

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
1240	1	If water use in the San Joaquin River is diverted to the point that it will drive salmon below the point they can be commercially harvested, this will not only be devastating our natural ecosystems, but our economic coastal ecosystem as well. If a species is removed from the market, it's incredibly difficult to bring back the market for that fish. Cheap, imported farmed seafood will fill the gap. Infrastructure at the small ports will collapse. Not only fishermen, but welders, boat mechanics, hoist operators, processors, and truck drivers will lose their livelihoods. If this water-war on salmon drives them to extinction, this will go down in the history books alongside the gold miners pressure spraying down mountains and running the debris through toxins to separate the gold, thereby wiping out everything downstream, including the thriving oyster industry in the San Francisco Bay	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1240	2	We don't view this conflict as fishing vs. farming. There are many, many examples of farmers in California who use cover crops, dry farm, organic compost, rotate crops, protect beavers and other wildlife that enhance salmon. Sadly, these practices are not being used in the Central Valley. We all need to start moving towards a sustainable food system, Creating cattle grazing ranches in the middle of the desert and planting millions of almond trees during a drought are not sustainable and the region racing for the next big dust bowl, even with all the water in the rivers.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1240	3	We ask you to consider the interests of all people of California and allot wild salmon 60% of the flow of the San Joaquin River Delta.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1241	1	The water flow on Central Valley rivers has been, and is being, mismanaged for at least a decade! Our farmers should come first, then the fish, and recreation is also important. The water levels in our reservoirs are always feast or famine! The Stanislaus River is full of trash! How is that good for us or the fish? Let's clean up the river and STOP the madness. And why isn't our canal system used more efficiently? Fill them up and use them when it rains so much! Prayers for our river and those in charge. Please listen to our community and act on these concerns! They are important.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1242	1	<p>I think we all agree that the proposed increased flows will decrease if not bring to zero the amount of water we can deliver to the people living within our district for the purposes of domestic water and irrigation.</p> <p>It doesn't take a scientist or an economic impact study to know what the effects will be to Modesto and the surrounding cities if the proposed plan is approved. All you have to do is take a 2 hour drive south of here (have any of you taken that drive). An elected official from Fresno stated at the SED hearing in Modesto that there is a humanitarian crisis south of here.</p> <p>I toured these communities in and around Huron in 2015 and saw firsthand the effects of what happens when the Irrigation Districts that service these towns receive a decreased or zero water allotment.</p> <ul style="list-style-type: none"> <li>- Increased pumping of ground water</li> <li>- Dozens of wells a week go dry</li> <li>- Subsidence</li> </ul>	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.

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		<p>- Homes boarded up and abandoned due to no water supply</p> <p>- Entire neighborhoods vacant</p> <p>- Refillable tanks in front of each house for drinking water</p> <p>If you think that can't happen here you're fooling yourself. It already has in the area south of here that is similar to ours and continues to happen. You are working to solve a fish crisis but in turn are creating a humanitarian crisis. What plan do you have for that?</p> <p>I know you don't control or issue our allotment of water, but in a sense, you will be when you require us to give 30 to 50%.</p> <p>Before approving this plan, take into account the effects we already see in areas that now receive little to no surface water.</p>	
1243	1	<p>We would like to express our support of the Bay Delta Plan. The health of the San Francisco Bay and Delta areas have long been of concern to our family. Growing up in the 1960's in the bay area, we saw some of the first measures taken to "Save the Bay" and stop the filling and destruction of the ecosystem. Now the time comes again to take an honest look at the impact that drought and lack of water in the estuary system has on the local fish and wildlife. We need our bay to remain healthy and the Bay Delta Plan. Please note our support and do everything possible to assure the protection of these valuable resources that we are so lucky to have.</p>	<p>Please see Master Response 1.1, General Comments, regarding responses to comments in general support of the plan amendments.</p>
1244	1	<p>Your misguided proposal to push more water down the Stanislaus and other rivers takes away our natural resources that our farmers and population need right here in our own valley.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1244	2	<p>The Bay Area has ocean water they can process with desalination equipment. Same for Southern CA. We need our water to stay right here for us and our wildlife.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1245	1	<p>The effect of your plan to take even more water from our rivers will cause lowering of the water table because more would have to be pumped to replace the diverted water. It will devastate farms and ranches as well as private citizens and will destroy lives, families and businesses. Please modify your plan.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1246	1	<p>Your plan to require more water to be wasted in our rivers is simply wrong and unfair. It will kill our biggest industry -- agriculture.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1246	2	<p>It [your plan] won't help salmon; the science on the Stanislaus River proves there are other ways that work better than simply flushing more water out to the ocean.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1247	1	<p>We support the Board's Supplemental Environment Document for the Bay Delta Phase I.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1247	2	<p>We are pleased you are asking for settlement offers that have been prepared by stakeholder groups which will include environmental groups.</p> <p>We request that as you review each settlement offer you keep the needs of the ESA listed O. mykiss in the forefront. O. mykiss have received inadequate consideration since they were not addressed in the license review for New Don Pedro dam in 1995. O. mykiss have</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>

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		<p>been needlessly ignored in most years. FERC flows do not address O. mykiss (steelhead) habitat requirements. Since there is now a federal mandate to protect O. mykiss, we request that you include language to support the special environmental status and requirements of the dual life strategies of both resident and migratory O. mykiss.</p>	
1247	3	<p>We support the idea of restoration both in and out of the river channel. Our organization has restored parts of the Tuolumne River and its floodplain in the juvenile rearing areas. We also have plans for several additional restoration projects upstream in the spawning reach as well as continuing with restoration in the rearing habitat reach. These projects will provide floodplain inundation and better instream habitat for spawning and rearing.</p> <p>We encourage you to address predation in the Tuolumne River in the mining reach. As much as 95 percent of out-migrating smolts are lost in the in-stream pits. Restoration of this area could do much to increase the success of the smolt migration to the ocean.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1248	1	<p>We request that as you review the Settlement Offer for the Tuolumne River, you require floodplain inundation. Studies show inundation must be a minimum of 10 consecutive days during the months January through June each year. Extended inundation periods are necessary to produce useful nutrient inputs for the fishery. Without substantial floodplain inundation, the potential to restore the fishery is hugely diminished. Although the dam operations frequently require flood releases, the releases are not managed to allow the floodplain to generate food and provide habitat for smolts.</p> <p>There are two potential floodplain restoration projects that will provide excellent habitat benefits in the spawning reach. Each area requires repair from the damages left 50 years ago during the building of New Don Pedro Dam. These two areas total about 65 acres in an important area of the river's floodplain. The Districts should be required to repair the floodplain and river channel damage done during their construction of the dam.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1248	2	<p>Summer river flows are necessary for the restoration of the steelhead/trout fishery. O. mykiss require good habitat for at least two years before any anadromous behavior manifests. The rivers must have between 400 and 500 cfs for consecutive summers if we expect the fishery to survive into the future. The flows should be managed to keep the river and fishery healthy during the summer months, as well as during the Fall Chinook spawning months.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1249	1	<p>We need our water here for our farms, households and businesses. Just because we had a good wet winter here in the north doesn't mean that we are out of the woods yet. Do not send any additional water south than was originally agreed to.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1250	1	<p>The water is ours and we pay dearly for our water, although we do subsidize the farmer. Our farmers feed the country.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1250	2	<p>We need more storage. To me, it's not about the salmon or other species it's about preserving the valley's most precious commodity. Your plan to increase river flows will not work and the science has proven it.</p> <p>Legislators need to pay attention. The people have spoken.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1251	1	<p>do not believe your plan to force more water down the Stanislaus River will do anything to increase the salmon population. While the rest of us are being asked to conserve water, you</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general</p>

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		are throwing it away.	comment on the plan amendments or do not raise significant environmental issues.
1252	1	Agribusiness in Northern California is extremely important. Taking our water will disrupt the water table and ruin farming forever. Salt water is encroaching, and will soon have a devastating effect on our ability to irrigate, etc. The most productive farmland will no longer exist!	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1253	1	I oppose your plan to require more water to be flushed down our rivers for many reasons, and you've already heard them all. This is just wrong! Come up with better plans to resource our water that won't have such a negative impact on us. Let the people be heard!	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1254	1	The Central Valley and surrounding areas need this water to remain in our rivers for our own livelihood. The salmon you are so concerned about we all know are 98% raised in hatcheries and quite frankly, I want my drinking water and all of the water I use to be available to me when I do need it. This is a ridiculous move on the State Water Board's part and we all know this. In closing, do the right thing and consider human life!	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1255	1	I am writing to express my opposition to the 2016 Bay-Delta Plan Amendment & SED. I have waited to write regarding the Amendment to the Bay-Delta Plan so that I could continue to watch, read, attend meetings, and be educated on the subject and proposed Amendment. In that time, we have seen devastating consequences to the environment and the entire region from the massive flooding and infrastructure failure due to lack of maintenance at the same time people were told they were in a continued drought.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1255	2	Even the Governor admits that we are no longer in a drought, but we may be if you continue on with this flawed proposal. The flooding has emphasized how the board's scientists and reports are flawed and I would encourage you to start over with a new proposal that is created with input from the many stakeholders in the region who will be affected as well as a more open and transparent report of what the board's end plan really is.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1255	3	My grandparents immigrated to the Turlock area in the early 1900s and their farm is still in the family being farmed by my cousins. It is in the Turlock Irrigation District. Their lifelong dream of success for their nine children was never realized as my grandfather died from skin cancer at a young age, leaving my grandmother to raise them alone. The picture that I am attaching is a very special picture to our family. It reminds all of us of their sacrifice, the hard work and life that they all endured to create a better life for the future generations. My father was one of the smaller boys and his goal in life was to ensure that none of us ever knew the poverty that they endured. As a small farmer and business owner, I look at what is happening to this region and wonder if I can make that promise to my children and grandchildren. Please do not adopt this flawed plan.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1256	1	I only have 18 acres of walnuts, but MID has been able to supply my irrigation needs throughout the decades. Within a few years we will not be able to use our irrigation pumps because of the aquifer stabilization rules. Therefore, we have to have our full allotment of MID water for our tree to survive.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1256	2	Try controlling the predatory fish, that makes more sense.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1257	1	It appears the State Water Board is looking at taking more water to save fish as the only solution to answering problems the fishing industry faces. Salmon are raised in fish	Please see Master Response 1.1, General Comments for responses to comments that either make a general

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		<p>hatcheries. They need a modest water flow to survive beyond the hatchery environment. Agriculture needs the water to remain in the central valley - not go out to the Pacific Ocean. Focus on preserving water through more water through reservoirs - not diverting water to the ocean - So Sacramento River can go south to Los Angeles.</p>	<p>comment on the plan amendments or do not raise significant environmental issues.</p>
1258	1	<p>I write today urging you to set the San Joaquin tributaries flows at 60% unimpaired to ensure that the Delta ecosystem - and all the life forms it contains - survive. When water is taken away, all life systems are affected. Water is seamlessly interconnected to life in the Bay Area and across the planet. Numerous studies have shown that 60% unimpaired flow is needed to restore the health of our rivers and waters. Anything less puts at risk all ecosystems and the health of millions of people who depend on clean water; killing fish, ecosystems, creating toxic algae blooms, affecting wildlife and species that have been around for millennia. There is enormous value in taking care of the water and all the life that surrounds it. This is a concept that our native brothers and sisters profoundly understood but something that large corporations with short term agricultural business models don't seem to understand.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1258	2	<p>Water is a public trust resource and thus belongs to the people of California. People and all other living beings are dependent on water to live. We must respect the value of water, salmon and all cycles of life. We also must have water for crops, but there are ways in which that can happen not through pumping in more water out of our rivers - but rather focusing on solutions such as pressurized irrigation systems, water capture, storage, recycling and more.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1258	3	<p>There are two quotes from United Nations Declaration of Water Rights from March 22, 1992, that I would like to share with you, "1st - Water is the lifeblood of our planet. It is essential for life of the whole plant, animal or human", and, "5th - The water isn't only heritage of our predecessors, she is primarily a loan to our successors. Your protection is a vital necessity, as well as the moral obligation of man to the present and future generations."</p> <p>The Water Board should listen to the native people, fisheries, scientists and biologists and set the bar higher. I urge you to set the instream flows at 60% to ensure the salmon and all other species in the Delta ecosystem survive. I ask you to make your decision based on future generations and the care of our precious resources; please focus on honoring all forms of life without sacrificing our delicate ecosystems and water supplies.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1259	1	<p>California's central valley was once home to one of the greatest salmonid fisheries in the world that has been squandered because of past water management mistakes.</p> <p>I have also been fortunate to fish for trout, salmon, and steelhead all around the USA and the world and have had many encounters with knowledgeable trout and salmonid lovers with one basic reaction: "What are you doing here when you live in the holy land of trout and why don't you take better care of your fish?" After shaking their head in disappointment, most of them speak with a wistful glint in their eye of their bucket list dream to fish for trout in California's hallowed waters, even knowing they have been decimated. By the way, that's proven economic value talking, too. In response, I have little choice but to admit shame and muster a shred of pride since I have spent most of my life trying to save California's unique natural wonders.</p> <p>The fact is, California has systematically and with great and full awareness destroyed a true</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>

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		wonder of the world, the central valley salmonid fishery. The misallocation of water in California is only one thing: a shameful and willful act of waste and negligence. It must stop now.	
1259	2	I have been told by industrial agricultural experts that they know how to farm productively and profitably with vastly less water and routinely do so elsewhere, but they have no incentive to do so in California, so they don't. The 'fish vs. farms and jobs' dichotomy is false and must be rejected: careful and innovative management of agricultural water creates more, not fewer jobs. Farmers know that and so do you.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1259	3	The SWRCB has before it the opportunity to take a significant and absolutely necessary step in the right direction. Let's save our unique and irreplaceable natural wonders first and learn to live well with what's left. As challenging as this may be, it is, by definition, the only way to a sustainable water future for the central valley and California.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1259	4	I trust you will make the decisions that will result in the continued fulfillment of California's destiny as a leader in all things, now to include your courageous wisdom to recover our natural legacy and create an economic environment of long overdue agricultural innovation and truly sustainable abundance for California and the world that admires and relies on us. I look forward to that and hope you do, too.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1260	1	Please adopt the proposed higher flow standards for the lower San Joaquin. Our planet needs our help.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1261	1	<p>If you study History at all, you'll find that Environmental Upgrades bring people to enjoy that place. Look at the increased traffic in Parks where clear cutting was eliminated - those local economies grew. Water Diversions happen everywhere, and lately a growing number of them are for stupid causes like growing pot. These idiots not only foul the streams with silt and fertilizer, they rob water from the headwater creeks.</p> <p>I don't care if people want to smoke their brains out, but don't steal vital water from the headwater creeks where the salmon/steelhead smolts are supposed to grow. I've been telling every Fishing Agency in CA this for over a decade now. Economics and Saving Fish (like Salmon) go hand in hand. I'd wager more money will be made for the entire West Coast by increasing fishing opportunities than any pothead could dream of.</p> <p>Who's going to travel out here just to get stoned? You can do that anywhere.</p> <p>The flow model should be adopted all the way to the Canadian Border.</p>	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1262	1	The draft flow objectives go against the hard work and investments made by water agencies throughout the state, such as CVWD [Cucamonga Valley Water District], who have worked tirelessly over the past decade to change our customers' behavior to use water more efficiently and that every drop of water is important. This type of behavior is inconsistent with the message of being in a drought and undermines our credibility with our customers.	The State Water Board acknowledges Cucamonga Valley Water District's water conservation effort and ongoing commitment to demand management. Please refer to Master Response 1.1, General Comments, regarding the consideration of beneficial uses by the State Water Board.
1262	2	The State Water Board's "unimpaired flows" approach for the San Joaquin River and its tributaries is not the path to achieve the desired ecological outcomes. It is inconsistent with established state policies, such as the California Water Action Plan, the coequal goals defined in the Delta Reform Act of 2009, the Sustainable Groundwater Management Act of	Please see Master Response 2.1, Amendments to the Water Quality Control Plan regarding the compatibility of the unimpaired flow approach with the functional flow approach. Please see Master Response 1.1, General Comments regarding the relationship of the plan amendments to other state programs and policies such as the California Water Action Plan and the Delta Reform Act. Please see Master Response 3.4, Groundwater and the Sustainable Groundwater Management Act regarding the approach to the

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		2014, and the Human Right to Water Act.	groundwater analysis. Please see Master Response 2.7, Disadvantaged Communities for a discussion regarding the human right to water.
1262	3	<p>This proposal would undermine investments in storage, adversely impact the drinking water quality of disadvantaged communities, increase groundwater overdraft in a part of the state where groundwater basins are already out of balance, and put large acreages of agricultural land out of production.</p> <p>The State Water Board should set aside the percent of unimpaired flows approach and heed Governor Jerry Brown’s call for negotiated agreements. Such agreements have been demonstrably successful in achieving desired ecological outcomes while maintaining water supply reliability.</p>	Please see Master Response 2.7, Disadvantaged Communities, for information regarding drinking water and disadvantaged communities. Please see Master Response 3.4, Groundwater and the Sustainable Groundwater Management Act regarding groundwater resources. Additionally, please see Master Response 1.1, General Comments, for information regarding voluntary agreements.
1262	4	We encourage the State Water Board to embrace a collaborative process to develop water quality objectives that incorporate the best available science, utilize comprehensive solutions that address multiple variables, align with established state policies, consider economics impacts, and ensure that Bay-Delta Plan decisions enable rather than obstruct implementation of the California Water Action Plan.	Please see Master Response 1.1, General Comments, for information regarding the plan amendments and their relationship to other plans and policies such as the California Water Action Plan as well as information regarding voluntary agreements and collaboration with agencies.
1263	1	<p>Recommended Unimpaired Flows Coupled with Non Flow Conservation Measures.</p> <p>The Board should recognize that flows less than 50% UIF without Non Flow Conservation Measures will not allow achievement of the Population Doubling Objectives for fall-run Chinook and steelhead in the Merced River and floodplain. In addition to increased floodplain inundation and spawning gravel addition, there are other non-flow measures that could improve salmonid population conditions: screen unscreened diversions, increase flood plain habitat with increased flows, reduce the proportion of river flow directly diverted, reduce predator abundance, increase geomorphic flows (by shaping), increase large woody debris, and provide access to habitats of the upper Merced River above Crocker-Huffman and New Exchequer Dams.</p>	For discussions on the role of the non-flow measures in protecting fish and wildlife and the incorporation of non-flow measures in the plan amendments, please see Master Response 5.2, Incorporation of Non-Flow Measures
1263	2	Habitat restoration won't produce the desired results if temperatures in the river get too high too early in the year. River reach temperatures are directly related to flows. If young fish cannot escape (migrate), then simply doing habitat restoration won't provide much benefit. Fisheries objectives must be specified in advance. Monitoring of the salmonid populations will provide data to determine if the objectives are achieved.	Please refer to Master Response 5.2, Incorporation of Non-Flow Measures, regarding habitat restoration and the incorporation of non-flow measures. See Master Response 3.1, Fish Protection, regarding reductions in harmful and lethal water temperatures, the importance of June, and the benefits of the plan amendments.
1263	3	We [Merced River Conservation Committee] recommend a flexible less than 50% UIF flow standard (with options to increase flows, should fish population targets not be met, through Adaptive Management measures). Science says that a 60% UIF standard is required to meet the salmonid doubling target. Board mandated non-flow measures to compensate for the reductions in flows are necessary for restoration of the salmon and steelhead populations in the Merced and lower San Joaquin Rivers.	Please refer to SED Appendix K and Appendix C and Master Response 2.2, Adaptive Implementation, for responses to comments and information regarding adaptive implementation within the 30 to 50 percent of unimpaired flow requirement. The science shows that 60 percent of unimpaired flow would be needed to protect the fish and wildlife beneficial use if no other beneficial uses of water were considered, and if no other measures were used to provide this protection other than flow. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments regarding the science and policy justification for the LSJR plan amendments.
1263	4	<p>Board Needs to Identify and Implement Summer and Fall Flow Requirements to Meet Fisheries Objectives.</p> <p>All life stages of the salmon and steelhead must receive appropriate flows (and non-flow measures) to achieve the doubling goals. The Draft SED identified that the constraints imposed by the severe modification of the February through June flows were associated</p>	<p>As described in the SED, Appendix K, Revised Water Quality Control Plan, and further clarified in Master Response 2.1, Water Quality Control Plan Update, and Master Response 2.2, Adaptive Implementation, the State Water Board recognizes the importance of flows during the time period outside of February through June.</p> <p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for a response to</p>

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		<p>with the declines in anadromous salmonid populations of the San Joaquin River and its tributaries. There are two sets of life history stages (fall adult returning spawners and over-summering juveniles) which do not receive protections with this SED flows approach. Chapter 19 (@ §19.2.3) acknowledges the probable temperature stressors in stating: “Temperature conditions in September, October, and November are often poor at many locations used by adult migrating and spawning salmon. Furthermore, fry emergence, rearing, smoltification, and emigration life stages are also exposed to suboptimal and even harmful temperature conditions from roughly March through June during many years. Finally, salmonids that stay in the rivers to over summer between July and September have little chance of thriving unless they find the little cold water refugia that potentially exists (depending on the year and river) directly below the dams.” Those temperature conditions below dams are greatly restricted during dry and critically dry water years. Evidence of these conditions are documented by the need for a CADFV steelhead rainbow trout rescue effort in 2014 [footnote 1: FERC eLibrary Accession 20161031-5156. Merced Irrigation District, Merced River Hydroelectric Project, FERC Project No. 2179-047, Fish Rescue Information] and 2015 [footnote 2: FERC eLibrary Accession 20160406-5183. Merced Irrigation District, Merced River Hydroelectric Project, FERC Project No. 2179-047, Reply to FERC’s March 7, 2016 Letter].</p> <p>The approach is to address October Flow Requirements for fall adult returning spawners by a process to “reevaluate the assignment of responsibility for meeting the October pulse flow requirement during a water right proceeding, FERC licensing proceeding, or other proceeding, in order to optimize protection for fish and wildlife beneficial uses and minimize impacts to water supplies.” Appendix K @ Page 34. This is basically just prolonging the decision making process into the future. We believe that there is some agreement among Resource Agencies and NGOs in terms of temperature targets, as well as fall adult returning attraction flows, criteria for the Merced River, and these parameters should be included as an element of the “Flows Approach”.</p>	<p>comments regarding year-round flow objectives.</p> <p>Please see Master Response 3.1, Fish Protection, for discussion of the basis for the February through June flow requirements, as well as the elements of the project that are intended to allow protection of fish and wildlife outside of the February through June period.</p>
1263	5	<p>The Board Needs to Manage Entire Watershed for Sustainable Fisheries under all Water Year types.</p> <p>The SED needs to evaluate alternatives and rules for the Merced River which allows for sustained operations in dry and critically dry water years. The elements of that management structure are: a) adjusting flows to water years (more water diversion in wet years, less in critically dry years); b) generally reducing agricultural irrigation deliveries from baseline; c) set a protective project reservoir carryover storage to partially mitigate dry and critically dry years; d) have a triage plan for drought conditions to protect aquatic resources; and e) don't rely on adaptive management to solve aquatic resource problems.</p>	<p>Please see Master Response 1.1, General Comments, for a discussion on the programmatic scope of the SED and CEQA requirements. Chapter 1, Introduction, describes the State Water Board’s purpose for amending the 2006 Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta Estuary (2006 Bay-Delta Plan): to establish reasonable protections for the fish and wildlife beneficial uses for the Lower San Joaquin River and the three eastside tributaries. The State Water Board is not required to provide for the comprehensive management of the entire watershed. Specific operations for the reservoirs would be addressed at a later time and in subsequent project-level environmental compliance documents, if needed. Chapter 3, Alternatives Description, Section 3.3.1, Attributes of LSJR Flow Objectives, explains that developing a LSJR flow objective as a “percent of unimpaired flow” ties flows to hydrology that adjust to various water-year types in way that reasonably protects fish and wildlife beneficial uses. Chapter 21, Drought Evaluation, provides an analysis of the frequency and severity of dry years (less than average runoff) and drought years (less than normal water supply diversions).</p> <p>Please see Maser Response 3.2, Surface Water Analyses and Modeling, for information on water supply reliability and carryover storage, and Master Response 2.2, Adaptive Implementation, regarding the adaptive implementation element of the flow proposal.</p>
1263	6	<p>Comments on Chapter 16- § 16.3.8 Fish Passage Improvements – Removal or Modification to Human-Made Barriers to Fish Migration and Chapter 18 Summary of Impacts and Comparisons of Alternatives Table 18-7. CEQA Significance Summary of LSJR Alternatives—</p>	<p>NMFS Federal Power Act Preliminary § 18 Prescriptions and §10(j) recommendations cited in the NMFS (2014) letter referenced by the commenter includes recommendations for fish passage through reactivation of two currently inoperable fish ladders: (1) at Crocker-Huffman Dam, and (2) subsequent passage upstream at the Merced Falls Dam. However, these recommendations would not be considered a reasonably</p>

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Ltr#	Cmt#	Comment	Response
		<p>Non-Flow Measures.</p> <p>The analysis correctly identifies that blockage of migration of anadromous fish to historical habitat by dams and other human-made barriers is recognized as a major reason for historical declines and current status of ESA-listed salmon, steelhead, and sturgeon in the Central Valley, and, specifically, in the Merced River. We disagree with the statement that:</p> <p>“Implementation of fish passage or re-introduction programs that restore passage of anadromous salmonids to reaches above impassable dams on the SJR tributaries would not likely occur within an effective timeframe to contribute to the State Water Board’s implementation program or other non-flow measures that may be implemented in the foreseeable future to improve anadromous fish production in the currently accessible reaches below the dams (e.g., floodplain and riparian habitat restoration).” (Page 16-186)</p> <p>National Marine Fisheries Service (NMFS, 2014 [footnote 3: FERC eLibrary Accession 20140722-5069. NOAA Fisheries Service’s Resource Management Goals and Objectives; our Federal Power Act Preliminary § 18 Prescriptions, § 10(j) Conditions, and § 10(a) Recommendations; and Motions to Intervene for the Merced River (P-2179-043) and Merced Falls (P-2467-020) Hydroelectric Projects on the Merced River, California) has identified a process and time-lines that are projected to be “implemented within the foreseeable future.”</p> <p>The SED should be modified to reflect the NMFS Federal Power Act Preliminary § 18 Prescriptions and §10(j) recommendations. In turn, that finding affects the CEQA analysis in Chapter 18.</p> <p>This table (Page 18-22) includes a scoring for “Biological Resources” for “Fish Passage Improvements-Human-Made Barriers to Migration” as L (Less than significant). It was incorrectly scored because it incorrectly assumed that an action would not be implemented in the foreseeable future. It should be scored as “SU*” (* Indicates that the impact after mitigation may be less than significant; however, given the various factors influencing the potential implementation of mitigation, and until such time that mitigation measures are implemented, the impacts would remain significant and unavoidable, consistent with State CEQA Guidelines Section 15091; SU = significant and unavoidable impact).</p>	<p>foreseeable non-flow measure for several reasons, as listed below.</p> <p>First, Merced Irrigation District has no legal obligation to reactivate the existing fish ladder. Crocker-Huffman Dam is not a FERC-licensed facility, and, thus, FERC has no authority to require fish passage at the dam. As described in the Final EIS, Section 5.1.1.3, “Measures Not Recommended by Staff” for the Merced River Project, FERC did not recommend fish passage upstream of Crocker-Huffman Diversion Dam or studies to evaluate the potential for upstream anadromous reintroduction as measures of the license principally because, “Crocker-Huffman diversion dam and any associated features, including the Main Canal, are not related to hydropower operation and are not included in the existing license” (FERC 2015, page 5-57).</p> <p>Second, the Crocker-Huffman Dam fish ladder was taken out of use in the 1970s per request by CDFW (MID 2014, page 213). CDFW also objected to operation of the Crocker-Huffman fish ladder in the FERC proceedings, primarily due to concerns about disease and aquatic invasive species transfer to the upstream hatcheries (CDFW 2014, Enclosure D, pages 1-3).</p> <p>Third, as described in the Final EIS, Section 5.1.2.3, “Measures Not Recommended by Staff” for the Merced Falls Project, FERC did not recommend fish passage upstream of Merced Falls Dam with the justification that, “Because anadromous fish are unable to achieve passage over Crocker-Huffman diversion dam and access the Merced Falls Project area, reoperation of the fish ladder at Merced Falls dam would provide no benefit to anadromous species in the Merced River at this time” (FERC 2015, page 5-76). As with the Merced River Project, FERC did not recommend passage at Crocker-Huffman Dam as a measure of the Merced Falls Project’s license because, “Crocker-Huffman diversion dam and any associated features, including the Main Canal, are not related to hydropower operation and are not included in the existing license” (FERC 2015, page 5-76). The State Board’s preliminary Water Quality Certification Condition No. 8 for the Merced River Hydroelectric Project (SWB 2014, Attachment B, page 3) was incorporated into the Staff Alternative with Mandatory Conditions of the Final EIS: “a fish passage or habitat restoration plan that would result in fish passage over Crocker-Huffman, McSwain, and New Exchequer dams or decrease water temperature [emphasis added] in and downstream of the project.” (FERC 2015, page 2-36). Considering MID’s stance to not re-operate the fish ladder at Crocker-Huffman dam and restore upstream passage, it is highly likely MID will satisfy Water Quality Certification Condition No. 8 through development and implementation of a habitat restoration plan for decreasing downstream water temperatures, and will not pursue a fish passage plan.</p> <p>Finally, passage at Crocker-Huffman is not considered a reasonably foreseeable future action because its feasibility has yet to be determined. SED Chapter 16, Evaluation of Other Indirect and Additional Actions, describes removal or modification of human-made barriers to fish migration as actions that present unique technological challenges that require extensive engineering, biological, and environmental studies to evaluate the feasibility of potential fish passage methods as well as the suitability and potential capacity of upstream habitat to support the life history and habitat needs of the target species. Here, that assessment has not been made. Permission from local landowners, whose property and structures would be affected, has yet to be secured. . Moreover, MID itself has stated, “When and if such a project would be placed into service is highly uncertain.” (MID 2015, page 10).</p> <p>Given the reasons cited above, the impact determinations made in Chapter 16, Section 16.3.8, and summarized in Chapter 18, Table 18-7 are not modified.</p>
1263	7	<p>We believe that water flows on the Merced and lower San Joaquin River must be adequate to restore and protect salmon and steelhead populations and fisheries—and to protect the public trust value of the Bay-Delta estuary. A 40% UIF prescription will not result in recovery of anadromous salmonid populations. Science tells us that we need 60% UIFs on the San</p>	<p>Please see Master Response 1.1, General Responses, for responses to comments that generally support the plan amendments, a specific percent of unimpaired flow, or an LSJR alternative.</p>

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Ltr#	Cmt#	Comment	Response
		Joaquin River for the health of the Bay-Delta.	
1264	1	<p>Reclamation supports the Board’s proposal to distribute flow requirements to each of the lower San Joaquin River tributaries. Reclamation does not support placing the sole responsibility for requirements along the San Joaquin River upon the Federal government via the Central Valley Project (CVP).</p> <p>For the Stanislaus River, it appears as though the Board would implement the flow standards as New Melones releases and carryover storage targets. The Board should focus on curtailing diversions, prior to meeting objectives with reservoir releases. Reclamation questions State-imposed carryover storage targets as New Melones. Such requirements, if valid, would increase water-short years for senior water right holders [Footnote 1: Because the State of California allocated water to the senior water right holders on the Stanislaus, not Reclamation, the State should be responsible for directly regulating senior water use to implement instream flow requirements. This should not be a responsibility placed on Reclamation.] and other State water quality objectives, such as salinity control and dissolved oxygen.</p> <p>State-imposed carryover targets also threaten to increase water short years for Federal purposes of the reservoir including water supply for CVP contractors, the Central Valley Project Improvement Act flows, and Endangered Species Act requirements.</p>	<p>Please see Master Response 1.2, Water Quality Control Planning Process, regarding the implementation of the plan amendments and water rights. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding carryover storage. Please see Master Response 3.2, Surface Water Analyses and Modeling el, for responses to comments regarding carryover storage and the modeled representation of it. Responses to comments regarding water quality can be found in Master Response 3.3, Southern Delta Water Quality.</p>
1264	2	<p>Reclamation has not been able to operate to the D-1641 spring pulse flows since the expiration of the San Joaquin River Agreement. Reclamation recommends that for an accurate assessment of the proposed changes, the No action Alternative should include the 2E flows, dissolved oxygen, D-1641 February through June base flows and Vernalis salinity (assuming that b(2) and the 1987 California Department of Fish and Wildlife agreement are covered under the 2E flows).</p>	<p>Chapter 3, Alternatives Description, Section 3.3.4, LSJR Alternative 1: No Project Alternative, explains why the No Project Alternative assumes full compliance with the 2006 Bay-Delta Plan, as implemented through D-1641, including the April-May pulse flow objective. Please refer to Master Response 2.5, Baseline and No Project, regarding no project conditions. Please also see Appendix F.1, Hydrologic and Water Quality Modeling, Section F.1.2.2, Development of the WSE Model Baseline and Alternative Assumptions, for flows included in the baseline, including 2E flows.</p>
1264	3	<p>Reclamation agrees that voluntary settlement agreements may provide a viable, sustainable, and holistic approach to meeting the Board's statutory obligations in relation to the San Joaquin River interests. However, voluntary settlements are not guaranteed to succeed and do not replace the standard-setting phase; therefore, we ask that the Board continue to work with us and engage in active discussions in order to address our concerns prior to a decision on the SED.</p> <p>Reclamation believes the many competing requirements should be resolved prior to implementation of the Board's proposed Bay-Delta Water Quality Control Plan amendments. Reclamation is in the process of developing a Revised Plan of Operation (RPO) of New Melones Reservoir and associated facilities. The RPO could ultimately facilitate settlement of the Stanislaus River portion of the Board's plan amendments and represent a viable future plan of implementation for the Stanislaus River. Reclamation welcomes the Board's participation in the RPO and looks forward to working with your agency on this important action. Also underway is the Re-initiation of Consultation on the Coordinated Long-term Operation of the Central Valley Project and State Water Project, which is expected to further contribute to the RPO.</p>	<p>Please see Master Response 1.1, General Comments, and Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments by the State Water Board regarding voluntary agreements.</p>
1264	4	<p>There are several references to submittal of an annual adaptive operations plan by January 10 of each year (see, for example, page ES- 18 and K-34). Reclamation believes January 10 is much too early in the year to develop a useful operations plan. Based on San Joaquin 5-Station Precipitation Index historic averages, less than 1/3 of the water year’s typical</p>	<p>Please refer to Master Response 2.2, Adaptive Implementation, for responses to comments and additional description and examples of adaptive implementation methods, products and procedure. Appendix K and Master Response 2.2, Adaptive Implementation, explain that the annual plan can be updated as more information becomes available. Unimpaired flow for the February through June period cannot be entirely</p>

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Ltr#	Cmt#	Comment	Response
		precipitation falls prior to this date, leaving such a large amount of uncertainty in projected hydrology and operations that any operational forecast will not provide an adequate basis for any meaningful decisions on adaptive management for the year. The Board should discuss the contents and uses of the operations plan with Reclamation to ensure a worthwhile product.	known on January 10; however, this early date is needed to have enough time: 1) to identify the framework for the provisional plan before the start of the February through June flow period; and 2) for the Executive Director to have sufficient time to review and approve.
1264	5	The basic premise for unimpaired flow operations is management to a 7-day running average of the inflows. Reclamation is concerned that this operation is not likely feasible based on issues including the need to conduct power scheduling, data availability and quality, coordination with other operations (both on the San Joaquin and at other CVP facilities such as Delta export facilities and upstream reservoirs on the American and Sacramento), downstream impact protection, and public notification, in addition to potential other unanticipated impacts.	Please refer to Master Response 2.2, Adaptive Implementation, regarding management of flows to an unimpaired flow objective.
1264	6	Reclamation is concerned that the increased frequency of operational changes may impact our facilities and infrastructure, potentially leading to more frequent outages and unscheduled maintenance, and potential equipment/facility failures. The Board should work with Reclamation to identify feasible operations metrics.	Please see response to comment 1264-5. Please refer to Appendix K and Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments and information regarding the STM working group, operations plans, and the San Joaquin Monitoring and Evaluation Program. Please refer to Master Response 3.2, Surface Water Analyses and Modeling for a discussion of measurement and compliance. Please see Master Response 2.2, Adaptive Implementation, regarding calculation of unimpaired flow and discussion of the averaging period.
1264	7	It is not clear how the operating to the 7-day running average of unimpaired flow will be conducted/coordinated when considering rivers with multiple reservoirs in series. For instance, if one or more water right holders are in the process of adding water to storage in upstream reservoirs, the furthest downstream reservoir may be required to release additional water from storage to meet the requirement.	Please see Master Response 1.2, Water Quality Control Planning Process, regarding the implementation of the plan amendments and water rights. Please see Master Response 2.2, Adaptive Implementation, for a discussion of alternatives to adherence with a percent of unimpaired flow on a 7-day average.
1264	8	[Page:] ES-1 [Line:] 35-37  The SED should specify which parties and the process the Board will use to assign responsibilities in order to pay for the monitoring and special studies	Please see Master Response 2.1, Amendments to the Water Quality Control Plan, and Master Response 2.2, Adaptive Implementation, regarding the San Joaquin River Monitoring and Evaluation Program, requesting identification of responsible parties for performing monitoring activities including data collection, data management, evaluation of monitoring data, and creating and submitting annual and comprehensive reports.
1264	9	[Page:] ES-4 [Line:] 29-31  The Board should identify an expectation for whether the need for temporary emergency changes will increase under these regulations.	Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for response to comments regarding the emergency provision of the plan amendments, including a clarifying discussion on the need for temporary use change petitions and orders. Please also see Master Response 2.5, Baseline and No Project, regarding temporary urgency change petitions.
1264	10	[Page:] ES-4 [Line:] 32-37  Reclamation requires additional information on "recommendations for non-flow measures" to understand how such measures will play a role and requests that the Board elaborate on the description and process.	Descriptions of non-flow actions that would complement the LSJR flow objectives for the reasonable protection of fish and wildlife are provided in Chapter 16, Evaluation of Other Indirect and Additional Actions, Section 16.3, Lower San Joaquin River Alternatives – Non-Flow Measures. Please see Master Response 5.2, Incorporation of Non-Flow Measures, for further information on non-flow measures, including their role in the overall health of the tributaries' ecosystems and how non-flow measures relate to the plan amendments.
1264	11	[Page:] ES-5 [Line:] 23-25  The techniques to measure salinity in segments is not known. The Board should either specify a method or require measurements at fixed points.	Please see Master Response 3.3, Southern Delta Water Quality, for responses to comments regarding salinity in the delta. Specific monitoring locations and procedures will be developed through the Comprehensive Operations Plan and Monitoring and Report Plan to be prepared by DWR and USBR.

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Ltr#	Cmt#	Comment	Response
1264	12	<p>[Page:] ES-11 to ES-13 [Line:] Sec. ES5</p> <p>"The unimpaired flow range element of the objective, proposed to be 30 to 50 percent of unimpaired flow, provides the bounds of the flow that is required to reasonably protect the fish and wildlife beneficial use. The proposed starting point, within the proposed 30 to 50 percent adaptive range, is an unimpaired flow of 40 percent." (ES-11) "The flow proposal would move the current flow objective from a single location on the SJR near Vernalis upstream to include the three salmon-bearing tributaries of the LSJR: the Stanislaus, Tuolumne, and Merced Rivers." (ES-12)</p> <p>Reclamation supports distributing responsibilities for meeting requirements to for each of the San Joaquin tributaries instead of a Vernalis-only flow standard. If Reclamation is in a position to consider requirements from Phase 1 that extend beyond the confluence of the Stanislaus, Reclamation requests that other entities who manage water at the downstream locations, e.g. DWR, also contribute to meeting downstream requirements (through agreements, infrastructure, monetary contributions or other mechanisms).</p>	<p>Please see Master Response 1.1, General Comments, regarding the voluntary agreement process and for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues. Please see Master Response 1.2, Water Quality Control Planning Process, regarding the implementation of the plan amendments and water rights and the independent proceedings of the updates to the Bay-Delta Plan that address different watersheds.</p>
1264	13	<p>[Page:] ES-14 [Line:] 4-6</p> <p>Reclamation would appreciate clarity on how base flows are measured (instantaneous or averaged daily/weekly/monthly).</p>	<p>As indicated in Appendix K, Table 3, the LSJR base flow objective for February through June shall be implemented by requiring a minimum base flow of 1,000 cfs, based on a minimum 7 day running average, at Vernalis at all times. This minimum base flow, however, may be adjusted within the range allowed by the LSJR base flow objective through adaptive methods described in the program of implementation.</p>
1264	14	<p>If Reclamation is in a position to consider requirements from Phase 1 that extend beyond the confluence of the Stanislaus, Reclamation requests that other entities who manage water at the downstream location, e.g., DWR, also contribute to meeting downstream requirements (through agreements, infrastructure, monetary contributions or other mechanisms).</p>	<p>Please see response to comment 1264-12 regarding the implementation of the plan amendments.</p>
1264	15	<p>[Page:] ES-19 [Line:] 41-42</p> <p>Reclamation would like clarification on how the STM Working group would integrate with river-specific groups and what decisions are made at each level.</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan and Master Response 2.2, Adaptive Implementation, regarding the STM Working Group.</p>
1264	16	<p>[Page:] ES-19 [Line:] Sec. ES5</p> <p>"The flow proposal therefore includes a provision to adjust flows for a state of emergency, such as the current drought emergency. Hydrologic conditions, and water supply needs experienced during the current drought were analyzed in this SED, and so the analyses in this SED have accounted for a wide range of hydrologic conditions.</p> <p>"Under this emergency provision, the State Water Board, at its discretion or at the request of any affected responsible agency or person, may authorize a temporary change to the implementation of the LSJR flow objectives in a water right proceeding if the State Water Board determines that either (1) there is an emergency as defined by CEQA (Pub. Resources Code, §21060.3), or (2) the Governor of the State of California or a local governing body has declared a state or local emergency pursuant to the California Emergency Services Act (Gov. Code, § 8550 et seq.)."</p> <p>Reclamation believes that Temporary Urgency Changes should be allowed as provided by the California water code and that the plan should not artificially create a condition precedent before water right holders can avail themselves of remedies allowable under the</p>	<p>Please see Master Response 2.1, Amendment to the Water Quality Control Plan, for responses to comments regarding emergency provision.</p>

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		California water code. However, at the very least, TUCPs should be allowed when material assumptions upon which the numeric or narrative standards are constructed, do not actually occur.	
1264	17	<p>[Page:] ES-23 [Line:] Sec. E55</p> <p>"When implemented through a water right proceeding, implementation would generally follow the water right priority system and in accordance with applicable law." California law does not require that junior water right holders who lawfully store water under priority, mine their stored supplies before senior water right holders contribute to instream flows. A source of instream flow is decreased diversion of unimpaired flow.</p> <p>In any discussion of the implementation, or water rights, phase, the Board should be forthcoming about how its analysis impacts individual water right holders. The 1988 Stipulation and Agreement between OID/SSJID and Reclamation is merely an operational arrangement to satisfy the senior rights of OID/SSJID. The State of California has allocated water rights to OID/SSJID, not Reclamation. Any curtailment of senior water rights for State instream flow contributions should be a State action.</p>	Please see Master Response 1.1, General Comments, and Master Response 1.2, Water Quality Control Planning Process, for responses to comments regarding water rights priorities, the State Water Board's authorities, and implementation of the plan amendments. Please see Master Response 1.1, General Comments, regarding the overall approach to the analyses contained in the SED. Please see Master Response 3.2, Surface Water Analyses and Modeling, regarding the overall modeling approach, which supports a watershed-scale evaluation in changes in available supply for water diversions.
1264	18	<p>[Page:] ES-29 [Line:] ES5.4</p> <p>Water Supply Effects Outside of the Immediate Plan Area: "In general, the flow objectives would be implemented through water right actions that would follow the water right priority system, and in accordance with applicable law, and limit water availability starting with the most junior water rights in the plan area." Under the priority system, junior status is relevant in relation to other diverters of the same source, not across wholly separate sources.</p>	Please see response to comment 1264-17 regarding water rights and the overall approach to the analyses contained in the SED.
1264	19	<p>[Page:] ES-24, ES-33, ES-35 [Line:] ES5.4</p> <p>Direct Net Effect on Surface Water Users and Indirect Effects on Groundwater Users (ES-24): "The net effect of the flow proposal on water supplies for agricultural purposes would be moderated to some extent by increased reliance on groundwater to make up for some of the loss in surface water diversions."</p> <p>Groundwater Effects (ES-33): "The overall rate of groundwater pumping in the plan area, particularly during the recent drought, is likely not sustainable."</p> <p>These statements are contradictory. To resolve it, the SED states "Improved municipal and agricultural water use efficiency and conjunctive water management, with increased groundwater recharge, would reduce the water supply deficit and mitigate potential impacts associated with increased groundwater pumping." An analysis should be performed to determine whether these measures practical or feasible? Are there enough gains in water use efficiency in the affected areas to offset the reduction in supplies?</p>	<p>The State Water Board respectfully disagrees that these are contradictory statements. The overall rate of existing groundwater pumping in the plan area is unsustainable, and, in fact, this was one of the primary reasons for the passage of SGMA. While the State Water Board recognizes that the response of water and irrigation districts to the reduction in surface water supplies may be to pump (more) groundwater, the plan amendments do not require or mandate an increase in groundwater pumping and nothing in the SED requires groundwater pumping to be the response. Precise actions that local entities would take in response to implementation of the plan amendments, with or without the future condition of SGMA, are in the hands of local entities. The State Water Board's responsibility under SGMA is, within a designated timeframe after the preparation, adoption, and implementation of the GSPs, to ensure sustainable management of groundwater basins.</p> <p>Please refer to Master Response 3.4, Groundwater and the Sustainable Groundwater Management Act, regarding historical groundwater uses and overdraft in the plan area, SGMA and SGMA implementation.</p>
1264	20	<p>[Page:] ES-25 [Line:] Table ES-3</p> <p>It appears that the Board's analysis makes flows available in critically dry years because of carryover requirements. Water lawfully stored under priority belongs to the water right holder. We are unaware of any authority of the Board to require water be stored in federal facilities specifically to meet state instream flow requirements in subsequent years.</p>	The State Water Board is not imposing water right conditions in this water quality control planning proceeding. Please see Master Response 1.2, Water Quality Control Planning Process, for a discussion of implementation of the plan amendments and the distinction between the program of implementation and implementation of the Bay-Delta Plan through water rights proceedings. The plan amendments neither modify nor determine water rights; instead, implementation of the water quality objectives will take place through future proceedings. Moreover, the SED is a programmatic-level document and does not evaluate

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		<p>Reclamation is concerned that in critically dry years, where water already is scarce, the SED requires more than 200 TAF (or 42%) of Water Supply.</p>	<p>project-specific impacts. For more information regarding the program-level analysis of the SED in evaluating environmental impacts of the plan amendments, please see Master Response 1.1, General Comments.</p> <p>For information on carryover storage and program of implementation, please see Master Response 2.1, Amendments to the Water Quality Control Plan. The program of implementation does not have any requirement on specific carryover storage. Instead, Appendix K, Water Quality Control Plan, describes that the State Water Board will impose minimum reservoir carryover storage targets or other requirements. Any consideration of whether such are requirements are needed and how they may best be implemented to avoid adverse impacts will be determined in future proceedings.</p> <p>Please see Master Response 3.2, Surface Water Analyses and Modeling, regarding the assumptions related to carryover storage used in the modeling. The purpose of the carryover storage guidelines is to provide information to assess impacts at a programmatic level. For a detailed description of the modeling results on surface water supply effects, please see Appendix F1, Hydrologic and Water Quality Modeling. Section F.1.3, Water Supply Effects Modeling—Results.</p> <p>The State Water Board exercises regulatory and adjudicatory functions of the state in the field of water resources (Wat. Code, § 174), which includes the authority to require federal reclamation projects to comply with state water law. (California v. United States (1978) 438 U.S. 645.) Please see Master Response 1.1, General Comments, for further discussion on State Water Board’s authorities on water rights in general. For further discussion on the State Water Board’s authorities specifically related to the water quality control planning process, please see Master Response 1.2, Water Quality Control Planning Process.</p>
1264	21	<p>[Page:] ES-31 [Line:] 27-29</p> <p>Reclamation believes that impacts outside of the plan area are cumulative impacts and should be included along with the effects within the plan area. List of cumulative actions being taken?</p>	<p>As described in Chapter 1, Introduction, impacts are analyzed in the SED within the plan area, the extended plan area, and areas outside of the plan area or extended plan area that obtain beneficial use of water from the Stanislaus, Tuolumne, and Merced Rivers, and the LSJR downstream of the Merced River, but are not contiguous with the plan area or extended plan area. It is unclear what cumulative actions the commenter is referring to; however, if it is a request of the list of programs or projects analyzed within the cumulative effects discussion, that list is contained in the SED, Chapter 17, Cumulative Impacts, Growth-Inducing Effects, and Irreversible Commitment of Resources.</p>
1264	22	<p>[Page:] ES-38 [Line:] 1</p> <p>Reclamation would like to see estimates in how much groundwater pumping could be sustainably reduced through water conservation, and whether these conservation measures are financially feasible for the area. How would these groundwater estimates be made?</p>	<p>Reductions in groundwater pumping can be achieved through water conservation. However, quantifying the amount of groundwater pumping that could be offset through water conservation would depend upon the individual actions local water users chose to take in response to a reduction in surface water. Similarly, the financial feasibility of water conservation can only be assessed on a case-by-case basis, not at a programmatic level. For a discussion on the scope and programmatic nature of the SED, the adequacy of the approach, and the requirements of CEQA for program-level review, please see Master Response 1.1, General Comments.</p>
1264	23	<p>[Page:] ES-38 [Line:] 7-10</p> <p>Based on the impacts seen from recent conservation cuts, is this level of conservation reasonable and sustainable for the long-term? Explain impacts--water conservation?</p>	<p>Please refer to Master Response 3.6, Service Providers, regarding water conservation during the recent drought.</p>
1264	24	<p>[Page:] ES-50 [Line:] ES6.2</p> <p>"SDWQ Alternative 2 would establish a numeric salinity objective of 1.0 dS/m as a maximum 30-day running average of mean daily EC for all months in the SJR between Vernalis and Brandt Bridge, Middle River from Old River to Victoria Canal, and Old River/Grant Line Canal from the Head of Old River to West Canal." Reclamation supports the new salinity objectives</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments that support the plan amendments or specific SDWQ alternative.</p>

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Ltr#	Cmt#	Comment	Response
		described in SDWQ Alternative 2.	
1264	25	[Page:] ES-65 [Line:] 1-4  Reclamation does not consider an SED adequate to analyze the effects of this plan. We recommend an EIR so that the Board can consider alternatives proposed by other sources. Although this is a CEQA issue, the main question here is why other, previously defined, plans such as the Reclamation Revised Plan of Operation and the OID/SSJID Plan of Operation are not evaluated for consideration. Reclamation recommends that previously defined plans be considered and analyzed as alternatives to the preferred alternative.	The State Water Board is considering the amendments to the 2006 Bay-Delta Plan pursuant to its independent obligation and responsibility to protect the quality of the waters of the State to protect beneficial uses. The SED is consistent with the State Water Board's certified regulatory program (CEQA § 21159) and is a program-level, not project-level, evaluation. Please see Master Response 1.1, General Comments, for clarification regarding the use of a program-level environmental review document and the use of an SED to meet environmental review requirements.  Pursuant to CEQA, the SED is required to present an analysis of reasonable alternatives to a project that would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen the significant adverse environmental impacts of the project. The suggested plans are not consistent with that requirement. Please refer to Chapter 3, Alternatives Description, and Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, for more detailed information regarding the scope and range of the alternatives considered.
1264	26	[Page:] 2-2 [Line:] Note 3  Add "and reduce the frequency of flood control releases."	As described in the SED and Master Response 1.1, General Comments, the upper San Joaquin River is not included in the plan area and therefore this modification would not change the analysis contained in the SED or the conclusions. No change has been made.
1264	27	[Page:] 2-30 [Line:] 31-32  Reclamation recommends including the requirements under D-1641 and associated compliance for Dissolved Oxygen.	This modification would not change the analysis contained in the SED or the conclusions. No change has been made.
1264	28	[Page:] 2-32  AFRP objectives are changing and being guided by a structured decision making tool assessment of multiple flow, habitat, and hatchery scenarios to achieve productivity, abundance, life history diversity and genetic diversity metrics. It is feasible that restoration and recovery actions on the Stanislaus may impact fall run Chinook salmon. The doubling metric of the AFRP is not a number developed through a scientific process. The statute behind the AFRP call for reasonable efforts, not achievement of an arbitrary doubling metric.	As noted in the SED, Appendix K, Biological Goals section, the salmonid biological goals for the program of implementation will be specific to the LSJR and its tributaries and will contribute to meeting the overall goals for each population, including the salmon doubling objective established in state and federal law. Biological goals for salmonid populations will be consistent with best available scientific information, including information regarding viable salmonid populations, recovery plans for listed salmonids, or other appropriate information. Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for a discussion of the salmon doubling objective and the narrative objective.
1264	29	[Page:] 2-33 [Line:] 28-31  While it is true that deliveries to OID and SSJID are 600 TAF when inflow to New Melones is over 600 TAF, OID and SSJID get all of the inflow plus a third of the difference between the inflow and 600 TAF.	Chapter 5, Surface Hydrology and Water Quality, Section 5.2.5, Stanislaus River, identifies and discloses this information.
1264	30	[Page:] 2-35 [Line:] SEWD  It should be noted that the allocations for SEWD and Central are not controlled by the Municipal and Industrial Water Shortage Policy.	This comment expands upon the discussion that is already in Chapter 2, Water Resources, Section 2.5.2, Water Diversion and Use, on the Stockton East Water District and Central San Joaquin Water Conservation District surface water allocations; however, the modification would not change the analysis contained in the SED or the conclusions. No change has been made.
1264	31	[Page:] 2-36 [Line:] Central  Central's interim supply is defined as such to allow development of future in-basin demands.	This comment expands upon the discussion that is already in in Chapter 2, Water Resources, on the Central San Joaquin Water Conservation District's surface water supply; however, the modification would not change the analysis contained in the SED or the conclusions. No change has been made.

