

RTD-158

ENVIRONMENTAL WATER CAUCUS COMMENT LETTER BAY DELTA CONSERVATION PLAN AND EIR/EIS JUNE 11, 2014



AQUALLIANCE

DEFENDING NORTHERN CALIFORNIA WATERS





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Santa Clarita Organization of Planning and the Environment (SCOPE)

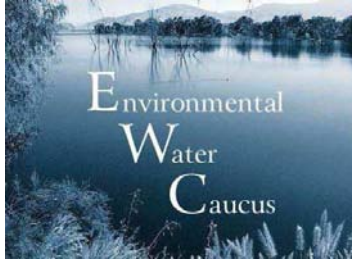


NORTHERN CALIFORNIA COUNCIL



FEDERATION OF FLY FISHERS





BDCP Comments
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June 11, 2014:

Subject: Comments on the Draft BDCP and Draft BDCP EIR/EIS

The Environmental Water Caucus and affiliated organizations throughout the state have consistently opposed the Bay Delta Conservation Plan in concept. After careful review of the actual December 2013 BDCP Plan and EIR/EIS documents, we see no reason to change our position. In fact, our review of the Draft BDCP Plan and its Draft EIR/EIS only heightens our opposition to the project, reinforcing our view that this project must not go forward.

Originally, the BDCP plan was conceived as a collaboration among south of Delta water export agencies. Their object was to increase exports from the Delta, using water supply “reliability” and ecosystem restoration as their stalking horse. Given the political power and influence of these large state, federal, and special district agencies¹, claims by BDCP officials that the Twin Tunnels will not increase water exports must be taken with many grains of salt. Our comments, attached, demonstrate that BDCP’s Twin Tunnels project will increase contract-based deliveries in wetter years, *and* will increase Delta exports in dry and drought years as the Tunnels increase water transfer opportunities for California’s water market. The Bay Delta “Conservation” Plan has little to do with conservation. Indeed, the very name of the project is disingenuous at best and deeply cynical at worst. Even the planned tunnels – which are essentially a means for draining the Delta of life-sustaining fresh water in the most expeditious way possible – are perversely referred to as “Conservation Measure 1.”

The BDCP project objective to export more water from the Delta is a foregone conclusion, essentially predetermined from the start of the project and advocated by major south of Delta water exporters referenced above. In this pursuit, they have been

¹ We refer here to the California Department of Water Resources, the US Bureau of Reclamation, Kern County Water Agency, the Metropolitan Water District of Southern California, Westlands Water District, and a handful of other water contractors supporting BDCP.

aided and abetted by the Department of Water Resources whose goal is to procure and sell more water to these same proponents, who are also their main water customers. In order to hide these objectives, they have jointly utilized consultants through the BDCP project who have cherry picked the science and who have developed 40,000 pages of biased analytical findings to support their predetermined objectives, thus obfuscating their real intent in the process. Their representatives in Congress have used the safeguards of the Endangered Species Act as their whipping post, while the main reason for the current lack of adequate water supplies (water supply “reliability”) has obviously been a persistent drought, not endangered species restrictions. A chronology of events to support these findings of a predetermined and predecisional project to move more water south is shown as Attachment 3.

BDCP documents total more than 40,000 pages. The size, complexity, and obfuscation it displays are gross and inexcusable abuses of NEPA and CEQA mandates. Their sheer volume subverts NEPA and CEQA objectives, defeats the rights of the public and decision-makers for clarity about the scientific and analytic bases for government actions. The impossibility of analyzing objectives and impacts in these documents makes a mockery of the environmental review process and fails NEPA and CEQA standards for clarity.

The BDCP fundamentally will fail to achieve its core purpose of restoring the Delta’s ecosystem. The conservation measures promoted by the Plan would be unlikely to work for the Delta’s listed fish species and their costs would be fobbed off on the taxpaying public – the Twin Tunnels beneficiaries would at most pay 10 percent of habitat restoration costs. Thus, the BDCP fails miserably as a “comprehensive conservation strategy” for the Delta. The era of ruinously expensive, environmentally destructive and inefficient infrastructure projects is dying, but rather than continue in that vein, we must embrace bold and innovative strategies that will insure the restoration and stability of the Delta and provide sustainable sources of water to our cities and farms, ideas that the Environmental Water Caucus has laid out in our Responsible Exports Plan for California.²

Numerous scientific elements of the plan have been questioned by federal regulatory and fishery agencies, the National Research Council and the Delta Independent Science Board. All these entities emphasize that the outcomes of the BDCP are rife with uncertainties. In short, the plan puts billions of taxpayer dollars at risk, with little if any benefit for listed species. Alternative means to address California’s water future and restore the Delta and its species of concern must be examined. The current plan and preferred alternative should be abandoned.

The federal and state habitat conservation plan laws require that a permissible project contain a vetted financing plan – precisely the kind of plan that BDCP lacks. Even after seven years of public debate, BDCP’s Implementing Agreement, a required document that spells out the financial and other obligations of BDCP applicants, was absent from the December 2013 draft plan and the draft EIR/EIS. The delayed June 2014 release of

² Online at <http://ewccalifornia.org/reports/responsibleexportsplanmay2013.pdf>.

an Implementing Agreement is not adequate, and will be commented on by the EWC in an Addendum by the July 29 deadline.

BDCP is a bad deal for California.

While California is now getting out from under the mountains of bonded debt it incurred to remain solvent in the previous decade, BDCP would cause the state's debt burden to increase again. BDCP lacks required financial assurances that guarantee that not only the Twin Tunnels would be built but that all of the Plan's mitigation measures would be funded throughout the 50-year term of the permits they seek. It fails to demonstrate that taxpayers would *not* be on the hook for the project if its finances falter and that ratepayers in southern California would be protected from steep, long – term rate hikes to pay its costs. It violates numerous state and federal laws, ranging from the Delta Reform Act of 2009 the federal Clean Water Act, the Porter-Cologne Water Quality Control Act, and state and federal endangered species and habitat conservation laws, to the public trust doctrine and the California's constitutional ban on waste and unreasonable use and method of use and diversion of water (adopted by California voters in 1928). It would grant veto power to the BDCP water agencies to control construction and manage restoration of habitat in the Delta with public taxpayer funds, BDCP's method for the fox to guard the chicken coop.

BDCP is an even worse deal for the Delta.

Purporting to restore Delta ecosystems and protect its most vulnerable fish species, BDCP would instead further reduce natural Delta outflows to San Francisco Bay, helping push listed, vulnerable salmon, sturgeon, and resident fish species into permanent oblivion. The people of the Delta, especially its poorest and most economically vulnerable, would endure a ten-year construction period only to find that the remaining catchable fish species would be more contaminated with mercury and selenium than they now are today. They would find that their agricultural, recreational, and regional economies would be decimated by the disruption from BDCP construction activities.

While BDCP now trumpets the risks to California's water supply of massive Delta levee failures due to earthquakes and sea level rise, BDCP lifts not a finger to address these supposed seismic levee issues. At the same time, the Department of Water Resources ignores seismic risks to other components of the State Water Project underlain by active seismic faults at the San Luis Reservoir and in the Tehachapi Range crossing of the California Aqueduct. By the 2030s the Delta residents will see their levees further deteriorated from being ignored by the state, fresh water supplies exported, prime farmlands converted, and beloved fishable, swimmable and drinkable places of recreation ruined from Delta exports to San Joaquin Valley agribusinesses and southern California suburban development. Instead of the thriving regional economy the Delta is today—integrated into the state, regional and global economies—it would by the 2030s be a subject colony of the Bay Delta Conservation Plan self-appointed “authorized entities.” The parallel of this prospect with the control of Owens Valley by the Los Angeles Department of Water and Power is impossible to miss.

BDCP and its EIR/EIS are meant to sell the project and try to limit the potential for critical thinking by an otherwise skeptical public. They conceal the Twin Tunnels' ulterior purpose of increasing the State Water Project's delivery capacity for enlarging the market for cross-Delta water transfers from Sacramento Valley "willing sellers." They reveal that Delta exports won't just increase in the wetter years, they will rise in the drier years as the water market grows in proportion that the Delta is colonized and controlled by BDCP. But by selectively modeling only the contractual water volumes and not the non-contractual amounts transferred via the water market in drier times, BDCP would prefer the public think they are merely "protecting and restoring" supplies already under contract from the effects of climate change and sea level rise.

The BDCP fails to provide an adequate range of alternatives to new conveyance as required by the National Environmental Policy Act and the California Environmental Quality Act; the listed "alternatives" to the tunnels are simply variations on tunnel export capacities and operational rules, none of which have any basis in existing water quality and operational regulations in the Delta. Alternatives that significantly reduce exports from recent historical levels have been ignored despite support from numerous environmental and water agency organizations throughout California, and despite scientific evidence confirming reduced exports and increased outflows to San Francisco Bay directly benefit Delta habitat restoration and fisheries recovery.

BDCP also proffers a snake-oil hypothesis that restored habitats can substitute for the river flows to and through the Delta that are needed for true recovery of the Delta's common wealth—its fish and its healthful, flowing waters. Time and again in our comments, in BDCP's own modeling results we find evidence that this hypothesis is sheer puffery. *Fish and people need both habitat and flows to recover the Delta. BDCP will accomplish neither for the people of the Delta nor the people of California. It is a fraudulent water grab grander in scale and skullduggery than any before seen in the American West.*

Our review and detailed responses are shown in the more technical document attached to this summarizing letter. Our thanks go to Tim Stroshane and Tom Stokely and numerous EWC organizations that have collaborated to prepare the technical and detailed comments which follow.



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¹ Comment preparation and consultation managed by Tim Stroshane for the Environmental Water Caucus. Contributors include Colin Bailey (Environmental Justice Coalition for Water), Barbara Barrigan-Parrilla and Jane Wagner-Tyack (Restore the Delta), Bill Jennings (California Sportfishing Protection Alliance), Carol Perkins (Butte Environmental Council), Linda Sheehan and Grant Wilson (Earth Law Center), Tom Stokely (EWC and California Water Impact Network), and Bob Wright (Friends of the River).

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The EIR/EIS and Bay Delta Conservation Plan documents are incomplete because the California Department of Water Resources has been unable to collect necessary environmental survey and geotechnical data from Delta lands directly related to habitat restoration and Conservation Measure 1 facilities. 133

The EIR/EIS and Bay Delta Conservation Plan documents were not noticed, let alone properly noticed to or translated for the Delta's environmental justice communities.135

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I. Introduction

After eight years in the works, the Bay Delta Conservation Plan applicants have delivered a Plan that is as flawed as it is expensive and monstrous.

The Twin Tunnels project it contains would divert more of the Delta common pool to benefit state and federal water contractors at a time when California the state has over-promised, wasted, and inequitably distributed scarce water resources, when the Delta is deteriorating from state mismanagement during the current drought, listed fish species are on the brink of extinction, and low-income communities of color who rely on the Delta for subsistence fishing, jobs, and recreation struggle to survive and thrive.

The Twin Tunnels project would be a new facility provide the State Water Project (SWP) with three new diversion points (or “north Delta intakes”) for water along the lower Sacramento River. These new intakes would divert the river into two gigantic tunnels that would isolate the river water from salty tidal flows for direct delivery to Harvey O. Banks Pumping Plant for export to the California Aqueduct of the SWP. This misnamed “conservation measure” would expand California’s cross-Delta water transfers market, and enable the US Bureau of Reclamation to receive Sacramento River flow diversions via the intertie between the state’s California Aqueduct and the Bureau’s Delta Mendota Canal or via the intermingling of stored water at San Luis Reservoir south of the Delta.² For reasons we describe in this comment letter, there is nothing authorized or authorizable about the efforts of the BDCP Applicants.

The Environmental Water Caucus (EWC), a coalition of over 30 nonprofit environmental and community organizations and California Indian Tribes, urges the National Marine Fisheries Service, the US Fish and Wildlife Service, and the California Department of Fish and Wildlife to disapprove the Bay Delta Conservation Plan and deny incidental take permits that are requested by the plan’s “Authorized Entities.”³ ***The EWC objects to the approval of the Plan, the execution of its Draft Implementing Agreement, and the issuance of incidental take permits to the Bay Delta Conservation Plan.***

² This is possible in part under State Water Resources Control Board approval in March 2000 of “joint points of diversion” in Water Rights Decision 1641.

