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> the low average rainfall and court ordered restrictions and, in my opinion, severely misguided regulations that we saw formed in 2008 and 2009, created some of the most severe water shortages in farming communities in my district and throughout the valley in the last 3 years. Starting with a zero water allocation, zero percent in 2009, some of the hardest working people you'll ever meet, many of you in this room, stood in food lines, unable to have work because there was no water and it should have never happened. Thousands of jobs were lost and unemployment reached in communities like Mendota and Firebaugh, over 40%.

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Another speaker at the meeting, Fresno County Board of Supervisor Judy Case, described the socioeconomic impacts of the reduced water supplies, stating:

> We're here to talk about what happens when there's no water on the west side. Workers lost their jobs. They not only lost their jobs, they lost jobs that had become permanent with benefits so they had healthcare for their families. Unemployment in Fresno County was higher than the entire United States. We kept unemployment up at 43 percent. And people who have worked really hard to purchase their first home they lost it in foreclosure and they were put in food lines in which food was provided.
>
> As a County, we provide safety nets to help people in a position who can't help themselves and our request for services soared. Some families were forced to leave the area to look for jobs and for work and they left with their children which affected the local schools which lost students and the revenue that came to support those students. For families to survive, they left the house they had just bought and been so hopeful for and they moved in with relatives with two and three and four families living in the same house or apartment.

The statements made by one farmer at the scoping meeting exemplify the real-world impact of reducing water supply deliveries:

> 2009 is a year that is engraved in my mind and it is there because it should never happen again. The impacts were severe on our farm. On my farm alone, I have over 900 acres of land. On those 900 acres were losses that were huge. In farmgate prices, in millions of dollars of losses, in wages, in hundreds of thousands of dollars of food for millions of people around the country. The effects were terrible on our farm, but the effects were more terrible on our farm workers. We saw people without jobs. We saw people who were working then they were unemployed. People that instead of working 60 hours per week were working 40 and 45 hours per

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> week. We tried not to lay people off so we just reduced their hours because our farm was cut down from 2,200 to approximately 1,300 acres.
>
> There were other impacts in my area. We saw many people who lost jobs move away. These are people that are skilled at what they do. Driving tractors, irrigating and harvesting. Many of these people didn't come back. We saw in my area the little brown school out in the country that I went to since I was in first grade closed down for lack of enrollment. So, it hurts us a lot to think about that and we should never forget that.

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These statements reflect some of the significant socioeconomic impacts of reducing water supplies to the farms, families and businesses that depend of CVP and SWP water. These impacts are very real and must be honestly explored and evaluated in the NEPA process for any alternatives that would reduce CVP and SWP water supply deliveries.

4. Environmental Justice

Although the impacts from reduced water supplies will have significant impacts on people and farmland throughout the state, the hardest hit areas will be in predominantly poor and minority communities—especially in the Central Valley where employment losses and environmental effects will be the most prevalent. As a result, water export losses have the potential to disproportionately impact disadvantaged communities and persons.

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5. Biological Resources, Including Fish, Wildlife, And Plant Species

Perhaps more than any other resource category, the evaluation of impacts to biological resources will entail a multi-fold analysis. On one hand, reduced Delta exports will impact biological resources dependent upon imported water from the CVP or SWP for their sustenance. Indeed, wetland and riparian areas across the state, including some national and local wildlife refuges, are maintained, in part, by imported water supplies from the CVP and SWP. The fallowing of fields in response to the reduced availability of CVP and SWP water supplies also increases the proliferation of weeds and other invasive species. Invasive species can harbor disease, choke out native species, adversely affect transportation corridors, and clog irrigation canals.

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On the other hand, the EIS will also have to assess the impacts or biological benefits, if any, to the listed species and other biota from the various alternatives evaluated. The Public Water Agencies believe that this portion of the NEPA analyses will provide vital information for the public and decision makers. A major value of NEPA comes in the comparison that may then be made between the effects on the listed species of the no action alternative compared to the other alternatives. Alternatives can also be compared among themselves. In evaluating and comparing these action alternatives, NEPA requires that Reclamation discuss the level of uncertainty and conflicting information in the data used to develop the impacts analyses. Making this information available to the public and decision-makers will allow a fully informed

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decision to be made and provide clear explanation and accountability for that discretionary choice.

6. Water Quality

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Reduced water supplies impact water quality by reducing water agencies' ability to blend lower quality water (e.g., from local groundwater or recycled water) with the higher quality Delta water, which is frequently needed to make the latter water sources beneficially usable. Increased pumping of local groundwater to offset export losses can adversely affect water quality by drawing poor quality or brackish water into higher quality groundwater basins. Increased reliance on groundwater for irrigation can also negatively impact the water quality of surface water streams due to the leachates present in the groundwater that becomes stream runoff.

7. Air Quality

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Reduced Delta water supply deliveries can adversely impact air quality because land fallowing generally results in increased dust and particulate emissions. Additionally, increased air emissions will occur because of the greater amount of energy that is needed for groundwater well pumps to lift water from a lower depth due to the greater reliance on and depletion of groundwater reserves associated with reduced availability of export water supplies.

8. Soils, Geology, And Mineral Resources

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Reduced Delta water supplies impact soils, geology, and mineral resources because increased groundwater use results in soil subsidence due to reduced groundwater replenishment. In turn, greater deposits of salts that negatively affect soil quality occur as a result of relying more heavily upon lower quality groundwater sources. In addition, reduced agricultural planting and increased fallowing leads to greater topsoil lost to erosion.

9. Visual, Scenic, Or Aesthetic Resources

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Aesthetics are impacted by reduced water supplies because resulting socioeconomic impacts from lost agricultural employment will affect urban decay in regions affected by resulting employment losses. Lower reservoirs and water levels in the upper watersheds from restrictions that require reservoir releases, and barren and decaying farmland where planting and maintemnce is infeasible due to the unavailability of delta water supplies, will have negative aesthetic impacts. Increased reliance on groundwater can also negatively impact aesthetic resources by causing damage to infrastructure from land subsidence.