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Ltr#	Cmt#	Comment	Response
1264	32	<p>[Page:] 2-37 [Line:] Flow Reqts.</p> <p>Low storage levels are not restricted to drought years since New Melones Dam is over allocated and relies upon frequent very wet years to remain operational throughout the average and below average years.</p>	<p>Please see Master Response 3.2, Surface Water Analyses and Modeling, for a discussion on the reasonableness of the SED modeling assumptions. Please see Appendix F.1, Hydrologic and Water Quality Modeling, for additional details regarding the assumptions and methods used to develop the WSE model baseline and LSJR alternative scenarios. The State Water Board conducted CALSIM II modeling using the CALSIM II SJR module supplied by USBR (USBR 2013a, 2013b). This version of the model contained many of the same assumptions and inputs as the CALSIM II "Current Conditions" case used in the DWR 2009 Delivery Reliability Report (DWR 2010), a version of CALSIM II, which closely represents the baseline conditions over 82 years of historical climate. Thus, the historic conditions that the commenter describes are represented in the WSE model and subsequent analysis.</p>
1264	33	<p>[Page:] 2-37 [Line:] Flow Reqts.</p> <p>The Board referenced the D1641 spring pulse flow as a "requirement" yet uses VAMP to define the No Action Alternative. The no action description should be consistent with how it's analyzed. Using VAMP would not be appropriate since it expired in 2011, but using full D-1641 pulse flows would also not be appropriate since Reclamation has not been able to operate to those flows since VAMP ended. Reclamation recommends the No action be the 2E flows, dissolved oxygen, D-1641 Feb-June base flows and Vernalis salinity. This assumes that b(2) and the 1987 CDFW agreement are covered under the 2E flows.</p>	<p>Please refer to response to comment 1264-2 regarding the No Action Alternative.</p>
1264	34	<p>[Page:] 2-37 1987 [Line:] Agreement</p> <p>The Interim Plan of Operations is unrelated to the 1987 CDFW agreement. The IPO was developed in 1997 in response to both CVPIA and the 1995 WQCP which both included increased releases from New Melones. The increase in fishery releases from 98-302 was developed under the 1987 CDFW agreement and relied upon a calculation that defined "available water." The IPO was only intended for 2 years (1997-1998) and did not address critical or "low" water year types. The "Fishery releases" in the IPO ranged from 98-467 TAF to address both the 1987 CDFW agreement and CVPIA (b)2 releases. The 1997 IPO also define the New Melones Index as a decision-making indicator for New Melones rather than using the San Joaquin River Index.</p>	<p>This comment clarifies information on the 1987 Agreement and IPO discussed in Chapter 2, Water Resources, Section 2.5.3, Flow Requirements, but it is unclear if a specific change is being requested. Therefore no change has been made.</p>
1264	35	<p>[Page:] 2-37 [Line:] 1422</p> <p>D-1422 also included a fishery release of 98 TAF.</p>	<p>This comment expands upon the discussion in Chapter 2, Water Resources, on D-1422. However, it is unclear what specific change or additions is being requested. Therefore, no change has been made.</p>
1264	36	<p>[Page:] 2-38 [Line:] VAMP</p> <p>VAMP included an increased flow requirement for successive wet year periods (referred to as the "double step"). In 2011, Reclamation developed an agreement with Merced Irrigation District to ensure water would be available to meet the VAMP flow requirements (except the double step if applicable). Although Reclamation developed the agreement with the intention of Merced Irrigation District increasing releases to meet Vernalis flows, the natural hydrology, along with New Melones RPA releases were able to meet Vernalis requirements for that 2 year period and no additional water was released from Merced.</p>	<p>This comment expands upon the discussion in Chapter 2, Water Resources, Section 2.5.3, Flow Requirements, on the VAMP; however, it is unclear what specific change or additions is being requested. No change has been made.</p>
1264	37	<p>[Page:] 2-31 [Line:] D1641</p> <p>"Due to inadequate water supplies in New Melones Reservoir to meet all of Reclamation's various obligations and the lack of water releases from elsewhere in the SJR Watershed, Reclamation has repeatedly failed to comply with the SJR flow objectives since the SJRA</p>	<p>Please see Master response 3.3, Southern Delta Water Quality, regarding responsibilities of USBR. Please also see Master Response 2.5, Baseline and No Project Alternative, regarding compliance. This suggested modification would not change the analysis or conclusion contained in the SED, therefore, no change has been made.</p>

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Ltr#	Cmt#	Comment	Response
		expired." Reclamation maintains that the lack of water to meet SJR flow objectives reveals an issue with the obligations, not a compliance issue. Suggest changing "failed to comply with" to "been unable to meet the requirements for."	
1264	38	<p>[Page:] 2-38 [Line:] USFWS</p> <p>Reclamation is not required to operate New Melones in accordance with the AFRP. Reclamation is required to operate the CVP in accordance with CVPIA which defines a limited volume of increased releases (and/or export restrictions) that may be made in an effort to reach the AFRP goals, but are at the discretion of USFWS. The increased releases are referred to as (b)2 flows because they are in section 3406 (b)2 of CVPIA. The IPO defined a quantity of "fishery releases" that would satisfy the (b)2, CDFW and 1995 WQCP requirements.</p> <p>This amount was 98-467 TAF as defined by the New Melones index. There are no "basic IPO flows" as referenced in this section. CVPIA (b)2 releases are measured against those required at the time D-1485 was passed, not the 1997 IPO. AFRP flows are much higher than those released from New Melones. The text infers that we're already meeting AFRP flows, which is false. The main point here is that the system is over allocated, so the numerous, layered flow objectives that have been applied are not feasible. To state that we operate New Melones to AFRP misses the point that we can't operate to our current requirements, let alone the recommended flows.</p>	The text was modified. The modification does not change conclusions within Chapter 2, Water Resources.
1264	39	<p>[Page:] 2-38 [Line:] NMFS BO</p> <p>It should be noted that the 2009 NMFS BO also allows for reshaping of this volume to different days and even months through a Stanislaus Operations Group.</p>	The suggested modification would not change the analysis or conclusion contained in the SED, therefore, no change has been made.
1264	40	<p>[Page:] 2-39 through 41 [Line:] Hydrology</p> <p>The flow releases shown (2000-2009) should include 2010-2012. It is misleading to characterize flood release frequency during a period of time that did not included the large release requirement of the 2009 NMFS BO. If analyzing actual releases, then recommend including through 2015.</p>	Appendix F. 1, Hydrology and Water Quality Modeling describes how the State Water Board included an updated representation of the National Marine Fisheries Service (NMFS) Biological Opinion, see Table F.1.2-4. Minimum Monthly Flow Requirements at Goodwin Dam on the Stanislaus River per NMFS BO Table 2E. The suggested modification would not change the analysis or conclusion contained in the SED, therefore, no change has been made.
1264	41	<p>[Page:] 2-42 [Line:] NMFS BO</p> <p>It should be noted that the minimum Vernalis flow requirements included in the NMFS BO were temporary and have ended.</p>	Please see Master Response 2.5, Baseline and No project for a discussion of the NMFS Vernalis flow requirements.
1264	42	<p>[Page:] 2-48 [Line:] CVP Jones</p> <p>Reclamation also has San Joaquin River Settlement Contractors that are served from Jones Pumping Plant.</p>	The San Joaquin River Settlement Contractors are included in the "CVP water service contractors" category identified in Chapter 2, Water Sources, Section 2.7.2, Water Diversions.
1264	43	<p>[Page:] 2-49 [Line:] Pumping</p> <p>Since the historical period of 2000-2009 is being referenced, CVPIA (b)2 export reductions should also be referenced in this section.</p>	Page 2-49 includes a list of references. It is unclear what section the commenter is referring to. No change has been made.
1264	44	[Page:] Chapter 5	The State Water Board is required to establish water quality objectives that in its judgment will ensure the reasonable protection of beneficial uses and the prevention of nuisance. As discussed in the Executive

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Ltr#	Cmt#	Comment	Response
		<p>Statements and excerpts such as the following (see below this paragraph) occur throughout Chapter 5 and others. Reclamation will assume "reasonably protect" and/or "viable" is defined elsewhere in the document. If not, please do, as readers may want to know the criteria these entail. Several native fish species are at low levels, some at the lowest levels in recorded history . . . it may be prudent to consider and state if 'reasonably protect,' 'viable' and other statements along these lines . . . and the criteria therein . . . allows for growth of those populations and not just maintenance at their current low levels.</p> <p>"The plan amendments would establish narrative and numeric flow objectives that would maintain flow conditions from the SJR Watershed to the Delta at Vernalis sufficient to support and maintain the natural production of viable native SJR fish populations migrating through the Delta."</p> <p>"suitable for reproduction and early development of fish"</p> <p>"for the survival and successful maintenance of plant and animal species established under state or federal law as rare, threatened, or endangered"</p> <p>"methods for adaptive implementation to reasonably protect fish and wildlife beneficial uses"</p> <p>"The operational changes made using the adaptive implementation methods above may be approved if the best available scientific information indicates that the changes will be sufficient to support and maintain the natural production of viable native SJR Watershed fish populations migrating through the Delta and meet any biological goals."</p>	<p>Summary, Section ES10, Intended Uses of This SED, Section 13241 identifies certain factors that must be considered when establishing water quality objectives. These factors include: (1) past, present, and probable future beneficial uses of water; (2) environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto; (3) water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect water quality in the area; (4) economic considerations; (5) the need for developing housing within the region; and (6) the need to develop and use recycled water. "Section 13241 does not specify how a water board must go about considering the specified factors. Nor does it require the board to make specific findings on the factors." (City of Arcadia v. State Water Res. Control Bd. (2010) 191 Cal.App.4th 156, 177.) In making its decision on establishing the water quality objectives, the State Water Board will consider these factors and information in the SED, including the impacts and benefits of the proposed water quality objectives, in determining what will ensure reasonable protection of the beneficial uses.</p> <p>Please refer to Master Response 1.2, Water Quality Control Planning Process, for a discussion of the State Water Board's establishment of water quality objectives and consideration of the factors identified in Water Code Section 13241.</p> <p>As noted in the SED, Appendix K, Table 3, indicators of viability are described, and include population abundance, spatial extent, distribution, structure, genetic and life history diversity, and productivity.</p> <p>The plan amendments are intended to allow for growth of populations, not just maintenance at their current levels. Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, and Master Response 3.1, Fish Protection, for a discussion of the biological goals and objectives of the plan amendments.</p>
1264	45	<p>[Page:] 5-16 [Line:] Note 6</p> <p>Add "and reduce the frequency of flood control releases."</p>	<p>There are no notes on page 5-16. This comment may be about page 5-14. The proposed additional text would not affect the conclusions of the SED; therefore, no change has been made.</p>
1264	46	<p>[Page:] 5-26 [Line:] 21-22</p> <p>OID and SSJID do not jointly hold rights with Reclamation to divert from New Melones; they are senior water rights holders and the up to 600 TAF they divert from New Melones is part of a settlement to avoid injury to OID and SSJID when New Melones inundated old Melones Dam and Reservoir. As written, it implies that Reclamation and the Districts have equal water rights.</p>	<p>The USBR, OID, and TID water rights are discussed in Chapter 2, Water Resources, Section 2.5.2, Water Diversion and Use; however, the text in Chapter 5 was modified. This modification does not change any of the conclusions in Chapter 5, Surface Hydrology and Water Quality.</p>
1264	47	<p>[Page:] 5-26 [Line:] 24-25</p> <p>This calculation of maximum diversion from the Stanislaus River does not include all of the Riparian Water Rights.</p>	<p>It is appropriate that the text in Section 5.2.5 regarding maximum diversions did not include riparian diversions. The text was modified to include the estimated volume of water associated with riparian diversions (20 TAF/y) and is currently identified in Table F.1.2-2. This modification does not change any of the conclusions in Chapter 5, Surface Hydrology and Water Quality.</p>
1264	48	<p>[Page:] 5-34 [Line:] 1st Paragraph</p> <p>Since 90+% of fish are usually lost if entering the SWP's CCFB via the radial gates . . . may consider incorporating language that limits using radial gates during migration periods . . . CVP may be used instead as needed.</p>	<p>Please see Master Response 1.2, Water Quality Control Planning Process, regarding the approach to the Bay-Delta Plan Updates and the separate and independent proceedings. Operation of the radial gates is beyond the scope of the plan amendments described in Chapter 3, Alternatives Description.</p> <p>Please see Master Response 1.1, General Comments, regarding exports to the south of Delta, and please see Appendix F.1, Hydrologic and Water Quality Modeling, and Chapter 5, Surface Hydrology and Water Quality, regarding analyses of exports.</p>

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Ltr#	Cmt#	Comment	Response
1264	49	[Line:] 18-21 The change of seasons for hydropower may have financial impacts that have not been quantified.	Please see Master Response 8.4, Non-Agricultural Economic Considerations, regarding hydropower economic effects.
1264	50	[Page:] 6-30 [Line:] 5 Delete 'or turbidity' in parentheses [turbidity is an optical property].	Turbidity is an optical property; however, as written the text reminds the CEQA document general reader of the relationship between suspended sediment and turbidity. I.e., 'Finer sediment (fine sand, silt, and clay) is transported in suspension and is a major source of turbidity.' (Page 6-7). Therefore, no change has been made.
1264	51	[Page:] 6-33 [Line:] 5 Delete 'or turbidity' in parentheses [turbidity is an optical property].	Please see response to comment 1264-50 regarding the use of the term turbidity.
1264	52	[Page:] 6-36 [Line:] 3 Delete 'or turbidity' in parentheses [turbidity is an optical property].	Please see response to comment 1264-50 regarding the use of the term turbidity.
1264	53	The document discusses potential impacts to bank erosion, bank armoring and bed siltation, but does not address the potential effect of enhanced flows on bed armoring.	Text was added in Section 6.2, Environmental Setting and Section 6.4, Impact Analysis to clarify bed armoring. The modification does not change any conclusions in Chapter 6, Flooding, Sediment, and Erosion.
1264	54	Where are effects of climate change discussed?	Impact EG-3, Impact EG-4, and Impact EG-5, in Chapter 14, Energy and Greenhouse Gases, address climate change. In addition, Chapter 16, Evaluation of Other Indirect and Additional Actions, and Chapter 17, Cumulative Impacts, Growth-Inducing Effects, and Irreversible Commitment of Resources, also discuss climate change. Finally, Master Response 3.2, Surface Water Analyses and Modeling, discusses climate change as it relates to quantitative evaluations.
1264	55	[Page:] 15-2 [Line:] 25-8 Reclamation believes VAMP should not be used in the No Project Alternative, particularly when elsewhere in the document defines the current requirements as the D1641 Table 3 flow requirements. VAMP ended in 2011 and no further funding agreements have been in place to continue a similar program.	The No Project Alternative does not include VAMP, but assumes continued implementation of and full compliance with the 2006 Bay-Delta Plan, as implemented through D-1641. Please refer to Master Response 2.5, Baseline and No Project, regarding the No Project Alternative (Alternative 1). Please refer to Chapters 3, Alternatives Description; 4, Introduction to Analysis; and 15, No Project Alternative (LSJR Alternative 1 and SDWQ Alternative 1) and Appendix D, Evaluation of the NO Project Alternative (LSJR Alternative 1 and SDWQ Alternative 1) for information regarding the No Project Alternative.
1264	56	[Page:] 15-16 Under Additional Resource Areas Considered: 3rd sentence, ". . . and thus are were only. . ." Delete "are."	It is clear from the context of the paragraph that those resources determined to have less than significant impacts were only evaluated in Appendix B. No change was made.
1264	57	[Page:] Appx K 28 [Line:] 7-8 Using a Narrative to describe Vernalis conditions for July through January leaves a lot of room for interpretation. Reclamation recommends including quantitative requirements in the plan table.	As described in Appendix K, Revised Water Quality Control Plan, and further clarified in Master Response 2.1, Water Quality Control Plan Update, and Master Response 2.2, Adaptive Implementation, the State Water Board recognizes the importance of flows during the time period outside of February through June. Please refer to Master Response 2.2, Adaptive Implementation, regarding clarification of adaptive implementation outside the February through June time period. The February through June flow objectives combined with adaptive implementation are designed to provide a similar level of protection as a year-round flow schedule while providing flexibility needed to achieve the greatest biological benefit with the block of water provided by the percent of unimpaired flow objective.
1264	58	[Page:] K-28 [Line:] 7-8 The Board needs to clarify how the 7-day running average may be feasibly implemented. Reclamation is concerned that this operation is not likely feasible based on issues including	Please see response to comments 1264-5 and 1264-6 regarding the 7-day running average and frequency of operational changes.

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Ltr#	Cmt#	Comment	Response
		<p>the need to conduct power scheduling, data availability and quality, coordination with other operations (both on the San Joaquin and at other CVP facilities such as Delta export facilities and upstream reservoirs on the American and Sacramento), downstream impact protection, and public notification, in addition to potential other unanticipated impacts.</p> <p>Further, Reclamation is concerned that the increased frequency of operational changes may impact our facilities and infrastructure, potentially leading to more frequent outages and unscheduled maintenance, and potential equipment/facility failures. In addition, it is not clear how the operating to the 7-day running average of unimpaired flow will be conducted/coordinated when considering rivers with multiple reservoirs in series. For instance, if one or more water right holders are in the process of adding water to storage in upstream reservoirs, the furthest downstream reservoir may be required to release additional water from storage to meet the requirement.</p>	
1264	59	<p>[Page:] K-28 [Line:] 7-8</p> <p>How will the Board ensure that the Vernalis base flow requirement responsibility is shared appropriately between the tributaries?</p>	<p>As indicated in the SED, Appendix K, Flow Requirements for February through June, the LSJR base flow objective for February through June shall be implemented by requiring a minimum base flow of 1,000 cfs, based on a minimum 7 day running average, at Vernalis at all times. This minimum base flow, however, may be adjusted within the range allowed by the LSJR base flow objective through adaptive methods detailed therein. When the percentage of unimpaired flow requirement is insufficient to meet the minimum base flow requirement, the Stanislaus River shall provide 29 percent, the Tuolumne River 47 percent and the Merced River 24 percent of the additional total outflow needed to achieve and maintain the required base flow at Vernalis.</p>
1264	60	<p>[Page:] K-44 [Line:] 29-31</p> <p>The additional studies on the October pulse flow are an additional use of water that is not accounted for in the WSE model, and therefore the impacts are not analyzed. This document only addresses the Feb-June flows, so an October action would be out of scope for this analysis.</p>	<p>Please see Master Response 1.1, General Comments, for a discussion of the approach to the analysis in the SED and program-level analysis. Please see SED Appendix F.1, Hydrologic and Water Quality Modeling, for a description of the WSE model and analysis that includes shifting a portion of the unimpaired flow requirement to fall months, including October. Adaptive implementation methods described in Appendix K, Amendments to the Water Quality Control Plan, Program of Implementation, allow using a portion of spring flows in fall months. Flow shifting can be used for several purposes including October pulse flows or fall experimental flows. The plan amendments do not propose any modification to the existing October pulse flow objective. Flow shifting a portion of the block of water provided by the percent of unimpaired flow objective to October has been evaluated in the SED and is not out of scope for this analysis because it is a method for adaptively implementing the plan amendments.</p>
1264	61	<p>[Page:] K-46 [Line:] 13-24</p> <p>The Board is not clear at what level the Comprehensive Reporting is to be done. It is also unclear if this process is going to replace the multiple other processes that are intended to do the same thing. Reclamation can provide an example of how current reporting is being completed (i.e., information in a current update plan that is already sent to the Board regularly) and would be happy to discuss a more straightforward process.</p>	<p>Please refer to Appendix K and Master Response 2.2, Adaptive Implementation, for discussion of the requirements of Comprehensive Reporting. State Water Board staff appreciates Reclamation's willingness to engage in discussions aimed to improve the reporting process and welcomes its input.</p>
1264	62	<p>[Page:] K-53 [Line:] 5-8</p> <p>Reclamation is unclear on how to measure salinity in segments as opposed to fix points.</p>	<p>Please refer to Appendix K, Chapter IV, for discussion regarding the requirements of salinity monitoring and reporting.</p>
1264	63	<p>[Page:]. K-53 [Line:] 31-32</p> <p>Environmental conditions are not in the control of Reclamation, as such all operations and salinity conditions cannot be predicted for the Comprehensive Operations Plan. Additional</p>	<p>Please refer to Appendix K for discussion of the requirements of the Comprehensive Operations Plan. Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for clarification and discussion of changes made to the plan amendments. Please also see Master Response 3.3, Southern Delta Water Quality, regarding the responsibility of Reclamation and DWR. State Water Board staff appreciates</p>

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Ltr#	Cmt#	Comment	Response
		discussion is needed with the Board on an operational plan and moving forward.	Reclamation's willingness to engage in discussions aimed to improve the process and welcomes its input.
1264	64	[Page:] K-54 [Line:] 1-3  Reclamation does not believe that a Comprehensive Operations Plan can be completed within 6 months. Additional discussion is needed with the Board on an operational plan and a feasible timeline.	Please see response to comment 1264-63 regarding the comprehensive operations plan.
1264	65	[Page:] K-54 [Line:] 18-35  Reclamation does not believe that a special study can be designed with public input within 6 months. Additional discussion is needed with the Board on an operational plan and a feasible timeline.	Please see response to comment 1264-63 regarding the comprehensive operations plan.
1264	66	[Page:] K-64 [Line:] 16-18  "Interested parties should evaluate SJRRP flow contributions to flow and water quality requirements at Vernalis." Replace "evaluate" with "monitor."	As discussed in Appendix K, the State Water Board will consider water quality objectives for the stream system above the San Joaquin River's confluence with the Merced River in future updates to the plan. Accordingly, an evaluation of the impact of flow contributions from the SJRRP to flow and water quality at Vernalis is more appropriate than just monitoring. An evaluation could include monitoring as well as other types of studies or analyses to understand the impact of SJRRP flow contributions to flow and water quality at Vernalis. Therefore, the requested change has not been made.
1264	67	[Page:] K-70 [Line:] 36  It is unclear on how the Board expects these non-flow recommendation to be funded, timelines, and how these differ from the projects already underway as a part of FERC requirements and/or Reclamation's Biological Opinions on Long-term Operations of the Projects. Reclamation suggests discussions with the Board on the feasibility of non-flow recommendations. We will work towards and address those issues on the Settlement Discussions, but these discussions may not be successful in the time period contemplated here.	Please see response to comment 1264-3 regarding voluntary agreements.  Please also see Master Response 2.2, Adaptive Implementation, and Master Response 5.2, Incorporation of Non-Flow Measures, for further information on non-flow measures, including how they relate to the voluntary agreement process and the plan amendments.
1264	68	[Page:] Water supply effects model--CCAO  Reclamation is concerned by the use of a 700 TAF carryover storage target at New Melones. While storage volumes may affect release temperatures at certain times of the year, there does not appear to be sufficient data to support this particular volume. A firm carryover storage target also limits the flexibility to balance water supply and downstream demands. In addition, we are unaware of the Board's authority to mandate such a requirement.	Please see response to Comment 1264-20 regarding carryover storage.
1264	69	According to the 1988 stipulation agreement between Reclamation and OID/SSJID, Reclamation must use the volume identified by the agreement formula water or consumptive use, whichever is smaller. The agreement allows Reclamation to store water in New Melones (and inundate old Melones Dam) without causing injury to the Districts who have senior water rights. This agreement (originally drafted in 1972 and revised in 1988) was in place prior to the Board issuing D-1422 and was assumed in drafting the water right permit requirements.  The Board's modeling, however, allows the Districts' deliveries to be reduced in order to meet carryover storage and release requirements. As such, reductions to the Districts' supply seems inconsistent with the agreements in place.	Please see Master Response 1.1, General Comments, for responses to comments that do not raise significant environmental issues or make a general comment regarding the plan amendments. Please see response to comment 1264-20 regarding distinction between the program of implementation and implementation of the Bay-Delta Plan through water rights proceedings. Please also see response to comment 1264-20 regarding carryover storage as it relates to the plan amendments and the modeling.  SSJID and OID hold a number of water rights, some of which are senior, and others of which, such as under the 1988 Agreement, are contingent upon USBR's appropriative permits governing the operation of New Melones Reservoir. The 1988 Agreement is separate and distinct from the common category known as 'CVP contracts,' but the rights and quantities conveyed in the 1988 Agreement are properly described as contract rights, regardless of any senior and underlying claims.

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Ltr#	Cmt#	Comment	Response
		<p>Note: The New Melones Revised Plan of Operation assumes full compliance with the 1988 stipulation agreement. In addition, a new plan would need to address (in some form) all of the following in addition to sustainability and general water supply reliability.</p> <p>Prior Water Rights Agreements: Dedicate half the average inflow (600 TAF), Riparian Water Rights (~36TAF)</p> <p>D-1422: Salinity and Dissolved Oxygen Requirements (up to 70 TAF)</p> <p>CVP Contracts: Required to fill and limited discretion to reduce (up to 155 TAF)</p> <p>California Fish and Game Agreement: Up to 302 TAF</p> <p>CVPIA releases: contribute towards 800 TAF of fishery releases (assume 200 TAF)</p> <p>D- 1641: Vernalis salinity and flow requirements</p> <p>NMFS BO: Up to 589 TAF of instream releases, temperature requirements (requires storage), Periodic high release requirements for gravel movement</p>	<p>Please see Master Response 2.5, Baseline and No Project, for responses to comments regarding flows required by 2009 National Marine Fisheries Service Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project.</p>
1264	70	<p>As a result of litigation, we [Reclamation] have limited ability to release sustained flows above 1,500 cfs into the Stanislaus River since it may cause harm to Stockton East Water District through increased seepage and damage to root zones of particular crops.</p>	<p>As described in Chapter 11, Agricultural Resources, flows greater than 1,500 cfs already occur on the Stanislaus River. Flows greater than 1,500 cfs would increase slightly with LSJR Alternative 2, and more with LSJR Alternative 3. However, because flows greater than 1,500 cfs affect less than 1 percent of the total agricultural production in the LSJR area of potential effects, this potential impact was considered to be less than significant.</p> <p>Brantley (2016) documents additional information that supports the SED conclusion that the seepage impacts with respect to agricultural lands within the Stanislaus River floodway are less than significant (Brantley 2016). Brantley assembled the USACE information demonstrating that the USACE has implemented a lower Stanislaus River Easement Program (i.e., below Goodwin Dam to the junction with the San Joaquin River). The USACE has purchased easements encompassing the majority of the 8,000 cfs Stanislaus River floodway. The USACE has some fee title-owned parcels as well as easements. The easement types are: flowage overflow easements (outside the primary floodway); flowage and channel maintenance easements (inside the primary floodway); and flowage and channel maintenance easements (inside the primary floodway) and Fish and Wildlife Habitat Protection and Propagation (includes the primary floodway and the vegetation bordering it). These easements along the entire lower Stanislaus River below Goodwin Dam further limit any agricultural impacts that might occur from the LSJR alternatives and support the less than significant impact conclusion. Additionally, the LSJR alternatives analysis evaluated a very conservative 1,500 cfs flow with respect to seepage when the majority of the agricultural lands along the Stanislaus River can have their surfaces completely inundated by flows up to 8,000 cfs within the floodway per their USACE easements.</p> <p>In addition, as discussed in Master Response 1.1, General Comments, regarding the programmatic analyses in the SED, and in Master Response 1.2, Water Quality Control Planning Process, regarding the program of implementation, the proposed amendments to the Bay-Delta Plan have not yet been implemented by a water right decision amending specific water right permits and licenses, or by regulation. The SED's analysis has been conducted at a programmatic level, not a project-specific-level. Consideration of any one particular water user's potential ability to implement the water quality objectives is premature and speculative. Moreover, to the extent the commenter appears to refer to the 1,500 cfs limitation resulting from a 1982 injunction, it merits noting that federal court decisions have deferred to the National Marine Fisheries Service's conclusions in connection with the salmonid biological opinion that the 1,500 cfs</p>

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			<p>limitation no longer applied and could be omitted from Stanislaus River modeling and that pulse flows are necessary despite Reclamation's concerns regarding flooding above this amount. (In re Consolidated Salmonid Cases (E.D. Cal. 2011) 791 F.Supp.2d 802, 941, revd. in part on other grounds; San Luis &amp; Delta-Mendota Water Authority v. Locke (9th Cir. 2014) 776 F.3d 971, 1007.)</p>
1265	1	<p>The draft Substitute Environmental Document ("SED") is legally and scientifically deficient and should not be adopted by the State Water Resources Control Board ("SWRCB").</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues. Also see Master Response 1.1, General Comments, for responses to comments in general opposition of the plan amendments.</p>
1265	2	<p>The SED proposes relaxing the agricultural beneficial use objectives in the southern Delta (from the current 0.7/1.0 EC to 1.0 EC all year), while at the same time purporting to maintain the existing water quality which regularly exceeded those objectives. Assuming that the relaxation of water quality standards in the collapsing Sacramento-San Joaquin Delta estuary could even be contemplated, such relaxation would have to [be] based upon evidence that the resulting water quality is reasonably protective of the beneficial use or uses dependent on that water. No such evidence exists. To be clear, the SWRCB is not facing a choice between two conflicting scientific opinions, sets of data, or conclusions. There is only one set of data relating to agricultural salt tolerances in the southern Delta and that data indicates the current water quality conditions in the area are not protective. The contrary "data" on which the SED and SWRCB staff rely is demonstratively incorrect.</p>	<p>Please see Master Response 3.3, Southern Delta Water Quality, regarding why the SDWQ objectives are being updated and for a discussion of the validity of the Hoffman Report and how the proposed salinity objective reasonably protects agricultural beneficial uses. As described in Chapter 5, Surface Hydrology and Water Quality, and Chapter 13, Service Providers, and Chapter 23, Antidegradation, water quality in the southern delta would not be degraded in response to implementation of the plan amendments. The USBR water rights permits will continue to include requirements to meet the 0.7 EC April-August Vernalis salinity standard, as contained in the program of implementation of the plan amendments. Therefore, salinity will not increase above baseline conditions and there will be no degradation in water quality. Agricultural production would not change, as described in Chapter 11, Agricultural Resources. Please see Master Response 1.2, Water Quality Control Planning Process, for information on the State Water Board's peer review process of the Scientific Basis report regarding flow and SDWQ objectives and authorities and regulations governing the water quality control planning process.</p>
1265	3	<p>In its most basic terms, the SED concludes that calculations and modeling show adequate leaching of salts is occurring in the southern Delta and because of that, allowing a worse water quality to exist than the current objectives permit will still protect agricultural beneficial uses. The logic used by the SWRCB staff to support the SED can be described as a simple syllogism; "if A then B; if B then C; if A then C." "A" is the data of salts applied and salts leaving the crop root zones. "B" is what leaching fractions derive from the "A" data. "C" is the reasonable water quality objective based on the leaching fractions. In the abstract such reasoning is perfectly appropriate. In practice, the SED uses "X" (the wrong salt data) as if it were "A." Since it is not we thus we end up with "if A then B; if B then C, if X then C." Of course such substitution of one of the premises destroys the logic.</p> <p>SED asserts that the violations of water quality objectives that occurred in the past (when the current objectives were not met and not enforced) did not adversely affect agriculture in the southern Delta. The SED then proposes to implement the relaxed objectives in a manner that will keep the water quality similar to the historic levels so that the proposed relaxation does not in fact "change" anything.</p> <p>In support of the relaxation, the SWRCB's staff used an analysis which calculated leaching fraction in the southern Delta, and from that calculated what water quality is protective of agriculture in the area. The faulty analysis used a "salt in" and "salt out" calculation to determine leaching fractions. The applied water was the "salt in" portion. Unfortunately for the SWRCB staff and the SED, the analysis used water qualities inputs which were not based on actual water quality, but on an assumed water quality which matched the objectives. This assumption of course ignored the well-known, ongoing and regular exceedences/violations of the objectives. If the water being applied to agricultural lands in the southern Delta had been of a quality matching the objective the analysis might have had merit. Since it did not, the analysis simply doesn't apply to the subject circumstances or</p>	<p>Please see Master Response 3.3 Southern Delta Water Quality for why the technical basis for the proposed salinity objective of 1.0 dS/m is valid and correct even considering the points raised by the commenter. Please see Chapter 11 Agricultural Resources section 11.4.2 Methods and Approach for language used to describe the Hoffman Report (Appendix E). Appendix E used the current state of knowledge on crop salt tolerances along with available input information such as leaching fraction, crops, and water quality from the Delta. The SED analyses of southern Delta water quality and crop salinity requirements, describes that existing salinity conditions in the southern Delta are suitable for all crops.</p> <p>Please see response to comment 1265-6 regarding the report produced by the Delta Protection Commission.</p>

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		<p>area.</p> <p>The analysis makes the further mistake of using the wrong "salt out" numbers so that all of its conclusions are necessarily wrong.</p> <p>In addition, the SED failed to "check" its conclusions to see if there was any data indicating how or if any particular quality of water would adversely affect agriculture. If it had, it would have found that data produced by the Delta Protection Commission indicates that increasing applied water salinity in the Delta forces farmers to change cropping and results in decreased yields; conclusions directly at odds with the SED.</p>	
1265	4	<p>A historical overview of the issues and problems is found in the 1980 Report on the Effects of the CVP Upon the Southern Delta Water Supply on the Sacramento-San Joaquin Delta, California ("Report") produced by the USBR and the SDWA [South Delta Water Agency]. [Footnote 1: The Report references one of the authors as the "Water and Power Resources Services;" a name by which the USBR was known for a short time.] Figure VI-25 from that Report shows that the (calculated) mean monthly average TDS at Vernalis for the decades of the 1930's and 1940's was below 400 TDS even during the summer (highest salinity) months. 400 TDS converts to an EC of 256. The Figure also shows the TDS for the decades of the 1950's and 1960's with those mean monthly values reaching 450 and 600 TDS, respectively. Even at the 1960's level, the EC on average did not exceed an EC of 384. The SED proposes to relax the objective to 1000 EC; just under a threefold increase from the water quality present in the 1960's after decades of deteriorating water quality.</p> <p>The reason for the every decreasing water quality in the San Joaquin River is of course the importation of huge quantities of salt into the basin each year by the CVP, and the subsequent movement of much of that salt into the river as surface or subsurface drainage. As the Central Valley Regional Water Quality Control Board showed in its 2006 report Salinity in the Central Valley, the San Joaquin River contributes 742,000 tons of salt (mean) to the Delta annually and that number exceeds a million tons per year sometimes.</p> <p>This huge amount of salt is of even greater concern because the CVP decreased river flows by 553,000 acre feet per year (345,000 acre feet April-September) (see Report Table V-18). The decreased flows resulted in greater concentration of the added salts. To date, neither the SWRCB nor the Regional Board have required the USBR to mitigate it adverse effects on the river.</p> <p>In 1995 the SWRCB adopted an updated Water Quality Control Plan for the San Francisco/Bay Sacramento-San Joaquin Delta Estuary which set the southern Delta Agricultural Beneficial Use Objectives at 700 EC (April-August) and 1000 EC (September-March). That Plan specified compliance be achieved by December 31, 1997. The implementation of that Plan occurred in 2000 with the adoption of the Revised Water Rights Decision D-1641. However, D-1641 further delayed implementation of the objectives (until April1, 2005) and in a footnote allowed the objectives to relax to a year round 1000 EC if DWR and USBR implemented a barrier program "or equivalent measures." This potential relaxation constituted a change in the objectives.</p> <p>D-1641 was challenged by nearly all involved parties except DWR and USBR. The eventual final ruling by the appellate court, among other things, concluded that the water quality objectives could not be changed via a water rights decision and so directed the SWRCB to either fully implement the southern Delta salinity objectives or change them in the proper</p>	<p>Please see Master Response 3.3, Southern Delta Water Quality, for responses to comments regarding why the southern Delta Salinity objectives are being updated. Furthermore, the Program of Implementation requires DWR and USBR to address the impacts of the SWP and CVP on salinity conditions in the southern Delta. The facilities and operations needed to address these impacts will be determined in the Comprehensive Operations Plan. Also, please refer to Master Response 3.3 for discussion of DWR and USBR's responsibilities and the Comprehensive Operations Plan. The State Water Board has been implementing and enforcing the existing salinity objectives in the Bay-Delta Plan, as exemplified by the Cease and Desist Orders cited by the commenter. The Board has made clear to USBR that it must comply with the existing salinity objectives and cannot presuppose the outcome of this proceeding to amend the salinity objectives.</p>

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		<p>water quality planning process. Unfortunately for southern Delta interests, the SWRCB then proceeded as if the appellate court had ordered it to change the objectives, ignoring the choice of simply implementing the objectives. This decision by the SWRCB was not supported by any evidence in the 1995 Plan process of the D-1641 process; no evidence was submitted that suggested the southern Delta salinity objectives were someone overly protective.</p> <p>Thereafter, DWR and USBR informed the SWRCB that they would not meet the objectives by the April 2005 deadline which resulted in two consecutive Cease and Desist hearings and Orders. Those orders, WR 2006-0006 and WR 2010-0002, extended the deadline by which DWR and USBR were to meet the objectives, or more correctly to submit a plan by which they would "obviate" the threats of future exceedences. The final deadline for such plan (January 2013) came and went without compliance with the CDO's. DWR, USBR and SWRCB apparently assuming they would relax the standards before enforcement would be necessary. Eventually, the SWRCB Watermaster issued a ruling that gives DWR and USBR an additional 180 days (expiring June 2017) to submit the plan of compliance.</p> <p>Thus, the history of the southern Delta water quality objectives for the protection of agricultural beneficial uses is one of delay and lack of enforcement. The incidences of violations are too numerous to relate here, but the SWRCB records of DWR/USBR notifications of exceedences since 2005 are incorporated herein.</p>	
1265	5	<p>The basis for the proposed changes to the southern Delta water quality objectives is the January 2010 report by Dr. Glenn Hoffman, Salt Tolerances of Crops in the Southern Sacramento-San Joaquin Delta ("Hoffman Report"). As related in the Hoffman Report, impacts to crops are estimated to occur when the EC of the soil reaches a threshold for any particular crop. In addition, individual applications of high saline water can also adversely affect plants and crops even when the soil EC threshold is not reached. The Hoffman Report uses no current data, relies on no actual sampling and testing of soils, and contains no actual data on existing conditions in the southern Delta. Because of this, both Dr. Hoffman and the single peer reviewer of Dr. Hoffman's work state that additional sampling and testing were desirable.</p> <p>There are two ways to determine if salts are building up in the root zone of agricultural crops. One is to actually measure the salts in the soil and the other is to calculate the soil salt and how it might be changing. The calculation method attempts to determine the leaching fraction of a particular area. The "leaching fraction" is the amount of additional applied water (of a certain quality) above the amount needed/used by the plant and which passes through (out of) the root zone. Leaching fractions are normally expressed as a percentage. This amount or percentage of "extra" water is the means by which salts move out of the root zone.</p> <p>In order to calculate leaching fractions for the southern Delta, Dr. Hoffman used a specified water quality for the applied water and 1986, 1987 and 1989 data from the sampling of tile drains (see Table 3.10 of Hoffman Report). In nonscientific language, Dr. Hoffman used applied water EC as the "salt in" to the soil, and tile drainage EC as the "salt out" of the soil. [Footnote 2: Dr. Hoffman also references some other drainage and tile drainage data but again never confirms if the water in that drainage was from poor quality ground water, excess applied water, or some combination thereof.]</p> <p>Dr. Hoffman assumed the applied water quality was 0.7 dS/m EC (to be consistent herein I</p>	<p>Please see Master Response 3.3, Southern Delta Water Quality, regarding why the SDWQ objectives are being updated and for a discussion of the validity of the Hoffman Report. Please see Chapter 11, Agricultural Resources, Section 11.4.2, Methods and Approach, for information on the impacts of salinity to crops in the southern Delta. Appendix E, Salt Tolerance of Crops in the Southern Sacramento-San Joaquin Delta, used the current state of knowledge on crop salt tolerances along with available input information such as leaching fraction, crops, and water quality from the Delta. The commenters conversion of units is incorrect, 0.7 dS/m = 70 mS/m not 700 mS/m and it is assumed that the 2,200 EC (no units supplied) that was sampled was reported in umhos/cm; 1,000 umhos/cm = 1mmhos/cm = 1 dS/m; therefore the salinity is 2.2 dS/m for the instantaneous reading.</p> <p>The information presented by the commenter on the recent leaching study by Dr. Leinfelder-Miles (discussed further in Master Response 3.3) does not consider all of the author's findings and rather selects findings that support the comment. Specifically, additional information in Dr. Leinfelder-Miles' report indicates the yield in areas with low leaching fractions were higher than some areas with higher leaching fractions. Also, Dr. Leinfelder-Miles found that irrigating with high quality water (i.e., seasonal average low EC of 0.47 dS/m) in a soil with a low leaching fraction resulted in an alfalfa yield (8.1 tons/acre). This is in contrast to the study field with the lowest water quality (1.78 dS/m seasonal average) that had the highest leaching fraction (25 percent) and yield of 9.8 tons/acre. Field 2 of the study in 2013 had the highest soil salinity (ECe), a 3 percent leaching fraction and the highest yield. The one factor that this field excelled in was a 150 cm rooting, which was deeper than the rooting depth in all other fields. This extra depth (10–50 cm) allows for better drainage. In addition, the author stated that field 1, which had the shallowest rooting depth, appeared to have a high water table that appeared to impede leaching. Reducing the level of the water table is a common practice with infrastructure such as tile drains. These data points and information indicate that leaching is crucial to obtaining superior yields. Finally, as described in the study, water quality is not the reason for the reduced yields or lower leaching fraction, rather it is the soil profile's ability to drain.</p> <p>The commenter's statement that Dr. Hoffman was just guessing on water quality being at 0.7 dS/m is</p>

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		<p>will convert from the dS/m scale to the mS/m scale, in this instance converting 0.7 to 700). There is no basis for such an assumption. Data from DWR indicates that the EC at the three interior southern Delta compliance locations is regularly above the 700 EC levels in summer months. Dr. Hoffman made no attempt to determine what the range of EC's were in any particular year or in any year types. Neither did Dr. Hoffman or SWRCB staff seek data from individual farmers who regularly take EC measurements. In June of 2015 I sampled the supply water from the southeastern end of Tom Paine slough as 2,200 EC. Thus, when Dr. Hoffman assumed the "salt in" as being 700 EC he was not using actual or accurate data; he was simply guessing.</p> <p>For the "salt out" inputs, Dr. Hoffman used the tile drain data referenced above. However, to be useful, the tile drain water (which was originally sampled and the EC thereof measured), would have to be the excess applied water which passed through the root zone which transported the applied salts through the soil. Instead, those tile drains (described in pages 51-53 of the Hoffman Report) contain mostly shallow ground water and not excess applied water. The ground water in that area is very saline. Thus, Dr. Hoffman's data for how much salt is being passed through the soil profile is simply not that.</p> <p>Therefore, Dr. Hoffman used the incorrect salt in data (understating applied salt) and incorrect salt out data (overstating salts leached from the soil). The results therefore may indeed be calculation outputs or modeling results, but they bear no relationship to what was/is happening to salt levels in southern Delta agricultural soils. Not only can one not calculate an accurate leaching fraction by using incorrect and irrelevant data, but one also cannot thereafter estimate what quality of water is necessary to protect agricultural beneficial uses. Once the initial, incorrect data was used, Dr. Hoffman's entire effort and certainly his results are merely some hypothetical math exercise and useless in evaluating southern Delta salinity issues.</p> <p>The only effort made to address this fundamental fault in the work was when Dr. Hoffman added another, lower leaching fraction (15%) to his work; and still concluded that the objectives could be relaxed. Of course such a "correction" does not cure the underlying problem unless this new leaching fraction he later inserted was indeed an accurate representation of leaching fractions for southern Delta soils. As one might assume, it was not as will be explained below.</p> <p>The Hoffman Report suffers from other inaccuracies and misconceptions which also preclude its use to justify a relaxation of water quality standards. Water and the dissolved salts in it must pass through the soil in order to leach salts from the soil (or prevent their buildup). However, as previously presented to SWRCB staff and Dr. Hoffman, the permeabilities/percolation rates of southern Delta soils inhibit, if not actually prevent the water from moving fast enough to accomplish any leaching. The Outline of Testimony of Alexander Hildebrand on South Delta Agriculture by Alex Hildebrand explains this problem with many southern Delta soils. Mr. Hildebrand relates how slow percolation rates can prevent a farmer from applying the necessary additional water to leach the soil because the field must be allowed to dry out before the next irrigation is necessary. Because of this, the farmer ends up adding more and more salt over the season and the crop suffers.</p> <p>Though perhaps not a controlling fact, Dr. Hoffman's familiarity with the underlying issues associated with farming perhaps helps explain why his work is not reliable. At a workshop early in this process, Mr. Hildebrand explained publically to Dr. Hoffman that he was not considering real-life problems in his analysis. Mr. Hildebrand explained how the</p>	<p>mischaracterizing the information. Dr. Leinfelder-Miles' report that shows a range of seasonal average salinity of 0.36–1.78 dS/m for seven fields, and that four of the fields have salinity less than 0.7 dS/m, and six of the seven fields were 0.85 dS/m or less.</p> <p>The commenter's quotation of Mr. Alex Hildebrand provides further evidence that leaching is more a physical issue with drainage in the affected area than an issue of the incoming water quality. Even with extremely low irrigation water salinity, if the soil permeability or drainage is so low that water cannot pass through it then salt will inevitably build up. In this case, the only option is apply other soil management techniques to remove the salts. In other words, it would not matter how low the salinity water quality objective is set if you have very low permeable soils for which management practices are not employed. Mr. Hildebrand states that they cannot apply enough water to leach the soil because of poor drainage and that soil compaction is increased due to frequent harvest equipment. Reducing compaction is commonly achieved through the use of deep ripping prior to establishing an alfalfa field. In the Imperial Valley, deep ripping combined with tile drainage has enabled high quality hay production on high clay content soil (low infiltration rates) for many decades.</p> <p>The commenter's attachments were not attached to his comment letter, but rather were submitted after the deadline for public comments and are therefore not considered or responded to in these response to comments.</p>

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		<p>management practices for alfalfa included mowing, raking and baling upwards of 8 times a season and how this regular vehicle traffic over the fields further compact the soils and exacerbates the low permeability problems. Dr. Hoffman's now semi-infamous reply was that he "could help it if fanners had bad management practices." Of course such a comment lays bare the technical shortcomings of the process and also how difficult it is to get "experts" to change their mind even in light of irrefutable evidence. Alfalfa cannot be fanned without vehicle traffic for mowing, raking and baling.</p> <p>This example also recommends a change to the entire process. Since the first agricultural objectives were developed for the Delta, the SWRCB and most interested parties have focused on measuring impacts to "salt-sensitive" crops. Thus the current SED as well as the many prior efforts all look to how applied water quality might affect beans, a salt sensitive crop. This perhaps makes sense in the lab where plant scientists pour water into containers of sand to see how much water passes through the soil and the degree to which salt may accumulate in the soil. However, the real world is something different altogether.</p> <p>The degree to which any plant may be sensitive to salt may not be the most important concern in developing a water quality objective. If the soils do not allow adequate leaching, then the salt delivered via the applied water never gets fully flushed out of the root zone and eventually that plant's particular threshold is reached and the crop suffers. Of course for any particular crop the time it takes to reach the threshold may differ, but the issue is not so much how sensitive the plant is, it's whether or not salts are being flushed out of the soil. Dr. Hoffman's fundamental error was thinking that he could calculate the leaching fractions of the soil and that his calculations need not be ground-truthed. One cannot know if a soil is allowing enough water to pass through to allow leaching without measuring what is actually going on in that particular area. Modeling leaching is at best a guess, and in this case a very bad one.</p> <p>Lastly with regard to the Hoffman Report it must be noted that in his attempts to use tile drain data, Dr. Hoffman failed to investigate (or understand) the many differences in the southern Delta. The southern Delta has land that is 20 feet above sea level and land that is 5 feet below sea level. Some of the lands get water from near Vernalis which is generally kept at or below the objective; some get water from interior areas that are stagnant and higher in salinity (than the water at Vernalis), some get export quality water either from the cross Delta flow or directly from the CVP's Delta Mendota Canal; and everything in between. Many areas have shallow ground water of very poor quality and the plants roots are in contact with that poor quality water. In some areas the tides directly affect ground water levels and thus twice daily raise the poor quality ground water up and down, in and out of the root zone. This inhibits if not prevents salts from permanently passing through the root zone. A myriad of differences determines the ability or success at leaching.</p> <p>Though some of these peculiarities were mentioned by Dr. Hoffman, none were actually taken into account in his work. For example, the notion that tile drains in the southeastern portion of the area are typical of drainage in other southern Delta areas is false on its face. Those drains are in soils and area that have little in common with other areas. Thus even if the tile drain data were correct (and it is irrefutably incorrect) it still would still not be reflective of drainage from other areas or indicate how much salts passes through other root zones. In this same vein, Dr. Hoffman did not determine if the supply water for the lands served by the tile drains was from the Delta channels or from the DMC. Such lack of "ground-truthing" cannot support changes to water quality objectives.</p>	

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		<p>As we see, the Hoffman Report simply cannot support changes to water quality objectives. The only evidence bearing on the issue of "what quality of water is necessary to reasonably protect agricultural beneficial uses" was in fact produced by the SDWA [South Delta Water Agency].</p> <p>In response to Dr. Hoffman's inaccurate Report and to the SWRCB staff's unwillingness to recognize the deficiencies therein, SDWA, in conjunction with grant funds from UC Davis retained Michele Leinfelder-Miles to conduct a study. The study is entitled Leaching Fractions Achieved in South Delta Soils Under Alfalfa Culture Project, Report Updated December 2016. Ms. Leinfelder-Miles is the Delta Resource Management Advisor with the University of California Cooperative Extension, based in San Joaquin County. Seven locations were selected throughout the southern Delta to get a sampling of different soil types and different water qualities. The basic design of the study was to sample and measure the soil salinity in the root zone at the beginning of the irrigation season, sample the applied water used for each irrigation and measure its salinity, and then sample and measure the soil salinity at the end of the season. In this manner, the study would determine the amounts of salts applied and how much of those did or did not remain in the root zone (were or were not leached out).</p> <p>The data was collected in the years 2013 and 2014. In general, Ms. Leinfelder-Miles' study found that of the seven locations, five never achieved a leaching fraction greater than 8% and of the 14 results (seven sites over two years) half had leaching fractions at or less than 5% with results of 3% and 2% in certain cases. Recall that Dr. Hoffman calculated leaching fraction for the southern Delta at 20% and above and added a 15% leaching fraction analysis after the initial criticisms to his work.</p> <p>The conclusions reached by Ms. Leinfelder-Miles were (i) salinity in the area is a problem because of the low permeability of the local soils, poor quality applied water and shallow groundwater, (ii) the data indicates that leaching fractions being achieved are very low such that salts are building up in the soils, potentially banning crops, and (iii) local conditions and best management practices constrain farmers ability to leach salts.</p> <p>Thus on the one hand, the SWRCB has before it calculated leaching fractions by Dr. Hoffman which were arrived at using incorrect and irrelevant data. On the other hand the SWRCB has Ms. Leinfelder-Miles' study which actually determined leaching fractions based on specific, current data. That data shows very low leaching fractions and a buildup of salts in the soil. The question before the SWRCB does not hinge on a choice between two sets of data or two opposing opinions. The only accurate, reasonable and reliable data that exists does not support a relaxation of the water quality objectives. To the contrary it suggests current standards are insufficient. That conclusion is perhaps premature in that we do not generally know if the current objectives are protective because DWR and USBR do not regularly meet the standards and the SWRCB does not enforce the standards. Regardless, there is no data supporting a relaxation of the water quality objectives for agricultural beneficial uses in the southern Delta.</p>	
1265	6	<p>The SED fails to include any data or reference any effort regarding to secure such data on the impacts of current water quality on crop production or costs associated with the use of high salinity applied water. It is important to note that this process began nearly ten years ago. Even before that, SOWA put on evidence at the two CDO hearings referenced above indicating ongoing crop damage due to salts in the applied water. Included herewith are copies of the testimony of Mark Bacchetti, Rudi Mussi and Chip Salmon; all local growers</p>	<p>Please see Appendix E, Salt Tolerance of Crops in the Southern Sacramento - San Joaquin Delta, for discussion of why the proposed salinity objective is protective of agriculture. The grower testimonies summarized in the comment present anecdotal accounts of lower water quality and reduced yields at specific fields. It is, however, difficult to assign yield reductions explicitly to salinity when considering other factors that must be managed, such as soil nutrients, pests, and pathogens, and environmental conditions,</p>

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		<p>who have presented evidence and conclusions regarding how the water they use for irrigation in the southern Delta adversely affects their crop production and or requires additional costs for them because they can only use that water.</p> <p>In addition, also included herewith are the Statements of Richard Marchini, Mark Bacchetti (again), and Jack Alvarez, also local growers indicating that they observe plant and crop damage due to salt and/or how this salt adversely impacts crop yields.</p> <p>The testimonies and statements are easy reads and I encourage each Board member to read each one. As the policy and decision makers in this process, the Board can of course decide to disregard these testimonies and statements if they believe they are unreliable or somehow inaccurate. However it must be recognized that there is no contrary evidence; no party, no fanner, no study suggests that yields and plants are unaffected by current water quality conditions. Hence there is nothing to balance against this information; nothing that presents a conflict in data or science or opinion. The only information which could be construed as presenting contrary data was given many years ago. It was simply statements that there were fewer acres of beans now in the area. Of course crops change over time as market and other forces guide farmers' decision, but the current acreage of one crop is simply not evidence of what water quality reasonably protects local agriculture.</p> <p>There is however other, official evidence contradicting the SED recommendations to relax the water quality objectives. The Delta Protection Commission retained Dr. Jeff Michael to produce the Delta Economical Sustainability Plan, completed and adopted in January 19, 2012. That Plan showed that even small changes in salinity significant decreases in agricultural revenues, just from changes in crop choices by farmers as they adjust to adverse situations. The Plan also calculated decreases in crop production resulting from small incremental increases of applied water (at 5% leaching fractions). These results were echoed in the BDCP Statewide Economic Impact Report. Both are referred to by Dr. Michael in his testimony given in the WaterFix hearings late last year, which testimony is attached hereto. We also include by reference the DPC Economic Sustainability Plan.</p>	<p>such as weather.</p> <p>The Delta Economic Sustainability Plan (DESP), adopted January 19, 2012, presents potential economic impacts of shifting crop choices in response to increasing salinity levels in the southern Delta. The analysis uses a Multinomial Logit Model, trained with a historical dataset of cropping patterns and salinity conditions for 6000 fields in the Delta from 2002 to 2010 (excluding 2005). The economic impacts were calculated assuming uniform salinity increases throughout the southern Delta of 25%, 50%, 100%, and 200% over baseline conditions. However, as discussed in Master Response 3.3, Southern Delta Water Quality, salinity levels in the southern Delta will not be increased because of the plan amendments since USBR will be required to comply with the current 0.7 dS/m salinity objective at Vernalis. Furthermore, though the Bay Delta Conservation Plan (BDCP) Statewide Economic Impact Analysis, released August of 2013, uses the same model as in the DESP, it is intended to describe the potential impact of new Delta conveyance facilities to the export pumps, not the plan amendments.</p> <p>The commenter's attachments were not attached to his comment letter, but rather were submitted after the deadline for public comments and are therefore not considered or responded to in these response to comments.</p>
1265	7	<p>SED Changes to Compliance Monitoring --</p> <p>When the 1995 WQCP was first developed, there was some uncertainty as to where compliance with the standard should be measured. The ultimate decision was that there would be three interior southern Delta compliance locations, at Brandt Bridge on the San Joaquin River, Old River at Middle River, and Old River at Tracy Blvd. Bridge. At the time, the involved parties assumed that if these locations were later determined to not be representative of the water quality conditions in the area, different locations would be found.</p> <p>Instead of evaluating what the proper compliance locations should be, the SED now proposes to average (though the specifics are lacking) three reaches of Delta channels to determine compliance. Those reaches are generally Vernalis to Brandt Bridge, Old River and Grant Line Canal, and Middle River from Old River to Victoria Canal. This approach raises serious questions given that the 2006 WQCP clarified that water quality objectives, like those in the southern Delta apply throughout the channels even though they are measured at discrete locations.</p> <p>If one averages a number of water quality measurements, the resulting number informs regulators very little about local conditions; obviously an average hides the extremes. Take</p>	<p>Under the Clean Water Act, states are required to develop water quality standards applicable to all water bodies or segments that lie within the state. (33 U.S.C. § 1313, subd. (c); 40 C.F.R. § 131.2, subd. (f), (i).) Water quality standards therefore apply throughout the water body for which they were adopted, not isolated points. Therefore, proposed revised salinity objectives apply throughout the southern Delta. In response to this and other comments, Appendix K has been revised to make this point clear. Please see Appendix K.</p> <p>The use of river segments as compliance locations is in no way intended to "average away" water quality problems. Please see Master Response 3.3, Southern Delta Water Quality, for responses to comments regarding the measurement of salinity in the southern Delta. The proposed plan amendments seek to improve the methods for determining compliance with the salinity objective by looking at the broader river segments to obtain an accurate depiction of the true salinity conditions. This will entail requiring and using information from the Comprehensive Operations Plan (COP), Monitoring Special Study, Modeling, and Monitoring and Reporting Plan to determine the appropriate locations and methods to assess attainment of the salinity objective in the interior southern Delta. DWR and USBR will be required to develop and implement the COP and consult with the commenter and local stakeholders to develop the COP.</p>

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		<p>for example the Old River channel proposed as one of the compliance reaches. At the upper end the water quality is "typically" 7-800 EC during summer, at Tracy Blvd. Bridge the EC can be 1000-1200 EC, a mile downstream the EC might be 1500, and at the end of the reach the EC would be 3-500 (the end of this reach would be sampling export water). Averaging all of these (700, 1000, 1500, 400) results in 900. If however we only average three of these (700, 1000, 400) we get 700. Which of these is the accurate representation of water quality in Old River? Which shows us the trouble spot near the Tracy Blvd. Bridge?</p> <p>The problem appears even more serious. Clearly, relaxing the objectives to 1000 EC all year (and requiring Vernalis to meet 700 EC as part of the implementation plan) will still result in violations of the 1000 EC given that the Tracy Blvd. Bridge compliance location is often above this 1000 EC threshold. If one were hesitant to relax the objectives too much but still didn't want to have to enforce compliance, one could not come up with a better way of avoiding future exceedences; simply average the worst water quality away. One can never know the underlying reason for this averaging proposal in the SED, but clearly it would hide problem areas in the southern Delta and would not be in compliance with the mandate in the 2006 WQCP that standards apply throughout the channels.</p> <p>SDWA [South Delta Water Agency] strongly opposes this averaging proposal and submits there is no logic or reasoning supporting it. We are all aware there are problem areas in the southern Delta and the "fix" to them remains elusive. We can also examine where better compliance locations might be situated and discuss why or if some future party might be responsible for compliance at such locations. We cannot however tolerate a proposal which will necessarily hide each and every future violation of the objectives in order that the SWRCB not be placed in the uncomfortable situation of having to enforce the rules.</p>	
1265	8	<p>We [South Delta Water Agency] note that Water Code Sections 12200 et seq. mandate that the projects provide an adequate supply of good quality water to all in-Delta users. Unless and until that is done, the statutes preclude the export of water from the Delta. The SWRCB as the agency which permits the export of water by DWR and USBR must first require the projects enter into contracts with Delta agencies to fulfill the mandates of Sections 12200 et seq. To date, DWR and USBR refuse to negotiate with SDWA for such a contract. Unless and until such contracts are executed or the provision of such water otherwise accomplished, the SWRCB should not prejudge the issue by relaxing the objectives and transferring the burden of poor water quality onto the senior right holders in the Delta.</p>	<p>It is incorrect that the State Water Board may not establish salinity objectives in light of Water Code section 12200 et seq. (i.e., the Delta Protection Act). As the court in State Water Resources Control Board Cases (2006) 136 Cal.App.4th 674, 772, found, "Nothing in the Delta Protection Act purports to grant any kind of water right to any particular party. The Delta Protection Act does preclude the diversion of water from the Delta that is necessary for salinity control or to provide an adequate water supply for users within the Delta; however, it is for the Board to decide, in the exercise of its judgment, what level of salinity control should be provided and what is an adequate supply of water users in the Delta." Please see Master Response 3.3, Southern Delta Water Quality, on how the proposed amendments will not degrade water quality related to salinity.</p>
1265	9	<p>Unless and until the SWRCB determines the effects the projects have on fisheries, it cannot require other and senior right holders to provide water for the protection and recovery of fish species due to project impacts. The SED is shifting the burden of project mitigation onto water right holders on the tributaries without having determine the responsibility if any they might have for such mitigation.</p>	<p>In performing its planning function, the State Water Board is authorized to establish water quality objectives that in its judgment will ensure the reasonable protection of beneficial uses. (Wat. Code, § 13241.) In other words, it establishes objectives based on what is reasonable protective—not based on who is responsible for affecting water quality. When it implements the plan amendments, the State Water Board will allocate responsibility for meeting the water quality objectives. As stated in Appendix K, Revised Water Quality Control Plan, the nature and extent of water right holders' responsibilities to meet the plan amendments will be considered in a future water rights proceeding or proceedings. Thus, claims about the State Water Board illicitly transferring the responsibilities of the state and federal water projects to senior water right holders are incorrect. Please see Master Response 1.1, General Comments, and Master Response 1.2, Water Quality Control Planning Process, for a discussion of the water quality control planning process, including the State Water Board's authorities and future water rights proceedings.</p>
1265	10	<p>The SED inappropriately piece-meals the process and the CEQA review.</p> <p>The SED is the first part of the Bay-Delta process and deals only with southern Delta salinity</p>	<p>Please see Master Response 1.2, Water Quality Control Planning Process, for a discussion of the scope of the Bay-Delta proceedings, exports, and why the State Water Board has not piecemealed environmental review.</p>

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		<p>issues and fishery flows as measured at Vernalis. Thus, the analysis ignores the other Delta related objectives regardless of whether or not they affect the salinity issues or the fishery flows; and vice-versa. For example, the fishery flows are meant to assist in- and out-migrating salmon move through the Delta. However, the flows are only measured at Vernalis and do not insure the fish get past the export pumps and either out to the ocean or up the rivers. By deferring the export issue until later, the SWRCB prejudices that flows, and not exports are the problem needing to be addressed. The fishery flows needed to protect the fisheries may be less if exports are not allowed or decreased during certain times. If the specified flows are adopted as needed for fish then there can be no exports of that flow. Deferring the export decision is contrary to the determination of what flows are needed.</p> <p>In addition, CEQA does not allow the piece-mealing of a project such that the environmental review only examines portions of the project and not the whole. The Bay-Delta process does just that by breaking the development and analysis of the eventual plan into distinct portions.</p>	<p>Please also see Master Response 3.1, Fish Protection, for a clarifying discussion regarding the justification and description of the plan amendments for protecting fish and the unimpaired flow approach.</p>
1265	11	<p>SDWA [South Delta Water Agency] asserts that there is no basis for relaxing the water quality objectives for the protection of agricultural beneficial uses in the southern Delta. The "evidence" of the suggest relaxation falls apart on examination and the only reliable evidence before the Board indicates that under current conditions salts are accumulating in the soils of the south Delta.</p>	<p>Please see the response to comment 1265-5.</p>
1265	12	<p>The SED appears to be deficient in numerous ways and the SWRCB should withdraw the document and begin again by first applying the appropriate laws, especially the requirement that USBR and DWR fully mitigate their adverse impacts to third parties and the environment.</p>	<p>Please see the responses to comments 1265-8 and 1265-9. Please see Master Response 1.1, General Comments, for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues.</p>
1266	1	<p>Friant needs to be included in the SED. Because Friant is the most upstream reservoir, it stands to reason the water that is captured there should be implicated in any plan that purports to maintain downstream water quality objectives. The mere, passing mention that there is an agreement for the operation of that reservoir is not sufficient to be considered as incorporated into the plan. The flow agreements that have been reached that are alluded to should be included in the analysis of inflow to the San Joaquin River.</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments regarding the San Joaquin River Restoration Program and for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues.</p> <p>Please see Master Response 1.2, Water Quality Control Planning Process, regarding the consideration of reasonably protecting beneficial uses of water.</p> <p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments regarding the plan area and extended plan area.</p>
1266	2	<p>This plan undermines water rights. The SED calls for an unimpaired flow of water that is currently captured in reservoirs subject to senior, pre-1914 water rights. On the basis of having a strong water right, water districts have raised funds from their grower constituents to fund the infrastructure to capture and deliver that water based on the certainty that it will be available. The SED calls for a significant and drastic reduction to water that there is a legal claim to and any encroachment on the rights of the districts is an affront to the water rights system that California Water Law is based in. We are gravely concerned that any revision to the district's water rights will set a precedent for such revisions to occur statewide.</p>	<p>Please see Master Response 1.2, Water Quality Control Planning Process, for responses to comments regarding the water rights priority system.</p>
1266	3	<p>Any increased impact to groundwater is contrary to public policy.</p> <p>In 2014, the California legislature passed a package of three bills to manage groundwater that are collectively known as the Sustainable Groundwater Management Act or SGMA. This</p>	<p>The State Water Board appreciates the efforts of local entities to improve groundwater conditions in the Eastern San Joaquin Subbasin. The condition of critical overdraft in the subbasin is a legacy issue caused by unsustainable agricultural expansion. SGMA was passed in 2014 to address the negative consequences of overdraft. However, the State Water Board also has a legal mandate to reasonably protect fish and wildlife</p>

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		<p>legislation mandates that local public agencies may elect to manage their groundwater basins themselves or if they elect not to, they will be considered probationary and the State Water Resources Control Board will be the backstop to ensure that basins are sustainable.</p> <p>The Eastern San Joaquin subbasin accounts for a vast majority of the land in San Joaquin County and is considered by the Department of Water Resources to be a high priority, critically overdrafted subbasin. For two decades, the Groundwater Basin Authority has been meeting regularly for to develop IRWMP's that are heavily focused on conjunctive use projects to lessen the reliance on groundwater facilitating the recovery from overdraft. Over \$700 million dollars have been invested locally in groundwater recharge projects, irrigation efficiency projects, and the Delta Water Supply Project that serves the city of Stockton.</p> <p>These projects saw great success and before the drought the basin was thought to be in a period of significant recovery. With the severe drought conditions that limited surface water supply and the passing of SGMA, the integration of these projects on a macro scale has been greatly accelerated.</p> <p>The recovery and improvement of basin conditions is a high priority to the state, as seen with the passage of such sweeping legislation and it has been a high priority for the Eastern San Joaquin subbasin for even longer as seen with the significant investments in time and resources. It is absolutely contrary to legislative and local efforts to implement a plan that will drastically reduce surface water supply in even wet years and force the usage of more groundwater at a time when basins are depleted from drought and statutorily obligated to be sustainable.</p>	<p>beneficial uses, which it is proposing to do with the plan amendments. The State Water Board acknowledges that it will be challenging, but implementation of the plan amendments is not contrary to SGMA; together they allow for integrated planning of scarce water resources that does not trade impacts between surface water and groundwater.</p> <p>The SED and plan amendments do not require or encourage an increase in groundwater pumping as a response to reductions in surface water. Rather, the SED reflects the historical local response to increase groundwater pumping when surface water availability is reduced. Actions that local entities may take to replace surface water that may no longer be available due to implementation of a plan alternative are described in Chapter 16, Evaluation of Other Indirect and Additional Actions, Section 16.2, Lower San Joaquin River Alternatives—Other Indirect Actions. Substitution of surface water with groundwater is only one of the actions described in the Chapter. It will be up to local entities to determine the precise actions that would be taken in response to implementation of the plan amendments, with or without the future condition of SGMA.</p> <p>SGMA requires GSAs develop and implement GSPs to sustainably manage local groundwater resources within 20 years. GSPs must include a water budget that quantifies the annual supply, demand, and storage by water year type (Cal., Code Regs., tit. 23, div. 2, § 354.18). Water budgets must also assess groundwater overdraft conditions “by calculating change in groundwater storage over a period of years during which water year and water supply conditions approximate average conditions. Overdraft conditions should be evaluated as changes in groundwater storage by water year type” (DWR 2016). Water year type is “the classification provided by the Department [of Water Resources] to assess the amount of annual precipitation in a basin” (Cal., Code Regs., tit. 23, div. 2, § 351, subdv. an). DWR’s water year type classifications are divided into the same five categories presented in the SED (wet, above normal, below normal, dry, and critically dry conditions; DWR 2016). GSAs will have to plan for variability in water year type with or without the plan amendments.</p> <p>Variables, such as the amount of water needed for groundwater recharge will be considered by GSAs as they develop GSPs. Since no GSPs were developed before the release of the Recirculated SED, it is unknown what actions the GSAs will take to achieve the sustainability goal. Therefore, any impact assessment would be speculative. However, SGMA was properly considered in the analyses, both as an existing legal requirement to prevent further degradation of groundwater basins and as a potential cumulative limit on future irrigation supplies.</p> <p>For further discussion on consideration of SMGA in the SED, groundwater recharge, and compliance of SMGA in the context of the plan amendments, please see Master Response 3.4, Groundwater Resources and the Sustainable Groundwater Management Act.</p> <p>The SED is a programmatic-level document. The State Water Board prepared an appropriate groundwater impact analysis for a programmatic review consistent with the requirements of the certified regulatory planning process and in accordance with CEQA.</p> <p>A detailed discussion regarding the assumptions for the groundwater balance and the methodology used in the analysis is provided in Appendix G, Agricultural Economic Effects of Lower San Joaquin River Flow Alternatives: Methodology and Modeling Result. Improving irrigation efficiency is a measure that a GSA can consider in developing a GSP, but improving irrigation efficiency is beyond the scope of the SED to analyze. Please see Master Response 1.1, General Comments, for a discussion the programmatic nature of the SED and the adequacy of such an approach, the scope of the SED, and the requirements of CEQA for program-level review.</p>