³ According to Bay Delta Conservation Plan, Chapter 1, *Introduction*, p. 1-1, the “authorized entities” for the Bay Delta Conservation Plan include:

- California Department of Water Resources, which would own the Twin Tunnels Project described in Conservation Measure 1
- US Bureau of Reclamation (whose authorization for take is sought under Section 7 of the ESA)
- Kern County Water Agency
- Metropolitan Water Agency of Southern California
- San Luis & Delta Mendota Water Authority
- Santa Clara Valley Water District
- State and Federal Contractors Water Agency
- Westlands Water District
- Alameda County Flood Control and Water Conservation District (Zone 7 Water Agency)

In these comments EWC will refer to the “Authorized Entities” as simply “the Applicants,” “the BDCP Applicants” or “Applicants.” The term “Authorized Entities” implies improperly that this group of state and federal water agencies, and regional wholesaling water agencies, have already been authorized to receive incidental take permits. In actuality, at this time they are merely aspiring to be “applicants.” No incidental take permits have yet been submitted to the fishery agencies because a completed application must also contain an “implementing agreement,” which has not yet received public review.

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We ask of BDCP: Why should BDCP Applicants be granted such legal privilege from the federal Endangered Species Act as the “regulatory stability” of the “No Surprises Rule” that would favor their conveyance investments over the “regulatory stability” of senior water right holders and a huge array of human and non-human beneficial users of water and land in the Central Valley and the Delta? What makes these Applicants worthy of the public’s trust that they should be permitted to construct a second set of maelstrom-generating diversions along the lower Sacramento River to augment the hydraulic maelstrom they already operate at the South Delta export pumps, with their attendant ecological and hydrodynamic havoc? What makes them worthy of special treatment, just because they divert water from the Delta?

The EWC incorporates by reference in these comments those of several other correspondents regarding BDCP.⁴

The Bay Delta Conservation Plan is challenging to grasp. It contains both a strategic plan for habitat restoration and a quasi-project description of the proposed Twin Tunnels export facility. The Tunnels project is considered as a “conservation measure,” due to hyped reduction of harm to listed species at the federal and state South Delta export pumps. Among the Plan’s other conservation measures is a “reserve system” containing dispersed “restoration opportunity areas” in the legal Delta region. Its “conservation strategy” contains 21 other specific “conservation measures.” The strategy also puts forward detailed biological goals and objectives, yet states that none of these goals and objectives will be used to measure compliance of the Plan with respect to the Endangered Species Act (about which more shortly). Also among its conservation measures are actions aiming to address “other stressors” to covered aquatic species. Unfortunately, some stressors, like selenium toxicity and nonnative invasive clams like *Potamocorbula amurensis*, are ignored altogether.

The Bay Delta Conservation Plan, when all is said and done, is a bad deal for California for several broad reasons and a long list of specific ones. The broad reasons include:

- It relies on a deeply flawed scientific hypothesis that habitat restoration can substitute for river flows as the chief strategy for “fixing the Delta.” Its implementation will likely be catastrophic for the Delta’s aquatic ecosystems, because it uses science in the service of marketing the Twin Tunnels, not for solving Delta problems.
- It is contrary to law—actually, many laws.
- Its financial and economic risks exceed benefits on offer from BDCP. Far more cost-effective water supply solutions are available to California and at far lower cost.
- If implemented, its hyper-bureaucratic organization will result in “paralysis by analysis” to the detriment of the Delta ecosystem it purports to “fix,” particularly because water agencies will have veto power over changes to BDCP’s non-water project conservation measures.

Section II of our comments focuses on what the Environmental Water Caucus believes are the “big picture” issues that BDCP raises, willingly or not.

BDCP’s approach to habitat conservation, examined in Section III, relies on magical thinking, an excess of “adaptive management,” and a clause declaring its biological goals and objectives

⁴ The Environmental Water Caucus incorporates by reference the comments of Restore the Delta, Local Agencies of the North Delta, North Delta Water Agency, Central Delta Water Agency, and South Delta Water Agency, San Francisco BayKeeper, Friends of the River, Earth Law Center, Friends of the San Francisco Estuary, California Water Impact Network, California Sportfishing Protection Alliance, and AquAlliance.

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irrelevant to plan implementation and incidental take permit compliance. We diagnose these problems in Section III. The key magical thoughts of BDCP's conservation strategy are that, on one hand, terrestrial and tidally-influenced wetland habitat restoration will increase overall food supplies for listed fish species. BDCP believes this "boost" to food supplies will overcome the bad effects on these same fish of operating the state and federal Delta water facilities.

On the other hand, BDCP barely acknowledges that ***invasive nonnative clam species are themselves likely to outcompete listed fish species (as they already do) as more food is made available and as salinity moves inland as a result of the new North Delta diversions.*** Controlling these clams would require greater river inflow to the Delta to successfully control their spread, not less, as is proposed by BDCP.

BDCP fails to account for the possibility that the predators of listed species will enjoy these new habitats at least as much as the listed and other covered species might. In neither case—the clams and the predator fish species—does BDCP contain conservation measures that directly addresses these fatal flaws. For the Applicants, the whole point of BDCP is to avoid having to increase river inflow and Delta outflow to achieve real ecosystem improvements in the Delta, while still claiming to have tried to help the Delta. The member organizations of the Environmental Water Caucus stoutly believe that habitat restoration is as important as ever. But from extensive review and analysis of its documents released last December 2013, we find that ***BDCP is the most lavish greenwashing campaign our members have ever seen.***

A similar level of magical thinking appears in the hyping of floodplain habitat to benefit salmonid fish and Sacramento splittail. BDCP fails to analyze the likelihood that introduced predators will find such enhance floodplains as attractive as would BDCP's covered fish species. Other flaws are identified in BDCP's approach to habitat restoration and ecosystem recovery, and are described more later. BDCP's methyl mercury management conservation measure provides little in the way of actual mitigation on Delta floodplains, while putting off to adaptive management the most difficult questions. Adaptive management would provide mere window dressing, application of scientific lipstick to what is ultimately, just a big hydraulic pig.

To add insult to injury, a clause in the Plan's conservation strategy states that ***its biological goals and objectives shall not be a basis for determining compliance with plan implementation and permit conditions.***

BDCP's financing plan and economic justification, examined in Section IV, remains sketchy at best and will externalize all the important costs of habitat restoration and selenium management onto the California electorate. In short, rate paying customers (both farmers and urban customers) will pay skyrocketing water charges for water that the Twin Tunnels project will not make available in dry years (because of the projects' junior water rights). Nearly all of the state funds for habitat restoration activities proposed in BDCP are to be paid for by water bonds not yet proposed or approved by California voters. The Tunnels would come first; habitat restoration ***maybe*** second, if at all. Early indications are that the draft Implementing Agreement reinforces this prioritization of funding for the Twin Tunnels over habitat restoration.

BDCP's governance approach, examined in Section V, is to give as much control to the Applicants as possible over Twin Tunnels operations and consequently over the Delta itself. Allowing greater control of the Delta's common water pool to the State Water Project would create a hydrodynamic maelstrom in the lower Sacramento River from Twin Tunnels diversions there. While much lip service is given to limiting the presence of political concerns in deciding important water operations and management and protection of listed fish species in the Delta, BDCP's proposed governance structure would provide veto power to the Applicants, the same folks who have already brought these same listed fish species to the brink of extinction.

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The long list of statutes BDCP violates includes the state and federal endangered species acts, the Delta Reform Act of 2009, state and federal clean water acts, the California water code, the California Constitution's ban on wasteful and unreasonable use and method of diversion of water, and the Public Trust Doctrine. There is little, if any assurance that the Brown Act, which sets standards for the conduct of open public meetings by local and regional governments in California, will apply to the meetings of the group of groups and teams that proliferate from the BDCP Implementation Office, and which the Office will be tasked with herding and supporting. Our analysis is provided in Section VI.

Finally, the BDCP EIR/EIS is examined in Section VII. Despite producing in excess of 30,000 pages of analysis, BDCP's environmental documents contain an inadequately and improperly formulated purpose and need statement that:

- Omits its water transfer marketing purpose,
- Leaves yawning holes in its setting/affected environment descriptions,
- Gapes huge blind spots where it should have analyzed numerous environmental justice issues in the Delta Plan area (including toxic contamination of fish), groundwater and water transfer issues in the Sacramento Valley region and Central Valley study area, and
- Glaringly and indefensibly omits storage, levee and restoration projects from its cumulative impacts.

Thus, BDCP has it backwards when it comes to prioritizing recovery of the Delta's aquatic ecosystems and listed fish species, and its most socially vulnerable and environmentally unequal communities.

II. BDCP and Big Picture Issues

The BDCP documents—the habitat conservation plan (BDCP) and its lengthy environmental impact statement/environmental impact report (EIS/EIR) and its Draft Implementing Agreement are intended for many decisions by many different state and federal regulatory agencies. Despite its length, BDCP musters only a partial list.⁵ This list omits the State Water Resources Control Board’s authority over water right permit issuance under the California Water Code for new points of diversion and rediversion. This section identifies many other areas where BDCP documents will be incorporated or factored into societal decisions in California for years to come.

A. Recovering Endangered Species Populations, Habitat Conservation Plans and Incidental Take Permits

Section 9 of the Federal Endangered Species Act prohibits the take of any listed species.⁶ Section 10 of the Act, however, provides that habitat conservation plans may be prepared that enable an applicant to take listed species if the take is “incidental” to, and not the purpose of, an otherwise lawful activity.⁷ Habitat conservation plans are subject to specific criteria for preparation and approval, and the National Marine Fisheries Service and the US Fish and Wildlife Service promulgated regulations and published a handbook on habitat conservation plans and incidental take permits that guide the entire Section 10 process.⁸ The California Endangered Species Act contains similar provisions of take prohibition followed by a path for permitted incidental take of listed species.⁹

⁵ Bay Delta Conservation Plan, Chapter 7, *Implementation Structure*, p. 7-33, lines 19-40, p. 7-34, lines 1-10. Sections 404 and 401 of the Clean Water Act (the US Army Corps of Engineers and the State Water Resources Control Board); Sections 10 and 14 of the Rivers and Harbors Act of 1899 (again, the Corps), Section 1602 of the California Fish and Game Code (California Department of Fish and Wildlife); Section 106 of the National Historic Preservation Act (Delta Protection Commission, Delta Conservancy, California Historic Preservation Commission, Native American Heritage Commission, possibly others); encroachment permits from the Central Valley Flood Control Protection Board and various Reclamation Districts for work on Delta levees; Federal Energy Regulatory Commission; and the National Environmental Policy Act and California Environmental Quality Act for full disclosure environmental review.

⁶ Section 9(a)((1)(B) prohibits anyone subject to the jurisdiction of the United States to “take...any such species within the United States or the territorial sea of the United States”. “Take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or to attempt to engage in any such conduct, according to Section 3 of the Endangered Species Act, subsection (19). The act is accessible online at <http://www.nmfs.noaa.gov/pr/pdfs/laws/esa.pdf>.

⁷ Section 10(a)(1)(B).

⁸ US Department of the Interior, Fish and Wildlife Service, and US Department of Commerce, National Marine Fisheries Service, *Habitat Conservation Planning and Incidental Take Permit Processing Handbook*, November 4, 1996. Hereafter cited as *HCP Handbook*.

⁹ California Fish and Game Code Section 86 defines “take” to mean “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill” a listed species. Section 2080 of the Fish and Game Code prohibits take of listed species, Section 2081(b) authorizes the California Department of Fish and Wildlife to authorize incidental take permits under which incidental take of a listed species is “minimized and fully mitigated, and 2081(c) specifies that no incidental take permit may be issued if its issuance would “jeopardize the continued existence of the species.” The California equivalent of a habitat conservation plan is called a “natural community conservation plan” or NCCP. NCCPs are authorized under the state’s Natural Community Conservation Planning Act (NCCPA) in California Fish and Game Code Section 2800 *et seq.*, provided they meet the statutory standards provided in Section 2820 of the act.

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BDCP is a habitat conservation plan (HCP) that may be employed to satisfy both California's Endangered Species Act (where it is considered a "natural communities conservation plan" or NCCP under California Fish and Game Code Section 2800 *et seq.*) and the federal Endangered Species Act, Section 10. In each law the HCP/NCCP is required as part of an application by a developer for an incidental take permit (a permit which would allow the taking, harming, or killing of listed species incidental to development or operational activities that would otherwise be lawful).

The HCP is the centerpiece of the incidental take permit application for purposes of the Endangered Species Act. It must document the expected level of take of listed species, and must provide measures that minimize and mitigate the impacts of take on those listed species so that the permitted takings "will not appreciably reduce the likelihood of survival and recovery of the species in the wild." It must document how the applicants will assure the National Marine Fisheries Service and the US Fish and Wildlife Service that the plan will be implemented as anticipated.¹⁰

Once each fishery agency deems the application complete and acceptable, they each provide incidental take permits and contractual assurances through the "Implementing Agreement" with the Applicants that unforeseen circumstances will not require additional commitment of land, money or water during the term of the permits.¹¹ The assurance come under the "No Surprises" rule. The Plan provides the analytic framework for an "Implementing Agreement" that is to contain the terms by which the fishery agencies will determine the Applicants' ongoing compliance with the terms of the incidental take permits. The Bay Delta Conservation Plan proposes that the term of the incidental take permits issued to the Applicants run for 50 years from the date of issuance. As of May 30th a draft Implementing Agreement was finally released, and the Department of Water Resources extended the comment period until July 29th, the minimum amount of time required for public review of the Agreement. The EWC will submit supplemental comments dealing with the Draft IA at that time.