10. Global Climate Change, Transportation, And Recreation

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Reduced water supplies from the Delta and increased reservoir releases to meet RPA requirements can also impact climate change due to the greater amount of energy and resulting emissions needed for pumping groundwater from greater depths, reductions in carbon uptake by plants, and changes in the timing and magnitude of project hydropower generation. Transportation can be impacted by greater impediments from blowing dust on fallowed lands,

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tumbleweeds, and bird-on-aircraft strikes. Recreation impacts are also likely to occur due to impacts on reservoir levels and upper watershed flows. SLDMWA WWD SJRECWA 131 continued

B. Comparison Among Alternatives

One of the key values of an EIS is its ability to inform the public and decision-makers of the relative environmental and socioeconomic costs and benefits of each alternative, including the no action alternative. An EIS does so by including information and analyses that allow and provide a comparative assessment of the environmental impacts or benefits among these alternatives. Accordingly, in the forthcoming EIS Reclamation must provide a comparison of the benefits and/or impacts of each alternative on all the various resource categories. Because part of the purpose and need entails ESA compliance by operating the projects to avoid jeopardizing the species or adversely modifying their critical habitats, it is critical that the EIS at a minimum provide analyses and descriptions for the no action alternative and the various other alternatives of the estimated increase or decrease in: (1) the numbers of individuals of each species, (2) the estimated population viability of the listed species, and (3) the amount or quality of their critical habitats. This is not an exhaustive list, and Reclamation should determine if other biological metrics would also be useful and appropriate. Because maintaining the projects' water supply reliability is a key aspect of the purpose and need, Reclamation should provide a commensurate level of analysis and detail regarding the degree to which each alternative would impair the ability of the CVP and SWP to serve their water supply functions. SLDMWA WWD SJRECWA 132

In addition to including extensive analyses and discussion, the Public Water Agencies agree with Reclamation's recently released NEPA Handbook, which states:

> A summary table comparing the impacts of all alternatives (including no action) should be attached to the end of the alternatives chapter. Whenever possible, numerical comparisons should be used. Brief narrative comparisons are permissible if numerical comparisons cannot be made. … The graphic display should provide a comparison of the tradeoffs between alternatives and a listing of proportionate effects and merits of each alternative.

NEPA Handbook at 8-13. Dually providing analytic information in both text and tabular or other graphic formats will best provide full and understandable disclosure to the public and decision-makers of the relative merits of each action alternative and the no action alternative, and better inform and support any policy decisions Reclamation makes at the end of the NEPA and ESA consultation processes.

C. Cumulative Impacts

NEPA requires that an EIS also include an analysis and discussion of cumulative environmental impacts, which must discuss the likely long-term impacts from each alternative in conjunction with other reasonably foreseeable actions and future events. As discussed elsewhere in this letter, there are numerous other stressors currently affecting the listed species that are or may be having a cumulative effect on the species. We earlier suggested developing alternatives SLDMWA WWD SJRECWA 133

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to address these impacts. The Public Water Agencies also encourage Reclamation to explore in the EIS whether any mitigation would address these other causes of cumulative effects, which could maintain or improve the conditions of any of the listed species so as to allow sustained and improved project operations for water supply reliability.

Additionally, there are numerous actions that have recently been completed or are currently being implemented by private, local, state, and federal actors throughout the project area to improve the habitat and status of the listed species whose benefits to the species must be taken into account in all the alternatives. These actions include gravel augmentation to improve salmon spawning conditions, changes in the operations or physical character of diversions (better screens or ladders), and modifications to other structures to improve passage for salmonids and green sturgeon. For example, a new biological opinion on the Yuba River requires the Army Corps of Engineers to implement extensive gravel augmentation and improvements to fish ladders on that tributary for the benefit of salmonids. Similarly, the operations of the Red Bluff Diversion Dam on the Sacramento River have been and will be modified in the future in a manner that will benefit survival, spawning, and passage of salmonids and the green sturgeon as a result of construction of new alternate diversion structures to serve the Tehama-Colusa Canal Authority. There are also other extensive habitat restoration plans ongoing in the Delta and on the San Joaquin River, as well as other Delta tributaries. While a comprehensive listing is not possible here, Reclamation must identify and discuss these ongoing and planned projects and programs and include the estimated improvements to the status of the listed species and their habitats in their evaluation of the impacts of the alternatives, including the no action alternative. At a minimum, the expected beneficial impacts of requirements in other biological opinions issued by FWS and NMFS that address the listed species at issue here must be identified and included in the analysis.

D. <u>Disclosure And Discussion Of Scientific Uncertainty And Data Gaps</u>

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Part of the value of the NEPA process is its requirement to disclose and discuss the relevance of conflicting, inconsistent data and unavailable or incomplete data. Past regulatory decisions taken without the guiding light of NEPA have been made with an unjustified claim of certainty or necessity without acknowledgment of the significant uncertainty or imprecision that accompanied such actions. This obscures the true weight of the policy decisions set before the agency, and discourages honest and critical evaluation of policy options. Accordingly, when Reclamation is "evaluating the reasonably foreseeable significant adverse effects on the human environment in [the EIS] and there is incomplete or unavailable information," it is required to "always make clear that such information is lacking." 40 C.F.R. § 1502.22. If, for example, there is incomplete or unavailable information regarding the effects of the proposed action and the alternatives on salmonids and/or Delta smelt, Reclamation must disclose and discuss this issue. However, "[e]very effort should be made to collect all information essential to a reasoned choice between alternatives." NEPA Handbook at 8-16. At a bare minimum, if the relevant incomplete information "cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known," Reclamation must include a statement in the EIS explaining the nature of such information, its relevance, a summary of existing credible scientific evidence, and Reclamation's evaluation of potential impacts based on approaches or methods generally accepted in the scientific community. 40 C.F.R. § 1502.22(b).

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In 2004, the National Research Council issued a report addressing the degree of scientific certainty, or lack thereof, regarding measures imposed under the ESA for the protection of listed fishes in the Klamath River basin. National Research Council, *Endangered and Threatened Fishes in the Klamath River Basin: Causes of Decline and Strategies for Recovery*. Washington, DC: The National Academies Press, 2004. To accomplish their charge, the committee developed "specific conventions for judging the degree of scientific support for a proposal or hypothesis" in the Klamath biological opinions. *Id.* at p. 35. The committee summarized these conventions in the following table:

TABLE 1-2 Categories Used by the Committee for Judging the Degree of Scientific Support for Proposed Actions Pursuant to the Goals of the ESA

Basis of Proposed Action	Scientific Support	Possibly Correct?	Potential to be Incorrect
Intuition, unsupported assertion	None	Yes	High
Professional judgment inconsistent with evidence	None	Unlikely	High
Professional judgment with evidence absent	Weak	Yes	Moderately high
Professional judgment with some supporting evidence	Moderate	Yes	Moderate
Hypothesis tested by one line of evidence	Moderately strong	Yes	Moderately low
Hypothesis tested by more than one line of evidence	Strong	Yes	Low

These or similar criteria should be explicitly applied in the NEPA process here to assess the strength of any scientific justification for proposals to restrict project operations and intended to benefit listed species. Doing so will assist policymakers and the public in better understanding the choices to be made among alternatives.

