, state and Federal agencies that supply water, regulate water quality, and protect California's fish and wildlife have worked closely together to manage through the drought and problem-solve with the larger stakeholder community. Reclamation, the California Department of Water Resources (DWR),

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[1] http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST.

[2] www.water.ca.gov/news/newsreleases/2015/040115snowsurvey.pdf.

[3] www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php?periods%5B%5D=12&parameter=tavg&state=4&div=0&month=9&year=2014#ranks-form.

California Department of Fish and Wildlife (CDFW), State Water Resource Control Board (SWRCB), U.S. Fish and Wildlife Service (USFWS), and National Marine Fisheries Service (NMFS), (collectively, the state and Federal Agencies) have coordinated CVP and State Water Project (SWP) operations at the highest level possible, to manage water resources through both forward-thinking and real-time efforts. This cooperative environment has allowed the state and Federal Agencies to collectively provide the necessary information to the SWRCB to support evaluation of several joint Reclamation and DWR requests for modifications to operational standards required under State Water Right Decision 1641 (D–1641). Those collaborative actions have borne fruit with the conservation of approximately 880,000 acre-feet that would not have been conserved but for the jointly filed Temporary Urgency Change Petitions (TUCPs) approved by the SWRCB.

Last month the state and Federal Agencies prepared and submitted a 2016 Drought Contingency Plan[4] (DCP) to provide a framework of more potential operational actions that may be requested from the regulatory authority of the SWRCB this year. The actions summarized in the DCP may be necessary even if California continues to experience the current wetter-than-average hydrology. As of this writing, the DCP provides the best big-picture summary of the objectives that will guide the state and Federal Agencies in 2016.

As the subcommittee is aware, water delivery for farms and cities is not the only imperative at play in the operation of the CVP, or the state's water project for that matter. The CVP and its reservoirs are authorized to serve multiple purposes, and they provide significant benefits for flood control, recreation, water quality and power generation every year, in all types of hydrology. In 1992 Congress specifically amended the CVP's overlying authorization (dating to 1937), with the statutory directive that CVP project purposes include the "mitigation, protection, and restoration of fish and wildlife" and "fish and wildlife enhancement." Similarly, California State Fish and Game Code Section 5937 requires releases below dams "to keep in good condition any fish that may be planted or exist below the dam." Compliance with state water law and the major environmental statutes such as the Endangered Species Act and Clean Water Act are obviously significant responsibilities governing the operation of the CVP along with the many water delivery contracts in place with more than 200 water user organizations in California.

It is true that state and Federal export facilities in the Delta have not operated at maximum capacity during these periods of elevated El Niño precipitation and runoff. The Bay-Delta is an estuary that is home to its own in-Delta farming community, many towns where water quality could be or is acutely impacted by operation of the pumps, as well as dozens of threatened and endangered species.[5, 6] The Delta serves these roles in addition to the water conveyance function it serves in providing millions of acre-feet of water to users south of the Delta every year. While some have argued the state's water supply cutbacks are entirely due to environmental regulations, it has been drought—the extreme declines in annual precipitation and snowpack in California since 2012—far more than any other factor, that has constrained the ability of the state and Federal projects to deliver full allocations of water during these years.

So far during 2016, Reclamation's operations during the El Niño pattern can be characterized as adaptive and strategic. Many variables such as temperature, salinity, turbidity, tidal action, inflow, outflow requirements, storage levels and the location of threatened and endangered fish species or their habitat have required us to adapt to determine what level of exports can be supported at the pumps. To the extent that Reclamation and the state can opportunistically maximize export pumping, particularly during surges in inflow to the Delta, we have done so and will continue to do so. But we've also proactively reduced export pumping on several occasions to protect listed species such as the Delta smelt, and we will continue to do so when warranted, because we strongly believe that not doing so would necessitate far more restrictive export levels days or weeks down the road. Federal and state agencies are working to avoid the potential extirpation of species like winter-, spring- and fall-run Chinook salmon, Central Valley steelhead, and Delta smelt, which has been found to be in danger of extinction throughout its range.[7]

Through the implementation of a series of Federal actions and investments laid out in the Interim Federal Action Plan, we and our resource agency partners are

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[4] www.water.ca.gov/waterconditions/docs/2016-DroughtContingencyPlan-CVP-SWPOperations-Feb-Nov_1.19.16-FINAL.pdf.

[5] www.fws.gov/sfbaydelta/es/species_info.cfm.

[6] www.westcoast.fisheries.noaa.gov/protected_species/salmon_steelhead/salmon_and_steelhead_listings/salmon_and_steelhead_listings.html.

[7] www.fws.gov/sfbaydelta/species/delta_smelt.cfm.

taking affirmative steps to address the role of stressors like predation by invasive species, further complicating recovery of threatened and endangered species. In fact, in his testimony last October on H.R. 2898 and S. 1984, Deputy Secretary Mike Connor stated "the Department strongly supports well-designed collaborative scientific research into predation." These factors, and 4 years of drought, will not be remedied with 1 year's above-average El Niño hydrology. And so we want to manage expectations, as we keep releases from Reclamation's major storage facilities conservative in recognition of the fact that the preceding years of below normal to critically dry hydrology have left carryover storage levels far below average.

As stated by Deputy Secretary Connor before the Senate Energy and Natural Resources Committee this past October, the Department is taking a multi-faceted approach and marshalling every resource at its disposal to assist western communities impacted by drought. Through the WaterSMART Program, hundreds of thousands of acre-feet are being conserved every year that would otherwise be lost. In June of last year, Reclamation announced investments of more than $24 million in grants for 50 water and energy efficiency projects in 12 western states, more than $23 million for seven water reclamation and reuse projects in California, and nearly $2 million for seven water reclamation and reuse feasibility studies in California and Texas. On February 8 we announced the allocation of $166 million in additional FY 2016 funding, $100 million of it directed at western drought response. And in the coming months, we will announce funding awards for dozens of additional WaterSMART awards, getting the 2016 funds out to the districts that will put them to work on the ground.

While these and many other measures have not and can never fully alleviate the drought's impacts, we've proven that we have the capacity to improve overall water management by building on the work of creative local partners. If sustained, the Department believes we can build long-term drought resiliency, even accounting for what El Niño may or may not yield in this and future years.

As we move through the remainder of this El Niño year, Reclamation will remain consistent in developing and adjusting our operations plan in conjunction with the state, requesting as much flexibility as possible while at the same time protecting the fish species. We look forward to engaging in discussions with water users on possible operational scenarios to address the needs of fisheries at the same time improving project yield.

Finally, while we understand that today's hearing is focused on near-term operational issues during the current El Niño cycle, I want to reiterate the Department's commitment to working with the state of California on long-term goals of improving California's water supply reliability, and protecting and restoring the Bay-Delta environment.

That concludes my written statement. In closing, I thank the committee for its attention to this issue, and for fair consideration of all we are doing to operate the state and Federal projects in compliance with the law for the benefit of all Californians and the environment. Reclamation values its working relationship with all the parties represented here today. I would be pleased to answer questions at the appropriate time.

Dr. FLEMING. Thank you, Mr. Murillo.

The Chair now recognizes Mr. Birmingham for 5 minutes.

STATEMENT OF THOMAS BIRMINGHAM, GENERAL MANAGER/ GENERAL COUNSEL, WESTLANDS WATER DISTRICT, FRESNO, CALIFORNIA

Mr. BIRMINGHAM. Thank you, Mr. Chairman, and members of the subcommittee. I want to express my appreciation for being invited to testify before the subcommittee on the 2016 California water supply outlook during the El Niño and the 3 years of restricted water deliveries.

As the subcommittee is aware, there has been a dramatic improvement in the hydrologic conditions in California. We have seen significant increases in storage and significant increases in Delta inflow and outflow. And, based on the February 1 snow survey conducted by the California Department of Water Resources,

the Northern Sierra snowpack was at 120 percent of the long-term average for that date, and the rainfall in the three regions tracked by the Department of Water Resources was 123 percent of the historical average for that date.

The dramatic improvements in the hydrology are depicted in two exhibits that I submitted to the committee. Exhibit 1 is a graph of the storage in Folsom Lake, the reservoir that Mr. Huffman referred to in his comments. And Exhibit 2 is a graph depicting Delta inflow during this year.

But, unfortunately, despite the improved hydrologic conditions, those conditions will not equate to an improved water supply for south-of-Delta Central Valley Project agricultural water service contractors. For the third year in a row, those contractors will receive a zero allocation.

For the third year in a row, the Bureau of Reclamation is likely to have to make releases from Millerton Reservoir on the San Joaquin River to the exchange contractors to meet the United States' obligation to the most senior water right holders on the San Joaquin River. And prior to 2014, that had never happened in the history of this project. There cannot be any debate that these impacts, as Mr. Murillo said, are as a result of drought. But there cannot be any reasonable debate that the impacts have also been a consequence of the implementation of the Endangered Species Act and biological opinions.

During his comments, Mr. Huffman made some remarks with which I completely agree. He talked about the necessity of looking at the facts. In fact, I remember very distinctly Mr. Huffman making a comment in a Floor debate to the effect that facts are stubborn things, and the facts are that, over the last 2 years, that 3-inch fish has taken exactly zero water from those who depend on water diverted out of the Delta system. We need to have an honest debate.

I will be the first to acknowledge that in 2014 it was so dry that the biological opinions had very little effect on water supply. But to make a statement that in 2015 there was no effect, that is absolutely false. I could very easily discover this morning, looking over the change orders, a February 22, 2015 change order directing that the pumping at the Jones Pumping Plant be reduced to 850 cubic feet per second, and the reason was Delta smelt concerns. We absolutely have to have an honest debate about what is causing these impacts.