B. Free Speech, Transparency, and Democracy

In late 2013, the Bay Delta Conservation Plan web site was reorganized and redesigned. The site's "Correspondence" page contains the statement: "The BDCP encourages public participation. Below is a list of correspondence and public comments that have been received in regards to the BDCP from 2007-2013." It appears BDCP's ongoing experiment in digital democracy ended in 2014, however. BDCP has precisely one comment letter posted to the Correspondence section of its web site, despite our being aware that many other comment letters have been sent to BDCP concerning its public review documents.

In January 2014, Friends of the River, Restore the Delta, and the Environmental Water Caucus sent a cease and desist demand letter to the California Resources Agency, California Department of Water Resources (DWR) and the Bureau of Reclamation about their recent decision to stop posting public comment letters and other vital information on their jointly hosted the BDCP website

¹⁰ *HCP Handbook*, Chapter 7, *op. cit.*, footnote 7 above, "Endangered/Threatened Species Permit Issuance Criteria," pp. 7-2 through 7-6.

¹¹ "Unforeseen circumstances" means "changes in circumstances affecting a species or geographic area covered by a conservation plan that could not reasonably have been anticipated by plan developers and the Service at the time of the conservation plan's negotiation and development, and that result in a substantial and adverse change in the status of the covered species." 50 CFR 17.3, as amended, February 23, 1998, *Federal Register* 63(5): 8870. See also Appendix A to this review.

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(baydeltaconservationplan.com) just after issuance of the public drafts of the BDCP Plan and Environmental Impact Report/Environmental Impact Statement (EIR/EIS) on December 13, 2013.¹² When our country was formed, people peaceably assembled in order to hear each other's views on matters of public importance. Informed public debate is the hallmark of our democracy. The modern equivalent of the venerable town hall/public park assembly is the public comment process via the Internet on proposed major government actions. Americans have fought wars to retain these freedoms. The BDCP Applicants, however, seem intent upon wresting these hard-earned freedoms from the public. These freedoms have been suppressed by their decision to stop posting critical comment letters on the established project website. If we lived in Communist China, we might expect thoughtful or critical public comment to be suppressed. We do not expect this in the United States of America.

The Twin Tunnels is another effort by the same Governor and others to develop the old peripheral canal project that was defeated by a referendum vote by a margin of nearly 2 to 1 in June 1982. The Twin Tunnels are identified as Alternative 4, DWR's Preferred Alternative. (BDCP Draft EIR/EIS, 3-3). The Twin Tunnels are one of, if not the most, controversial proposed public works projects in California history, certainly since 1982.

1. Recent Website Change Regarding Posting of Comments

The initial Friends of the River comment letter was submitted to the National Marine Fisheries Service (NMFS) as instructed by the BDCP website on January 14, 2014. Receipt was confirmed by reply email from NMFS that same date also advising that "Additional information can be found at www.baydeltaconservationplan.com." What can be found on the BDCP website are the 40,000 pages of the consultant prepared Plan and EIR/EIS documents which the federal Bureau of Reclamation, NMFS and United States Fish and Wildlife Service (USFWS), have previously called "advocacy" and/or "biased" documents for the Twin Tunnels project. (Federal Agency Release, Bureau of Reclamation Comments p.1; NMFS Comments p.2); USFWS Comments p.1, July 18, 2013).

No longer found on the BDCP website is the January 14, 2014 Friends of the River initial comment letter explaining among other things that the Twin Tunnels project "is not a permissible project under the Endangered Species Act (ESA) because it would adversely modify designated critical habitat for at least five Endangered and Threatened fish species." (p.1). What also cannot be found on the BDCP website is the December 19, 2013 Environmental Water Caucus (EWC) (a coalition of more than 30 public interest organizations) letter requesting that the public review and comment period be extended from April 14, 2014 to August 15, 2014. The EWC letter explains that "there are 40,214 actual pages of the released documents" and that "these documents represent 20% more pages than the 32 volumes of the last printed edition of the Encyclopedia Britannica."

To explain the change in policy regarding posting of correspondence on the BDCP website, the following language initially appears under "Correspondence": *"In order to maintain the integrity of the formal public review period, incoming correspondence will not be available via the website beginning December 13, 2013 to the close of the public comment period April 14, 2014."*¹³

¹² Letter transmitted via email to Sally Jewell, Secretary of the Interior; Penny Pritzker, Secretary of Commerce; Michael Connor, Commission, Bureau of Reclamation, John Laird, Secretary of California Natural Resources Agency, Mark Cowin, Director of California Department of Water Resources, and BDCP.Comments@noaa.gov from E. Robert Wright, Senior Counsel, Friends of the River, concerning *Demand to Cease and Desist Unlawful Viewpoint Discrimination and Denial of Public Access on BDCP Website and Comment Letter re Same*, dated January 28, 2014, 6 pages.

¹³ See <http://baydeltaconservationplan.com/library/Correspondence.aspx>, emphasis added.

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The obvious purpose of refusing to post comment letters is to hide critical comments from the public. It limits the information available to the public to the pro-Twin Tunnels documents posted in December 2013. In so doing, BDCP perversely and falsely uses NEPA and CEQA as pretenses not to post comments. This restriction is an unconstitutional and unlawful exercise of viewpoint discrimination by the State agencies, the Resources Agency and DWR, aided and abetted by the participating federal agencies, NMFS which is receiving the comments but not posting them on a website, and USFWS and Reclamation. The First Amendment prohibits viewpoint discrimination. This restriction is also an unlawful denial of public access to the comments prohibited by the California Constitution. Furthermore, the decision to withhold posting of comments is a direct violation of the environmental full disclosure purposes of both the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

2. The Closing of the Forum to Critical Comment Is Contrary to the Promise of Encouraging Public Participation

The State claims that “The BDCP encourages public participation.” (BDCP website under “Correspondence”.) Secretary Laird of the California Natural Resources Agency and numerous other state officials have claimed that the BDCP process is open and transparent. Those claims of encouraging public participation and openness are false. By refusing to post critical comment letters, the speech of the commenters on BDCP is silenced in this age of the Internet. The public is shielded from seeing the other side of the Twin Tunnels story.

Meanwhile, the BDCP Applicants continue to tout the Twin Tunnels on the website. (Spanish language posting, January 3, 2014 entitled *Breve Informativo*; English language Overview Presentation posting, January 20, 2014). The BDCP Applicants have been free to misrepresent and omit knowledgeable and unpalatable facts from the web site while silencing responsive correction.

Instead of encouraging public participation, the agencies are doing everything in their power to discriminate against and exclude views opposing the Twin Tunnels from the public website forum they have created. This is part of a pattern of suppression of free speech that was displayed in the summer of 2013 when CalTrans employees trespassed on private property in the Delta to remove signs carrying the message “Save the Delta! Stop the Tunnels!” That thuggery by the State only stopped after it was brought to widespread public attention by media coverage and rallies protesting the sign removals; no legal basis for the sign removals was ever provided by CalTrans.

Claiming that taking more water away from the fish will be good for the fish, that taking more freshwater away from the Delta would be good for the Delta and that a water grab for the benefit of the exporters is really a conservation plan is false propaganda intended to deceive and confuse the public. This pattern and practice of viewpoint discrimination by the BDCP proponent agencies is the strongest self-indictment that could be made of the folly, environmental destruction and economic waste threatened by the Twin Tunnels project. The government would not suppress the speech of project opponents if it had true confidence that its own claims about the asserted benefits of the Twin Tunnels.

3. Viewpoint Discrimination on the BDCP Website Violates the First Amendment

The First Amendment of the United States Constitution provides in pertinent part that there shall be no law “abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances.” Similarly, the California Constitution commands that “A law may not restrain or abridge liberty of speech or press” and the

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people have the right to “assemble freely to consult for the common good.”¹⁴ “In a public forum, by definition, all parties have a constitutional right of access and the state must demonstrate compelling reasons for restricting access to a single class of speaker, a single viewpoint, or a single subject. When speaker and subject are similarly situated, the state may not pick and choose.”¹⁵ “Any access barrier must be reasonable and viewpoint neutral [citations].”¹⁶ “When the government targets not subject matter, but particular views taken by speakers on a subject, the violation of the First Amendment is all the more blatant. [Citation.] Viewpoint discrimination is thus an egregious form of content discrimination. The government must abstain from regulating speech when the specific motivating ideology or the opinion or perspective of the speaker is the rationality for the restriction.”¹⁷

Under the current regime, only those viewpoints that the government chooses will be posted on the BDCP website. For example, the website continues to include blogs purporting to debunk alleged “Myths” about the BDCP, and other materials written to promote BDCP and discount public concerns.¹⁸ This blog suggests that a comment on the blog may be provided by clicking on a link. (“Click here to contact us with your questions or comments about the BDCP Blog.”) Yet that link is the same link to the email address for submitting formal public comments on the Plan and EIR/EIS (BDCP.comments@noaa.gov). As explained clearly on the BDCP website, such comments will not be posted. The exclusion of critical comments from the BDCP website at the same time as the government agency proponents continue to post materials that promote their viewpoint that BDCP is a worthwhile project violates the First Amendment prohibition of viewpoint discrimination in forums created by the government.

4. The Denial of the Right of Access to Critical Comments Violates the California Constitution

The California Constitution provides in pertinent part that “The people have the right of access to information concerning the conduct of the people’s business, and, therefore, the meetings of public bodies and the writings of public officials and agencies shall be open to public scrutiny.”¹⁹ Moreover, any authority “shall be broadly construed if it furthers the people’s right of access, and narrowly construed if it limits the right of access.”²⁰

“Given the strong public policy of the people’s right to information concerning the people’s business (Gov.Code, § 6250), and the constitutional mandate to construe statutes limiting the right of access narrowly, all public records are subject to disclosure unless the Legislature has *expressly* provided to the contrary.”²¹

¹⁴ California Constitution, Article I, § 2(a); § 3(a).

¹⁵ *Perry Educ. Assn. v. Perry Local Education Assn*, 460 U.S. 37, 55 (1983).

¹⁶ *Christian Legal Soc. Chapter of the University of California, Hastings College of the Law v. Martinez*, 130 S.Ct. 2971, 2984 (2010).

¹⁷ *Rosenberger v Rector and Visitors of University of Virginia*, 515 U.S. 819, 829 (1995).

¹⁸ See, e.g., http://baydeltaconservationplan.com/news/blog/14-01-10/Correcting_Stubborn_Myths_Part_II.aspx.

¹⁹ California Constitution, Article I, § 3(b)(1).

²⁰ California Constitution, Article I, § 3(b)(2).

²¹ *Sierra Club v. Superior Court*, 57 Cal.4th 157, 166 (2013) (internal quotation marks deleted).

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The complexity of the BDCP and the volume of documents being circulated for public review to explain that complexity make review challenging even for professionals. For an average member of the public, the job is almost impossible. The public's ability to be informed regarding this project is facilitated by having access to comments being made by others during the review process, including non-profit environmental groups and other public agencies. The refusal to publish comment letters on the website as they come in denies the public the right of access to the comments in violation of the California Constitution.

**5. The Exclusion of Environmental Information Contrary to the
Opinions of the Project Proponents Violates NEPA and CEQA**

NEPA and CEQA are both "environmental full disclosure laws."²² Both laws require that an agency "use its best efforts to find out all that it reasonably can" about the subject project and its environmental impacts.²³

Interfering with review by members of the public of comments made by other members of the public is environmental concealment, not disclosure, and is calculated to prevent the public from finding out all that it reasonably can about the subject project and its impacts.

CEQA provides that "notwithstanding any other provision of law" the record of proceedings "shall include, but is not limited to," written documents submitted by any person relevant to findings and all written correspondence submitted to the respondent public agency with respect to compliance with CEQA or the project.²⁴

The NEPA Regulations require that federal agencies make comments received under NEPA available to the public pursuant to the provisions of the Freedom of Information Act and that they shall be provided without charge to the extent practicable.²⁵

The CEQA Regulations provide that:

Public participation is an essential part of the CEQA process. Each public agency should include provisions in its CEQA procedures for wide public involvement, formal and informal consistent with its existing activities and procedures, in order to receive and evaluate public reactions to environmental issues related to the agency's activities. *Such procedures should include, whenever possible, making environmental information available in electronic format on the Internet, on a web site maintained or utilized by the public agency.*²⁶

Instead, the BDCP proponent agencies have selectively published environmental information favorable to the project on their website while concealing what they consider to be unfavorable information that they would rather not share with the public until it is too late for cross-pollination

²² *Silva v. Lynn*, 482 F.2d 1282, 1284 (1st Cir. 1973)(NEPA); *Communities for a Better Environment v. City of Richmond*, 184 Cal.App.4th 70, 88 (2010)(CEQA).