Some have sought to justify restrictions on CVP and SWP operations even in the absence of substantial scientific support based on the "precautionary principle." As the Klamath report observed, however, "even when a policy decision is made to apply the precautionary principle, the question of whether the decision is consistent with the available scientific information is important. . . . At some point [] erring on the side of protection in decision-making ceases to be precautionary and becomes arbitrary. One indication that policy-based precaution has given way to bias or political forces is a major inconsistency of a presumed precautionary action with the available scientific information." *Id.* at 315. If the federal agencies make a policy decision to apply the precautionary principle here, that choice should be explicit, so that the choice and the tradeoffs involved are made clear to the public and any reviewing courts. That policy choice has not been made explicit in past decisions. In the litigation regarding the 2009 Salmonid BiOp, for example, NMFS sought to justify a restriction on OMR flows based on precaution, but as the

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district court found "nowhere in the BiOp (or any other document in the administrative record cited by the parties) [did] NMFS disclose its intent to use a 'precautionary principle' to design the RPA Actions." *Consolidated Salmonid Cases*, 713 F. Supp. 2d 1116, 1145 (E.D. Cal. 2010). SLDMWA WWD SJRECWA 134 continued

In sum, Reclamation should be explicit in identifying the scientific uncertainty associated with any restrictions on project operations that are proposed as necessary to comply with the ESA.

E. **Information Quality Act**

The Information Quality Act (Public Law 106-554) and orders, regulations, and guidelines issued thereunder impose additional requirements on Reclamation that must be applied to this NEPA process. Reclamation recently issued its peer review policy to implement the mandate in the Office of Management and Budget's Bulletin and Guidelines that important scientific information "shall" be peer reviewed by qualified specialists before being used to inform a government decision ("IQA Policy"). Reclamation's IQA Policy requires peer reviews of all scientific information that is determined to be "influential scientific information" or "highly influential scientific assessments." The IQA Policy applies to NEPA documents: SLDMWA WWD SJRECWA 135

> This policy applies to all scientific information produced, used, or disseminated by Reclamation. This includes scientific information that, along with other factors, informs a policy or management decision. For example, this Policy applies to scientific components of an environmental document prepared pursuant to the National Environmental Policy Act that present a scientific evaluation or are otherwise based upon scientific information.

(Reclamation IQA Policy section 5(B)) The forthcoming EIS will likely qualify for peer review under Reclamation's policy either as a "highly influential scientific assessment" or an "influential scientific assessment" based on the level of controversy, potential for societal and resource impacts or implications, the degree to which the scientific information may be novel or precedent setting, and the clear and substantial impact on important public policies and private sector decisions that may be implicated. Accordingly, the Public Water Agencies urge Reclamation to be prepared to implement the IQA peer review policy.

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VI. **CONCLUSION**

The Public Water Agencies thank Reclamation for providing the opportunity to submit comments for consideration in the scoping process. These comments are intended to provide Reclamation with a clear understanding of a few of the primary concerns of the Public Water Agencies and their member agencies as they continue the important work of providing safe, sufficient water to millions of Californians and hundreds of thousands of acres of highly productive farmland. The Public Water Agencies reserve the right to submit additional comments as the NEPA process proceeds. The Public Water Agencies, including individual SWC member agencies, as appropriate, look forward to participating as cooperating agencies, to hearing from you regarding a meeting to develop an MOU, and to working with Reclamation in a cooperative manner in developing the environmental review for the OCAP.

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Sincerely,

Daniel G. Nelson
Executive Director
San Luis & Delta-Mendota Water Authority

Terry L. Erlewine
General Manager
State Water Contractors, Inc.

Thomas Birmingham
General Manager
Westlands Water District

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EXHIBIT A

State Water Contractor Member Agencies

The State Water Contractors' members are: Alameda County Flood Control and Water Conservation District Zone 7; Alameda County Water District; Antelope Valley-East Kern Water Agency; Casitas Municipal Water District; Castaic Lake Water Agency; Central Coastal Water Authority; City of Yuba City; Coachella Valley Water District; County of Kings; Crestline-Lake Arrowhead Water Agency; Desert Water Agency; Dudley Ridge Water District; Empire-West Side Irrigation District; Kern County Water Agency; Littlerock Creek Irrigation District; Metropolitan Water District of Southern California; Mojave Water Agency; Napa County Flood Control and Water Conservation District; Oak Flat Water District; Palmdale Water District; San Bernardino Valley Municipal Water District; San Gabriel Valley Municipal Water District; San Gorgonio Pass Water Agency; San Luis Obispo County Flood Control & Water Conservation District; Santa Clara Valley Water District; Solano County Water Agency; and Tulare Lake Basin Water Storage District.

San Luis & Delta-Mendota Water Authority Member Agencies

The Authority's members are: Banta-Carbona Irrigation District; Broadview Water District; Byron Bethany Irrigation District (CVPSA); Central California Irrigation District; City of Tracy; Columbia Canal Company (a Friend); Del Puerto Water District; Eagle Field Water District; Firebaugh Canal Water District; Fresno Slough Water District; Grassland Water District; Henry Miller Reclamation District #2131; James Irrigation District; Laguna Water District; Mercy Springs Water District; Oro Loma Water District; Pacheco Water District; Pajaro Valley Water Management Agency; Panoche Water District; Patterson Irrigation District; Pleasant Valley Water District; Reclamation District 1606; San Benito County Water District; San Luis Water District; Santa Clara Valley Water District; Tranquillity Irrigation District; Turner Island Water District; West Side Irrigation District; West Stanislaus Irrigation District; Westlands Water District.

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EXHIBIT C

RATIONALE FOR EXCLUDING ALTERNATIVES FROM THE EIS THAT IMPOSE PROJECT OPERATIONAL RESTRICTIONS FOR MANAGING THE LOCATION OF X2 IN THE FALL

a. Recent Life-Cycle Models Uniformly Conclude That X2 Location Is Not A Significant Factor Affecting Subsequent Delta Smelt Abundance

In the last three years, peer-reviewed delta smelt life-cycle modeling studies have been undertaken by Maunder & Deriso (2011), MacNally et al. (2010), Thomson et al. (2010), and Miller et al. (2012). These published works have assessed the importance of a suite of factors on Delta fish species, with particular focus on delta smelt. None of the studies found evidence of a relationship between the location of X2 and subsequent delta smelt abundance. FWS, First Draft 2011 Formal ESA Consultation on Proposed Coordination of CVP and SWP p. 268 (Dec. 2011).