Mr. Huffman talked about things over which we should be outraged, and he is absolutely right. What is going on right now at Folsom is outrageous. But where is the outrage that there are going to be communities in the San Joaquin Valley that have no water?

I have watched the press talk about what has happened in Flint, Michigan, and the outrage over the governmental action in Flint, Michigan that put the population at Flint at risk. Where is the outrage that it is governmental policies that have created zero water supplies for communities in the San Joaquin Valley, disadvantaged communities that have no resources to respond to zero water supplies, as Mr. Costa said, that are a result of government action?

In 2015, the San Luis and Delta-Mendota Water Authority, which is a joint-powers entity created under California State Law that actually operates the Delta facilities of the Central Valley Project, estimated that the biological opinions cost 470,000 acre-feet of water. In January and February of this year, despite the improved hydrology and increased inflow, the Delta smelt biological opinion has cost 500,000 acre-feet of water. That is enough to irrigate 200,000 acres of land and to produce tens of thousands of jobs.

No one wants to see these species go extinct. In fact, one of the things we should be outraged about is the fact that over the last 20 years we have dedicated millions of acre-feet of water to the protection of these species, and the species have continued to decline. Today, the Delta smelt index is zero. The fish are gone. We should be outraged that nothing is being done to actually protect these fish.

[The prepared statement of Mr. Birmingham follows:]

PREPARED STATEMENT OF THOMAS BIRMINGHAM, GENERAL MANAGER, WESTLANDS WATER DISTRICT

Mr. Chairman and members of the subcommittee, my name is Thomas W. Birmingham, and I am the General Manager of Westlands Water District ("Westlands" or "District"). Thank you for the opportunity to appear before you today to testify on one of the most, perhaps the most, important resource issue facing the state of California, its broken water supply infrastructure.

Westlands is a California water district that serves irrigation water to an area of approximately 600,000 acres on the west side of the San Joaquin Valley in Fresno and Kings counties. The District averages 15 miles in width and is 70 miles long. Historically, the demand for irrigation water in Westlands was 1.4 million acre-feet per year, and that demand has been satisfied through the use of groundwater, water made available to the District from the Central Valley Project under contracts with the United States for the delivery of 1.19 million acre-feet, and annual transfers of water from other water agencies.

Westlands is one of the most fertile, productive and diversified farming regions in the Nation. Rich soil, a good climate, and innovative farm management have helped make the area served by Westlands one of the most productive farming areas in the San Joaquin Valley and the Nation. Westlands farmers produce over 50 commercial fiber and food crops sold for the fresh, dry, and canned or frozen food markets; domestic and export. These crops have a value in excess of $1 billion.

In April 2011, I testified at a field hearing of the subcommittee in Fresno, California. At the time I observed that it was ironic that the subcommittee was in Fresno to hear about drought and the impact of drought on jobs at a time when California's reservoirs were full and rivers, streams, and flood control by-passes were running high. In the years subsequent to 2011, hydrologic conditions in California were dramatically different; in the 4 years after 2011, California experienced a prolonged drought. However, the wet hydrologic conditions in 2011 and the 4 subsequent years of drought were not an anomaly. Floods and drought, the continual alteration between these two extremes, is part of the natural cycle of life in California. And California's water supply systems were designed to help the state withstand the impacts of extended drought.

Indeed, the "firm yield" of the Central Valley Project was historically defined as the measure of the availability of water to meet authorized purposes of the Central Valley Project based on the assumed operations of the Project throughout the simulation of the critically dry 1928–34 period, the most severe drought in California's recorded history. Bureau of Reclamation ("Reclamation") decisions concerning the quantities of water that would be made available under water service contracts were based on this measure.

Prior to the enactment and implementation of the Central Valley Project Improvement Act and the application of the Endangered Species Act to the operations of the Central Valley Project, Reclamation's estimate of the availability of water to meet authorized project purposes during extended drought was reasonably accurate. This is reflected by allocations to south-of-Delta Central Valley agricultural water service contractors during the 1987–1992 drought. During the 6 years of that ex-

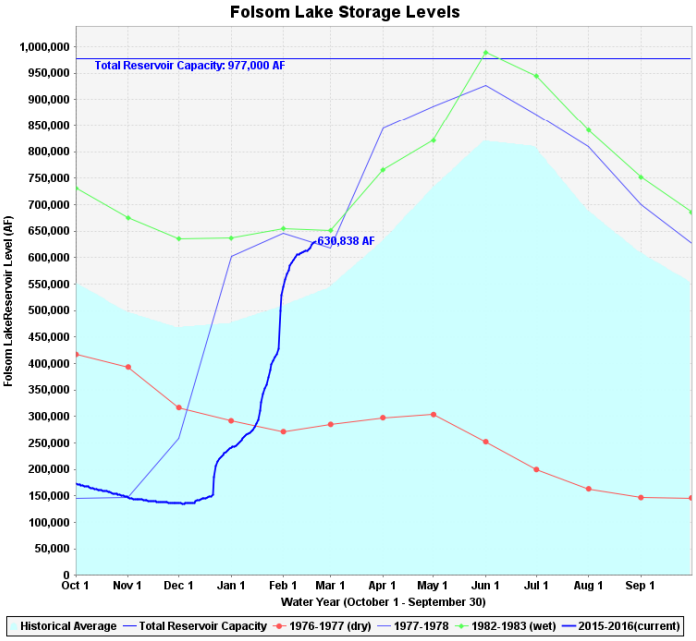
tended drought allocations were 100 percent, 100 percent; 100 percent; 50 percent, 25 percent, and 25 percent.

Allocations to south-of-Delta Central Valley agricultural water service contractors during the 2012–2015 drought demonstrate the degree to which restrictions imposed on operations of the Project have reduced its deliver capability. However, to put the 2012–2015 drought into perspective, it must be noted that 2010 and 2011, the two hydrologic years preceding this most recent drought, were above average and significantly wet, respectively. Notwithstanding these wet conditions in 2010 and 2011, the allocation to south-of-Delta Central Valley agricultural water service contractors in 2012, the first year of drought, was only 40 percent. In 2013, 2014, and 2015 the allocations were 20 percent, 0 percent, and 0 percent, respectively. Moreover, in 2014 and 2015, north-of-Delta agricultural water service contractors and Friant Division Class I contractors also received zero allocations. For the first time in the history of the Central Valley Project, releases had to be made from Millerton Reservoir on the San Joaquin River to meet the United States' obligation to the San Joaquin River Exchange Contractors, and Reclamation was unable to meet its core obligations to Sacramento River settlement contractors and refuges. Stated differently, in the third year of a drought, a drought which was not significantly more severe than prior extended droughts, the Central Valley Project was incapable of meetings even its most basic obligations.

As anticipated, 2016 is an El Niño year and the hydrologic conditions have improved dramatically. According to the California Department of Water Resources' February 1, 2016 manual snow survey, rainfall and the Sierra Nevada snowpack's water content are both markedly improved this water year, and storage in the state's major reservoirs also has increased significantly since January 1. Rainfall in the three regions (northern Sierra Nevada, central Sierra Nevada, and southern Sierra Nevada) tracked by DWR was 123 percent of the historical average between October 1 and January 31. In addition, the water content of the northern Sierra Nevada snowpack was 120 percent of average for the date.

The dramatic improvement of storage in Folsom Reservoir, a Central Valley Project reservoir that has received widespread media attention during the drought, is shown in the graph below prepared by the California Department of Water Resources (Exhibit 1). In fact, storage conditions have improved to the point that on or about February 10, 2016, Reclamation significantly increased releases from Folsom Dam to comply with flood control criteria established for the reservoir.

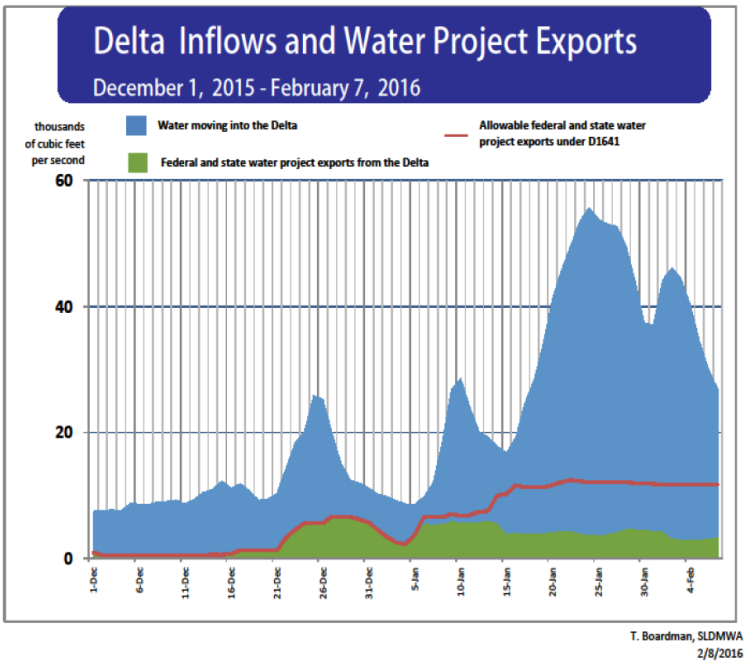
Exhibit 1



However, despite improved hydrologic conditions, the outlook for water supplies from the Central Valley Project has not significantly improved. Westlands currently forecasts that the initial allocation for south-of-Delta Central Valley Project agricultural water service contractor will, for the third consecutive year, be zero, and the allocation is likely to remain at zero. In addition, I am informed that Reclamation has informed the San Joaquin River Exchange Contractors and Friant Division contractors that it is likely releases from Millerton Reservoir will, for the third consecutive year, have to be made to satisfy the United States' obligation to the Exchange Contractors. And despite flood control releases having to be made from Folsom Dam, pumping in the Delta has been reduced.