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1266	4	<p>The analysis is incomplete. The SED makes many references to the new regulatory regime under SGMA but SWRCB staff has repeated at many public presentations that the impacts to groundwater under both the unimpaired flows standard coupled with the statutorily required implementation of SGMA is “too speculative” because sustainability plans are developed and implemented locally. To acknowledge the reality that there are looming, significant changes to groundwater management and then to not account for those in the analysis make it impossible to determine what the true impacts to the groundwater basins will be.</p>	<p>Please see response to Comment 1266-3.</p>
1266	5	<p>The proposed SED flows retard Groundwater Sustainability Plan development. It is incumbent on those agencies that have elected to be Groundwater Sustainability Agencies (GSA’s) that they develop a Groundwater Sustainability Plan (GSP) to ensure there is a management plan for the basin to bring it into sustainability throughout the “planning horizon”. Creating a water balance is required as well as creating a plan to ensure that the basin will reach balance on the planning horizon through the management steps outlined in the GSP.</p> <p>The SED determines impacts in terms of averages. However, the SED also recognizes that impacts will be less in wet years and higher in dry years. A Groundwater Sustainability Agency (GSA) cannot develop a plan for basin management when they cannot predict whether the water years in the planning horizon will be dry, wet, or normal and the GSA cannot determine how much water they could expect to be pumped to account for that variation. It is also difficult to determine the water balance when the amount of surface water available to these GSA’s will vary so dramatically.</p>	<p>Please see response to Comment 1266-3.</p>
1266	6	<p>One of the significant economic impacts that is not cohesive in the analysis is that in analyzing the impacts to local county governments based on tax revenue, the difference is calculated based on lost tax revenue from agricultural production in table 20.3.2-8. However it is readily acknowledged that there are indirect and induced jobs that contribute to the local economies in the three counties and the lost tax revenue for those businesses and jobs is not analyzed.</p> <p>The SED states on page 20-25 in table 20.3.2-9 that under the most restrictive alternative in the most stressed county the loss in tax revenue from lost agricultural production will not exceed .4 percent of total collected taxes. We feel that this is a significant impact to local governments that are already struggling. A \$26 million dollar loss in San Joaquin County alone will devastate the ability of local county governments to provide necessary services to their residents.</p>	<p>The IMPLAN multipliers used to estimate changes in tax revenue from reduced agricultural revenue do account for indirect and induced effects. Please see Appendix G, Agricultural Economic Effects of the Lower San Joaquin River Flow Alternatives: Methodology and Modeling Results, section G.5.4 for discussion of the fiscal economic analysis.</p> <p>From Table G.5-14 of Appendix G the total tax revenue for local governments in San Joaquin, Stanislaus, and Merced counties is \$963 million, \$722 million, and \$278 million, respectively. The average annual change in revenue under LSJR Alternative 3 would be -\$0.4 million (-0.04% of the county’s total tax revenue) in San Joaquin County, -\$1.0 million (-0.14% of the county’s total tax revenue) in Stanislaus County, and -\$0.3 million (-0.09% of the county’s total tax revenue) in Merced County. The average annual change in revenue under LSJR Alternative 3 for the three counties would be -\$1.7 million.</p>
1266	7	<p>Impacts to Agricultural Resources</p> <p>The aforementioned economic impacts are intrinsically linked with the impacts to agricultural resources. In San Joaquin County, the agriculture industry is valued at \$2.7 billion dollars. This only accounts for farm gate value and does not account for indirect or induced revenue generated from the agricultural production. Our community heavily relies on the jobs and tax base generated by our strong agricultural economy.</p> <p>As stated on page 20-15 of the SED, to analyze the impacts to agricultural production, the study looked at amount of surface water available and then the “groundwater pumping capacity” of each impacted district. However, because the pumping capacity will necessarily change as SGMA is implemented so the impacts to agriculture cannot be estimated on the</p>	<p>How SGMA will be implemented has not yet been determined and it would be speculative to assume how SGMA would affect present capacity. Please see Master Response 3.4, Groundwater and the Sustainable Groundwater Management Act, for discussion of SGMA compliance.</p>

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		assumption that there will be pumping capacity to replace the lost surface water.	
1266	8	<p>Under every alternative, table 11-1 shows there will be significant and unavoidable impacts to agricultural resources including the conversion of prime farmland, unique farmland, and farmland of statewide importance. These impacts will have resounding impacts throughout the communities that can include significant soil erosion.</p> <p>There is a significant disconnect between table 11-7 that indicates over 36% of irrigated land in San Joaquin County is irrigated by drip or microsprinkler irrigation and yet on page 11-49, one of the suggested mitigation measures is conversion to more efficient irrigation measures. Given the high percentage of growers who have already invested in irrigation efficiency technology and the fact that some crops are not suitable for such irrigation systems, it would seem that the current level of efficiency is very close to where it will be.</p>	<p>Please see Master Response 1.1., General Comments, regarding general impact responses. Chapter 11, Agricultural Resources, Table 11-1 summarizes the impact findings presented in Chapter 11. Please see Master response 8.1, Local Agricultural Economic Effects and the SWAP Model, and Master Response 8.2, Regional Agricultural Economic Effects, for information on local and regional agricultural economic effects. Because land fallowing for crop rotation or disease control are already a normal operating program for agricultural soil erosion, the practice is not expected to increase above existing conditions. In addition, please see Appendix B, State Water Board’s Environmental Checklist, for information on soil erosion as it relates to the potential fallowing of land.</p> <p>As described in Chapter 11, Table 11-7, there is an existing level of drip irrigation implemented in the plan area; however, additional acreage can be converted to drip to conserve water and improve water use efficiency. Please see Master Response 3.5, Agricultural Resources, regarding illustrative examples of demand management.</p>
1266	9	There is no analysis as to what the impacts to groundwater will be should all growers who can improve efficiencies do so. When water is applied to crops recharge occurs and it will be lost and that is not considered in the impacts to groundwater analysis.	Please see response to Comment 1266-3.
1266	10	Impacts to South Delta agricultural production need to be evaluated. On page 11-2, the SED states that the water quality in the south Delta will remain the same, which is entirely contrary to the fact that at the same time the plan calls for increasing salinity in the South Delta even during the irrigation season. Furthermore, the assumption that this will have no impact on even salt sensitive crops that are grown is entirely unfounded and baseless. There are ongoing studies to evaluate such impacts and until they are completed this cannot be accepted as fact particularly considering ample anecdotal evidence to the contrary.	Please see Master Response 1.1, General Comments, for responses to comments that generally oppose the plan amendments. Please see Master Response 3.3, Southern Delta Water Quality, for information on salinity and crop production, as well as discussion of studies. Please see Chapter 5, Surface Water Hydrology and Water Quality, regarding water quality in the southern Delta and the historic range of water quality in the southern Delta, as well as the less-than-significant determination to water quality in the southern Delta. Please see Chapter 11, Agricultural Resources, Impacts AG-1 through AG-4, regarding the evaluation of the potential impacts of SDWQ Alternatives 2 and 3 on agricultural resources in the southern Delta. As described in Master Response 3.3 and Chapter 5, water quality in the southern Delta would not be degraded in response to implementation of the plan amendments. The USBR water rights permits would continue to include requirements to meet the current 0.7 EC April-August Vernalis Salinity Standard, as contained in the program of implementation. This would maintain the historical range of salinity in the southern Delta. The water quality would not significantly impact agricultural resources in the southern Delta, as described in Master Response 3.3 and Chapter 11.
1266	11	<p>Increasing Salt in the South Delta</p> <p>Increasing the salinity standard to 1.0 ec year-round.</p> <p>Salinity has been an increasing issue in the Delta, particularly in the South Delta where the water quality standards are violated more often than they are met. These standards were developed through a very lengthy process to establish the biological opinions that created that standard.</p> <p>The SED disproportionately allocates the responsibility of meeting water quality objectives from the project operators to the local water districts. It is the Bureau of Reclamation’s responsibility to ensure water quality downstream and instead of enforcing the current 0.7 ec standard during the irrigation season, the SED allows them to continue to degrade water quality and share the burden with the local districts at the expense of senior water rights that the districts hold.</p> <p>At the December 16th, 2016 workshop held by the SWRCB in Stockton, CA, Michelle</p>	The Program of Implementation in Appendix K requires DWR and USBR "to address the impacts of their operations on interior southern Delta salinity levels", as part of the proposed Comprehensive Operations Plan. Please see Master Response 3.3, Southern Delta Water Quality, for discussion of the Comprehensive Operations Plan and the responsibilities of DWR and USBR with regards to southern Delta salinity. Furthermore, Please see Master Response 3.3 for discussion of why the southern Delta Salinity objectives are being updated.

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		<p>Leinfelder-Miles with the University of California Cooperative Extension gave a presentation on her findings in the leaching [sic.] study that has been ongoing in the South Delta and her findings that as saltier water is applied, salt will build up in the soil.</p> <p>Here, no such scientific analysis has been done to determine the impacts of the new salinity standard of 1.0 ec year-round. At the same time, the process to begin reevaluating the biological opinions has just begun. These processes need to be coordinated and there is no reason behind establishing a detrimental arbitrary standard in the meantime.</p>	
1266	12	<p>Measuring water quality with compliance points rather than at Vernalis.</p> <p>In addition to increasing the standard to 1.0, the SED also allows for the standard to be measured by an average of different compliance points throughout the South Delta. This will lead to further impaired water quality in some areas because the poor water quality can be averaged with that where it is less salty.</p> <p>Both the increasing of the standard and allowing it to be measured by a variety of compliance points rather than at Vernalis will lead to growers in the Delta applying saltier water and seeing I build up in their soil. Studies are ongoing as to the effect this has on crops.</p>	<p>Please see Master Response 3.3, Southern Delta Water Quality, for responses to comments regarding the measurement of salinity in the delta. Please note that the specific monitoring locations and procedures will be developed through the Comprehensive Operations Plan and Monitoring and Report Plan to be prepared by DWR and USBR.</p> <p>Though the salinity objective is being increased, existing conditions will be maintained because USBR's water rights on New Melones reservoir will be conditioned to require them to continue meeting the original 0.7 EC standard at Vernalis. Please see Master Response 3.3, Southern Delta Water Quality, for responses to comments regarding why the southern Delta Salinity objectives are being updated.</p>
1266	13	<p>Increasing salinity and the anti-degradation policy</p> <p>The anti degradation policy analysis clearly states that the current standard of 0.7ec during the irrigation season would be moved to 1.0ec year-round and that this would not lower water quality in the southern Delta. We [San Joaquin Farm Bureau Federation] fail to see how such a determination could be made when clearly the increased salinity in and of itself is a significant impact to the quality of water.</p>	<p>Please see Master Response 3.3, Southern Delta Water Quality, for responses to comments regarding why the southern Delta Salinity objectives are being updated and discussion of why the update will not cause degradation of water quality.</p>
1266	14	<p>We [San Joaquin Farm Bureau Federation] remain adamantly opposed to any increase in salinity in the South Delta and any reduction of surface water deliveries that our community relies on. We believe there are better and more effective ways to provide benefits for fisheries and the people best suited to manage the watersheds are those who work directly with the rivers and have made the investments in beneficial, scientifically based habitat improvement projects. We will continue to follow this process very closely.</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues.</p>
1267	1	<p>I ask you to consider the long-term implications of business-as-usual and challenge you to make your decision on the Bay Delta Water Quality Control Plan with future generations and the environment as top priorities.</p> <p>The State Water Resources Control Board's mission, as written on the website, is "To preserve, enhance, and restore the quality of California's water resources and drinking water for the protection of the environment, public health, and all beneficial uses, and to ensure proper water resource allocation and efficient use, for the benefit of present and future generations." Note that the environment is listed before all beneficial uses and even public health. Wow! That statement leads me to believe that protecting the environment really is a priority for the State. What a relief! Or is it?</p> <p>I encourage you to consider your reasons for accepting your post as one of five individuals responsible for "provid[ing] comprehensive protection for California's waters". Are you</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>

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		doing your job?	
1267	2	<p>The State Water Board’s own report, Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem, determined that approximately 60% of unimpaired flow between February and June would be fully protective of fish and wildlife in the lower San Joaquin River and its three major tributaries.</p> <p>Why is it then, that the draft Substitute Environmental Document (SED) for Phase 1 of the Bay Delta Plan proposes establishing unimpaired flow requirements of only 30 - 50 % for the Merced, Stanislaus, and Tuolumne Rivers? Is 60% unimpaired flow providing the river protection that is too comprehensive? Or maybe the intention of that statement was meant to comprehensively protect California’s agricultural and urban interests?</p>	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1267	3	<p>Allocating water to the environment is allocating water to the people. We rely on the San Joaquin’s waters to hydrate our bodies, recharge our aquifers (which are used to grow food), provide habitat for critical species, grow our food, and bring us joy when we are lucky enough to experience its refreshing and life-sustaining waters through outdoor activities like fishing, rafting, and swimming. Without sufficient instream flows for the species, environment, and people that rely on it, we are headed down a road where there won’t be enough water left for future generations to fight over. Please do everything in your power to protect and restore the Bay-Delta. Think about the legacy you’re leaving for future generations. While making decisions based on business-as-usual is easy, it takes conviction and courage to stand up for the underdog -- for the side that doesn’t have a steady supply of corporate dollars to throw at misinformation campaigns, for the environment that doesn’t have its own voice to testify with at hearings, and for your children and grandchildren’s future quality of life. How do you want to be remembered?</p>	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1268	1	<p>California’s water, as it should be everywhere, is a public trust resource. The clear inherent rights and codified legal meaning of this concept is that the majority of water, and the "earth" surface on which the water lies, belongs inherently to the people of California. The true nature and history of water, flowing through stream, river, delta, bay, and finally ocean...makes us clearly aware that water really belongs to all the people "down-stream" from any point and use on the earth</p> <p>While water agencies, farmers, and others may have some rights granted to use "the peoples water" in manners that are beneficial and approved, it is the State (the people) that must determine which beneficial uses have priority/approval, and how that precious resource is to be managed and protected. Additionally, to aid in the assurances to deal with changing needs, conditions, and environment.</p> <p>It is the responsibility of the California State Water Resources Control Board to represent all the people of the state in these matters. To this end, "the true public interest", I strongly encourage the California State Water Resources Control Board to represent all the people of the state and go forward with approval and robust enforcement of the currently drafted "Bay Delta Water Quality Control Plan".</p>	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1268	2	<p>The drafted plan is entirely fair and equitable to all "upstream and downstream humans", stakeholders, and businesses. While I and most others (who are somewhat knowledgeable, and are not driven by rampant profit motive) believe strongly that at least half of the natural flow from the Stanislaus, Tuolumne, Merced and lower San Joaquin Rivers should make it to the Bay-Delta. However, the draft plan to share and allocate water in a</p>	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.

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		conditional and proportional manner seems very fair and achievable...but will require a robust enforcement regime. Additionally, the increased water flow must not be diverted to any other locations, or purposes. The increased flow must be allowed to follow the natural paths completely to the ocean!	
1268	3	The plan represents an immense improvement to the possibilities of protecting and reviving the populations of wildlife that are continuing to dwindle on a path to extinction (local and regional "extinctions" are already a sad reality). This is because some groups (usually with strong profit motives that are never satiated) have been given "greater right" to state water. Thus, the common man and wildlife (as a whole) are left to suffer the terrible consequences. The people of this state want the waterways and wildlife of this state to be vibrant, healthy, and diverse...allowing all to thrive and be accessible for today and the future!	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1269	1	Water should be used, enjoyed and shared by all citizens and businesses of the state.  No group, company, or agency should be able to dewater a river. It's robbery from the downstream users and does not allow for groundwater refill. (groundwater being a major problem in California). I would like to strongly suggest that the Bay Delta needs 60% flows as originally recommended. This will allow for healthy rivers, communities, habitat for fish and groundwater refill. The Agricultural Industry has had high times for many decades. It's not time to bring it back to normal. (away from dewatered rivers, subsidence, Owens Lake, Salton Sea examples).	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1269	2	Central Valley Water districts are willing to lie to the public and the SEC to get what they want. They cannot be trusted.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1269	3	All Central Valley cities, towns and communities - must have water meters on their houses!! This is 2017 for God's sake	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1270	1	After many decades of managing the ecosystem primarily by regulating the storage, release and diversion of water--the flow of water--a new approach is necessary. Under the existing flow-centric approach, which relies upon flow as the master variable and master solution, few beneficial uses of the water involved have been adequately protected. The diagnostic inertia of the current flow-centric regulatory regime has had real, adverse social and economic impacts. Fish populations and water supplies for urban and agricultural communities and waterfowl have all declined. The painful lessons of the past twenty years have demonstrated that adding flow will not redress most of the physical, chemical and biological changes that have occurred within the watersheds for the Sacramento and San Joaquin Rivers.	Please refer to Master Response 1.1, General comments for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues.  Please see Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Standards, and Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, regarding how scientific information indicates that higher flows of a more natural pattern are needed from the three eastside, salmon-bearing tributaries to the Lower San Joaquin River, the Stanislaus, Tuolumne, and Merced Rivers, during the spring (February- June) to protect fish and wildlife beneficial uses.
1270	2	The State Water Resources Control Board's process to update the Bay-Delta Plan presents an important opportunity to at least question, and at best replace, the existing, failed regulatory regime. This process presents an opportunity to move toward a more scientifically-sound approach that provides flow when it will serve specific functions and that better supports an improved understanding of the biological mechanisms impaired by the physical, chemical and biological changes that have occurred within the watershed.  Two examples of the many pieces of scientific literature that supports the functional flow approach are:  -Flows and Fishes in the Sacramento-San Joaquin Delta, A Review by the Delta Independent	Please see response to comment 1270-1.  Please refer to Master Responses 1.1, General Comments, regarding the scientific basis of the plan amendments and the length and complexity of the SED. Please also refer to Appendix K, Revised Water Quality Control Plan, Master Response 1.1, and Master Response 2.1, Amendments to the Water Quality Control Plan for a description of the objectives and the plan amendments.  The 2015 Delta Independent Science Board report that is referenced regards fishes in the Delta and not the Lower San Joaquin River (LSJR) and its three eastside tributaries, the Stanislaus, Tuolumne and Merced Rivers (ISB, 2015). Nevertheless, as a general principle, the report states that "[s]ince water flows are a defining process of the Delta, as in river ecosystems worldwide (e.g. Webb et al. 2015), scientific interest in

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		<p>Science Board, August 2015, in which independent scientists recommend a "Focus on cause and effect - the mechanisms that enable flows to affect fishes." [Footnote 1: Available at <a href="http://deltacouncil.ca.gov/sites/default/files/2015/09/2015-9-29-15-0929-Final-Fishes-and-Flows-in-the-Delta.pdf">http://deltacouncil.ca.gov/sites/default/files/2015/09/2015-9-29-15-0929-Final-Fishes-and-Flows-in-the-Delta.pdf</a>.]</p> <p>-Functional Flows in Modified Riverscapes: Hydrographs, Habitats and Opportunities, Yarbakk et al., BioScience Advance Access, August 5, 2015, in which the authors recognize that "[m]imicking a natural flow regime in modified riverscapes will not yield successful ecological outcomes unless such flows trigger functional processes" and therefore "propose that a more effective approach is to identify and restore aspects of the flow regime that support key ecosystem functions and drive geomorphological and ecological processes." [Footnote 2: Available at <a href="https://academic.oup.com/bioscience/article/65/10/963/245807/Functional-Flows-in-Modified-Riverscapes">https://academic.oup.com/bioscience/article/65/10/963/245807/Functional-Flows-in-Modified-Riverscapes</a>.]</p> <p>Unfortunately, the Proposed Flow Objective and Draft SED do not take advantage of the opportunity presented. The Proposed Flow Objective and Draft SED do not take advantage of the significant scientific body of information and increasingly sophisticated monitoring tool developed since the last meaningful update to the Bay-Delta Plan. And, nowhere does the Draft SED explain why the State Water Board should stray from the scientifically-sound functional flow approach. Indeed, nowhere does the Draft SED present analysis showing the level of protection that is expected if the State Water Board continues with a flow-based regulatory approach, particularly based on a percent of unimpaired flow, or the relative benefit of that approach compared with a "functional flow" approach.</p>	<p>this topic is keen. Water flow has been dubbed the ‘master’ ecological variable in the Delta (e.g., Mount et al. 2012), not because of the precise way in which flows affect fishes, but because of flows’ pervasive influences on so many other variables in the Delta ecosystem.” (ISB, 2015) This is consistent with scientific analysis for the LSJR. Please see Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives. Moreover, the revised LSJR flow objectives and the program of implementation for the flow objectives include adaptive implementation methods to enhance the functions of those flows.</p> <p>The numeric portion of the flow objectives requires that 40 percent of the unimpaired flow is maintained February through June in the Stanislaus, Tuolumne, and Merced Rivers within an adaptive range of 30 to 50 percent of the unimpaired flow. The numeric objective provides flows that more closely mimic natural hydrograph conditions; however, the program of implementation also includes four adaptive adjustments that can be made to the percent of unimpaired flow. As explained in the Executive Summary, Master Response 2.2, Adaptive Implementation, and Master Response 3.1, Fish Protection, the adaptive implementation feature of the program of implementation allows for adjustment of the required percentage of unimpaired flow in specified ways to improve the functions of those flows and better achieve the water quality objective. Please also see Master Response 3.1 for an explanation of the difference between unimpaired flow and natural flow and for a description of how unimpaired flow with adaptive implementation is a functional flow approach.</p> <p>Please also see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the modifications made to the Water Quality Control Plan and Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, regarding the reasonable range of potentially feasible alternatives in the Draft Substitute Environmental Document (SED).</p>
1270	3	<p>Consistent with the significant body of scientific literature that recognizes the benefits of a functional flow approach in a highly altered system such as the Bay-Delta, the Delta Independent Science Board recently identified defects within the draft scientific basis report for the Phase 2 proceedings. [Footnote 3: The Delta Independent Science Board letter raising the comments ("DSB Review Letter") is attached hereto [ATT2] and incorporated herein by this reference. It is also available at <a href="http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/environmental_review/docs/cmp_rvw_cmmnt_isb/20170228_disb_report.pdf">http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/environmental_review/docs/cmp_rvw_cmmnt_isb/20170228_disb_report.pdf</a>.]</p> <p>Three of the defects are:</p> <p>-Failure to Explain the Basis for and Implementation of the "Unimpaired Flow" Approach: The independent scientists wrote: "we recommend clarifying, and further justifying scientifically, the proposed use of percent of ‘unimpaired flow’ as the main basis for establishing an annual environmental water budget." (DSB Review Letter, at 1.) The independent scientists also wrote: "the proposed approach would establish a fixed annual volume of water to be used for environmental purposes. . . . It would be useful for the report to separately clarify a) how the fixed annual quantity of water would be used, with and without successful agreements among basin water managers and b) how the annual water volumes would be calculated (by basin and/or by tributary)." (DSB Review Letter, at 2.)</p> <p>-Failure to Adequately Consider Alternatives: The independent scientists wrote: "The report could be improved by adding a comparison of the ‘unimpaired flows’ approach with other science-based approaches to establishing flow requirements for fish and aquatic ecosystems. . . . The recommended comparisons could evaluate approaches in terms of</p>	<p>The commenter is referencing a 2017 Delta ISB letter that is not about the water quality control plan update for the LSJR but is instead about the water quality control plan update for other areas: the Sacramento Valley watershed, the Delta, and the Delta’s primary eastside tributaries, the Cosumnes, Mokelumne, and Calaveras Rivers (Sacramento Bay-Delta watershed). The Sacramento Bay-Delta watershed is a separate proceeding because it involves different water quality objectives, a largely different geographic area, and can be implemented independently. Please refer to Master Response 1.2, Water Quality Control Planning Process, for more information regarding the scope of the Bay-Delta plan proceedings.</p> <p>To the extent that the comment is generally referencing unimpaired flow as an approach, please see response to comment 1270-2. As described in Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives, and in Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, the unimpaired flow approach is intended to capture the natural pattern of variability and retain the attributes of the natural flow regime to which native LSJR basin fish and wildlife adapted, and that is important to support key ecosystem processes. See Appendix C for the scientific basis of the plan amendments, and specifically, Section 3.6, Analyses of Flow Effects on Fish Survival and Abundance and Section 3.9, Conclusions. More recent studies (e.g. Sturrock et al. 2015; State Water Board 2017; TID and MID 2013; USFWS 2014; Zueg et al. 2014) continue to provide evidence of the importance of suitable flow and related habitat conditions during the spring time period. In addition, Chapter 19 provides an analysis of biologically important and measurable benefits of providing higher and more variable flow during the February 1 through June 30 time period.</p> <p>As described in Appendix K, Water Quality Control Planning Update, the adaptive implementation component of the program of implementation will afford flexibility to the unimpaired flow approach in response to changing information and changing conditions, and will allow the frequency, timing, magnitude,</p>

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		<p>scientific merit, ability to respond to extreme events and climate change, ability to accommodate other water management objectives (water supply, flood management, etc.), and alignment with regulatory objectives. The comparisons may show how the proposed environmental water-budget approach can combine the best aspects of other scientific approaches for establishing environmental flows. A hybrid approach, which often has value (Kiernan et al. 2012), could allow for more effective and adaptable environmental flows, and these could have less impact on other water users than would a single, less flexible approach." (DSB Review Letter, at 2-3.)</p> <p>-Failure to Adequately Consider Non-flow Stressors: The independent scientists wrote: "The report could do more in assessing the contributions of non-flow stressors to declines in native fish and wildlife in the Delta and estuary. . . . The report could also provide more information about direct and indirect stress from non-native aquatic plants." (DSB Review Letter, at 5.)</p> <p>While these comments were directed at the scientific basis report for Phase 2, they are equally applicable in Phase 1. The State Water Board staff proposes the same unimpaired flow approach in these Phase 1 proceedings as the State Water Board staff considered in the scientific basis report for Phase 2. For that reason, the defects identified by those independent scientists exist here as well. [Footnote 4: The San Luis &amp; Delta-Mendota Water Authority, along with the State Water Contractors, previously submitted detailed comments on the 2012 Substitute Environmental Document and potential Phase 1 amendments. Those comments remain relevant and are incorporated by reference herein. See <a href="http://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/baydelta_pd_sed/docs/comments032913/daniel_nelson.pdf">http://www.waterboards.ca.gov/waterrights/water_issues/programs/hearings/baydelta_pd_sed/docs/comments032913/daniel_nelson.pdf</a>.]</p>	<p>and duration of flows to shift in order to enhance the biological benefits.</p> <p>Please refer to Master response 3.1, Fish Protection, regarding the use of best available science, the unimpaired flow approach, functional flows, and current fish decline and the need for increased flow. Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for clarification regarding the methods used during the February through June period for making adaptive adjustments to the LSJR flow objective, and for the need to balance beneficial uses. Please refer to Master Response 2.2, Adaptive Implementation, for further clarification regarding the process of adaptive implementation.</p> <p>The State Water Board recognizes various methods are available for developing flow requirements. In Chapter 3, Alternatives Description, the State Water Board conducted an analysis to compare LSJR Alternatives 2, 3, and 4 with flow schedules previously provided by multiple commenters on the 2012 Recirculated Draft SED. Please also refer to Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, regarding consideration of a reasonable range of alternatives.</p> <p>In addition to proposing amendments to the LSJR flow objectives, the State Water Board recognizes that non-flow measures have a complementary role to flow-based restoration. As described in Appendix K and in Chapter 16, Evaluation of Other Indirect and Additional Actions, non-flow measures may include floodplain and riparian habitat restoration, reduction of vegetation-disturbing activities in floodplains and floodways, gravel augmentation, enhancement of in-channel complexity, improvement of temperature conditions, fish passage improvements, predatory fish controls, and invasive aquatic vegetation control. Please see Master Response 5.2, Incorporation of Non-Flow Measures, for more information.</p> <p>Please also see Master Response 1.1, General Comments, with respect to comments submitted in 2012. The State Water Board recirculated the SED in its entirety to members of the public, agencies, and other interested entities for a formal review and comment and required them to submit new comments (Pub. Resources Code § 21092.1; Cal. Code Regs., tit. 14, § 15088.5).</p>
1270	4	<p>The "Unimpaired Flow" Approach Fails to Draw a Causal Relationship to Ecosystem Improvement in the Context of the Significantly Altered Bay-Delta Watershed.</p> <p>A fundamental assumption of the flow-centric, unimpaired flow approach is that the dedication of a percent of unimpaired flow will "mimic the natural hydrographic conditions to which native fish species are adapted." (See Draft SED, App. K at 18.) The dedication of a percent of unimpaired flow, however, will not provide "natural" flows in a highly altered ecosystem such as the Bay-Delta watershed. [Footnote 5: See Functional Flows in Modified Riverscapes: Hydrographs, Habitats and Opportunities, Yarbek et al., BioScience Advance Access, August 5, 2015; see also Department of Water Resources (2010), Comments on the Draft Technical Report on the Scientific Basis for Alternative San Joaquin River Flow Objectives, available at <a href="http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/comments120610/erick_soderlund.pdf">http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/comments120610/erick_soderlund.pdf</a>.]</p> <p>The Bay-Delta watershed has been and continues to be altered substantially--physically, chemically and biologically. As a result, the Bay-Delta watershed has experienced diminished and disrupted habitats such as lost floodplains, the proliferation of non-native invasive species, shifts in the food-webs, and increases in pollutants, among other changes. The Draft SED does not adequately consider the altered ecosystem or the potential effects of the proposed unimpaired flow approach given the alterations. Well-established scientific principles compel such consideration.</p>	<p>Please refer to Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives, Master Responses 1.1, General Comments, and Master Response 3.1, Fish Protection, regarding the scientific basis of the plan amendments, water temperature benefits, and increases in floodplain habitat.</p> <p>The adaptive adjustments in the program of implementation for the LSRJ flow objectives allow the percent of unimpaired flow to be shaped or shifted between February and June to provide more optimal flow patterns and more functionally useful flows to increase benefits to fish and wildlife. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, Master Response 2.2, Adaptive Implementation, and Master Response 3.1, regarding adaptive adjustments, the unimpaired flow approach as a functional flow approach, and the difference between the unimpaired flow approach and "natural" flows.</p> <p>The State Water Board recognizes that non-flow actions must be part of the overall effort to comprehensively address physical ecosystem restoration requirements and the plan amendments provide flexibility to incorporate non-flow measures and for the results of such actions to inform adaptive implementation decisions. See Appendix K, Revised Water Quality Control Plan, Recommendations to Other Agencies, regarding non-flow measures. Please also see Master Response 1.1 regarding voluntary agreements and Master Response 5.2, Incorporation of Non-Flow Measures, regarding the importance and role of non-flow measures. Please also refer to Master Response 2.4, Alternatives to the Water Quality Control Plan for an explanation of why commenter-suggested alternatives were infeasible.</p>

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		<p>The Proposed Flow Objective is premised on the familiar and fundamentally flawed presumption that providing more water necessarily results in more fish. This simplistic framework sets up a false paradigm, in which any decline in the species can be mistakenly attributed to "insufficient" flows, and for which the perpetual response is more water instead of a sophisticated scrutiny of the functions of flow. This approach fails to reflect the existing altered ecosystem and the numerous stressors affecting native fish populations. While the proposed percentage of unimpaired flow approach may be desirable due to its ease of implementation, it lacks the necessary scientific and analytical support to ensure reasonable protection of fish and wildlife beneficial uses.</p> <p>For example, the analysis assumes that increased flows will result in increased floodplain inundation that in turn provides suitable habitat for fish species. (See Draft SED, at 19-52-19-74.) It fails to analyze whether the proposed flows will actually provide improved floodplain habitat and whether the other variables necessary to provide that function are present. (Id., at 19-55.) Functional flows for floodplain habitat require a more robust and tailored approach, which considers the physical habitat characteristics and timing and duration of flows necessary to provide suitable habitat. This ecosystem approach would ensure that flows are being examined in conjunction with the actual habitat needs of fish, and prevent the waste and unreasonable use of flows that only provide more water, not more suitable habitat. To demonstrate this point, a few additional inches in the height of water flowing in a leveed and rip-rapped channel is not the same as water flowing in a natural river, with riparian habitat, large woody debris, or water flowing over natural riverbanks into the floodplain.</p> <p>Likewise, the inclusion of "indicators of viability" as standards for the Proposed Flow Objective lacks scientific foundation and implies a causal relationship that that has not been scientifically established. The proposed unimpaired flow approach is unlikely to meet the stated objective of increasing the viability of fish species because it is based on historical correlations that do not provide a scientific basis for specific flow management actions. A basic scientific principle is that correlation does not equal causation. In reviewing the basis for the unimpaired flow approach, the Delta Independent Science Board recently warned against reliance on statistical correlations.</p> <p>-The independent scientists wrote: "Correlations do not always indicate clear causation." (DSB Review Letter, at 4.)</p> <p>-The independent scientists wrote: "[R]egressions from past data may not be predictive into the uncertain future, especially in the face of 'regime' changes like the pelagic organism decline and the consequences of climate change." (DSB Review Letter, at 4.)</p> <p>-The independent scientists wrote: "[S]ome correlations are spurious, and some statistical analyses have led policies astray." (DSB Review Letter, at 4.)</p> <p>Yet, the Draft SED relies on correlative relationships between past flows and salmon production to present modeled results that are supposed to be "predictive" of the effect of future flows on future salmon production. (See Draft SED, Chapter 19.) The Draft SED fails to provide the analytical pathway necessary to move from correlative relationships to developing and evaluating a proposed flow approach that can be linked to the production of native fish populations. The Proposed Flow Objective, which seeks to tie the "efficacy" of flow actions to outcomes such as natural production and viability, is based on the false assumption of a simple flow-fish relationship. This is not scientifically defensible because</p>	<p>Please see response to comment 1270-3 regarding the Delta Independent Science Board commentary on the water quality control plan update for the Sacramento Bay-Delta watershed.</p>

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		viability is dependent on numerous factors, including non-flow factors.	
1270	5	<p>The Proposed Program of Implementation Fails to Adequately Analyze the Program’s Efficacy in Light of Non-Flow Stressors.</p> <p>The proposed program of implementation identifies non-flow measures that others could take in the future to improve the viability of salmonids. (SED, Appendix K, at 59-64.) That does not satisfy the State Water Board’s legal or scientific obligations. In the program of implementation more must be done.</p> <p>The California Legislature found and declared: "Activities and factors which may affect the quality of the waters of the state shall be regulated to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible." (Water Code, § 13000.) Simply acknowledging there are non-flow stressors on fish populations fails to provide the State Water Board with the necessary information to determine which water quality objectives will ensure the reasonable protection of beneficial uses, considering all the beneficial uses of the water.</p> <p>Likewise, the California Legislature has directed the State Water Board to consider "[w]ater quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area." (Water Code, § 13241.) Nowhere is there adequate consideration of controlling all factors. As such, these findings and declarations are not respected by the Proposed Flow Objective or in the Draft SED.</p> <p>The Delta Science Board recently recommended "a deeper analysis of non-flow stressors" in its review of the draft scientific basis report for Phase 2. (DSB Review Letter, at 1.) Yet, the Phase 1 Draft SED and Proposed Flow Objective are proceeding without this "deeper analysis" of the role and relative importance of non-flow stressors of fish populations.</p> <p>The State Water Board’s legal or scientific obligations discussed immediately above have been imposed for good reason. They force a level of consideration necessary to ensure a reasonable protection of beneficial uses of water. Because those obligations have not been satisfied, under the Proposed Flow Objective and program of implementation, water would be taken away from other beneficial uses in the name of certain fish, with no basis for concluding that addressing flow alone will improve the viability of the fish populations.</p> <p>The existing approach presents a significant risk that water will be sent on an impossible mission--in which flow is held solely responsible for addressing a multi-factor condition that flow alone cannot control. Such an approach is not scientifically defensible, and it certainly is not good public policy in a state such as California, where water must be carefully managed to meet the needs of all beneficial uses. Indeed, the redirection of water resources in this matter will likely harm fish, wildlife, and people in urban and agricultural communities.</p>	<p>Please see response to comment 1270-4 regarding the State Water Board’s approach to non-flow actions. Please also see Chapter 16, Evaluation of Other Indirect and Additional Actions, Section 16.3, Lower San Joaquin River Alternatives – Non-Flow Measures, for detailed descriptions of non-flow measures and a programmatic evaluation of the costs and potential environmental effects of those non-flow measures.</p> <p>Water Code section 13241 factors are considered in the Executive Summary and in the SED. Water diversions, exports and competing uses of water have resulted in water quality conditions, such as low flows and increased temperatures, that have impaired fish and wildlife beneficial uses. Coordinated control of these factors through the establishment of the flow water quality objectives while considering competing uses of water is both achievable and necessary. Please be advised that the focus of Water Code section 13241 subd. (c) is water quality conditions and the coordinated control of all factors that affect water quality—not fish populations. Please see Master Response 1.2, Water Quality Control Plan Process, regarding the consideration of non-flow measures under Water Code § 13241, subd. (c). Please also see Master Response 5.2, Incorporation of Non-flow Measures, for further discussion on the consideration and incorporation of non-flow measures.</p> <p>Water Code section 13000 sets for the legislative findings that activities and factors that may affect the quality of the waters of the state shall be regulated to attain the highest water quality that is reasonable, considering all of the demands on those waters. It does not state that all activities and factors affecting fish populations must be regulated to achieve the highest water quality that is reasonable.</p> <p>The best available science has shown that non-flow factors, such as predation, are affected by flow, because a reduced, flattened flow regime favors nonnative species. Increasing flow in the river will enhance the effect of predator removal. The scientific basis for the flow objectives is in Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives.</p> <p>Please see response to comment 1270-3 regarding how the Delta ISB’s letter regards a different proceeding. Even so, the Delta ISB’s comment in that proceeding acknowledged consideration of interactions that enable the effects of non-flow stressors to exacerbate the effects of low flows and vice versa. In that context, the ISB commented that greater scientific understanding of non-flow stressors could provide a better basis for voluntary agreements.</p> <p>Additional evaluation on non-flow stressors is unnecessary for adoption of the proposed plan amendments. The scientific basis report for the proposed plan amendments (Appendix C) concluded that “flow of a more natural spatial and temporal pattern is need from the three salmon bearing tributaries to the San Joaquin River during the February through June time frame to protect San Joaquin River fish and wildlife beneficial uses.” It has been peer-reviewed and found to be based on sound scientific knowledge, methods, and practices. For more information on the peer reviewers’ comments, please see Master Response 3.1, Fish Protection.</p> <p>Master Response 3.1 further explains the scientific justification for flow in protecting fish and wildlife, the role of hatcheries and why focusing on predation alone is inadequate for the recovery of native salmonids.</p> <p>Please see Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, for information regarding a reasonable range of alternatives and the need for the alternatives to meet the objectives of the plan amendments, as well as why non-flow measures are not alternatives.</p>
1270	6	The Analysis Fails to Comply with the California Environmental Quality Act.	Please see Master Response 1.1, General Comments regarding the appropriate use of an SED in lieu of an EIR. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding a

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		<p>The legal defects extend to other important components of the Draft SED. The Public Resources Code affords only a limited exemption for certified regulatory programs, and an SED prepared in lieu of an environmental impact report ("EIR") is subject to the substantive provisions of the California Environmental Quality Act ("CEQA"). (Pub. Resources Code §§ 21002, 21080.5; CEQA Guidelines, § 15250.) These include the fundamental duties to identify a project's adverse environmental effects, to mitigate those effects through adoption of feasible alternatives or mitigation measures, and to justify the proposed action based on specific economic, social, or other conditions. (Sierra Club v. State Board of Forestry (1994) 7 Cal.4th 1215; see also CEQA Guidelines, § 15250.)</p> <p>Under CEQA, a regulatory plan designed to improve environmental conditions must include objective performance criteria by which to measure success. (POET, LLC v. California Air Resources Board (2013) 218 Cal.App.4th 681.) The Draft SED does not identify the monitoring or performance standards necessary to assess effectiveness (and therefore the reasonableness and necessity) of the Proposed Flow Objective.</p> <p>The Proposed Flow Objective provides that "[i]ndicators of viability include population abundance, spatial extent, distribution, structure, genetic and life history diversity, and productivity." (Draft SED, Appendix K at 18.) Thus, to implement a flow objective that seeks to "support and maintain the natural production of viable" fish populations, the program of implementation must provide the basis for evaluating the relationship between a particular flow action and any particular biological goal.</p> <p>The Draft SED and proposed program of implementation fall far short of this--the "biological goals" that will be used to inform adaptive methods and evaluate the effectiveness of the flow objective are left undefined and deferred to a later, separate process. (Draft SED, Appendix K, at 33.) More importantly, they fail to explain how any cause-and-effect evaluation can be done to assess the effect of flows on specific biological viability indices when such a causal relationship has not been scientifically established.</p>	<p>description of the plan amendments (i.e., project description), information regarding the Lower San Joaquin River flow objectives, biological goals and objectives, the role of the STM working group in implementation, and the San Joaquin Monitoring and Evaluation Program. Please see Master Response 3.1, Fish Protection, for information regarding the scientific justification for the plan amendments and additional information regarding the biological goals and objectives.</p>
1270	7	<p>The Update Process and the Current Substitute Environmental Document Have Failed to Provide the State Water Board with Alternatives to the Proposed Unimpaired Flow Approach.</p> <p>The process to develop the Proposed Flow Objective has not provided the State Water Board with a comparative analysis of alternatives to the proposed unimpaired flow approach. The draft technical report for Phase 1, issued back in 2010, only examined various percentages of unimpaired flows. [Footnote 6: See draft technical report at <a href="http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/docs/techrpt102910.pdf">http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/docs/techrpt102910.pdf</a>.] Neither that technical report or any subsequent document produced by State Water Board staff for the Phase 1 proceeding provide the State Water Board with an evaluation of the available alternative methods for setting environmental flows.</p> <p>This singular focus on an "unimpaired flow" approach is insufficient. Reasonable alternatives exist that were not examined. One such alternative would be to manage the ecosystem comprehensively, as opposed to a myopic flow-centric approach, by attempting to address the numerous and significant non-flow stressors impacting native fish populations. Another alternative is the "Functional Flow" approach. This approach was recommended by the</p>	<p>Please refer to Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, regarding the reasonable range of feasible alternatives and the Water Board's discretion, as CEQA lead agency, to set purposes and goals for the plan amendments. In particular, please refer to Table 2.4-1. Summary of Inability of Non-Flow Measures Alone to Achieve the Purposes and Goals of the Plan Amendments, of Master Response 2.4., which summarizes the infeasibility of non-flow-only alternatives. Please See Master Response 3.1, Fish Protection, regarding unimpaired flows and functional flows. Please refer to Master Response 5.2, Incorporation of Non-Flow Measures, for additional information about complementary non-flow actions.</p>

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		<p>Delta Stewardship Council in its Delta Plan. [Footnote 7: See Delta Plan, Chapter 4, available at <a href="http://deltacouncil.ca.gov/sites/default/files/documents/files/CH_04_2013.pdf">http://deltacouncil.ca.gov/sites/default/files/documents/files/CH_04_2013.pdf</a>.]</p> <p>The Functional Flow approach is a mechanistic approach for estimating flow needs. This approach has a greater ability to explain anticipated benefits and better integrate management of flow and non-flow stressors. The Delta Independent Science Board has explained that an advantage of this approach "is its greater ability to explain cause-effect and to lead to new knowledge." (DSB Review Letter, at 4.)</p> <p>Without an examination of flow in the context of other ecosystem factors and an evaluation of alternative approaches to protecting fish and wildlife beneficial uses, the Draft SED does not provide the State Water Board with the information necessary to develop water quality objectives that are tailored to provide the ecosystem functions required to support native fish populations. To adequately perform its duty under Water Code section 13241, the State Water Board must consider a broader range of approaches to setting environmental flows, including the Functional Flow approach.</p> <p>Likewise, to understand the avoidable environmental consequences of the Proposed Flow Objective, the Draft SED must be revised to describe and evaluate a Functional Flow approach, as well as other alternative approaches that consider the numerous non-flow stressors impacting fish populations. Analyses of these alternatives, and comparing them against the proposed unimpaired flow approach will allow the State Water Board to better determine the most effective and tailored management approaches, which would provide a reasonable level of protection for all beneficial uses.</p>	
1270	8	<p>The Proposed Lower San Joaquin River Flow Objectives and Program of Implementation are Contrary to California Law and the Public Interest.</p> <p>The Proposed Flow Objective would reallocate and use significant quantities of water in a manner that is contrary to fundamental principles of California law and the public interest. Requiring that water be used for flow without adequate scientific analysis of what biological functions can realistically be served is contrary to the California Constitutional principles requiring California's water resources to be used reasonably and to the fullest extent of which they are capable. Reallocating water away from other beneficial uses without meaningful consideration of the purported fishery benefits is also contrary to California's water quality laws, including Water Code section 13241, which require consideration of all beneficial uses of water in developing water quality objectives.</p> <p>The California Constitution declares that the water resources of the State must "be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use . . . of water be prevented . . ." (Cal. Constitution Art. 10, § 2; see Water Code § 100 [same].) The proposed flow objectives would not put the water resources of the San Joaquin River and its tributaries "to beneficial use to the fullest extent of which they are capable."</p> <p>Flow is a tool for supporting ecosystem functions. However, requiring the dedication of a percent of unimpaired flow, as opposed to dedicating flow where it serves particular functions, is the equivalent of using a hacksaw to conduct surgery: what is needed is precision. Article 10, section 2 requires that water be used more as a surgical tool than a</p>	<p>Please see Master Response 1.1, General Comments, for a description of the plan amendments and Master Response 1.2, Water Quality Control Plan Process, for an explanation of the State Water Board's authorities under the Porter-Cologne Water Quality Control Act and information regarding the State Water Board's considerations as they relate to public trust resources. Please also see Master Response 1.2, and Master Response 2.1, Amendments to the Water Quality Control Plan for additional information regarding the State Water Board's considerations of beneficial uses and the compatibility of the unimpaired flow objectives with the principals of functional flows. Please refer to Master Response 2.2, Adaptive Management for information regarding adaptive implementation products, plan and process and the Stanislaus, Tuolumne, and Merced working group. Please refer to Master Response 3.1, Fish Protection regarding the scientific justification for the plan amendments related to the reasonable protection of fish and wildlife.</p>

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		<p>blunt instrument. Article 10, section 2 demands that the State Water Board consider more thoroughly the factors that affect the beneficial uses beyond flow, before taking action. Indeed, both environmental and beneficial consumptive uses will suffer from an ineffective and hence inefficient dedication of water supply to increased flow.</p> <p>The Proposed Flow Objective is also contrary to fundamental requirements of California’s water quality laws. A water quality control plan must conform to the State policy that the activities and factors which may affect water quality "shall be regulated to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible." (Water Code, § 13000; § 13240; § 13170.)</p> <p>The State Water Board must "establish such water quality objectives in water quality control plans as in its judgment will ensure the reasonable protection of beneficial uses. . . ." (Water Code, § 13241.) In establishing water quality objectives, the State Water Board must consider: the beneficial uses of the water; the environmental characteristics of the watershed; the water quality conditions that could reasonably be achieved through the control of all factors affecting water quality; and economic considerations. (Water Code, § 13241, subd. (a)-(d).)</p> <p>The proposed flow objective is contrary to these policies. It is not "reasonable" to rely so heavily on flow in light of the environmental characteristics of this hydrographic region, which are complex and highly-altered. These considerations require a more careful and exacting approach to water quality planning than is advanced in the Proposed Flow Objective.</p>	
1270	9	<p>The Proposed Program of Implementation for the Southern Delta Salinity Objectives does not Reflect Consideration of all the Factors that Affect Salinity and Unlawfully Assigns Responsibility for Meeting the Objectives.</p> <p>The State Water Board must consider all factors contributing to southern Delta salinity. (Water Code, § 13241, subd. (a), (c), (d).) As the State Water Board has previously recognized, there are multiple factors affecting salinity in the southern Delta, both at Vernalis and downstream of Vernalis. [Footnote 8: See, e.g., Revised Decision 1641, at pp. 80-89.] The Draft SED acknowledges that southern Delta salinity is affected by two factors, changes in flow and load, factors that are impacted at multiple locations and by multiple sources. (SED, App. C, at 4-7; see SED, at 13-21-13-22.)</p> <p>The proposed program of implementation for the Proposed Salinity Objectives does not reflect the necessary consideration of all factors that affect southern Delta salinity. Nor does the proposed program of implementation reflect consideration of changes in the factors that affect southern Delta salinity over the last few decades; in particular the unprecedented reduction in the discharges from Grasslands Bypass Project. (See SED, Appendix K, at 48-49.) The assignment of responsibility for implementing southern Delta salinity objectives must be directly tied to the current factors contributing to salinity concentrations in the southern Delta.</p> <p>Further, the proposed program of implementation for the Proposed Salinity Objective unlawfully pre-determines water rights conditions that can only be decided in a subsequent water rights proceedings. The proposed program of implementation unlawfully conflates the State Water Board’s quasi-legislative water quality planning authority with its quasi-</p>	<p>The proposed salinity objectives consider all of the factors required to be considered under Water Code § 13241, including the water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area. For example, the Executive Summary states:</p> <p>“With respect to salinity conditions, attainment of current salinity objectives in the southern Delta has been difficult because of the complex interaction of upstream salinity sources, including salts imported to the SJR Basin in irrigation water; municipal discharges; poor circulation in southern Delta channels; tidal influences; and water diversions and discharges from agricultural drainage. . . . The above factors like circulation, diversions and discharges can be coordinated to reasonably achieve salinity conditions that protect agricultural beneficial uses in the southern Delta.”</p> <p>Please see Master Response 1.2, Water Quality Control Plan Process, for responses to comments on the consideration of Water Code § 13241 factors when establishing water quality objectives. The program of implementation does not disturb the findings of Decision 1641 related to USBR’s and DWR’s responsibilities for salinity exceedances in the southern Delta. Please see Master Response 3.3, Southern Delta Water Quality, for discussion of the responsibilities of USBR and DWR with regard to southern Delta salinity. The program of implementation continues with implementation of the salinity objectives through the control of flow and discharges. It does not limit the State Water Board’s authority to assign responsibility to other water users for complying with the salinity objectives. In addition, the salinity objectives will also be implemented through the LSJR flow objectives, under which diversions from entities beyond USBR and DWR will also be regulated.</p>

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		<p>adjudicatory water rights authority and would thus condition fundamental water rights without providing the procedural protections mandated by law. (U.S. v. SWRCB (1986) ["Racanelli"] 182 Cal.App.3d 82, 101.)</p> <p>The proposed program of implementation unlawfully assigns responsibility for implementation of the proposed new salinity objectives to specific water right holders. As an example, the program of implementation predetermines responsibility by stating: "DWR and USBR shall be required to comply with the 1.0 dS/m water quality objective year-round as a condition of their water rights." (Draft SED, Appendix K, at 43.) [Footnote 9: For an additional example, see Draft SED Appendix K, at 43 ("DWR's and USBR's water rights shall be conditioned to require completion of the Comprehensive Operations Plan"), at 45 ("DWR's and USBR's water rights shall be conditioned to require continued operations of the agricultural barriers . . .").]</p> <p>The State Water Board cannot impose water right conditions as part of a program of implementation in this water quality proceeding. (Racanelli Decision, supra, 182 Cal.App.3d at p. 101.) Any water right conditions that may be necessary to implement the new salinity objectives must be considered and determined in an adjudicative water right proceeding, which affords water right holders due process.</p>	
1270	10	<p>The Phase 1 amendments and the Draft SED advance an approach to ecosystem management that attempts to recreate a historic flow regime that is impossible in the context of the significantly altered ecosystem of the Bay-Delta watershed. Presumably, the Phase 1 amendments and the Draft SED assume such an approach will resurrect the long-dead characteristics of the natural estuarine system in which native fish species in the Bay-Delta watershed adapted. A significant and growing body of science does not support these assumptions.</p> <p>The "unimpaired flow" approach assumes that all the ecosystem and its species need is more water to improve, without attempt to ensure the water would serve an identified biological function. The Phase 1 amendments and the Draft SED appear to continue to wish away one hundred and fifty years of dredging, channelization, pollution, sequestration, and the introduction of non-native predators for sport in the Delta watershed. Instead, sound science and responsible policy put the following question: how to responsibly manage for natural functions in what is now the unnatural landscape of the Bay-Delta.</p> <p>In this significantly altered system, the large body of scientific information on ecosystem management says flow alone cannot compensate for the physical, biological, and chemical changes that have occurred within the Bay-Delta estuary.</p> <p>Flow alone cannot create floodplain habitat due to land reclamation and the existing flood protection system.</p> <p>Flow alone cannot replace lost riparian habitat, cannot replace lost large woody debris.</p> <p>Flow alone cannot mitigate for the impact caused by rip-rapping the river banks.</p> <p>Flow alone cannot mitigate for the impact caused by the introduction of non-native, predatory species.</p> <p>The Public Water Agencies respectfully request that the State Water Board staff revise the</p>	Please see response to comment 1270-4 regarding the unimpaired flow approach and non-flow actions.