²³ *Barnes v. U.S. Dept. of Transp.* 655 F.3d 1124, 1136 (9th Cir. 2011)(NEPA); *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova*, 40 Cal. 412, 428 (2007)(CEQA).

²⁴ Public Resources Code § 21167.6(e)(3), (7).

²⁵ 40 C.F.R. § 1506.6(f).

²⁶ 14 Code Cal. Regs § 15201(emphasis added).

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of ideas to occur among the public. Making the comments available only *after* the comment period has closed makes a mockery of the promise of a fair, transparent and open process. Members of the public will have no opportunity to learn information provided by those with concerns about the BDCP in time to help them develop their own timely comments, including suggested alternatives to the project. The exclusion of comments from the website violates the environmental full disclosure purposes of both NEPA and CEQA, and the CEQA regulation requiring the posting of environmental information on the agency's website.

Exclusion of public comments from the BDCP website makes the claim that the BDCP encourages public participation a lie, and violates the First Amendment, California Constitution, NEPA and CEQA. This blatant viewpoint discrimination will not be tolerated. We demand that your agencies immediately commence posting all comment letters received on the BDCP website as soon as they are received, and confirm in writing that you are now doing so.

C. Government's Public Trust Responsibility, the Delta Common Pool, and the ESA

Enforcing the Public Trust Doctrine is an environmental justice issue, both broadly and narrowly construed. The Delta's public trust resources—the listed and covered fish species and the non-covered fish species of the Delta—are all nurtured at some point in their lives (if not their whole lives) in the Delta common pool. Protecting the commons in the Delta common pool is at stake from the proposed activities of the Bay Delta Conservation Plan. Governments have a permanent fiduciary responsibility and obligation to protect the public trust. In *National Audubon Society v. Superior Court*, the court held that “the public trust is more than an affirmation of state power to use public property for public purposes. It is an affirmation of the duty of the state to protect the people's common heritage of streams, lakes, marshlands and tidelands, surrendering that right of protection only in rare cases when abandonment of that right is consistent with the purposes of the trust.”

The Public Trust Doctrine is an affirmation of the duty of the state to protect the people's common heritage in streams, lakes, marshlands, and tidelands.²⁷ The Delta is a common pool resource. DWR acknowledges this legal reality.²⁸ The application of the Public Trust Doctrine requires an analysis of the public trust values of competing alternatives, as was directed by the State Water Board in the Mono Lake Case. Its applicability to alternatives for the Delta, where species recovery, ecosystem restoration, recreation and navigation are pitted against damage from water exports, is exactly the kind of situation suited to a Public Trust analysis, which should be required by the Delta Plan and BDCP. The act of appropriating water—whether for a new use or for a new method of diversion or of use— is an acquisition of a property right from the waters of the state, an act that is therefore subject to regulation under the state's public trust responsibilities.

Aspects of the Public Trust Doctrine are taken up and fulfilled by adequate conduct of the habitat conservation planning process. For instance, both ESAs require the state and federal fishery agencies to find and demonstrate the BDCP will not result in take of listed species that would appreciably reduce their chances of survival and recovery must apply as well to what it means to protect these species under the public trust doctrine. The Services' HCP Handbook states in pertinent part:

²⁷ *National Audubon Society v. Superior Court* (1983) 33 Cal 3d, 419, 441.

²⁸ California Department of Water Resources, *Water Transfer Approval: Assuring Responsible Transfers*, July 2012, page 3. Accessible online 16 February 2014 at http://www.water.ca.gov/watertransfers/docs/responsible_water_transfers_2012.pdf. In addition, the Delta Protection Act of 1959 also acknowledges this reality, California Water Code Sections 12200-12205.

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This finding typically requires consideration of two factors: adequacy of the minimization and mitigation program, and whether it is the maximum that can be practically implemented by the applicant. To the extent[] that the minimization and mitigation program can be demonstrated to provide substantial benefits to the species, less emphasis can be placed on the second factor. *However, particularly where the adequacy of the mitigation is a close call, the record must contain some basis to conclude that the proposed program is the maximum that can be reasonably required by that applicant. This may require weighing the costs of implementing additional mitigation, benefits and cost of implementing additional mitigation, the amount of mitigation provided by other applicants in similar situations, and the abilities of that particular applicant.* Analysis of the alternatives that would require additional mitigation in the HCP and NEPA analysis, including the costs to the applicant is often essential in helping the Services make the required finding.

The federal ESA further requires adequate funding for the habitat conservation plan and its associated procedures are dealt with. This funding must adequately cover “procedures to deal with unforeseen circumstances” as well.

...The Services must ensure that funding sources and levels proposed by the applicant are reliable and will meet the purposes of the HCP, and that measures to deal with unforeseen circumstances are adequately addressed. Without such findings, the section 10 permit cannot be issued.²⁹

Because “the adequacy of mitigation” in BDCP is *definitely* “a close call,” the Plan also provides an economic analysis in an attempt to address the fishery agencies’ concerns over whether additional mitigation is needed before approving the BDCP. Thus, in the ESA regulatory framework, the implementation of assured mitigation requires an economic analysis of each take alternative examined in the habitat conservation plan.³⁰

Unfortunately, the benefit-cost analysis called for in HCP guidelines and in BDCP need only consider whether the benefits of the Plan outweigh costs to the Applicants.

The public trust doctrine requires government to go further. In the case of the Bay Delta Conservation Plan, it demands an accounting of the benefits of nature’s services and the cost to society of replacing what ecosystem services are damaged by water development under BDCP. This way, government assesses whether the BDCP represents net benefits over its costs to society as a whole, beyond the net benefits to the Applicants, as provided under the ESAs. Put another way, the ESA economic analysis asks what the net payoff is to the Applicants of the project, while the public trust doctrine requires of examination of the overall net benefits to society as whole, including to future generations. It can be successfully used to value nature’s services.³¹

But the HCP process for obtaining incidental take permits and “no surprises” in endangered species treatment flies in the face of the public trust doctrine. In the absence of any legal analysis, we are deeply concerned that the State of California would contract away its obligation to protect Delta public trust resources as the ink dries on the BDCP, its Implementing Agreement, and the incidental take permits. The EIR/EIS fails to disclose and analyze this crucial issue. In so doing, it fails to

²⁹ *HCP Handbook*, pages 7-3 and 7-4. Emphases added.

³⁰ *Bay Delta Conservation Plan.*, November 2013, Chapter 9, p. 9-38, lines 12-15, p. 9-39, lines 1-4.

³¹ ECONorthwest, *Bay-Delta Water: Economics of Choice*, prepared for the California Water Impact Network as part of comments on the Delta Stewardship Council’s Delta Plan, January 11, 2013. Accessible online at http://www.c-win.org/webfm_send/282.

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address our introductory question: why are the BDCP Applicants deserving of 50 years of regulatory stability when their activities to date have caused the problems they claim BDCP will solve? Without this information, decision makers cannot make fully-informed decisions as required by the California Environmental Quality Act and the National Environmental Policy Act.

The Delta Stewardship Council and the State Water Board clearly have trustee responsibilities in balancing the public trust here in California. However, the final Delta Plan and BDCP both gratuitously mention the public trust obligation but provide no analysis.³²

D. Restoring the Delta for All

An environmental justice vision of the Delta reflects principles that apply beyond the life of the BDCP planning process and can be used to guide future Delta planning decisions. A sustainable Delta that provides for the needs of environmental justice communities, currently spread broadly across the legally defined Delta, will provide a safe, livable environment for all current and future residents of the Delta. That environment will include necessary infrastructure for water, flood protection, adequate transportation, etc., and will include economic opportunities for current and future community residents.

Environmental justice and disadvantaged communities face multiple barriers in trying to address the needs of their communities. These include:

- Competing priorities. These communities face multiple challenges that, due to a lack of resources, are often addressed on an emergency basis, if at all.
- Lack of access to decision-making processes, including language translations and meeting interpretation.
- Limited data on the scope of their issues
- Lack of resources

Achieving a BDCP—or, preferably, some set of actions that literally “restores the Delta” for all its species, residents and visitors—that addresses these barriers will require special focus on communities that lack the financial flexibility to easily adapt to substantial changes in the way of life in the Delta, as well as when planning for climate change and catastrophic events. There are key elements and considerations necessary to ensure that EJ communities do not suffer disproportionately and, conversely, that EJ communities benefit equitably from new policies governing the Delta, its economy, and its common pool resources.

1. Procedural Elements

- *The Delta decision-making structure must recognize and address the differing capacity for participation among interested stakeholders in order to ensure a fair and balanced BDCP.*
- *Planning and implementation of the BDCP must incorporate meaningful stakeholder engagement that contributes to and impacts the outcome of the BDCP.*
- *Data gaps relevant to disadvantaged and environmental justice communities must be identified and addressed.*

³² Environmental Water Caucus, *Response Letter to the Final Delta Plan, Recirculated Draft PEIR and Rulemaking Package*, January 14, 2013, page 5. Accessible online 16 February 2014 at <http://ewccalifornia.org/reports/ewcdeltaplancommentsfinal.pdf>.

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- *Decisions based upon inconclusive data should be made in a provisional and reversible manner.*

A sustainable Delta will be governed by a diverse and representative set of agencies and interested stakeholders. The best and most defensible decisions are made with full participation of all interested stakeholders. The current and historical make-up of Delta policy decision-making structures focus representation on those stakeholder groups with the most powerful voices. Not surprisingly, this has limited the range of discussion to focus on areas of conflict. Broadening the stakeholder base increases the range of topics to be discussed, but also provides an opportunity to reach consensus on issues that have not previously been central to the discussion.

Enabling meaningful engagement and statewide investment in Delta restoration and management will require education and capacity building around the state. California's residents, by and large, have no idea where the Delta begins and ends or the role it plays in providing for California's water resources. Education can serve multiple purposes including the development of a greater investment in the Delta that may translate into support for additional resources to sustain the Delta. In addition, education can help to build capacity for more meaningful participation. Delta planning will benefit greatly from a more informed and engaged community who can impact the Delta through their individual behaviors (i.e.: conservation, reduced pesticide use, alterations in boating practices, etc.) and in their contributions to the greater decision-making process.

Implementing agencies and impacted communities need basic information upon which to base decisions and evaluate outcomes. For impacted communities, a lack of data monitoring and evaluation means that information about cumulative impacts is absent from decision-making, and that funding opportunities are missed. For agencies, decisions made on this uncertain foundation are subject to challenge. The BDCP process must, as part of its recommendations, identify areas in which key information must still be gathered to support its conclusions.

The Delta is a dynamic system. Any ideal developed in a one-time process will fail to account for unknowns that are difficult to predict. Thus, the most important element of a new vision for the Delta is a governance structure that will be flexible, and able to make decisions in a timely fashion and in the face of uncertainty, but will also provide full opportunity for participation and review of previous decisions and course change as necessary to achieve a sustainable delta. The proposed BDCP does neither. We don't see such a governance structure in BDCP.

2. Water Supply/Water Quality

- *Drinking water quality and supply, both groundwater and surface water, must be adequate for all people who live in California.*
- *The public health impacts on subsistence fishers from eating unsafe amounts of contaminated fish must be addressed through efforts to improve water quality and to reduce exposure to mercury and other harmful bio-accumulative contaminants.*

While the major focus in the BDCP has been on water supply, water quality is a key component of a functional Delta. High quality water is necessary for the proper functioning of the ecosystem, drinking water supply, and provision for dietary subsistence.

Any water quality requirements set for the Delta must take into consideration the fact that people eat the fish swimming through the Delta. We estimate that more than 20,000 people, including young children, eat fish from the Delta as a dietary staple. These families often lack the economic flexibility to purchase alternative sources of nutrition. Because it will take generations to reduce

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mercury contamination in fish, risk reduction activities must be developed with community input and implemented—that will actually reduce their risk of exposure and mitigate health impacts when they occur. We believe selenium toxicity in fish is understated in BDCP documentation (see elsewhere in Section II and III).

In addressing the clear and pressing issues of surface water quality in the Delta, the continuing deterioration of groundwater quality within the Delta and its source watersheds must also be of concern. A BDCP that ignores groundwater quality condemns a significant number of California residents to continue reliance on substandard drinking water supplies, and ignores the potential for great improvement in water supply reliability that can be made through groundwater conjunctive use south of the Delta.