Reclamation's current inability to make water available to large areas of the Central Valley Project despite improved hydrology is a function primarily of constrains imposed on Project operations under the 2008 biological opinion for the protection of Delta smelt. This fact is illustrated dramatically by the graph below (Exhibit 2), which depicts Delta inflow and rates of pumping at the Central Valley Project and State Water Project southern Delta pumping plants from December 1, 2015, through February 7, 2016. The red curve on Exhibit 2 indicates the rates of pumping permitted under Water Right Decision 1641, the California State Water Right Decision that established operational criteria intended to protect fish and wildlife resources in the Delta. As depicted in Exhibit 2, in early January 2016, when the El Niño rains began to produce increased inflow into the Delta, rates of project pumping were decreased, rather than increased as permitted under D–1641. The decreased rates of project pumping were implemented to comply with the reasonable and prudent alternative established by the Delta smelt biological opinion, and between January 5 and February 7, the Central Valley Project and the California State Water Project lost a combined 397,000 acre-feet.

Exhibit 2



Losses of water resulting from the Delta smelt biological opinion have continued to accumulate, and it is presently estimated that the losses exceed 500,000 acre-feet. The irony, some might say absurdity, of Central Valley Project operations in this El Niño year is demonstrated by a comparison of cumulative Delta pumping by the Central Valley Project for the period from October 1 through February 7 for the 2015 and the 2016 water years. Despite dramatically improved hydrologic conditions in 2016, the Central Valley Project has pumped significantly less water this year,

more than 200,000 acre-feet less, compared to the same period of the 2015 water year.

I hope my testimony has made it clear that there is a complete disconnect between hydrology and Central Valley Project water supply under the 2008 Delta smelt biological opinion. Since the beginning of December 2015, two Delta smelt have been observed at the fish recovery facilities operated at the Central Valley Project and California State Water Project pumping plants. (These two observed fish are expanded to eight for purposes of the incidental take level established under the Delta smelt biological opinion.) But for reasons beyond explanation by me, Reclamation and the Fish and Wildlife Service have adopted very conservative decisions concerning compliance with the biological opinion's reasonable and prudent alternative.

It is beyond reasonable dispute that the continued, prolonged water supply shortages being suffered in the San Joaquin Valley are the result of policy choices made by the Federal Government, not by hydrologic conditions. As a consequence, it is unlikely that the current El Niño conditions will produce any water supply benefits.

I would welcome any questions from members of the subcommittee.

Dr. FLEMING. Thank you, Mr. Birmingham, and thank you, witnesses, for your testimony. At this point we would like to begin our questions. To allow all Members to participate and ensure we can hear from all the witnesses today, Members are limited to 5 minutes for their questions. I now yield myself 5 minutes for questions.

Back to you, Mr. Birmingham. Some have opposed legislation because they say Federal agencies have discretion and, therefore, Congress should not meddle in this discretion. Are the agencies using that discretion?

Mr. BIRMINGHAM. Well, the agencies, Mr. Chairman, are exercising their discretion, but they are not exercising it in a way to maximize water supplies. To the contrary, they are exercising the discretion in a way to operate the project in a very conservative way. By that I mean they are doing everything that they can to avoid the take of listed fish at the two pumping plants in the south Delta.

So, discretion is being exercised, but it is not being exercised in a way to make water available for people.

Dr. FLEMING. OK, thank you.

Now, Mr. Barbre and Mr. Bettner, is legislation necessary to help bring Federal fixes to California, since the Federal Government created some of these problems?

Mr. BETTNER. In my oral and written testimonies, we have some specific recommendations we believe that can be done now that are not controversial, like other things: streamline permitting for projects, particularly for environmental restoration projects, would be helpful. We have included a discussion on new storage—I think, again, looking at new ways to permit storage. Strategic storage that would benefit the environment would be another way.

These are things that can be done now. They are not controversial, and will have immediate impacts on improving the project, the operations, and the environment.

Dr. FLEMING. Mr. Barbre?

Mr. BARBRE. I would concur with that. I think the Federal Government could do quite a bit for local projects and doing a one-stop period of time to challenge everything.

For instance, trying to build a de-sal plant in Southern California, it is probably $75 million in up-front studies in permit-

ting and 35 different permits you have to obtain between the state and Federal system. It is a tremendous burden on local entities, because every step of the way you can be challenged under a whole host of state and Federal statutes. So something like that, to make it easier to develop some of these projects, would be significant assistance.

Dr. FLEMING. OK. Again, to Mr. Barbre, how did Southern California prepare for the future following the 1977 drought?

Mr. BARBRE. Yes. Great question. We did what most people have done, historically. We built up our storage, we developed new technologies, we have developed recycling. We have de-sal plants. We just had a de-sal plant that came on in Carlsbad. We have one plant in Huntington Beach, one in Dana Point.

We spent a tremendous amount of money building storage. We built Diamond Valley Lake, which was $2 billion. We built a tunnel through the mountains called the Inland Feeder, which gives us more operational flexibility. We spent over $2 billion in upgrading our various treatment plants, whether it is getting ready for the next earthquake, whether it is a regulatory piece, things like that, and we also did a lot in water transfers.

One of the challenges in water transfers, today, for us in the state of California, there are a lot of willing sellers, but you cannot move it south through the Delta. In the early 1970s, and I put this in my written testimony, the Delta Environmental Advisory Committee, everybody agreed—the fisheries, the environmental community, labor, north/south of the Delta folks, farmers—they all agreed you need to do something to fix the Delta, you need to have some conveyance around the Delta. Otherwise, you are going to force the Delta to become a conveyance facility, which will destroy the Delta. That is what we are witnessing today, because we did not build that.

Dr. FLEMING. Right. And then back to you, Mr. Birmingham. What did the Federal Government do after the 1977 drought in California?

Mr. BIRMINGHAM. Exactly the opposite of what was done in Southern California. Southern California reacted to create flexibility. The Federal Government, since 1977, has imposed layer upon layer upon layer of restrictions that have constrained the use of water resources in the state of California.

It is ironic to me that I hear people talk about you cannot pass legislation because we need to respect state water rights. But in 1992, George Miller introduced and ultimately had it enacted, the Central Valley Project Improvement Act, a Federal statute that reallocated more than 1 million acre-feet of water from farmers to the environment. That was a Federal law. And what we are talking about today are Federal laws, the application of the Endangered Species Act, that are constraining the operation of these projects. That is a Federal law.

Dr. FLEMING. OK, thank you. The Chair recognizes Mr. Huffman. Yes, go ahead.

Mr. HUFFMAN. I think we are going to be sharing this microphone, Mr. Chairman.

I think we need to all be very careful about the facts on a subject as potentially loaded as California water. That Central Valley

Project Improvement Act did not affect any state water rights. In fact, it reallocated within the Federal water right of the Central Valley Project. There is no conflict between the CVPIA and the principle of respecting state water rights. It simply changed the way certain contractors, especially junior contractors like Westlands, within the CVP got their water. It changed Federal law, but not state water rights.

Similarly, Mr. Birmingham, I am happy to be corrected if I get a fact wrong, but I try to be very careful. When you cite data from one water year to suggest that when I made a quote about a prior water year I was wrong, that is not being very careful. So I want to urge everyone to be careful and precise when we talk about this subject.

Mr. BIRMINGHAM. Well, Mr. Huffman——

Mr. HUFFMAN. No, I listened carefully and politely while you misstated the facts, and so you get to listen carefully to my correction of them.

Mr. BIRMINGHAM. Then I hope I have an opportunity to——

Mr. HUFFMAN. My friend from Orange County——

Mr. BIRMINGHAM [continuing]. Correct the correction.

Mr. HUFFMAN. This is my time, Mr. Birmingham, you had your time.

I am glad that my friend from Orange County brought up 1977 and Marin County, and you are right, Marin County was bailed out by an emergency pipe across the Richmond Bridge with water from the Metropolitan Water—we are probably not grateful enough for what happened in 1977. But I believe I heard you say that after all the investments that Orange County did after that drought—which I am a big fan of, by the way, you have done terrific work down there, and put you in a good position for this current drought—that Marin County had to string a pipeline again in 2014. That is factually incorrect. You have some bad information there.

In fact, Marin did essentially what Orange County did. After that 1977 drought, they invested in new storage, they invested in agreements with their neighbors to the north for imported water, and they invested heavily in water recycling and conservation. As a result, Marin County came through about as well as Orange County for this current drought. So, I wanted to point out that important clarification, again urging everyone to be careful as we talk about this issue.

I want to ask you, Mr. Murillo, about hydrology. In your view, what is the primary factor driving low water supply allocations, hydrology or endangered species pumping restrictions?

Mr. MURILLO. Yes, I appreciate the question, Congressman. Right now, we cannot ignore the fact that we have had low hydrology the last 3 or 4 years. It is there. And that is what has impacted our carryover, and that is what has impacted our operations.

In addition to that, we do have some biological opinions that we have to comply with. Those also affect the species. So, the hydrology is going to affect the yield, it is also going to affect how we operate to protect the species.

Mr. HUFFMAN. One other statement that we often hear is about zero water allocations. My colleague mentioned that the San Joaquin Valley has gotten zero allocation, is likely to get another

zero allocation of surface water. I just want to clarify. The whole Valley has not gotten a zero allocation, or isn't getting one. That applies only to junior contractors of the CVP, right?

Mr. MURILLO. Yes, it does.

Mr. HUFFMAN. And only to their surface water supplies, as opposed to other supplies they may have?

Mr. MURILLO. Yes. Right now, the senior exchange contractors are going to get water, and so will the——

Mr. HUFFMAN. I am not trying to trivialize the very significant impact that has on junior contractors, it is very real. But the bigger picture is important, too.