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		Proposed Salinity Objective, Proposed Flow Objective, proposed program of implementation, and Draft SED.	
1270	11	[ATT1: San Luis & Delta-Mendota Water Authority and Westlands Water District’s detailed comments on proposed amendments to the Bay-Delta Plan and Recirculated SED.]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1270	12	<p>[From ATT1:] The Proposed Salinity Objectives Fail to Adequately Consider the Section 13241 Factors.</p> <p>In establishing water quality objectives that provide "reasonable protection" of beneficial uses, Water Code section 13241 requires the State Water Resources Control Board ("State Water Board") consider the following factors, among others: (1) "[p]ast, present, and probable future beneficial uses of water;" (2) "[w]ater quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area;" and (3) "[e]conomic considerations." (Wat. Code, § 13241, subd. (a), (c), (d).) The proposed SDWQ salinity objectives fail to reflect adequate consideration of these factors.</p>	<p>The Executive Summary, Table ES-27, Porter-Cologne Section 13241 Factors, identifies where the topics identified by the commenter are discussed in the SED, specifically: 1- Past, present, and probable future beneficial uses of water- Chapter 5; (2) water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area-Chapter 5; and (3) economic considerations- Chapters 16 and 20.</p> <p>Please see Response to comments 1270-13 and 1270-14.</p>
1270	13	<p>[From ATT1:] The Proposed Salinity Objectives do not Consider the Water Quality Conditions that Could Reasonably be Achieved through the Coordinated Control of all Factors Affecting Water Quality.</p> <p>The proposed salinity POI reveals that the proposed salinity objectives were developed without adequate consideration of the water quality conditions that could reasonably be achieved through the coordinated control of all factors affecting water quality. (See Recirculated SED, App. K.) The Recirculated SED states that "[s]alinity levels in the southern Delta are affected primarily by the salinity of water flowing into the southern Delta from the SJR near Vernalis and evapo-concentration of salt in water that is diverted from and discharged back into southern Delta channels for agricultural purposes [within the southern Delta]." (Recirculated SED, App. C, at p. 4-7; see Recirculated SED, at pp. 13-21-13-22.)</p> <p>This statement acknowledges that multiple factors affect salinity concentrations in the southern Delta. Yet, the proposed salinity POI reveals that the 1.0 EC objectives were developed with the assumption that the salinity objectives would be achieved by imposing significant responsibility on the U.S. Bureau of Reclamation ("Reclamation"). As proposed, Reclamation would be obligated to meet a salinity level of 0.7 EC at Vernalis, to provide "assimilative capacity" for downstream diversions and discharges. (See Recirculated SED, App. K., at pp. 42-45.)</p> <p>Similarly, the proposed POI states that "DWR and USBR’s water rights shall be conditioned to require . . . the development and implementation of a Comprehensive Operations Plan [that must] describe the actions that will fully address the impacts of SWP and CVP export operations on water levels and flow conditions that may affect salinity conditions in the southern Delta, including the availability of assimilative capacity for local sources of salinity." (Id., at p. 43.)</p> <p>The Department of Water Resources ("DWR") submitted the results of DSM2 modeling that specifically analyzes the effect of pumping by the CVP and SWP on water quality, water levels, and circulation with and without the temporary barriers. The modeling results demonstrate that CVP and SWP operations usually have no effect on salinity in the southern Delta, and, at times, have a positive effect by lowering salinity concentrations. The models</p>	<p>Please see response to comment 1270-9 regarding the consideration of other factors affecting salinity. Please see Master Response 3.3 Southern Delta Water Quality, regarding the DSM2 modeling results and the responsibilities of USBR and DWR with regards to southern Delta salinity.</p> <p>The SED acknowledges other sources of salinity in the southern Delta. As described in Master Response 3.3, the development of the Comprehensive Operations Plan will include further assessment of sources of salinity in the southern Delta as well as the effectiveness of potential measures to reduce the salinity.</p> <p>The SED does not attempt to re-evaluate all aspects of D-1641. For example, it does not provide new guidance regarding operation of temporary barriers in the southern Delta for the control of water surface elevation to facilitate agricultural diversions.</p> <p>The basis for the proposed salinity objectives is not similar to the facts in the case cited by the commenter. In <i>United States v. State Water Resources Control Board</i> (1986) 182 Cal.App.3d 82 (the "Racanello Decision"), the court reviewed the State Water Board’s adoption of water quality objectives to protect agricultural, industrial and municipal uses from salinity based on the measure of flows necessary to protect existing water rights against impairment by the state and federal water projects. Please see Master Response 1.2, Water Quality Control Planning Process regarding the consideration of beneficial uses. It stated that the Board’s task is to protect beneficial uses, not water rights. The court held that the Board had compromised its water quality role by defining its scope too narrowly because the Board had established the water quality standards only at a level that could be enforced against USBR’s and DWR’s water rights. (Id. at pp. 118-120.) No attention was given to water use or quality degradation by other users such as upstream diverters or polluters. (Ibid.) Here, the proposed salinity objectives are not based on enforceable water rights, but rather based on the Scientific Basis Report in Appendix C describing that 1.0 dS/m is protective of agricultural beneficial uses and considering the factors to be considered under Water Code § 13241.</p>

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		<p>also demonstrate that null zones, which are commonly used as an indicator of poor circulation, occur with the same general frequency and duration with or without CVP and SWP pumping.</p> <p>In addition, spikes in salinity in the southern Delta may not be attributable to poor circulation because salinity sometimes spikes during high flow periods in the absence of null zones. The modeling also demonstrates that CVP and SWP pumping has a small and ephemeral impact on water levels in the southern Delta of approximately 6-8 inches for just a few hours per day. In contrast, the temporary barriers raise water levels well above levels that would occur without CVP and SWP pumping. [Footnote 1: Indeed, if the State Water Board is concerned about the impact of water levels on irrigation in the southern Delta, it would be far more cost effective and appropriate to study alternatives such as altering the timing of irrigation pumping in the southern Delta, or changing the location of pumps or siphons that experience issues with fluctuating water levels.]</p> <p>Indeed, the Recirculated SED acknowledges this effect of operations of the CVP and SWP. For instance, the SED states that "[h]igher CVP and SWP pumping also results in reduced southern Delta salinity as higher pumping brings more Sacramento River water across the Delta to the export pumps." (Recirculated SED, at p. 2-43.) In addition, the draft SED itself clearly demonstrates that the salt loadings in the Lower San Joaquin River ("LSJR") and southern Delta are not attributable to the CVP or SWP pumping, but rather result from a host of other factors, including agricultural return flows in the southern Delta. (E.g., Recirculated SED, at pp. 13-21-13-22.)</p> <p>Yet, by assuming assignment of responsibility to Reclamation and DWR, the proposed amendments ignore the actions that could be taken by other entities that actually contribute to salt concentrations in the southern Delta. The State Water Board should not make the same mistakes it has made in the past, by taking too narrow a focus and failing to consider all of the factors that affect water quality in developing water quality objectives.</p> <p>[Footnote 2: See U.S. v. SWRCB (1986) ["Racanelli"] 182 Cal.App.3d 82. In Racanelli, the court concluded that "the Board made no effort to protect against water quality degradation by [] users [other than Reclamation and DWR] namely, upstream diverters or polluters. As a consequence, the Board erroneously based its water quality objectives upon the unjustified premise that upstream users retained unlimited access to upstream waters, while the projects and Delta parties were entitled only to share the remaining water flows." (Id. at p. 118.) The court stated that "the Board cannot ignore other actions which could be taken to achieve Delta water quality, such as remedial actions to curtail excess diversions and pollution by other water users." (Id. at p. 120.) The proposed salinity objective and POI reflect the same mistakes found in Racanelli--the faulty and narrow presumption that the CVP and SWP will be held responsible for supporting the diversions and discharges of other entities.]</p>	
1270	14	<p>[From ATT1:] The Proposed Salinity Objectives do not Adequately Consider the Economic Costs Associated with the Proposed Objectives.</p> <p>The Recirculated SED explains that the "State Water Board based the southern Delta EC objectives on the calculated maximum salinity of applied water which sustains 100% yields of two important salt sensitive crops grown in the southern Delta (beans and alfalfa) in conditions typical of the southern Delta." (Recirculated SED, App. C, at p. 4-2.) However, this approach to establishing the salinity objectives fails to consider and compare the economic</p>	<p>Please see Master Response 3.3, Southern Delta Water Quality, regarding the technical justification for amending the salinity objectives in order to reasonably protect the beneficial use of agriculture. As described in Chapter 20, Economic Analyses, the State Water Board is required to consider economics per Water Code Section 13241. The State Water Board considers the costs associated with the installation and operation of the temporary barriers in Chapter 16, Evaluation of Other Indirect and Additional Actions, Section 16.4.5, Southern Delta Temporary Barriers. A summary of this information is now included in Chapter 20 so that it appears with other economic considerations. The costs of studies and monitoring can vary widely depending on the scope and objectives of the study, the length of the study, and the cost sharing agreements between</p>

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		<p>costs and benefits of implementing specific salinity objectives.</p> <p>In other words, this approach fails to provide the State Water Board with the information necessary to consider whether it is "reasonable" to establish salinity objectives that provides 100% protection for agricultural beneficial uses of water in light of the economic costs associated with the responsibilities assigned in the proposed POI. For example, the Recirculated SED acknowledges that revising the salinity objectives could involve costs to dischargers complying with a NPDES discharge permit, waste discharge requirements, or complying with a TMDL that is established for protecting agricultural beneficial uses. (Recirculated SED, at pp. 20-10-20-11.)</p> <p>Those are important considerations. However, the SED fails to account for other costs, such as the costs associated with mandating the installation and operation of the temporary barriers and conducting the studies and monitoring identified in the proposed POI. These costs are necessary considerations.</p>	<p>agencies and funding opportunities to offset the cost. Chapter 16, Section 16.5, Sources of Funding, discusses possible sources of funding to assist with costs; however, at this time the State Water Board does not have information available regarding the specifics of the studies to identify costs associated with different studies that could be conducted under the POI.</p>
1270	15	<p>[From ATT1:] The Proposed Program of Implementation Illegally Conflates the State Water Board's Legislative Water Planning Function and its Adjudicative Water Right Function.</p> <p>The State Water Board performs dual functions--its legislative function of developing and amending water quality control plans and its adjudicatory function of allocating water rights. Consideration and determination of what, if any, water right conditions are necessary to implement new water quality objectives must be performed in an adjudicative proceeding. (See Racanelli, supra, 182 Cal.App.3d at p.113 ["in undertaking to allocate water rights, the Board performs an adjudicatory function."].) The Recirculated SED acknowledges this rule and repeatedly asserts that the State Water Board will consider any necessary changes to water rights to implement the amendments to the water quality control plan in a later water right proceeding.</p> <p>[Footnote 3: See, e.g., Recirculated SED, at p. 1-2 ["the State Water Board will evaluate, in a subsequent water rights proceeding, whether to impose responsibility on surface water users who divert surface water from the Stanislaus, Tuolumne, and Merced River Watersheds above the major dams."]; Id., at p. 1-3 ["In Phase III, the State Water Board will conduct proceedings to assign responsibility for actions to implement the water quality objectives established in Phase I and Phase II, including changes to water rights or other implementation actions."]; Id. at p. 1-8 [the "State Water Board's Phase III would specifically identify the water rights that could be modified as a result of adopting and applying the program of implementation for the LSJR flow objectives analyzed in this SED as part of Phase 1."]; Id., App. C, at p. 1-1 ["Any changes to water rights consistent with the revised program of implementation will be considered in a subsequent adjudicative proceeding."].]</p> <p>Unfortunately, the proposed amendments and POI pre-determine many water right conditions. For example, the proposed POI pre-determines that DWR and Reclamation's water rights will be conditioned to: 1) develop and implement a Comprehensive Operations Plan to address how SWP and CVP operations "might affect the assimilative capacity for local sources of salinity in the southern Delta;" 2) develop and implement a special monitoring study to characterize water level, flow and salinity conditions in the southern Delta; 3) to require continued operations of the agricultural barriers program; and 4) develop a monitoring and reporting protocol to provide the data necessary to assess</p>	<p>Water Code section 13241 requires a program of implementation for achieving water quality objectives, which must include a description of the nature of actions that are necessary to achieve the objectives. (Wat. Code, § 13241, subd. (a).) Consistent with this requirement, the proposed implementation program sets forth the actions necessary to achieve the salinity objectives, including that through water right actions, USBR and DWR will be required to continue complying with salinity requirements as conditions of their water rights. The State Water Board has been granted a "broad,' 'open-ended,' and 'expansive' authority to undertake comprehensive planning and allocation of water resources." (National Audubon Society v. Superior Court (1983) 33 Cal.3d 419, 449.) This includes the authority to enact rules and regulations that condition water rights. (Light v. State Water Resources Control Board (2014) 226 Cal.App.4th 1463, 1484-1487 [the Board's broad adjudicatory and regulatory authority is coincident with that of the Legislature and includes the power to enact regulations governing the reasonable use of water].) citing California Trout, Inc. v. State Water Resources Control Board (1989) 207Cal.App.3d 585.) Moreover, it has long been established that a legislative act like a regulation or rulemaking, such as the proposed plan amendments, can dictate the outcome that would otherwise be decided in a later evidentiary hearing. (See, e.g., U.S. v. Storer Broadcasting (1956) 351 U.S. 192.) Commenter's claims about the denial of due process are equally unavailing. Here, USBR, DWR, and those affected by CVP and SWP operations had both notice and the opportunity to comment and participate in the proposed plan amendment proceeding.</p> <p>Please refer to Master Response 3.3, Southern Delta Water Quality, for response to comments regarding the Responsibilities of DWR and USBR.</p> <p>Please refer to Master Response 1.2, Water Quality Control Planning Process, for response to comments regarding the State Water Board's legislative water planning function and its adjudicative water right function.</p>

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		<p>attainment of the salinity objectives. (Recirculated SED, App. K.)</p> <p>Such an approach illegally conflates the State Water Board’s legislative water quality planning function with its adjudicative water rights function and fails to provide the targeted water right holders with the procedural protections and due process provided by an adjudicative water right proceeding.</p>	
1270	16	<p>[From ATT1:] The State Water Board cannot decide in the Program of Implementation to "Continue" to Condition the Water Rights of Reclamation and DWR to Implement Water Quality Objectives during this Quasi-Legislative Water Quality Planning Process.</p> <p>The "guiding principle" in any water right proceeding commenced to implement a water quality control plan is that the State Water Board's power to act in such a water rights proceeding "is constrained by the terms of the plan it is implementing." (State Water Resources Control Bd. Cases (2006) 136 Cal.App.4th 674, 729 at p. 729.) The proposed SDWQ salinity objectives would amend the existing southern Delta salinity objectives in the Bay-Delta Plan (0.7 EC April-August and 1.0 September-March) to require 1.0 EC year-round. (Recirculated SED, App. K, at p. 15; Bay-Delta Plan at p. 13.)</p> <p>Therefore, the inquiry in any water right proceeding commenced to implement the new salinity objectives would be: "what water right conditions, if any, are necessary to implement the 1.0 dS/m salinity objective." Thus, because the State Water Board would be seeking to implement a new salinity objective, it must perform a new evaluation and determination of the water right conditions, if any, necessary to implement those salinity objectives, in a water right proceeding.</p> <p>Although the proposed salinity objectives would effectively eliminate the 0.7 EC salinity objectives that currently exist in the Bay-Delta Plan, the proposed POI assumes that Reclamation will be required to operate to achieve the objectives. The proposed POI states: "For the San Joaquin River at Airport Way near Vernalis, Revised Water Right Decision 1641 imposes conditions on USBR’s water rights requiring implementation of EC levels of 0.7 mmhos/cm from April through August and 1.0 mmhos/cm from September through March (units of mmhos/cm are equal to units of dS/m). As part of implementing the salinity water quality objective for the interior southern Delta, USBR shall be required to continue to comply with these salinity levels, as a condition of its water rights." (Recirculated SED, App. K, at p. 42.)</p> <p>[Footnote 4: See, e.g., Recirculated SED at p. 11-6, Table 11-1 [water quality within the southern Delta under SDWQ Alternatives 2 and 3 "is expected to remain unchanged as USBR would be responsible for complying with the same salinity requirements that currently exist at Vernalis."]; at p. 11-43 [the "program of implementation for the numeric salinity objectives contained in SDWQ Alternatives 2 and 3 includes continued USBR compliance with the Vernalis salinity requirement currently established in the 2006 Water Quality Control Plan for the San Francisco/Sacramento-San Joaquin Delta Estuary (2006 Bay-Delta Plan) and implemented through the State Water Board’s Water Right Decision 1641 (D-1641)."]; at p. ES-50 ["Revised D-1641 imposes conditions on USBR’s water rights requiring implementation of EC levels of 0.7 mmhos/cm from April-August and 1.0 mmhos/cm from September-March at Vernalis (units of mmhos/cm are equal to units of dS/m). USBR would continue to be required to comply with these salinity levels, as a condition of their water rights, in order to implement and meet the proposed salinity water quality objective in the</p>	<p>The basis upon which the State Water Board found USBR and DWR responsible for salinity exceedances in the southern Delta in D-1641 has not changed. The proposed updates to the WQCP continue USBR’s responsibility over salinity problems at Vernalis and in the interior southern Delta. The plan amendments’ program of implementation requires USBR to maintain EC levels of 0.7 dS/m from April through August at Vernalis in order to implement the salinity objectives for the interior southern Delta. With respect to DWR’s responsibility over salinity exceedances in the interior Delta, the proposed plan amendments continue DWR’s responsibility to address salinity exceedances for which it is partially responsible, as determined in D-1641. Some commenters argued that DWR does not have responsibility for salinity exceedances in the southern Delta. However, per D-1641 (page 88): “The DWR and the USBR are partially responsible for salinity problems in the southern Delta because of hydrologic changes that are caused by export pumping.” Although DWR facilities do not deliver water to the west side of the San Joaquin River, and so do not contribute salt loads directly to lands that drain to the San Joaquin River, the State and federal projects are sometimes jointly operated. This joint operation, allowing the use of DWR’s and USBR’s respective water rights and pumping capacities, means that DWR also partially contributes to the salinity problems caused by export pumping and addition to salt loads to the west side of the San Joaquin River that drain to the San Joaquin River.</p> <p>Please refer to Master Response 3.3, Southern Delta Water Quality, for response to comments regarding the Responsibilities of DWR and USBR.</p> <p>Please refer to Master Response 1.2, Water Quality Control Planning Process, for response to comments regarding the State Water Board’s legislative water planning function and its adjudicative water right function.</p>

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		<p>interior southern Delta."].]</p> <p>Also, the proposed POI states: "Revised Water Right Decision 1641 imposes conditions on DWR's and USBR's water rights requiring implementation of EC levels of 0.7 mmhos/cm from April through August and 1.0 mmhos/cm from September through March at the three compliance stations in the interior southern Delta (Interagency Stations No. C-6, C-8, and P-12). As part of implementing the salinity water quality objective for the interior southern Delta, DWR and USBR shall be required to comply with the 1.0 dS/m water quality objective year-round as a condition of their water rights." (Recirculated SED, App. K, at pp. 42-43.)</p> <p>In addition, the POI states: "DWR and USBR's water rights shall be conditioned to require continued operations of the agricultural barriers at Grant Line Canal, Middle River, and Old River at Tracy, or other reasonable measures, to address the impacts of SWP and CVP export operations on water levels and flow conditions that might affect southern Delta salinity conditions, including the assimilative capacity for local sources of salinity in the southern Delta." (Recirculated SED, App. K, at p. 45.)</p> <p>However, the State Water Board cannot pre-determine the water right conditions necessary to implement the salinity objectives, and the proposed POI's assumption that the State Water Board will continue to require the water right conditions imposed to implement the Bay-Delta Plan is contrary to law.</p>	
1270	17	<p>[From ATT1:] An Adjudicative Water Right Proceeding is Necessary to Provide Due Process to Water Right Holders.</p> <p>A right to appropriate water is recognized as a private property right and "once rights to use water are acquired, they become vested property rights." (Racanelli Decision, supra, 182 Cal.App.3d at p. 101.) The Constitution prohibits a state from depriving any person of property "without due process of law." (Sec. 1, Amendment XIV, U.S. Constitution.) Thus, appropriative water rights "cannot be infringed by others or taken by governmental action without due process and just compensation." (Racanelli Decision, supra, 182 Cal.App.3d at p. 101.)</p> <p>Therefore, the procedural protections provided by law with respect to appropriative water rights are necessary to ensure that due process is provided by the State. The proposed POI for the salinity objectives deprives Reclamation and DWR, their respective contractors, including members of the Public Water Agencies, and likely others of due process by attempting to impose water right conditions through this legislative water quality planning process.</p> <p>An adjudicative water right proceeding provides additional procedural protections to water right holders that are not provided in the legislative water quality planning process. For example, in an adjudicative water right proceeding, each party has the right to call and examine witnesses, to cross-examine opposing witnesses, and to rebut evidence against him or her. (Gov. Code, § 11513, subd. (b); Gov. Code, § 11425.10, subd. (a); 23 C.C.R. § 648, subd. (b) [listing applicable procedures in State Water Board adjudicative proceedings].) In addition, the decision issued in a water right proceeding must include "a statement of the factual and legal basis of the decision. . . ." (Gov. Code, § 11425.10, subd. (a); 23 C.C.R. § 648, subd. (b).)</p> <p>These procedural rights, and others provided for in adjudicative proceedings, ensure that</p>	Please refer to response to comment 1270-15.

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		<p>parties to such proceedings receive due process and an opportunity to contest the State Water Board's evidence. If adopted, the proposed POI for the SDWQ salinity objectives would deprive Reclamation and DWR, their respective contractors, including members of the Public Water Agencies, and likely others of these procedural rights by pre-determining the conditions that will be placed on water rights, prior to providing the due process afforded in an adjudicative water right proceeding.</p> <p>In addition, the State Water Board is held to a higher evidentiary standard in making water rights decisions than it is in developing water quality control plans. In reviewing the State Water Board's legislative actions, such as amendments to a water quality control plan, the courts apply a deferential standard of review and a court will "uphold the agency action unless the action is arbitrary, capricious or lacking in evidentiary support." (Racanelli Decision, supra, 182 Cal.App.3d at p. 113.)</p> <p>In contrast, in reviewing the validity of water right permit conditions imposed through an adjudicative proceeding, the courts must determine whether "the conditions are supported by 'precise and specific reasons founded on tangible record evidence.'" (Id. at p. 115.) Also, an administrative agency is required to make findings that bridge the analytic gap between the raw evidence and the ultimate decision when it issues an adjudicative decision, but not when it issues a legislative decision. (Id. at p. 114.) Thus, the nature of the proceeding determines the evidentiary standard the State Water Board must meet and adjudicatory actions provide more protection for the parties and rights affected by the agency action, by providing a more demanding evidentiary standard.</p>	
1270	18	<p>[From ATT1:] Assignment of Responsibility for Implementing the Salinity Objectives Should be Commensurate with a Party's Contribution to Salinity.</p> <p>The Recirculated SED states that the "[e]levated salinity in the southern Delta is caused by various factors, including low flows; salts imported to the SJR Basin in irrigation and wetland supply water; municipal discharges; subsurface accretions from groundwater; tidal actions; diversions of water by the CVP, SWP, and local water users; channel capacity; and agricultural drainage discharges to the SJR upstream of the Delta and in the Delta."(Recirculated SED, at p. 1-9.)</p> <p>However, rather than address these various factors affecting salinity in the southern Delta, the proposed POI would require Reclamation to provide "assimilative capacity" downstream of Vernalis for salinity inputs by others. (See Recirculated SED, at pp. 1-11-1-12 [under SDWQ Alternatives 2 and 3 "USBR's water rights would continue to be conditioned to meet EC levels of 0.7 dS/m August and 1.0 dS/m from September-March in the SJR at Airport Way Bridge near Vernalis to provide assimilative capacity for salinity inputs downstream of Vernalis."].)</p> <p>The SED does not explain why it is appropriate to burden Reclamation's water rights to accommodate salinity contributions by other parties. Nor does it explain why it is appropriate to require Reclamation and DWR to install, operate and maintain barriers, conduct the specified monitoring, and conduct the specified studies. (See Recirculated SED, App. K, at pp. 41-46; see also SED, at p. 16-215) There is also no valid basis for imposing permit conditions on the CVP and SWP, including those that require the Reclamation and DWR, and likely the Public Water Agencies, to fund monitoring and studies, install temporary barriers. (Id.)</p>	<p>The Program of Implementation in Appendix K requires DWR and USBR to address the impacts of the SWP and CVP on salinity conditions. Ultimately, the suite of facilities and operations needed to address these impacts will be determined in the Comprehensive Operations Plan, which in turn will be informed by the specified studies and monitoring. Please see Master Response 3.3, Southern Delta Water Quality, for discussion of the responsibilities of DWR and USBR with regards to southern Delta salinity and the Comprehensive Operations Plan.</p>

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		<p>It is beyond reasonable dispute that multiple factors affect the concentration of salinity in the waters of the San Joaquin River and southern Delta. Indeed, the draft SED acknowledges that salinity conditions in the southern Delta are affected by various factors. (Recirculated SED, at p. 1-9.) Thus, it is unreasonable and unlawful to require Reclamation to provide assimilative capacity or to require Reclamation and DWR to install, operate and maintain barriers, conduct the specified monitoring, and conduct the specified studies.</p>	
1270	19	<p>[From ATT1:] The Assignment of Responsibility for Implementing the Salinity Objective Must Reflect the Substantial Reduction in Salt Discharge Upstream of Vernalis.</p> <p>While the SED briefly describes several of the projects that have significantly reduced salinity loading in the San Joaquin River from lands irrigated with CVP water, the proposed POI's assignment of responsibility to Reclamation for implementing the proposed new salinity objectives does not reflect consideration of these reductions. (See Recirculated SED, App. K, at pp. 42-52.)</p> <p>The contribution of salinity to the San Joaquin River from lands irrigated with CVP water have changed considerably since the State Water Board last closely examined San Joaquin salinity standards in the 1995 Water Quality Control Plan amendments and in D-1641. At the time the State Water Board adopted D-1641, there was a concern that the Vernalis salinity objective would not be met. Indeed, Reclamation "acknowledged that on occasion salinity objectives at Vernalis will not be met under its plan." (D-1641, at p. 80.) The State Water Board found that "the actions of the CVP are the principal cause of the salinity concentrations exceeding the objectives at Vernalis." (Id. at p. 83.) The effect of CVP-related irrigation and other activities is very different today, something the Recirculated SED does not sufficiently acknowledge or consider.</p> <p>There have been no exceedances of the salinity objective at Vernalis since D-1641 was adopted. The Grasslands Bypass Project ("GBP") has achieved substantial reductions in salt discharges to the San Joaquin River. (See Recirculated SED, App. K, at p. 48 [monitoring data from 1995-2015 shows that Grasslands Bypass Project reduced the discharge of salts by 83% compared to pre-GBP conditions].) The GBP is regulated through waste discharge requirements issued by the Central Valley Regional Water Quality Control Board ("Central Valley Regional Board"), an important fact not mentioned in the description of the project. (Id.)</p> <p>The GBP gathers subsurface drain water from some 90,000 acres of farmland located west of Firebaugh, California, lands that are irrigated with CVP water. The regulations and agreements governing the GBP require further dramatic drainage reductions that will continue to reduce discharges of salinity, while drainage management through the project will allow viable agriculture to be maintained.</p> <p>In addition, other programs on the west side of the San Joaquin Valley are addressing salinity on lands not within the GBP. The Irrigated Lands Regulatory Program ("ILRP") includes measures addressing drainage discharges from irrigated agricultural lands that reach the San Joaquin River. (See Recirculated SED, App. K, at p. 47.) The ILRP initially requires monitoring and data collection that will guide later management.</p> <p>In addition to program requirements for monitoring the discharge of salts, priority management practices, such as installation of drip irrigation and tailwater recirculation systems to avoid sediment discharges, are expected to have incidental but immediate</p>	<p>The SWRCB acknowledges that the ILRP, the Grasslands Bypass Project, and other projects have had substantial benefits to salinity conditions in the San Joaquin River. Please see Master Response 3.3, Southern Delta Water Quality, for discussion of the responsibilities of DWR and USBR with regards to southern Delta salinity.</p>

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		<p>benefits in reducing discharges of salts. The ILRP, along with the waste discharge requirements for the GBP, will be used to implement the TMDL for salinity in the lower San Joaquin River. (Id.) Reclamation has entered into and is updating a Management Agency Agreement with the Central Valley Regional Board that is engaging stakeholders, including state and federal refuges, among others, in the development of a real time program for managing discharges to address salinity concerns. (Id.)</p> <p>In sum, much has changed since adoption of the 1995 WQCP and D-1641 regarding the CVP's contribution to salinity in the San Joaquin River upstream of Vernalis. There have been no exceedances of the standard at Vernalis since D-1641 was adopted. The GBP has achieved substantial reductions in salt discharges from agricultural lands irrigated with CVP water. These reductions in salinity discharges upstream of Vernalis, should be reflected in the proposed POI for any new southern Delta salinity objectives and considered in determining responsibility for implementing those objectives. Consideration of these reductions and changes in salinity contributions is essential to developing sound amendments to the existing water quality control plan, including to the program of implementation.</p>	
1270	20	<p>[From ATT1:] Legal and Evidentiary Defects of the Proposed Lower San Joaquin River Flow Objective &amp; Related Program of Implementation.</p> <p>Flow is not a Proper Parameter for a Water Quality Objective under Porter-Cologne.</p> <p>The proposed LSJR flow objective is unlawful because flow is a not a proper parameter for a water quality objective. "Water quality objectives" are defined in the Porter-Cologne Act as the "limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area." (Wat. Code, § 13050, subd. (h).) Temperature, pH, dissolved solids, pathogens, dissolved oxygen, and chemical constituents such as pesticides are all examples of "water quality constituents or characteristics."</p> <p>Flow, by contrast, is the physical movement of water in a watercourse. While flow may affect water quality, flow is not a water quality constituent or characteristic of the water. Flow is therefore outside the scope of a water quality objective as defined in section 13050, subd. (h). The State Water Board's current task is to consider potential amendments to water quality objectives. Questions of flow may be properly addressed as part of implementation, in a water rights proceeding.</p> <p>The Porter-Cologne Act defines "quality of the water" separately and differently from its definition of "water quality objectives." "Quality of the water" is defined as the "chemical, physical, biological, bacteriological, radiological, and other properties and characteristics of water which affect its use." (Wat. Code, § 13050, subd. (g).) Flow, and volume too, are physical properties of a water body. By contrast, the definition of "water quality objective" does not include the term "physical."</p> <p>Notably, the defined term "quality of the water" is not used in the provisions of the Water Code that govern water quality control plans. Instead, it appears in a provision of the Water Code that prohibits the commingling of transferred water resulting in a diminution of the quality of the water (Wat. Code, § 1810), and in a provision that defines a "project" in the context of groundwater basin protection (Wat. Code, § 12921.3).</p>	<p>Please see Master Response 1.2, Water Quality Control Planning Process, and Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the project description and the authorities of the State Water Board under the Porter-Cologne Water Quality Control Act, including flow as an appropriate parameter for a water quality objective.</p>

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		<p>The term also appears in provisions pertaining to specific projects and entities. For example, section 5901 addresses the deterioration of the quality of the waters of the Upper Klamath River Basin, sections 13951 and 13952 address waste disposal affecting the quality of waters in Lake Tahoe, and sections 50903 and 60230 enable small reclamation districts and water replenishment districts, respectively, to take certain actions to protect the quality of local waters. The Legislature’s choice to use a term that includes physical properties in some contexts, but not in the water quality control plan provisions, is a strong indicator that it did not intend for plans to define objectives using physical properties of a water body such as flow.</p> <p>There are sound policy and practical reasons for excluding properties such as flow and volume from water quality control plans. As discussed above, water quality control plans and water rights proceedings are subject to differing standards and requirements. The distinction between the two is breached when water quality objectives are expressed in terms of flow, because that can predetermine what water rights may be affected and by how much, without the benefit of due process.</p> <p>The term "quality of the water" appears in only one reported California case. (State Water Resources Control Board Cases, supra, 136 Cal.App.4th at p. 699.). In that case, the court said that "[w]ater flow can be regulated as a water quality objective because, as the Board explained in the 1995 Bay-Delta Plan, ‘the rate and quantity of flow . . . are physical properties or characteristics of the water’ which ‘have an impact on the beneficial uses of water in the Bay-Delta.’ (Id. at p. 701 [citing Wat. Code, § 13050, subd. (g)].)</p> <p>This was dictum, however, because no party in that case challenged the State Water Board’s authority to set flow-based objectives, which were adopted following the Delta Accord. Further, the court did not explain how the definition of "quality of the water" it quoted could be substituted for the pertinent and materially different definition of "water quality objective" provided in Water Code section 13050(h).</p> <p>The 1995 Bay-Delta Plan illustrates that for many years the State Water Board has taken the position that it may set flow objectives in a water quality control plan, despite the definition of "water quality objective" in section 13050(h). Assuming arguendo that the State Water Board’s interpretation is not contrary to section 13050(h), it is still unlawful for failure to comply with the California Administrative Procedure Act, California Government Code §§ 11340 et seq. ("APA").</p> <p>A "regulation" within the meaning of the APA includes "every rule, regulation, order, or standard of general application or the amendment, supplement, or revision of any rule, regulation, order, or standard adopted by any state agency to implement, interpret, or make specific the law enforced or administered by it, or to govern its procedure" (Gov. Code, § 11342.600). Under the APA, a promulgating agency "must comply with the procedures for formalizing such regulation, which include public notice and approval by the Office of Administrative Law. . ." (County of Butte v. Cal. Emergency Medical Services Authority, Inc. (2010) 187 Cal.App.4th 1175, 1200 [internal quotations and citations omitted].)</p> <p>In Tidewater Marine Western, Inc. v. Bradshaw (1996) 14 Cal.4th 557, 571, the California Supreme Court explained that a regulation is subject to the APA if it has two principal identifying characteristics: (1) "the agency must intend its rule to apply generally, rather than in a specific case;" and (2) "the rule must ‘implement, interpret, or make specific the</p>	

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		<p>law enforced or administered by [the agency], or . . . govern [the agency's] procedure.'" (Citing Gov. Code, § 11342, subd. (g).)</p> <p>The State Water Board's claim of authority to include flow as a water quality objective meets these criteria. Yet, the State Water Board has never formally adopted a regulation setting forth its expanded definition of water quality objectives. Accordingly, a water quality objective defined by flow would be based on an underground regulation, and hence invalid. (Niles Freeman Equipment v. Joseph (2008) 161 Cal. App.4th 765 [citing Kings Rehabilitation Center, Inc. v. Premo (1999) 69 Cal.App.4th 215, 217].)</p>	
1270	21	<p>[From ATT1:] The Proposed Program of Implementation Fails to Consider and Balance Competing Beneficial Uses of Water.</p> <p>In developing water quality objectives, the State Water Board is directed to consider all competing demands for water in determining what is a reasonable level of water quality protection. (Wat. Code, § 13000.) In the State Water Resources Control Bd. Cases, the court described the Board's duty to consider and balance competing beneficial uses of water as follows:</p> <p>"In formulating the 1995 Bay-Delta Plan, the Board set out 'to attain the highest water quality which is reasonable, considering all demands being made on the water of the [Bay-Delta].' (1995 Bay-Delta Plan, p. 14.) While the Board had a duty to adopt objectives to protect fish and wildlife uses and a program of implementation for achieving those objectives, in doing so the Board also had a duty to consider and protect all of the other beneficial uses to be made of water in the Bay-Delta, including municipal, industrial, and agricultural uses. It was for the Board in its discretion and judgment to balance all of these competing interests in adopting water quality objectives and formulating a program of implementation to achieve those objectives." (State Water Resources Control Bd. Cases, supra, 136 Cal.App.4th at p. 778.)</p> <p>Thus, the State Water Board has a duty to both protect fish and wildlife beneficial uses and other beneficial uses of water in developing flow objectives. Unfortunately, the SED fails to meaningfully evaluate the State Water Board's duty to balance competing beneficial uses in developing the flow objective. The SED states that one of the goals related to the flow objectives is:</p> <p>"In establishing flow water quality objectives to reasonably protect fish and wildlife, take into consideration all of the demands being made and to be made on waters in the LSJR and the three eastside, salmon-bearing tributaries and the factors to be considered for establishing water quality objectives in Water Code Section 13241, including, but not limited to, past, present and probable future beneficial uses and economic considerations." (Recirculated SED, at p. 3-2.)</p> <p>While the SED includes this statement, the SED does not provide an analysis or explanation of what is considered "reasonable" protection of fish and wildlife in consideration of all of the demands for the water at issue. The proposed flow objective and POI does not effectuate the State Water Board's duty to balance the competing beneficial uses of water because it provides for an "unimpaired" flow regime that would require significant reductions in water diversions for other beneficial uses, in the face of significant uncertainty regarding the benefits of the proposed flow objectives on fish populations.</p>	<p>Please refer to Appendix K, Water Quality Control Plan, the Executive Summary, Master Response 1.1 General Comments, Master Response 1.2, Water Quality Control Plan Process, and Master Response 2.1 Amendments to the Water Quality Control Plan, regarding consideration and reasonable protection of beneficial uses.</p> <p>Please refer response to comment 1270-4 regarding the unimpaired flow approach and non-flow restoration actions.</p>

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		<p>It is unclear how the State Water Board can fulfill its statutory duty to consider and balance competing demands for water in developing water quality objectives if the SED fails to evaluate those competing beneficial uses of water. The SED asserts: "[t]he flow proposal would provide the flow conditions necessary to reasonably protect fish and wildlife beneficial uses. The proposed flows are higher than the existing flow requirement. Implementation of these higher flows would reduce water available to water users in the LSJR Watershed more often than does the current objective." (Recirculated SED, at p. ES-4.) Yet, the SED does not provide an analysis of what is considered "reasonable" protection of fish and wildlife beneficial uses in light of the other users of this water, such as for agricultural and municipal and industrial uses.</p> <p>In other words, the SED does not grapple with the trade-offs inherent in taking water from other beneficial uses and dedicating it to fish and wildlife. But the SED does reveal that the proposed flow objective of 30%-50% of unimpaired flow would have significant impacts on other beneficial uses of water. For example, the SED shows that the proposed flow objective (LSJR Alternative 3) will have significant and unavoidable impacts on agricultural supply and recreation. (See Recirculated SED, at p. ES-52; see also Wat. Code, § 13050, subd. (f) [identifying agricultural supply and recreation as beneficial uses of water]; see also Revised Draft SED 2016, Section 3.3.6)</p> <p>While the SED attempts to quantify the expected fishery benefits of these proposed additional flows, the analysis is based on flawed modeling and correlative relationships that fail to account for the complexity of the ecosystem under today's physical and biological conditions. (See Recirculated SED, Chapter 19 and App. C.) Given the uncertainties and complexity of flow-fish relationships, any assumed fishery benefits from the proposed flow objective are at best highly speculative.</p> <p>In light of the impacts to other beneficial uses of water, it is unclear how the proposed flow objective's "unimpaired flow" regime satisfies the State Water Board's duty to consider and balance the competing beneficial uses of water in developing water quality objectives. The SED states that "[f]low needed for the protection of fish and wildlife beneficial uses will be balanced against flow needs for other beneficial uses of water including: agriculture and hydropower production." (Recirculated SED, App. C, at p. 3-59.) The proposed flow objective and POI does not reflect a balanced approach to the protection of all beneficial uses of water in the plan area.</p>	
1270	22	<p>[From ATT1:] Applying the Unimpaired Flow Metric Does Not "Mimic The Natural Hydrographic Conditions to Which Native Fish Species are Adapted."</p> <p>The SED asserts that: "[S]cientific evidence indicates that in order to protect fish and wildlife beneficial uses in the SJR basin, including increasing the populations of SJR basin fall-run Chinook salmon and Central Valley steelhead to sustainable levels, changes to the current flow regime of the SJR basin are needed. Specifically, a more natural flow regime from the salmon bearing tributaries (Stanislaus, Tuolumne, and Merced Rivers) is needed during the February through June time frame." (Recirculated SED, App. C, at p. 3-2.)</p> <p>However, the SED overlooks that "unimpaired flow" is not, and cannot be, the same as a "natural" flow regime in a highly modified ecosystem such as the Bay-Delta. The SED also states that "[u]sing a river's unaltered hydrographic conditions as a foundation for determining ecosystem flow requirements is well supported by scientific literature [Citations]." (Id. at p. 3-40.) This statement fails to acknowledge that "unimpaired flow" is</p>	<p>Please see Master Response 3.1, Fish Protection, regarding the unimpaired flow approach to improving protection of fish and wildlife beneficial uses and for an explanation of how the analysis in the SED did not use unimpaired flow as a representation of natural flow conditions. Please also see Master Response 3.1 regarding how the unimpaired flow approach allows increased instream flows for the protection of fish and wildlife beneficial uses during the critical February through June period, captures the natural pattern of variability to which native LSJR basin fish and wildlife adapted, and supports key ecosystem processes.</p> <p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the February through June time period and reasonable protection of beneficial uses. Please see Master Response 2.1, Amendments to the Water Quality Control Plan regarding the unimpaired flow approach and functional flows, the program of implementation, adaptive implementation, biological goals, and the San Joaquin River Monitoring and Evaluation Program.</p> <p>Please see Master Response 2.2, Adaptive Implementation, for additional information about adaptive</p>

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		<p>not the same as "unaltered hydrographic conditions" because the physical structure of the streams, rivers, and the Bay-Delta estuary has been so altered that unimpaired flow conditions will not reflect or mimic the "natural" hydrographic conditions that existed in the predevelopment era. The "unimpaired flow" regime is a simplistic short-hand approach that attempts to provide more variability in flow, but such a flow regime will not approximate "natural flow," nor will it restore the complex habitat that native fish species are adapted to or many of the functions that predevelopment flows may have provided.</p> <p>First, the proposed flow objective would modify the hydrograph in the lower reaches of these tributaries, the San Joaquin River and Delta, all of which are highly altered. The SED should explain that even to the extent the percent of the unimpaired hydrograph approach may approximate natural hydrology in the upper tributaries, the unimpaired flow approach would not result in a "natural" hydrographic conditions in the lower reaches of these tributaries, the San Joaquin River and Delta.</p> <p>Second, the proposed "unimpaired flow" aspect of the flow objective only includes a portion of the year (February-June), even though the existing standard includes flows in October. The SED does not provide an adequate explanation for why excluding nearly half of the year's hydrograph still represents "natural" conditions. Juvenile steelhead rear within in the San Joaquin River tributaries year-round and require suitable instream flows and cold water temperatures, particularly in the late spring, summer, and fall to support their growth and survival. Similarly, adult fall-run Chinook salmon adults migrate into the San Joaquin River, and its tributaries, in the fall (September-December) where they spawn and eggs incubate. Providing instream flows and maintaining suitable cold water for salmon spawning and egg incubation is necessary to their reproductive success and subsequent abundance (year class strength). Limiting changes in flow to less than half the year does not allow a holistic managing approach in which all life stages' needs are analyzed and provided for.</p> <p>Third, the proposed POI describes a process where the Executive Director could decide in any year to deviate from the pattern of the unimpaired flow hydrograph based on an exercise of his or her discretion indicating that a different flow would benefit the fishery. (See Recirculated SED, App. K, at pp. 28-32.) The proposed POI would allow the water to be managed as a block of water, rather than under the pattern of unimpaired flow, and would allow shifting of water outside of the February-June period. (Id.) These allowed deviations from the unimpaired flow approach are inconsistent with the stated basis for the increased flows--which is to "mimic" the natural hydrographic conditions.</p> <p>The SED provides no discussion of the types of habitat and biological monitoring data, rationale, or analyses that would be used as the technical basis for modifying the instream flow schedule within a year. The reservation of authority for the Executive Director further deviates from a "natural" pattern. The lack of description of 1) decision support models, 2) quantitative predictions or performance standards, and 3) monitoring specifications, are all indicators that this is a watered down version of adaptive management, "Adaptive Management Lite" (AM-Lite), and this approach often fails (Ruhl and Fischman 2010).</p> <p>Fourth, while the calculated percent of the unimpaired hydrograph approach may approximate natural flow patterns in the tributaries below the dams, it does not do so downstream on the San Joaquin River and in the south Delta. Once flow enters the valley, it cannot be considered "natural" as the current channel configuration and physical environment are drastically transformed from historic conditions. Levees, channelization, and land use changes have dramatically altered the relationship between instream flows</p>	<p>implementation, monthly flow schedules, and flow shaping and shifting.</p>

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		<p>and seasonal floodplain and wetlands inundation on the lower San Joaquin River and Delta from historic conditions. The functional relationships and biological benefits to juvenile salmonid rearing on intermittently inundated habitat in the basin may have changed in a fundamental manner and merely mimicking historical flows will not necessarily lead to viable populations; thus the basic premise of the unimpaired flow strategy is flawed.</p> <p>Today's highly altered conditions are relevant because the seasonal timing and magnitudes of flow under historic conditions were highly modified through interactions with channels, wetlands and floodplains, groundwater recharge, consumptive use by native vegetation, and evaporation. These interactions moderated the timing and magnitude of outflow, and dictated localized hydrodynamic patterns. These interactions also affected the functions that these flows provided; functions that are not necessarily replicated by equivalent flows through today's channels.</p> <p>The SFEI Report, Sacramento-San Joaquin Delta Historical Ecology Investigation: Exploring Pattern and Process, contains a detailed description of the historic south Delta. The report describes the physical environment as well as the likely historic hydrograph, as follows:</p> <p>"The South Delta is defined by the distributaries and meanders of the San Joaquin River upstream of the central Delta. At the landscape scale, the south Delta historically presented an array of tidal wetlands interwoven with distributary riverine channels and non-tidal floodplains across a broad transitional zone, or ecotone. Early travelers encountered rivers that were formable only late in the season, often with dense willow and oak riparian forest along their banks. Beyond forested natural levees, the land surface sloped away to meet a matrix of perennial wetlands (dominated by tule, <i>Schoenoplectus</i> spp.), patches of sedges and grasses, perennial and intermittent ponds, and overflow channels. This floodplain was challenging to traverse for much of the year, owing to annual inundation." (SFEI, South Delta, at p. 309.)</p> <p>The SFEI report further describes 12,000 acres that once were comprised of an extensive mosaic of wetlands and adjacent upland habitat types of the south Delta, generally defined as extending from Roberts and Union Islands to the Stanislaus River. (Ibid.) The historic hydrograph on the San Joaquin River was also different than on the Sacramento River, as follows:</p> <p>"The south Delta marked the terminus of the San Joaquin River, a large riverine system that frequently overflowed its banks to fill numerous secondary channels, ponds, and floodplain wetlands. It conveyed floodwaters that spread and inundated land sometimes several feet in depth before much of it entered downstream tidal channels in the central Delta. In contrast to the more rainfall-event driven hydrograph of the Sacramento River, winter floods were less frequent on the San Joaquin, with flooding typically snowmelt-driven. The resulting hydrograph was characterized by fewer peak flood events and exhibited a gradual rise of river stage in the late spring and early summer. Also different from the northern flood basins, the south Delta floodplains were apparently less isolated from the river by natural levees (presumably related, in part, to the lower flood peaks and sediment supply in comparison to the Sacramento River).</p> <p>"This greater hydrologic connectivity was maintained through multiple side channel systems that made floodplain hydrology more responsive to river stages and enabled water to pass through the system with relative speed. Masses of woody debris obstructed the main channels at certain locations, such as Old River near the present day Fabian Tract, affecting</p>	

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		<p>flows and habitat complexity. The combination of these factors meant that floodwaters were found in a wetland complex, likely associated with the many secondary side channels and oxbow lakes. The comparison to the lower Sacramento River riparian forests, a greater proportion seems to have been composed of willows and other shrubs, as opposed to oaks and sycamores." (SFEI, South Delta, at pp. 312-313.)</p> <p>As a result of the changes that have occurred from historic conditions to present, making releases based on the calculated hydrograph will not result in the timing or magnitude of flows described above nor will it "mimic" the historic functions that instream flows supported for juvenile salmonid rearing and other biological processes. In fact, the south Delta has changed so substantially that the historic wetland complex found there that provided habitats that supported migratory fish survival and growth no longer functions in the same way. For one and a half centuries, wetland conversion and levee construction has taken place in the Delta (Thompson 1957). Land "reclamation" changed the complex distributary pattern of the Delta (Mount 1995) and the intricate anabranching (Nanson and Knighten 1986) channels gave way to much more simplified anabranching channels protected by levees.</p> <p>Irrigated agriculture became the dominant land use and with that came a transformation in stream water chemistry, e.g. nitrogenous and phosphoric nutrients increased. Also, some urbanization took place and runoff from these areas contributes pollutants such as polycyclic aromatic hydrocarbons (Pareira et al. 1996). Dubrovsky et al. (1998) found that organophosphate insecticides in runoff frequently exceed established concentration criteria for the protection of aquatic life. This changed physical and chemical environment was further altered by the introduction of dozens of exotic species including numerous species of fish predators, e.g. striped bass and numerous centrarchids. One of the results of all these changes to the physical, chemical, and biotic environment was that the Delta changed so extensively that even in a high flow year like 2011 survival through the Delta was only 2% for Chinook salmon from Durham Ferry to Chipps Island (SJRG 2011: Table 5-21).</p> <p>Similar to instream flow, the outflow from the San Joaquin River to the ocean will not approximate "natural" or historic conditions. This means that the through-Delta flows targeting improved juvenile salmon passage cannot be defined as "natural." The proposed amendments and Recirculated SED do not adequately reflect these facts.</p>	
1270	23	<p>[From ATT1:] the SED fails to explain how an unimpaired flow approach can "mimic" historic conditions in the face of climate change. The most likely consequences for salmonids on the west coast of North America from climate change are more precipitation as rain rather than snow, altered timing of the flow regime, increased maximum flows in rivers, and increases in water temperatures (ISAB 2007). Thus, under climate change, the flow regime is going to be shifting and will not resemble the historic flow regime. Yet, the SED does not critically examine the effects of climate change or consider those changes as part of the proposed flow objective or program of implementation.</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan; Master Response 3.1, Fish Protection; and Master Response 3.2, Surface Water Analyses and Modeling, regarding the definition and calculation of unimpaired flow and the use of unimpaired flow to reasonably protect the beneficial use of fish and wildlife through the narrative and numeric objectives.</p> <p>Please see Master Response 3.2 regarding the modeling of the 82-year period, the adequacy of the model inputs and parameters, and climate change as it relates to the quantitative analysis. Please see Master Response 3.7, Greenhouse Gas Emissions and Analysis, regarding quantifying GHG emissions and the scope and approach of the GHG analysis in Chapter 14, Energy and Greenhouse Gases.</p>
1270	24	<p>[From ATT1:] There is a Lack of Evidentiary and Analytical Support for the Program of Implementation's Proposed Flow Regime.</p> <p>While flows are important for ecological functions and physical processes that support native fish populations, it does not follow that an "unimpaired flow" regime in a highly altered watershed and estuary will provide the conditions needed to support those</p>	<p>Refer to Master Response 2.1, Amendments to the Water Quality Control Plan, and Master Response 3.1, regarding the science and policy justification for the plan amendments. As described in SED Chapters 5, 7, and 19, LSJR Alternative 3 provides flows in a quantity necessary to achieve functions essential to native fishes, such as increased instream flow, increased floodplain inundation, improved temperature conditions, improved migratory conditions, and other conditions that favor native fishes over nonnative fishes (Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow Between February 1 and June 30,</p>

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		<p>biological and ecosystem processes. The Recirculated SED does not contain an analysis establishing that the salmonid population viability metrics (e.g., abundance, spatial extent or distribution, genetic and life history diversity, and productivity) can be achieved by providing flows that mimic the natural hydrograph. Even if this analytical connection had been made, it has not been sufficiently established that the implementation of the proposed POI would provide "natural" flows under which the fish evolved and were adapted (e.g., the relative magnitude, duration, timing, and spatial extent of historic flows). As discussed in detail below, the SED fails to provide analytical or evidentiary support for the presumption that the proposed flow regime will support native fish populations.</p> <p>In Appendix K, the State Water Board explains that biological goals will be developed to measure the viability of salmonids. (App. K, at p. 33). Their goals mimic the same Viability of Salmon Population (VSP) parameters that are utilized by the Recovery Plan for Central Valley salmonids (NMFS 2014). Similar to the Recovery Plan, the State Water Board specifies that the biological goals that will inform the adaptive methods will address the 4 parameters of abundance, productivity, spatial structure, and diversity.</p> <p>However, the State Water Board provides no analyses linking how the proposed adaptive strategy of shifting % unimpaired flow targets will achieve each of the four VSP criteria. The SED and program of implementation fail to describe the hypotheses that could support linking proposed flow changes with each of these four criteria. Critically, the SED fails to disclose or address that there are many ecosystem variables other than flow that affect the viability of salmonids. It is unclear how the State Water Board will be able to evaluate the effect of the unimpaired flow approach in the face of so many confounding variables. The State Water Board does not have a scientific basis for attributing a cause and effect relationship between flow actions and changes in the viability parameters.</p> <p>The State Water Board provides no analyses linking their proposed adaptive methods and the biological goals of abundance, productivity, spatial structure, and diversity. While the State Water Board mentions that contributions to productivity may include "meeting measures of quality and quantity of spawning and rearing habitat, fry production, and juvenile outmigrant survival to the confluence of each tributary to the LSJR," they provide no evidence from literature supporting a link between instream flow levels and these biological measures.</p> <p>In particular, the two criteria of spatial structure and diversity are unlikely to be influenced by proposed adaptive methods of shifting % unimpaired flow. The VSP criterion of spatial structure reflects how abundance is distributed among available or potentially available habitats, with populations that are more geographically widespread able to better survive unpredictable, stochastic events (Good et al. 2005). However, it is unclear how the State Water Board's proposed adaptive management plan of altering % unimpaired flow would influence the spatial structure of salmonids. Without making new habitats assessable through habitat restoration or barrier removal, changes to flow levels alone is unlikely to achieve this biological goal.</p> <p>Therefore, it is misleading to use spatial structure as a biological goal of flow prescriptions unless non-flow measures are explicitly integrated with flow measures. While the program of implementation describes possible non-flow measures that could be conducted by other parties, the program of implementation fails to actually couple flow measures with necessary non-flow measures. The State Water Board's proposed flow measures cannot reasonably be expected to improve the viability of native species if other factors controlling</p>	<p>Tables 19-3 through 19-14 [temperature] and Tables 19-19 through 19-24 [floodplain]).</p> <p>Also refer to Master Response 2.1, for a discussion of the development and use of the biological goals, including requirements in the program of implementation for the development of LSJR Salmonid population viability parameters of: abundance, productivity (as measured by population growth rate), genetic and life history diversity, population spatial extent, distribution, and structure.</p>

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		<p>viability are not concurrently addressed.</p> <p>The VSP criterion of diversity is unlikely to be influenced by the proposed adaptive management strategy. Genotypic and phenotypic diversity are important in that they allow species to use a wide array of environments, respond to short-term changes in the environment, and survive long-term environmental change (Good et al. 2005). Diversity refers to variation in traits such as run timing, age structure, size, fecundity (birth rate), morphology, behavior, and genetic characteristics (NMFS 2014). While alterations to the flow regime alone may influence components of diversity such changes in flow pulses influencing run timing, or average size of juvenile migrants, it is unlikely that other components of diversity could be influenced by flow alone. How will flow alterations alone influence age structure, or fecundity, or morphology, or genetic characteristics? This needs to be discussed by the State Water Board. And like spatial structure, expecting flow prescriptions alone to truly enhance the diversity of salmonid populations is a set up for failure, and will lead to adaptive management measures that will unlikely reach biological goals.</p> <p>Without clear, supported hypotheses linking proposed adaptive flow prescriptions to each of the 4 VSP criteria, using the VSPs as biological goals is misleading and sets the adaptive management plan up for failure. Instead, biological goals should be developed that can be directly linked to the proposed adaptive management measures as supported by scientific literature or new analyses. And it is critical that the State Water Board disclose the difference between correlative relationships and cause and effect relationships. For example, while increased flows may cause increased inundation of floodplains, increased flows cannot be directly attributed for increasing productivity. Using biological goals that cannot be directly linked to flow actions is dangerous, as it could lead to iterative increases in flow levels that do not help meet biological goals, and instead waste water that could otherwise have supported other beneficial uses.</p> <p>An "unimpaired flow" regime implemented without careful consideration of the biological and ecosystem processes that the flows are intended to support is unlikely to provide the intended protection for fish and wildlife beneficial uses. Also, an unimpaired flow regime implemented without consideration of how the hydrological system has been altered or without consideration of other habitat needs of native fish populations is unlikely to be an effective approach to restoring and maintaining native fish populations. In addition, factors other than flows or exports are having a dramatic impact on salmon survival in the southern Delta. The survival levels are so low now, that even in the high flow years of 2005, 2006 and 2011 these survival rates (likely altered by increases in predation by invasive species) are not high enough to sustain salmon abundance.</p> <p>In fact, the Recirculated SED's technical report quotes the Independent Panel Review of the VAMP studies with the following: The review panel concludes that "'the very low recent survival rates seem unlikely to be high enough to support a viable salmon population, even with favorable conditions for ocean survival and upstream migration and spawning success for adults' (Hankin, et al. 2010)." (Recirculated SED, App. C, at p. 3-39.)</p>	
1270	25	<p>[From ATT1:] The Proposed Flow Regime Fails to Implement the Draft Narrative Flow Objective and Improperly Defers Critical Components of the Program of Implementation.</p> <p>Under the proposed program of implementation, the Executive Director would have the authority to change the timing and magnitude of flows within the February-June period</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the San Joaquin River Monitoring and Evaluation Program, biological goals, Executive Director authority, and the STM Working Group. Please also see Appendix K, Revised Water Quality Control Plan regarding the composition of the STM Working Group, which would include State Water Board staff and seek the participation of</p>

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		<p>each year, provided the total quantity of water dedicated to instream flow releases is not less than the quantity that would be have been dedicated under a percent of the hydrograph approach each year. (Recirculated SED, App. K, at pp. 29-36.) A newly formed Stanislaus, Tuolumne and Merced Working Group ("STM Working Group") made up of the fishery agencies (DFW, NMFS, and USWS) and water users would make recommendations to the Executive Director regarding how he or she should schedule each year's reservoir releases. (Ibid.)</p> <p>The San Joaquin River Monitoring and Evaluation Program would be responsible for monitoring, implementing special studies, and evaluating the performance of the flow management strategy on the viability of native salmonid populations, including the abundance, spatial extent, diversity, and productivity of fall-run Chinook salmon and steelhead. (Ibid.) The practical result of the proposed "adaptive management" structure is that it changes the program of implementation into something other than a percent of the hydrograph approach. Rather than mimicking the actual hydrograph during the February-June period each year, the program of implementation would function more like a water bank where withdrawals can be made at any time throughout the spring (February-June).</p> <p>The total quantity of water available for additional flows is established by the percent of the hydrograph approach, but the timing of flows is established by the Executive Director and the STM Working Group. In fact, the program of implementation allows a portion of the February-June unimpaired flow water bank to be shifted outside of the February-June period, to be released later in the year. (Id. at p. 30.) Such an approach results in a failure to satisfy the proposed objective of maintaining "... flows that more closely mimic natural hydrographic conditions. ..." or the proposed objective of maintaining a "percent of unimpaired flow between 30%-50%" from February through June (Id. at p. 18.) The flows will not be targeting more natural conditions, rather the flows will be whatever the Executive Director orders each year.</p> <p>Not only does the water budget approach not satisfy the narrative objective of "mimic natural hydrologic conditions. ..." but the adaptive methods to determine the annual schedule for releases is left to future annual decisions, making it impossible to review their approach. The State Water Board only states that an Executive Director along with the STM Working Group will determine the release schedule on an annual basis, and provides no detail on the possible ecological mechanisms that would inform these release schedule changes. The SED provides no discussion of the types of habitat and biological monitoring data, rationale, or analyses that would be used as the technical basis for modifying the instream flow schedule within a year. The State Water Board needs to provide the actual suite of functional flows that the STM Working Group and Executive Director could draw from to inform the year's release schedule, explicitly linking these functional flows with the ecosystem processes they are intended to support.</p> <p>The program of implementation states that the biological goals for the flow objectives "will specifically be developed for abundance; productivity as measured by population growth rate; genetic and life history diversity; and population spatial extent, distribution, and structure." (Recirculated SED, App. K at 33.) However, as suggested by the Delta ISB (2015), a critical component of adaptive management is identifying causal mechanisms between flow and other drivers on fish vital rates to create "specific outcome expectations for management actions." Unfortunately, the program of implementation and SED do not perform the critical step of linking management actions to biological goals. Instead of</p>	<p>fishery agencies, water users, and others.</p> <p>The flow objective and program of implementation result not only in flows that better mimic the natural hydrograph, but also include the flexibility to shape and shift flows when doing so provides even greater benefits to fish and wildlife. Please see Master Response 2.2, Adaptive Implementation, for a description of the adaptive methods. Only flows in excess of 30 percent of the unimpaired flow can be shifted, meaning that such flows would be combined with remaining flows, February through June, that are still within the adaptive range. Master Response 2.2 also provides more explanation of the adaptive implementation framework and includes examples of how flow shaping and shifting can be used to enhance functions, for example by achieving short duration pulse flows at critical times that could be higher than 30 to 50 percent of unimpaired flow.</p>

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		<p>leaving the adaptive management process up to a future, ambiguous process, the State Water Board should develop explicit hypotheses linking specific functional flows to fish responses informing a transparent, adaptive management process.</p>	
1270	26	<p>[From ATT1:] The Proposed "Adaptive Management" is Not True Adaptive Management as Used in a Scientific Framework.</p> <p>Adaptive management in a scientific context is something very different than what is being proposed in the POI. The approach outlined in the proposed POI is basically water balance accounting and re-allocation of instream flows among months to address hydrologic variability within a year. Such an approach is not true adaptive management. In the proposed adaptive management structure, decision-making is not linked to a rigorous study plan of hypotheses testing and monitoring. There is no process and no thresholds or performance measures for determining when a change in the implementation measure is scientifically appropriate, and no specifically articulated standards or criteria for determining whether actions have been effective.</p> <p>Adaptive management provides a means for carrying out and assessing alternative management actions in the face of uncertainty. The adaptive management process, when appropriately implemented, should facilitate testing of management alternatives, evaluation of outcomes, iterative modifications of management actions as new information is developed through monitoring and experimentation, and learning.</p> <p>Adaptive management cannot be used to compensate for a lack of knowledge, the variability and complexity of ecological systems and biological processes affecting salmonid population dynamics, or underestimating sources of uncertainty including socio-political uncertainty. [Footnote 5: Under the California Environmental Quality Act ("CEQA") (Pub. Resources Code, § 21000 et seq.), a regulatory plan designed to improve environmental conditions must include objective performance criteria by which to measure success. (POET, LLC v. California Air Resources Board (2013) 218 Cal.App.4th 681 [agency implementing a certified regulatory program cannot defer formulation of plan details or mitigation measures without committing to specific performance standards to achieve stated objectives].)]</p> <p>If the State Water Board is going to pursue adaptive management, it needs to follow a true scientific model of monitoring, special studies, and hypotheses testing. [Footnote 6: The Recirculated Draft SED acknowledges that "[a] comprehensive monitoring, special studies, evaluation, and reporting program is necessary to determine compliance with the LSJR flow objectives, inform adaptive implementation, investigate the technical factors involved in water quality control, and identify potential needed future changes to the LSJR flow objectives," but defers any description of or commitment to biological goals, adaptive methods procedures, and measures to achieve, monitor, and evaluate compliance with flow objectives until long after the State Water Board adopts amendments to the Bay-Delta Plan. (Recirculated Draft SED, at pp. 3-17-3-18.) It also suggests that approval of these critical components of the Bay-Delta Plan could be delegated to the Executive Director. (Ibid.) By deferring and delegating these important responsibilities of the State Water Board, the Recirculated Draft SED violates CEQA.]</p> <p>To accomplish true adaptive management, the State Water Board must develop a detailed adaptive management plan and associated experimental design for monitoring the performance of the instream flow strategy on metrics of salmonid viability before it adopts</p>	<p>Please see Master Response 2.2, Adaptive Implementation, for more information regarding the distinction between adaptive implementation and adaptive management, the STM Working Group, and examples of adaptive implementation.</p> <p>The adaptive implementation framework described in the program of implementation (Appendix K and Executive Summary) is different from adaptive management. The flow proposal relies upon adaptive implementation, and recognizes the needs to develop science to best manage flows.</p>

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		<p>an amendment to the Bay-Delta Plan. (See POET, LLC, supra, 218 Cal.App.4th at p. 740 [agency implementing a certified regulatory program must specify "what tests will be performed and what measurements will be taken" to demonstrate progress toward achieving stated objectives].) Such actions cannot be deferred. (Ibid.)</p> <p>[Footnote 7: An agency implementing a certified regulatory program may rely on CEQA's tiering principles when considering a proposed program, plan, or policy, and the Recirculated Draft SED states that the State Water Board has done so for the draft amendments by preparing a programmatic environmental analysis. (Recirculated Draft SED, at p. 1-3; see Conway v. State Water Resources Control Board (2015) 235 Cal.App.4th 671, 680.) A program-level document may sometimes forego a project-level analysis of activities that are specific to later phases and will be analyzed as part of a subsequent CEQA process. Tiering does not permit the agency to defer formulation of critical elements of the plan it is approving to a later date, however, particularly where, as here, the agency does not anticipate further CEQA review of plan changes or subsequently developed information, and suggests instead that they may be delegated to its staff. (Vineyard Area Citizens v. City of Rancho Cordova (2007) 40 Cal.4th 412, 431 ["stating information will be provided in the future" does not comply with CEQA]; see Recirculated Draft SED, at pp. 3-17-3-18.) Tiering is not a device for deferring identification of impacts that adoption of a proposed plan can be expected to cause. (Stanislaus Natural Heritage Project v. County of Stanislaus (1996) 48 Cal.App.4th 182, 199.) Fundamental and general matters--such as the biological goals that are the fundamental objectives of the draft amendments--must be identified and addressed in the first tier EIR. (Ibid.; Vineyard, supra, 40 Cal.4th at p. 431.)]</p> <p>The State Water Board's Program of Implementation appears to be "Adaptive Management Lite" (AM-Lite). AM-Lite is a restricted version of adaptive management that according to Ruhl and Fischman (2010) "often fails due to management, implementation and planning problems." They continue describing AM-Lite as ad hoc contingency planning done for projects. This is because AM-Lite lacks the necessary elements to be adaptive management proper: precise goal definition, decision-support models, active experimentation with a priori quantitative predictions or "performance standard setting" (Fischman and Ruhl 2015), monitoring, and adjustment of management strategy based upon the outcome of the process (Holling 1978; Walters 1986).</p> <p>The State Water Board should develop explicit hypotheses linking specific functional flows to fish responses informing a transparent, adaptive management process. The Delta Independent Science Board (Delta ISB) offers several recommendations on scientific strategies to benefit adaptive management of Delta fishes (Delta ISB 2015). The Delta ISB concludes that an improved quantitative understanding of causal mechanisms is required for effective adaptive management and for creating specific outcome expectations for management actions. The Delta ISB (2015) believes in restoring specific aspects of the flow regime that support key ecosystem functions and drive geomorphological and ecological processes.</p> <p>Instead of relying on simple regressions of annual abundance with annual measures of flow, specific functional flows hypothesized to benefit salmonids (e.g. specific peak flow events meant to support specific life stages) should be evaluated using a life cycle modeling approach that links hydrodynamics and water quality with salmon life history. Instead of simply mimicking a natural flow regime, the Delta ISB (2015) believes that a more effective approach is to restore specific aspects of the flow regime that support key ecosystem</p>	