3. Land Use

- *Impacts on low-income homeowners, such as threats to public safety and lowered home values must be addressed as part of any proposed land use changes called for by the new BDCP.*
- *Affordable housing opportunities must be maintained as land use changes are implemented.*
- *The disproportionate impacts of flooding on renters must be mitigated for all resident of the Delta, including those who work and live in the Delta, but do not own land.*
- *The impacts on existing communities of alterations in land use plans must be evaluated, particularly the potential for increased vulnerability to flooding.*
- *Emergency response plans must address the needs of the low-income and Latino populations at disproportionate risk from flood events.*

A sustainable Delta will require dramatic changes in land use decisions. The Delta is already over-developed limiting choices for flood attenuation and increasing the potential for catastrophic damage associated with a seismic event. As those choices are made the potential exists to provide equitable benefits in planning for EJ communities, but there is also the threat of disproportionate impacts on those same communities. For this reason, a sustainable vision for the Delta must identify and account for the particular impacts on EJ communities.

Changes in allowable land use patterns must be an element of a sustainable Delta. Current patterns of development will leave entire communities at risk in the event of seismic activity or flooding. We are deeply concerned that BDCP facilities and alignments may foreclose options for improving land use and affordable options for the Delta's poorest residents. A disproportionate number of these at-risk developments are populated by low-income, predominantly Latino residents. Changes in flood mapping and zoning will have a profound effect on their investments, while their ability to recover from a flood event is limited. Moreover, these existing communities may be detrimentally impacted by the advent of upper scale developments protected by new "super levees," which have the potential to re-route flood waters in ways that may negatively impact lower income communities.

In addition, Hurricane Katrina ("Katrina") provided a vivid illustration of the potential impacts of a catastrophic event. Katrina made it very clear that the people with the fewest resources tend to suffer the most, and as many remaining homeless families in New Orleans will tell you, recover the slowest from a catastrophic event. If we want to avoid a similar tragedy any BDCP must protect communities remaining in the Delta and expedited emergency evacuation plans with special focus

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on educating environmental justice communities to be aware of the plan and with the resources necessary to actually evacuate these communities.

At an even greater disadvantage are communities that reside in, but don't own property in, flood plains—including tenants and farmworkers. These communities receive less assistance than property owners after a flood event and are more likely to be permanently displaced. Any emergency plan must target the special needs and vulnerabilities of these residents as well as their leadership capacity, if supported with resources.

Finally, as development becomes limited and/or more expensive in flood plains, the supply of low-income housing will be curtailed. Any land use changes must include a plan for provision of affordable housing for the current and expected population in the Delta region. This BDCP fails on each of these points.

4. Local and State Economies

- *Proposed changes in agricultural practices or other economic activities must evaluate the potential impacts of those changes on Delta residents, particularly farmworker and other disadvantaged communities.*
- *Implementing the BDCP should provide economic opportunities to current Delta residents.*

The "legal" Delta is largely an agricultural and recreational economy. As such, many of the employment opportunities require only lower levels of educational attainment. Changing crops, fallowing or retiring land, shifts in recreational opportunities and supporting service industry will impact Delta communities who provide this labor force. Such dislocations go beyond the paycheck these individuals receive, to include loss of the very communities where these individuals live. While they may comprise migrant communities, in fact these are stable, established communities, often now for the past two generations. Any changes in the economic viability of these communities must be accommodated in a sustainable BDCP.

Conversely, proper care-taking of the Delta and its resources can provide new economic opportunities that should be targeted at these residents. Water quality monitoring, wetland restoration, and levee reconstruction and repair all provide new or continuing job opportunities for Delta workers.

5. Environment

- *A sustainable Delta must provide necessary water flows to maintain the common pool and ecosystem, and regulators must have the flexibility to amend these flows as circumstances dictate.*
- *Ecosystem impacts, beyond flow, must be considered and altered to improve ecosystem health.*
- *BDCP must recognize the impact of upstream source control and flood attenuation activities on the health and viability of the Delta.*

The collapse of Delta smelt and other fish populations calls for sober reflection on the dangers of unintended consequences. Environmental justice communities have a similar unfortunate history; that is, the dismissal of cumulative impacts on their communities as insignificant until such time as their impact on the community's health is undeniable and perhaps irreversible.

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To ensure that community health and the environment are protected in the BDCP process, we recommend that decisions on changes in conveyance and operation of Delta water infrastructure be incremental and reversible, dependent upon the measured impact on the ecosystem. This can only be done by having habitat restoration proceed first, so that society knows it will succeed. Success for the Delta common pool resources should be assured before any Twin Tunnels project is deemed safe to develop. Agricultural and storm water discharges be limited to protect water quality. Remediation of mine sites and stream beds be prioritized and ecosystem restoration projects be prioritized, sited, and designed so as to limit the potential for additional methylation of mercury and the related health impacts to wildlife and human health.

E. The Delta Plan

The Bay Delta Conservation Plan enters a larger context beyond the state and federal Endangered Species Acts. In 2009, the State Legislature approved new initiatives in California water policy. Key among these was creation of the Delta Stewardship Council (with its Delta Science Program) and the Council's Delta Independent Science Board. The legislation required the Council to complete a Delta Plan that regulates "covered actions" in the Delta. BDCP and its Twin Tunnels project is one such covered action. The legislation describes criteria for how the Council and the California Department of Fish and Wildlife must consider the Bay Delta Conservation Plan for inclusion in the Delta Plan. DFW is responsible for making findings under the state's Natural Communities Conservation Planning Act and the California Environmental Quality Act. Once these findings are made and the Department issues its incidental take permit approval, the law requires the Delta Stewardship Council to incorporate BDCP into the Delta Plan. However, the same section of the law requires the Delta Stewardship Council to hold a public hearing about the incorporation of BDCP into the Delta Plan, and allows that the Department's approval of BDCP may be appealed to the Delta Stewardship Council. By this reading of the law, the Delta Stewardship Council may have some type of veto power over BDCP.³³

F. The State Water Resources Control Board's Bay-Delta Plan

Since 2009, the State Water Board has sought to update its water quality control plan (WQCP) for the Bay Delta Estuary. The Board is not legally bound to consider incorporating the BDCP the way that the Delta Plan is. However, Conservation Measure 1 (CM 1), Water Facilities, of the Bay Delta Conservation Plan employed modeling criteria for the Twin Tunnels project that, if elevated to the status of flow and operational objectives in the WQCP, represent the likely shape of "regime change" for water quality control in the Bay Delta Estuary should the Twin Tunnels move forward. Neither the BDCP nor its EIR/EIS acknowledge the Twin Tunnels need for "regime change." They do not analyze how it will likely force the State Water Board to revisit most if not all its current Delta water quality objectives while also adding new ones to accommodate operation of new intakes along the lower Sacramento River.

Currently, the Bay-Delta WQCP and its implementing water rights decision D-1641 regulate salinity and flow conditions for the legal Delta region's water ways. Flow objectives in the Plan currently cover Delta outflow, Sacramento and San Joaquin Rivers' inflow, the ratio of exports to inflows, the size and position of the low salinity zone (the estuarine objective, X2), and the operation of the Delta Cross Channel gates near Walnut Grove.

The modeling criteria for CM 1 would introduce "bypass flows" on the lower Sacramento River as well as new diversion objectives for the three North Delta intakes of the Twin Tunnels project that

³³ California Water Code Section 85320. This section as written is silent about the possibility of the Delta Stewardship Council upholding such an appeal, and on what legal grounds for upholding an appeal would be.

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would be located between Clarksburg and Courtland. It would also introduce new Old and Middle River (reverse) flow objectives as well. It would revise the inflow-to-export ratio objective and may force reconsideration of salinity objectives at Emmaton on the Sacramento River and Jersey Point on the San Joaquin. Operational objectives for a gate at the head of Old River would be needed as well.

The State Water Board will need to prepare and adopt a new Bay Delta Plan before authorizing water rights permits for new north Delta diversions for the Twin Tunnels project, otherwise BDCP-project water rights permits will not conform to the current Bay Delta plan. The Bay Delta Plan must come first and must demonstrate compliance with the federal Clean Water Act (CWA), including its anti-degradation policy. BDCP must also comply with federal Clean Water Act regulations and water quality objectives as well. The Bay Delta Plan must also meet the obligation for state flow (and salinity) standards to protect—not “reasonably” protect under Porter Cologne provisions such as Sections 13000 and 13241—the most sensitive beneficial uses, as is required by the CWA. Where there are multiple beneficial use designations, the Bay Delta Plan must protect the most sensitive beneficial use.³⁴ The State Water Board typically reserves jurisdiction upon issuing new or modified water right permits.

It is our understanding that the BDCP and its Environmental Impact Report/Statement are to be employed not only for making findings to support approval of the Applicants’ incidental take permits but also to support issuance of the State Water Board’s water rights permits for the proposed Twin Tunnels and associated uses of water (such as increased flows for Yolo Bypass associated with the BDCP’s seasonal floodplain inundation strategy). ***In their current condition, these documents are at best unready to fulfill such a role.***

Both the US Bureau of Reclamation and the California Department of Water Resources filed petitions with the State Water Board to extend the time on their water rights permits to allow additional time to complete facilities on the Central Valley Project and the State Water Project. No mention is made of these time extension requests in the BDCP or its EIR/EIS, despite several governmental and nonprofit entities filing protests of the requests with the Board.³⁵

G. Availability of Water

At this time, the Bay Delta Conservation Plan’s Applicants *assume* that the Twin Tunnels project will have sufficient water rights to carry out its operations. Water quality control planning efforts to date have led the Board to consider proportional tributary contributions needed to meet Delta inflow objectives from the Sacramento and San Joaquin River Basins to improve water quality and protect all beneficial uses, including fish and wildlife, in the Delta. The State Water Resources Control Board has authority over water rights in the Basins that would enable it to reallocate water usage and ensure compliance with the Board’s new instream flow objectives.

³⁴ See 40 CFR § 131.11; *see also* 40 CFR § 131.6.

³⁵ Among those entities filing protests were EWC member groups California Water Impact Network, California Sportfishing Protection Alliance, and AquAlliance.

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The Environmental Water Caucus has previously illustrated how the Central Valley Project and the State Water Project have failed for decades to have enough water to fulfill the contract-based demands of their numerous contractors in the Central Valley and southern California.³⁶

Water availability analysis is an important method for modeling how the Board would implement new flow objectives. Testimony submitted in 2012 by EWC member organizations California Water Impact Network, California Sportfishing Protection Alliance, and AquAlliance illustrates the use of a planning-level water availability analysis for the Trinity River (much of whose flows are diverted to the Central Valley watershed of the Bay-Delta Estuary), and the major tributaries of the Sacramento and San Joaquin River Basins. The analysis incorporated the Basins' hydrologic variability, instream flow requirements based on the Board's 2010 public trust Delta flow determinations³⁷, and then allocated the divertable flows that remain in the system according to known publicly available water rights data and priorities. They found that under public trust protective flow determinations, the promised water represented in water rights claims exceed flow conditions available to these claims.

In addition, the California Water Impact Network has shown that total consumptive water rights claims for the Sacramento and Trinity River basins exceed annual average unimpaired flows by a factor of 5.6 acre-feet of claims per acre-foot of flow. A similar ratio occurs in the San Joaquin River Basin. The river basins of the Delta's Central Valley watershed are over-appropriated. The analysis showed that Bureau and DWR water rights had potentially clouded titles to water on the Sacramento, Feather, American, Stanislaus, and San Joaquin Rivers.³⁸

The EWC objects to approval of BDCP and its EIS/EIR because they fail to disclose the root cause of Delta water supply "unreliability" and the "Delta crisis." The State Water Resources Control Board, the Department of Water Resources and the US Bureau of Reclamation are unwilling to eliminate the paper water in both the overall water rights system of the Central Valley and the excess contractual amounts of the state and federal water projects. The absence of clearly analyzed and legally reliable water availability for nature as well as for society means that the state and federal fishery agencies risk issuing incidental take permits for supply benefits to the Applicants that are based on wishes and prayers. Failure of these fictitious benefits could jeopardize the Applicants' continued ability to pay for and comply with BDCP covered activities and programs. That funding ability is crucial to adaptively manage the conservation, avoidance and minimization measures that are crucial to BDCP's conservation strategy, flawed as it is.

³⁶ Letter from David Nesmith and Nick Di Croce, co-facilitators of the Environmental Water Caucus, to Katrina Chow, Project Manager, Shasta Lake Water Resources Investigation, United States Department of the Interior, Bureau of Reclamation, dated September 30, 2013, *Comments on Draft Environmental Impact Statement dated June 2013*, pp. 6-8. Accessible online 21 March 2014 at <http://ewccalifornia.org/reports/shastadeiscomments.pdf>.

³⁷ State Water Resources Control Board, *Developing Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem*, prepared pursuant to the Sacramento-San Joaquin Delta Reform Act of 2009, August 2010, 178 pages. Accessible online 7 April 2014 at http://www.swrcb.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/final_rpt.shtml.