And tell us about senior water right holders. For example, right next door to Mr. Birmingham you have the San Joaquin Valley exchange contractors. Tell us about their allocations through the drought and for this coming year. What do you think they are likely to get?

Mr. MURILLO. Well, about a week or so ago we were believing that they would be able to get a full contract volume.

Mr. HUFFMAN. A hundred percent?

Mr. MURILLO. A hundred percent. But that has changed a little bit within the last year, because February was not an average precip month. So, it just depends on how we move forward, whether they are going to get a full allocation or not, along with the refuges.

Mr. HUFFMAN. OK. Often when we hear about pumping restrictions in the Delta, those restrictions are sometimes for water quality purposes that are required to maintain outflows to the whole system works, and so you are not pumping brackish or salt water at the Delta pumps.

But sometimes these restrictions are conflated with Endangered Species Act pumping restrictions. Can you talk about the difference between the two, and tell us what has had a bigger impact on Delta pumping levels during this drought?

Mr. MURILLO. Yes. So, our pumping does get affected by the D–1641 state requirements, the water quality requirement, and then also the biological opinion. I think there are quite a few days throughout the year, throughout the last several years, that water quality has been the factor affecting our pumping at the Jones and State pump facilities.

But, we have to push salinity out of the Delta, so the water goes out into the ocean. And then, with respect to the Delta smelt, we have to protect the Delta smelt. And that is influenced by the San Joaquin River reverse flows, but that will also affect our pumping.

Mr. HUFFMAN. Thank you, Mr. Chairman. I will have a few more for the next round, if we have one.

Dr. FLEMING. Thank you. The Chair recognizes Dr. Gosar.

Dr. GOSAR. Thank you very much.

Mr. Barbre, you testified clearly that the status quo is not working for Orange County water users. Can Californians conserve their way out of this drought?

Mr. BARBRE. There is a false belief within the state of California that if you have grass in your yard or have a swimming pool, that is a cause of the drought. In fact, Metropolitan invested $400 million telling people to tear out their grass. We can conserve

all we want, but it is not going to make a long-term difference. We still need storage. Storage is what has gotten us through this. And you know this all well, being from Arizona. Having that significant storage, and being able to ride it up and down, is incredibly helpful.

So, probably the most important thing Southern California has done has been to develop their storage above ground, below ground.

Dr. GOSAR. I went last year to the Poseidon Water Carlsbad desalinization plant. Oh my God, it took over 20 years to get that permitted. Jiminy Christmas.

And you are exactly right, the Tale of Two States, Arizona versus California, for the most part. They are very different looking in infrastructures.

But I want to reiterate for those that are watching. With recycling and water, can't we create more water without having to put more storage in place? People do not quite understand this.

Mr. BARBRE. Yes, and you need someplace to put it, because you are not always going to have constant flows of water usage. You need someplace to put it for those times when it is not needed.

We have had people that have challenged us and said, "Why don't you just walk away from the Bay-Delta? That is worth 2 million acre-feet to us." Well, to replace that, whether it is in desal plants or whether it is in recycling, we would need a plant about every 3 miles from Ventura down to San Diego. I don't think people would want that, and it would be incredibly expensive, and it would not be nearly as reliable. We would have to completely replumb the system, because we use gravity, and we try to generate power as we let the water flow, and we would have to pump it all up into the hills again to let it flow back. So, it is just not as practical.

It is part of the portfolio. We need 30,000–50,000 acre-feet a year, just because of people moving to Southern California, because it is 75 degrees out there today. That is why people move there.

Dr. GOSAR. Wonderful. Mr. Birmingham, conservation last year reportedly saved 1 million acre-feet in California. Yet, you testified today that communities in your area lost 500,000 acre-feet since January 1 to the ocean. What kind of message does that send to San Joaquin Valley?

Mr. BIRMINGHAM. That nobody cares. Very simply, nobody cares. I mean, I appreciate Mr. Huffman's expressions of sympathy, and his characterization that we get zero because we are a junior contractor, but the reality is the Central Valley Project was designed so that it could deliver water during extended droughts, the most severe drought in the history of the state of California. And the amount of water that the Bureau of Reclamation contracted with, including the junior contractors like Westlands—and I am using his term; I would not characterize it that way—the amount that we contracted for was based on the analysis of the firm yield of the Central Valley Project.

But what has happened over the course of the last 25 years is that the firm yield has been eaten away and eaten away and eaten away by different regulations. So, today, the Bureau of Reclamation not only cannot deliver us any water, when Mr. Murillo says that the exchange contractors are going to get their

full contractual volume, it is not going to come from the source anticipated. That full contractual volume is going to have to come from releases out of Millerton Lake, on Friant Dam. And that, prior to 2014, was never done in the history of this project.

Dr. GOSAR. Now, pointing to the screen, a chart is going to come up. The Delta outflow from one period in 2015 to the same period this year. Can you describe the significance of this chart? Nothing coming up?

[Laughter.]

Mr. BIRMINGHAM. Well, if it was the chart that was shown at the beginning of the hearing——

Dr. GOSAR. Yes, outflows.

Mr. BIRMINGHAM. What it depicts is the volume of outflow in 2015 compared to the volume of outflow in 2016. And what that shows is Mr. Murillo is absolutely correct: 2015 was a dry year, and exports were limited for much of the year because of water quality constraints under Water Right Decision 1641; 2016 is a wet year, at least it started out as a wet year.

So, we have increased Delta outflow, but yet we have exported less water than we did last year, in a dry year. Our experience in California is when the water is available you have to take the opportunity to capture it. We are doing exactly the reverse of that.

From December 1, 2012 through the end of February 2013, the projects lost 815,000 acre-feet at a time when we had hundreds of thousands of acre-feet of water flowing out of the Delta. Then it turned dry. If 2016 turns dry, then we will have lost maybe the only opportunity we had to capture some of the water flowing into the Delta.

Dr. GOSAR. I thank you, Mr. Birmingham, and yield back.

Dr. FLEMING. The gentleman yields back. Mr. Costa is recognized.

Mr. COSTA. Thank you very much, Mr. Chairman. I want to get some perspective here.

Mr. Murillo, would you consider the east side of the San Joaquin Valley, the Friant water users unit, a junior water rights holder?

Mr. MURILLO. What was that question, again?

Mr. COSTA. The Friant water users, would you consider them junior rights water holders, as was described?

Mr. MURILLO. For Friant?

Mr. COSTA. Right.

Mr. MURILLO. [No response.]

Mr. COSTA. No, and it got a zero allocation this year, a zero allocation before. Let's get a little more perspective. Yes, the exchange contractors should maybe get 100 percent of their water this year, but that is 200,000 acres plus. And the exchange contractors up in the Sacramento Valley, by the way, will be getting the same amount of water. But they are under 400,000 acres of productive land.

We have 6 million acres in California that we farm, 600,000 acres in the valley were fallow, fallow because they have no water. To compare one small area of the Valley getting, because they had the senior water rights, just like the city and county of San Francisco and the upper Sacramento Valley, and say somehow it

is all fine, it is not. You have 600,000 acres that were fallow last year, unplanted, period.

Now, let me also talk about another contradiction. I love the examples you gave in Marin, in Orange County, and Diamond Lake, which I helped the Metropolitan Water District with. And, guess what? A key component of using water tools to satisfy those regions involves storage, right? Yes. But when we talk about storage in the Valley, "Oh, no, we don't think we have to have storage. We don't think you ought to raise the gates at Exchequer or Lake McClure because you don't think we can use the same tools that you use." I don't get it. I don't get it. We ought to be fair and equitable for every region in California when we talk about the water tools that are available to solve those regional water needs for those areas.

Now, let me get to some questions here. Mr. Murillo, the amount of rainfall and snowpack that you have from the fall to the end of this water year, what allocation of water do you think will be made available to your contractors, both on the west side and the east, side, given the current status?

Mr. MURILLO. Probably, right now, we are looking at initial allocations. You know, it is going to be close to zero and——

Mr. COSTA. Zero, OK. Is it your opinion that the Central Valley Project will ever meet its contractual obligations to the junior contractors—it is the term we are using now—under the current regulatory structure?

Mr. MURILLO. Yes.

Mr. COSTA. You do?

Mr. MURILLO. If you are talking for the long term, yes. If you are talking this year, if you are talking whether we are going to meet that allocation——

Mr. COSTA. Is it your opinion that the co-equal goals of providing a more reliable water supply, and it appears it is being operated primarily for the purpose of the species recovery that, in fact, we can ever provide our commitments to the contractors with the current system?

Mr. MURILLO. I believe in the future we will provide allocations to the junior——

Mr. COSTA. Yes, but we have a historic delivery of 75 percent. Do you think you could do that with the existing system?

Mr. MURILLO. I don't know.

Mr. COSTA. I think not. Let's be candid here. It is very difficult.

What improvements do you think need to be made in order to meet those co-equal goals?

Mr. MURILLO. Like I said, in order for us to be able to improve the allocations to the junior right holders, we are impacted by the drought. We are going to have to have some wet years. We have flexible——

Mr. COSTA. No, but we need to fix a broken water system, don't you think?