In addition, the National Research Council reviewed the studies the 2008 Delta Smelt OCAP biological opinion relied upon as support for regulating the position of fall X2 and concluded that the BiOp's reliance on Feyrer et al. (2007) was improper, due to the study's unacknowledged uncertainty arising from improperly linking several statistical models, as well as the lack of rigor in the analysis (National Research Council 2010). A federal district court also examined several of the studies relied upon in the BiOp, including Feyrer et al. (2007, 2011), and reached the conclusion that the best available science did not demonstrate a relationship between fall X2 location and subsequent delta smelt abundance (X2 Decision 2011). The court also noted that the Feyrer analyses were limited to an examination of abiotic habitat factors which ignored species' food supplies and other biotic factors. X2 Decision at 34-36, 132 (2011) (*In re Consol. Delta Smelt Cases*, 812 F. Supp. 2d 1133 (Aug. 31, 2011)). Moreover, the Feyrer studies themselves acknowledged that their analysis was limited and not appropriate for use as a regulatory mechanism (Feyrer et al. 2007).

b. Historical Survey Data Show That Delta Smelt Distribution Only Weakly Overlaps The LSZ, And Thus the LSZ Should Not Be Used As A Habitat Surrogate

Historic survey data show that regulating SWP and CVP operations to manage the location of fall X2 is unnecessary to expand the geographic area utilized by pelagic fish species, such as delta smelt. Contrary to assumptions relied upon, for example, in the 2008 Delta Smelt OCAP biological opinion, applicable survey and other data show that the distribution of delta smelt in the fall occurs over a wide range of environmental and salinity conditions ranging approximately 40 km from Suisun Bay to the Cache Slough region in nearly all years. The LSZ is often referred to as stretching from 0.5 to 6 psu; however, survey data show that delta smelt can be found at salinities substantially greater than 10 psu downstream from the LSZ, and are frequently found in substantial numbers in freshwater portions of the Delta upstream from the LSZ such as the Cache Slough Complex.

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Thorough analysis of data collected in California Department of Fish and Game ("CDFG") Fall Midwater Trawl ("FMWT"), 20 mm, and Summer Townet ("STN") surveys has failed to identify *any* correlation between the location of X2 in the fall and delta smelt distribution, reproduction, or food availability (Hanson 2011). Reclamation's own biologist, Matt Nobriga, testified during a hearing before the federal district court that: "I think that in terms of the historical data, that the three models probably indicate there's – that you're not going to find a correlation out of the historical data." *Consolidated Delta Smelt* Cases, 812 F. Supp. 2d 1133, 1160 (E.D. Cal. 2011). Thus, the analysis of survey data is consistent with the conclusions reached in the delta smelt life-cycle modeling efforts: there is no relationship between fall X2 location and delta smelt abundance.

More recent analyses of the historical survey data also show that the geographic distribution of delta smelt is much broader than previously acknowledged—covering more than 51,800 hectares and areas beyond the LSZ. Merz et al. (2011) extensively reviewed the relevant survey data and concluded that year-round populations of delta smelt are likely present in the lower Sacramento River to Suisun Marsh region, as well as in the Cache Slough, and Sacramento Deepwater Ship Channel region of the northern Delta. Merz et al. (2011) also noted observations of delta smelt at the most upstream sampling station locations, thus indicating that the current surveys may not capture the full extent of smelt distribution upstream of the LSZ. In terms of highest delta smelt densities, the study found that spawning seems to occur in vast regions of the Delta (i.e., Suisun Marsh, Cache Slough, the lower Sacramento River, and Napa River); rearing occurs mainly in Grizzly Bay and the lower Sacramento River; and adults (i.e., the migration phase) tend to occur further east, near the confluence of the Sacramento and San Joaquin Rivers and into the lower Sacramento River region. The existence of a year-round demographic unit of delta smelt in the Cache Slough region also demonstrates that it is likely not a semi-anadromous species as previously believed (Baxter et al. 2010).

The FMWT did not begin surveying in the Cache Slough and Sacramento River Deep Water Ship Channel region until 2009, and the STN survey was not expanded to these areas until 2011. Thus, previous studies ignored a substantial region occupied by the delta smelt population. Indeed, a federal district court, relying on admissions made by the primary author of the studies, found that Feyrer et al. (2007, 2011) studies did not consider the region of Cache Slough in their analyses. 812 F. Supp. 2d at 1155-56; 1201-1202. However, some of the highest densities of larva and juveniles have been sampled in this region in recent years, suggesting that the range of delta smelt spawning and rearing includes areas a significant distance from Suisun Bay. The current scientific consensus is that delta smelt are not restricted solely to the LSZ and that management efforts need to incorporate measures not singly focused on X2 location in the fall.

It is also beyond scientific dispute that habitat is a species-specific concept, and the habitat of a species includes the geographic areas it occupies, all the resources it uses, and the conditional states of those resources. X2 is a poor surrogate of habitat for delta smelt, not only because much of the population resides in areas outside the LSZ, but also because many parts of the LSZ have not been occupied by delta smelt during most of the past decade despite those areas' regularly having salinities within the LSZ range. Thus, it is apparent that delta smelt habitat is not defined by salinity because the LSZ in autumn only weakly overlaps the

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distribution of delta smelt. Because extensive areas of the LSZ do not support delta smelt, much of the LSZ should not be considered habitat for delta smelt.

In addition, the delta smelt located in the upstream, freshwater environment of Cache Slough—which in recent years have comprised as much as one-third of the total number of individuals observed in surveys—are largely unaffected by winter and spring objectives related to X2 and outflow. Rather than migrating upstream to spawn and downstream to rear, the delta smelt appear to simply spread out into available habitat.

c. Conclusion Re Fall X2

Productivity in the LSZ has been drastically limited by springtime suppression of phytoplankton blooms from ammonium loading and feeding by the *Corbula amurensis* clam, which has resulted in a reduced carrying capacity in the Suisun Bay region (Glibert 2010, Kimmerer 2009, Kimmerer 2006). However, the delta smelt occupies a much larger area than just the LSZ (Baxter et al. 2010, Hanson 2011). These and other factors show that regulatory efforts should be directed toward life-cycle modeling related to the relevant fish species to help better determine what factors (e.g., ammonium loading and food supply) are contributing to reductions in delta smelt abundance and how those factors can be addressed to improve the health and numbers of the species. Reclamation cannot promote an action based on a one-size-fits-all variable when there are many more complex interacting variables in the Delta ecosystem that must be addressed for the species' recovery.

The Public Water Agencies are legitimately concerned with FWS's and Reclamation's prior presumptions that the LSZ (and thus any impact from the SWP and CVP on the downstream extent of the LSZ) determines species abundance. Efforts to bolster this flawed hypothesis should be abandoned, the location of fall X2 should not be a primary focus of any regulatory regime, and efforts should rather focus on the proven drivers of species abundance that would improve habitat for delta fishes.

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EXHIBIT D

ENVIRONMENTAL IMPACTS

As explained above, the Public Water Agencies submit that a scientifically rigorous analysis of the effects of CVP and SWP operations in accordance with ESA section 7 will conclude that operations are not likely to jeopardize the listed species or adversely modify their critical habitat. Accordingly, no major changes to CVP and SWP operations should be required to comply with the ESA, and there should be no loss of water supplies and associated impacts. The proposed action should not include major changes to CVP and SWP operations. However, to the extent that Reclamation considers alternative actions involving changes to CVP and SWP operations, and those changes to operations would reduce water supplies, then Reclamation must analyze and disclose the associated impacts. The following discussion is intended to assist Reclamation in identifying potential impacts related to loss of CVP and SWP water supplies resulting from such alternatives.