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		<p>functions and drive geomorphological and ecological processes. These functional flows are based on field observations of life stages and computer models of hydrodynamics, habitat, and ecological conditions for different flows (Delta ISB 2015). The advantage of this mechanistic approach is greater ability to explain cause-effect and lead to new knowledge through the adaptive management process. This approach also provides a more tailored use of limited water resources, targeted towards areas of greater certainty regarding expected benefits of particular flows.</p> <p>Similar to Delta ISB recommendations, Yarnell et al. (2015) provides similar support for applying a functional flows approach when developing flow schedules in modified riverscapes. Yarnell et al. (2015) argues that simply mimicking natural flows will be unsuccessful without also triggering key functional processes such as wet-season initiation flows, peak magnitude flows, recession flows, dry-season low flows, and interannual variability. Yarnell et al. (2015) states that "considering the interaction of hydrologic, geomorphic, and ecologic processes and the functions they serve is more likely to result in e-flow targets that better support self-sustaining ecosystems that are inherently diverse and adaptive." Therefore, as supported by the Delta ISB, a comprehensive, integrative, and well planned scientific approach focused on processes, drivers, and predictions is needed to aid adaptive management and to predict how future changes might affect fishes.</p> <p>This more integrative science approach recommended by the Delta ISB (2015) requires the creation of collaborative, open-source hydrodynamic models developed for the purpose of making testable predictions of biological responses to functional flows. Such a modeling approach would provide an operational tool for adaptive management and forecasting biological outcomes of water decisions. Modeling will require components of regional climate (hydrology), hydrodynamics, water quality, food availability, and physiological and habitat requirements at various fish life stages across different fish species (Delta ISB 2015).</p>	
1270	27	<p>[From ATT1:] The Proposed Program of Implementation Would Result in Future Amendments to the Water Quality Control Plan without the Procedures Required by Law.</p> <p>The proposed POI would effectively allow for amendments of the water quality control plan through an adaptive management program, without complying with the procedural requirements of Porter-Cologne and the APA that are applicable to the promulgation of a water quality control plan. The proposed POI states that the "LSJR flow objectives for February through June shall be implemented by requiring 40 percent of unimpaired flow, based on a minimum 7-day running average, from each of the Stanislaus, Tuolumne, and Merced Rivers. This required percentage of unimpaired flow, however, may be adjusted within the range allowed by the LSJR flow objectives through adaptive methods detailed below. . ." (Recirculated SED, App. K, at p. 29.)</p> <p>The proposed POI allows a "Stanislaus, Tuolumne and Merced Working Group" to propose annual adaptive management of flows during the February through June period and the adaptive management allows a "flow pattern different from that which would occur by tracking the unimpaired flow percentage . . ." (Id. at p. 30.) In addition, the proposed POI allows the State Water Board or the Executive Director of the State Water Board, to approve modifications to the required base flow and percentage of unimpaired flows based on subsequently produced information. (Id. at pp. 30-31.) These provisions of the POI effectively allow the State Water Board and the Executive Director to amend the water quality control plan to require different base flows and a different flow regime. This approach not only improperly delegates authority to the Executive Director and STM</p>	<p>Please see Appendix K, Revised Water Quality Control Plan and Master Response 2.1, Amendments to the Water Quality Control Plan. Table 3 of the Revised Water Quality Control Plan is amended to clarify that the LSJR flow objective requires 40 percent of unimpaired flow, within an allowed adaptive range of 30-50 percent, from each of the Stanislaus, Tuolumne, and Merced Rivers from February through June. In addition, the base flow objective text in Table 3 was simplified to make it clearer that the base flow must be met at all times during the February through June time period and may require water that is in addition to the LSJR percent of unimpaired flow objectives on the three eastside tributaries.</p> <p>Adaptive implementation and the associated regulatory framework is part of the program of implementation for the LSJR flow objectives and is constrained by the adaptive flow range of 30 to 50 percent of February through June unimpaired flows, and the other elements of adaptive implementation, as described. Making changes within an adopted, and limited adaptive range of flows, as analyzed in the SED is not a modification of the objective but an implementation of the objective. In addition, the State Water Board is authorized by law to delegate its authority to its Executive Director and its staff. Please see Master Response 2.1 regarding Executive Director authority.</p> <p>Please also see Master Response 2.2, Adaptive Implementation, for additional description of the adaptive implementation framework, including governance and processes.</p>

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		<p>Working Group, but denies the public procedural protections afforded by law.</p> <p>Porter-Cologne and the APA require the State Water Board to provide an opportunity for public notice and comment before the State Water Board adopts any amendment to a water quality control plan. Porter-Cologne requires the State Water Board to provide notice of a public hearing and to hold a public hearing regarding a proposed water quality control plan, before adopting any plan. (Wat. Code, § 13244.) In addition, the State Water Board must comply with the APA procedures applicable to rulemaking prior to the adoption or amendment of a water quality control plan. (23 C.C.R. §§ 649.1, 649(a).)</p> <p>The APA requires that a state agency permit "both oral and written statements, arguments, or contentions" at the public hearing for the rulemaking proceeding and the state agency "shall consider all relevant matter presented to it before adopting, amending, or repealing any regulation." (Gov. Code, § 11346.8, subd. (a).) The APA also prohibits a state agency from adopting or amending a regulation which has been changed from that which was originally made available to the public, unless the change is "nonsubstantial" or "sufficiently related to the original text that the public was adequately placed on notice that the change could result from the originally proposed regulatory action." (Gov. Code, § 11346.8, subd. (c).) These procedural provisions are intended to provide the public with prior notice and an opportunity for comment, before a water quality control plan is amended or adopted. They are also intended to allow the State Water Board (not the Executive Director through a delegation of power) the ability to make informed decisions.</p> <p>[Footnote 8: The POI allows the Executive Director of the State Water Board to independently approve changes within the 30-50% unimpaired flow range unimpaired flow regime based on subsequently produced information or requests by the newly formed STM Working Group. (Recirculated SED, App. K, at pp. 30-31.) The POI also allows for management of the flows as a block of water that can be adjusted to a different flow pattern than the unimpaired flow pattern, and allows for shifting of the releases outside of the February-June period. (Id.) Such an approach effectively allows for amendments to the water quality control plan, without any further review or consideration by the State Water Board. This would be an improper delegation of the State Water Board's water quality planning powers and duties. (See Cal. Assn. of Nursing Homes etc. Inc. v. Williams (1970) 4 Cal.App.3d 800, 813 [agency's incorporation of standards developed outside of the rule-making process without independent consideration of the underlying evidence and without public or judicial access to that evidence transgresses fundamental demands for the adoption of administrative regulations].) In fact, the Water Code expressly prohibits a regional water quality control board from delegating any of its powers and duties related to the issuance or modification of any water quality control plan to its executive officer. (Wat. Code, § 13223, subd. (a).) The same prohibition should apply when the State Water Board is modifying or issuing a water quality control plan pursuant to Water Code section 13170.]</p> <p>The proposed POI contemplates an "adaptive management" process that would effectively deny the public important rights and usurps the State Water Board's responsibility to establish objectives, by allowing the flow regime to be determined and approved annually, at the discretion of the Executive Director and the STM Working Group. Such an approach effectively allows the water quality control plan to be amended each year. Such an approach is contrary to the procedures provided for in Porter-Cologne and in the APA.</p> <p>[Footnote 9: An approach that effectively allows the water quality control plan to be amended each year also violates CEQA by impermissibly delegating the State Water Board's</p>	

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		<p>duty to consider the environmental effects of subsequently developed information or changes to the plan. (See POET, LLC, supra, 218 Cal.App.4th at p. 731 [agency violated "a fundamental policy of CEQA" by separating decision-making authority on its regulatory program from its duty to conduct environmental review]; Kleist v. City of Glendale (1976) 56 Cal.App.3d 770, 779 [separation of the approval function from the environmental analysis function improperly attempts to insulate the agency "from public awareness and possible reaction" to the choices made].])</p> <p>The annual changes would amount to unlawful, underground regulations.</p>	
1270	28	<p>[From ATT1:] The Public Water Agencies submitted detailed comments on the proposed draft amendments as well as on the draft SED, but these comments have received insufficient attention from the State Water Board in its environmental analyses. The Public Water Agencies continue to have serious concerns with the draft amendments and the Recirculated Draft SED, because fundamental requirements of CEQA have not been met and the SED fails to provide the necessary analysis and scientific information to develop water quality objectives.</p>	<p>Please refer to Master Response 1.1, General Comments regarding the use of an SED to meet CEQA requirements, the adequacy of the approach to the analysis as well as a discussion regarding the use of comments on the 2012 Draft SED to inform refinements to the 2016 Draft Recirculated SED and the legal basis for recirculation. Appendix M, Summary of Public Comment on the 2012 Draft SED provides a summary of the types of issues and concerns raised during the 2012 public comment period.</p>
1270	29	<p>[From ATT1:] Fundamental Problems with the SED Undermine the Environmental Analysis.</p> <p>An SED prepared in lieu of an EIR is an informational document designed to provide agencies and the public with an understanding of a proposed plan or project sufficient to assess its environmental consequences, and is subject to the substantive provisions of CEQA. (Pub. Resources Code §§ 21002, 21080.5; CEQA Guidelines, § 15250; City of Morgan Hill v. Bay Area Air Quality Management District (2004) 118 Cal.App.4th 861, 874-875.)</p> <p>[Footnote 10: The exemption for certified regulatory programs provided by Public Resources Code section 21080.5 is not a blanket exemption from CEQA. A certified regulatory program remains subject to the provisions of CEQA outside the scope of the exemption, including CEQA's broad policy goals and substantive standards. (POET, LLC, supra, 218 Cal.App.4th at p. 731; see Cal. Code Regs., tit. 23, § 3777(b) [State Water Board regulations describing minimum required contents of a substitute environmental document].) These include the fundamental duties set forth in Public Resources Code sections 21000 and 21002 to identify a project's adverse environmental effects, to mitigate those effects through adoption of feasible alternatives or mitigation measures, and to justify its action based on specific economic, social, or other conditions. (Sierra Club v. State Board of Forestry (1994) 7 Cal.4th 1215; see also CEQA Guidelines, § 15250.) In short, the State Water Board's SED must include the same types of environmental information as an EIR, including a description of the activity and analysis of impacts, mitigation measures, alternatives, and cumulative impacts. (Friends of the Old Trees v. Dept. of Forestry &amp; Fire Protection (1997) 52 Cal.App.4th 1383, 1393.)]</p> <p>Fundamental flaws continue to pervade the Recirculated Draft SED's project description and objectives, the scope and methods of impact analysis, the selection and analysis of alternatives, and the lack of substantial evidence to support stated conclusions. [Footnote 11: Environmental documents prepared for certified regulatory programs must use scientific and other empirical evidence to support their conclusions. (See Ebbetts Pass Forest Watch v. Dept. of Forestry &amp; Fire Protection (2008) 43 Ca.4th 936, 943-945.) Just as in an environmental impact report, a lead agency's conclusions in an SED must be supported by substantial evidence—facts, reasonable assumptions predicated on facts, and expert opinion supported by facts. (CEQA Guidelines, § 15384; Laurel Heights Improvement Association v.</p>	<p>Please see Master Response 1.1, General Comments, regarding the programmatic approach and analyses in the SED and a general discussion of the scope and methods of the impact analyses. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding a description of the plan amendments (i.e., the project description), the goals and objectives of the plan amendments, and the scientific basis for the plan amendments. Please see Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, regarding the range of alternatives.</p>

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		<p>Regents of the University of California (1988) 47 Cal.3d 376, 393.) Substantial evidence does not include argument, speculation, unsubstantiated opinion or narrative, evidence that is clearly inaccurate or erroneous, or evidence that is not credible. (Pub. Resources Code, §§ 21080(e), 21082.2(c); CEQA Guidelines, § 15384.) This recirculated environmental document, like the Draft SED, lacks supported analysis and evidence in support of its assumptions and conclusions regarding anticipated effects and outcomes likely to result from implementation of the draft amendments.] These flaws result in a misleading document that fails to serve CEQA's informational purposes.</p>	
1270	30	<p>[From ATT1:] The SED's Description of the Draft Amendments and Program of Implementation is Indefinite and Unstable.</p> <p>Programmatic CEQA documents must include "accurate, stable and finite" project descriptions. (Rio Vista Farm Bureau Center v. County of Solano (1992) 5 Cal.App.4th 351, 370 [programmatic analysis requires "[a]n accurate, stable and finite project description" because it "is the sine qua non of an informative and legally adequate" CEQA analysis].) It allows the lead agency to identify the proper environmental baseline, to evaluate the "no project" alternative, to develop a range of reasonable and viable alternatives, to consider mitigation measures, and to balance a project's benefits against its environmental costs. (County of Inyo v. City of Los Angeles (1977) 71 Cal.App.3d 185, 192-193.)</p> <p>[Footnote 12: The Recirculated Draft SED assumes that the draft amendments will result in long-term environmental benefits without identifying any standards, criteria, or biological goals by which to measure whether and to what degree any such benefits occur. The true extent and likelihood of the proposed action's assumed benefits are highly uncertain. Clear identification of objectives and the ways in which the proposed action is expected to achieve them is crucial to an informative CEQA analysis. Without specifically articulated biological goals, performance standards, or other meaningful project objectives against which to compare anticipated outcomes of the proposed action and a range of potentially feasible alternatives, the SED fails to meet CEQA's basic requirements. (Pub. Resources Code, § 21061; CEQA Guidelines, §§ 15002(a); 15124(b), 15126.4, 15126.6.) "[F]ailure to provide enough information to permit informed decision-making is fatal." (Napa Citizens for Honest Government v. Napa County Board of Supervisors (2001) 91 Cal.App.4th 342, 361.)]</p> <p>Although a programmatic analysis may contain a more general project description than a project-level document, it nevertheless must be stable and finite such that the public and other agencies have a meaningful opportunity to comment on the actual plan that will be adopted and implemented. The SED's project description of the draft amendments and program of implementation is not stable and is subject to change. (Recirculated Draft SED, Chapter 3; see id. at pp. ES-11-21.)</p> <p>The SED violates CEQA because it does not define parameters or describe the range of possible flow patterns the Executive Director may order in the future; it does not specifically articulate the biological goals or performance criteria such actions are intended to meet; nor does it analyze the reasonably foreseeable environmental impacts of those potential flow patterns. Relying on a "curtailed, enigmatic or unstable definition of the project," as the SED does here, stands as the paradigm of legal error under CEQA, because it "draws a red herring across the path of public input." (County of Inyo, supra, 71 Cal.App.3d at p. 199.)</p>	<p>Please see Master Response 1.1. General Comments regarding the programmatic nature of the SED's analysis. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for a description of the LSJR flow requirements and an explanation of why the project description is adequately precise and specific. Please also see Master Response 2.1 for information regarding the LSJR flow objectives, biological goals and objectives, and the role of the STM working group in implementation. Please see Master Response 3.1, Fish Protection, for information regarding the scientific justification for the plan amendments and additional information regarding the biological goals and objectives.</p>

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1270	31	<p>[From ATT1:] The SED Fails to Provide a Sufficient Analytical Link Between Flow Function and Expected Benefit for Salmonids and the Proposed Implementation Program.</p> <p>"An EIR may not define a purpose for a project and then remove from consideration those matters necessary to the assessment of whether the purpose can be achieved." (County of Inyo v. City of Los Angeles (1981) 124 Cal.App.3d 1, 7-9.) The SED violates this basic CEQA principle by failing to provide a legally or scientifically sufficient analytical link between the proposed flow objective and implementation flows, and potential flow-derived benefits for salmonids. The fundamental basis of the flow objective is that an increased magnitude of instream flows that mimic actual seasonal hydrologic conditions during the later winter and spring each year is predicted to result in an increase in the abundance and survival of juvenile and adult Chinook salmon and steelhead.</p> <p>However, the SED does not contain an analysis establishing that the salmonid population viability factors (e.g., abundance, spatial extent or distribution, genetic and life history diversity, and productivity) can be achieved by providing flows that mimic the natural hydrograph. Even if this analytical connection had been made, it has not been sufficiently established that the implementation of the proposed SED flow alternatives would provide "natural" flows under which the fish evolved and were adapted (e.g., the relative magnitude, duration, timing, and spatial extent of historic flows).</p>	<p>Please refer to response to comment 1270-2 and response to comment 1270-3 regarding the use of best available science, the unimpaired flow approach, functional flows, and adaptive implementation. See Master Response 1.1, General Comments, regarding the requirements of CEQA and Program level review, and Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, for discussion of the provisions of CEQA as they relate to analysis of the LSJR alternatives.</p> <p>As described in Appendix K, Water Quality Control Plan Update, the program of implementation describes biological goals (indicators of viability including abundance; productivity as measured by population growth rate; genetic and life history diversity; and population spatial extent, distribution, and structure) that will specifically be developed for LSJR salmonids to ascertain the effectiveness of the program of implementation. Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for clarifying descriptions regarding modifications to the plan amendments, and the program of implementation, including biological goals. Please also refer to Master Response 3.1, Fish Protection, for a description of the importance of biological goals from a population monitoring perspective, and for discussion of adaptive implementation of the unimpaired flow approach. Please also refer to Master Response 2.2, Adaptive Implementation, for clarification regarding the adaptive implementation process.</p>
1270	32	<p>[From ATT1:] The Available Science Does Not Support the Conclusion that an Unimpaired Flow Approach Will Ensure the Reasonable Protection of Fish And Wildlife.</p> <p>Appendix C of the SED describes two general categories of expected benefits from the percent of unimpaired flow approach: (1) additional flow is needed to significantly improve production (abundance) of fall-run Chinook salmon [upstream]; and (2) the primary influence on adult abundance is flow 2.5 years earlier during the juvenile rearing and outmigration life phase (Recirculated SED, App. C, at p. 3-30.) However, the SED provides only a high level and incomplete review of the literature regarding the unimpaired flow management concept, and fails to link the flows actually being proposed with the flows studied in the literature. (Draft Revised SED, App. C, Section 3).</p> <p>In addition, the SED fails to acknowledge the high level of uncertainty and highly variable responses within aquatic communities under the unimpaired flow strategy and the effects of factors such as habitat modifications (e.g., levee construction that alters floodplain inundation, channelization, loss of wetland and riparian vegetation, water storage by dams, cold water pool management and exposure to seasonally elevated water temperatures particularly during the late spring, summer, and fall, groundwater extraction, gravel mining, loss of spawning gravels and habitat complexity, etc.), changes in exposure to contaminants, and changes in biological relationships (e.g., increased risk of predation, influence of hatchery operations, competition for limited suitable spawning and rearing habitat, changes in macroinvertebrate prey composition and abundance, invasive species, etc.). The SED fails to identify a scientific method for evaluating the success or failure of the unimpaired flow approach in a complex ecosystem with many factors affecting fish viability.</p> <p>Appendix C assumes that all increases in flow will provide measureable improvements in species viability; despite the fact the related literature explains that this is an inappropriate assumption. The literature explains ecosystem response to increased flows are complicated,</p>	<p>Please refer to response to comment 1270-2 and response to comment 1270-3 regarding the use of best available science, the unimpaired flow approach, functional flows, adaptive implementation, and non-flow measures.</p> <p>Please refer to response to comment 1270-31 regarding the development of biological goals for the program of implementation.</p> <p>The State Water Board acknowledges that uncertainty is inherent in any programmatic planning effort of this geographic and temporal scale. The State Water Board, however, has strived to use the best available science throughout the impacts analysis, consistent with the requirements of the certified regulatory planning process, and, in accordance with CEQA, used its best efforts to evaluate and disclose significant findings. Additionally, the official public review process for the plan amendments provides an opportunity for formal public comment on the plan amendments. Public and agency comments on the 2012 Draft SED led to further refinement of the plan amendments, as evidenced in the current document.</p> <p>As described in Appendix K, Water Quality Control Plan Update, experiments may be conducted, within the adaptive implementation framework, in order to improve scientific understanding of needed measures for the protection of fish and wildlife beneficial uses, such as the optimal timing of required flows. Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, and Master Response 2.2, Adaptive Implementation, for more information.</p> <p>Please also refer to Master Response 3.1, Fish Protection, regarding the role non-flow measures, the adequacy of the floodplain and water temperature modeling to support the analyses, current fish decline and need for increased flow, anticipated benefits of implementation of the plan amendments, making adjustments and addressing uncertainty, and consideration of the role of hatcheries and predation as other stressors. As also explained in Master Response 3.1, unimpaired flow is not equivalent to the natural flow regime.</p> <p>See Master Response 5.2, Incorporation of Non-flow Measures, for more in-depth discussion of the role of non-flow measures, which are outside of the State Water Board's authority. See Master Response 1.1,</p>

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		<p>not a monotonic response to flow alone. As asked and answered in Poff, et al. (1997): "Can reestablishing the natural flow regime serve as a useful management and restoration goal? We believe that it can, although to varying degrees, depending on the present extent of human intervention and flow alteration affecting a particular river."</p> <p>The literature further explains that it cannot be assumed that additional flow will always provide species benefits. Poff and Zimmerman (2010) reviewed 165 papers related to the natural flow regime. A narrative summary of the reported results from the synthesis of available scientific literature by Poff and Zimmerman (2010) strongly corroborated previous, less comprehensive, reviews that document highly variable ecological responses to all types of flow alteration. The literature review by Poff and Zimmerman (2010) revealed some sensitivity of different ecological groups to alterations in flow magnitudes, but consistent robust statistical relationships were not detected between flows and many important biological responses of the aquatic community.</p> <p>The Poff and Zimmerman (2010) results revealed: "Macroinvertebrates showed mixed responses to change in flow magnitude, with abundance and diversity both increasing and decreasing in response to elevated flows and to reduced flows. Fish abundance, diversity and demographic rates consistently declined in response to both elevated and reduced flow magnitude. Riparian vegetation metrics both increased and decreased in response to reduced peak flows, with increases reflecting mostly enhanced non-woody vegetative cover or encroachment into the stream channel."</p> <p>Poff and Zimmerman (2010) explained, "Given the alteration of flow regimes is typically confounded with other environmental factors, we would not necessarily expect unambiguous relationships between single measures of flow alteration and ecological response." These confounding relationships have been observed by other researchers as well. Bunn and Arthington (2002) describe the uncertainties associated with attempting to restore "natural" flow to promote ecological restoration.</p> <p>"In writing this review, we often encountered reports of river systems affected by multiple stressors and were unable to definitely separate the impacts of altered flow regimes from those of the myriad of other factors and interactions. How much of an observed decline in species diversity can be attributed directly to modified flow compared to diffuse inputs of nutrients and contaminants? A similar problem occurs in our attempt to unravel the cause and effect of exotic species on aquatic diversity. Is an observed decline in native fish species the result of a modified flow regime or direct impact of an introduced species (or both)? Ecological science is not yet able to answer these questions, important as they are.</p> <p>"Ecologists still have much to learn about the ecological significance of individual flow events and sequences of events, and descriptive science can take us only so far in unraveling these linkages. The advice from aquatic ecologists on environmental flows might be regarded at this point in time as largely untested hypotheses about the flows that aquatic organisms need and how rivers function in relation to flow regime."</p> <p>Similar concerns regarding the relationship between flow alteration and ecological response to those described by Bunn and Arthington (2002) have been identified in the estuary and Delta. Bennett and Moyle (1996) hypothesized that non-native fish species are better adapted to the conditions now found in the Delta than are native fish species. The Bennett and Moyle (1996) hypothesis is supported by the observations of Feyrer and Healey (2003) who found that non-native fish species are numerically dominant in the south Delta</p>	<p>General Comments, and Master Response 1.2, Water Quality Control Planning Process, for discussion of the State Water Board's authority.</p> <p>Please also refer to Master Response 2.1, regarding the importance of flow connectivity and the protection of flows downstream of the LSJR.</p>

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		<p>compared to native species.</p> <p>Bennett and Moyle (1996) identified six mechanisms that contribute to declining fish populations: 1) transport and entrainment, 2) advection from preferred habitats, 3) effects of invading species, 4) primary production and food web dynamics, 5) dilution/flushing of toxic compounds, and 6) quantity and quality of shallow-water habitat. They argued that several mechanisms may control recruitment in any given year thus it was futile to promote any one of these mechanisms solely.</p> <p>These studies explain why the State Water Board cannot rely on a percent of the hydrograph approach without also considering the relative success of those efforts in meeting the desired biological goals and functions, and the potential for success in the San Joaquin River system and south Delta. The San Joaquin River and the southern Delta are highly altered systems, both physically and ecologically, and the relationships between flows and habitat functions for salmonids are no longer the same as those during historic conditions.</p>	
1270	33	<p>[From ATT1:] The SED Fails to Provide an Integrated Analysis of Flow in an Ecosystem Context that Evaluates Non-Flow Stressors.</p> <p>The purpose of Chapter 16, according to the SED (p. 16-1), is to evaluate indirect actions other than flow-related measures. However, Chapter 16 fails to analyze the relative importance of particular non-flow measures to fish viability and thus fails to provide the State Water Board with the information necessary to develop water quality objectives and a program of implementation that can provide for the reasonable protection of beneficial uses. The SED does not provide an integrated evaluation of all actions that might benefit listed fish species and ensure the beneficial use of fish and wildlife populations is conserved.</p> <p>Such an analysis could include:</p> <ul style="list-style-type: none"> <li>-identification of non-flow actions essential to recovery of listed migratory fish species;</li> <li>-development of functional flow criteria designed to meet specific life history stage objectives for each species of interest;</li> <li>-development of alternative functional flows and non-flow action combinations;</li> <li>-impact analysis of each of the alternatives;</li> <li>-salmon population modeling regarding the expected outcome of each alternative for key response variables;</li> <li>-a cost analysis of each of the alternatives and a predicted benefit: cost analysis;</li> <li>-an adaptive management approach that identifies hypotheses to be tested and special studies to remove/reduce key uncertainties.</li> </ul> <p>If this integrated evaluation approach was used then the State Water Board would be provided with a range of alternatives that might all contribute to recovery of migratory fish populations. In addition, this integrated approach and effectiveness and cost analyses would provide a sound basis for the selection of a management strategy.</p>	<p>Please see response to Comment 1270-5.</p> <p>Regarding the commenter’s suggestions for additional actions to be added to the analysis in the SED, please see Master Response 1.1, General Comments, for a discussion on the development of the LSJR alternatives.</p>

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		<p>In the Executive Summary, the State Water Board acknowledges the concern expressed that its "proposal for protecting fish and wildlife is 'flow-centric.'" (SED, p. ES-73). However, the State Water Board's response to this criticism is to provide recommended non-flow actions that "could improve conditions for fish and wildlife in the plan area." Id. The result of this approach is that non-flow measures that are critical to increasing the viability of fish are largely left unexamined and deferred, while simultaneously, water is taken away from other beneficial uses in the name of improving fish viability.</p> <p>But simply dumping more water into the rivers is not a responsible or scientifically-defensible approach to satisfying the requirement to provide reasonable protection of beneficial uses. An assessment of the role of non-flow measures in achieving the biological goals of the State Water Board's "proposal" is essential to developing reasonable flow measures that can contribute to a comprehensive approach to ecosystem management and fish recovery.</p>	
1270	34	<p>[From ATT1:] The SED's "Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30" is Inadequate and Misleading.</p> <p>Chapter 19 of the SED is dedicated to providing analyses of the potential benefits to native fish populations from the proposed flow objective's increased flows. The analyses is presented is not scientifically defensible and is misleading in its presentation.</p> <p>While the SED provides modeled flow analyses of floodplain inundation under the different alternatives in Section 19.3 of Chapter 19, key parameters such as duration, timing, and water temperature that are critical to link modeled floodplain inundations to the fish populations that may benefit are not incorporated. Quantifying the frequency or magnitude of floodplain inundation without considering the usefulness of those inundation events for supporting fish populations overestimates the benefit of floodplain inundation and provides an inaccurate comparison between alternatives.</p> <p>Inundated floodplain habitat requires time for primary production to occur and subsequent colonization of macroinvertebrates for inundated habitat to provide rearing benefits for juvenile fishes. For example, Grosholz and Gallo (2006) found that zooplankton on the Cosumnes River did not reach a maximum biomass until 2-3 weeks after disconnection with the river. This lead Grosholz and Gallo (2006) to recommend that floodplain restoration in the Central Valley consider management strategies that would ensure repeated flooding every 2-3 weeks during periods that would best match the peaks in abundance of native fishes.</p> <p>Therefore, when calculating the amount of floodplain inundation occurring across the various alternatives in Section 19.3, the State Water Board should only be enumerating habitat that has remained inundated for a minimum of two weeks. Without providing this threshold, the State Water Board is counting floodplain habitat that may only be inundated for a few days or less as productive rearing habitat for juvenile fish. This leads to an overestimation of the potential benefit of the different flow alternatives on juvenile fish rearing.</p> <p>In addition to floodplain duration, the timing of when the modeled floodplain habitat inundates needs to be related to the life history timing of those fish populations utilizing the habitat to avoid overestimating floodplain habitat benefits for rearing fish. Each run and population of salmonids that emigrate out of the San Joaquin River has different</p>	<p>Please refer to Master Response 3.1, Fish Protection, regarding the use of best available science in the SED, the adequacy of the floodplain analysis, including the relationship of floodplain to temperature, and the presence of salmon and steelhead in June.</p> <p>The floodplain analysis in Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, Section 19.3, Floodplain Inundation, is provided in terms of floodplain timing and duration. Please refer to tables 19-22 to 19-27, which describe potential changes to floodplain inundation under different flow scenarios, and include results by month from February through June to incorporate the timing component during months when native fish primarily require access to floodplain habitat in order to be successful in the juvenile life stage. Results of the floodplain analysis are also shown according to monthly average flow exceedances for approximately 30-day duration events (depending on the month); and therefore, incorporate a duration component.</p> <p>As described in Master Response 3.1, for juvenile salmon, the benefits of increased floodplain inundation derive not only from potential increases in food availability on floodplain habitat, but also from reduced predation risk and energy expenditures associated with access to shallow, low velocity areas and cover. With higher, more frequent overbank flows associated with the plan amendments, potential growth and survival benefits are expected to extend throughout the rearing and migration corridor for juvenile salmon, including tributary reaches where the active floodplain is narrow and such habitat is limited to a narrow strips of riparian vegetation along the channel margins. Where low-lying floodplain and off-channel areas occur naturally or where floodplain restoration has been implemented, these benefits would be further enhanced.</p> <p>The adaptive implementation process will allow the fine tuning of flows to achieve desired floodplain timing, magnitude, and duration: even higher flows can be achieved for part of any given time period than what is described in tables 19-22 to 19-27. For example, flows during different portions of a 30-day period could be set to 3,000 cfs and 1,000 cfs, for a 30 day average of 2,000 cfs. This example illustrates that desired floodplain durations and magnitudes can be managed for; furthermore, higher unimpaired flows represent greater potential for habitat improvements. Please refer to Master Response 2.2, Adaptive Implementation, for clarification regarding the process of adaptive implementation.</p>

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		<p>outmigration timing. Hallock et al. (1961) found that juvenile steelhead in the Central Valley migrate downstream during most months of the year, but the peak emigration period occurred in the spring, with a much smaller peak in the fall. Fall-run Chinook salmon juveniles typically emerge from the gravel in December through March and rear in fresh water for 1-7 months, usually moving downstream into large rivers within a few weeks (Williams 2010). Future populations of spring-run Chinook salmon are expected to behave similarly to spring-run juveniles in Butte Creek, CA, that move downstream primarily during December, January, and February (Ward et al. 2003).</p> <p>Therefore, the floodplain modeling conducted by the State Water Board should calculate the magnitude of floodplain inundation that actually would be available for rearing of each salmonid run by overlaying modeled floodplain inundation with the timing of each salmonid run. Rotary screw trap data of juvenile salmonids is available for each tributary of the San Joaquin River and could be used to compare to floodplain inundation timing.</p> <p>Finally, the State Water Board’s floodplain modeling should also model water temperatures to ensure that modeled inundated habitat is suitable for rearing. The San Joaquin River Basin populations of Chinook salmon are the southernmost of its species, making them especially susceptible to stress and mortality due to elevated water temperatures (Moyle 2002). Therefore, water temperatures need to [be] modelled along with flows in order to estimate rearing habitat that meets the suitability requirements of juvenile salmonids. Without considering temperature, the State Water Board is overestimating floodplain habitat available for rearing.</p>	
1270	35	<p>[From ATT1:] The Salmon Simulator (SalSim) model documentation (AD Consultants 2014) provides a list of assumptions and uncertainties inherent in SalSim and its implementation for the San Joaquin River. SalSim makes one assumption that is unreasonable: Assumption 5 is that juvenile migration rates are similar during turbid storm events compared to non-storm days. This is not supported by the literature: 1) Atlantic salmon smolts initiate migration after storm events (McCormick et al. 1998) and 2) Chinook salmon smolts in the Sacramento River show a strong positive relationship between turbidity and movement rate (Michel et al. 2012).</p> <p>It is impossible to gauge how important this assumption is to the outcome of the model.</p> <p>SalSim also has some uncertainties that should incorporate known information into the model (Uncertainty 7) or address drivers in the model (Uncertainty 22):</p> <p>Uncertainty 7: What are juvenile survival rates without the HORB (Head of Old River Barrier)? This is not an uncertainty. There are numerous estimates of juvenile survival rate when the HORB was not installed using coded wire tags in 1995, 1996, 1998, 1999, 2005 and 2006 (SJRG 2013: Figure 5-1). And there is an estimate of juvenile survival rate in 2011 when no HORB was installed (SJRG 2013: Table 5-21) using acoustic telemetry. Clearly, this was not an uncertainty but it was not modeled in SalSim.</p> <p>Uncertainty 22 is "Unmeasured environmental drivers." This is a concern because numerous unmeasured variables could have significant impacts on the outcome of the model. This means that the model cannot consider non-flow measures that may be controlling fish survival and abundance.</p> <p>In addition to the modeling problems caused by unreasonable assumptions and</p>	<p>As described in Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, SalSim was developed by the CDFW, AD Consultants, and a variety of other modeling and fisheries experts. The SalSim documentation (CDFW 2013a; CDFW 2014, as cited in Chapter 19) should be consulted for a complete description of model development and calibration.</p> <p>In Chapter 19, Section 19.4.1, Introduction of SalSim, and Section 19.4.4, Summary and Conclusions of the SalSim Evaluation, provide a use advisory for SalSim; and specifically describe the limitations of SalSim. As explained in the use advisory, the State Water Board did not rely on SalSim to describe the effects of increased flows on fish abundance. Please also see Master Response 3.1, Fish Protection, regarding State Water Board’s use of SalSim and acknowledgement of model limitations.</p>

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		<p>uncertainties that were not addressed, there are substantial problems with model calibration and validation. The model was calibrated using data from the past and the model was developed to provide backcasts, estimates of production in the past. Thus, the similarity between the model simulations of escapement and historical observations (AD Consultants 2014: Figures 63, 65, and 67) are in effect a tautology. A robust statistical validation has not been conducted.</p> <p>Perhaps the most important point in the SalSim documentation is that the only validation exercise appears to be a simple graphical comparison. That is, there has been no statistical comparison of model backcasts to actual production in each year. Thus, it is impossible to determine if SalSim model outputs are precise predictions of Chinook salmon production under various flow scenarios. A visual evaluation of AD Consultants (2014) Figure 61 suggests there is a range in error from 0-25% in escapement for different years.</p> <p>Without a rigorous validation study, it is not possible to assess the usefulness of the SalSim model. For example, in a rigorous validation study an a priori threshold for model performance would be provided before model construction commenced. Then, a statistical comparison of the model backcasts to the actual observed values would be made.</p> <p>SalSim output would have to meet the a priori threshold before the model and its output could be considered validated. Un-validated models and theories have long been known to be a detriment to effective salmon management (Hall 1988). Hall (1988) makes his case regarding theory but it can just as easily be applied to models: "This does not mean that the theorists need to become experimentalists, but rather that any new theory be required to include non-trivial, non-tautological field validation or else suggest experiments or observations that could be done by someone else to (in)validate the theory."</p> <p>The lack of validation is not an academic problem. It essentially means that the output of the SalSim model cannot be trusted to provide precise enough estimates of salmon escapement for management purposes. Thus, it is incumbent upon the State Water Board to carry out a proper model validation exercise before using the SalSim model for management and policy decision making. And, conclusions from the SalSim modeling can't be relied upon until such a validation takes place. For example, the SED suggests that a seven year model run (1998 to 2004) may be a "better output instead of looking at the full 16-year SalSim time period" (SED, p. 19-85). Then, using the 1998-2004 period, the SED concludes that the SB20%UF (the 20% unimpaired flow run) will produce even less fish compared to the baseline. This reasoning cannot be accepted because the conclusion is provided by a model that has not been properly validated. Thus this "conclusion" cannot be relied upon. And, importantly, this is true of all conclusions drawn from SalSim model runs.</p> <p>The SED's attempts to predict the effects of increased flows on fish abundance are inaccurate and misleading. (See SED Chapter 19, Section 19.4) The SalSim modeling was done providing backcasts: a prediction of what would have happened in the past if different flow management strategies would have been implemented. However, this modeling relies on past correlations and cannot accurately predict the cause-effect of future flows in a highly altered ecosystem such as the San Joaquin River watershed.</p>	
1270	36	<p>[From ATT1:] Years of telemetry data from Delta survival studies show that the greatest mortality hotspots occur in the most-tidally driven reaches (least impacted by Delta inflow), providing evidence that changing seasonal flows is unlikely to solve mortality concerns in the Delta. Survival studies summarized by Perry et al. (2016) have shown that survival tends</p>	<p>Please see response to comment 1270-3. The plan amendments for the LSJR flow objectives includes flows in the salmon-bearing tributaries of the LSJR below the rim dams on the Stanislaus, Tuolumne, and Merced Rivers, and the mainstem of the LSJR between its confluence with the Merced River and downstream to Vernalis. The issues of Sacramento River inflow and interior Delta hydrology are beyond the scope of the</p>

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		<p>to be higher in the upper reaches of the Delta (less tidally-driven) compared to lower reaches (more tidally-driven).</p> <p>In the Sacramento River, survival rate per kilometer generally declined along a downstream gradient, with lowest survival rates occurring in the interior Delta and the region around Cache Slough (Perry 2010). In the San Joaquin system, survival estimates of juvenile fall-run Chinook Salmon from the region near the Mossdale Bridge to Turner Cut averaged 0.30 for 2008-2012, while survival in all possible routes downstream of the Turner Cut junction to Chipps Island averaged only 0.11 in 2008 and 2010-2012 (Holbrook et al. 2009; Buchanan et al. 2013, 2015; SJRGA 2013).</p> <p>Therefore, the areas with the lowest survival in the Delta occur in the more interior reaches where tidal dynamics drive hydrology. Changes to Delta inflows are unlikely to solve mortality concerns for migrating salmonids in these areas. In the SED, the State Water Board should discuss the potentially limited influence that changes to seasonal flows could have on outmigration survival of salmonids in the Delta.</p> <p>As recommended by the Delta ISB (2015), a comprehensive, integrative, and well planned scientific approach focused on processes, drivers, and predictions is needed to aid adaptive management and to predict how future changes might affect fishes. The Delta ISB (2015) recommends the creation of collaborative, open-source hydrodynamic models developed for the purpose of making testable predictions of biological responses to functional flows. Such modeling will require components of regional climate (hydrology), hydrodynamics, water quality, food availability, and physiological and habitat requirements at various fish life stages for different fish species (Delta ISB 2015).</p> <p>The flow prescription approach proposed in the SED is unlikely to succeed. The SED provides no mechanism to test the unimpaired flow approach and its usefulness for fish population recovery. Thus, if migratory fish populations fail to recover under this proposed management policy it will not be possible to determine if the unimpaired flow approach caused the decline or contributed to it. Furthermore, the SED does not provide a sufficient description of the adaptive management process in its Program of Implementation to indicate what will be learned in the event of success or failure.</p> <p>There is not substantial evidence in the record to support the conclusion that an "unimpaired flow" regime will support the physical and ecological processes necessary to support native fish populations. The SED fails to evaluate "unimpaired flow" in the context of a highly modified ecological system and instead assumes that the "unimpaired flow" approach is necessary to support native fish populations. That assumption is not supported by substantial evidence and fails to account for the complex and inter-related physical and biological characteristics of the San Joaquin River basin and the Bay-Delta ecosystem.</p> <p>The confounding relationships between flows and other environmental factors make the ecological consequences of an "unimpaired flow" regime highly uncertain. The "natural hydrographic conditions" to which native fish species are adapted included a complex and dynamic habitat that has been significantly altered by human actions. An "unimpaired flow" regime will not restore those dynamic habitat functions and it will not mimic "natural" hydrographic conditions.</p>	<p>plan amendments. Please also refer to response to comment 1270-3 regarding the use of best available science in the SED, the unimpaired flow approach and benefits thereof, functional flows, adaptive implementation, and non-flow measures.</p> <p>Please refer to Master Response 1.2, Water Quality Control Planning Process, regarding other Bay-Delta Plan proceedings. Please also refer to Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the importance of flow connectivity and the protection of flows downstream of the LSJR.</p> <p>Please refer to response to comment 1270-31 regarding the development of biological goals for the program of implementation.</p> <p>Please refer to response to comment 1270-32 regarding uncertainty, and application of the adaptive implementation framework.</p> <p>Please see Master Response 3.1, Fish Protection, for an explanation of how unimpaired flow with adaptive management is a functional flow approach. Please also see Master Response 3.1 for an explanation of how the analysis in the SED did not use unimpaired flow as a representation of natural flow conditions.</p>
1270	37	[From ATT1:] The Alternatives Analysis is Inadequate to Allow for Informed Comparison.	Please see Master Response 1.1, General Comments, regarding the programmatic approach and analyses in the SED and a general discussion of the scope and methods of the impact analyses. Please see Master

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		<p>The alternatives analysis is critical to the informational purposes and legal adequacy of an EIR. (In re Bay Delta Programmatic Environmental Impact Report Coordinated Proceedings (2008) 43 Cal.4th 1143, 1162-1163; CEQA Guidelines, § 15126.6.) Indeed, the discussion and meaningful consideration of alternatives to the proposed action lies at "the core" of an adequate CEQA review. (Citizens of Goleta Valley v. Board of Supervisors (1990) 52 Cal.3d 553, 564 [range of alternatives in a CEQA document is intended to provide the public and decision makers with meaningful choices]; Laurel Heights Improvement Association v. Regents of the University of California (1988) 47 Cal.3d 376 [CEQA document's major purposes include ensuring that the lead agency thoroughly assesses all reasonable alternatives to the proposed action].)</p> <p>The "public agency bears the burden of demonstrating that, notwithstanding a project's impact on the environment, the agency's approval of the proposed project followed meaningful consideration of alternatives and mitigation measures." (Cal. Clean Energy Com. v. City of Woodland (2014) 225 Cal.App.4th 173, 203.) Particularly given the State Water Board's characterization of its approach to the draft amendments as "programmatic" under CEQA, the range of potentially feasible alternatives and the depth of their consideration should be the heart of the SED. (Ibid.; CEQA Guidelines, § 15168(b)(1).) Yet, in the SED as drafted, an unduly narrow statement of the project purpose and the lack of meaningful information in the project description and objectives carries fundamental defects forward into the alternatives analysis.</p>	<p>Response 2.1, Amendments to the Water Quality Control Plan, regarding a description of the plan amendments (i.e., the project description), the goals and objectives of the plan amendments, and the scientific basis for the plan amendments. Please see Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, regarding the range of alternatives.</p>
1270	38	<p>[From ATT1:] The Goals and Objectives of the Project are too Narrowly Drawn and Lead to an Unreasonably Constrained Alternatives Analyses.</p> <p>Under CEQA, the SED "must include a clear statement of 'the objectives sought by the proposed project,' which will help the lead agency 'develop a reasonable range of alternatives to evaluate in the [environmental document] and will aid the decision makers in preparing findings or a statement of overriding considerations, if necessary.'" (San Joaquin Raptor Rescue Center, supra, 149 Cal.App.4th at pp. 654-655, quoting CEQA Guidelines, §15124(b).) Project objectives are crucial to proper consideration and analysis of the proposed action, especially in relation to the formulation and evaluation of potential alternatives.</p> <p>The SED's statement of objectives frustrates CEQA's basic purposes because it lacks biological goals or other specifically articulated water quality objectives against which to compare anticipated outcomes of the proposed action and a range of potentially feasible alternatives. (CEQA Guidelines, § 15124(b); In re Bay-Delta, supra, 43 Cal.4th 1143, 1166 [lead agency may not give a project's purpose an artificially narrow definition such that the range of alternatives to the proposed action is unduly constrained]; County of Inyo v. City of Los Angeles (1984) 160 Cal.App.3d 1178, 1186 [proposed action cannot be defined to set up "a CEQA turkey shoot"].)</p> <p>The SED goals and objectives unreasonably limit the alternatives to the months of February through June, limit the alternatives to only three of the tributaries in the watershed (the Stanislaus, Tuolumne, and Merced Rivers); and limit flows to those that ". . . mimic the natural hydrographic conditions to which native fish were adapted." (Recirculated SED, at pp. 3-1-3-3.) A number of alternatives could offer an equivalent or better contribution to improved salmon viability but in a more water efficient and practical (and thus less impactive) manner than unimpaired flow, but were precluded from consideration because</p>	<p>Please see SED Executive Summary and Chapter 3, Alternatives description, which both describe the project and the alternatives. SED Chapter 3 also describes how the alternatives were selected based on very specific goals and that the alternatives are supported by Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity objectives. Please also see Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments for a discussion of the SED's inclusion of a reasonable range of feasible alternatives.</p> <p>Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments regarding the project description and project goals and the February through June time period. Please refer to Master Response 1.1, General Comments, for responses to comments regarding adequacy of the CEQA document.</p> <p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, and Master Response 2.2, Adaptive Implementation, for responses to comments regarding the geographic scope of the Bay-Delta Plan and the plan amendments, program of implementation, adaptive methods, biological goals, the STM Working Group, the San Joaquin Monitoring and Evaluation Program, and justification of the plan amendments.</p> <p>Please refer to Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30 and Master Response 3.1, Fish Protection, regarding SalSim and the SalSim use advisory. The State Water Board did not rely upon SalSim, either for impact determinations in the SED or for its conclusions regarding fish benefits.</p>

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		<p>of the overly narrow goals and objectives.</p> <p>For example, alternative flow patterns to the "unimpaired flow" regime, as well as non-flow actions such as habitat and floodplain restoration to improve the food web, could provide equivalent or better fishery benefits. (See Baxter et al. 2010: Figure 8; Delta Stewardship Council 2016). [Footnote 13: As noted above, the Recirculated Draft SED fails to identify any biological goals or performance standards or specifically articulate any other meaningful project objectives against which to compare anticipated outcomes of the proposed action and a range of potentially feasible alternatives. (See Recirculated Draft SED, at pp. 3-1-3-3.)</p> <p>According to Chapter 19, Figure 19-13, it appears that the primary benefit of 40-50% unimpaired flow is an increase of approximately 1,100 Fall-run Chinook Salmon, a non-listed fish species. (Recirculated Draft SED, Figure 19-13.) The SED violates CEQA because its statement of project objectives and alternatives analysis provide no information as to whether this benefit serves the fundamental project purpose, and no information regarding potential options to achieve the same increase in fish population while avoiding or substantially reducing the environmental impacts of the proposed action. (CEQA Guidelines, §§ 15124(b), 15126.6.)</p> <p>To comply with CEQA, the SED must include these options as alternatives and state meaningful project objectives--criteria that link the proposed action and alternatives to achievement of the agency's fundamental purpose to reasonably protect fish and wildlife beneficial uses--as the basis for comparing their impacts and benefits. The SED's calculated selection of a truncated project concept is "not an abstract violation of CEQA," but rather, a failure to proceed "in a manner required by law." (County of Inyo, supra, 71 Cal.App.3d at p. 200, quoting Pub. Resources Code, § 21168.5.) The "impermissibly truncated" and unstable project description in the SED also unlawfully skewed the assessment of alternatives.</p> <p>As drafted, the SED lacks any substantiated evaluation of the impacts or effectiveness of the preferred alternative in relation to meaningful project objectives or to other potential courses of action. (Recirculated SED, at pp. 3-1-3-3.) The SED fails to provide any analytical basis for its comparisons of environmental impacts and benefits, and as a result, the SED's range of alternatives and comparison of their relative merits is manifestly unreasonable. (City of Maywood v. Los Angeles United School District (2012) 208 Cal.App.4th 362, 420; see Kings County Farm Bureau v. City of Hanford (1990) 221 Cal.App.3d 692, 730-737 [general qualitative comparisons such as "greater than" or "lesser impacts" than the proposed action are not adequate].) The SED provides no basis for genuine comparison, leaving the public and the decision makers unable to determine whether the draft amendments or alternatives can feasibly accomplish the objectives.</p> <p>In Appendix K, the State Water Board explains that biological goals will be developed to measure the viability of salmonids. The State Water Board specifies that the biological goals that will inform the adaptive methods will address the four parameters of abundance, productivity, spatial structure, and diversity. While they mention that these goals will be used for adaptive management, the State Water Board never uses these biological goals in their comparisons of alternatives in the SED. Biological goals should be developed and utilized in comparisons of alternatives to determine which alternative best supports the viability of each salmonid population.</p>	
1270	39	[From ATT1:] The Draft SED Fails to Analyze Reasonable Alternatives to a Flow Objective.	Please see response to comment 1270-7.

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		<p>The SED analyzes a single, flow-centric approach, to protect fish and wildlife beneficial uses. This analysis is manifestly unreasonable because it does not provide an analysis of the "reasonable alternatives" to a flow objective, or even any criteria against which to measure the effectiveness of flow objective alternatives. (23 C.C.R. § 3777, subd. (b)(3); City of Maywood, supra, 208 Cal.App.4th at p. 420.) "Reasonable alternatives" to the flow objective are any alternatives that could accomplish most of the basic goals of the amendments to the water quality control plan. (CEQA Guidelines, § 15126.6(c).) In reviewing and amending a water quality control plan, the State Water Board's fundamental goal and statutory mandate is to establish water quality objectives that in its judgment will ensure the "reasonable protection of beneficial uses. . ." (Wat. Code, § 13241.)</p> <p>Thus, in seeking to establish water quality objectives that will ensure the reasonable protection of fish and wildlife beneficial uses, the State Water Board must take a broad view, and consider a variety of factors, including the environmental characteristics and quality of the waters under consideration. (Ibid.) To achieve the basic goal of providing for the reasonable protection of fish and wildlife beneficial uses, the State Water Board should consider the various water quality characteristics or constituents that affect such beneficial uses and establish reasonable water quality objectives for those characteristics or constituents.</p> <p>Because the SED's statement of objectives is skewed, the SED fails to analyze reasonable alternatives to the proposed action that could feasibly accomplish the basic goal of providing for reasonable protection of fish and wildlife beneficial uses, and which could avoid or substantially lessen the significant effects of flow objective alternatives. The range of alternatives needs to be expanded to include an analysis of non-flow alternatives that could provide for the reasonable protection of fish and wildlife beneficial uses.</p>	
1270	40	<p>[From ATT1:] The SED Fails to Analyze Reasonable Alternatives to "Mimicking the Natural Hydrograph" or to the "Unimpaired Flow" Regime.</p> <p>The SED evaluates four "alternatives" for LSJR flows during the February-June time frame, including the No Project Alternative (LSJR Alternative 1) and three other LSJR Alternatives (LSJR Alternatives 2, 3, 4). (SED, at p. ES-14.) However, LSJR Alternatives 2, 3, and 4 all contain the same narrative objective and only differ in terms of the percentage of unimpaired flow specified in the program of implementation for each of the "alternatives." The SED states that these unimpaired flows provide a "range" [which] "allows for the evaluation of alternatives that would attain the project's objective of providing inflows while also reducing any significant effects of the project." (SED, at p. ES-14.)</p> <p>However, the SED fails to analyze other, reasonable alternatives that do not use the "unimpaired flows" approach. By limiting the alternatives analyzed to percentages of "unimpaired flow" the SED constrains the State Water Board's ability to evaluate whether there are alternative flow regime approaches that could potentially reduce the significant impacts associated with the various unimpaired flow alternatives. Alternative approaches could include, for example, approaches that examine the essential physical and ecological processes necessary to support native fish populations and the actions necessary to provide those processes.</p> <p>There are at least two alternatives to percent-unimpaired-flow that warrant consideration, particularly since they were identified by Delta Independent Science Board ("ISB") (Oral Comments, 12-Jan-2017): statistical approaches and the "functional flow" approach. The</p>	<p>Please refer to Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, regarding the development of alternatives and the reasonable range of feasible alternatives and the State Water Board's discretion, as CEQA lead agency, to establish the purposes and needs of the plan amendments, including consideration of the feasibility of commenter-suggested plans and proposals.</p> <p>Please see Master Response 1.1, General Comments, regarding the public comment period and hearing dates for the Recirculated Draft Substitute Environmental Document in Support of Potential Changes to the Water Quality Control Plan for the San Francisco Bay-Sacramento/San Joaquin Delta Estuary: San Joaquin River Flows and Southern Delta Water Quality. To review responses to comments submitted by other entities within the comment period on the 2016 Recirculated Draft SED, please review to the index of commenters in Volume 3 to locate the letter number(s) of interest.</p> <p>Please see response to comment 1270-3. The Delta Independent Science Board (DISB) meeting held on 1/12/17 (<a href="http://deltacouncil.ca.gov/event-detail/13960">http://deltacouncil.ca.gov/event-detail/13960</a>) and DISB comments do not refer to plan amendments but instead refer to the Sacramento Bay-Delta watershed update. The Recirculated Draft Substitute Environmental Document for the San Joaquin River Flows and Southern Delta Water Quality was not on the agenda for the 1/12/17 DISB meeting and comments provided by DISB do not apply to the SED addressing San Joaquin Flows and Southern Delta Water Quality.</p> <p>Regarding the alternative approaches suggested by comment, the LSJR alternatives evaluated in the SED include different higher, more variable flows based on the unimpaired hydrograph, which can entail a broad range of potential flow functions (see Appendix C, Scientific Basis for Developing Alternative San Joaquin River Flow Objectives). Implementation of the plan amendments does not preclude the potential application of various experimental or analytical approaches to link specific attributes of the flow regime with fish</p>

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		<p>Delta ISB requested the State Water Board staff write sections and include them in the Draft Revised SED evaluating these two approaches.</p> <p>Statistical Approaches:</p> <p>Statistical approaches could use several lines of analysis to address instream flow and other needed management actions. There are numerous studies that evaluate the relationship between flow and particular fish population parameters. These studies could be summarized in each area of interest including the three east-side salmon-bearing tributaries of the SJR and the SJR mainstem. Flow recommendations could be provided from these approaches for each species and life stage in all of the areas of interest for which information exists. Data gaps could be identified and special studies could be specified by State Water Board that are needed to complete the update for the LSJR alternatives.</p> <p>Another potential statistical approach that has been used in the Central Valley of California is Ecosystem Diagnosis and Treatment (EDT; ICF International, Portland, OR). EDT has been applied in the SJR already (SJRRP 2010; ICF International 2014). The habitat from Friant Dam to the SJR confluence with the Merced River has been explicitly modeled. The river segments downstream have been modeled with multipliers from the Merced River to Vernalis. The Delta and the ocean modules have also been modeled to get adult return predictions for Chinook salmon for the Reach 2B alternatives for the San Joaquin River Restoration Program (Ibid.). The SJR habitat segments from the Merced River to Vernalis could quickly and easily be modeled.</p> <p>Furthermore, EDT could be applied in each of the three east-side salmon-bearing tributaries of the SJR. The results from EDT provide a ranked set of restoration priorities and limiting factors that are most likely to recover salmonid populations, e.g. improve temperature conditions in a particular reach in a specified time period. In addition, EDT will rank flow parameters for each life stage; this ranking would be for those flow parameters that could be changed to recover salmonid populations. Thus, EDT provides a framework to rank the most important restoration actions for salmon recovery: riparian improvements, connectivity improvements (e.g. floodplain connection), channel stabilization, temperature parameters (e.g. coldwater dam releases), changes in predation (e.g. predator removals), and flow parameters.</p> <p>Furthermore, EDT does this for every life stage and species of interest. Because EDT has been applied on San Joaquin River (ICF International 2014) and could be quickly adapted to all of the SJR and the three east-side tributaries and because of its successful use in Butte Creek (Butte County, CA), EDT seems a vital modeling framework to apply as an alternative to the unimpaired flow approach.</p> <p>The third statistical approach that could be considered is the Indicators of Hydrological Alteration (IHA) approach (Richter et al. 1996). IHA statistical methodology could be applied to three east-side salmon-bearing tributaries of the SJR and the SJR mainstem. IHA would identify which of 33 metrics of flow alteration are the most severe for each area of interest. Then, these results could be used to fine tune how a new flow prescription could be specified.</p> <p>Functional Flows:</p> <p>Yarnell, et al. (2015) recently elaborated the functional flow approach. They suggested that</p>	<p>population responses as part of adaptive implementation. Tailored flow regimes for each tributary or each species life stage, as suggested by comment, would be based on information developed by the STM Working Group and implemented through adaptive implementation. Please see Master Response 2.2, Adaptive Implementation, for a description of how adaptive implementation can respond to changing information and changing conditions; maximize the habitat, temperature, and other benefits achieved through the narrative and numeric objectives; and support scientific experiments that are intended to assess the benefits of different flow regimes.</p> <p>Regarding the suggestion to use alternative statistical or functional flow approaches, please see Master Response 3.1, Fish Protection, regarding the use of best available science; justification and description of the plan amendments for protecting fish; and the benefits of the plan amendments (including unimpaired flow and functional flow).</p>

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		<p>rather than trying to mimic the historic natural flow regime that specific components of the natural flow regime be identified and retained. These components directly relate to process-based parts of the flow regime and some of their examples include: "wet-season initiation discharges, peak magnitude flows, recession flows, dry-season low flows, an interannual variability."</p> <p>The functional flows approach was used successfully on the Yuba River (HDR 2007). The Yuba Accord was a collaborative process representing most of the fisheries agencies, water users, and other agencies and took place over a period of approximately two and a half years (Ibid.). A The Yuba River technical team developed these discharge schedules without consideration of existing regulatory requirements or historic requirements. This allowed development of a new set of flow schedules based on a Stressor Matrix, scientific considerations, basic operational constraints, and hydrologic probabilities.</p> <p>While the State Water Board provides no analytical methods for determining the flow schedule that will be prescribed across February through June, functional flows analysis is a rich area of study and example approaches can be drawn from many recent studies. Various approaches have been used to develop relationships between flow characteristics and biological response. Examples include use of habitat suitability models that relate flow change to requisite habitats for target taxa (e.g., MesoHABSIM, Parasiewicz et al. 2013; and PHABSIM, Beecher et al. 2010); establishment of functional flow regimes to support species of management concern (McClain et al. 2014, Yarnell et al. 2015); and use of statistical ranges of sustainability based on unaltered hydrographs (Richter et al. 2011).</p> <p>ELOHA Approach:</p> <p>One such method that brings together concepts from several of these approaches is entitled the Ecological Limits of Hydrologic Alteration (ELOHA) framework (Poff et al. 2010; <a href="https://www.conservationgateway.org/ConservationPractices/Freshwater/EnvironmentalFlows/MethodsandTools/ELOHA/Pages/ecological-limits-hydrolo.aspx">https://www.conservationgateway.org/ConservationPractices/Freshwater/EnvironmentalFlows/MethodsandTools/ELOHA/Pages/ecological-limits-hydrolo.aspx</a>). The ELOHA framework uses a variety of hydrologic and biologic tools to determine and implement environmental flows at the regional scale. Results of the ELOHA analysis can inform management decisions, such as release rates from dams, reservoirs or basins, diversion volumes for irrigation or water re-use, or flows associated with stream restoration. Because the ELOHA framework provides a way to assess the effect of flow alteration on the condition of biological communities (vs. individual taxa) on a regional basis, it is a useful approach for setting targets across a wide range of geographies and stream types where comprehensive detailed site-specific investigations are not practical.</p> <p>FDA Approach:</p> <p>The field of functional data analysis (FDA) is a growing area of statistical research that provides an alternative way forward for river ecologists and managers looking for methods to address questions of flow ecology (Stewart-Koster et al. 2014). The FDA approach uses functional linear models to capture the entire hydrograph as a predictor variable to identify relationships between single observations of fish abundances and river flow over the course of a year (Stewart-Koster et al. 2014). This solves the problems of selecting a subset of flow metrics and quantifies a direct link between fish in the stream and the river flow they experienced. The models can provide managers with a specific understanding of the timing, magnitude and duration of ecologically important flow events to replicate when setting environmental flow standards. In addition, functional models may provide a valuable tool</p>	