³⁸ Stroshane, T., *Testimony on Water Availability Analysis for Trinity, Sacramento, and San Joaquin River Basins Tributary to the Bay-Delta Estuary*, Submitted by the California Water Impact Network on behalf of California Sportfishing Protection Alliance, and AquAlliance on October 26, 2012, for Workshop #3: Analytic Tools for Evaluating Water Supply, Hydrodynamic, and Hydropower Effects of the Bay-Delta Plan. Accessible online at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/comments111312/tim_stroshane.pdf

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The failure to adequately define and quantify “water supply reliability” renders these documents legally inadequate. CEQA and NEPA require that an EIS and EIR inform the public and decision-makers about adverse consequences of a project or program. These findings are crucial parts of BDCP’s affected environment and environmental and regulatory baseline. **Absent a thorough documentation of the purpose and need for BDCP with respect to water supply reliability, decision makers cannot understand what type and level of reliability might be achieved. The National Environmental Policy Act and the California Environmental Quality Act are both violated as a result.**

The EWC has presented clear alternatives for achieving water supply reliability and Delta ecosystem restoration (Responsible Exports Plan) but our alternative was not considered in the Draft EIS/EIR. The EWC Reduced Exports Plan contains numerous actions that compensate for reduced Delta exports. This reasonable alternative has not been evaluated in the BDCP or in the Draft EIS/EIR. The EWC alternative has relied on strict enforcement of water quality laws, adoption of the State Water Resources Control Board and Fish and Game flow recommendations, shoring up of existing levees, ceasing the unreasonable use of water to irrigate toxic soils (primarily in the western San Joaquin Valley) that return pollution to the estuary, while also providing for modest export water supply with statewide water conservation, efficiency, and recycling measures to ensure existing supplies are extended to meet demand.

As we describe in Section VII, BDCP’s Twin Tunnels project will function to increase the Central Valley Project and State Water Project’s ability to arrange and facilitate cross-Delta water market transfers in drier and drought years. ***The very existence of the water transfer market is due to this lack of water available to fulfill SWP and CVP water right claims, and the contractual demands of their south of Delta customer agencies.***

BDCP all but ignore this crucial purpose of the Twin Tunnels project. They fail to call it out as a purpose to comply with CEQA and NEPA. The project itself increases reliance on the Delta in flagrant defiance of the Delta Reform Act of 2009, and fails utterly to justify why the Twin Tunnels are needed.

H. Reasonable Use of Water

California’s constitution recognizes water rights only to the extent they are reasonable. No one has a right in California to use water unreasonably, not even the state and federal governments. (California Constitution, Article X, Section 2) Moreover, the state constitution also states that “such right does not and shall not extend to the waste or unreasonable use or unreasonable method of use or unreasonable method of diversion of water.” The EWC believes that because lack of water availability and the precarious population status of listed fish species go unaddressed, the Bay Delta Conservation Plan’s Twin Tunnels project (often referred to as “North Delta Intakes”) in Conservation Measure 1 would be an unreasonable method of diversion of water, and that continued provision of a supposedly more reliable irrigation water supply to the drainage impaired lands of the western San Joaquin Valley, as is implied but not disclosed in the Bay Delta Conservation Plan and its EIS/EIR, would continue to be a wasteful and unreasonable use of water.

The Bay Delta Conservation Plan would violate the California Constitution’s ban on wasteful and unreasonable use of water and method of diversion of water because BDCP:

- Fails to demonstrate and disclose its purpose and need,
- Reduces Delta outflow by increasing exports in violation of legal requirements to reduce reliance on Delta exports,
- More than appreciably reduces the likelihood that listed species can survive and recover in the Delta under operating conditions of the Twin Tunnels project, and

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- Disconnects biological goals and objectives intended to help species survive and recover in the Delta from accountability of the BDCP Applicants for successful performance of the Plan.

I. Selenium Toxicity and Fate in the Delta

BDCP's analysis of selenium as a water quality stressor is inadequate for failing to acknowledge or address uncertainties about the regulatory and technological setting of the Grassland Bypass Project and long-term management and mitigation of selenium loading to the San Joaquin River in the western San Joaquin Valley. The California Water Impact Network provided the State Water Board with testimony about the Grassland Bypass Project's limitations and the broad overview of the challenges Grassland area farmers face in developing and implementing a cost-effective treatment technology for concentrating, isolating, managing and sequestering selenium.³⁹

These projects indicate the ecological and public health risks of various scenarios of selenium loading to the Bay-Delta Estuary. BDCP irresponsibly downplays the risks and foreseeable costs and circumstances involved. See our detailed analysis of this issue in Section III.

J. Adaptive Management and the Rule of Law

Adaptive management "serves as a tool to address the uncertainty associated with the needs of species covered by" an HCP or NCCP. According to BDCP, the fishery agencies consider adaptive management to be "an integrated method for addressing uncertainty in natural resource management" that must be "linked to measurable biological goals and monitoring."⁴⁰ The EWC does not see how adaptive management can be accomplished on behalf of listed species in the Bay Delta Estuary with No Surprises rules applied to their protection and recovery. ***"Regulatory stability," No Surprises, and "adaptive management" mutually contradict each other.***

Estuaries like the San Francisco Bay-Delta are by definition areas where fresh water flows from rivers meet tidal flows from the ocean. Estuaries depend for their ecological productivity on interactions between fresh water from rivers and salt water from tides. Managing estuaries requires that resource managers and regulators have available *all* the tools they need—including fresh water inflows from major tributaries to the estuary—so they may act effectively for the good of the resource and the public trust, in real-time and over the long term.

Adaptive management has been described elsewhere as "an approach for simultaneously managing and learning about natural resources..."⁴¹ BDCP recognizes this need to learn more about the mechanisms of flow, water project operations, and habitat functions in the Delta. To excess.

There are two adaptive management precedents for the massive restructuring of the Delta's hydrodynamics and ecology with insufficient advance knowledge of ill-conceived and damaging effects—the Central Valley Project and the State Water Project. We are still dealing with the projects' effects in an ex post facto adaptive management era that was capped by the enforcement of

³⁹ Stroshane, T. 2012. *Testimony on Recent Salinity and Selenium Science and Modeling for the Bay-Delta Estuary*, prepared for the California Water Impact Network and submitted to the State Water Resources Board Workshop #1 Ecosystem Changes and the Low Salinity Zone, September 5 (and 6, if necessary), 44 pages plus appendices. Accessible online 21 March 2014 at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/cmnt081712/tim_stroshane.pdf.

⁴⁰ *Bay Delta Conservation Plan*, November 2013, Chapter 3, Section 3.6, p. 3.6-4, lines 2-3.

⁴¹ Byron K. Williams, "[Adaptive management of natural resources—framework and issues](#)," *Journal of Environmental Management* 92 (2011): 1346.

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the 2008 Delta smelt biological opinion and the 2009 salmonid biological opinion. It took four decades for adaptive management to begin to limit just the risk of jeopardy to Delta smelt and salmonids from project operations.

There is indeed much that remains unknown in the Bay-Delta estuary. BDCP's conservation strategy contains 22 conservation measures entailing at least 43 compliance actions required, 86 effectiveness monitoring actions, and 48 research actions to address uncertainties and risks of the plan. Any or all of these 175 research and monitoring-related actions could trigger further "adaptive management" actions to resolve uncertainties associated with BDCP implementation. This is a virtual, profound, and enormous reservoir of uncertainty and bureaucratic delay concerning BDCP risks. Uncertainty in one area adds uncertainty in others and must be accounted for.⁴² All such delays work to the detriment of the fish species BDCP purports to help.

The Applicants request incidental take permits with 50-year terms. Under federal "No Surprises" rules, HCPs (including BDCP) are to identify which future circumstances it will accept responsibility for mitigating. All other circumstances will be deemed "unforeseen" and therefore beyond the scope of the HCP. Determining this scope of BDCP will ultimately limit the fishery agencies' authority to require additional mitigations from the Applicants in the form of land, money, or water.

BDCP's fine print (that is, the terms of the BDCP implementing agreement and the conditions of the incidental take permits) will determine how these risks and uncertainties will be apportioned according to "No Surprises" requirements. Once set, they last for 50 years.

With "No Surprises" in the ESA legal framework, the constraints of law trump the reasonable need to manage natural resources effectively. This is what we mean by adaptive management and "No Surprises" mutually contradicting each other. The "toolbox" for truly restoring the Delta and recovering listed species must include managing inflow to and outflow from the Delta. The Environmental Water Caucus would appreciate an explanation from the Applicants and the fishery agencies: How can the Bay-Delta estuary be managed adaptively if regulations, implementing agreements, and permit conditions governing the Twin Tunnels project preclude provision of additional flows from rivers controlled by the Applicants for the next 50 years? It is already the case that flows are documented to be inadequate for the protection and recovery of public trust resources (especially fish resources) in the Bay-Delta Estuary.⁴³ Without the ability to manage fresh water inflow to the Delta beyond parameters provided in BDCP (through No Surprises), and which currently assume Water Rights Decision 1641 (which is well-known to provide inadequate flows to the Estuary already), the Delta will continue to decline and fish species now on the brink of extinction will likely fall into it.

K. EWC Responsible Exports Plan

Development and evaluation of a range of reasonable alternatives are the declared "heart" of both the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA)

⁴² Delta Science Program Independent Review Panel, *BDCP Effects Analysis Review, Phase 3*, p. 32, 40. Accessible online 7 April at http://deltacouncil.ca.gov/sites/default/files/documents/files/Delta-Science-Independent-Review-Panel-Report-PHASE-3-FINAL-SUBMISSION-03132014_0.pdf.

⁴³ See Note 37 above, p. 4, where the State Water Board states: "There is sufficient scientific information to support the need for increased flows to protect public trust resources; while there is uncertainty regarding specific numeric criteria, scientific certainty is not the standard for agency decision making."

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required EISs and EIRs.⁴⁴ Despite that, the alternatives section (Chapter 3) of the Draft EIR/EIS and the Endangered Species Act (ESA) required Alternatives to Take section (Chapter 9) of the BDCP Draft Plan fail to include even one, let alone the CEQA, NEPA and ESA required range of, reasonable alternatives that would increase water flows in the San Francisco Bay-Delta by reducing exports. These serious violations of law, brought to your attention by the Environmental Water Caucus (EWC)(a coalition of over 30 nonprofit environmental and community organizations and California Indian Tribes) and Friends of the River (FOR), require corrective action.

The BDCP omission of alternatives reducing exports to increase flows is deliberate. A claimed purpose of the BDCP Plan is “Reducing the adverse effects on certain listed [fish] species due to diverting water.” (BDCP Draft EIR/EIS Executive Summary, p. ES-10). “There is an urgent need to improve the conditions for threatened and endangered fish species within the Delta.” (*Id.*). The omission of a range of reasonable alternatives reducing exports to increase flows violates CEQA, NEPA and the ESA. The failure to include even one alternative reducing exports to increase flows is incomprehensible. Alternatives reducing the exporting/diversion of water are the obvious direct response to the claimed BDCP purpose of “reducing the adverse effects on certain listed [fish] species due to diverting water.”

The BDCP agencies have been marching along for at least three years in the face of “red flags flying” in their deliberate refusal to develop and evaluate a range of reasonable alternatives, or indeed, any alternatives at all, that would increase flows by reducing exports. Three years ago the National Academy of Sciences declared in reviewing the then-current version of the draft BDCP that: “[c]hoosing the alternative project before evaluating alternative ways to reach a preferred outcome would be post hoc rationalization—in other words, putting the cart before the horse. Scientific reasons for not considering alternative actions are not presented in the plan.” (National Academy of Sciences, Report in Brief at p. 2, May 5, 2011).

The EWC Responsible Exports Plan contains numerous constructive actions to compensate for our recommendation to reduce exports.⁴⁵ This is a reasonable alternative that has not been considered in the BDCP or DEIS/EIR. These actions include alternatives for achieving water supply reliability and Delta ecosystem restoration. This alternative relies on strict enforcement of water quality laws, adoption of the SWRCB 2010 Delta Outflow and Fish and Game flow recommendations, shoring up existing levees, ceasing the unreasonable use of water to irrigate toxic soils that return pollution to the estuary, while also providing for exports and water supply along with water conservation measures to ensure existing supplies are extended to meet demand.

Unless the state is willing to write off restoring vibrant Delta waterways, and abundant fish and wildlife, the state needs to plan effectively for the water needs of both Californians and California ecosystems. The vicious spiral of “use, overuse, environmental decline, then hasty and unplanned reaction” can begin to be unwound by granting waterways the right to be at the planning table from the beginning, at a level truly “co-equal” to human water uses, rather than at the end when the damage has been done.