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1. **Water Resources, Including Groundwater**

Reduced deliveries of Delta water supplies into the service areas of the Public Water Agencies member agencies have demonstrable, dramatic, and undeniable impacts on groundwater pumping, risk of groundwater overdraft, local surface water supplies, provision of emergency services, the ability to suppress wildfires, and a host of other impacts. Operational changes to the projects necessary to meet OMR and other flow requirements can lead to increased reservoir releases in the spring, decreased reservoir releases in the summer, decreased reservoir carryover storage, and decreased Delta export pumping.

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a. Loss Of Surface Water Supplies For End Users

By way of background, it is undeniable that reduced Delta exports result in reduced supplies in the SWP and CVP service areas. It was undisputed in the delta smelt and salmonid district court cases that "every acre-foot of pumping foregone during critical time periods is an acre-foot that does not reach the San Luis Reservoir where it can be stored for future delivery to users during times of peak demand in the water year."[1] It is also "beyond dispute" that water supply reductions from the BiOps have the potential to significantly affect the human environment.[2]

"The quantity of water lost through pumping reductions translates directly into water losses for urban and agricultural users."[3] "In the SWP service area, one acre-foot of water serves about five to seven people for one year."[4] "Water loss for agricultural users results in reduction

[1] *Consolidated Salmonid Cases*, 713 F. Supp. 2d 1116, 1148 (E.D. Cal. 2010).
[2] *Consolidated Salmonid Cases*, 688 F. Supp. 2d 1013, 1034 (E.D. Cal. 2010).
[3] 713 F. Supp. 2d at 1151.
[4] 713 F. Supp. 2d at 1151; PI Transcript 186:25-187:1-3 (April 6, 2010).

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in the number of acres that may be sustained with actual water supply."[5] In the SWP service area, it takes approximately 3 acre-feet of water per acre to sustain a crop for a growing season.[6]

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b. Operational Constraints, Non-Project Factors, And Water Demand May Exacerbate Water Supply Impacts From Pumping Restrictions

The level of San Joaquin River flow at Vernalis affects OMR flows, which in turn affects the magnitude of the impact of the OMR flow restrictions.[7] Export facility capacities (either their physical capacity or their operational capacity) can restrict exports under wetter conditions, as occurred in the case of the SWP's pumping facilities on several occasions in January of 2011 due to equipment availability and personnel issues. Project demands can affect the level of exports. Irrigation demands, in particular, are low during the months of December through February, and begin to increase in March and during the later spring months. Storage capacity can restrict or expand exports, particularly during the winter months when demands for direct delivery of project water are lower. Exports at the SWP's Banks Pumping Plant can also be increased when the federal share of San Luis Reservoir fills and pumping capacity at the CVP's Tracy Pumping Plant is available to be used to enhance the pumping capacity otherwise available at the Banks Plant alone. Practical operational considerations can also restrict exports because the project operators will generally operate to meet a lower spring OMR flow level than that specified in the RPAs in order to ensure that they do not exceed the specified level. State Water Resources Control Board Water Right Decision 1641 also restricts exports based on several parameters including the export-to-total Delta inflow ratio, thus providing protections to listed species and their habitats.

c. Groundwater Overdraft, Subsidence, Resulting Dangers

Reductions in Delta exports have a direct impact on groundwater levels across the Public Water Agencies' service areas, particularly in agricultural regions.[8] Reduced Delta water means that Public Water Agencies will not be able to replenish and store groundwater, or will be able to do so at a reduced rate, and will also need to rely more heavily upon groundwater reserves to meet demand.[9]

Shortage of surface water supplies, and the corresponding reliance on groundwater supplies, also leads to groundwater overdraft, which occurs when pumping exceeds the safe yield of an aquifer.[10] When water is removed from the spaces between the particles in the sediment,

[5] 713 F. Supp. 2d at 1151.
[6] 713 F. Supp. 2d at 1151; PI Transcript 87:22-25 (April 6, 2010).
[7] *See* Erlewine Decl. (Doc 816) at 3, Delta Smelt Consol. Cases (Feb. 2011).
[8] *Consolidated Delta Smelt Cases*, 812 F. Supp. 2d 1133, 1182-87 (E.D. Cal. 2011); Leahigh 2nd Supplemental Declaration re X2 Injunction (Doc. 1006) ¶7, *Consol. Delta Smelt Cases* (Aug. 10, 2011); Erlewine X2 Declaration (Doc. 915) pp. 8-9, *Consol. Delta Smelt Cases* (June 16, 2011).
[9] *Id.*
[10] 713 F. Supp. 2d at 1153; Erlewine X2 Declaration (Doc. 915) pp. 9-11, *Consol. Delta Smelt Cases* (June 16, 2011).

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the soils compact, which reduces the volume for water storage.[11] Long-term impacts resulting from overdraft include land subsidence and damage to water conveyance facilities.[12]

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Land subsidence is the sinking of the Earth's surface due to subsurface movement of earth materials. The major cause of subsidence in the southwestern United States is the overdrafting of aquifers. The negative effects of land subsidence include the permanent loss of groundwater storage space and changes in elevation and the slope of streams, canals, and drains.[13] Additionally, in some areas where groundwater levels have declined, surface streams lose flow to adjacent groundwater systems.[14] These losses entail significant impacts to hydrology, as well as the biological systems that depend on those groundwater or surface flows. In additon, land subsidence can lead to cracks and fissures at the land surface, which may damage bridges, roads, railroads, storm drains, sanitary sewers, canals, levees, and private and public buildings. Furthermore, land subsidence leads to the failure of well casings,[15] which will require additional well drilling and attendant environmental impacts to air quality.

While urban areas are especially vulnerable to the damaging effects of subsidence, the largest occurrence of land subsidence in the world induced by human activity occurred in California's Central Valley. Prior to the commencement of CVP and SWP surface water imports to the San Joaquin Valley, parts of northwestern Fresno County experienced land subsidence of up to 30 feet as a result of groundwater overdraft in the area.[16] Large portions of the Kern County groundwater basin also experienced subsidence due to overdraft of the aquifer and the lowering of its hydraulic head. In the San Joaquin River and Tulare Lake regions, for example, an area of 5,200 square miles registered at least 1 foot of subsidence.[17] Land subsidence related to groundwater overdraft exceeded 12 feet in portions of Tulare County and 9 feet in the Arvin-Maricopa area.[18]

Since SWP and CVP operations commenced, imported water from the projects has largely eliminated widespread and large-scale subsidence. However, further loss of project water for export threatens to entirely reverse this trend. To the extent the new BiOps involve additional export restrictions, even more groundwater pumping will be required to meet demand, with attendant environmental impacts.[19]

[11] Declaration of Russ Freeman (Doc. 170) at 5, *Consol. Salmonid Cases* (Jan. 27, 2010).
[12] 713 F.Supp. 2d at 1153; 812 F. Supp. 2d at 1187; Erlewine X2 Declaration (Doc. 915) pp. 9-11, *Consol. Delta Smelt Cases* (June 16, 2011); Declaration of Russ Freeman (Doc. 170) at 5-6, *Consol. Salmonid Cases* (Jan. 27, 2010).
[13] Beck letter, *supra*, at p. 3; Leake, *supra*, at pp. 1-2.
[14] Central Valley Project Improvement Act ["CVPIA"] Programmatic EIS ["PEIS"] (1997) at p. II-5.
[15] Leake, *supra*, at pp. 1-2.
[16] CVPIA PEIS, *supra*, at p. II-28.
[17] *Id.* at pp. II-10, II-28.
[18] *Id.* at pp. II-42, II-43.
[19] Beck letter, *supra*, at p. 2.