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		<p>for ecologists seeking to explore the flow-ecology relationships of poorly understood species.</p> <p>The State Water Board seems to imply that the unimpaired flow approach is the only solution, thereby ignoring the numerous flow prescription approaches already described in the literature and successfully applied throughout the world. (See Section 19.1.2). For example, a major reference that the State Water Board relies on to support a more natural flow regime, and ultimately to support its unimpaired flow approach, actually implemented a functional flows approach to develop a flow regime. The flow regime implemented in Putah Creek, CA, as described by Kiernan et al. (2012) and referenced by the State Water Board on page 19-5 of Chapter 19, was developed using a functional flows approach (described as ecosystem-based flows by Moyle et al. 1998).</p> <p>Kiernan et al. (2012) and Moyle et al. (1998) describes the approach that the Putah Creek Accord took to achieve a more natural flow regime, specifically by mandating functional flow measures, including pulse flows to attract and support anadromous fishes and reduce numbers of exotic species not adapted to extreme flow events, baseline flows to maintain spawning and rearing habitat, and drought flow requirements to ensure permanent stream flow during dry years. However, the State Water Board does not acknowledge the approach taken in Putah Creek to achieve more a more natural flow regime, erroneously citing the Putah Creek project as support for their unimpaired flows approach.</p> <p>Similar to Putah Creek, the State Water Board cites multiple papers from Dr. LeRoy Poff of the Colorado State University Stream Ecology Lab to support a more natural flow regime, (SED, at p. 19-7 and 19-8); however, the incorporation of these papers fails to draw on the actual approach developed by Poff et al. (2010) to inform the development of environmental flows. The Poff et al. (2010) paper that the State Water Board cites presents a consensus view from a group of international scientists on a new framework for determining environmental flow needs on a regional scale. The framework that Poff et al. (2010) describes, called the ecological limits of hydrologic alteration (ELOHA), is a well-crafted synthesis of environmental flow methods that provides scientists, water-resource managers and stakeholders with a detailed approach to analyze and synthesize available scientific information into ecologically based and socially acceptable goals and standards for management of environmental flows.</p> <p>This approach is not only detailed in Poff et al. (2010) but example applications are available throughout literature, including a recent application in the San Diego River watershed (Stein et al. 2016), the Upper Tennessee River (McManamay et al. 2013), a Mediterranean river basin (Solans and Garcia de Jalon 2016), and Australian river systems (Swirepik et al. 2015). Instead of specifically drawing from this fully developed approach for prescribing environmental flows, the State Water Board fails to mention the recommended approach of Poff et al. (2010) and others; instead the SED uses the literature to support their approach of unimpaired flows.</p>	
1270	41	<p>[From ATT1:] The SED fails to serve its fundamental purpose as an informational document for the decision makers as well as the public, because it offers no evaluation of alternatives for how to get the most good from use of the limited water available. Carryover storage in reservoirs will obviously be affected in many years and there is no consideration of how that should affect choice of amounts and duration of flow prescriptions. The tradeoffs to fish of spreading the use of water across 5 months rather than focusing on specific functions are</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments regarding substantial evidence, adequacy of the SED, program-level-document and program-level analyses.</p> <p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments regarding unimpaired flow and functional flow, carryover storage, February through June time period, justification of the plan amendments and consideration of beneficial uses. Please also see Master Response 1.2, Water Quality Control Planning Process, for responses to comments regarding consideration</p>

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		<p>not discussed.</p> <p>Use of a salmon lifecycle model and/or other analytical tools is needed to assess the relative contribution of various elements of the proposed management strategies and the associated predictions of biological benefits to the population dynamics of the target species. For example, rather than providing higher sustained flows over extended periods during the February-March period for fry migration the application of short-duration pulse flow migration cues may be a more effective management strategy. Results of these comparative analyses would be useful in identifying substantial differences in management strategies that impacts how water operations could support productive salmon runs.</p>	<p>of beneficial uses. Please refer to Master Response 2.2, Adaptive Implementation regarding the flexibility in the program of implementation to use adaptive adjustments to maximize unimpaired flow benefits. Please see Master Response 3.1, Fish Protection, regarding unimpaired flow and functional flow, February through June time period, and estimated benefits to fish resulting from the plan amendments.</p> <p>Please see Master Response 3.2, Surface Water Analyses and Modeling, regarding carryover storage.</p>
1270	42	[ATT2: Delta Independent Science Board’s Review of SWRCB’s "Working Draft Scientific Basis Report for New and Revised Flow Requirements on the Sacramento River and Tributaries, Eastside Tributaries to the Delta, Delta Outflow, and Interior Delta Operations." February 2017.]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1271	1	<p>This letter is submitted to express my opposition to increasing unimpaired flows on the San Joaquin River tributaries, especially the Tuolumne River.</p> <p>I have been a resident of Modesto, CA since 1998 and believe this region has benefited from the thoughtful and careful stewardship by our local agencies of surface water (Tuolumne River) and ground water (Modesto subbasin). I believe the flow changes proposed by the draft revised Substitute Environmental Document (SED) will result in a very lopsided outcome:</p> <ul style="list-style-type: none"> <li>* significant, negative impacts to area homes, businesses and agriculture</li> <li>* insignificant, positive impacts to the environment.</li> </ul>	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1271	2	More Flow. Why is flow the only tool in the toolbox? What about non-flow options such as hatcheries and suppressing predation? If more flow = more fish, don't the numbers of all fish increase, including predators? Yet more salmon is the net result?	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1271	3	Adaptive Management. Unimpaired flow is the metric for determining the amount of water, but the delivery of that water to the environment would be shaped and timed. Carryover storage is assumed (required?) to be available, which reduces (impairs) the availability of reservoir storage for non-environmental uses. Does the Tuolumne’s natural flow regime have carryover?	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1271	4	Groundwater Availability. Adequate groundwater is assumed to be available to offset the reduced delivery of surface water. However, surface water use contributes to maintaining and recharging groundwater. If surface water becomes less available, how can groundwater use simultaneously increase and be sustainable?	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1271	5	Environmental Use. Ostensibly, increased flow is for environmental purposes. Does the plan guarantee that the additional flow from the San Joaquin will go into the delta and then go out to the ocean? Or is that water "fair game" for other use(s) once it gets to the delta?	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1271	6	Sequence of Action. The plan sets up a process whereby expectations of flow levels are	Please see Master Response 1.1, General Comments for responses to comments that either make a general

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		established in advance of and separately from what existing law and policy (ex: water rights, groundwater management) may ever allow. This appears to be putting the cart before the horse and hopefully won't become a very costly thought exercise.	comment on the plan amendments or do not raise significant environmental issues.
1271	7	The Best Solution. The plan is described as a measured action which is needed to protect the delta. The summary states that failure to act now (accept this plan) could result in more draconian measures in the future. It appears we are being asked to make a deal with the devil we know versus the devil we don't know. Is this plan really the best solution available?	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1272	1	The State has a significant number of key water policy initiatives and projects that are moving at differing speeds at the same time. This includes, but is not limited to the Administration's California Water Action Plan, the Sustainable Groundwater Management Act (SGMA), the California WaterFix, the expenditure of Proposition 1 dollars by the California Water Commission for storage, and the development of the California Water Plan Update 2018. It is imperative that none of these efforts or future proposed efforts are looked at in isolation as California looks to increase water conservation and water use efficiency through improved water resource management for the 21st Century. Rural County Representatives of California (RCRC) does not believe that addressing unimpaired flows in virtual isolation meets the criteria for successful water resource management moving forward.	Please see Master Response 3.4, Groundwater and the Sustainable Groundwater Management Act regarding SGMA. Please see Master Response 1.1, General Comments regarding California WaterFix and other statewide plans, policies and programs.
1272	2	In 2014, landmark water legislation – Senate Bill 1168 and Assembly Bill 1739 –established SGMA, provided a framework for local agencies, including counties, to develop plans and implement strategies to sustainably manage groundwater resources within a defined period. The suggested flow requirements in the SED could be detrimental to achieving sustainable groundwater management within the San Joaquin Valley basins by constraining the opportunity to access flows for recharge purposes, particularly in “wet years”. This would significantly undercut the efforts of local agencies which are working to meet their statutory requirements under SGMA and, more importantly, working to improve the Valley's groundwater health for environmental and economic purposes. Therefore, it is very concerning to see the draft SED suggest to water users, disadvantaged by the proposed increase in unimpaired flows, to look to groundwater as an alternative source. This is expressly contrary to SGMA's intent as well as our collective desire to see California's groundwater continue to serve as a critical resource in meeting our water supply needs.	Please see Master Response 3.4, Groundwater and the Sustainable Groundwater Management Act, for discussions on the potential for increased groundwater pumping, SED consideration of SGMA, and compliance with SGMA in the context of the plan amendments. Please see Master Response 2.7, Disadvantaged Communities, for discussion regarding the plan amendments as they relate to disadvantaged communities.
1272	3	<p>Throughout much of the San Joaquin Valley, agriculture is a critical economic driver and we fully expect the draft SED would exacerbate the difficulties these communities have experienced through increased unemployment and drought. Also, this would undermine the work of the local agencies in implementing SGMA. Rural County Representatives of California (RCRC) is concerned that the SWRCB's assessment of the potential economic impacts of the SED is too narrow in scope and does not account for the water supply reliability, sustainability and volatility challenges that does and will continue in the affected counties.</p> <p>This concern seems to be confirmed by the economic study commissioned by several of the affected counties and prepared by Stratecon Inc. in 2016. According to the analysis done by Stratecon, the economic impacts within the Study Area of the proposed SED flow objectives is substantial and derives from a combination of:</p> <p>A) reduced crop production;</p>	<p>Please see Master Response 8.2, Regional Agricultural Economic Effects, for discussion of economic analysis performed by Stratecon, Inc.</p> <p>Please see Master Response 3.4, Groundwater and the Sustainable Groundwater Management Act, for discussion of SGMA compliance.</p> <p>Please see Master Response 8.1, Local Agricultural Economics Effects and the SWAP Model, regarding the scope of the agricultural economic analysis and potential long term effects of reduced water supply availability.</p>

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		<p>B) reduced output by enterprises relying on that crop production as key inputs (e.g. dairies);</p> <p>C) increased costs of pumping incurred by irrigators and communities;</p> <p>D) reduced lake recreation visitor spending; and</p> <p>E) reduced hydropower generation values.</p>	
1272	4	<p>Rural County Representatives of California (RCRC) is also concerned that the data upon which the proposed flow criteria are based do NOT seem to reflect the data and science developed by the Delta Stewardship Council (DSC) and the Delta Independent Science Board (Board). The State has expended tremendous energy and funding in the development of the work produced by the Board to meet the DSC's co-equal goals of environmental health and water supply reliability. Ignoring the robust volume of work emanating from this effort not only discounts these investments, but also discounts the most contemporary, peer-reviewed work available as we all struggle to address the issues that bedevil this key West Coast Estuary. RCRC encourages the SWRCB to incorporate this body of work as it works to a final version of the proposal.</p>	<p>Please see Master response 1.1, regarding general methods and modeling used in the SED, including use of best available science and information. The State Water Board acknowledges there is more than one way to approach modeling and analysis and there are many data sources available. The State Water Board strived to use the best available science and information throughout the SED; the modeling and analyses are credible, because they are based on reasonable assumptions and allow comparative analyses between baseline and alternative conditions.</p>
1272	5	<p>In our [Rural County Representatives of California] experience at the local level, regulatory solutions do not seem to be working well, nor are they achieving the outcomes associated with their adoption. Moreover, regulatory approaches have proven to lack the flexibility to manage a vibrant ecosystem and achieve the desired resource health. Therefore, we encourage the SWRCB to aggressively pursue negotiated agreements with the affected parties to achieve the functional flows that are sustainable, contribute to species health in the Delta, and improve overall ecosystem viability. Furthermore, this approach is in concert with the California Water Action Plan (which specifically calls for a collaborative and coordinated approach to water management in the State) and the Governor's September 19, 2016 letter directing agencies to pursue negotiated agreements.</p>	<p>Please see Master Response 1.1, General Comments, and Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments by the State Water Board supporting voluntary agreements.</p>
1272	6	<p>The near catastrophic dam event in Oroville, the recent drought, flooding throughout the state and even the mudslides that are largely a result of too much precipitation on areas burned by wildfire all speak to the fragile and fragmented nature of our water resources. This set of circumstances re-enforces the need for an integrated approach which the unimpaired flow approach clearly does not address.</p>	<p>Please refer to Master Response 1.1, General Comments for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues.</p>
1273	1	<p>Currently, we are unaware of the exact amount of unimpaired flow in the Delta Estuary, however we are aware the current amount of freshwater entering the Delta Estuary is not enough to sustain and save the salmon from extinction.</p> <p>As mentioned in the October 26, 2015 letter to Chair Felicia Marcus main authored by Bill Jennings and his coalition, unimpaired flow is feasible and it is the only viable solution to saving the salmon population. In 2010, some of the leading scientist on this subject have scientifically concluded that we must implement a policy of unimpaired flow to save the salmon. We are now in March of 2017, nearly seven years have elapsed since the scientific report was released. In other words, there has been inaction for the past seven years.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1273	2	<p>I am mindful that Board has a difficult job and that allocating water resources is no easy</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>

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		<p>task. However, I ask that Board makes with full confidence any and all hard decisions to</p> <p>problems that can no longer be ignored. One of the hard decisions is set to unimpaired flow levels. I ask the Board to set the unimpaired flow limit to initially 65%, with the option to later raise the levels of unimpaired flows to 80% if need be. To protect farmers , this needs to be done in phases. Firstly, farmers should be given an eighteen month grace period to adjust to less water, this adjustment could include, but not limited to changing crops, reducing acreage planted or whatever else they deem feasible. During these eighteen months, the unimpaired flow should be set at thirty percent. After the eighteen months have elapsed, the unimpaired flow should be set at fifty percent for a period of nine months. After those nine months have elapsed, the unimpaired flow should be set to sixty-five percent for a period of twelve months. During this entire time, the Board will have commissioned a third party (maybe even those who wrote the original report in 2010) to monitor the salmon population. If the third party concludes that the salmon need more water, the Board should increase the unimpaired flow to eighty percent for a period of another twelve months and continue to monitor salmon populations.</p>	
1273	3	<p>Congressman Devin Nunes of the 22nd District of California, once remarked that the salmon are a lost cause and even if we reserve all of the water to them, there is no saving their species. However, I respectfully disagree with Congressman Nunes and urge that Board do the same. Other opponents may argue that an allocation of water to save the salmon is a violation of Article X, section II of the California State Constitution, however they are incorrect. Allocating the water to almond farmers is reckless use of water. In comparisons, almonds can use up to 22x more water than other crops. Almond farmers should not be punished for wanting to make a profit, we do live in a capitalist society in which profit is encouraged (in fact water in California is referred to as "liquid gold"), however they must not at any cost profit by recklessly using water. Most of the almonds grown in California are exported. The Board in conjunction with the State Legislature must place higher export tariffs. In the Mono Lake case ruling, the California Supreme Court ruled that the Board has an affirmative duty take into consideration the public trust doctrine whenever applicable and to safeguard the public trust by correctly allocating water resources. Applying the letter of the law outlined in the Mono Lake, this Board is legally obligated to implement a policy of unimpaired flow in the lower San Joaquin River to protect the salmon.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1273	4	<p>This is a battle not of the North versus the South, but instead of farmers versus farmers.</p> <p>In addition to having 65% of unimpaired flow into the Delta Estuary, I ask the Board to host and mediate a peaceful conversation between both sides. In this discussion, both sides should not discuss why they need more water than the other, but instead how both parties can work together to solve the water issues of California, whether it is groundwater replenishment or desalination or moving forward with the two tunnels. This is an issue that requires both sides to come together and to work together. Now is not the time nor it never has been to draw the lines and fight one another. The Board plays a bigger role than it thinks in encouraging both sides to not only coexist, but to solve the overarching water issue.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1273	5	<p>If the Board does approve of a plan that is not the most suitable or lacks a definitive reasoning, the US Environmental Protection Agency does reserve the right to veto any plan put forth by the Board. As a friendly reminder, I urge the Board to implement the unimpaired flow allocation plan aforementioned. That in my humble opinion, is the most</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>

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		feasible and necessary solution to this issue. I do not wish the Board to come under the scrutiny of the US EPA or the public by attempting to approve a plan that is not effective. I cannot stress enough the need for an immediate solution and the immediate implementation of that solution.	
1273	6	This is an issue that affects more than the almond farmers or the Salmon fishers or the Board. This affects everyone, people in California, New York and even those abroad. How we conduct ourselves, is how the rest of the world will conduct itself. There are unfortunately countless regions in the world, where there is not a drop of clean water. We here in California must put our water to good use and must work to enable those who do not have any clean water to gain access to it.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1273	7	In my school Biology class I learned that on an average day about two hundred species of animals, insects, plants and other species go extinct. The salmon cannot become a part of that statistic. If the salmon goes extinct, that is irreparable harm. That is unacceptable and we must not have that. The concept of letting the salmon go extinct for the "greater good" of society (or corporations) is foolish and intolerable, I ask this Board to immediately implement the unimpaired flow to 65% (increase to 80% if necessary).	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1274	1	<p>Across our [CA Water Service] service areas, we rely on a combination of surface water and groundwater to provide safe, reliable, and high-quality service to our customers. As both a purchaser of wholesale water from various suppliers and a water rights holder, Cal Water has interests in areas of origin, exports from the Delta, and locally derived supplies. For example, Cal Water relies on locally derived supplies to provide water to about 257,000 customers in our Bayshore and Bear Gulch service areas, which are in the San Francisco Bay Area. Because of certain restrictions under federal law, a reduction in water supply to the Hetch Hetchy water system could significantly impact our ability to serve these customers.</p> <p>As is the case with many water utilities, Cal Water is reliant, in many of our service areas, on the supplies made available by local wholesale agencies. For example, we utilize significant amounts of water from our wholesale partners to serve approximately 171,000 people who live in and around the City of Stockton. In those areas where we are unable to rely on groundwater to supplement the water we receive from local wholesalers, any water supply shortages will directly impact our customers. This is also true in service areas where the future use of local groundwater supplies may be limited by rules and regulations established pursuant to the Sustainable Groundwater Management Act.</p> <p>You are aware of the concerns addressed by many wholesalers that the proposed changes to the Bay-Delta Water Quality Control Plan would have devastating effects on their ability to meet customer demands and that the SED has some scientific infirmities. Our wholesale partners share these concerns. Given our reliance on wholesale supplies, we urge you to continue to work toward a solution that will not ultimately harm the customers we are committed to serving.</p>	Please see Master Response 8.5, Assessment of Potential Effects on the San Francisco Bay Area Regional Water System, regarding the State Water Board’s evaluation of potential reductions in water supply and associated economic considerations and other impacts within the SFPUC Regional Water System (RWS) service area with implementation of the plan amendments. The master response identifies the main points of disagreement or differing assumptions between the SED and the comments. As described in Master Response 8.5, the SED identified reasonably foreseeable actions that could be taken by affected entities to comply with the plan amendments and in response to reduced surface water supplies. These actions did not include the severe mandatory rationing described by SFPUC because it was not reasonably foreseeable that a water supplier would impose drastic mandatory water rationing on its customers without first attempting other actions to replace any reductions in water supplies with alternative sources of water, such as through water transfers. Please also see Master Response 3.4, Groundwater and the Sustainable Groundwater Management Act, for information regarding the plan amendments and SGMA.
1274	2	We truly appreciate the Board making the decision to provide a two-month extension to the 120-day public comment period on the SED. With negotiations regarding a potential solution ongoing and in light of the seriousness of the potential negative consequences of the proposal laid out in the SED, Cal Water respectfully requests that the Board consider further extending the comment period. It is our hope that this additional time will increase the likelihood of negotiating parties reaching a sustainable and equitable solution.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.

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		<p>Cal Water stands ready to work with the Board, parties to the negotiations, and others to reach such a solution. If there is anything we can do to assist you or if you have any questions, please do not hesitate to get in touch with us.</p>	
1275	1	<p>As a native of Northern California 78 years it makes me very sad to see what is being done to our beautiful state in someone's name of progress. Decreasing the flows of the Sacramento and San Joaquin Rivers thru the Delta and bays is crazy! Has any one there heard of the Owens Valley? If not look it up! Do you want to make our beautiful Delta a Salt water, polluted marsh? The fisheries, agriculture, and recreation will all suffer as will the SF bay. For what reason?</p> <p>So corporate farms can plant more thirsty nut crops and fatten their own wallets?</p> <p>It is time to wake up. Every one pays lip service to the environment, especially the state, but this action doesn't meet the test.</p> <p>We live in Discovery Bay and have for 30 plus years and because of the drought we have been afraid to swim in the delta due to the algae bloom.</p> <p>What is the next plan? Drain lake Tahoe? Plenty of clear fresh water there.</p> <p>Please. We do not need less clean river flows into the delta, but more.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1276	1	<p>The California Farm Water Coalition wishes to express its support for workable, holistic, collaborative solutions to meet the challenges facing Sacramento-San Joaquin Bay-Delta water quality- solutions that are not currently achievable through the staff-proposed Bay Delta Plan Substitute Environmental Document (SED). We continue to believe that policies supporting outcomes-oriented actions based in objective science and pursued in a spirit of collaboration with local and State partners will lead to more robust, adaptive, and durable solutions for all stakeholders.</p> <p>During five hearings in Sacramento and the San Joaquin Valley during the SED public comment period, Board Members heard from community leaders, water district professionals, business and finance experts, engineers, biologists, economists, farmers and members of affected communities about the numerous shortcomings found in the current proposal. The hearings teemed with people concerned about the threat to their community, homes, and livelihoods. These voices and faces cannot be ignored.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1276	2	<p>Flow-centric approaches pursued in other places have not only proven to be inefficient and costly, but they often produce adverse impacts not foreseen by those advancing them. One example is the Murray Darling Basin Plan, pursued by Australia in response to an unusually prolonged drought and impacted river systems. While this flow-oriented approach has reallocated water from farms and communities to environmental uses, these uses have yet to deliver the environmental benefits that they sought to achieve. The adoption of a flow-based approach has proven devastating to once productive communities such as Wee Waa, Warren and Collarenebri, now withering for lack of water and the farm-related jobs it supports. Unemployment, farm foreclosures, business closures and strained social services are the ongoing legacy of this approach.</p> <p>With elusive benefits but undeniable cost, water managers in Australia are now beginning to consider implementing "complementary measures," non-flow actions that can improve the</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>

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		<p>efficacy and efficiency of water dedicated to environmental purposes. Complementary measures closely align to the numerous non-flow measures, such as habitat restoration, predator control, and release timing that experts here have recommended the State pursue in meeting the species and ecosystems goals outlined in the proposed SED. The SED advocates for a number of specific benefits of flow for salmonids, such as predation, fish growth, reproduction, and food production, all of which these other non-flow management strategies could achieve.</p> <p>The Board should abandon the current narrow focus in the SED staff proposal and join a team effort to comprehensively address the complex network of factors beyond flow that can help to meet our changing needs. Our state and its waterways are forever and irreversibly changed from their natural condition. Adopting management strategies that promote responsive, nimble actions, based on best-available science and superior monitoring will produce better results for all users and reduce wasteful loss of that water.</p>	
1276	3	<p>Ensuring that all water is put to work to the fullest extent possible requires that measures taken to support one use do so with demonstrable management efficiencies. When one use comes at the cost of another, some effort must be taken to ensure that water is truly being put to work. Human water uses are held to not only a standard of utility, but also mandates on planning, application efficiency, use and allocation measurement. Quantifying the efficiency of environmental uses, such as fishery benefits, would gain from the completion of water management planning and implementation of quantifiable benefit-driven efficient water management practices.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1276	4	<p>We urge the Board to discontinue pursuit of this misguided, unilateral action and instead focus on helping to develop collaborative, comprehensive approaches to improve water resources for all stakeholders, as outlined in relevant legislative directives.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1276	5	<p>The coequal goals of the Delta Reform Act require that California provide a more reliable water supply; a goal the proposed plan fails to do. Instead the proposed plan destabilizes not only the water supply of a region, but the communities and lives built on that supply. Implementing an approach to achieving these coequal goals that protect the people and the communities they have built will require work, but their lives are worth the effort.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1276	6	<p>We strongly urge the Board adopt a course of action that also seeks to foster success, not ensure failure in local efforts to achieve sustainable use of groundwater as required by the Sustainable Groundwater Management Act. Ensuring that sufficient surface water is available to avoid expanding groundwater overdraft into the basins affected prudently avoids the subsidence and overdraft issues caused by surface water delivery curtailment in other parts of the state.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1276	7	<p>California’s water suppliers, cities, counties and other local agencies have an abundance of intelligent and innovative personnel. Reaching out to local experts in these agencies helps harness local expertise the State does not have. Working together as a partner with other State and local agencies is certain to more quickly yield equitable, functional solutions.</p> <p>We look forward to a positive response to the numerous suggestions, plans and offers on the table by local public water agencies that have already demonstrated the kind of success the Board seeks in its Draft Water Quality Control Plan. Working together in a collaborative manner rather than seeking solutions through a regulatory approach will help sustain California’s rural economy and restore the important ecosystem resources that are</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>

**Table 4-1. Responses to Comments**

Ltr#	Cmt#	Comment	Response
		important to all of us.	
1277	1	The SED does not fully analyze/model the potential water quality impacts on the City of Antioch.	Please refer to Master Response 3.3, Southern Delta Water Quality, for further clarification regarding the methodology and area evaluated for analyzing water quality effects of the plan amendments in the southern Delta, in addition to analysis provided in Chapter 5, Surface Hydrology, and Chapter 23, Antidegradation Analysis.
1277	2	The SED does not appear to analyze the impacts of potential upstream increases in agricultural salinity standards in the Southern Delta on Antioch's diversion and water supply. It appears that no analysis was performed to determine the impacts on downstream municipal uses (including the City of Antioch) resulting from such a proposed change in salinity standards (or potential increases in salinity from increased upstream flows from San Joaquin Tributaries). There is no analysis of how such increased upstream salinity would impact downstream municipal water quality when analyzed in the context of the proposed WaterFix Project, which would at times remove higher quality water from the Delta - e.g. limiting dilution of increased upstream salinity on the San Joaquin River by through Delta Sacramento River flows.	Please see the Executive Summary for a description of the Plan Area. The City of Antioch is outside of the Plan Area and the extended Plan Area. Please see Master Response 1.1, General Comments regarding California WaterFix. Please refer to Master Response 3.3. Southern Delta Water Quality regarding the protection of Southern Delta water quality. Also, please refer to Chapter 17, Cumulative Impacts, Growth-Inducing Effects, and Irreversible Commitment of Resources for discussion regarding California WaterFix with respect to cumulative effects.
1277	3	Separate private and confidential settlement processes being conducted outside of the authority and overview of the SWRCB addressing flows upstream of the Delta. All such processes should be addressed by the SED and subject to public hearings and comment.	The importance of voluntary agreements is recognized and acknowledged in the SED. Specifically, voluntary agreements are discussed in the Executive Summary and Appendix K, Revised Water Quality Control Plan. Please see Master Response 1.1, General Comments, and Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments by the State Water Board supporting voluntary agreements and a clarifying discussion regarding the process to consider a voluntary agreement as part of the State Water Board's future proceeding to implement the Bay-Delta Plan.
1278	1	<p>I am writing to state my opposition to weakening the water quality standards of the San Joaquin River. Now, more than ever, it important the we make policies to protect our state's natural resources in order to create a sustainable future for generations to come. Healthy rivers, lead to a healthy delta, which leads to health bays and ultimately to our Pacific Ocean. In the words of Sylvia Earle, "Even if you never have the chance to see or touch the ocean, the ocean touches you with every breath you take, every drop of water you drink, every bite you consume."</p> <p>Please make policies to improve water quality in the San Joaquin River and increase water flows to the California Delta.</p>	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1279	1	The HPOC [Hydropower Operations Committee] acknowledges the significant time, resources, and effort that resulted in the draft SED analysis, but is nevertheless concerned that the document does not accurately capture the energy resource impacts to the CVP.	The commenter makes a general statement regarding the adequacy of the energy and greenhouse gas impact analysis. Please see Master Response 1.1, General Comments, regarding energy and greenhouse gas impacts. Please also refer to Master Response 8.4, Non-Agricultural Economic Considerations, regarding the effects on hydropower generation and revenues.
1279	2	The HPOC [Hydropower Operations Committee] believes that the SED did not incorporate an analytical framework that used the appropriate controlling statutory and administrative regulations and/or operational limitations as applied to the energy sector in California. Therefore, the SED analyses of significant impacts and feasible mitigations are incomplete and possibly incorrect. Specifically, the SED did not discuss or evaluate the Lower San Joaquin River (LSJR) Alternatives in accordance with the current regulatory paradigm as framed by SB 350 (Clean Energy and Pollution Reduction Act of 2015), SB 32 (California Global Warming Solutions Act of 2006: emissions limit), AB 197 (State Air Resources Board: greenhouse gases regulations) and the current grid reliability restrictions resulting from	Please see Master Response 3.2, Surface Water Analyses and Modeling, regarding the modeling of the 82-year period, the adequacy of the model inputs and parameters, and climate change as it relates to the quantitative analysis. Please see Master Response 3.7, Greenhouse Gas Emissions and Analysis, regarding quantifying GHG emissions and the scope and approach of the GHG analysis in Chapter 14, Energy and Greenhouse Gases. Please see Master Response 8.0, Economic Analyses Framework and Assessment Tools, regarding the framework and scope of the economic analyses contained in the SED and the regulatory context for the scope. Please see Master Response 8.4, Non-Agricultural Economic Considerations, regarding the scope and approach to evaluate potential hydropower economic effects. Please also see the response to

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
		<p>over-generation and integrating intermittent renewable resources.[Footnote 2: See e.g., California Energy Commission – Tracking Progress: Resource Flexibility, <a href="http://www.energy.ca.gov/renewables/tracking_progress/documents/resource_flexibility.pdf">http://www.energy.ca.gov/renewables/tracking_progress/documents/resource_flexibility.pdf</a> ; What the duck curve tells us about managing a green grid, <a href="http://www.caiso.com/Documents/FlexibleResourcesHelpRenewables_FastFacts.pdf">http://www.caiso.com/Documents/FlexibleResourcesHelpRenewables_FastFacts.pdf</a>]</p>	<p>comment 1279-3 for more information on SB 350 and Renewable Portfolio Standard (RPS).</p>
1279	3	<p>Impact EG-1: Adversely affect the reliability of California’s electric grid</p> <p>SED evaluation: LSJR Alternatives 2, 3, and 4 (Less than significant/Less than significant with adaptive implementation)</p> <p>SED reasoning: This analysis relied on SWB’s water supply effects (WSE) model to estimate the effects of the LSJR Alternatives on reservoir releases, storage, and diversions. The calculated changes in monthly and annual energy production were inputs to electric grid reliability modeling, which evaluated the potential impacts of the changes on the electric grid reliability under peak load and outage contingency scenarios. Reliability assessments were based on evaluating sub-station voltages and transmission line loadings. A steady state power flow assessment of the California grid was performed to check if reduction in hydropower capacities of the three rim dams would adversely impact the grid reliability. No reliability violations were found except under LSJR Alternative 4. However, the results indicated that a simple re-dispatch of generator facilities would correct the minor violation. The new loading of the analysis element after this re-dispatch was 99.81 percent of the long-term emergency rating. Therefore, there would be no violation after the re-dispatch.</p> <p>HPOC [Hydropower Operations Committee] Comment: The electricity grid analysis should incorporate the impacts of California’s current Renewable Portfolio Standard (RPS).[Footnote 4: SB 350, Clean Energy and Pollution Reduction Act of 2015 (2015).] The SED’s analysis of the power grid is backwards looking, drawing conclusions from historical data that does not reflect current or likely future conditions of the electrical grid, such as the 50% RPS and 40% reduction in GHG emissions from 1990 levels by 2030.[Footnote 5: SB 32, California Global Warming Solutions Act of 2006: emissions limit (2016); AB 197, State Air Resources Board: greenhouse gases: regulations (2016).] A study from the California Independent System Operator Corporation (CAISO) and GE Energy Consulting on the integration of renewable resources into the California power grid identified that hydropower “typically provides a large fraction of the regulation utilized by the CAISO, and is among the most flexible resources available, so anything that impacts its ability to provide the service has a noticeable impact on the market.”[Footnote 6: Integration of Renewable Resources, <a href="https://www.caiso.com/Documents/Integration-RenewableResources-OperationalRequirementsandGenerationFleetCapabilityAt20PercRPS.pdf">https://www.caiso.com/Documents/Integration-RenewableResources-OperationalRequirementsandGenerationFleetCapabilityAt20PercRPS.pdf</a>, at page 42.] As additional renewable energy resources are introduced into the energy grid, “higher levels of renewable resources will increase the overall system variability and uncertainty and need for operational flexibility.”[Footnote 7: Integration of Renewable Resources, at page 22.] Although SED Appendix J references grid reliability and Section J.3.2 summarizes the Ancillary Services Market, there is no indication of the impact resulting from the proposed LSJR Alternatives. Impact EG-1 listed in Section 14 focuses exclusively on transmission when identifying adverse effects to the reliability of California’s electric grid. The CAISO system currently experiences extremely high ramping events as renewable facilities (predominately solar and wind) stop generating, such as in the evening or when wind stops blowing across hundreds of megawatts (MW) of wind turbines. In these events, the renewable energy must be replaced by more flexible generating units quickly enough to ensure that load is served in</p>	<p>Please see Master Response 3.2, Surface Water Analyses and Modeling, regarding hydropower ramping, the increasing use of solar and wind power, potential over-generation in the spring, and evaluation of impacts associated with reduced generation in the summer. Please see Master Response 8.4, Non-Agricultural Economic Considerations, regarding hydropower economics. The State Water Board did coordinate with CalISO early on in the water quality control planning process and CalISO reviewed and commented on information contained in Appendix J, Hydropower and Electric Grid Analysis of Lower San Joaquin River Flow Alternatives (pers. comm. Gowdy). The capacities of the three major hydropower facilities on the eastside tributaries (i.e., New Melones, New Don Pedro, and New Exchequer) exceed 30 MW and as such, are not considered “eligible” renewable resources under SB 350 for the RPS (Table 14-2b, Elevation and Maximum Capacity and Major Hydropower Plants on Eastside Tributaries). Any reductions in hydropower at these facilities therefore would not conflict with the RPS. Any reduction in hydropower generation from small hydroelectric facilities (i.e., facilities with a capacity of 30 megawatts or less) in the extended plan area may directly hinder the state’s ability to meet the Renewables Portfolio Standard (RPS). It is possible that hydropower generation at small upstream or off-stream facilities may be reduced as a result of the LSJR alternatives (Table 14-2a, List of Hydropower Facilities and Section 14.4.4, Impacts and Mitigation Measures: Extended Plan Area). Reductions in hydropower generation at these facilities could conflict with the RPS if certified as RPS-eligible facilities. However, Chapter 14, Energy and Greenhouse Gases, Impact EG-4 evaluates the potential for the LSR alternatives to conflict with state policies and plans adopted to reduce GHG emissions, which would include the RPS. For LSJR Alternative 3 (i.e., plan amendments) the analysis concludes that implementation would result in a significant and unavoidable impact. Similar impact determinations are made for facilities in the extended plan area in Section 14.4.4.</p>

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Ltr#	Cmt#	Comment	Response
		<p>a reliable manner. The CAISO has also reported that between 6,000 and 8,000 MW of over-generation is expected this spring,[Footnote 8: Memorandum to ISO Board of Governors, <a href="http://www.caiso.com/Documents/CEOREport-Feb2017.pdf">http://www.caiso.com/Documents/CEOREport-Feb2017.pdf</a>] which indicates that ramping requirements will become more intense and strongly predicts the continued need for the clean generation and flexibility offered by hydropower.</p> <p>The LSJR Alternatives, which require greater flow volume during the spring months, would result in more hydropower generation in the spring and less in the summer with the dual effect of: (a) increasing curtailment of renewable facilities in the spring, which negatively affects the economic value of resources required for RPS compliance; and (b) less hydropower available in the summer when it is needed most to serve peak load using zero-GHG emission energy.</p> <p>The HPOC recommends that the Water Board coordinate with the CAISO and other state energy agencies to determine the full effect of lost flexibility to the energy grid when combined with the ongoing effort to integrate increasing amounts of renewable capacity to meet the 50% RPS mandate and carbon reduction goals.</p>	
1279	4	<p>Impact EG-2: Result in inefficient, wasteful, and unnecessary energy consumption</p> <p>SED evaluation: LSJR Alternatives 2, 3, and 4 (Less than significant/Less than significant with adaptive implementation)</p> <p>SED reasoning: The SED found that LSJR Alternatives 2, 3, and 4, with or without adaptive implementation, could result in: (a) additional energy consumption by potentially increasing groundwater pumping; and (b) additional energy generation at other facilities to compensate for the loss of hydropower. The SED stated that the increased electricity generation was not inefficient, wasteful, and unnecessary, since it would be generated to maintain the energy supply level that is currently supplied by hydropower.</p> <p>HPOC [Hydropower Operations Committee] Comment: The SED does not adequately evaluate the environmental benefits of hydropower or the deleterious environmental impacts caused by changes in seasonal, daily or even hourly flows. Components of SED Section 14 understate the GHG impact of the proposed LSJR Alternatives. The conclusions reached in EG-2 focus on groundwater pumping and consumptive use of energy, without capturing the full and significant impacts of water usage for power generation. Consumption is not the only consideration recommended under the CEQA Guidelines Appendix F, [Footnote 9: 2016 CALIFORNIA ENVIRONMENTAL QUALITY ACT STATUTE AND GUIDELINES, <a href="http://resources.ca.gov/ceqa/docs/2016_CEQA_Statutes_and_Guidelines.pdf">http://resources.ca.gov/ceqa/docs/2016_CEQA_Statutes_and_Guidelines.pdf</a>, Appendix F: Energy Conservation, at page 276.] and the LSJR Alternatives fail all three criteria for achieving this energy conservation. This is shown in the table on page 4 [ATT 1].</p> <p>In contradiction to CEQA Guidelines Appendix F, the LSJR Alternatives will directly cause an increasing reliance on fossil fuels and decreasing reliance on renewable resources. This will be especially true due to California’s over-generation problem (described below in the Impact EG-3 Comments). Reducing the availability of flexible zero-GHG hydropower will actually cause the curtailing of non-flexible renewable resources like solar and wind. By the very definition provided in the CEQA Guidelines, this curtailment of available renewable energy is wasteful and inefficient. These impacts, which are significant, were not satisfactorily addressed in the SED. And, since the SED incorrectly categorized the impacts as</p>	<p>Please see the response to comment 1279-3 regarding the approach to the hydropower analysis. In addition, the State CEQA Guidelines’ Appendix F energy conservation goals presented in a table within the comment are considered. It is acknowledged in Chapter 14, Energy and Greenhouse Gases, that the LSJR alternatives could potentially result in increased reliance on fossil fuels due to potential increases in groundwater pumping and reductions in hydropower. The potential deleterious effects are increases in GHG emissions that may be associated with the replacement of hydropower energy and increased energy for groundwater pumping using primarily non-renewable generating facilities. These potential impacts were considered under Impacts EG-3 and EG-4 in Chapter 14 and were considered to be significant for LSJR Alternatives 3 and 4. Mitigation measures are then discussed under Impact EG-3 and referenced appropriately under Impact EG-4. Please see Master Response 1.1, General Comments, for a general discussion of mitigation measures discussed throughout the SED.</p>

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Ltr#	Cmt#	Comment	Response
		less than significant, the SED did not include a mitigation analysis.	
1279	5	[ATT 1: Table of CEQA Energy Conservation Goals and Effect of Plan Alternatives]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1279	6	<p>Impact EG-3: Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment</p> <p>SED evaluation: LSJR Alternative 2 (Less than significant/Less than significant with adaptive implementation)</p> <p>LSJR Alternatives 3, 4 (Significant and unavoidable/Significant and unavoidable with adaptive implementation)</p> <p>SED reasoning: The SED calculated the annual GHG emissions generated from: (a) the increased power generation at other [fossil] generation facilities to balance the loss of hydropower production; and (b) the increased energy consumption for groundwater pumping to compensate for the reduction of surface water supply. The total GHG emissions generated by LSJR Alternatives 2, 3, and 4 are compared against a significance threshold of 10,000 MT CO<sub>2</sub>e per year. The impacts of LSJR Alternatives 3 and 4 were deemed significant since GHG emissions would exceed the threshold. The SED stated that a review of GHG mitigation measure guidance documents was conducted to determine if additional actions could be taken to reduce GHG emissions. The listed actions were almost exclusively demand side efficiency measures that would require regulatory action by the Water Board. The SED stated, however, that since the Water Board has limited resources to pursue such actions, the imposition of the identified mitigation measures is infeasible and impacts under LSJR Alternatives 3 and 4 are significant and unavoidable.</p> <p>The Impact Analysis also reviewed various adaptive implementations that involved changing the timing or rate of unimpaired flow and changing the timing of the release of the volume of water within the February–June time frame to other parts of the year. The SED stated that these changes would not affect diversions or groundwater pumping, and on average it would have little effect on hydropower generation. But, neither would any adaptive implementations reduce the impacts under LSJR Alternatives 3 and 4, which would remain significant and unavoidable.</p> <p>HPOC [Hydropower Operations Committee] Comment: The SED discussion of Impact EG-3 overlooked the capability for adaptive management to mitigate GHG emissions. Intermittent renewable generation like solar and wind present challenges to grid reliability because their output fluctuates over multiple time horizons, forcing the grid operator to adjust its day-ahead, hour-ahead, and real-time operating procedures. The dramatic increases in solar generation in California is decreasing the need for mid-day, carbon-emitting generation in the energy market and is also decreasing GHG concentrations in the same timeframe. In contrast, the morning and evening energy demand has consistently driven increases in carbon intensity in the energy market as more fast responding carbon emitting thermal resources (typically, natural gas-fired units) are required to integrate the increasing amount of renewable resources. Another integration challenge is the “overgeneration” that occurs when the generation resources deemed as “must-run” exceed California’s entire electricity load and exports. Hydropower generation serves an important function for integrating solar because it can displace thermal generation that is typically called upon to maintain grid stability. Time-of-day hydropower operations have become</p>	<p>Please see response to comment 1279-4 regarding a discussion of Impact EG-3 in Chapter 14, Energy and Greenhouse Gases, as it relates to hydropower and GHGs. Please see Master Response 3.2, Surface Water Analyses and Modeling, for a discussion of the integration of hydropower and other renewable resources, the use of the ramping ability of hydropower, peaking operations, and the assessment of hydropower effects on GHG emissions.</p> <p>The comment claimed peaking operations would be affected by the LSJR alternatives. However, as stated in Chapter 5, Surface Hydrology and Water Quality, Section 5.4.2, Methods and Approach: “The normal peaking-energy operation of the rim dams would continue under the LSJR alternatives. The only changes to the peaking energy operation would be slightly different hours with peaking energy releases each day during the month according to the monthly changes in the simulated WSE model river flows and diversion flows under the LSJR alternatives.” Adaptive implementation, which is part of the plan amendments, could reduce potential hydropower effects similar to the supply side (operational) measures noted by the commenter. Please see Master Response 2.2, Adaptive Implementation, for more information about implementing adaptive implementation in response to implementation of the plan amendments. The primary purpose of adaptive implementation is the reasonable protection of the beneficial use of fish and wildlife and this is how it was evaluated in the SED. However, as stated in Appendix K, Revised Water Quality Control Plan: “Adaptive implementation could also optimize flows to achieve the objectives while allowing for consideration of other beneficial uses, provided that these other considerations do not reduce intended benefits to fish and wildlife.”</p> <p>The comment claimed increases in GHG emissions would be worse than estimated in the SED because hydropower is needed for electricity generation during the daily period of peak demand, when renewable energy is limited. However, the GHG assessment assumed that the reduction in hydropower generation would be compensated at the baseline, mostly fossil-fuel based, portfolio mix and associated GHG intensity emission factors for associated providers (See Table 14-14, Greenhouse Gas Emission Factors (lb/MWh), in Chapter 14). As discussed in Master Response 3.2, Surface Water Analyses and Modeling, and Master Response 8.4, Non-Agricultural Economic Considerations, when various sources of renewable energy and mechanisms for storing energy become more plentiful under SB 350, lost hydropower would increasingly be more likely to be replaced with renewable energy, and the values found in Table 14-14 would be lower, resulting in even less GHG emissions associated with compensation for the reduction in hydropower generation.</p> <p>The comment stated that operational mitigation for hydropower effects should have been considered to optimize hydropower flexibility. However, as stated above and in Master Response 3.2, it is expected that hydropower facilities would continue to provide peaking power to the maximum extent possible and that hydropower flexibility will be optimized to the extent possible while achieving environmental goals.</p>

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Ltr#	Cmt#	Comment	Response
		<p>increasingly important to achieve state-mandated carbon reduction goals by providing vital regulation of intermittent generation from renewable facilities as well as serving the peak summer demand with no carbon emissions. The graph [ATT 2] uses market heat rate as a proxy for GHG generation to show the normalized February hourly heat rates in 2011, 2013, 2015, and 2017. GHG emissions during peak demand are roughly four times higher than mid-day in 2017. Loss of hydropower and ever-increasing amounts of solar power will only exacerbate this trend.</p> <p>Additionally, time-of-year generation has carbon implications as well. The SED analysis yielded increased hydropower generation in spring and decreased hydropower generation in summer for the LSJR Alternatives. As stated in the CAISO's GHG Emission Tracking Report, there are significantly more GHG emissions in summer months compared to the spring.[Footnote 10: Greenhouse Gas Emission Tracking Report, February 28, 2017, <a href="http://www.caiso.com/Documents/GreenhouseGasEmissions-TrackingReport-February2017.pdf">http://www.caiso.com/Documents/GreenhouseGasEmissions-TrackingReport-February2017.pdf</a>] The hydropower generated by CVP dams represents a sizable percentage of California's GHG-free power generation. Specifically, the New Melones Dam located in the LSJR Watershed is operated to provide generation during periods of peak demand when energy generation from other renewable sources, such as wind and solar, are in decline or unavailable. We estimate that the GHG emissions during average peaking hours in August 2017 will be at least six times higher than during mid-day hours in spring 2017. This trend is expected to increase as California reaches the 50% RPS goal and beyond. Hydropower provided by New Melones Dam is capable of meeting this peak demand, and providing GHG-free energy during a time when it is also most valuable to air quality.</p> <p>The SED's unimpaired flow power sector impact analysis addressed some GHG impacts from increased pumping and facility generation, but the analysis did not capture the increase in time of day and time of year carbon emissions through the loss in operational flexibility. This flexibility is pertinent to meet the state mandates, particularly to mitigate the increasing carbon density of resources serving load prior to sunrise and after sunset.</p> <p>The SED did evaluate some mitigation measures but only certain demand side measures that would require regulatory action to implement and enforce. Based on the sources cited, the SED failed to even consider any meaningful supply side (operational) mitigation measures that would involve optimizing hydropower flexibility concomitant with achieving Water Board environmental goals. The SED must be updated to consider these impacts and reassess its analysis of feasible mitigation measures.</p>	
1279	7	[ATT 2: Graph of Market Heat Rate as Percent of Monthly Average]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1279	8	<p>Impact EG-4: Conflict with an applicable plan, policy, or regulation adopted for the purposes of reducing GHG emissions</p> <p>SED evaluation: LSJR Alternative 2 (Less than significant/Less than significant with adaptive implementation)</p> <p>LSJR Alternatives 3, 4 (Significant and unavoidable/Significant and unavoidable with adaptive implementation)</p> <p>SED reasoning: As discussed for Impact EG-3, LSJR Alternatives 3 and 4 would generate GHG</p>	Please see response to comment 1279-3 and 1279-6 regarding conflicts with applicable plans, policies, or regulation and the evaluation contained in Chapter 14, Energy and Greenhouse Gases. Please also see the information contained in Master Response 3.2, Surface Water Analyses and Modeling; Master Response 3.7, Greenhouse Gas Emissions and Analysis; and Master Response 8.4, Non-Agricultural Economic Considerations, regarding climate change, and the approach to evaluating hydropower effects and potential economic considerations associated with hydropower.

Table 4-1. Responses to Comments

Ltr#	Cmt#	Comment	Response
		<p>emissions greater than 10,000 MT CO2e per year, which is inconsistent with the state goals listed in AB 32 or in any state policies and plans adopted to reduce GHG emissions. This impact was deemed significant. Like the Impact EG-3 mitigation analysis, the SED reasoned that the Water Board cannot feasibly impose identified mitigation measures and the impact would remain significant and unavoidable.</p> <p>HPOC [Hydropower Operations Committee] Comment: The HPOC arguments and comments made for Impact EG-3 also apply to Impact EG-4. As stated above, the SED evaluated some mitigation measures but only certain demand side measures that would require regulatory action to implement and enforce. The SED did not consider any meaningful supply side (operational) mitigation measures that would involve optimizing hydropower flexibility concomitant with achieving Water Board environmental goals. The SED must be updated to consider these impacts and reassess its analysis of feasible mitigation measures.</p>	
1279	9	<p>SED Energy Analysis: Appendix J and Section 20 rely on some technical assumptions and outdated data that introduce inaccuracies to the SED analysis. First, the New Melones plant's defined maximum potential capacity in the SED is 300 MW. However, New Melones Dam's installed capacity is 384 MW, with one 191.6 MW turbine at each of the two units and has historically been operated above 300 MW. [Footnote 11: The New Melones 300 MW plant capacity value was based on a 0.9 power factor. Bureau of Reclamation operates at 1.0 power factor. In addition, the units were rated at 115%. The 300 MW was divided by 0.9 power factor and then multiplied by 115% to arrive at 384 MW. <a href="https://www.usbr.gov/projects/pdf.php?id=47">https://www.usbr.gov/projects/pdf.php?id=47</a>.] This affects the analyses for both the electric grid and related economic impacts. Second, the SED's reliance on the 82-year simulation data from CALSIM II omits scientific data following operational changes introduced since 2003, including information and recommendations for the protection of delta smelt, salmonids, and green sturgeon during long-term operations of the CVP found in the Biological Opinions of the US Fish &amp; Wildlife Service [Footnote 12: US Fish &amp; Wildlife Service, December 2008. Biological Opinion regarding Proposed Coordinated Operation of the Central Valley Project (CVP) and State Water Project (SWP). File number 81420-2008-F-1481-5, available at <a href="https://www.fws.gov/sfbaydelta/documents/SWP-CVP_OPs_BO_12-15_final_OCR.pdf">https://www.fws.gov/sfbaydelta/documents/SWP-CVP_OPs_BO_12-15_final_OCR.pdf</a>.] and the National Marine Fisheries Service. [Footnote 13: NOAA National Marine Fisheries Service. June 2009. Biological and Conference Opinion regarding Long-term Operational of the Central Valley Project (CVP) and State Water Project. File number 2008/09022, available at <a href="http://www.westcoast.fisheries.noaa.gov/central_valley/water_operations/ocap.html">http://www.westcoast.fisheries.noaa.gov/central_valley/water_operations/ocap.html</a>.] The 82-year CALSIM II data also does not reflect operations during recent drought years.</p>	<p>While maximum potential capacity at the New Melones Powerplant is not explicitly included in the WSE model, the model does have a maximum hydropower flow, which corresponds to the maximum capacity. An increase in capacity from 300 MW to 384 MW would result in less need to bypass the hydropower facilities under conditions of high flow. Because the LSJR alternatives tend to increase spring flows, which sometimes exceed the capacity of the power plant, increasing the capacity at New Melones could allow more hydropower generation in response to implementation of the LSJR alternatives and reduce the effect of the LSJR alternatives on hydropower generation already disclosed in the SED in Chapter 14, Energy and Greenhouse Gases, Chapter 20, Economic Analyses, and Appendix J, Hydropower and Electric Grid Analysis of Lower San Joaquin River Flow Alternatives.</p> <p>The CALSIM representation of baseline is not directly used in the SED. The WSE model includes regulations pertinent to the San Joaquin River enacted through 2009. This includes the Stanislaus River flow requirements from the 2009 National Marine Fisheries Service (NMFS) Biological Opinion. For more information on baseline modeling assumptions, please see Appendix F.1, Hydrologic and Water Quality Modeling, and Master Response 2.5, Baseline and No Project.</p> <p>The primary WSE results used for impact assessment do not include the 2012–2015 drought. For a discussion of drought conditions, please see Chapter 21, Drought Evaluation, and Master Response 3.2, Surface Water Analyses and Modeling. The WSE model does not estimate what particular emergency actions may be taken in response to drought. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the emergency provision.</p> <p>For more information on modeling assumptions in general, please see Master Response 3.2.</p>
1279	10	<p>SED Economic Analyses: Chapter 20's hydropower revenue valuation using a monthly time-step does not accurately capture economic impacts to hydropower. To derive the effects of LSJR Alternatives 2, 3, and 4 on hydropower revenue, the estimated change in monthly power generated over the 82-year simulation period was multiplied by an assumed monthly price of hydropower. While this information is valuable to estimate seasonal revenue impacts, a more granular analysis comparing hourly generation changes against hourly market prices needs to be conducted to account for the value and operational flexibility that hydropower provides. This hourly analysis will help to determine if increasing flows in spring months will exacerbate negative prices in the energy market, a phenomenon in which excess energy above demand causes generators to pay utilities to have resources consumed. [Footnote 14: What the duck curve tells us about managing a green grid,</p>	<p>Please see Master Response 8.4, Non-Agricultural Economic Considerations, regarding the use of the price series and effects of hourly fluctuations in power generation.</p>

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Ltr#	Cmt#	Comment	Response
		<p><a href="http://www.caiso.com/Documents/FlexibleResourcesHelpRenewables_FastFacts.pdf">http://www.caiso.com/Documents/FlexibleResourcesHelpRenewables_FastFacts.pdf</a>; at page 3.] In a negative market price scenario hydropower operators may spill water before allowing it to flow through the generators. Without an hourly hydropower impact analysis it is unknown if the proposed water release changes force hydropower into a spilling state in high water years. It is also not clear if the proposed water release changes will allow New Melones to continue to operate as a valuable peaking unit in which it predominately generates in high energy demand hours and shuts down in saturated hours. Additionally, market prices used in the SED Economic Analysis were based on 2006 because they “most closely match the median price during years in which price data are available.” At the time of the SED’s publication, much more recent data were available, and are significantly different from the range analyzed.</p>	
1279	11	<p>Non-Flow Measures and Adaptive Management: The Economic Analyses Section 20.3.7 provides a general overview of recommended non-flow measures and their associated costs. However, there is no identified link between non-flow measures and adaptive management decisions, and similarly, there is no identified link between the cost of these “potential compliance actions that could be taken to inform the body of scientific literature and assist with adaptive implementation” and beneficiaries. The CVP power and water customers pay a surcharge for Central Valley Project Improvement Act (CVPIA) activities that already support many related projects, including many of those referenced in the section for cost comparison. The proposed adaptive management does not clearly define how it will respond to non-flow measures, introducing the risk of severing the relationship between the cost of maintaining watershed health and the benefits that are provided by the related water projects.</p>	<p>Please see Master Response 2.2, Adaptive Implementation, for responses to comments regarding non-flow measures and voluntary agreements with respect to adaptive implementation. Please see Master Response 5.2, Incorporation of Non-Flow Measures, for a discussion of the incorporation of non-flow measures into the plan amendments and non-flow measure costs. The STM working group, State Water Board staff, and entities that are responsible for providing flows will need to identify the relationships between flow and non-flow actions, the relative costs, and ecological performance metrics as the non-flow projects are proposed and built.</p>
1279	12	<p>The SED must be updated to consider the current regulations applicable to the electric sector, current system operating data and the most recent electricity planning tools. The impact of LSJR Alternatives must be evaluated in light of the rapid growth in renewable resources and the significant advancements made by the electric sector toward reaching California’s renewable energy and greenhouse gas reduction goals. The SED must consider all feasible mitigation measures that incorporate Water Board goals while also reducing the carbon impacts to utilities that may conflict with state carbon policy, including cost increases to covered electric, industrial and agricultural entities complying with the California Cap-and-Trade program. [Footnote 15: Cal. Code Regs., tit. 17, §§ 95801-96022.]</p>	<p>The SED evaluation represents a comparison of the LSJR alternatives to baseline conditions. Baseline conditions represent those present at the time of the release of the NOP. Please see Master Response 2.5, Baseline and No Project, regarding baseline conditions. The power flow assessment described in Appendix J, Hydropower and Electric Grid Analysis of Lower San Joaquin River Flow Alternatives, did include current system operating data as described in Section J.4.2, Power Flow Assessment Methodology.</p> <p>Please see response to comment 1279-6 regarding growth in renewable sources.</p> <p>Please see Chapter 20, Economic Analyses, and Master Response 8.4, Non-Agricultural Economic Considerations, regarding costs associated with hydropower and growth in renewables.</p> <p>California’s Cap-and-Trade Program (Assembly Bill 32) is an element of California’s climate plan. It sets a statewide limit on greenhouse gas emissions, and establishes a pricing mechanism for long-term investment in cleaner fuels and efficient use of energy. The program is designed to provide affected entities with the flexibility to seek out and implement their lowest-cost options to reduce emissions. The participation of hydropower producers in the program is voluntary, and the plan amendment does not limit nor require their participation. The extent of involvement by hydropower producers, or the effects on prices of any forthcoming agreements following plan implementation is highly speculative given the energy market and that the portfolio of clean renewable energy is dynamic and constantly changing. For example, please see Master Response 8.4 regarding the ascendancy of solar power.</p>
1280	1	<p>As we near the public comment deadline, it is imperative to us that our distress over your proposal is included in the official record on the Draft Revised Substitute Environmental Document (SED). Therefore we to urge you once more to heed the requests of the numerous cities, school districts, and concerned residents who have voiced their opposition to the Bay-Delta Plan. In an area that is largely dependent on agriculture, a proposal that</p>	<p>Please refer to Master Response 1.1, General Comments for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues. Please refer to the section acknowledging concerns of community members.</p>

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Ltr#	Cmt#	Comment	Response
		increases the unimpaired flows of the Merced, Stanislaus, and Tuolumne rivers by 40% would devastate a region that has only just now begun to heal from five years of drought.	
1280	2	<p>The public hearings held in Merced and Modesto this past December provided ample evidence that local stakeholders have been left out of a process that will severely impact every aspect of their lives. Safe and reliable access to drinking water, our economic vitality, and our very way of life would all be jeopardized by your proposed plan.</p> <p>Given the serious implications of your proposal, there should have been a credible effort to involve us throughout the development phase, but this simply didn't happen. By allowing stakeholders to comment on the plan only after it was released, you have excluded our region from providing valuable local knowledge that could have been used by your scientists and technical experts to create a plan that appropriately balances the competing priorities under your consideration.</p>	Please see Master Response 1.1, General Comments, for regarding voluntary agreements and the public outreach process. The State Water Board used the best available science throughout the SED. A variety of data were obtained for the water quality planning process: quantitative data from peer-reviewed published literature on topics specific to the plan area; peer-reviewed published literature outside the plan area but on topics relevant to the proposed project; unpublished quantitative data from within the plan area and from outside of the plan area; qualitative data or personal communication with topical experts; and expert opinion if no other sources were available. Please see Master Response 1.2, Water Quality Control Planning Process for a discussion regarding the consideration of beneficial uses.
1280	3	<p>To us, "significant, but unavoidable" is more than a term of art - it is a tangible threat and a clear statement of willful disregard for our safety, sustainability, and livelihoods. By failing to include City of Gustine's region in the development process, you have marginalized a community that already suffers from economic challenges and is home to many minority and disadvantage communities. Simply put: we deserve better.</p> <p>I urge you to give consideration to the voices of our community and revise the current plan to reflect the needs of all the parties involved.</p>	The City of Gustine is not located in the plan area or extended plan area, and is not located above any of the four groundwater subbasins considered in the study area in the groundwater impact analysis in Chapter 9, Groundwater Resources. Please see Figure 2-1b, Vicinity Map of plan area and extended plan area, and Figure 9-1, Vicinity Map of Groundwater Subbasins, for the boundaries of the plan area, extended plan area and the four groundwater subbasins.
1281	1	After several years of drought Californians need to accept that there is not enough water for everyone without significant adjustments in its collection, storage and use. Clearly most of our States water is allocated to agriculture -- ranching and farming -- at rates that defy logic and the facts.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1281	2	An environmental stewardship with our water, and land, reasonably suggests unimpaired river flows of 60%. Such flows will improve the health of the rivers and also the fish, animals and wetland habitat. Being a kayaker, canoer and farmer fisherman, I can say that a healthy water use is wise now, and is wise for our children and our collective future.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1282	1	<p>Upstream, peak flows of the over-allocated San Joaquin River are critical to the health of our remaining salmonids and the delta ecosystem.</p> <p>Please let science be your guide and require 60% minimum unimpeded flows in the San Joaquin River and its tributaries/Phase 1 of the Delta Plan.</p>	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1283	1	The Bay Delta is obviously critical to human lives around the Bay--whether simply for aesthetics, or for the benefits such as producing the food that we eat (including wild salmon). Until about 10 or 15 years ago, I remember wild salmon to be an abundant, relatively inexpensive summer treat. No more.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1283	2	As a scientist, I found the research and study, including the Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem compelling: the unimpaired flows of during the critical spring months should be at 60% of unimpaired flows. Whether or not one "cares" about the ecosystem, it is simply not prudent to allocate all water narrowly for human uses--doing so leaves absolutely no margin for error.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.