Mr. MURILLO. No, the broken water system—what we are doing, we have WaterSMART programs for conservation——

Mr. COSTA. No, I know. But in the bigger picture, Mr. Murillo—you and I have worked on this for many years. If you do not use other water tools in the water toolbox—raising San Luis, raising Shasta, building——

Mr. MURILLO. Storage studies, yes.
Mr. COSTA. Right?
Mr. MURILLO. Yes, storage studies——
Mr. COSTA. For a growing state?
Mr. MURILLO. What is that?
Mr. COSTA. For a growing state, more demands on the water system?
Mr. MURILLO. Like I said, we are also doing storage. There are five storage studies, Congressman, that we are also working on, and we are going to complete——
Mr. COSTA. My time is expiring here, but I want to get to Mr. Pool, because it is good to see you, Richard, and I appreciate your efficacy on behalf of the salmon industry over the years.
You have a lot of experience and expertise. Do you believe that we can recover the salmon fisheries in California, of which I guess 90 percent now are not native, with doing other improvement conditions by simply water flows alone? I mean just using one tool—i.e. the flow of water, is that going to be enough to fix the devastated salmon runs?
Mr. POOL. If I understand your question, I don't think that is nearly enough. I think the biological opinions, the way they stand today, are about right. There are a number of science studies going on——
Mr. COSTA. How about the other impacts?
Mr. POOL. The other impacts, we do not have nearly the things going. There are predation impacts, there are things that are needed in flows, in habitat, a number of things for the salmon, and I think we are not doing those things. That has been part of the problem. We can blame the past for not doing the things that the system needed for a fix. But it is never too late to start, and we have a lot of projects that can help that situation. And, I think we need a whole bunch of stressor actions.
Mr. COSTA. Thank you. Mr. Chairman, this gentleman has been a respected expert for 30 years in this effort, and I think he has a big-picture view on all of the factors that are contributing to the decline in the fisheries. But we do not talk about those for reasons.
I thank you, Mr. Pool, for your comments.
Dr. FLEMING. OK. Mr. McClintock.
Mr. MCCLINTOCK. Our sound system works about as well as our water system, I guess.
[Laughter.]
Mr. MCCLINTOCK. Mr. Birmingham, you were about to make a statement regarding the relationship of the biological opinions on smelt to water pumping and were cut off. I would be interested to hear your answer.
Mr. BIRMINGHAM. Mr. McClintock, thank you. I am not sure specifically what you were referring to. If it was Mr. Huffman's——
Mr. MCCLINTOCK. Yes. That is specifically what I was referring to.
Mr. BIRMINGHAM. On July 16, 2015, Mr. Huffman, on the Floor of the House in the debate on H.R. 2898, said the following, and I will quote, "Facts are stubborn things."
Mr. MCCLINTOCK. No, I remember that. I was incredulous by his statement. You were in the process of correcting that.

Mr. BIRMINGHAM. Well, thank you, Mr. McClintock. I went back this morning and I looked. I was looking at the change orders for 2015, the 2-year period that he was referring to. I very quickly found a change order from the Bureau of Reclamation saying, "Reduce pumping at the Jones pumping plant to 850 cubic feet per second," the bare minimum. And the reason for it was "Delta smelt concerns."

So, in fact, over that 2-year period, that 3-inch fish did cost the projects water. And that was the point I was trying to make.

Mr. MCCLINTOCK. Thank you. Last year the House——

Mr. HUFFMAN. Will the gentleman yield for a correction?

Mr. MCCLINTOCK. No, Mr. Huffman, I respected your time, I would ask you to respect mine.

Mr. HUFFMAN. You don't have to yield.

Mr. MCCLINTOCK. Mr. Birmingham, last year the House adopted the Valadao bill. It is sitting in the Senate right now. Had that been enacted into law, what impact would it have made on our current situation?

Mr. BIRMINGHAM. If that bill had been enacted, of the 500,000 acre-feet of water that was lost, compared to Water Right Decision 1641, we would have been able to capture at least 200,000 acre-feet of that water.

Mr. MCCLINTOCK. And how many residential customers would that serve?

Mr. BIRMINGHAM. It would serve 400,000 households of 4 people.

Mr. MCCLINTOCK. So about 1½ to 2 million residential users for a year.

Mr. BIRMINGHAM. Yes.

Mr. MCCLINTOCK. And that is just what would have been saved if that bill was currently law.

Mr. BIRMINGHAM. Yes.

Mr. MCCLINTOCK. I think the Ranking Member was right, that the current releases from Folsom are due to flood control regulations that are badly outdated. Yet, the water, once that has been released for flood control purposes out of Folsom, could have been pumped south to be stored in reservoirs downstream. Could it not have?

Mr. BIRMINGHAM. Yes. In fact, historically, when water was released from Folsom——

Mr. MCCLINTOCK. But we cannot do that because of environmental regulations that are not only outdated, but, in many cases, have been found to be either defective or actually fraudulent.

Mr. BIRMINGHAM. Yes. And if I can elaborate——

Mr. MCCLINTOCK. Perhaps we ought to be revisiting both of those sets of regulations, the outdated flood control regulations, as well as the outdated environmental regulations that have prevented hundreds of thousands of acre-feet that are being released out of dams like Folsom for flood control, so that they can be stored downstream for beneficial human use in dry periods.

Mr. BIRMINGHAM. The simple answer to that question is, absolutely, yes.

Mr. MCCLINTOCK. Mr. Murillo, how can we expect residents to continue their Herculean efforts to conserve water, to stretch every drop, to watch their lawns turn brown, to watch their prized

gardens wither and die, when they see the government releasing tens, and in some cases hundreds, of thousands of acre-feet of water to adjust river temperatures for fish in the middle of the worst drought in the recorded history of California?

I am very concerned that the lesson that this government is teaching is that it does not care about the residential needs of users. And, therefore, I wonder why those residents should care to continue these enormous efforts that they are making to conserve when they watch this enormous, outrageous amount of wasted water coming out of our dams. Do you worry about that?

Mr. MURILLO. Well, when we operate the CVP, we have to not only take a look at providing the project yield, but we also have to comply with the law. And, the law says that we have to protect a certain species. It is the Delta smelt and the winter-run salmon; and we are doing that.

I know that people are disappointed with the operations, but that is the job we have.

Mr. MCCLINTOCK. Mr. Birmingham was right. These laws were put in place to protect the environment, like the Delta smelt. How is the environment doing after all of these years of experience with these laws and regulations?

Mr. MURILLO. Well, I know that the abundance of the Delta smelt is pretty low right now.

Mr. MCCLINTOCK. So, we have not only decimated our economy, we have not only done enormous harm to millions of people, but we have not accomplished the stated purpose of these laws, which was to improve the environment. In fact, I would say we have actually harmed the environment. They want to tear down the Iron Gate Dam on the Klamath, which would take with it the Iron Gate fish hatchery that produces 5 million salmon smolts every year. This is just lunacy.

Dr. FLEMING. OK. The gentleman yields. Mr. Lowenthal is recognized.

Dr. LOWENTHAL. Thank you, Mr. Chair. I want to thank all the witnesses for coming today. After listening to this discussion, I want to preface my questions with kind of how I am framing what we are talking about.

We have many important water decisions to be making in California. Much of our state is hurting, as we have heard today. It is frustrating. We have heard that from our witnesses. But, we should also keep in mind that the dominant factor in our decreased water availability and decreased pumping out of the Delta is the drought. And the drought was not caused by the Delta smelt.

The truth is that the effects of the Endangered Species Act on our water supply are only around the edges of our state's water balance. Let's really be honest. We have a much bigger and harder problem to address to get our house in order and to create a long-term solution for our water system that our future and our entire state depends upon.

These are problems that are going to take a great deal of courage, and to find solutions it is going to require compromises by all sides. Much of that solution—and I am going to say that again—much of that solution lies in investing in water infrastructure, big and small, that will allow us to use less water, use the same water

over and over again, and capture and save more water for later use.

I am—just an example, I am proud to represent two world-class water districts that have been leading the way on building sustainable water systems using less water and reducing their dependence on imported water. For example, the Orange County Water District, different than the Municipal Water District, in partnership with the Orange County Sanitation District, has built the world's largest potable water reuse facility, the world's largest.

That system now produces 100 million gallons per day of local drought-proof water supply, which is enough water for 850,000 people. Other nations throughout the world come to Orange County to understand this engineering feat, which was created by the Orange County Water District, in partnership with the Sanitation District.

Just to the north, the city of Long Beach, its mayor, Robert Garcia, is working to increase our storm water capture from the San Gabriel River, and to complete a recycled water purification plan that will reduce imported water demand by 1.9 billion gallons per year. Thousands of drought-tolerant landscapes have been installed in homes and businesses in the Long Beach and Orange County area, replacing 2.3 million square feet of turf grass. And Long Beach is also planning to use recycled water for cooling of all of its power plants.

These are the kinds of investments that have helped to protect my district in Southern California from drought and import dependence, and have set an internationally-recognized standard for sustainable water use. But those infrastructure investments took a lot of time, planning, and lots of capital. Let's be clear about that.

We should be encouraging all of our water districts to make these kinds of long-term investments, because unfortunately, if we are really going to face this, we will have an even bigger problem in today's drought that we all must face, and that is climate change. And, we have not discussed that at all. We have just summarily dismissed that this is just the beginning.

The greatest driver behind long-term, as I will say again, is precipitation changes, climate change. And we need to acknowledge that our universities are telling us—for example, recently Stanford University released a study that by 2030 we can expect nearly all dry years to be abnormally warm. In other words, many more droughts are coming, like the one like we have now, in the near future because of climate change.

This brings me to a question now for Mr. Murillo to focus on where we are going in the future.

What is the Bureau of Reclamation doing to prepare for the increased frequency of drought conditions that our universities are predicting? That is where we are going. I want to know what you are doing about what we are hearing from our universities.

Mr. MURILLO. Thank you for a good question, Congressman. Just a quick response. You know we are doing storage studies. There are five storage studies we are doing. There is the WaterSMART program, which is conservation. Then we also have these climate change pilot programs that look at our operations.

Dr. LOWENTHAL. Thank you. I would continue this in questions, but I yield back.

Dr. FLEMING. The gentleman yields. Mr. LaMalfa.