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d. **Increased Demand Upon Alternative Water Supplies Such As Local Surface Water, Local Groundwater, And Colorado River Water**

Reduced SWP water supplies will result in increased reliance on Colorado River supplies, which are conveyed through Metropolitan Water District's Colorado River Aqueduct.[20] However, Colorado River supplies have been limited to a basic apportionment of 550,000 acre-feet per year, and they are generally high in salinity (averaging 700 mg/L of total dissolved solids (compared to SWP concentrations that range from 200-300 mg/L)).[21] Thus, blending of SWP water is needed to make use of Colorado River supplies. SLDMWA WWD SJRECWA 138

e. **Responding To Emergencies, Including Earthquakes, Wildfires**

Lost surface and groundwater reserves due to reductions and shortages in project supplies additionally impact the ability to store water for dry years and emergencies. This reduced water storage makes areas across central and southern California increasingly vulnerable to emergencies such as wildfires, because less water is available to suppress and control wildfires and to respond to other emergencies.[22]

If a severe earthquake occurred that disrupts or damages SWP infrastructure, inadequate surface and groundwater reserves would also put human health and safety at risk.[23] Furthermore, earthquake damage to levees inside the Delta could significantly disrupt Delta exports and cause the loss of millions of acre-feet of water, further constraining water supplies if adequate reserves are not replenished and maintained with adequate SWP and CVP supplies.[24]

2. **<u>Land Use, Including Agriculture</u>**

Reduced project deliveries, and the resulting unavailability of adequate water supplies, will result in significant changes in land use. Related impacts include the removal of prime agricultural land from production, fallowing of land, loss of topsoil, shifts toward planting permanent crops, reduced production and yield of crops due to reduce water quality, increased costs to obtain supplemental water, and negative impacts to water management plans that act as source documents for evaluating land use projects. SLDMWA WWD SJRECWA 139

a. **Fallowing Land And Taking Prime Agricultural Land Out Of Production**

The federal district court in the *Consolidated Salmonid Cases* found that evidence was established that water losses caused by the NMFS BiOp's RPA would result in a variety of adverse impacts to the human environment, including "irretrievable resource losses" from the

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[20] MWD (Nov. 2008).
[21] MWD (Nov. 2008).
[22] *See* MWD (Nov. 2008); DWR, California's Drought, Water Conditions & Strategies to Reduce Impacts pp.16-17 (March 2009); Governor's Proclamation, State of Emergency-Water Shortage p.3 (Feb. 27, 2009).
[23] *See* MWD (Nov. 2008).
[24] DWR Delta Risk Management Strategy (Feb. 2009) available at http://www.water.ca.gov/floodmgmt/dsmo/sab/drmsp/docs/drms_execsum_ph1_final_low.pdf.

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loss of "permanent crops, fallowed lands, destruction of family and entity farming businesses [and] social disruption and dislocation. . . ."[25] SLDMWA WWD SJRECWA 139 continued

Agricultural operations in Fresno County, Tulare County, Kern County, San Diego County, and other areas of the State rely on Delta water, and this supply of water has already been impaired by the prior BiOps, with concomitant environmental effects. Farmers have been forced to fallow hundreds and thousands of acres of prime agricultural land as a result of reduced water supplies and uncertainty regarding future water supply.[26] As previously noted, in the SWP service area, it takes approximately 3 acre-feet of water per acre to sustain a crop for a growing season.[27] In the CVP service area, it has been estimated that approximately 400 acres of land may remain out of production for every 1000 acre-feet of water lost.[28] Thus for any reductions in the water supply there will be commensurate reductions in the acreage of crops that can be sustained. Conversely, farmers anticipate that increased water allocations would mitigate anticipated damage to crops in proportion to the amount of water received.[29]

b. Losing Top Soil Due To Erosion

The fallowing of land also leads to greater soil erosion from wind and water, which comprises an additional irretrievable resource loss.[30] Such actions may result in substantial soil erosion and loss of topsoil.[31]

c. Shift To Permanent Crops

Reductions in water supplies have resulted in changed farming practices, such that more permanent crops are grown.[32] However, permanent crops carry an additional risk, because farmers cannot cut back further on the water supply without destroying the crops.[33]

d. Salt Intolerance Limits Some Crops From Being Produced And Reduces Yields

In response to reduced surface water deliveries, farmers must increase their reliance on groundwater, which in many locations is an inferior water source due to its higher salinity.[34] Unfortunately, not all fields and crops can be irrigated with groundwater, and the increased soil salinity from irrigating with saline groundwater impacts the ability to grow certain salinity

[25] 713 F. Supp. 2d at 1153; Declaration of Russ Freeman (Doc. 170) at 3, *Consol. Salmonid Cases* (Jan. 27, 2010).
[26] 713 F. Supp. 2d at 1152; Declaration of Russ Freeman (Doc. 170) at 3-4, *Consol. Salmonid Cases* (Jan. 27, 2010).
[27] 713 F. Supp. 2d at 1152.
[28] 713 F. Supp. 2d at 1152.
[29] 713 F. Supp. 2d at 1151.
[30] *Consolidated Salmonid Cases*, 688 F. Supp. 2d 1013, 1033-34 (E.D. Cal. 2010).
[31] Beck letter, *supra*, at p. 3.
[32] 713 F. Supp. 2d at 1151.
[33] 713 F. Supp. at 1151-52.
[34] 713 F. Supp. 2d at 1153; Declaration of Russ Freeman (Doc. 170) at 6, *Consol. Salmonid Cases* (Jan. 27, 2010).