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1283	3	Farmers need water, but farms also have an obligation to use water wisely and not to treat water as essentially free. While we need farm products for local consumption, use of underpriced water to produce export crops is simply mining by another name. There is no legitimate reason to subsidize exports of water-intensive crops such as alfalfa, or to use underpriced water to produce low-value products available elsewhere, such as cotton.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1283	4	As an urban consumer of water, I have personally invested to reduce my water consumption by over 50% during the last 15 years. I obtain water from the San Francisco Public Utility Commission through the City of Palo Alto. The wholesale price of this water is roughly \$2,000 per acre foot. In contrast, the wholesale price of the same Tuolumne River water from Modesto Irrigation District is less than 1/100th the cost (\$15/acre foot). Clearly such pricing leads to economic inefficiencies.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1283	5	The current allocation practices have resulted in sub-critical flows in 19 of the last 42 years. In contrast, naturally such sub-critical flows would have occurred only once in that time period. Climate change is ushering a new era, and now is the time to improve our discipline as humans, especially with the increase of California's population. The dooms day economic stories of disaster if water isn't fairly allocated are simply not true. The doomsday scenario occurs if we don't manage our water wisely, with a balanced allocation between "narrow" human uses and allocating water for the environment.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1283	6	Please adopt a requirement for 60% unimpaired flows during the critical spring/ early summer months. People can and will adapt, and with only minimal pain.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1284	1	The Bay Delta Conservation Plan/California WaterFix neither conserves the Delta or fixes California's water problem. It is simply a water grab by those in power in the State of California, corporate agribusinesses in the Central Valley whom our elected officials are apparently beholden to.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1284	2	Scientists say that increased water flows on the San Joaquin River are needed to protect the South Delta. These scientists have quantified that we need 60% of flows on the San Joaquin River, NOT the proposed 40%. Lack of sufficient flows will cause more toxic algal blooms such as those that already occurred in the South Delta waterways around Discovery Bay, Tracy and Stockton during 2016, the last year of the drought.  A permanent reduction of water exports must happen to protect the Delta. The current level of water exports exceeds the limit in the late 1990s and is not sustainable.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1284	3	I do not want to see a weakening of salinity standards in the South Delta. Water quality standards must be protected for Delta agriculture, irrigation uses and recreation.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1285	1	Given that on average, less than 50% of the freshwater flow from the Central Valley reaches the Bay, and in some years even less than 35% I beg you, and your colleges to consider increasing flow and mandating more water reaches the end of the Bay-Delta system. By continuing to allow reduced inflows, the size and location of the ecologically-important salinity mixing zone shifts, which causes repercussions on everything from plankton to marine mammals. Furthermore, a report from 2010 released by State Water Resources Control Board, titled Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem, determined that approximately 60% of unimpaired flow between February and June would be fully protective of fish and wildlife in the lower San Joaquin River and its	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.

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Ltr#	Cmt#	Comment	Response
		three major tributaries.	
1285	2	It is imperative to strive to preserve the ecosystems of the Sacramento and San Joaquin Delta system to protect natural wildlife with the additional benefit of recreation and enjoyment for California constituents as well as visitors.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1285	3	I advocate that the Bay-Delta Water Quality Control Plan should require at least half of the flow of the San Joaquin and its main tributaries reach the Delta and be allowed to flow out through Carquinez Strait.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1286	1	I have become increasingly aware of the many threats to the Bay that I love - from the marshes that protect our coastlines to the fish that form the basis of our ecosystems to the birds that still amaze me with their majesty as they fill the Delta flyways. I am writing today to urge you to allow more water to flow into the Bay, to keep it safe and strong for generations to come.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1286	2	Surely, it is more than fair for our single species to take "only" 40% of that flow? Yet I was horrified to learn that, on average, we are taking more than HALF: less than 50% of the freshwater flow from the Central Valley reaches the Bay, and in some years less than 35%. Not only is this unfair to other species - it is stupid and self-destructive. Humans do not stand apart from nature; we depend on it.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1286	3	We are effectively starving our Bay and Delta. Reduced freshwater inflow has changed the chemistry of the Delta, encouraging blue-green algae that produces neurotoxins - making people sick and killing plankton and wildlife. Why would we do this to ourselves?	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1286	4	They [salmon] are the foundation of an entire ecosystem - of which we are a part. They are also essential to the commercial fishing industry. Yet their numbers have been reduced by over 90%. To protect our salmon, river flows need to inundate floodplains, which serve as critical habitat for juvenile salmon and other fish. Yet we have been depriving these floodplains of the water they need.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1286	5	There is no reason why we must continue this kind of destructive behavior. Through better management of snowmelt, through using efficient irrigation technologies and practices, and by replacing lower-value, water-intensive crops with higher-value, water-efficient crops, we could grow more food with less water. I have personally seen - during the height of the drought, no less! - fields still being irrigated by sprinklers. This is madness. Today, pressurized irrigation systems make it possible to increase crop yields and radically reduce our usage, and we need to be implementing this technology on a massive scale. The next mega-drought may be right around the corner, so we need to act now.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1286	6	In California, water is a public trust resource, meaning it belongs to the people of California. Let's take back our power and demand that we leave enough water in the rivers to protect the ecosystems on which our species relies. It's time for us to make it a priority to treat water as the precious resource that it is - for us, and for the environment we all depend on.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1287	1	I am deeply concerned about the deterioration of the overall health of the ecosystems of the Delta and its tributaries that flow to the Bay, and specifically our endangered native Salmon population. I have been involved in creek cleanups over the years and have personally seen the decline of the water quality and lower fish counts.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.

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		I urge you to be awake for what is at stake. As you must be aware: low river flows impede fish passage, concentrate pollutants, raise water temperatures, and eliminate migratory cues for fish returning to spawn. This is not just about Salmon- it is entire ECOSYSTEM that scientists have told you is in CRISIS and that it is fragile and should take precedence over agricultural needs. We cannot bring species that become extinct back, but we can employ creative solutions to address agricultural needs.	
1287	2	What is needed to secure a future of health for the waters is 60% of flow for the San Joaquin River and its three major tributaries.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1288	1	I am against the proposal to remove more water from the already fragile ego system of the South Delta area. For years the State has taxed the Delta - birds, fish, wildlife, and human enjoyment by continually taking too much water from this special area.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1288	2	I encourage you to stop taking more water and instead add to the protection by reducing the water grab. Salinity levels continue to rise which harm this amazing eco system and is a direct result of over taking of fresh water from the Delta.  Vote to protect the Delta by NOT allowing more water to be removed.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1289	1	Long-Term Impacts of Climate Change  The SED (Hydrology Appendix F1) considers impacts on flows, carryover storage, and water temperature based on modeling conditions for periods up to the year 2003. The impacts to these same elements for each SED Alternative should be considered by modeling future conditions caused by climate change and in particular the more dramatic anticipated drought periods utilizing DWR recognized climate change models.	Please see Master Response 3.2, Surface Water Analyses and Modeling, regarding the modeling of the 82-year period, the adequacy of the model inputs and parameters, and climate change as it relates to the quantitative analysis.
1289	2	[ATT 1: Letter #1198 - Mokelumne Agencies' Joint Comments on Bay-Delta Plan Update Phase 1 SED]	The commenter provided this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1290	1	The Substitute Environmental Document (SED) Is Not in Conformance with the Requirements of CEQA Requiring That All Reasonable Alternatives and Mitigation Measures Be Examined as to Their Environmental Impacts. The SED Does Not Consider Alternatives Other than Flow and Expansion of Flood Plain Space to Provide for Enhancement of Fish and Natural Species Populations.  The consideration of reasonable alternatives requires that the SWRCB quantify the benefits and detriments of alternatives such as fish hatcheries, killing of predator populations and use of anadromous fish transportation methods other than increasing and releasing of flows. Because that has not occurred, this SED is deficient and must be revised.  CEQA requires that a reasonable range of alternatives be considered and only alternatives which are not reasonable may be disregarded. CEQA Guidelines §15126.6(b). The CEQA document must explain in its text why alternatives were ruled out or discarded. That discussion must include an explanation of why the alternatives (1) failed to meet most of the basic project objectives, (2) were infeasible, or (3) caused significant environmental impacts which exceeded or caused greater environmental harm than the project impacts. CEQA Guidelines §15126.6(c). The discussion of alternatives in the Aquatic Resource Section	The SED appropriately evaluates and discloses the plan amendments' significant or potentially significant adverse environmental impacts and reasonable alternatives to the project and mitigation measures to avoid or reduce those impacts. As discussed in Chapter 3, Alternatives Description, the State Water Board selected a reasonable range of alternatives that would feasibly attain most of the project objectives while avoiding or substantially lessening the project's significant effects. Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the proposed flow requirements and the incorporation of non-flow measures in the plan amendments. Please refer to Master Response 2.4, Alternatives to the Water Quality Control Plan Amendments, regarding the focus of the planning efforts, the project's purposes and goals, the reasonable range of feasible alternatives and why non-flow measures alone (including fish transportation, hatchery improvements, and predation controls) are not feasible alternatives to the plan amendments. Actions that would not meet most of the project's purposes and goals or are otherwise infeasible are not included within a reasonable range of alternatives. For example, farm land purchases are not feasible alternatives, in part, because they do not involve water quality actions within the State Water Board's regulatory authority and by themselves would not provide flows necessary for the reasonable protection of fish and wildlife beneficial uses. The SED sufficiently describes the rationale for selecting the alternatives to be discussed and explains why certain alternatives were considered but rejected as infeasible. An additional assessment involving the quantification of costs and benefits associated with infeasible alternatives is not required and is unnecessary in light of the reasoning already contained in the SED. Also

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		<p>(and other sections of the SED) contains no such analysis or consideration.</p> <p>Here, no alternatives such as new fish hatcheries, transportation of juvenile anadromous fish from fish hatcheries through and to areas of the Sacramento San Joaquin Delta, killing of predators, or development of hatcheries for other desired species are considered or discussed. The flooding of floodplain lands for creation of food and habitat for anadromous fish is treated as the chosen device with the only alternative being the amounts of flow and floodplain to be inundated. In all other aspects of management of the human environment, human habitat and feeding patterns are in the CEQA process considered to be changeable and subject to being manipulated, and yet anadromous and warm water fish species are not subject to the same examination of alternatives.</p> <p>Fish hatchery development and operation, transportation of anadromous species through areas where detrimental conditions exist, and maximization of fish populations through predator control and fishing limits have been used for decades, and yet there is no mention of the quantification or comparison of the impacts of those alternatives or consideration of the potential reduction of significant environmental impacts from such alternatives. On pages 3-19, the SWRCB assumes without explanation that only flow alternatives to enhance fishery resources are to be considered. CEQA includes no such limitation of a CEQA study to the “usual” or “preferred” mechanisms.</p> <p>Such a prejudice, prejudgment and crafting of the document to exclude alternatives not favored by the SWRCB staff and consultant authors is not permitted under CEQA. The SED document itself must explain factually why alternative measures for fish survival or the means of increasing the numbers of surviving and returning fish would be infeasible or increase adverse environmental impacts. It must explain why predator removal would not quantitatively increase salmon and steelhead survival in the same numbers as increased flows or floodplain inundation. The presented SED and its appendices do not provide any evidence that these alternatives unrealistic or that the comparative environmental benefits and detriments of alternative measures are barred from consideration. The test of whether alternatives are to be examined is to determine if a given alternative is realistically possible. <i>Foundation for San Francisco’s Architectural Heritage v. City and County of San Francisco</i> (1980) 106 Cal App.3rd 893, 910. As an example, the chapters “Aquatic Resources” and “Evaluation of Other Indirect and Additional Actions” do not include any discussions of why such alternatives were not addressed or were rejected in closed-door proceedings, or how determining whether fish hatcheries and predator removal would, with less water, accomplish more benefit for the “preferred fishery or aquatic species.”</p> <p>If the SED authors believe the information to provide a comparison of alternatives, such as survival, return rates or comparative costs, other than flow alternatives for fishery propagation and to compare survival, would be too costly to develop, the SED must at least describe what information exists and explain why it would be too costly or unrealistic to provide for comparisons and to quantify the benefits and detriments of nonflow alternatives in terms of surviving juveniles or returning adults. CEQA Guidelines §15126.6(c). There is no such explanation in this SED, despite the fact that the flow alternatives are admitted to create extensive groundwater overdraft, to significantly and adversely affect the human environment, and – in a disorderly fashion – cause thousands of acres of productive agricultural deep wells to run dry. The alternative of simply buying up farm land which is dependent on groundwater to avoid those environmental consequences and implementing a coordinated flow project designed to prevent overall increased and diverse</p>	<p>refer to Master Response 1.1, General Comments, for a general discussion of mitigation measures.</p> <p>The SED extensively discusses non-flow measures. In addition to Master Responses 2.1 and 2.4, please see Master Response 3.1, Fish Protection, regarding the scientific justification for the plan amendments to reasonably protect the beneficial uses of fish and addressing parameters other than flows, such as the role of hatcheries and predation. Please see Master Response 5.2, Incorporation of Non-Flow Measures, regarding the incorporation of non-flow measures (e.g., habitat restoration, predator control, and other measures) in the plan amendments; Appendix K, Revised Water Quality Control Plan, regarding recommended non-flow actions specific to the San Joaquin River; and Chapter 16, Evaluation of Other Indirect and Additional Actions.</p> <p>The SED appropriately evaluates economic and cost considerations in accordance with CEQA and the Porter-Cologne Water Quality Control Act. For a discussion of the costs associated with non-flow measures, see Master Response 5.2. Chapter 20, Economic Analyses, considers economic effects on the LSJR and tributaries related to agriculture and municipal and industrial water supplies, as well as economic effects on the southern Delta related to the potential costs of compliance with salinity and water quality objectives in the southern Delta. Refer to Master Response 8.0, Economic Analyses Framework and Assessment Tools, for more information about how economic analysis was used in the SED to help inform the State Water Board’s consideration of potential economic effects related to the plan amendments.</p> <p>Please see Master Response 1.1, General Comments, regarding the programmatic analysis conducted in the SED. The SED has been prepared pursuant to the State Water Board’s certified regulatory program and is a program-level, not project-level, evaluation. Other actions taken in response to the plan amendments may also be subject to future project-specific CEQA review by those entities with authority over those projects once they are developed and proposed.</p> <p>For information regarding the State Water Board’s authority and appropriate designation as lead agency for this project, see response to comment 1290-2.</p>

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		<p>environmental impacts is not even considered. CEQA was developed for and is required to stop such tunnel vision decisionmaking.</p> <p>In regard to predator removal in Chapter 16, the insufficiency of the SED can be clearly seen. After a long discussion of changing habitat conditions to deter or reduce predator success, it is concluded that direct removal programs are unclear in their ability to rebuild populations (p. 16-190) and that "Pilot Programs" would be required. On page 191 of Chapter 16, the authors attempt to explain why no quantification of the potential increased survival from direct predator control measures is included, and why a vague narrative discussion in three separate locations is sufficient, the third area being Attachment C which is not even mentioned. Alternatives must be comparable and sufficient quantifications included to understand the comparative environmental impact detriments and benefits. No such facts are included in this document.</p> <p>Attachment C is a purported Scientific Basis for alternative flows, yet it includes no data to examine if additional flows and additional floodplain inundation benefits could be multiplied if instead of increasing flows, financial resources were placed into hatchery development on the Tuolumne and Stanislaus Rivers and a means of transportation to occur to avoid predation despite decades of studies. For 11 years, the Vernalis Adaptive Management Program ("VAMP") attempted to quantify the losses to predation and the benefits or detriments of pulse flows or higher flows. The results of those studies are claimed to be inconclusive, yet the same device of "more water flow" is assumed to be preferable. If that is the case, how many more adult salmon will result from increasing groundwater overdraft by one acre-foot per overlying acre? How much hatchery and juvenile transportation capacity would have to be employed to obtain the same adult return increase?</p> <p>CEQA requires clear analytic consideration of alternatives. CEQA is not satisfied if the authors' prejudices that "natural is better" persuades every conclusion. Because flow is important (Appendix C, pp. 3-39, 40), it is impermissible not to examine the benefits and detriments of alternative projects and methods.</p> <p>Other commenters will cite to survival estimates from predation versus survival if less predators are present and studies of transportation of juveniles from hatcheries and costs of those efforts. The California DF&amp;W should have written those alternative comparisons but did not. That information is incorporated herein to demonstrate how the inadequacy of this process can be remedied and a proper lead agency be designated.</p>	
1290	2	<p>The Failure to Designate the Proper Lead Agency and the Failure to Properly Describe the Multiple "Projects" Included as One Project Results in a Violation of CEQA. The California Department of Fish and Wildlife Is the Proper Lead Agency for Any Project to Improve the Numbers of Fish and Wildlife Species and the SWRCB Is the Proper Lead Agency for the Proper Uses of Water. The SWRCB Views its Role in this CEQA Document as That of the California DF&amp;W to Attempt to Develop and Order Implementation of a Fishery Enhancement Project Which is a Separate Project that must be Designed, Financed and Adopted by California First Before Water Flow and Quality Standards are Incorporated and the Result Is an Inadequate Consideration of Impacts and Alternatives.</p> <p>The proper lead agency is "the public agency which has the principal responsibility for carrying out or approving a project." CEQA Guidelines §15367.</p> <p>The choice of the proper lead agency is not simply formalistic. It is to insure that the Project</p>	<p>The State Water Board is the appropriate lead agency with the authority and responsibility to approve or carry out the proposed amendments to the Bay-Delta Plan that are the subject of this SED. The State Water Board is responsible for orderly and efficient administration of the state's water resources, including the coordinated consideration of water rights, water quality, and drinking water. (Wat. Code, § 174.) The State Water Board protects water quality that affects beneficial uses of water in the Bay-Delta through the water quality control plan for the area, the Bay-Delta Plan, pursuant to its authorities under the Porter-Cologne Water Quality Control Act and the federal Clean Water Act. As described in the Executive Summary; Chapter 1, Introduction, and Chapter 3, Alternatives Description, the 2006 Bay-Delta Plan designates beneficial uses of water within the Bay-Delta, water quality objectives for the reasonable protection of those beneficial uses, and a program of implementation for achieving the water quality objectives. The plan amendments would revise the 2006 Bay-Delta Plan to establish flow water quality objectives for the LSJR and its three eastside, salmon-bearing tributaries for the protection of fish and wildlife beneficial uses, revised water quality objectives for the protection of agricultural beneficial uses in the southern Delta, and an associated program of implementation to achieve the objectives. Please refer to Master Response 1.1,</p>

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		<p>is properly understood and appraised by the party who is best able to approve, disapprove or change the project by adopting alternatives. The SWRCB is not outfitted to determine how or whether to have a project to protect or enhance fishery numbers. The SWRCB is not the proper lead Agency for a project which is primarily to decide whether a broad and expensive plan to increase fish numbers should be preferred to existing urban and agricultural uses of water. That is, instead, a “project” to be designed by California DF&amp;W, and presented to the California legislature for approval and funding, and only then presented to the SWRCB to answer the question of how to provide for the flow and water quality directions in regard to flow requirements to accomplish the California DF&amp;W or federally-encouraged project.</p> <p>In Laurel Heights Improvement Associations v. Regents of the University of California (1988) 47 Cal.3rd 376, 406 the Supreme Court made clear that the lead Agency itself must develop alternatives. This requirement confirms that the wrong agency has been chosen. Here, what expertise does the SWRCB or its consultants have to determine alternatives or mitigation measures related to fish numbers or habitat, hatcheries or predation? The SWRCB cannot fund or staff fish hatcheries and cannot change fishing programs or establish predator removal programs as an example, under CEQA, once the decision is made by California DF&amp;W as to whether predators should be removed or numbers of juvenile salmon should be increased without hatcheries and that plan has been approved and funded by the Legislature, the issue of the amounts of flow required and how to provide those flows and water quality can be properly resolved by the SWRCB and alternative water quality and flow conditions adopted.</p> <p>The present, incorrect, designation of the SWRCB as lead Agency is only because some interests believe that the orders of the SWRCB regarding water are without need for public funding or compensation of property owners...the allocation and dedication of water flows are believed to be free because it is claimed the SWRCB Water Quality Control Plan is simply a matter of withdrawing water from lawful users without compensation or relocation benefits.</p> <p>In fact, that assumption and approach that the SWRCB can make such orders without payment is not the correct and the further evidence for reorganizing these proceedings with California DF&amp;W as lead Agency emerges. Public trust uses of water which withdraw water from proper users have long been held to require reasonable compensation for improvements and investments made in reliance on the allocation of water. In Illinois Central Railroad Co. v. Illinois (1892) 146 U.S. 387, the United States Supreme Court on page 455 states that if the public trust doctrine is utilized to return water to natural uses or public land to natural uses, that the State “...ought to pay” for any “...expenses incurred in improvement made under such a grant” when the State wishes to resume possession of the public trust assets or property. In Berkeley v. Superior Court (1980) 26 Cal.3d 515, 533-34, the California Supreme Court confirmed that the exercise of a public trust reservation to reclaim water or property for what is considered a preferred use required the payment of damages or compensation for the loss of value because of the reasonable reliance of private parties in installing and constructing improvements in reliance upon the use of those resources.</p> <p>The proper lead Agency role under CEQA when multiple projects are proposed may be to coordinate with other public agencies in the role of a responsible Agency, but the SWRCB cannot and does not become the proper lead Agency for a project to increase numbers of</p>	<p>General Comments, and Master Response 1.2, for information regarding the State Water Board’s authority, water quality control planning process, and the proposed plan amendments. In addition, as described in Master Response 1.1 and 1.2, the State Water Board has an affirmative duty to take the public trust into account in the planning and allocation of water resources and to protect public trust uses whenever feasible (National Audubon Society v. Superior Ct. (1983) 33 Cal.3d 419, 446) and to prevent the waste or unreasonable use of water, regardless of the basis under which the right is held. (Cal. Const., art. X, § 2; Wat. Code, § 275; California Farm Bureau Federation v. State Water Resources Control Bd. (2011) 51 Cal.4th 421, 429.) Adverse water quality impacts are an appropriate basis for finding water use unreasonable. (United States of America v. State Water Resources Control Bd. (1986) 186 Cal.App.3d 82, 130.)</p> <p>CEQA defines the lead agency as the “public agency which has the principal responsibility for carrying out or approving a project.” (Cal. Code Regs., tit. 14, § 15367.) The State Water Board is the sole public agency with the responsibility for carrying out or approving amendments to the Bay-Delta Plan that revise or establish water quality objectives for the reasonable protection of beneficial uses of water. The California Department of Fish and Wildlife (CDFW) has neither the authority nor the responsibility to take such action. Thus, the provisions of State CEQA Guidelines section 15051, which provide criteria for identifying the lead agency when two or more public agencies will be involved with a project, do not apply here. No dispute has occurred over lead agency status requiring resolution by the Office of Planning and Research under State CEQA Guidelines section 15063. No other public agency can claim to be lead agency for the Bay-Delta Plan update.</p> <p>As identified in the Executive Summary Section ES 10.4, Review and Consultation Requirements, CDFW is a designated Trustee Agency. Trustee agencies are state agencies that have jurisdiction by law over natural resources affected by a project that are held in trust for the people of the State of California. In accordance with CEQA, the State Water Board has consulted with CDFW on the plan amendments and their potential environmental impacts. The State Water Board’s consideration of the plan amendments does not inhibit or limit CDFW’s ability to undertake actions pursuant to its own authorities. Please refer to Master Response 1.2 for information regarding consultation requirements and the State Water Board’s lead agency role.</p> <p>The comments cites City of Sacramento v. State Water Resources Control Bd. (1992) 2 Cal.App.4th 960, stating that the court “held that the CEQA compliance was flawed because the wrong lead Agency had proceeded to examine the issues regarding rice culture discharges to water first.” This summary does not correctly reflect the court’s conclusion. In fact, the appellate court concluded that record did not establish noncompliance with CEQA. The court considered whether the Central Valley Regional Water Quality Control Board or the Department of Food and Agriculture (DFA) should be designated the lead agency when the statutory scheme establishes the agencies’ concomitant responsibility for protecting State waters from pesticide pollution, concluding that the trial court erred in mandating CEQA compliance by the Regional Board. The court concluded that DFA was the logical choice for lead agency in connection with the annual rice pesticide plans and that the record failed to establish DFA’s noncompliance with its certified regulatory program or the other requirements of CEQA.</p> <p>The comment raises hypothetical issues concerning the future implementation of the plan amendments that will be addressed in a future, separate proceeding. The plan amendments establish the desired condition of water quality in a specific area consistent with state and federal law. The plan amendments neither modify nor determine water rights. Any responsibility to achieve the water quality objectives will be imposed through a future proceeding. Please refer to Master Response 1.2 for information regarding implementation of the Bay-Delta Plan generally, implementation through water right proceedings, and due process. In addition, the suggestion that the State Water Board would appropriate improvements on public trust lands or otherwise incur “recoverable costs” is unsupported. Water rights are non-possessory rights of use subject to the overriding limitations and restrictions of California’s reasonable use and public trust doctrines;</p>

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		<p>fish and natural flood plan habitat under its authority in regard to administration of water. The proper lead Agency is the Agency with the experience, funding and authority to implement the project. SWRCB meets none of these requirements. The effect of the choice of the wrong lead Agency is an insufficient SED. Planning &amp; Conservation League v. DWR (2000) (3rd Dist. Ct. of Appeal) 83 Cal. App. 4th 892.</p> <p>Here, because the only tool assumed available to the SWRCB is water flows, the only alternative considered to provide for a viable desired fishery or natural resources project was water flows. However, that is not factually or legally correct.</p> <p>If there is a public desire for increased numbers of anadromous or other fish, or even preservation of current populations, the California DF&amp;W is the proper Agency to provide for the examination of that proposed project, to present the environmental effects and economic and social costs of that project since the SWRCB has no funding authority for such measures or plans. Once the “project” envisioned by the proper lead Agency, California DF&amp;W has been outlined, alternatives considered, and funding provided, and the project approved by the California Legislature, application to the SWRCB would then be made by California DF&amp;W to provide for amendment of the Water Quality Control Plan flows on the San Joaquin tributaries to provide for those ideal flows and the SWRCB would perform its SED as to the alternatives, mitigation measures and No Project alternatives.</p> <p>The CEQA Guidelines provide for the use of staged EIR’s “where a number of discretionary approvals from government agencies and one of the approvals will occur more than two years before construction will begin.” CEQA Guidelines §15167(a). Here, that two-stage process has been ignored in order to avoid compensation of the parties that hold the rights to water and who claim property interests in the water. The SWRCB has been induced to serve as the lead Agency designee under CEQA for a fishery improvement project or preservation project utilizing regulatory powers in a fashion that two independent projects are disguised and merged into one despite the fact that the SWRCB has no ability to appraise alternatives or mitigation measures may not order alternatives or fund anything. . . it can only order water to be taken away from current users. This CEQA SED violates CEQA.</p> <p>In A Local &amp; Regional Monitor v. City of Los Angeles (2nd Dist 1993) 16 Cal.App.4th 630, the Court discussed the relationship between two projects with a separation in time and a programmatic approach and how to properly maintain a project specific approach for each project. Here, a somewhat different problem has developed. The SWRCB is trying to design a fishery enhancement project utilizing only one tool – water. It is not an expert in regard to fisheries, does not wish to review and judge alternatives other than “more water flows” and has authority only over water use and applications. CEQA Guidelines section 15051(b)1 states: “the lead agency will normally be the agency with the general governmental powers . . .” The SWRCB has no expertise over the measures most directly to be decided in a fishery protection plan. If society wishes water to be withdrawn from current uses, the California DF&amp;W should design the plan and present it to the legislature after CEQA has been complied with, the legislature can fund it and then the SWRCB can adjudge how best to conform with water quality control plan and water rights granted to that new project plan.</p> <p>Whether characterized as an improper project description or a designation of the wrong lead Agency, CEQA can only be properly analyzed if Department of Fish and Wildlife explains the alternatives and impacts of the fishery and natural resource project it envisions, and after funding and approval by the Legislature, then the SWRCB determines the proper use of water resources, if any, to implement that Project. The SWRCB has no funding to carry</p>	<p>accordingly the regulation of activities that have the potential to affect public trust resources or to contravene the reasonable use doctrine cannot result in a taking because no one has a property right in the unlimited and unregulated use of surface water in California. The California Supreme Court has “rejected the claim that establishment of the public trust constituted a taking of property for which compensation was required.” (National Audubon Society, supra, 33 Cal.3d at p. 440.)</p> <p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding a description of the plan amendments and information supporting the need for the LSJR flow objectives. Please see Master Response 3.1, Fish Protection, regarding the scientific justification for the LSJR flow objectives to reasonably protect the beneficial uses of fish.</p> <p>Please see response to comment 1290-1, for information regarding alternatives and mitigation measures, non-flow measures, the program-level analysis in the SED, and economics and costs.</p>

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		<p>forward fishery enhancement or modification projects, cannot consider ordering the development or operations of hatchery a or artificial transportation or predator removal processes or control fishing regulations, yet is asked to write a sufficient SED to examine those alternatives.</p> <p>Section 21104.2 of the Public Resources Code requires that state agencies consult with CF&amp;W and obtain written findings on the impact of a project on the continued existence of any endangered species. Here, the converse is occurring. If CDF&amp;W has a plan for protecting endangered species with water flows, after a CEQA study considering alternatives and mitigation measures, it should adopt that plan and submit it to the Legislature to implement the funding for that plan. Only then should the SWRCB determine if the water elements (as contrasted with the physical changes such as hatchery construction or predator removal) are consistent with the SWRCB duties regarding water control plan provisions.</p> <p>The Office of Planning and Research is the proper Agency to determine the lead Agency for a fishery improvement project (CEQA Guidelines §15053(a)) and no submission of the question of the proper lead Agency role has occurred by either the SWRCB or California DF&amp;W. The case of Friends of Cuyamaca Valley v. Lake Cuyamaca Recreation and Park District (4th Dist 1990) 28 Cal.App.4th 419 described an analogous circumstance in which a local park and recreation district attempted to serve as lead Agency on a project in which the principal goals of the project were to establish a duck hunting season on a lake operated by the Park District. The Park District’s CEQA process was set aside because although they clearly owned and controlled the water body, the proper order was that the lead Agency – California DF&amp;W – should determine the program for duck hunting, then the Park District should consider its regulation of uses or reject all duck hunting use. Similarly here, if public resources and private resources are to be devoted to increasing numbers and survivability of fish and other species, the “project” should first be subject to review for the best means of accomplishing that, and only then should the SWRCB be involved other than in a consultative role as a responsible Agency. The SWRCB must restrict its involvement to determining whether the water should be taken from public agencies and private individuals when it knows what the fishery plan to be adopted actually is, in which case the authority to exercise condemnation powers will likely apply in some instances, and the legislature will have approved the funding plan.</p> <p>In this instance, in order to provide due process, the SWRCB “project” would involve not only the adoption of a water quality control plan, but also an individual proceeding to withdraw water use from granted water rights and a CEQA examination of the effects and alternative ways of altering each affected post-1914 water right to conform to the plan adopted by the California DF&amp;W as required in National Audobon v. SWRCB (1983) 33 Cal. 3d 419. With the clear budgetary responsibility for payment of any recoverable costs from the State established – as opposed to the general excuse that the Water Quality Control Plan must be complied with regardless of cost or impact – CEQA would be complied with in the proper order.</p> <p>The importance of this lead Agency designation and order, and the error that results when the proper lead agency is not chosen and the proper description of the two projects is not adopted was discussed in City of Sacramento v. SWRCB (3rd Dist. 1992) 2 Cal.App.4th 960. The SWRCB (Regional Board) had moved forward as a lead Agency in regard to rice (pesticide and herbicide plans), while Department of Food and Agriculture had the broader authority to consider the environmental impacts of use of the chemicals on all</p>	

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		<p>environmental and human resources . . . not just water. The Regional Board limited to water issues did not have the broad authority and view of alternatives that the Department of Food and Agriculture held. The Court held that the CEQA compliance was flawed because the wrong lead Agency had proceeded to examine the issues regarding rice culture discharges to water first.</p> <p>This is typical of the tunnel vision which develops when one Agency attempts to examine environmental impacts and alternatives without the full panoply of alternatives available to it, or under its authority, for mitigation such as, in this instance, money for hatcheries, predator removal, transportation of anadromous fish, fishing regulations and similar authorities. The myth that there will “be no cost” if the SWRCB simply adopts a different use of water in a water quality control plan is similarly part of the fundamental defect at work here.</p>	
1290	3	<p>The Project Description Is Wrong. The Use of the Wrong Project Description Has the Effect of Barring the Consideration of Reasonable Alternatives, Mitigation Measures, and Correctly Describing the Environmental Effects of the Project for Comparison to the Alternatives.</p> <p>The requirement that a CEQA Project description be properly described and finite is well known. However, in this case the combination of a truncated description of the project as only one to determine water quality and flows leads to an inadequate SED. Rather than considering fishery improvement measures and a project for those purposes, and after designing that project the assumption occurs in this SED that only through greater flows may a fishery project be implemented, leads to the clearest violation of CEQA imaginable . . . no alternatives or mitigation measures for a fishery improvement plan are really discussed, compared or considered here other than differences in the flow rates and quantities of water.</p> <p>“A curtailed or distorted project description may stultify the objectives of the reporting process. Only through an accurate view of the project may affected outsiders and public decision makers balance the proposed benefit against its environmental cost, consider mitigation measures, assess the advantage of terminating the proposal (i.e. the “no project” alternative) and weigh other alternatives in the balance.”</p> <p>Dusek v. Anaheim Redevelopment Agency (4th Dist 1986) 173 Cal.App.3d 1029, 1041.</p> <p>Although a SWRCB project is supposed to be open for comment and consideration of change, because this CEQA process is portrayed as a project to determine flow rates and quantities, only water is considered when the real project is one to increase fish numbers and change fishery conditions. No tools other than water are considered because the project description and choice of lead Agency are both wrong. In County of Inyo v. City of Los Angeles (3rd Dist 1981) 124 Cal.App.3d 1, 6, the Court rejected an EIR that described the purpose of the project and then removed from consideration the matters necessary for or possibly essential for achievement of the purpose. Here, the proposed project is described as a project to determine flows and water quality but the project is really to enhance fishery numbers, species and resources. Because of the description that the issues to be considered is water flows, “no alternatives” means that fish population numbers can be achieved with non-flow measures are not even discussed by the SWRCB SED.</p> <p>In some instances, the Courts have treated the lack of an accurate project description as related to piecemealing. Santiago Water District v. County of Orange (4th Dist. 1981) 118</p>	<p>The State Water Board has the authority, responsibility, and discretion to define its own project in accordance with statutory mandates and to propose water quality objectives to reasonably protect beneficial uses. The plan amendments’ focus on flows is in keeping with the State Water Board’s mandate to protect the quality of the waters of the state and establish water quality objectives to reasonably protect the beneficial uses of those waters. Focusing on flow does not constrain alternatives, eliminate alternatives with fewer water supply and economic impacts, bar consideration of appropriate mitigation measures, or in any way invalidate the SED analysis. Refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for information regarding the adequacy of the project description, including the scope and definition of the project. Refer to Master Response 1.2, Water Quality Control Planning Process, for information regarding the scope of the planning proceeding and responses to piecemealing concerns. Environmental impacts are discussed in the various resources sections of the SED, with summaries provided in the Executive Summary and in Chapter 18, Summary of Impacts and Comparison of Alternatives.</p> <p>Please see also response to comment 1290-1, above, for information regarding alternatives and mitigation measures. See response to comment 1290-2, above for information regarding the lead agency role and agency authority in this proceeding.</p>

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		<p>Cal.App.3d 818, 829-830 (EIR for mining operation did not properly include construction and use of water delivery facilities), or in other instances the project description does not allow a sufficient description of the environmental setting to satisfy CEQA. San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus (9th District 1994) 27 Cal.App 4th 713, 722-729. Regardless, the environmental setting is described in such a fashion that the goal is to establish greater numbers of fish and provide for greater fish survivability, but none of the alternative tools are examined. Only flows can accomplish this project according to the SED. Greater numbers or even ultimate survival of fish is CDF&amp;W authority and is really outside of the SWRCB authority to even quantify or estimate as to which tools might be most effective and have the least environmental impact and costs. The true project must be first examined and then the consideration of whether the project will be achieved and then funded and authorized by the legislature with water flows determined after each of those steps has occurred. Only in that way can the alternative means of providing for the fishery project to be free of tunnel vision effects and for CEQA to be satisfied.</p>	
1291	1	<p>We must protect the Delta from further over exporting. It is criminal. The tunnel dollars should be invested in desalination plants in the Los Angeles area, which would be a fair and equitable solution for everyone involved. The loss of more water would be a disaster for the delta area. Where are all the environmentalists on this issue?</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1291	2	<p>Lack of sufficient water flow has already caused serious problems for those of us who live in Discovery Bay. Lowering the flow levels below 60% would be an additional hazard to us from more toxic algal blooms, particularly below the 1990 levels of flow.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1292	1	<p>The 2016 Bay-Delta Plan Amendment &amp; SED executive summary does not discuss private ownership of water rights affected by the plan, and proposals for compensation for takings. I am a farmer using water from the Tuolumne and Merced River watersheds.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1293	1	<p>Please do not destroy my Delta! I have lived off and on in this area (Bethel Island/Discovery Bay) since I was a child. I have incredible memories of boating adventures with my family. It is a unique paradise, filled with character. It is a gem and treasure of California and the United States. And it should be treated with respect and the love it deserves. Unfortunately I have seen the quality of the environment slowly deteriorating. And after reading about the impacts of the tunnels, from both sides, I am convinced that this plan will destroy this piece of God's incredible creation. If you take water from upstream of us, then less fresh water comes our way. Gravity will force the channels and tracts to backfill with water from the Bay, which will increase the salinity of our water and kill fish populations, and ruin boats, docks and levees. We already suffer from horrendous algae blooms that seem to worsen every year.</p> <p>What do you think will happen when less fresh water flows through here? Even the current water export is too much for our Delta. And from my understanding already exceeds the promised maximum set in the '70s and flows at 110% of that maximum. These tunnels will only be a grab for more water. And it's appalling that the majority of this water doesn't even go to consumer homes, but to commercial enterprises that don't even benefit California in any direct way. Leaving our own small Delta farmers to suffer from lack of water for their own crops.</p> <p>Stop allowing big business to take our precious water resources. Let them truck water down from Oregon, or build a pipeline. Because lord knows that water is going to become more</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>

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		<p>valuable and scarce than oil. Current plans for construction include shutting off vital waterways which will severely damage local businesses. Marinas will go out of business, recreational areas will be cut-off from each other, [and] property values will diminish rapidly. I have neighbors who are already considering selling their homes. And I understand muck ponds will be created, leaving stinking rotting piles peppered throughout the Delta. Please don't do this! There are alternatives to destroying the environment that probably will cost a lot less money.</p>	
1294	1	<p>I'm an eco-artist and in 2012 created a 20 foot long "taxidermied" Sturgeon, to remind folks that they used to be that huge, right here in our Delta. They weighed as much as 2000 lbs and were a thriving fishery until we almost wiped them out. And here we are over a century later still threatening the survival of this 240 million year old (minimum!) species. They live to be well over 100, giving them time to bioaccumulate the many toxins we carelessly allow to pollute our rivers. Those toxins negatively impact their ability to reproduce: high flows will dilute and flush those toxins.</p> <p>Almost all of the talk about river flows is focused on restoring the salmon fishery. We need to restore the sturgeon fishery as well--they are the incredibly delicious to eat and their roe is highly prized caviar. But even more importantly they are a key species in maintaining the health of the entire delta eco-system--they eat the invasive overbite clams, and it has been suggested that their "plowing" of the sediment at riverbottom keeps it aerated, preventing anoxic deadzones that plague most estuaries worldwide.</p> <p>Plus they are simply amazing elders we should be honored to have in our midst. Rivers in both Oregon and Washington support profitable recreational "catch and release" sturgeon fishing, and the ecstatic faces of fisherpeople momentarily embracing their enormous catch testify to the marvel of contact with these ancient beings.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1294	2	<p>The scientists are telling you that 60% of unimpaired flow February to June is necessary for the health of the delta ecosystem and of all the various fish: there's your mandate, and your cover. Stick with the science!</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1294	3	<p>Sturgeon numbers have plummeted during the last few years of severely reduced flows and research into the cause has shown that they simply do not reproduce when there is not an adequate flow of cold, oxygen rich water around their eggs. They are blocked everywhere by dams from migrating upstream to spawn as they normally would, so they require consistent high flows in the rivers from February to June in order to reproduce, period.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1294	4	<p>We humans can figure out how to get by with less water--we fancy ourselves intelligent innovators, and actually we love a challenge. Though you wouldn't know it given all the whining I've witnessed at the Water Board hearing in Modesto or SFPUC meetings evaluating the supposed dire impact of your flow proposals. I've heard "experts" claim that it's impossible to ask folks to conserve anymore because they've already achieved a 30% drop in per capita usage to 60 gallons per day and certainly that is the most that can be asked or achieved. Meanwhile I use 12 to 24 gallons per day for my household and large food producing garden, with no sense of deprivation. In fact, the Water Board creating the necessity for us to change our water behaviors(due to reduced supply) could catalyze the adoption of practices which we desperately need to embrace anyway --for human survival in the face of climate chaos!</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>

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Ltr#	Cmt#	Comment	Response
1294	5	<p>It is being widely recognized that industrial agriculture is a primary contributor of greenhouse gas emissions and a driver of climate change. The majority of farmers claiming rights to the water that (truly rightfully) needs to flow down our rivers and through our Delta, are engaged in industrial ag, often just to raise crops for export. They can be encouraged to adopt more beneficial ag strategies (and crops) that require less water. For example, “Carbon farming” practices are getting a lot of traction at the state level, and will hopefully become highly incentivized or even mandated. These practices have been shown to reduce CO2 emissions and increase water infiltration into the soil and groundwater, so that less irrigation water is required.</p> <p><a href="https://oaec.org/food-systems/carbon-farming/">https://oaec.org/food-systems/carbon-farming/</a></p> <p><a href="http://www.carboncycle.org/programs/ag-carbon/">http://www.carboncycle.org/programs/ag-carbon/</a></p> <p><a href="https://oaec.org/our-work/projects-and-partnerships/california-climate-agriculture-network/">https://oaec.org/our-work/projects-and-partnerships/california-climate-agriculture-network/</a></p> <p>We now know that industrial agriculture's use of plowing and of chemical fertilizers and pesticides kills the biological life in the soil, leaving dead dirt with no organic matter and no capacity to absorb and hold water. (Hence requiring large inputs of irrigation water.)</p> <p>An inspiring example of carbon farming/organic no-till yet highly profitable food production, is Singing Frog Farm in Sonoma County. Applications of compost have increased soil organic matter to 12% and very little irrigation is needed as the biologically living soil holds moisture like a sponge. <a href="http://www.singingfrogsfarm.com/our-farming-model.html">http://www.singingfrogsfarm.com/our-farming-model.html</a></p> <p>Dr. Elaine Ingham consults around the world helping farmers revitalize their soil’s biology, with the result that virtually no fertilizer or herbicide or pesticide inputs are required to maintain fertility and productivity. This results in greater profitability too, and no pollutants are running off into rivers. AND irrigation requirements decrease substantially. These practices could be implemented on large acreages in the central valley.</p> <p><a href="http://sustainablefoodtrust.org/articles/roots-health-elaine-ingham-science-soil/">http://sustainablefoodtrust.org/articles/roots-health-elaine-ingham-science-soil/</a></p> <p><a href="http://www.soilfoodweb.com/drlnghams_cv.html">http://www.soilfoodweb.com/drlnghams_cv.html</a></p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1294	6	<p>I submit that both water and soil are a “public trust” and the broadscale adoption of carbon farming practices would represent a more responsible stewarding of those trusts. The atmosphere should be considered a public trust as well.</p> <p>A big dilemma for climate change intervention is that even if we stop burning fossil fuels and emitting greenhouse gases, there is already too much CO2 in the atmosphere, having a continuing impact on global warming. We must figure out how to extract CO2 from the atmosphere and the best and most hopeful way is through carbon sequestration from the atmosphere into the soil: The game changing Marin Carbon Project research conclusively demonstrated that the spreading of 1/2” of compost over vast swaths of rangeland stimulates a cascade of effects: the annual and continuing sequestration of high amounts of carbon from the atmosphere into a stable form in the soil; the increased abundance and nutritive quality of forage; and most important here, the increased absorption of water into the soil.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>

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Ltr#	Cmt#	Comment	Response
		<p><a href="http://www.marincarbonproject.org/about">http://www.marincarbonproject.org/about</a></p> <p>The highly respected scientists participating in the study have suggested that spreading even 1/4" of compost on rangelands over large areas of CA could offset a significant amount of our state's greenhouse gas emissions. And I would add, possibly contribute to the recharging of aquifers through increased stormwater infiltration. Question is what can we use to make all that compost?</p> <p>What about the elephant in the room: the flush toilet! (the water conservation opportunity staring us in the face that we refuse to look at!) Okay, time to tackle this one if we want there to be enough water for everyone, especially rivers and fish. Time to intercept the nutrients in our own effluent and put them to good use. And what higher use could there be than "using our poo to save our butts"? Maybe we can collect our precious poo, compost it with yard waste and food scraps, and then spread it on rangelands to pull CO2 out of the air and increase our chances of survival!</p> <p>Oops, is your fecal phobia getting triggered? Of course! It would require a massive public education campaign, true. But it would save a massive amount of water, (duh), and prevent a massive amount of nutrients from polluting our waterways, contributing to algal blooms.</p> <p>Many people are doing important work on this front:</p> <p>Thermophilic composting of humanure has been proven to destroy pathogens</p> <p>(Thermopile Project). Current research at Stanford and Davis is focused on what happens to pharmaceuticals during the hot composting process: are they rendered safe for the environment? Thus far results are promising. <a href="http://www.thermopileproject.com">http://www.thermopileproject.com</a></p> <p>Occidental Arts and Ecology Center has just gotten high level research permits to track the performance of composting toilets they have installed in new housing. This could lead to major regulatory changes. <a href="https://oaec.org/our-work/projects-and-partnerships/composttoilet-project/">https://oaec.org/our-work/projects-and-partnerships/composttoilet-project/</a></p> <p>Rich Earth Institute, University of Michigan and others have a \$3 million NSF funded project to do further research on human urine as a fertilizer.</p> <p><a href="http://richearthinstitute.org/wpcontent/uploads/2016/12/ProjectSummaryContext_ForSharing.pdf">http://richearthinstitute.org/wpcontent/uploads/2016/12/ProjectSummaryContext_ForSharing.pdf</a> . The flush toilet was a choice. An extremely unwise one at this point in the face of inadequate fresh water supplies. We can un-choose it and choose to hot compost our feces instead! We can! We're supposedly a smart and adaptable species! Maybe even smart enough to save ourselves from extinction.</p>	
1294	7	<p>In summary, I am proposing that we can give the rivers 60% of unimpaired flow AND thereby be prompted to embrace other beneficial practices:</p> <p>We can change agricultural practices to increase the amount of organic matter and biological life in the soil, thereby requiring less irrigation water. Less run-off pollution and less carbon release into the atmosphere would result.</p> <p>We can increase stormwater infiltration and augment groundwater resources by spreading</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>

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Ltr#	Cmt#	Comment	Response
		<p>compost on rangelands, at the same time catalyzing the sequestration of carbon into the soil.</p> <p>We can collect our human poo and hot compost it, thus capturing those nutrients, and making all the fresh water currently required to convey it available for other uses.</p> <p>Challenge the public to conserve even more water with rebates for low flow fixtures, appropriate landscaping, elimination of lawns, re-use of greywater, and harvesting of rainwater.</p>	
1294	8	<p>Please please give our Sturgeon Elders the water they need to thrive! Give the Delta the water it needs to function as an effective eco-system.</p> <p>We need living rivers and vibrant fish populations, not lawns and flush toilets!</p> <p>I submit that even if unconsciously, we humans can sense whether the natural environment around us is flourishing or in steep decline, and that has an impact on our mental health. Rampant depression and substance abuse may have something to do with the way we are treating the world around us, and the beings that share it with us.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1294	9	<p>Let's release that 60% of unimpaired flows into our rivers, so we can all feel the rebounding exuberance and exhilaration of our Delta eco-system!</p> <p>Thank you for doing the best you can, on behalf of all beings, and for seizing this opportunity to simultaneously advance many beneficial changes in our human behaviors!</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1295	1	<p>We appreciate that the Revised SED represents a serious effort on the part of the State Water Resources Control Board (SWRCB or Board) to address the many concerns raised in previous comment letters on the original SED. In particular, we are pleased that the Revised SED recognizes the importance of biological goals and objectives and effective adaptive management to adequately protect fish and wildlife resources in the San Joaquin River and its tributaries.</p> <p>However, we remain concerned that the revised water quality objectives lack the structure and definition necessary to allow a finding that fish resources will be reasonably protected. To the extent structure is provided, it reveals a proposal that will not provide flow conditions adequate to meet existing biological standards such as the salmon doubling objective contained in the 2006 Bay-Delta Plan or protect the Public Trust.</p> <p>Consequently the Revised SED, which errs strongly on the side of providing flexibility at the expense of details, will only cement the long-standing water management practice of placing the burden of an inadequate and uncertain strategy on the most compromised water user in the system: the fish. As a result, fish populations and others that rely on healthy fish populations for their livelihoods and recreation will continue to shoulder most of the burden of providing water for other needs. The Board must use this process to better balance the allocation of water between different uses.</p> <p>The Revised SED acknowledges the current dismal predicament of salmonids in the San Joaquin/Bay Delta and the failure of the previous Bay-Delta Plans to reverse their trajectory. "The Bay-Delta is in ecological crisis. Fish species have not shown signs of recovery since adoption of the 1995 Bay-Delta Plan objectives intended to protect fish and wildlife. Several</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments related to support or opposition of the plan amendments, a higher or lower percent of unimpaired flow, or an LSJR alternative. This comment does not raise significant environmental issues. Please see Master Response 1.1 and Master Response 1.2, Water Quality Control Planning Process, regarding the public trust doctrine and the requirements of the State Water Board regarding the public trust. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments regarding the LSJR plan amendments and the salmon protection objective (salmon doubling), science and policy support for adopting the plan amendments and reasonable protection for fish and wildlife beneficial uses while moderating impacts on water supply for drinking water and agriculture. This master response describes the program of implementation and provides additional information about the Stanislaus, Tuolumne, and Merced Working Group, biological goals, and San Joaquin River Monitoring and Evaluation Program.</p>

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		<p>species of fish are listed as protected species under the California Endangered Species Act (CESA) and under the federal Endangered Species Act (ESA)." (Revised SED, ES-1.)</p> <p>Salmon and steelhead in the San Joaquin watershed cannot again afford to be on the losing end of a half-developed strategy. Fortunately, the SWRCB has the information and tools available to ensure that its revised water quality objectives are clear, meaningful, adequately protective of fish species and consistent with the requirements of state and federal law. To do this, we recommend that the SWRCB include specific population and/or habitat goals and targets for all species of concern, including the salmon doubling goal, in the LSJR objective and program of implementation. Additionally, we recommend that a higher initial starting flow of 50% unimpaired flow, supported by the science as being more protective of anadromous salmonids, and an adaptive management unimpaired flow range of 40%-60% be selected.</p>	
1295	2	<p>Concern: The revised water quality objective lacks sufficient detail to permit informed decision-making or facilitate a finding that salmon and steelhead are "reasonably protected."</p> <p>We agree with the general approach of the draft LSJR objective and its program of implementation (Preferred LSJR Alternative) which anticipates the provision of flows that will more closely mimic the natural hydrograph to maintain the natural production of viable native fish populations in the February through June time period. Specifically, the revised LSJR objective seeks to:</p> <p>"[m]aintain inflow conditions from the San Joaquin River watershed to the Delta at Vernalis sufficient to support and maintain the natural production of viable native San Joaquin River watershed fish populations migrating through the Delta. Inflow conditions that reasonably contribute toward maintaining viable native migratory San Joaquin River fish populations include, but may not be limited to, flows that more closely mimic the natural hydrographic conditions to which native fish species are adapted, including the relative magnitude, duration, timing, and spatial extent of flows as they would naturally occur.</p> <p>"Indicators of viability include population abundance, spatial extent, distribution, structure, genetic and life history diversity, and productivity. A percent of unimpaired flow between 30%-50%, inclusive, from each of the Stanislaus, Tuolumne, and Merced Rivers shall be maintained from February through June. Notwithstanding the above unimpaired flow requirement, a minimum base flow value between 800-1,200 cfs, inclusive, at Vernalis shall be maintained at all times during February through June." (Revised SED, Appendix K, p. 18.)</p> <p>Unfortunately, this standard provides little certainty that salmonids will even receive "reasonable" protection despite the conclusions of the Revised SED. Lacking any quantitative metrics or other guidance regarding how to determine whether an "inflow condition" is sufficient to "support and maintain the natural production of viable native San Joaquin River watershed fish populations," the LSJR objective leaves us with only two certainties; (1) that a base flow between 800-1200 cfs will be maintained at Vernalis in February through June and (2) that an unimpaired flow as low as 30% unimpaired (below or close to the current average flow of the San Joaquin's three tributaries) will be maintained from the Merced, Tuolumne and Stanislaus Rivers. The science is clear that these items alone will do nothing to change the current status of imperiled salmon and steelhead species in the San Joaquin watershed. [Footnote 1: See CDFW 2013 and TBI et al 2013.]</p>	<p>Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, regarding modifications to the plan amendments.</p> <p>See Master Response 1.2, Water Quality Control Planning Process, and Master Response 3.1, Fish Protection, regarding the scientific basis of the plan amendments.</p> <p>See Master Response 2.2, Adaptive Implementation, and Master Response 3.1 regarding adaptive implementation, biological goals, and evaluating success.</p>

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1295	3	<p>Recommendation: The LSJR objective should include specific population and habitat targets for all species of concern including the AFRP salmon doubling targets.</p> <p>The Revised SED notes that one of its main purposes is to document the Board’s analysis of the effects of the updated LSJR objective. However, the mostly narrative form of the LSJR draft objective and the to-be-completed structure of the program of implementation make it difficult to discern what the objective actually requires, what environmental changes will result from its implementation and how the program of implementation expects to achieve the objective. The narrative portion of the LSJR draft objective requires "[i]nflow conditions that reasonably contribute toward maintaining viable native migratory San Joaquin River fish populations. . ." (Revised SED, Appendix K at 18.) It further states that "[i]ndicators of viability include population abundance, spatial extent, distribution, structure, genetic and life history diversity, and productivity." (Id.)</p> <p>The narrative section of the objective represents an adequate overarching goal statement and the unimpaired flow range is useful to establish bookends to an analysis. However, the objective does not provide any specific and measurable targets or metrics for the indicators it references. Such metrics are necessary to provide the objective sufficient structure to allow the effects of its implementation to be meaningfully analyzed and to determine whether the program of implementation will actually achieve it. The Revised SED recognizes this in part by including a process for biological goal development (including a reference to the salmon doubling objective) following the approval of the revised water quality control plan. "The salmonid biological goals for this program of implementation will be specific to the LSJR and its tributaries and will contribute to meeting the overall goals for each population, including the salmon doubling objective established in state and federal law." (Revised SED, Appendix K at 33.)</p> <p>While we appreciate the reference to the salmon doubling objective and agree that it may be appropriate to defer some parts of the goals and objective development process to post-plan approval, deferring all of it leaves the SWRCB with a thin rationale to support its assertion that this plan will reasonably protect salmonids. Deferral becomes even more problematic when there are few details regarding the specifics of the post-plan biological goal development process.</p> <p>We recommend that the LSJR objective be revised to be consistent with the salmon doubling objective contained in the existing Bay-Delta Water Quality Control Plan (2006 Bay-Delta Plan). Additionally, at a minimum, the LSJR objective should include the Anadromous Fish Restoration Plan (AFRP) salmon doubling targets for the Merced, Tuolumne and Stanislaus Rivers to provide a pre-plan approval benchmark that can facilitate a quantitative assessment regarding whether the proposed flow prescriptions will achieve the conditions necessary to meet the targets.</p> <p>The salmon doubling requirement is a necessary and appropriate inclusion as it can be found in the existing 2006 Bay-Delta Plan, is required by state [Footnote 2: "It is the policy of the state to significantly increase the natural production of salmon and steelhead trout by the end of this century. The department shall develop a plan and a program that strives to double the current natural production of salmon and steelhead trout resources." (Cal. Fish &amp; Game Code section 6902.)] and federal [Footnote 3: "Develop within three years of enactment and implement a program which makes all reasonable efforts to ensure that, by the year 2002, natural production of anadromous fish in Central Valley rivers and streams will be sustainable, on a long-term basis, at levels not less than twice the average levels</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments regarding a description of the plan amendments, migratory corridors, the salmon protection objective (salmon doubling), biological goals, San Joaquin Monitoring and Evaluation Program, and suggested modifications to the plan amendments that were not made. Specific population and habitat targets may be included in Biological Goals as part of the program of implementation. They are not incorporated into the LSJR flow objective.</p>

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		<p>attained during the period of 1967-1991." Central Valley Project Improvement Act. 34 U.S.C. § 3406(b)(1). (1992.) law, is a good salmon abundance target, and AFRP has developed the salmon doubling production targets for each tributary. [Footnote 4: Anadromous Fish Restoration Program Final Plan, Appendix B-1. 2001. Population targets for fall-run Chinook salmon necessary to achieve the doubling requirement include 22,000 for the Stanislaus River, 38,000 for the Tuolumne River and 18,000 for the Merced River.]</p> <p>Additionally, we recommend that the SWRCB consider a process for including specific population and habitat targets for all species of concern into the LSJR objective prior to its finalization including utilizing existing information.</p> <p>Inclusion of quantitative objectives is necessary for the SWRCB to support any conclusion that the revised water quality control plan is reasonably protective of salmonids. For instance, the Revised SED's biological effects analysis should demonstrate how proposed flows support the habitat conditions (physical and ecological) required by fish populations. Fish habitat is composed of multiple interacting components including water (quality/ quantity), soil/ substrate, vegetation, and invertebrate prey availability.</p> <p>In order for a fish population to be successful, habitat conditions must be met for each individual life stage, across all the habitat components necessary for that life stage. Moreover, flow is only relevant in relation to life-stage specific thresholds for flow mediated habitat and behavioral attributes (e.g. sufficient flow to inundate adequate rearing habitat, maintain suitable temperatures for juvenile outmigrants, trigger movement); it is therefore not only critical that prescriptions be evaluated against these thresholds quantitatively, but those evaluations should be the primary focus and means of determining the adequacy of proposed flows for salmonids and other fish species in the Revised SED.</p>	
1295	4	<p>Recommendation: The Board should utilize measurable objectives, associated targets, and key metrics from existing scientific documents and reports for inclusion in the LSJR objective.</p> <p>We recommend that the LSJR objective be modified to be consistent with the existing salmon doubling objective in the 2006 Bay-Delta Plan and include AFRP salmon doubling targets for the Merced, Tuolumne and Stanislaus Rivers. Additionally, we recommend that specific population and habitat targets for all species of concern be included in the LSJR objective. To facilitate this, we recommend that the SWRCB utilize existing information sources that quantify both: a) the habitat conditions necessary to achieve fish recovery (using AFRP doubling targets), as well as b) the species level responses (individual, cohort and population) indicative of both progress towards and attainment of recovery objectives. These sources include but are not limited to:</p> <p>a. Science Evaluation Panel (SEP): A collaborative group of scientists working on behalf of state and federal agencies (including SWRCB staff), NGOs and water interests recently completed "Conservation Planning Foundation For Restoring Chinook Salmon (Oncorhynchus tshawytscha) And O. Mykiss In The Stanislaus River." [Footnote 5: Science Evaluation Panel (SEP), 2016. Conservation planning foundation for restoring Chinook salmon (Oncorhynchus Tshawytscha) and O. Mykiss in the Stanislaus River. Administrative Report. This report is available at <a href="https://www.dropbox.com/sh/h6lmw8lh2aikdnp/AABWR7KHyetlzSl6YggxGj7Ua?dl=0">https://www.dropbox.com/sh/h6lmw8lh2aikdnp/AABWR7KHyetlzSl6YggxGj7Ua?dl=0</a> and is incorporated by reference.] The report details biological and environmental (i.e. habitat) objectives for the Stanislaus River and was the subject of a SWRCB workshop in February</p>	<p>The commenter provides suggested references and sources for the State Water Board to use in establishing specific population and habitat targets to be included in the LSJR flow objectives. The information in these sources is generally consistent with information found throughout the SED, including Master Response 2.1, Amendments to the Water Quality Control Plan, which references SEP, and Master Response 3.1, Fish Protection, which references the NMFS Recovery Plan for Central Valley Chinook Salmon and Steelhead. Please see response to comment 1295-3 and please see Master Response 2.1 for a discussion of biological goals.</p>

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		<p>2017.</p> <p>b. Central Valley Flood Protection Plan Conservation Strategy includes a detailed analysis of floodplain habitat needs in order to support CVPIA salmon targets for all Central Valley rivers within the State Plan of Flood Control. The analysis includes specific inundated acreages needed for the basins within the Central Valley in order to provide adequate habitat for juvenile rearing (DWR 2016).</p> <p>c. NMFS Recovery Plan for Central Valley Chinook Salmon and Steelhead (WR, SR) provides a scientific basis for quantifying recovery of Threatened and Endangered Central Valley Salmonid populations, including quantifying viability. The recovery plan additionally specifies conditions as well as specific actions necessary to recover Threatened or Endangered salmonid populations in the Central Valley.</p> <p>d. Temperature objectives for different life history stages (CDFW, EPA) have been established and are currently being applied to the management of flow releases in Central Valley rivers to support fish populations.</p> <p>e. The San Joaquin River Restoration Program (SJRRP) in its 2012 report Minimum Floodplain Habitat Area for Spring and Fall-run Chinook Salmon modeled floodplain habitat needs for fish populations associated with the restoration program. The report also presents habitat suitability criteria for salmonids in terms of depth, temperature, velocity, cover, and inundation timing and duration (SJRRP 2012).</p> <p>Because no one process or planning effort can achieve salmonid recovery on its own, recovery is doomed to failure in the absence of objectives that support the primary regulatory and habitat focused processes operating in the Central Valley and effectively integrate their efforts and jurisdictions. As described above, many of these objectives have already been developed and are available. To facilitate integration across plans and processes, the Revised SED should include these objectives, identify to what extent those objectives are achievable within the scope of this process, and quantify the extent to which implementation of the revised water quality objectives will advance or achieve those objectives.</p>	
1295	5	<p>Recommendation: The Board should apply [specific] objectives and metrics recommended to flow prescriptions to ensure that they are reasonably protective of fish.</p> <p>We are concerned that the LSJR objective and program of implementation lack the detail necessary to facilitate the required finding that the revised water quality control plan is reasonably protective of fish. Incorporating the [specific] objectives and metrics referenced above into the LSJR objective is necessary for the SWRCB to demonstrate whether or not the habitat extent and quality necessary to support all life stages of salmonids is achieved by the proposed flow regime.</p> <p>After specific objectives and metrics are incorporated into the LSJR objective, the Board should specifically analyze its proposed flow alternatives against those objectives. Of particular note, the analysis of habitat in terms of wetted acre days provided in the Revised SED, while quantitative, is not a sufficient metric to quantify habitat and significantly over-estimates habitat. Calculations of estimated acreage should be refined to include only those acres with sufficient (modeled or measured) depth, temperature, velocity, cover (extent and suitability), inundation duration, and timing of habitat availability (both inter and intra-</p>	<p>Please see response to comment 1295-3. Please see Master Response 2.2, Adaptive Implementation, for additional information regarding the San Joaquin Monitoring and Evaluation Program. The plan amendments have been modified to include a request for Delta Science Program to conduct periodic reviews of the San Joaquin River Monitoring and Evaluation Program. Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, to see a summary and description of modifications to the plan amendments. Please refer to SED Appendix K to see all modifications to the plan amendments.</p>