Mr. LAMALFA. Thank you, Mr. Chairman.

First of all, I would like to enter into the record a written testimony from a long-time constituent, Ken LaGrande, who is a rice farmer from Northern California. What he underlines is that the prospective Federal agencies' role in the refusal to declare an end to the drought means a loss of control, power, authority, value, or relevance. And in light of the situation at Folsom Lake, you could argue that perhaps the drought is over for that entity, in light of over-doubling of releases because of flood control needs, which leads to many other questions.

So, I would like to enter that in the record, please.

[No response.]

Dr. FLEMING. Without objection, so ordered.

[The letter entered by Mr. LaMalfa for the record follows:]

PREPARED STATEMENT OF MR. KEN LAGRANDE, RICE FARMER FROM NORTHERN CALIFORNIA

As a fifth generation farmer and landowner in the Sacramento Valley, I have lived the ups and downs of our region's agricultural economy—ups and downs that are driven as often as not by issues of water supply. Unfortunately, negative fluctuations in our regional water supply are increasingly being driven by forces other than Mother Nature.

With that said, I am strongly encouraged by Mother Nature and her recent delivery of El Niño. Its ongoing performance has already brought us an above average snow pack, rising reservoir levels across the state, and noticeable improvements in groundwater measurement.

The fact that the U.S. Bureau of Reclamation is currently dumping water from Folsom Reservoir for flood control purposes should be another encouraging sign of ample water supply. I fear, however, that it is yet another example of the so-called "regulatory" drought.

And I fear that it is the harbinger of things to come—a refusal to declare an end to the drought by those for whom an end to the drought means a loss of control, power, authority, value or relevance.

Constituents are watching as these high flood flows surge down the American River at the command of the Federal Government, and at the same time they are staring at their notices from the State Water Resources Control Board and the Governor's Office as to the continuing severity of our drought in California. This is not sitting well out with many residents of Sacramento, not to mention the Sacramento Valley.

To be certain, as a slap in the face to every average resident of Sacramento who is doing their part to conserve water, this Folsom release situation is critical. But, it is also critical because, as you know, the California water storage system is operated on an integrated basis; water supply in Shasta, Oroville, Folsom and elsewhere is all taken into account when needs and uses are allocated. The point? Less water in Folsom means more demand on water in other reservoirs—namely Shasta and Oroville. Regulatory drought.

The good news? Clearly, the inflows at Shasta appear to be on track to meet the contractual thresholds for full 100% deliveries to Sacramento River Settlement Contractors. For that, we can all be thankful.

We are already hearing cries, however, from the litigious environmental groups such as the Ms. Kate Poole at the Natural Resources Defense Council that the drought is not over and that the "fish flows" must come first. This must be dismissed categorically.

It will not be easy, however. The State Water Resources Control Board, led by Chairwoman Felicia Marcus and Executive Director Tom Howard, is by all appearances extremely reluctant to acknowledge that the drought is over or that any of their draconian emergency powers may be relaxing anytime soon.

A concerted effort by and between these litigious environmental groups, the SWRCB and even several Federal resource agencies appears to be under way to minimize agricultural diversions and certainty of water supply in California. The mantra seems to be: if Mother Nature will not cooperate, we will.

The state of things today in the Sacramento Valley? Mother Nature has delivered on her promise and has ended the recent drought. Reservoirs are filling and snow is continuing to fall. But there are those who tasted the control of the supply of water during the recent drought—and found it to their liking. They are giving clear evidence—to anyone who is paying attention—that they will fight tooth and nail to maintain the fiction that the drought is continuing, thereby preserving their mouthful of power. And control.

I am testifying today that in my view, the very foundations of the entire California water system are under serious attack. And not by Mother Nature. But from within. It is incumbent upon this Congress to be vigilant in protecting the rights and properties of the United States and of one of the largest economies, agricultural and otherwise, within this great Nation.

May God continue to bless us with rainfall. And may God continue to bless the United States of America.

Thank you.

Mr. LAMALFA. Thank you. I will start out with Mr. Bettner from the neighborhood here.

In your written testimony, you suggest it seems that the NOAA Fisheries are demanding that Reclamation operate the CVP in a way that is going to result in shortages to water users, even when the drought situation, it could be argued, is easing on that system. Can you explain more about these concerns? And, if you can, would you discuss the role you see the state playing in dictating how the CVP is operating on that Sacramento River system?

Mr. BETTNER. Sure. A lot has been discussed about Delta operations and Delta smelt. But, things downstream like the Delta affect operations upstream and upstream reservoirs.

For us, an endangered winter-run is currently driving a significant portion of the upstream operations of the Central Valley Project. So, that affects Lake Shasta, which in turn affects Lake Oroville, which also affects Folsom Reservoir. We are seeing that just the number, and how the fishery agencies are calculating the number of fish surviving, while it is challenging to monitor on the river, we just think a better job needs to be done, potentially——

Mr. LAMALFA. Let me jump in. You alluded a while ago that there is a portion of the season during the high flows where they are not even monitoring, but they are modeling off of that, correct?

Mr. BETTNER. No, what actually happens is during high-flow events, and we have this with our fish screen, as well, you cannot operate the traps because of debris, safety issues. So, what happens is, you use data before and after those high flow events to average in what the number of fish would have moved through the system were.

We know that salmon moved during high flow and turbid events, and what happens is that those fish are not caught or counted.

Mr. LAMALFA. Well, they have to basically model or guess at what is happening during the high events——

Mr. BETTNER. Yes. And, there is a current under-projection of the number of fish moving, which says there is an extremely low count, artificial low count. This is evidence that is fact with the late fall run. The late fall run currently has only a 3 percent annual survival rate. If you look at the same data, the same calculations, the same tools that they calculate how the late fall run are surviving, from 2002 to 2012, the average survival is 3 percent.

So, that number alone would say that run should not be sustainable. That run should have died and not come back with those numbers that are that low. And, that has been the same concern expressed on winter-run of the 3 and 5 percent.

So we know, based on the late fall run, the data is not right. The calculations cannot be right to have numbers that low. And that is the same number and the same method that is being calculated for winter-run. And that is driving the operation of Lake Shasta, which drives our water supply, which drives how the Bureau ultimately operates the rest of the system.

Mr. LAMALFA. Do you believe the CVP is being solely operated for the benefit of the winter-run only?

Mr. BETTNER. The upstream reservoirs, yes. And that ultimately does affect the Delta, as well.

We believe the fishery agencies are doing the best they can with the data they have, but they need better monitoring, like I said, additional monitoring. We have talked to the agencies about even potentially helping fund some of those activities, so we can get better data to make better decisions.

Mr. LAMALFA. Speak to us a little bit about the regime of cold water being held behind in Shasta Dam where, right now, the operation did not allow releases of significant Ag. water, I believe, until May 1 last year. And there is discussion of, and talk about that, and seasonal——

Mr. BETTNER. Yes. Well, the last 2 years, there have been limited diversions in order to protect the cold water pool. This year, there is potentially even more.

So, while we have water rights in our contract that say we may get X supply, right now we don't know what the Bureau is going to give us.

Mr. LAMALFA. Talk about the planting season. My understanding is that May 1 is when the first water can be drawn. Now they are talking about mid-June. My understanding is farmers tend to plant in the spring, and they need water starting maybe in April or May. So, if we are putting off deliveries to mid-June or——

Mr. BETTNER. We don't know. I mean today I cannot tell you when we are going to get water, how much. We are currently——

Mr. LAMALFA. You cannot tell your banker when you are going to get water, or——

Mr. BETTNER. We cannot tell our growers right now what we are going to——

Mr. LAMALFA. Growers? Yes.

Mr. BETTNER. And we are a senior water holder. We are trying to do our own modeling, provide that. We work with the Bureau closely, but we have the State Board asserting its influence, as well. We are trying the best we can——

Mr. LAMALFA. So, your growers are in there with their banker right now, trying to predict if they are going to get a crop loan this year. They cannot tell their banker if they are going to get a water supply on time or at all, or is it going to be in September, after they have already harvested.

Mr. BETTNER. That is correct, we do not know.

Mr. LAMALFA. Thank you.

Dr. FLEMING. OK, the gentleman's time up. Mr. Denham is recognized.

Mr. DENHAM. Thank you, Mr. Chairman. First of all, let me say on record that the Ranking Member and I work very closely together on a variety of different issues, especially as they pertain to California. But on this issue, the arrogance to trivialize such a critical issue that affects so many people in the state of California and around the country, I think is disrespectful to the people in Porterville.

I mean, this Administration continues to talk about environmental and social justice. Yet, where is the social justice to large Hispanic communities in the Central Valley, like Porterville, that are now forced to use government showers that are brought in, or water that is now being trucked in? Where is the social justice of 34 percent unemployment going back up to 50 percent in large Hispanic areas like Mendota, or areas that Mr. Costa represents over in Los Banos?

This is not an ideological battle. This is not an election-season battle. This is a battle of basic necessities of life. This is a battle of whether or not they are going to have food, or whether we are going to truck it in from other countries. This is not an issue to be trivialized. On election season?

Mr. HUFFMAN. Will the gentleman yield?

Mr. DENHAM. We have 2-year terms.

Mr. HUFFMAN. Will the gentleman——

Mr. DENHAM. Every year is an election year. Every year is an election season. Every year we need to continue to bring up bills and amendments to address this important issue.

On the environmental justice side, I plant trees, and those trees actually clean the carbon out of the air. If we are going to talk about climate change, shouldn't we be considering the trees that we plant? Shouldn't we actually be talking about the cleanest energy there is, of hydro? But yet in the climate change issue, the social environmental justice issue does not consider hydraulic energy.

Mr. HUFFMAN. Would the gentleman yield?