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intolerant crops in those areas.[35] Because some crops are particularly sensitive to salinity concentrations, the use of high-salinity water may reduce the yields of these crops.[36] SLDMWA WWD SJRECWA 139 continued

e. **Increased Cost And Infeasibility Of Supplemental Water**

Farmers would be required to make up for any shortfall in imported water deliveries by purchasing supplemental water at drastically increased costs, if such supplemental water is even available.[37]

f. **Impacts To Water Management Planning Related To Land Use**

California law requires all urban water suppliers to prepare urban water management plans every five years to ensure adequate water supplies and for use as a source document for analyzing water supply issues for specific projects under SB 610, SB 221, and the California Environmental Quality Act. The plans must identify and discuss factors affecting current and projected water supplies and demand, and they must identify steps being taken to ensure availability and reliability of supplies. ESA regulatory restrictions that reduce water deliveries for the protection of fish species are one of the main constraints facing water suppliers for providing adequate supplies.[38] Therefore, development projects and land use planning decisions that depend on these plans will also be constrained by any future imported water supply reductions caused by the new BiOps.

3. <u>Socioeconomics</u>

Reduced Delta water supplies also cause socioeconomic impacts. In response to reduced water supplies, farmers fallow fields and this reduced agricultural productivity results in layoffs, reduced hours for agricultural employees, and increased unemployment in agricultural communities. Reduced agricultural productivity also has socioeconomic impacts for agriculuture-dependent business and industries. In addition, the unavailability of stable and sufficient water supplies reduces farmers' ability to obtain financing and result in employment losses, due to the reduced acreage of crops that can be planted and the corresponding reduction in the amount of farm labor needed to manage that reduced acreage. Reduced project export water supplies and the resulting employment losses also cause cascading socioeconomic impacts in affected communities, including increased poverty, hunger, and crime, along with dislocation of families and reduced revenues for local governments and schools. SLDMWA WWD SJRECWA 140

[35] *See* 713 F. Supp. 2d at 1153; Declaration of Russ Freeman (Doc. 170) at 6, *Consol. Salmonid Cases* (Jan. 27, 2010).
[36] MWD (Nov. 2008); Declaration of Russ Freeman (Doc. 170) at 6, *Consol. Salmonid Cases* (Jan. 27, 2010).
[37] 713 F. Supp. 2d at 1151.
[38] Southern California Water Committee, Urban Water Management Plans Fact Sheet, available at http://www.socalwater.org/images/SCWC.UWMP_Fact_Sheet.9.21.11.pdf.

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a. **Lack Of Ability To Obtain Financing**

Water supply uncertainties interfere with farmers' abilities to secure financing for continuing their farming operations.[39] Reduced water availability from the projects frequently results in depletion of supplemental water supplies from local groundwater, which removes the additional water supplies that would be needed for obtaining financing for farming operations.[40] Additionally water constraints would lead to increased payments for supplemental water, which would further affect farmers' cash flows.[41] These financial constraints affect hiring decisions, strain liquidity, and create difficulties for farmers in meeting their payroll obligations.[42]

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b. **Employment Losses And Resulting Community Impacts**

Water supply losses can also be linked to unemployment and related sociological impacts, including poverty, hunger, and crime.[43] Regardless of the season, socioeconomic impacts are likely to result from reduced water supplies.[44] For example, the 2009 delivery reduction that resulted from implementing FWS's 2008 BiOp's RPA resulted in a loss of 9,091 jobs in the San Joaquin Valley, relative to the year 2005, most likely as a result of reduced agricultural acreage under production.[45] Even during wet years, reduced water supplies caused by imposing onerous RPAs can impact employment.[46]

Increased project water allocations prevent layoffs to farm employees.[47] It was undisputed in the federal district court "that farm employees and their families have faced devastating losses due to reductions in the available water supply" and that severe impacts have occurred in the farm economy due to a combination of drought and diversion limitations from the BiOps.[48] The decrease in productive agricultural acres resulted in reduced employee hours, salaries, and positions, which had devastating effects on farm employees and their families.[49] The removal of 250,000 acres from production translated into the loss of approximately 4,200 permanent agricultural worker positions, with even more jobs lost in adjunct businesses, such as packing, processing, and other related services.[50] In spring 2010, it was estimated that wage losses in the agriculture industry would be as much as $1.6 billion during that year.[51]

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[39] 812 F. Supp. 2d at 1187; Stiefvater Declaration re X2 Injunction (Doc. 918) *Consol. Delta Smelt Cases* (June 16, 2011); Mettler Declaration re X2 Injunction (Doc. 919) *Consol. Delta Smelt Cases* (June 16, 2011); 713 F. Supp. 2d at 1152.
[40] 812 F. Supp. 2d at 1187-88.
[41] 812 F. Supp. 2d at 1187-88.
[42] 812 F. Supp. 2d at 1187-88.
[43] 812 F. Supp. 2d at 1188; Sunding Declaration re X2 (Docs. 916 & 986) *Consol. Delta Smelt Cases* (June 16, 2011 & July 15, 2011).
[44] 812 F. Supp. 2d at 1187-88; Sunding Declaration re X2 (Docs. 916) at 1, *Consol. Delta Smelt Cases* (June 16, 2011).
[45] 812 F. Supp. 2d at 1188.
[46] 812 F. Supp. 2d at 1188.
[47] 713 F. Supp. 2d at 1151; Declaration of Chris Hurd (Doc 171) at 3, *Consol. Salmonid Cases* (Jan. 27, 2010).
[48] 713 F. Supp. 2d at 1152; Declaration of Daniel G. Nelson (Doc 172) at 4, *Consol. Salmonid Cases* (Jan. 27, 2010).
[49] 713 F. Supp. 2d at 1152; Declaration of Chris Hurd (Doc 171) at 2, *Consol. Salmonid Cases* (Jan. 27, 2010).
[50] 713 F. Supp. 2d at 1152; Declaration of Russ Freeman (Doc 170) at 7, *Consol. Salmonid Cases* (Jan. 27, 2010).
[51] 713 F. Supp. 2d at 1152; Declaration of Chris Hurd (Doc 171) at 3, *Consol. Salmonid Cases* (Jan. 27, 2010).