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		<p>annual). For an example of the application of these habitat suitability criteria to refine an inundated acreage analysis, see the SJRRP report Minimum Floodplain Habitat Area For Spring And Fall-Run Chinook Salmon (SJRRP 2012).</p>	
1295	6	<p>Recommendation: The Board should utilize quantitative objectives to evaluate the opportunities and trade-offs across different flow alternatives.</p> <p>In considering the costs and benefits of each of its flow alternatives, the Board should use objectives to determine whether each alternative is structured such that it maximizes its ability to meet the specific needs of species. Doing so will enable an evaluation of the biological opportunities and trade- offs across different flow management scenarios. For example, in the analysis provided by TBI (See TBI 2016, Figure 3) the modeled application of temperature objectives to percent unimpaired flow prescriptions reveals that in the fall (Sep-Dec) on the Tuolumne River, temperature is fairly consistent for a significant portion of the river across all flow percentages. In the late winter and spring, however (Feb-May) the difference between 40% and 50% unimpaired flow regimes has a significant impact on the suitability of temperatures across several different segments of the river (Id).</p> <p>Objectives that are even more refined can ensure that flow management is optimized to make the most efficient use of limited water. For example, applying a simple temperature target for steelhead in the summer would invite a management scenario that seeks to achieve cold temperatures throughout the system during the summer months and requires a large amount of water. By contrast, a more specific suite of objectives that specify the habitat conditions and extent necessary for only those life history stages that use the river during the summer, across a geographic extent limited to what is necessary to provide over-summering habitat for a target population size, would invite flows that use much less water in order to simply maintain temperatures in those limited and specific locations where fish will be holding. Such a process would create additional benefits by more closely mimicking the way the system functioned naturally.</p>	<p>To review responses to comments submitted by other entities within the comment period on the 2016 Recirculated Draft SED, please refer to the index of commenters in Volume 3 to locate the letter number(s) of interest.</p> <p>Please see Master Response 1.1, General Comments, regarding the overall approach to the analysis and the appropriate consideration of beneficial uses and economics. Please see Master Response 8.0, Economic Analyses Framework and Assessment Tools, regarding the overall framework for the consideration of economic effects and the assessment tools used in the SED. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments regarding the science and policy justification of the plan amendments and the development of biological goals and objectives. Please see Master Response 2.2, Adaptive Implementation, regarding the implementation of adaptive implementation in response to implementation of the plan amendments and through the potential use of operations plans.</p>
1295	7	<p>Concern: The initial flow prescription of 40% unimpaired flow is insufficient to protect fish and wildlife beneficial uses.</p> <p>The LSJR objective, lacking quantifiable metrics, guarantees only that a base flow between 800-1200 cfs will be maintained at Vernalis in February through June and that an unimpaired flow as low as 30% unimpaired (below or around the current average flow of the three tributaries) will be maintained from the Merced, Tuolumne and Stanislaus Rivers. The Program of Implementation recommends a 40% unimpaired flow for an initial flow. (Revised SED, Appendix K, p. 29.) The best available science indicates that this flow level is insufficient to reasonably protect salmonids and would not provide habitat conditions in the tributaries and lower San Joaquin River sufficient to achieve salmon doubling, or even to provide "reasonable protection of fish and wildlife." [Footnote 6: See SEP 2016, DWR 2016, TBI 2016, CDFW 2012, TBI et al. 2012.]</p> <p>The mostly narrative form of the draft LSJR objective and its lack of specific biological or habitat criteria make it difficult to determine what specific environmental outcomes can be expected from its implementation and therefore it is difficult to analyze exactly how it will affect fish and wildlife beneficial uses. What is clear, however, is that the draft LSJR objective will result in significantly less flow than what the Board previously determined was required to fully recover public trust resources. [Footnote 7: Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem. State Water Resources Control Board.</p>	<p>To review responses to comments submitted by other entities within the comment period on the 2016 Recirculated Draft SED, please refer to the index of commenters in Volume 3 to locate the letter number(s) of interest (i.e., The Bay Institute).</p> <p>Please see Master Response 1.1, General Comments, for responses to comments in general support of the plan amendments, a specific percent of unimpaired flow, or an LSJR alternative.</p> <p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for responses to comments regarding the plan amendments, biological goals and objectives, and the salmon protection objective (salmon doubling) as it relates to the plan amendments. Please see Master Response 3.1, Fish Protection, and Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, regarding the expected benefits of the plan amendments. Section 19.2, Temperature, and Master Response 3.1, Fish Protection, identifies beneficial temperature effects under different percentages of unimpaired flow (e.g., 40 percent).</p>

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		<p>August 3, 2010.]</p> <p>In its 2010 Delta Flow Criteria Report, the Board determined that 60% of unimpaired flow in February through June was required to protect public trust resources and extensive scientific information submitted by fish and wildlife agency scientists and conservation groups in this proceeding has corroborated that finding. [Footnote 8: Id; see also CDFW 2010, TBI et al. 2010.]</p> <p>For example, fish and wildlife agency scientists and conservation groups have submitted extensive scientific information in this proceeding demonstrating the relationship between average winter-spring flow levels in the San Joaquin River at Vernalis greater than 5,000 cfs (the threshold identified as necessary for population growth) and subsequent increases in Chinook salmon escapement. [Footnote 9: See CDFG 2010; TBI et al. 2010, TBI et al. 2012.] This information demonstrates that an impaired flow requirement between 50-60% is required to achieve these average flow levels and thus promote salmonid population growth. [Footnote 10: See TBI et al. 2012.]</p> <p>Additionally, analysis performed by The Bay Institute (TBI) of modeled percent unimpaired flow scenarios relative to objectives for inundated floodplain acres necessary to achieve CVPIA salmon targets from the Central Valley Flood Protection Plan (DWR 2016), indicate that 40% unimpaired flow will not be sufficient to achieve juvenile rearing habitat needs in the median water year type on the Stanislaus, Merced, or Lower San Joaquin Rivers respectively (See TBI 2016, Figures 1 and 2).</p> <p>The Revised SED's identification of an initial flow rate requirement of 40% is clearly not enough to promote robust salmon population growth and thus is not sufficient to protect fish and wildlife beneficial uses. Achieving conditions sufficient for salmon recovery will therefore necessitate either or both a) greater than 40% unimpaired flow, or b) well-studied non-flow measures that, in combination with flow prescriptions, are sure to achieve biological and habitat objectives.</p>	
1295	8	<p>Recommendation: The Board should adopt an initial starting flow greater than 40% unimpaired flow.</p> <p>The Revised SED contains insufficient analysis to support the assumption that a 40% unimpaired initial flow is adequate for protection of fish and wildlife beneficial uses. An objective must ". . . ensure the reasonable protection of beneficial uses. . ." (Water Code § 13241.) Without a scientific justification for concluding that a lesser standard reasonably protects fish and wildlife beneficial uses, the Board must require flows as close to 60% of unimpaired flow as is possible considering other demands on the system. The Board must adopt water quality objectives that intend ". . . to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved. . ." (Water Code § 13000.)</p> <p>We recommend that the Board adopt an initial unimpaired flow requirement of 50% with an adaptive range of 40%-60%. Specifically, TU recommends that Appendix K, pp. 18 and 30-31 be modified to include the higher adaptive range and that p. 29 be modified to identify 50% unimpaired flow as the initial starting flow.</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments that generally support the plan amendments, a specific percent of unimpaired flow, or an LSJR alternative. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding a description of the plan amendments, including the purpose and goal to reasonably protect fish and wildlife. Please see Master Response 3.1, Fish Protection, regarding the scientific basis for the plan amendments, including the percent of unimpaired flow, using adaptive implementation, in the plan amendments.</p>
1295	9	<p>Concern: The Program of Implementation's adaptive management framework lacks</p>	<p>Please see Master Response 2.2, Adaptive Implementation and SED Appendix K for responses to comments regarding the framework and efficacy of the LSJR flow objectives and the use of adaptive implementation</p>

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		<p>necessary detail to determine whether proposed actions will meet the LSJR objective.</p> <p>The Revised SED's program of implementation contains several promising elements including plans for biological goals development, adaptive management, and comprehensive monitoring. Unfortunately, the Revised SED defers the development of the majority of these elements to the future or to a to-be-determined working group and does not include appropriate safeguards making it impossible to assess whether and how the proposed plan protects salmonids. The program of implementation must include a "description of the nature of actions which are necessary to achieve the objectives. . ." (Water Code § 13242(a).) Therefore, the adaptive management plan must be described with sufficient specificity to allow an informed decision regarding whether or not it will achieve the objective.</p> <p>The program of implementation contemplates a number of possible flow changes, both annual and long-term, pursuant to the adaptive management program. "Adaptive adjustments to the flow requirements . . . may be approved by the State Water Board on an annual or long-term basis, or by the Executive Director as provided below, if information produced through the monitoring and review processes described in this program of implementation, or other best available scientific information, indicates that the change for the period at issue will satisfy the following criteria for adaptive adjustments: (1) it will be sufficient to support and maintain the natural production of viable native San Joaquin River watershed fish populations migrating through the Delta; and (2) it will meet any existing biological goals approved by the State Water Board." (Revised SED, Appendix K at 29.)</p> <p>The adaptive adjustments described in the Revised SED can be approved by the SWRCB's Executive Director if (1) the proposed adjustment has the consensus of all members of a to-be-determined workgroup (STM Working Group) in cases such as adjustment of the required percent of unimpaired flow or (2) if the adjustment is recommended by one member of the STM Working Group in cases such as delaying release of some portion of February-June flows to after June or managing the February-June flows as a total volume of water. In the case of certain multi-year flow changes, SWRCB approval is required.</p> <p>"The required percent of unimpaired flow for February through June may be managed as a total volume of water and released on an adaptive schedule during that period where scientific information indicates a flow pattern different from that which would occur by tracking the unimpaired flow percentage would better protect fish and wildlife beneficial uses. The total volume of water must be at least equal to the volume of water that would be released by tracking the unimpaired flow percentage from February through June. The Executive Director may approve such changes on an annual basis if the change is recommended by one or more members of the STM Working Group." (Id at 30.)</p> <p>"The release of a portion of the February through June unimpaired flow may be delayed until after June to prevent adverse effects to fisheries, including temperature, that would otherwise result from implementation of the February through June flow requirements. Again if one or more members suggests." (Id.)</p> <p>The STM Working Group carries significant responsibilities such as assisting "with the implementation, monitoring and effectiveness assessment of the February through June LSJR flow requirements" yet does not require that its membership include any NGO representation, such as conservation or fishery organizations or even an opportunity for public input on STM decisions. Granted, the Board's Executive Director can appoint other</p>	<p>methods. The program of implementation (described in Appendix K) provides a sufficient framework for implementation of the LSJR flow objectives. Ideally, more information, such as biological goals, if they were already available, would add more rigor to the adaptive implementation framework. Biological goals, and other such information, is not currently available. Rather than delay adoption and implementation of the LSJR flow objectives, the program of implementation describes a process under which biological goals and other elements of adaptive implementation can be developed, during which time the LSJR flow objectives can be implemented. At a minimum, attainment of the starting unimpaired flows, with some flow shifting and shaping, will achieve the numeric and narrative fish and wildlife protection goals.</p> <p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, and Master Response 2.2, Adaptive Implementation, for responses to comments regarding the STM Working Group.</p> <p>Conservation and fishery organizations may request participation in the STM Working Group or public outreach subgroups. Such subgroups would help provide additional transparency and opportunity to best adaptively manage this complex system.</p> <p>Master Response 2.2, Adaptive Implementation, provides additional description and examples of how adaptive management and the bounds under which it may proceed.</p>

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		<p>members to the STM Working Group but it is at his/her sole discretion.</p> <p>Presumably, conservation and fishery organizations should derive some assurance from the adaptive management criteria noted above. Changes to flow prescriptions can be adjusted only if the change will meet the LSJR narrative objective and "any existing biological goals approved by the State Water Board." However, it is virtually impossible to ascertain whether a flow prescription meets the LSJR objective without including additional metrics and the SWRCB has declined to include any biological goals in its revised water quality objective, or identify any possibilities for such objectives in its Revised SED, deferring instead to a post-plan approval process.</p> <p>There are scant details about the post-plan process other than that the SWRCB will seek information from interested stakeholders and will try to approve the goals within 180 days from OAL approval of the amended water quality control plan. "The State Water Board will seek recommendations on the biological goals from the STM Working Group, State Water Board staff, and other interested persons. The State Water Board will consider approval of the biological goals within 180 days from the date of the Office of Administrative Law's (OAL) approval of this amendment to the Bay-Delta Plan and may modify them based on new information developed through the monitoring and evaluation activities described below or other pertinent sources of scientific information." (Revised SED, Appendix K, at 33.)</p> <p>The SWRCB is asking a lot of the discerning public to place its faith that fish and wildlife resources will be protected to future decisions and processes that contain few meaningful constraints and ambiguous opportunities for public input. We recommend that the SWRCB consider a different course, one that will facilitate a confident and supported conclusion by the Board and others that the revised water quality control plan will protect fish and wildlife beneficial uses.</p>	
1295	10	<p>Recommendation: The adaptive management program should be guided by goals and objectives that are described in the LSJR objective.</p> <p>The adaptive management program as described in the Revised SED aims to provide maximum flexibility to decision-makers to alter the volume, timing and shape of flows on frequent bases. The level of discretion allowed in the program is problematic without clear decision-making processes and metrics. Adaptive management changes (especially those that can be approved on the recommendation of one interest) must be guided by objectives that are specific, measureable, achievable, relevant, and time-bound (S.M.A.R.T.). There are several existing resources that the SWRCB can consult to include goals and objectives in the LSJR objective prior to approval of the revised plan. Inclusion of objectives would help address many of [our] concerns including discomfort with the flexibility of the flow regime and decision-making structure.</p> <p>Objectives effectively serve as triggers for adaptive management or additional actions in the cases where objectives are not achieved. In order for the collaborative adaptive management process proposed in the Revised SED to be successful, specific quantitative objectives must be identified and flow prescriptions designed to achieve them in the SED/before the adaptive management process begins. This is the case as Adaptive Management, by definition, requires thresholds for progress or success, which if not met can trigger additional adaptive actions.</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, and Master Response 2.2, Adaptive implementation for responses to comments regarding the program of implementation, biological goals, and the STM Working Group. The intent of the biological goals described in the program of implementation (Appendix K) is to inform adaptive methods. Examples of things that can be measured are provided in the Section "Biological Goals", and the intent is that these goals are specific, measurable, achievable, relevant, and time-bound (S.M.A.R.T.) The following language has therefore been added to this section: "Biological goals should be specific, measureable, achievable, relevant, and time-bound (S.M.A.R.T.)."</p> <p>Master Response 2.2, Adaptive Implementation, provides additional description and examples of adaptive management and the bounds under which it may proceed.</p>

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		<p>While specific details of the adaptive management process, including which metrics are selected as triggers and what type of adaptive actions should be associated with those triggers, are more appropriate for development during the proposed adaptive management process, the objectives themselves should be identified in the water quality control plan and guide initial flow (and potentially non-flow) prescriptions. Specifically, we recommend that the program of implementation "Adaptive Methods for February through June Flows" section found in Appendix K, pp.29-31 be modified to specify that adaptive management decisions must help achieve all biological and habitat goals and objectives adopted by the Board to be approved.</p>	
1295	11	<p>Recommendation: The adaptive management program should include constraints on the extent to which flow can be manipulated.</p> <p>The adaptive management program anticipates the modification or "shaping" of flow requirements over time. However, such modifications should not occur without demonstrating that they are truly providing an environmental benefit. In other words, the ability to modify or shape flows should be subject to constraints. Of course, if the constraints are not sufficiently defined, it may be difficult for parties to agree whether or not modifications are warranted. To address this issue, the adaptive management program should frame its constraints in terms of biological and habitat objectives as they can serve to constrain flow management to actions that directly contribute to achieving objectives or resolving stressors for fish species.</p> <p>While some flexibility around flow management can be helpful, if not properly constrained, it can also introduce a level of uncertainty in the ways flows will be applied that can thwart successful application of flows to achieve environmental benefits. For example, with too much ambiguity, different interests may make the case for how the flows that best serve their needs are also creating the greatest "environmental benefit" (an issue that has arisen as a recurrent challenge for the SJRRP).</p> <p>In order to avoid this, but maintain the ability to manage flows, flexibility in flow management should be constrained by quantitative prioritized objectives for application of flow, informed by the requirements of species' life stages undergoing the greatest stress. For example, the stressor analysis for the Stanislaus River completed by the SEP (2016) indicates that juvenile rearing habitat extent and condition as well as juvenile migratory conditions are the primary stressors for salmon populations (SEP 2016). Flow management on the Stanislaus should therefore be constrained by a requirement to meet objectives required for juvenile rearing and migration first, and only to determine that there is additional/ flexible water once those objectives have been achieved.</p>	<p>Please refer to Master Response 2.2, Adaptive Implementation, for responses to comments regarding flow shaping. The narrative and numeric flow objectives are the constraints on adaptive implementation.</p> <p>Master Response 2.2, Adaptive Implementation, explains that in the absence of consensus of the STM working group, there will either be no adaptive changes, or the changes will have to be approved by the State Water Board, so there will be opportunity for public review and comment. The Executive Director may, however, make small changes such as flow shaping in a single year, based on the recommendation of only one STM Working Group member.</p> <p>The numeric constraint of flow shifting is that only a portion of the amounts over 30 percent of unimpaired flow may be shifted to other times of year, so the majority of flow will still be provided during the February through June period.</p> <p>Master Response 2.2, Adaptive Implementation, provides additional description and examples of adaptive management and the bounds under which it may proceed.</p>
1295	12	<p>Recommendation: The Board should acknowledge its authority to require non-flow measures and require that biological and habitat goals and objectives guide the development of these measures.</p> <p>The Revised SED does not acknowledge the authority of the SWRCB to require water rights holders to implement non-flow measures as part of the program of implementation despite legal authority and past practice. As noted by conservation groups in past comments, the SWRCB has the legal authority to require water rights holders to invest in habitat restoration and other non-flow measures under the physical solution doctrine. [Footnote 11: See TBI et al. 2013, Exhibit 2, at 6-7.]</p>	<p>The State Water Board recognizes that non-flow actions must be part of the overall effort to comprehensively address ecosystem needs in the Delta and tributaries, as a whole, and that results from the implementation of such actions can be used to inform adaptive implementation decisions in response to implementation of the plan amendments. Please see Appendix K, Revised Water Quality Control Plan, for a list of recommended non-flow measures. Descriptions of a range of non-flow actions that would complement the flow objectives for the reasonable protection of fish and wildlife are provide in SED Chapter 16, Evaluation of Other Indirect and Additional Actions, Section 16.3, Lower San Joaquin River Alternatives – Non-Flow Measures.</p> <p>Please see Master Response 2.2, Adaptive Implementation, for more information regarding the program of</p>

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		<p>Additionally, the SWRCB has previously used its legal authority, including the physical solution doctrine, section 5937 of the Fish and Game Code and Clean Water Act section 401, to require non-flow measures in water rights and water quality certifications. [Footnote 12: See SWRCB Decision 1631 where the SWRCB ordered the Los Angeles Department of Water and Power to undertake habitat restoration projects in order to reduce flow requirements; see also SWRCB Water Rights Order 98-05 (approving habitat restoration measures implementing Decision 1631). See, SWRCB Water Rights Order 90-16 (holding that under the physical solution doctrine and section 5937 of the Fish and Game Code, the Board can require releases from a reservoir greater than unimpaired inflow during certain times of the year, in order to keep fish in good condition).] These non-flow measures have included habitat restoration projects, fish passage measures, gravel augmentation and the placement of large woody debris.</p> <p>Given that the Board will use its water rights and water quality authority in this proceeding to implement the revised water quality objectives [Footnote 13: Revised SED, Appendix K at 26 notes "[u]nder its water rights and water quality authority, the State Water Board will continue, as necessary and appropriate, to determine the contributions from water right permit and license holders needed to implement the objectives in this Plan."], the Board should consider whether non-flow measures are required to achieve the LSJR objective and acknowledge its ability to include them in relevant water rights or water quality certifications as needed.</p> <p>To do so, the Board should utilize biological and habitat goals and objectives to guide the development of non-flow measures and ensure that when combined with non-flow measures objectives will be achieved with prescribed flows. As a component of this analysis, in cases where objectives can be met through either flow in isolation, or flow in combination with non-flow measures (e.g. grading and restoration of the channel form and vegetation) the Board should a) specify the type and extent of non-flow measure required to meet objectives and b) provide an economic analysis of the relative costs associated with flow versus combined flow/ non-flow solutions.</p>	<p>implementation and non-flow measures.</p> <p>Please see Master Response, 5.2, Incorporation of Non-Flow Measures, for further information on non-flow measures, including a discussion of the role of non-flow measures and their relationship to the plan amendments.</p> <p>Please also see Master Response 1.2, Water Quality Control Planning Process, for responses to comments regarding the program of implementation and the State Water Board’s Clean Water Act section 401 authorities.</p>
1295	13	<p>Recommendation: The Biological Goals Process, if necessary, should occur prior to finalization of the revised plan and should include a defined process for public input and SWRCB approval.</p> <p>We recommend that the SWRCB utilize existing resources to identify biological goals and objectives for inclusion in the LSJR objective including the salmon doubling objective contained in the 2006 Bay-Delta Plan. To the extent that the SWRCB requires assistance in identification or development of biological goals or other metrics (similar to the Biological Goals Process contained in the Revised SED), TU recommends that this process occur prior to the finalization of the revised water quality objective. After the LSJR objective and program of implementation is revised to include biological goals and objectives, an opportunity for public input on the revisions should be provided.</p> <p>If the SWRCB chooses to maintain its existing direction, it should provide more detail regarding its proposed biological goals process including the anticipated process for public input and Board approval of the biological goals. Specifically, TU and the Conservancy recommend that such detail be included in the Program of Implementation’s "Biological Goals" section described in Appendix K, p.33.</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, regarding biological goals and the program of implementation. Additional discussion of biological goals can be found in Master Response 3.1, Fish Protection and Master Response 2.2, Adaptive Implementation.</p>

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1295	14	<p>Recommendation: Alternatives to the STM Working Group should be considered.</p> <p>We are concerned that the STM Working Group may be unworkable. The adaptive management regime is structured such that the Board’s Executive Director can approve flow changes if all members of the STM Working Group agree (in some cases) or if only one member of the STM Working Group proposes the change (in other cases). Given that the proposed make-up of the Working Group includes interests that have a long history of disagreement on water management measures, this structure seems ripe for conflict. In one scenario, any STM Working Group member can veto a legitimate flow change proposal. In another scenario, any STM Working Group member can push through a flow change without the support of any other working member. Either case is far from ideal.</p> <p>We propose that the Board consider a process whereby the Board and fishery agencies make adaptive management decisions after considering public input. Such a process would engage all interested stakeholders in the decision-making process while ensuring that the Board has access to varied and current information. It would also ensure a clear decision-making pathway, based on non-biased scientific findings, that is less susceptible to gridlock and delay.</p>	<p>Please see Master Response 2.1, Amendments to the Water Quality Control Plan, and Master Response 2.2, Adaptive implementation, for responses to comments relevant to the STM Working Group. It is correct that there is potential for conflicting views by STM Working Group members. That is why the adaptive implementation framework allows the Executive Director to act only on short duration, small adaptive changes. The alternative suggestion, to use a process whereby the State Water Board and fishery agencies make adaptive management decisions after considering public input, is too lengthy to allow its use within the one-year timeframe for adaptive implementation to be successful. This State Water Board process is what will be used for any multi-year, or other large changes that require Board approval. The State Water Board must make decisions at a publicly noticed meeting, so there will be opportunity for public review and comment of any proposed adaptive implementation that requires Board approval. The details of how exactly to vet any STM working group proposals (either unanimous or with only single member support) will also be a process for the STM to determine. The backstop, in all cases, is still adherence to the 40 percent of unimpaired flow, with minimal flow shaping and shifting recommendations by State Water Board staff or any single member of the STM Working Group.</p>
1295	15	<p>Recommendation: The STM Working Group should include NGO representation, including at least one fishery organization, and should be required to accept public input at defined times. Additionally, the SED should describe the procedures the group will follow when "consensus" is not possible.</p> <p>We have several recommendations in the event the Board decides to retain the STM Working Group as part of the program of implementation. First, we recommend that the Executive Director be required to appoint at least two representatives from conservation or fishery non-governmental organizations with demonstrated interest and relevant expertise to serve on the STM Working Group to help ensure balanced and diverse discussions and decisions.</p> <p>Second, we recommend that STM decisions accept public input on certain decisions/deliverables such as the annual implementation plans. We appreciate that there is an anticipated public process associated with the comprehensive plans.</p> <p>Third, we recommend that the SED provide some structure to the STM Working Group decision-making process including procedures to be applied when consensus cannot be achieved or when strong dissent is registered to a proposed flow change. At present, the Revised SED suggests that the STM Working Group itself develop proposed procedures for adjusting February through June flow requirements (See Revised SED, Appendix K, p. 34.). TU and the Conservancy recommend some thought be given to this process now to give support to the theory that the STM Working Group will be an effective decision-making body.</p> <p>Finally, we recommend that flow changes only be approved if they will achieve all biological and habitat goals and objectives including the salmon doubling objective. At present, the language suggests that adaptive changes could be approved if any biological goal approved by the Board is achieved. The flexibility afforded to the STM Working Group to adjust and re-shape flow regimes must be properly constrained by robust biological metrics, many of which are already available.</p>	<p>The State Water Board can provide direction to the Executive Director at any time, before or after adoption of the Plan, regarding the composition of the STM Working Group. SED Appendix K states that the Executive Director can include any persons that have appropriate expertise.</p> <p>Any adaptive implementation that requires State Water Board approval, such as when there is no STM Working Group consensus, will have a public process during which public input can be provided to, and acted upon by, the Board. Any such Board process will be noticed to the public for review and comment.</p> <p>Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan and Master Response 2.2, Adaptive Implementation, for responses to comments regarding the STM Working Group. There is a requirement and process to develop structure for the STM Working Group decision-making—the program of implementation requires the STM Working Group, in consultation with the Delta Science Program, to develop procedures to standardize the way adaptive adjustments are made to the February through June flows and guide development of operations plans</p> <p>Master Response 2.2, Adaptive Implementation, provides additional description and examples of adaptive management and the bounds under which it may proceed and also provides discussion of the basis upon which adaptive changes may be made.</p>

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		<p>We recommend that the Board modify the program of implementation's "Stanislaus, Tuolumne and Merced Working Group" section found in Appendix K, p. 32 as well as the "Adaptive Methods for February through June Flows" section found in Appendix K, pp. 29-31 to address above recommendations.</p>	
1295	16	<p>The Revised SED does not support its contention that it strikes a balance between competing uses.</p> <p>The Board is charged with adopting a water quality control plan that will ensure "the reasonable protection of beneficial uses" and it must attain the highest water quality possible considering all demands being made on the system. (Water Code §§ 13241, 13000.) This inevitably requires that the Board must balance the needs of competing uses before arriving at an objective.</p> <p>However, the Board's balancing discretion is somewhat constrained by state and federal law. For instance, the Board "has an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses wherever feasible." (See National Audubon Society v. Superior Court, 33 Cal.3d 419, 446 (1983); State Water Resources Control Board Cases, 136 Cal.App.4th 674, 777-78 (2006).) The Board must also comply with federal law and ensure that "[f]or waters with multiple use designations, the criteria shall support the most sensitive use." (40 CFR § 131.11(a).)</p> <p>Further, the Board cannot balance away statutory expressions of the Public Trust, such as section 5937 of the Fish and Game Code which requires the owner of any dam to release sufficient flows to maintain fish in good condition below the dam. [Footnote 14: Cal. Fish and Game Code § 5937; see California Trout, Inc. v. State Water Resources Control Bd., 218 Cal.App.3d 187, 195 (1990); see also San Luis &amp; Delta Mendota Water Authority v. Haugrud, No. 14-17493, WL 677537 at 12 (Feb. 21, 2017) affirming that the Bureau of Reclamation must comply with Fish and Game Code section 5937 even without Board modification of its water right permits, "[5937] not only allows, but requires BOR to allow sufficient water to pass the Lewiston Dam to maintain the fish below the Dam. The use of the unconditional 'shall' indicates that such required releases are not dependent on having a proper water permit."]</p> <p>Therefore, as the Board attempts to determine what objectives will provide reasonable protection of beneficial uses, it must also ensure that its objectives support the most sensitive use, consider the extent to which protection of public trust resources is feasible, and ensure that required instream flows are sufficient to maintain fish in good condition below reservoirs on the Stanislaus, Merced and Tuolumne Rivers.</p> <p>The Revised SED claims that the proposed LSJR objective strikes a balance between competing uses of water. The Board supports this assertion by pointing to the fact that it can quantify the amount of flow going to each use with an unimpaired regime.</p> <p>"Unimpaired flow clearly identifies the allocation of a seasonally and annually variable quantity of water between the reasonable protection of fish and wildlife and other beneficial uses of water. Establishing the percent of unimpaired flow reflects the State Water Board's explicit balancing of competing beneficial uses--the allocation of water to environmental uses relative to other, primarily agricultural, uses. In contrast, the current 2006 Bay-Delta Plan's reliance on a table of different flow requirements to protect fish and wildlife for different seasons and hydrologic conditions provides no indication of the overall</p>	<p>Please see Master Response 1.2, Water Quality Control Planning Process, for a discussion of the water quality control planning process and Bay-Delta proceedings, including the consideration of multiple beneficial uses through the plan amendments and the water quality control planning process, and the State Water Board's protection of beneficial uses in the Bay-Delta and tributary watersheds through independent proceedings.</p> <p>Please see Master Response 3.1, Fish Protection, for a description of the how the plan amendments will protect fish.</p>

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		<p>balancing that has been considered between competing uses of water.</p> <p>"The use of a percent of unimpaired flow assigns an explicit percent of unimpaired flow to fish and wildlife, with the remaining percent of unimpaired flow available for other uses. Both amounts are easily calculable because the total unimpaired flow is easily calculable. For example, if the flow requirement is 40 percent of unimpaired flow from February through June, the remaining 60 percent is available for all other uses. In practice, even more than 60 percent is available for other uses because some of the water used is returned to the river, and would contribute to the 40 percent unimpaired flow requirement. Unimpaired flow is therefore a more transparent way to allocate water towards the protection of fish and wildlife resources and other uses of water." (Revised SED, ES at 13.)</p> <p>We appreciate the fact that the percentage of unimpaired flow paradigm presents in a very clean and intuitive manner what slice of a pie each "use" will receive. However, this balancing rationale is faulty. First, as we discuss in multiple sections above, it is not actually clear what amount of water will be dedicated to fish and wildlife uses despite the suggested initial starting flow percentage. The LSJR objective and adaptive management program prescribe a wide range of suggested flows, an inadequate base flow, and an adaptive management structure that is maximally flexible with safeguards that will be determined later if at all.</p> <p>"The unimpaired flow objective is not intended to be implemented in a way that requires rigid adherence with a fixed percent of unimpaired flow. It is intended to determine a quantity of water that can be 'shaped' or shifted in time to provide more functionally useful flows. Functionally useful flows are designed to achieve a specific function, such as increased habitat, more optimal temperatures, or a migration cue. The unimpaired flow requirement is also not intended to remain at one fixed percent, but rather to be adaptively implemented within a range of unimpaired flow in response to changing information and changing conditions." (Revised SED, ES at 16.)</p> <p>Given that the Board contemplates that the flow requirement will not remain in a fixed percentage, it makes little sense to justify its balancing analysis on it. To conduct a meaningful balancing exercise, the Board must first quantitatively show how its proposed flow regime will reasonably protect beneficial uses. In the case of fish and wildlife resources, the analysis must go several steps beyond "proposed flows are higher than the existing flow requirement." Instead it must show how the proposed flow regime, in terms of quantifiable metrics, achieves biological goals including the salmon doubling goal. The Board must be able to confidently conclude this before conducting any further balancing. Without it, the Revised SED retains its original flaws where the impacts to fish and wildlife resources are determined using best case scenario assumptions.</p> <p>Essentially, the Revised SED assumes that the implementation of the LSJR objective will translate into improved conditions for aquatic resources because it assumes that many post-plan approval processes and decisions will unfold smoothly and yield credible outcomes. The reality, however, is that there are too many unknowns to confidently conclude anything about post-plan processes. What we do know is that the flows that are guaranteed (base flow and an unimpaired flow requirement as low as 30%) will result in conditions very near the status quo, which is a condition of rapid decline of aquatic species. Further, the Revised SED conclusions (and thus balancing) appear to be made without acknowledgement that aquatic resources are the most sensitive (and therefore least</p>	

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		flexible) use in the system.  While the Revised SED continues to assess impacts to fish and wildlife resources using best case scenario assumptions, it analyzes impacts to water supply without considering the availability of water supplies from wastewater recycling, improved water use efficiency, urban stormwater capture, and other sources as previously recommended by conservation groups. (See TBI et al 2013.) The lack of quantifiable analysis regarding whether and how the LSJR objective reasonably protects fish and wildlife uses combined with an overly conservative water supply impact analysis strongly suggests that the Board’s balancing analysis was not equally weighted.	
1295	17	To ensure the Board’s balancing analysis is transparent and fair, we recommend the following actions. First, the Board should analyze in quantitative terms how the LSJR objective and program of implementation reasonably protect fish and wildlife uses and achieve the salmon doubling objective. Second, the Board should demonstrate that the LSJR objective and program of implementation support the most sensitive use (the fish), protect public trust resources to the extent feasible, and provide instream flows sufficient to maintain fish in good condition below reservoirs on the Stanislaus, Merced and Tuolumne Rivers. Finally, the Board should meaningfully analyze the availability of alternative water supplies, including improved agricultural and urban water use efficiency or water recycling.	Please see Master Response 1.1, General Comments, and Master Response 1.2, Water Quality Control Planning Process, regarding State Water Board consideration of beneficial uses within the context of the water quality control planning process and public trust resources. Please see Master Response 3.1, Fish Protection, regarding measurable benefits to aquatic resources from the plan amendments. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for discussion on the salmon doubling objective. Please also see Master Response 1.1, regarding the SED program-level review. The SED adequately identifies the significant effects of the plan amendments and defers the development of detailed site-specific information to future project-specific review.
1295	18	TU and the Conservancy recommend that the Board adopt an initial starting flow of 50% with a range of 40-60% of unimpaired flow. Additionally, we encourage the Board to provide more detail and structure to the LSJR objective and adaptive management program by including biological and habitat goals and objectives prior to plan approval. Doing so will allow the Board to provide scientific support for the proposed objective and better articulate how fish and wildlife will benefit from its implementation. This information is necessary for the Board to credibly conclude that its decision will restore balance to the San Joaquin River system.	Please see Master Response 1.1, General Comments, for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues. Specifically, refer to the Higher Flow Requirements section and SED Appendix C, which discusses in detail the consideration of other beneficial uses.  Please see Master Response 2.1, Amendments to the Water Quality Control Plan, for additional information on the Program of Implementation, adaptive implementation, biological goals, and the STM Working Group.
1295	19	[ATT1: Figure 1. Analysis of habitat acreage generated by percent unimpaired flow allocations, and associated acreage shortfalls relative juvenile rearing habitat needs objectives (DWR 2012, SEP 2016) in the Merced and Stanislaus Rivers (TBI 2016).]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1295	20	[ATT2: Figure 2. Analysis of percent unimpaired flow allocations against juvenile inundated habitat needs objectives (DWR 2012) during the time window required by Chinook salmon juvenile life stages in the Lower San Joaquin River (TBI 2016).]	The commenter is providing this attachment for reference purposes in support of their comments. Those comments are addressed in these responses to comments; therefore, no additional response is required.
1296	1	I’m writing to support the findings of the earlier report recommending a 60% unimpaired flow of the San Joaquin River between February and June of each year. The goal  The 40% goal as proposed is inadequate. Please consider supporting the 60% goal.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1296	2	As climate change continues to impact the California landscape, it is critical that the Control Board get behind an approach that is based on best available science and the needs of the entire ecosystem.  It is clear that climate change will have negative impacts that are, to a large degree, unknown in terms of scale and timing. It would be ideal to at least get the San Joaquin River on a footing that is sustainable in the medium term, to set the stage for the challenges	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.

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		ahead.	
1297	1	The full Board of the State Water Resources Control Board should require staff to terminate and begin anew its work on the Substitute Environmental Document of the 2016 Bay Delta Plan issued for public comment.	Please see Master Response 1.1, General Comments, for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues.
1297	2	<p>Ample public and expert testimony have been offered to impeach the justifications cited by staff to the Board regarding their recommendation and the draft language of the SED. Specifically, the staff and head of the California Department of Water Resources ("DWR") South Delta Branch provided the board compelling reasons to reject the draft SED. DWR testified in January's hearing that the board's SED proposal was "without evidence, [contained] incomplete scientific information, [was] ill-suited for real-time operations, and [was based on] unverified assumptions."</p> <p>DWR further testified that net flow direction, not flow rate or water levels, was the only causative factor in salinity of Delta waters and that the SED's stated benefits related to salinity factors in fish survival and habitat impacts were scientifically untenable. DWR also identified a significant gap created by the order with respect to management and achievement of groundwater goals in areas affected by the SED, namely that the SED's flow action would transfer to SGMA authorities groundwater depletion problems that do not currently exist and would aggravate existing groundwater depletion in various critically depleted or marginally depleted aquifers.</p> <p>Further, DWR noted that the SED relied on real-time flow management data and decision-making criteria that is not presently available from either existing or future proposed stream-flow measurement systems in the impacted area. We [California Water Alliance] concur with DWR's recommendation that the only reasonable action is withdrawal of the SED draft and starting anew with a fresh, accurate, and complete scientific basis.</p>	Please see Master Response 1.1, General Comments, for responses to comments regarding substantial evidence and adequacy of the SED. Please see Master Response 3.3, for responses to comments regarding SDWQ objectives and salinity conditions. Historically, southern Delta water quality has generally ranged from 0.2 deciSiemens per meter (dS/m) to 1.2 dS/m. Salinity generally remains below 1.0 dS/m when salinity at Vernalis is less than approximately 0.9 dS/m. For additional information, please see SED Chapter 5, Surface Hydrology and Water Quality, and Appendix F.2, Evaluation of Historical Flow and Salinity Measurements of the Lower San Joaquin River and Southern Delta. Please see Master Response 2.1, Amendments to the Water Quality Control Plan, Master Response 2.2, Adaptive Implementation, and 3.1, Surface Water Hydrology and Hydrologic Modeling Using the Water Supply Effects Model, for responses to comments regarding calculation of unimpaired flow and compliance.
1297	3	<p>DWR's testimony, conclusions and recommendations received significant and previously unavailable support upon publication in the North American Journal of Fisheries Management, a scientifically respected biosciences journal, of an independently peer-reviewed, 12-year study that staff did not consider as it wrote the SED draft. The study, conducted with real stream-flow measurement data and actual fish counts on the Stanislaus River demonstrates that the SWRCB's SED proposal would provide no significant overall increase to fish populations. Rather, flows at the prescribed level required by the SED would kill target species or limit their migration as they traveled upriver to reach their spawning grounds or, for emerging smolt, descended the rivers to the ocean.</p> <p>The study further notes that existing unimpaired stream flow requirements ordered by the board were instituted prior to completion of any scientific study of benefit in response to the authors' own initiation of pulse-flow regimens on the Stanislaus by their sponsor, a local irrigation district. In consequence, the Board's prior orders implemented on many rivers in Northern California, now becoming the subject of proposed changes under the SED, lacked necessary scientific basis for imposition and were, instead speculative and assumptive in nature.</p> <p>The Board should note that, since those orders were made and pulse flow releases initiated, the populations and diversity of target species have declined further rather than reversed their negative trends, a result that concurs with the present study's findings. These are serious discrepancies. They contradict the SED's named benefits intended from new actions,</p>	<p>The comments are noted, however, some of the comments include inaccuracies. We presume that the commenter is referring to the publication cited as:</p> <p>Matthew L. Peterson, Andrea N. Fuller &amp; Doug Demko (2017) Environmental Factors Associated with the Upstream Migration of Fall-Run Chinook Salmon in a Regulated River, North American Journal of Fisheries Management, 37:1, 78-93. This study was not conducted or funded by DWR; the study was conducted by employees of FISHBIO and was funded by Oakdale and South San Joaquin irrigation districts and the Tri-Dam Project as indicated in the published journal article.</p> <p>The study by Peterson et al. (2017) was conducted to evaluate the effects of flow on the migration of adult fall-run Chinook salmon during the fall time period, which is unrelated to the plan amendments. The goal of the plan amendments is to improve conditions during the spring time period for rearing and migrating juvenile salmon and steelhead, and other native fish. Furthermore, the study that is referenced found evidence that both temperature and dissolved oxygen conditions affected the overall run timing of adult Chinook salmon at the Stanislaus River weir, but the study fails to acknowledge that flow conditions affect temperature and dissolved oxygen. Additionally, understanding how adult migration and holding conditions effect egg viability is an extremely important factor for measuring the overall success of reproduction that the study fails to consider. Finally, the study authors (Matthew L. Peterson, Andrea N. Fuller &amp; Doug Demko) recommend (page 91 of the publication) that if pulse flows are continued, they: (1) be conducted in a more experimental fashion and (2) mimic the natural hydrograph for the time of year. Both of these recommendations are supportive of the proposed plan amendments described in SED.</p>

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		<p>and they further demonstrate that even the Board’s existing orders concerning unimpaired stream flows maintained by dam releases may be harming rather than helping threatened and endangered species, even contributing to their decline.</p> <p>In combination with the testimony of DWR fisheries experts, the Board should order staff to withdraw the SED draft and start again with proper scientific justification to determine whether existing unimpaired stream flow management practices are beneficial to target species and are fairly applied in light of the harm done to fish, habitats, other wildlife and waterfowl, and to other users of water from the rivers affected by the SED.</p>	<p>As described in Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objectives, and Chapter 19, Analyses of Benefits to Native Fish Populations from Increased Flow between February 1 and June 30, the plan amendments for the LSJR flow objectives are intended to capture the natural pattern of variability and retain the attributes of the natural flow regime to which native LSJR basin fish and wildlife adapted, which is important for supporting key ecosystem processes. Please refer to Master Response 3.1, Fish Protection, regarding the use of best available science, the unimpaired flow approach, and fish decline and the need for increased flows.</p> <p>As described in Appendix K, Revised Water Quality Control Plan, experiments may be conducted, within the adaptive implementation framework, in order to improve scientific understanding of needed measures for the protection of fish and wildlife beneficial uses, such as the optimal timing of required flows. Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, for clarification regarding the methods used during the February through June period for making adaptive adjustments to the LSJR flow objective. Please refer to Master Response 2.2, Adaptive Implementation, for further clarification regarding the process of adaptive implementation.</p>
1297	4	<p>We [California Water Alliance] recommend that the Board reject the SED draft and call for a full CEQA-compliant environmental review that properly considers all environmental impacts of the proposed unimpaired flow requirements.</p>	<p>Please see Master Response 1.1, General Comments, for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues.</p>
1297	5	<p>We [California Water Alliance] recommend that the Board reconsider its existing pulse-flow orders in light of the peer-reviewed and published FishBio study results and seek staff response regarding appropriate modifications to the Board’s pulse flow and unimpaired stream flow orders that may be appropriate to avoid harm to target species and prevent further declines in threatened or endangered fish populations.</p>	<p>See the response to this comment letter (1297-3) regarding the Peterson et al. (2017) fall pulse flow publication. Please see Master Response 1.1, General Comments, for responses to comments that either make a general comment regarding the plan amendments or do not raise significant environmental issues.</p> <p>Please refer to Master Response 2.1, Amendments to the Water Quality Control Plan, regarding the proposed modifications to the plan amendments.</p>
1298	1	<p>There is tremendous scientific uncertainty underpinning the Flows Document. Analytic flaws have been identified in great detail by numerous stakeholders, including affected local water districts, during the public review process associated with the document. This scientific uncertainty in turn raises a most foundational concern about the worth of the Flows Document and its "unimpaired flow" approach to species rehabilitation - namely, whether the Board’s process comports with the mandate of Article X, Section 2 of the California Constitution that California’s water resources are put to use to the fullest extent possible in ways which are not wasteful or unreasonable. By proposing the extraction of huge volumes of "unimpaired flows" from otherwise legal and beneficial water users, at enormous human cost and without any reasonable and commensurate assurance of benefit to the environment, we submit that the Flows Document has indeed proposed a wasteful and unreasonable use of water.</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>
1298	2	<p>This seems a particularly poor time in California for the Board to embark upon such an ambitious path. The Board should be painfully aware that we have just emerged from a historic, multi-year drought, which involved unprecedented hardship for California water users, and significant systemic questions remain about available year-over-year supply and infrastructure to sustain a growing California into an uncertain hydrological future. From an agricultural standpoint, dry-year and carryover storage impacts to vital surface water supplies that are undisclosed or obscured in the Flows Document and underlying modeling are particularly severe. Contrary to apparent assumption, water efficiency technologies do not offer an adequate solution to this problem, where such technologies are not always agronomically indicated, disrupt or fail to capture system-level efficiencies (Examples</p>	<p>Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.</p>

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		include conjunctive use management of available surface and groundwater, downstream reuse of return flows, as well as in lieu and active groundwater recharge), are more energy intensive, are technically or economically infeasible, increase yields but not overall consumption, and are in any case insufficient to close large dry year and future groundwater supply shortages. As Farm Bureau and others have pointed out, California remains in zero-sum mode with respect to water resources until basic questions are addressed regarding additional supply and statewide management, while the Flows Document would be destined to exacerbate that growing disconnect between water supplies and system demands, if adopted.	
1298	4	Numerous flaws have been identified in the Flows Document that cast considerable doubt on its likely effectiveness in achieving desired benefits for the species involved, including the Central Valley fall-run Chinook salmon, and in this regard the proposed flow objectives make no attempt to achieve any rational balancing of harms to the affected interests.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1298	5	In addition, the Flows Document appears to suffer from numerous legal infirmities. For example, the Flows Document brushes aside water rights priorities, even as it is dealing with some of the most senior water rights in the state. Without clear achievable objectives or any credible plan of implementation, the Flows Document ensures (essentially and impermissibly) that the project will be re-defined later. And, not least of all, the Flows Document appears to underestimate the distinct risk, and related statewide management and planning implications, of a massive basin wide adjudication.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1298	6	The Flows Document also fails to analyze, improperly analyzes, or significantly understates adverse environmental impacts in many areas while at the same time calling even acknowledged significant adverse impacts to water supplies and agricultural lands simply "significant but unavoidable." Overall, as a CEQA document, the Flows Document fails to thoroughly explore an adequate range of feasible alternatives and mitigation measures to achieve most or all of the stated objectives of the proposed project, while at the same time reducing or avoiding the significant adverse environmental impacts as required by law.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1298	7	There is a better path. Given the uncertainties in beneficial effect associated with the "unimpaired flow" proposals, on balance with the far greater harm which will be caused to water users on the Stanislaus, Tuolumne and Merced Rivers if the Flows Document is adopted, we think the State of California's better course is to pursue voluntary agreements with affected water users. These voluntary agreements would likely not only avoid far-ranging and wholly unnecessary economic shock to the region, but could also have greater beneficial effect on the fish populations which are of concern to the Board. In this regard, you have heard affected water districts outline a series of comprehensive alternative approaches to provide reasonable protection for fish and wildlife while at the same time reducing unwarranted water supply impacts and preserving the regional economies and social fabric of the affected region. Such common-sense, reasonable approaches can and should be further developed through intensive, good-faith negotiations with the affected water districts - and not in a mere follow-on "adaptive implementation" process that assumes the proposed 30-to-50-percent unimpaired flow as a base, but rather as a stand-alone separate alternative to the current Flows Document proposal.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1298	8	Conditions for fish can be significantly improved through a "functional flow" approach which targets affected populations directly, in a manner which is more efficient than the	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.

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		blunderbuss of "unimpaired flow."	
1298	9	The water districts have outlined non-flow measures for the benefit of species of interest, including programs with respect to competing predation, habitat, and timing of flows. Much of this work is grounded in the existing FERC relicensing processes on the Merced and Tuolumne Rivers, and in years of science and intensive management on Stanislaus River. Before looking toward blanket notions of "unimpaired flow" as the solution to fish and wildlife objectives, we urge the Board and State of California to turn their attention to these directions in proactive management and fisheries science with greater focus and urgency.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1298	10	As the Board Chair noted during one of the recent Phase 1 hearings, the Board does have a "track record" working with stakeholders on voluntary agreements to achieve Board objectives while avoiding harsh unintended consequences often associated with a more prescriptive regulatory approach. Farm Bureau does appreciate the stamina and thoughtfulness which the Board has approached the extensive public hearing process associated with the Flows Document, and if nothing else those hearings laid bare the limited range of prescriptive policy approaches that would be fruitful in achieving fisheries objectives on these rivers. We certainly hope that the Board will not now reverse its progress on developing consensus through voluntary agreements, and will instead carry forward its history of collaborative cooperation and practical flexibility on complex water issues on the Stanislaus, Tuolumne and Merced Rivers.	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1298	11	<p>In summary, the Flows Document appears to portend a water-rights overlay which would be an abrupt U-turn on over a century of orderly development of water resources on these river systems, and on the fabric and landscape of human development that has been the reasoned policy of the State of California. It arrives in a package of uncertain science which would be paid for at tremendous cost to both humans and the off-stream landscapes of the region. Its adoption would not be sound policy.</p> <p>We urge instead that the Board table this document and instead pursue voluntary agreements calculated to integrate both reasonable environmental objectives and the human use of water on the landscape.</p>	Please see Master Response 1.1, General Comments for responses to comments that either make a general comment on the plan amendments or do not raise significant environmental issues.
1299	1	<p>The [Tuolumne Utilities] District is concerned with the BDP/WQCP itself, and the inadequacy of its underlying environmental analysis that is the SED. The compartmentalization of the BDP into the proposed phases threatens a predetermination of how future phases must be developed and analyzed, and produces an inadequate Phase I environmental analysis since approval of Phase I will have sweeping and unresolved environmental impacts and consequences forwarded to future phases. This approach to environmental review is inconsistent with how this type of environmental analysis should be developed.</p> <p>To the extent that the WQCP and SED will implicate how the effects of future phases might be imposed upon the District, portions of its service area, or the surface waters upon which the District relies for water, whether by way of future incremental regulatory application through action of the SWRCB or other regulatory agencies, or at bar, then the SED fails to adequately examine the environmental effect on the District, its customers, upstream ecosystems and species, and the greater whole of Tuolumne County. In essence, the BDP's Phase I determinations will have the practical effect of tying the hands of future decision makers and render all other BDP/WQCP "phases" a fait accompli under which future environmental determinations will be force fit. Environmental justice alone demands a</p>	Please see Master Response 1.1, General Comments for responses to comments regarding adequacy of the SED and substantial evidence. Please see Master Response 1.2, Water Quality Control Planning Process, for responses to comments regarding the independent proceedings to Bay-Delta Plan updates.

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		more comprehensive, transparent environmental analysis.	
1299	2	Tuolumne County’s local economy has a median household income of \$48,493 and a per capita income of \$26,063. The county is rural with approximately 55,365 residents, of which 15,540 (28%) are seniors. The county’s median age is 47.3. Approximately 39% of the county’s population is very low or low income. These are relevant underlying economic factors that are of significant importance when analyzing the effects of WQCP, and the SED, and should be considered. [Footnote 2: TUD serves the substantial majority of county residents and businesses with treated and raw water, including large disadvantaged community (DAC) populations. The economic profile of the TUD service population is consistent with that of Tuolumne County, generally.]	<p>Consideration of disadvantaged communities (DACs) is provided in Chapter 22, Integrated Discussion of Potential Municipal and Domestic Water Supply Management Options.</p> <p>Please see Master Response 2.7, Disadvantaged Communities, regarding the plan amendments as they relate to DACs, consideration of DACs in the SED, and the State Water Board’s technical and financial assistance programs for DACs.</p> <p>Please see Master Response 8.2, Regional Agricultural Economic Effects, for detailed discussion on the regional agricultural economic effects of the plan amendments.</p>
1299	3	The SED does not adequately evaluate the economic impact of the potential effects of the proposed project on the [Tuolumne Utilities] District’s service area or Tuolumne County more generally. The local county economy is heavily reliant on tourism, recreation, access to rivers, reservoirs and lakes, as well as agriculture and logging. The project proposal for 40% or greater unimpaired flows will necessarily impact the local economy in a manner that the SED completely fails to analyze.	Please see Chapter 20, Economic Analyses, Section 20.1, Introduction, and Master Response 8.0, Economic Analyses Framework and Assessment Tools, for a description how economics were considered in the SED and the tools used. Please see Chapter 20, Section 20.3.5, Effects on Fisheries and Associated Regional Economies, and Section 20.3.6, Effects on Recreational Opportunities, Activity, and the Regional Economy, for quantification and evaluation of the commercial and recreational economic effects associated with the plan amendments. Please also see Master Response 8.4, Non-Agricultural Economic Considerations for additional information regarding potential recreational economic effects in the extended plan area.
1299	4	The SED fails to properly evaluate the economic impact of the proposed flow restrictions on the [Tuolumne Utilities] District’s customers, many of whom live in disadvantaged communities, are senior, or are otherwise very low and low income. Cost burdens forced upon these populations for the development of alternate water sources, loss of surface water sources, including without limitation, the loss of jobs will have a significant impact on these groups in particular, and the District’s service area and the county more generally.	Please see response to Comment 1299-2.
1299	5	<p>[Tuolumne Utilities] District’s customers rely on surface water from the South Fork of the Stanislaus River for approximately 97% of the local water supply. The District delivers approximately 3% of its potable water from ground wells. The local geology of fractured rock does not lend itself to the development of a long term, stable or safe source of water in place of surface water. Residents and businesses in Tuolumne County suffered significant loss of several hundred ground wells as a result of the recent drought’s effect on the region’s fractured rock geology.</p> <p>The SED does not adequately analyze additional groundwater development in a comprehensive way, either locally, upstream of the rim dams, or more generally downstream of the rim dams. The SED speaks in vague generalities about replacing surface water with "new" groundwater sources and over relies on this notional reference as if it would be an effective, environmentally sensitive alternative to the reduced surface water supplies imposed by the BDP. All of this culminates in a failure of the SED to properly analyze the environmental effects of increasing ground water development and reliance within the Plan Area. [Footnote 3: Plan Area includes those areas more particularly described in Chapter 1, §1.2 of the Bay-Delta Plan and Draft Revised SED, page 1-1 &amp; 1-2.]</p>	<p>Chapter 9, Groundwater Resources, and Chapter 13, Service Providers, acknowledge the limited availability of groundwater resources around the reservoirs and in the extended plan area. In general, consumptive surface water use around the reservoirs and in the extended plan area is relatively small (Chapter 13, Service Providers, Section 13.2.2, Extended Plan Area, and Section 13.4.4, Impacts and Mitigation Measures: Extended Plan Area). Therefore, if water users in the extended plan area chose to increase groundwater extractions to compensate for the surface water reduction, the increase in groundwater extractions would be relatively small, and the impacts would be less than significant (Chapter 9, Groundwater Resources, Section 9.4.4, Impacts and Mitigation Measures: Extended Plan Area).</p> <p>The SED is a program-level (not project-level) first-tier evaluation, consistent with State CEQA Guidelines, Section 15168. Therefore, a location-specific groundwater analysis is outside the scope of the SED, because the State Water Board cannot reasonably foresee the mitigation actions local water users would take in response to surface water reductions, and quantification of the impacts of the proposed LSJR flow objectives would be speculative. For example, if local water users chose to build new wells or deepen existing wells in response to the plan amendments, the State Water Board could not forecast the location of the new wells, new well depths, or new extraction rates. For a discussion on the scope and programmatic nature of the SED, the adequacy of the approach, and the requirements of CEQA for program-level review, please see Master Response 1.1, General Comments.</p> <p>The SED and plan amendments do not require or encourage increased groundwater pumping as a response to reductions in surface water. The SED merely reflects the historical local response to increase groundwater pumping when surface water availability is reduced. It will be up to local entities to determine the precise actions that would be taken in response to implementation of the plan amendments. For a discussion on the</p>

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			<p>groundwater impact analysis approach (including the thresholds and criteria used to evaluate impacts on groundwater resources), please see Master Response 3.4, Groundwater and the Sustainable Groundwater Management Act.</p> <p>For further discussion regarding groundwater resources and service providers, please see Master Response 3.6, Service Providers.</p>
1299	6	<p>The proposed decision presupposes that the vast unknown environmental effects of that decision can, or will, be adequately addressed in future phases, which is inconsistent with law and the establishment of good public policy. A failure to comprehensively analyze the implications of the entire project proposal, upstream, as well as, downstream, is also inconsistent with the State’s declaration that there is a basic human right to water. AB 685 declares that "...every human being has the right to safe, clean, affordable, and accessible water." Neither the provisions of WQCP or the SED specifically address this issue in a comprehensive or otherwise adequate manner such that the cumulative effects of an implemented plan can be recognized, or analyzed, let alone mitigated.</p>	<p>Please see Master Response 1.1, General Comments, for a general discussion of the plan amendments. Please see Master Response 1.2, Water Quality Control Planning Process, for a discussion of the water quality control planning process, including the State Water Board’s protection of beneficial uses in the Bay-Delta and tributary watersheds through independent proceedings. Please also see Master Response 1.2 and Master Response 2.7, Disadvantaged Communities, for a response to comments regarding the Human Right to Water (AB 685 which was codified as Water Code section 106.3)</p>
1299	7	<p>The SED does not adequately examine non-flow alternatives for protection of fish, instead relying almost exclusively on flows. The WQCP and the SED both fail to adequately consider ecosystem changes and their associated causes that have significantly contributed to the problems experienced by native fish species in the Delta. [Footnote 4: See Delta Independent Science Board report entitled "Flows and Fishes in the Sacramento-San Joaquin Delta," page 6 and generally.] The lack of such analysis is inconsistent with the environmental document’s requirement to adequately analyze alternatives, including the scientific bases thereof. The [Tuolumne Utilities] District objects to the proposed unimpaired flow regimen proposed for the Stanislaus and Tuolumne rivers.</p> <p>The proposals commit to a course of action without answering, or analyzing, the question of how upstream environmental impacts will be appropriately addressed. Instead such issues will be deferred to other of the plan’s phases, though the die will have already been cast. The proposal ignores critical scientific findings that are contrary to the state’s own desires threatening continued environmental injury under the state’s scheme. This approach frustrates the public interests of upstream communities served by the District by failing to adequately conduct a legally required comprehensive environmental review prior to taking action(s) that stand to impose significant environmental harm.</p>	<p>The State Water Board recognizes the importance of implementing non-flow measures to aid in the recovery of, and to support, salmon populations. Detailed descriptions of the non-flow measures that affected agencies may take are provided in Chapter 16, Evaluation of Other Indirect and Additional Actions, Section 16.3, Lower San Joaquin River Alternatives – Non-Flow Measures. The potential cost and environmental impacts of those actions in a programmatic level are evaluated after the description of each of the actions in Section 16.3.</p> <p>Please see Master Response 5.2, Incorporation of Non-Flow Measures, for an explanation of why non-flow measures are not alternatives to the plan amendments. The scientific basis for the LSJR flow objectives to protect fish and wildlife are documented in Appendix C, Technical Report on the Scientific Basis for Alternative San Joaquin River Flow and Southern Delta Salinity Objective.</p> <p>For a discussion regarding the need for improved flow in protecting fish and wildlife, consideration of fish predation, and the approach of unimpaired flow as functional flow, please see Master Response 3.1, Fish Protection.</p> <p>Part of the Tuolumne Utilities District is located in the extended plan area. Analyses of the environmental impacts in the extended plan area and mitigation measures are presented in the subsection entitled “Impacts and Mitigation Measures: Extended Plan Area” in Chapters 5, Surface Hydrology and Water Quality, to 14, Energy and Greenhouse Gases. Those impacts are summarized in Chapter 18, Summary of Impacts and Comparison of Alternatives, Table 18.2, Summary of CEQA Significance Determinations for LSJR Alternatives 2, 3, and 4 in Chapters 5–14—Extended Plan Area.</p>