Mr. DENHAM. I only have a couple minutes to ask a couple questions. I hope we will have a second round, because I know you have more, and so do I, but obviously, this is an issue that goes across party lines and should be addressed by Californians and Americans. It is a real social injustice, and a real environmental injustice. We cannot just talk about it or ship in supplies because we are afraid to address this on such a huge magnitude issue.

One of the focuses of this hearing has been whether reducing the Delta pumps has been helpful to endangered species. I think that is debatable. I think we ought to continue to debate it, and we ought to continue to come up with sound science.

But yet, 2 weeks ago, this subcommittee talked about non-native striped bass predation, how big of an impact that has to the overall fish population. Here, on one hand, we are trying to address the threatened and endangered species, yet we have a doubling goal on non-native predator fish. So, the predator fish that are eating 98 percent—Mr. Pool talks about 97 percent of the salmon that do not make it out to the ocean, be it 98 percent of them, by the Administration's own numbers, by NOAA's numbers, 98 percent of those

get eaten by the predator fish that, under CVPIA, we are supposed to double.

So, we are going to double the amount of fish that are eating the endangered species. It would seem like the Administration's goal is to kill the endangered species that we are spending millions and millions of dollars and millions of acre-feet of water, affecting all of California at the time of a fifth-year drought.

I would ask specifically, controlling predation seems like the easiest of fixes, and certainly, if you want to save the endangered species, which certainly seems to be an easy fix to fish or address the predator fish population, I would ask each of you for a very, very brief answer on whether you think predation is something that can help to solve this overall, starting with Mr. Barbre.

Mr. BARBRE. I cannot find much to disagree with your comment. Obviously, these predators are killing what we are supposed to be protecting. It is a two-edged sword. So, I concur with you.

Mr. DENHAM. Thank you. Mr. Bettner?

Mr. BETTNER. I would agree, as well. I mean we have seen evidence of predation moving further up into the Sacramento River system, and it is being a significant issue, especially with winter-run that are holding upstream in the river longer. The longer they sit upstream before they move out, they are going to get predated on. So, I totally agree.

Mr. DENHAM. Thank you. Mr. Pool?

Mr. POOL. I would agree. Predation is a huge, huge problem. And it needs dealing with. We have developed 39 engineering projects that will deal with predation. There is massive predation in the Delta that can be taken care of with projects, and we cannot get those projects moving. So, I agree with you, we need to do the things that we have identified.

Mr. DENHAM. Thank you. Mr. Murillo?

Mr. MURILLO. Yes, I would also agree that predation is one of the stressors for the endangered species.

Mr. DENHAM. Thank you. Mr. Birmingham?

Mr. BIRMINGHAM. There is unanimity here.

Mr. DENHAM. Thank you. Well, it is nice that we can all agree on one thing. I actually have a bill that has just been introduced. I would love to have all of your support on it.

If I could just follow up with one last question, I will make it brief, Mr. Chairman.

Mr. Murillo, one of our Senators introduced a California drought bill. In regard to Senator Feinstein's bill that she just introduced——

Dr. FLEMING. Wait, Mr. Denham.

Mr. DENHAM [continuing]. If enacted——

Dr. FLEMING. Mr. Denham, let's do this. We are going to have a brief round after this. So let's save that, because we need to go ahead and move on.

So, Mr. Newhouse, I will recognize you, and then we will come back for a 2-minute round.

Mr. DENHAM. Well, at this time I would be happy to yield back the time that I do not have left.

[Laughter.]

Dr. FLEMING. OK. I thank you for that.

Mr. Newhouse.

Mr. NEWHOUSE. Thank you, Mr. Chairman, and thank you for yielding, Mr. Denham. Let me just ask a couple of questions.

I come from the Pacific Northwest, the state of Washington, where, fortunately or unfortunately, we are experiencing drought conditions, but certainly not to California's extent yet. But, we are watching with grave interest what is going on to our neighbors in the South.

So, just to allow you to expand on a couple of these things, Mr. Barbre, in your testimony you talk about the need to increase the surface water storage capacity to mitigate future water crises. Could you expand a little bit on how H.R. 2898 could help address these issues, while also working within the current biological opinions that we are discussing here today?

Mr. BARBRE. I think certainly expanding water storage is a critical part of the future of this. We have enough studies where we know when the fish are running and when they need the cold water. If we have the water in storage, we can let it go. This shows man and nature can co-exist.

You hear a lot of talk about climate change. If climate change truly is happening, we are going to have less of a snowpack. It means we are going to have significantly more runoff. So, we need to be able to capture that. I go back to the Colorado River System. We capture every drop in that watershed. We capture every drop, and it saved us. We have the ability to move a drop of water from the Oregon-California border down to the Mexican-California border, we just have the unwillingness, it seems, to fix the Delta. And that is the main hub. That is what is critically important at this point.

Mr. NEWHOUSE. Thank you.

Mr. Birmingham, I think, from what I can tell, part of the problem that California is facing is due to a failure to continue to improve water storage and delivery systems. I see in our state that the runoff that you are talking about—the Yakima River is high, we are losing our valuable snowpack early. So, the summer could be another long, dry spell for us.

With the state of California population scheduled or predicted to increase in the next 30-some years, how will people in California, especially farmers, be impacted without some kind of a forward-looking water management policy?

Mr. BIRMINGHAM. Well, the state of California absolutely has to have a forward-looking water policy. Mr. Huffman and Mr. Lowenthal made some comments, and some of those comments are spot on about the need to have a comprehensive water policy.

But, as an example, Mr. Lowenthal talked about the Herculean efforts made by one agency to save 1.9 billion gallons of water. Sounds like a lot of water. That is 5,830 acre-feet. Over the next 2 days, the Bureau of Reclamation is going to release out of Folsom Reservoir nearly 30,000 acre-feet. That water is going to be gone forever.

So, we have to do the things that Mr. Lowenthal was talking about, we have to build new storage, we have to figure out smarter ways to move water from where it exists to where the demand exists, we have to conserve, we have to use de-salinization, and we

have to do all of those things. But we also need to have smart policy that governs the operation of these projects.

And pardon me for saying this, but, from my perspective, a policy that does not do anything to benefit fish or apparently does not do anything to benefit fish, given the decline of all of these species, when it has the type of impacts that Mr. McClintock was talking about, does not represent sound policy. We want to protect the fish, but it needs to be done in a smart manner that allows us to deliver water to people.

Mr. NEWHOUSE. Let me follow up with that, if I could. How would you respond to those that argue that the current level of water diversions are necessary for the protection of the Delta smelt species?

Mr. BIRMINGHAM. We have talked a lot about the amount of water that is lost. And I said 500,000 acre-feet over 2 months compares to operations under D–1641, the Water Right Decision in the state of California, that describes how much water has to go out of the Delta to protect fish. It is 500,000 acre-feet of water. I suspect, and you can ask the experts, but if they were to have pumped that 500,000 acre-feet, it probably would not have had any effect on the long-term abundance of the Delta smelt.

And, there are reports—for example, the National Academies of Science did an analysis that described some of these relationships, the rates of pumping at the Delta pumping plants to the survival of salmon as being weak. They said flow is very important, but pumping apparently has no effect on salmon abundance moving out of the San Joaquin River. That is an objective analysis, and yet we continue to implement policies that severely limit our ability to deliver water to people, both farmers and urban areas.

Mr. NEWHOUSE. I appreciate that answer. I see my time has expired, so I yield back, Mr. Chairman, thank you.

Dr. FLEMING. I thank the gentleman. Well, panel, it seems that we are so close to a solution here today that Members would like another round of questions. We are going to limit it to 2 minutes and just hold a queue. For instance, I am not going to ask any further questions. I know Mr. Huffman wants to ask further questions, so we will keep a queue for Members who do want in.

The Chair now recognizes Mr. Huffman for 2 minutes.

Mr. HUFFMAN. Thank you, Mr. Chair. Not enough time to cover all the ground I would like to, but a couple of important points need to be made.

Mr. Birmingham, we have gone back and forth a little, but you do not have to take my word for it from last summer on the Floor of the House. Right there in that chair, we had Mike Conner and other folks saying the exact same thing. At the time those statements were made, they were true and correct. Citing data that was only released by the Bureau this week is not much of a gotcha moment, and it is not very productive, quite frankly. So, I think we need to be more careful, as I said before, on how we assert and use these facts in a discussion of a subject like this.

Jeff Denham, you are my friend, and we do work well together on a bunch of issues. But, I want to correct the notion apparently that I have somehow trivialized the suffering in places like Porterville and other parts of the Valley. You will never hear me

trivialize that suffering. What I will do is ask that we tell the whole story.

Porterville, East Porterville, is an environmental justice tragedy and a disgrace. It is an area that, even in wet years, has to drink nitrate-laden, toxic water for a community that deserves better. It is a community that needs to have clean water that, unfortunately, is not being shared with the hard workers who helped build the Ag. economy. It is flowing right by them, in many cases, in canals. But they are forced to drink nitrate-laden water from wells. When the wells dry up, water had to be trucked in——

Mr. DENHAM. Will the gentleman yield?

Mr. HUFFMAN. I would work with you. I would be delighted to work with you on a solution to that environmental justice problem. And the same goes for communities like Mendota and other places that are suffering not just this year, but every year, from chronic unemployment. I will never trivialize those issues.

But I will ask that we tell the whole story, because even just a few years ago, when water deliveries were much higher, when the Ag. economy was booming in the Valley, unemployment was 40 percent or greater in many parts of the Valley. So, let's be very clear. This is not trivializing, but there is a bigger context. And thankfully, Jim Costa talks about these communities each and every year, not just in critical drought years. But we need to be very careful with the context of this discussion.