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Unemployment resulting from water delivery reductions has led to hunger in the impacted San Joaquin Valley communities. For example, one food bank serving Fresno, Madera, and Kings Counties estimated in 2010 that 435,000 people in the area did not have a reliable source of food, that hunger in these communities would continue to increase, and that at least 42,000 people served by the food bank in October 2009 were employed in the farm industry before losing their jobs.[52]

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4. Environmental Justice

Although the impacts from reduced water supplies will have significant impacts on people and farmland throughout the state, the hardest hit areas will be in predominantly poor and minority communities—especially in the Central Valley where employment losses and environmental effects will be the most prevalent. These characteristics of the counties in the San Joaquin Valley are illustrated in the tables below, using data from the U.S. Census Bureau.[53]

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County	Race/Ethnicity, percent of persons, 2010							
	White	Black	American Indian, Alaska Native	Asian	Native Hawaiian, Other Pacific Islander	Reporting 2+ Races	Hispanic or Latino Origin	White Persons Not Hispanic
Fresno	55.4	5.3	1.7	9.6	0.2	4.5	50.3	32.7
Kern	59.5	5.8	1.5	4.2	0.1	4.5	49.2	38.6
Kings	54.3	7.2	1.7	3.7	0.2	4.9	50.9	35.2
Madera	62.6	3.7	2.7	1.9	0.1	4.2	53.7	38.0
Merced	58.0	3.9	1.4	7.4	0.2	4.7	54.9	31.9
San Joaquin	51.0	7.6	1.1	14.4	0.5	6.4	38.9	35.9
Stanislaus	65.6	2.9	1.1	5.1	0.7	5.4	41.9	46.7
Tulare	60.1	1.6	1.6	3.4	0.1	4.2	60.6	32.6
California	57.6	6.2	1.0	13.0	0.4	4.9	37.6	40.1

County	Income, 2006 - 2010		
	Per Capita Money Income in Past 12 Months (2010 dollars)	Median Household Income	Persons below Poverty Level
Fresno	$20,329	$46,430	22.50%
Kern	$20,100	$47,089	20.60%
Kings	$17,875	$48,684	19.30%
Madera	$18,724	$46,039	19.30%
Merced	$18,041	$43,844	21.80%
San Joaquin	$22,851	$54,341	16.0%
Stanislaus	$22,064	$51,094	16.40%
Tulare	$17,966	$43,851	22.90%
California	$29,188	$60,883	13.70%

[52] 713 F. Supp. 2d at 1153; Declaration of Dana Wilkie (Doc 173) *Consol. Salmonid Cases* (Jan. 27, 2010).
[53] Information gathered from the U.S. Census Bureau, at: http://quickfacts.census.gov/qfd/states/06/06107.html.

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This is even more apparent at the level of local communities within these counties. According to U.S. Census Bureau data, in Huron 96.6% of the population is of Hispanic or Latino origin, and 54.5% of the population is below poverty level. In Mendota, 96.6% of the population is of Hispanic or Latino origin, and 44.6% of the population is below poverty level. In Firebaugh, 91.2% of the population is of Hispanic or Latino origin, and 33.5% of the population is below poverty level. In 2009, each of these communities suffered severe dislocation as a result of water shortages brought about in significant part by ESA related restrictions on water supplies. SLDMWA WWD SJRECWA 141 continued

5. **Biological Resources, Including Fish, Wildlife, And Plant Species**

Reduced delta water supplies will have impacts on biological resources, including the reduced ability to supply areas dependent on water supplies from the projects, including wetlands that are maintained, in part, by those supplies. An indirect impact of resulting reduced agricultural production will be the proliferation of weeds and other invasive species, which adversely affect other biological resources. SLDMWA WWD SJRECWA 142

The EIS will also have to determine and show whether there is any biological benefit to the listed species associated with the alternatives being evaluated. These issues need to be fully addressed in the EIS.

a. **Lack Of Water For Wetlands And Species Outside The Delta**

Although a biological opinion's purpose is to aid the recovery of listed species, if the expected new BiOps result in reduced project exports, there will also be a significant impact on other protected species, which impacts should be analyzed.

For example, the northwestern portion of Kern County is home to 14,000 acres of flooded water habitat, including the Kern National Wildlife Refuge, where migratory birds, including protected and listed species, nest and feed during the fall and winter. An additional 11,000 acres of recharge ponds are located in the Kern River fan area, which provides seasonal habitat during recharge cycles. These complexes depend on the fall and winter delivery of imported surface water to provide for migratory bird habitat. If the federal action significantly decreases water exports, no Delta water will be available to fill these ponds. Because local surface water supplies to fill the ponds are only available in locally wet years, curtailment of imported water deliveries for the purported benefit of salmonid and delta smelt species would result in the destruction of this habitat for other protected species.[54]

Another example of protected and listed species that could be harmed is found within the boundaries of the Santa Clara Valley Water District—which receives water from both the SWP and CVP. Of the 163 miles of local streams used by Santa Clara for instream groundwater recharge, 129 miles are considered to be habitat for threatened or endangered species, including 32 species of plants, 50 species of wildlife, six amphibians, and three aquatic species listed as special status species under State or federal law. Local reservoirs, streams, and artificial recharge ponds provide habitat for 11 native species and 19 nonnative species of fish. Populations of protected steelhead trout are known to exist in Coyote Creek, Guadalupe River,

[54] Beck letter, *supra*, at p. 3.

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Stevens Creek, and San Francisquito Creek and their tributaries. Santa Clara's average in-stream flow releases for groundwater recharge are normally about 104,000 acre-feet. Project export restrictions could reduce these flow releases, which in turn could significantly impact these species.[55]

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Furthermore, in the San Joaquin Valley, there are protected oak woodlands that serve as habitat for many other sensitive species. These woodlands and the species they support rely on groundwater and would be injured by further drops in groundwater levels due to increased pumping in response to a curtailment of imported water deliveries.[56] Similar impacts would be felt on other protected species throughout the SWP and CVP service areas. These potential impacts to other listed species must be analyzed in the EIS.

b. Proliferation Of Weeds

Non-cultivated fallow fields can be excellent habitat for non-native weed species such as tumbleweeds (Russian thistle), which break from the soil and are transported with the wind. Proliferation of these weeds in turn "clog irrigation systems, are hazardous to automobile traffic, spread wildfires and harbor insect pests that transmit viruses to many vegetable crops."[57]

c. Beneficial Effects On The Listed Delta Species

The EIS must analyze both adverse and beneficial effects.[58] Therefore, a discussion must also be included to show the beneficial effects of the action, if any, on the listed species. These statements must be objective, balanced, and substantiated with evidence.

6. Water Quality

Reduced imported water supplies impact water quality by reducing water agencies' abilities to blend lower quality water with the higher quality Delta water. For example, local water agencies' beneficial use of recycled water frequently requires blending. Increased reliance on groundwater supplies also affects water quality by drawing in unusable saline, poor quality water from areas adjacent to usable sources. Use of groundwater also impacts the water quality of surface water streams due to the leachates that are present in the groundwater that becomes runoff into local streams.

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a. Need For High Quality Delta Water For Blending

Because of varying levels of quality in the water sources available, some water agencies must manage the salinity of the water they provide in order to maximize water use and meet the

[55] *See* Declaration of Joan Maher in Reply to Proposal on Interim Remedy, *NRDC v. Kempthorne*, No. 1:05-cv-1207-OWW-LJO ¶ 17 (Aug. 10, 2007).
[56] Beck letter, *supra*, at p. 3.
[57] Lincoln Smith, Biological Control of Russian Thistle (Tumbleweed) (2008) http://www.cwss.org/proceedingsfiles/2008/90_2008.pdf.
[58] Ron Bass, The NEPA Book p 110 (2001); 40 C.F.R. § 1508.8 ("Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.")

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