⁴⁴ These comments were originally provided to Bay Delta Conservation Plan officials in a joint letter from Nick Di Croce, Co-Facilitator of the Environmental Water Caucus and E. Robert Wright, Senior Counsel of Friends of the River, “Comment Letter re Failure of BDCP Draft Plan and Draft EIR/EIS to Include a Range of Reasonable Alternatives Increasing Flows and Reducing Exports Including the Responsible Exports Plan Submitted by the Environmental Water Caucus,” May 28, 2014. Accessible online at http://www.friendsoftheriver.org/site/DocServer/Cmt_817.pdf?docID=8741.

⁴⁵ Accessible online 14 May 2014 at <http://ewccalifornia.org/reports/responsibleexportsplanmay2013.pdf>.

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More than two years ago, on April 16, 2012, the Co-Facilitators of the EWC transmitted a short, 1 ½ page letter to Gerald Meral, Deputy Secretary of the California Resources Agency, sharing “concerns with the current approach and direction of the [BDCP] project and we would like to share those concerns with you.” (Letter, p. 1). Most of the paragraphs in the letter dealt with the types of issues involving consideration of alternatives. The penultimate paragraph of the letter specifically pointed out:

The absence of a full range of alternatives, including an alternative which would reduce exports from the Delta. It is understandable that the exporters, who are driving the project, are not interested in this kind of alternative; however, in order to be a truly permissible project, an examination of a full range of alternatives, including ones that would reduce exports, needs to be included and needs to incorporate a public trust balancing of alternatives. (Letter, p. 2).

We attached (for BDCPComments@noaa.gov) and incorporated by reference a copy of the April 16, 2012, EWC letter. As you can see from the letter’s distribution list, the letter was also distributed to a number of other federal and State officials involved in the BDCP process and BDCP decision-making in addition to Gerald Meral who was leading the BDCP process.

On December 15, 2012 by email, and December 17, 2012 by letter, Nick Di Croce, Co-Facilitator of the EWC transmitted the EWC’s Reduced Exports Plan to the California Resources Agency Deputy Secretary and requested “that you include it among the alternatives to be included in the BDCP.” On November 18, 2013, FOR submitted a comment letter in the BDCP process urging those carrying out the BDCP to review the “Responsible Exports Plan [a later, more detailed version of the Reduced Exports Plan]” proposed by the EWC:

as an alternative to the preferred tunnel project. This Plan calls for reducing exports from the Delta, implementing stringent conservation measures but no new upstream conveyance. This Plan additionally prioritizes the need for a water availability analysis and protection of public trust resources rather than a mere continuation of the status quo that has led the Delta into these dire circumstances. Only that alternative is consistent with the EPA statements indicating that more outflow is needed to protect aquatic resources and fish populations. The EWC Responsible Exports Plan is feasible and accomplishes project objectives and therefore should be fully analyzed in a Draft EIS/EIR.”⁴⁶.

FOR specifically pointed out (at p. 3, fn. 1) that the plan was online at <http://www.ewccalifornia.org/reports/resonsibleexpltplanmay2013.pdf>. We incorporate by this reference a copy of FOR’s May 21, 2014 BDCP comment letter explaining in greater detail the failure of the Draft BDCP Plan and EIR/EIS to include the required range of reasonable alternatives as well as supporting legal citations. (The FOR letter is in the BDCP comments Record and may also be found online at www.friendsoftheriver.org/bdcpcomments). We also reiterate that the May 21, 2014 FOR comment letter attached and incorporated by reference a copy of the 39 page “Responsible Exports Plan” of May 2013 as setting forth a feasible alternative that must be considered in the BDCP process.

We repeat the EWC’s demand for consideration of the Responsible Exports Plan alternative and reasonable variants on that alternative. This demand follows up EWC’s similar requests which started back on April 16, 2012 but have to date been ignored in the BDCP process.

⁴⁶ Friends of the River, November 18, 2013 comment letter at p. 3, Attachment 4 to FOR January 14, 2014 comment letter. Accessible online at http://www.friendsoftheriver.org/site/DocServer/Cmt_94.pdf?docID=7621.

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We also urge you to not load up the Responsible Exports Plan alternative with “poison pills” designed to make the alternative or variants on the alternative appear infeasible or undesirable. Our suspicions of future BDCP process intentional violations of CEQA, NEPA and the ESA are heightened by the flat refusal of the BDCP agencies to develop or even consider a reasonable range of alternatives despite the clear warnings in this regard given by the National Academy of Sciences three years ago, and repeated by the EWC over the past three years. In addition, obvious variants on the Responsible Exports Plan alternative creating a range of reasonable alternatives will include reducing exports both more and less than the 3,000,000 acre-feet reduction called for by the Responsible Exports Plan alternative as well as phasing in reductions in exports over time.

Finally, the BDCP agencies have failed to produce an alternatives section that “sharply” defines the issues and provides a clear basis for choice among options as required by the NEPA Regulations, 40 C.F.R. § 1502.14. The choice presented should include increasing flows by reducing exports, not just reducing flows by increasing the capacity for exports as is called for by **all** of the so-called “alternatives” presented in the BDCP Draft Plan and EIR/EIS. No matter how badly the BDCP proponents do not want to reduce exports and increase flows, during the Draft CEQA, NEPA and ESA processes inclusion of such alternatives as part of a range of reasonable alternatives is mandatory. Because of the gross deficiencies in the BDCP alternatives and Alternatives to Take sections in the Draft BDCP Plan and EIR/EIS it will be necessary for the BDCP agencies to prepare and release for decision-maker and public review a **new** Draft Plan and **new** Draft EIR/EIS. Those new Draft documents **must** include alternatives and Alternatives to Take sections that present the required evaluation of a range of reasonable alternatives.

III. BDCP fails to provide adequate ecological assurances under the endangered species laws.

A. No Quantified Incidental Take Estimates

The Bay Delta Conservation Plan fails to provide clear, direct analysis and findings of effects of the Twin Tunnels and other elements of the Plan on take of listed species, as a result of the Twin Tunnels' effects on population abundance, distribution, and critical habitat and whether those effects could result in jeopardy to listed species.

Chapter 9 of the Bay Delta Conservation Plan addresses alternatives to take. It provides no summary of what are anticipated quantified levels of incidental take for covered and listed fish species in the BDCP “proposed action” despite having used over 37 different types of models and generated 68 different models as a whole.⁴⁷ The chapter describes how the proposed action and its alternatives to take were developed, and how the take alternatives differ from EIS/EIR alternatives (Tables 9-1 and 9-2). It provides summary descriptions of the take alternatives (Table 9-3), their conveyance facilities components (Table 9-4), and their overall comparative differences relative to the BDCP proposed action (Table 9-5). It describes the “permanent effects” by natural community type of each take alternative relative to the BDCP proposed action, and summarizes the change in take for each alternative relative to the BDCP proposed action (Tables 9-6 and 9-7). It summarizes differences in consistency of each take alternative with BDCP goals (Table 9-8). It summarizes other environmental consequences of take alternatives that vary from those of the BDCP proposed action (Table 9-9). None of these comparisons are quantified despite all the modeling done for BDCP.

Chapter 9 ranks each take alternatives' expected change in incidental take *in relative terms* for each covered fish species (Tables 9-10 through 9-26, pages 9-49 through 9-184). After reviewing take alternatives' effects on all covered species using this relativistic method, BDCP summarizes the relative take effects on all covered species in Table 9-31, where it can be seen that among them are several take alternatives that are deemed to perform better than the BDCP proposed action from the standpoint of decreasing take on covered fish: the so-called “portfolio alternative” (Alternative D) containing just one 3,000 cubic feet per second (cfs) intake in the north Delta; “isolated conveyance” (Alternative E) would have reduced take for nine covered fish species, and “more restoration” (Alternative H) would have reduced take for 11 covered fish species both relative to the BDCP proposed action. Also significant is Take Alternative G, calling for less tidal restoration (which would consume more terrestrial habitat currently occupied by mammals, birds, reptiles, amphibians, and invertebrates). Take Alternative G which would result in no (zero) increase in take of covered species and reduced take relative to the BDCP proposed action for 20 species (over half of whom would be birds). We still do not know how much take would be occurring and what levels would be deemed incidental to the operations of an otherwise lawful activity.

Nowhere to be found in Chapter 9 is an estimate first of the *absolute* incidental take quantities for each covered fish species for the Bay Delta Conservation Plan's proposed action (i.e., the Twin Tunnels project of Conservation Measure 1); and second, no quantified estimate of the take alternatives *in comparison to the absolute take* of the BDCP proposed action. This is the central analysis needed for the fishery agencies to understand the magnitude of incidental take and level of regulatory effort they will face should they decide to issue incidental take permits to the BDCP proposed action.

⁴⁷ Bay Delta Conservation Plan, Chapter 5, Effects Analysis, Table 5.2-5, pages 5.2-17 to 5.2-21.

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As a result of this omission, it becomes impossible for the fishery agencies to quantify a magnitude, or a schedule of magnitudes, based on flow or other BDCP- or regulatory agency-controllable criteria for incidental take limits to be included in the conditions of incidental take permits.

Chapter 9 provides only *a relative sense* of incidental take outcomes: Alternatives D, E, and G would result in less overall incidental take of covered species (especially fish) than would the BDCP proposed action. While useful to know for whether to like one or another alternative, the relativistic analysis provided in Chapter 9 is an insufficient base of knowledge, analysis, and understanding of the covered species involved for regulating a set of 50-year incidental take permits on any of these alternatives.

What are the sizes of the population of each covered species involved? What are the permissible levels of take for each covered species for each life stage that occurs in the Delta that can be managed by actions organized under BDCP and its conservation strategy? Which alternatives would not appreciably reduce the likelihood and recovery of any of the listed species among those that are covered by BDCP? We were unable to locate this vital information in the Bay Delta Conservation Plan.

B. Inadequate Biological and Ecological Assurances

The Bay Delta Conservation Plan fails to provide adequate assurances that its biological goals and objectives will be implemented and used to hold the Applicants accountable for making progress towards recovery of listed species and minimizing incidental take, as well as compliance with the terms of the implementing agreement and incidental take permit terms.

Chapter 3, Section 3.3 of BDCP's conservation strategy discloses that:

Failure to achieve a biological goal or objective will not be a basis for a determination by the fish and wildlife agencies of noncompliance or for the suspension or revocation of the [incidental take] permits as long as the Permittees are properly implementing the BDCP and in compliance with the Implementing Agreement and the permit terms and conditions.⁴⁸

This passage early in the BDCP conservation strategy belittles the importance of biological goals and objectives, renders them irrelevant to the implementation of the BDCP and to whether BDCP complies with incidental take permit terms and conditions. ***This is unacceptable.*** How do the Applicants explain this passage? What is its basis, if any, in ESA law, regulation, fishery agency practice, and handbook usage? If the biological goals and objectives are irrelevant to determining compliance or making findings as to whether suspension or revocation of incidental take permits is warranted, why include the biological goals and objectives, conservation measures 4 through 10, and the entire adaptive management program contained in the draft Bay Delta Conservation Plan? If they are irrelevant to accountability of the Applicants throughout the 50-year term of the incidental take permits, then how could the fishery agencies be assured, in advance of permit issuance, that implementation of the Bay Delta Conservation Plan “*will not appreciably reduce the likelihood of the survival and recovery of the species in the wild,*” as stated in the federal Endangered Species Act?

This question applies to several listed species addressed by the rest of the biological goals and objectives in BDCP: Delta smelt, longfin smelt, winter-run and spring-run Chinook salmon, and green sturgeon.

⁴⁸ Bay Delta Conservation Plan, Chapter 3, Section 3.3 Biological Goals and Objectives, p. 3.3-2, lines 2-5. We note that the July 2013 draft implementing agreement states, “...will not be *the sole* basis...” for this clause, p. 25 of the implementing agreement. Emphasis added. We also note with concern that the November 2013 BDCP may represent the more recent formulation of this clause.

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Combined with the absence of modeled estimates of quantified incidental take levels, this passage of the conservation strategy makes the thousands of pages of earnest analysis and detailed description of habitat restoration actions and covered fish species seem like an elaborate exercise in greenwashing and busy-making.

There are many more reasons to doubt, and reject, BDCP ecological assurances.

1. Flawed Habitat Restoration Hypothesis for Increasing Food web Productivity

Omitting a conservation measure that would use freshwater flow to manage nonnative invasive clam ranges and abundance is fatal to BDCP's habitat restoration plans and activities. ***Therefore BDCP cannot fulfill the Endangered Species Act's requirements for ecological assurances that should not appreciably reduce the likelihood of the survival and recovery of listed species. The BDCP application for incidental take permits should be rejected by the fishery agencies.***

Even if the Environmental Water Caucus tries to take the habitat restoration component of the Bay Delta Conservation Plan seriously, flaws in the Plan's presentation and analysis are not addressed clearly and comprehensively. The flaws are likely fatal to success of the habitat conservation plan. They fail to provide adequate assurances for the ecological performance of its conservation strategy. Lack of realistic analysis and of planned corrective actions makes it extremely problematic for the fishery agencies to make findings on ecological and conservation assurances in support of issuing incidental take permits based on the Bay Delta Conservation Plan.