Mr. DENHAM. If the gentleman would be willing to support the predation issue—I mean you heard it from every one of these experts, that it is a big issue, and 2 weeks ago you heard that 98 percent of the endangered species are getting eaten by these predator fish. We would ask you to support that bill to make sure that the social injustice stops.

Mr. HUFFMAN. As I told you, I am happy to look at that pilot project.

Dr. FLEMING. All right. Mr. McClintock is recognized.

Mr. MCCLINTOCK. Thank you. Mr. Murillo, I want to follow up on a point that Mr. Costa had made. The El Niño is an unreliably wet weather cycle. We had hoped for much more than we now appear to be getting. It looks like it is fizzling. It is usually then followed by a La Niña, which is a reliable dry period.

Is it possible that we are simply in a 1-year respite from a multi-year drought that has yet to unfold?

Mr. MURILLO. That is a possibility.

Mr. MCCLINTOCK. And if that occurs, are we going to be looking back on the release of these hundreds of thousands of acre-feet of water that could have been retained for productive human use very wistfully in a year or two?

Mr. MURILLO. Yes. I just want to make sure that people understand. We talk about these flood control releases out of Folsom. Some of that water, when we are not in excess conditions—and we are, at times, the last few weeks—some of that water is used to meet our exports on the south of Delta——

Mr. MCCLINTOCK. No, I understand that. But those exports then have been severely restricted because of the biological opinions that we have been discussing for the smelt.

In addition to that, that is still water lost out of Folsom, which is necessary to serve the community of Roseville and other surrounding communities.

Mr. MURILLO. Well, this is a system we operate, Folsom is part of the system——

Mr. MCCLINTOCK. I want to get in one more question. Mr. Barbre, you mentioned the raising of Shasta Dam. Shasta was built to 600 feet of vertical elevation that stores about 4½ million acre-feet. It was designed to be 800 feet of elevation. That 200-foot difference in vertical elevation of the dam means about 9 million additional acre-feet of water storage. Why aren't we doing that?

Mr. BARBRE. That is a good question. We should be doing that.

Mr. MCCLINTOCK. Is it the same environmental regulations that have so vastly inflated the cost of these projects that has made them cost-prohibitive?

Mr. BARBRE. Well, I think it is that, but also I believe there is a tribal issue that is asserted that some of their lands may be disturbed by the raising of Shasta.

Mr. MCCLINTOCK. Yes, but again, that is not an Act of God, these are all acts of government.

Mr. BARBRE. Exactly.

Dr. FLEMING. Mr. Costa.

Mr. COSTA. Thank you very much, Mr. Chairman. As Mr. Denham indicated, this is not only a social economic injustice issue that so many people in the San Joaquin Valley, 4 million people, have been impacted because their very existence is threatened by whether or not they will have a reliable water supply in the future, but it is also a national security issue. We need food in this country, and we produce food in this country.

In California, we have 300 commodities that we grow. It is the Number One dairy state in the Nation, it is the Number One citrus state in the Nation. We produce half of the Nation's fruits and vegetables. And the list goes on and on. My time does not allow it, but these are some of the most nutritious, healthiest food products in the world.

And I must make issue with some of my colleagues who like to villainize the people in the Valley, these 4 million people who are trying to put the food on America's dinner table and say, "No, you really don't need water, you can just dry up and blow away." That is what it feels like, I can tell you. That is what it feels like over the years that we have debated and debated these issues, and tried to come together with bipartisan solutions to fix a broken water system.

Mr. Birmingham, it is nice to hear the efforts of conservation that take place in Marin, in Orange, and in Imperial. Let's talk about the conservation that agriculture is doing. How much of Westlands Irrigation District is under drip or other high-tech water effective utilization?

Mr. BIRMINGHAM. Well over 80 percent. The farmers in Westlands Water District are the most efficient farmers in the world.

Mr. COSTA. How much do you pay for water that you—when you can get water, you have not been able to get it for 2 years.

Mr. BIRMINGHAM. Next year we are hopeful to be able to deliver water for approximately $900 an acre-foot.

Mr. COSTA. And normally it would cost $130 an acre-foot?

Mr. BIRMINGHAM. Yes, sir.

Mr. COSTA. And I think that people need to understand that, because of the cost of the water—every efficiency is being used, but when you only irrigate the roots, you do not recharge the groundwater, and there is a double-edged sword. We need to take that into account, as well.

Dr. FLEMING. OK, the gentleman yields. Mr. LaMalfa.

Mr. LAMALFA. Thank you, Mr. Chairman.

Mr. Barbre, there was a little back-and-forth a while ago, talking about 1977, a pipeline was run from across the Richmond Bridge to help out Marin County with water supply that belonged to MWD during water trades, right? Was there also something that happened in 2014?

Mr. BARBRE. No, in 1977, that was a line that the Marin folks had to construct themselves. It was just temporary, but they ended up moving Metropolitan Water that we had turned back to the rest of the state.

Mr. LAMALFA. MWD water was able to be used for that?

Mr. BARBRE. Yes.

Mr. LAMALFA. OK.

Mr. BARBRE. And from that point forward, that is when we made the $14 billion in investments. We had to diversify our portfolio.

Mr. LAMALFA. Certainly. OK. I am short on time.

So, since then, Marin has gone on to build new storage and take other measures importing water. They built new storage there to help their situation. OK. Very good.

Now, we talk about regulatory drought. You mentioned a while ago you have $75 million worth of costs just to study and permit a de-sal plant in your neighborhood?

Mr. BARBRE. Yes.

Mr. LAMALFA. Amazing. Mr. Bettner, when we talk about the regulatory drought, which means not just on the flows, but also, evidently, leading up to building something to help with the drought, one of the things you talked about were delays in environmental review are related to shifting environmental requirements. What does that mean, when we are talking about the projects in our neighborhood, as far as the years and years it has been studied and talked about, and here we are, ready to go—especially since the voters in California passed a bond to build storage——

Mr. BETTNER. Well, I think we are at a point, from a local perspective, to start moving this project, get the feasibility study done, and the work done for DWR——

Mr. LAMALFA. What is the delay?

Mr. BETTNER. We are getting that worked out. I think our concern is there is no permit strategy. So, we are going to be ready to go build a project, and if we are stuck with having to go through state and Federal permits, there is not alignment, there is not any way to expedite those permitting, then we are going to have a project that is going to provide a lot of benefits for water supply in the environment, and——

Mr. LAMALFA. How much water would have been saved during the drought years, had it already existed?

Mr. BETTNER. About a half-million acre-feet every year.

Mr. LAMALFA. Half-a-million acre-feet during drought flows would already be there.

Mr. BETTNER. Yes.

Mr. LAMALFA. Thank you. I yield back, sir.

Dr. FLEMING. OK. Mr. Denham.

Mr. DENHAM. Thank you. Mr. Murillo, I just wanted to follow up. In regards to Senator Feinstein's bill that was recently introduced, if it were enacted, what operational changes would it make in this year, 2016?

Mr. MURILLO. It probably would not change our operations this year. We would continue to operate the way we are operating right now, because the bill basically says we still have to comply with the state and Federal law——

Mr. DENHAM. So, none. As we discussed yesterday, there would be no changes in pumping, which means Mr. Costa's area is going to face the same thing that it has faced for the last 4 years.

Mr. MURILLO. Yes, with respect to pumping that we are doing in the Delta, it would probably be the same.

Mr. DENHAM. Thank you. For that reason, much, much more needs to be done.

Mr. Pool, there is a very successful program in the lower Columbia River that pays people to catch pikeminnow, very similar to the striped bass that are eating our endangered and threatened species. Do you believe that Federal fish agencies and the California Fish and Wildlife should begin a similar program in California?

Mr. POOL. I think we should take a look at it. Pikeminnow are a major, major predator. Unfortunately, they are a native fish. But we should take a look at that one, because it has been quite successful in the Columbia River.

Mr. DENHAM. With striped bass being a non-native fish that is proving to eat 98 percent of our salmon population——

Mr. POOL. No, I would like to talk to you about that. It is not eating 90 percent. We are losing 90 percent. But that is temperature problems in the last few years, not predation problems. Predation is very high.

Mr. DENHAM. It is very high. We just had——

Mr. POOL. I would like to talk to you——

Mr. DENHAM [continuing]. NOAA here 2 weeks ago, and their numbers—not my numbers, not this committee's numbers, but the Obama administration, their numbers say that 98 percent of the fish that we are trying to save are getting eaten by these predator fish. So, it makes sense to me.

By your numbers, you say how many? What percentage are getting killed or are not making it out to the ocean?

Mr. POOL. Oh, 5 percent survival from the upper——

Mr. DENHAM. OK, so 5 percent survival——

Mr. POOL. From the upper river.

Mr. DENHAM. If the 95 percent that are not making it are getting eaten by predator fish, this would seem like a very, very cost-

effective way to try to save the fish that are being prioritized over the people in Mr. Costa's and other people's districts.

Mr. POOL. We would like to interact——

Mr. DENHAM. I yield back, thank you.

Mr. POOL [continuing]. On predation more with you. There are some subtleties.

Dr. FLEMING. I have been hanging on the edge of this cliff, waiting for the final solution here. But, unfortunately, we have——

Mr. DENHAM. Do you want to have a third round?

[Laughter.]

Mr. COSTA. Did you get it?

Dr. FLEMING. I have a feeling that if we go a third round, we are not going to get to the final solution.

I do want to thank our witnesses for their valuable testimony. Members of the subcommittee may have additional questions for witnesses. We would ask for you to respond to these in writing. The hearing record will be open for 10 business days to receive these responses.

Therefore, being no further business before us today, and without objection, the subcommittee stands adjourned.

[Whereupon, at 12:07 p.m., the subcommittee was adjourned.]

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