In essence, the most central ecological gamble of BDCP is that habitat and its food production capability can substitute for freshwater inflows to the Delta at key times of year in the service of protecting listed fish species so they have a chance to recover. This hypothesis is tenuous to start with, and BDCP stretches its thin threads across the relevant listed species: Delta smelt and longfin smelt and salmon smolts, Central Valley steelhead, and green sturgeon.

The hypothesis has two major components: the Twin Tunnels project (providing operational "dual conveyance flexibility" for moving water from the Sacramento Valley to the San Joaquin Valley) and physical habitat restoration. We take up the Twin Tunnels in the next section on hydrodynamics below. Physical habitat restoration is intended to protect, enhance, and restore natural habitat communities that provide food resources to covered fish species. Limited food availability is known as a factor in the catastrophic decline of Delta fish populations, including Delta smelt, longfin smelt, and juvenile salmonids since the 1970s.⁴⁹

Restoration of large, connected tracts of these natural communities is intended to substantially increase the extent of physical habitat for covered species (including cover, rearing habitat, nesting habitat, and food resources) and improve overall food web productivity in the restoration areas and adjacent aquatic habitat.⁵⁰

Three principal types of terrestrial and tidal habitat are intended in the BDCP to boost food production for the listed and covered species: tidal natural communities, seasonal floodplain

⁴⁹ For instance, the US Fish and Wildlife Service's Delta smelt biological opinion from December 2008 reported that summer copepod blooms were impaired by state and federal export pumping operations in the south Delta. Essentially, Delta smelt's major food supply and ecosystem support was being exported by the pumps, contributing to the reduction in Delta smelt abundance (page 197).

⁵⁰ Bay Delta Conservation Plan, Chapter 3, p. 3.2-10, lines 2-6.

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inundation, and channel margin habitat.⁵¹ By increasing food supplies throughout the Delta-located life stages for covered fish species, BDCP hypothesizes it will increase fish health and improve overall fish fitness for reproducing and thereby increase the abundance of covered fish populations.

The food resources to be produced from restored habitat will originate onshore or nearshore in tidal marshes and riparian corridors, or offstream altogether in seasonally inundated floodplains. How will covered fish species access the food that will be produced? Some live away from shore in open water, while salmonid smolts, may or may not frequent tidal wetlands. BDCP believes optimistically that tidal wetlands, especially in the Cache Slough restoration opportunity area at the southern end of Yolo Bypass (combined with “floodplain enhancement”), and Suisun Marsh will “provide tidal freshwater wetland structure and functions that exchange with and benefit adjacent open-water habitat [citation].”

Tidal wetlands...have the capacity to export food resources to adjacent channels and to downstream systems [citation]. The export of food to open-water areas may include movement of phytoplankton and zooplankton by advection and tidal exchanges and the export of productivity in the form of macro-invertebrates, small fishes, and other larger organisms [citation]. Of the Delta habitats, the tidal marsh sloughs have the highest particulate organic matter and phytoplankton concentrations and support the greatest zooplankton growth.”

...[T]here are local examples of tidal marsh production being advected [that is, lateral flow vectors from shore to open water, rather than vertical or downstream flow with gravity] and/or tidally dispersed to adjacent habitats [citation]. Production from the lower Yolo Bypass, including Liberty Slough and Cache Slough marshes [where there is currently a Delta smelt refuge population in residence], stays relatively intact as it moves down the estuary [citation]. This production may contribute significantly to the greater foodweb, ultimately benefiting open-water species such as delta smelt [citation].⁵²

Elsewhere in the BDCP, it is stated:

The main hypothesis behind CM4 [tidal natural communities restoration] is that restoration of shallow tidal marshes and associated shallow subtidal habitat will increase the growth of phytoplankton and thereby increase the amount of zooplankton that are the food base for delta smelt [citation].⁵³

BDCP more directly articulates a further hypothesis that habitat restoration-generated foodweb productivity can provide greater ecosystem services than can provision of additional freshwater river inflow to the Delta for eventual outflow from the Delta.⁵⁴ “Two key areas of uncertainty for the BDCP are the importance of fall outflow in achieving abundance and habitat objectives for delta smelt and the importance of spring outflow for achieving the longfin smelt abundance objective.”⁵⁵

These two “key areas of uncertainty” are framed as four hypotheses competing within the pages of both Chapters 3 and 5 of the Bay Delta Conservation Plan:

⁵¹ Each type of habitat community is provided its own conservation measure discussion in the Bay Delta Conservation Plan: Conservation Measure 4 (Tidal Natural Communities), Conservation Measure 5 (Seasonally Inundated Floodplain Enhancement), and Conservation Measure 6 (Channel Margin Habitat).

⁵² Bay Delta Conservation Plan, Chapter 3, p. 3.3-105, lines 7-17 and 21-25.

⁵³ *Ibid.*, Chapter 5, p. 5.5.1-13, lines 20-22.

⁵⁴ In particular, BDCP states, “An analysis of food change potential for juvenile delta smelt is provided...for it has considerable relevance to the Fall X2 decision tree.” Page 5.5.1-13, lines 22-24.

⁵⁵ *Ibid.*, Chapter 3, p. 3.3-24, lines 6-8.

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- The US Fish and Wildlife Service’s Delta smelt biological opinion in 2008 put forward the hypothesis that “the fall habitat objective will be achieved by providing fall (September-November) flows necessary to position X2 in or near Suisun Bay in wet or above-normal years.” **Hypothesis:** Fall outflow provides key delta smelt habitat attributes, either directly or by providing delta smelt with maximum opportunity to access areas providing key habitat attributes.⁵⁶
- Alternatively, it is hypothesized by BDCP that “new shallow-water habitat areas created through restoration of tidal natural communities (CM4) could accomplish this objective with lower outflow during the fall. If restoration of habitat for delta smelt is successful, there may be no need to provide the ‘high outflow scenario’ fall outflows....”⁵⁷ **Competing hypothesis:** Population performance of delta smelt is enhanced by biotic or abiotic habitat features that are *not dependent* on fall outflow of the magnitude described by the Fish and Wildlife Service’s Fall X2 requirement.
- Concerning the longfin smelt **hypothesis:** Spring outflow provides key longfin smelt habitat attributes, either directly or by providing longfin smelt with maximum opportunity to access areas providing key habitat attributes.⁵⁸
- BDCP’s **competing hypothesis** that CM4 (tidal natural communities restoration) provides a “functional lift” in the form of “enhanced productivity and expanded habitat availability and that this lift will increase longfin smelt recruitment “per unit of Delta outflow,” adding:

Under this hypothesis, substantial benefits of tidal natural community restoration provide for the conservation and management of longfin smelt and help meet the biological objectives for this species. Therefore, the high-outflow scenario for spring outflow...would not be needed.⁵⁹

These “decision trees” for spring and fall outflow are touted as analytical processes to compare these alternative hypotheses to identify strategies most likely to achieve BDCP biological goals for longfin smelt (via spring outflow determination) and Delta smelt (Fall outflow/X2 determination).

The decision trees are also a way to delay increased outflow requirements in the Delta. The State Water Resources Control Board has already determined that flows into and out of the Delta are insufficient for recovery of public trust fish resources in the Delta.⁶⁰ Moreover, the 9th Circuit Court

⁵⁶ *Ibid.*, Chapter 5, p. 5.5.1-17, lines 9-11.

⁵⁷ *Ibid.*, Chapter 5, p. 5.5.1-16, lines 12-19.

⁵⁸ *Ibid.*, Chapter 5, p. 5.5.2-9, lines 22-24. The California Department of Fish and Game certainly acknowledges that longfin smelt are food-limited in their abundance, but their scientists argued in the 2009 incidental take permit effects analysis prepared on the operations of the State Water Project in the Delta that “food production is not the only factor involved because the X2 response [of longfin smelt abundance to high Delta outflows] has persisted [citations].” Quoted in lines 38-43, same page.

⁵⁹ *Ibid.*, Chapter 5, p. 5.5.2-12, lines 20-23.

⁶⁰ State Water Resources Control Board, *Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem*, prepared pursuant to the Sacramento-San Joaquin Delta Reform Act of 2009, August 3, 2010, p. 4, where the Board states: “There is sufficient scientific information to support the need for increased flows to protect public trust resources; while there is uncertainty regarding specific numeric criteria, scientific certainty is not the standard for agency decision making.”

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of Appeals recently upheld the 2008 Delta Smelt biological opinion by the US Fish and Wildlife Service, including its Fall X2 provision.⁶¹

But the decision trees concerning spring and fall outflow/X2 are relevant to BDCP's flawed habitat restoration for another reason. The presence of nonnative invasive clams (overbite clam, *Potamocorbula amurensis*, and the Asian clam, *Corbicula fluminea*) are likely to undermine the basis for the pro-habitat hypothesis by expanding their range and abundances to consume whatever zooplankton abundance increase is created by BDCP. No matter how much foodweb productivity may be boosted by BDCP-sponsored habitat restoration, that productivity can be consumed by invasive nonnative clams, particularly that of the salt-water overbite clam.

The problems posed by these two clam species is that they graze the same water column as Delta smelt and longfin smelt. They can graze the water column clean of food every day in a hurry, making it difficult if not impossible for the two small fish species to compete for food. According to Appendix 5.F of BDCP, at typical north Bay densities, *Potamocorbula*, which tends to occupy benthic sediments in Delta and Suisun Bay waters *downstream of X2's position in fresher water areas*), can filter phytoplankton from the entire water column more than once per day in open water Delta channels and almost "13 times per day over shallow areas." This filtration rate by *Potamocorbula* enables its consumption to exceed the phytoplankton growth rate in the Delta.⁶² *Corbicula*, which tends to occupy benthic sediments in Delta and Suisun Bay waters *upstream of X2's position*, is considered in BDCP, Appendix 5.F to be less efficient than *Potamocorbula* at filtering out shallow water bodies like Franks Tract. But *Corbicula* can still "filter out the entire water column in less than a day."⁶³

The good news, however, is that the invasive clams' relative abundances and location are susceptible to changes in habitat conditions, especially salinity which can be managed with applications of freshwater flows to affect their location and abundances. *Potamocorbula* larvae has a tremendous salinity tolerance range (suspended but mobile in the water column) ranging from 2 to 30 parts per thousand (ppt) salinity in the Delta.⁶⁴ This tolerance range enables *Potamocorbula* to become established upstream in the Delta during low flow/high salinity and drought years. Fresh water flows are lethal to adult *Potamocorbula* specimens. In wetter years and seasons, *Corbicula* is more adapted to freshwater conditions and can migrate downstream of the Delta into Suisun Bay sediments, displacing *Potamocorbula's* range further downstream to some extent.

BDCP acknowledges this in Appendix 5.F:

If Fall X2 [that is, higher fall Delta outflow] is implemented...no change in suitable habitat for *Potamocorbula* from water operations would occur. However, if Fall X2 is not implemented, X2 would occur more easterly than under [the Existing Conditions Scenario with Fall X2 implemented under the Delta smelt biological opinion], *and therefore the suitable habitat for Potamocorbula would be expanded in wet and above normal water years.* Likewise, increased tidal habitat from restoration of tidal natural communities (CM4) may facilitate recruitment and expansion of *Potamocorbula* if located in areas with

⁶¹ *San Luis & Delta-Mendota Water Authority, et al v. Sally Jewell*, No. 11-15871, D.C. No. 1:09-cv-00407-OWW-DLB, 168 pages, decision released March 31, 2014. Accessible online 8 May 2014 at http://earthjustice.org/sites/default/files/files/Delta_smelt_biop_ruling_3-13-14.pdf.

⁶² Bay Delta Conservation Plan, Appendix 5.F, p. 5.F-110, lines 7-13.

⁶³ *Ibid.*, Appendix 5.F, p. 5.F-111, lines 18-25.

⁶⁴ *Ibid.*, Appendix 5.F, Table 5.F.7-1, p. 5.F-113.

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salinity greater than 2 ppt. *If this occurs, the foodweb benefits described [elsewhere in BDCP] may be reduced.*⁶⁵

[Also] if Fall X2 is not implemented, operations would comply with...Water Right Decision 1641 (D-1641) Delta outflow requirements. In that situation, outflow in wet and above normal years would be similar to [the Existing Conditions Scenario without Fall X2] in which X2 is more east than under [the Existing Conditions Scenario with Fall X2]. *This situation may allow for Potamocorbula to recruit farther into the Central Delta, and conversely, reduce habitat for Corbicula, which requires more freshwater conditions (<2 ppt). These invasive clams have the potential to reduce food production and export from Restoration Opportunity Areas (ROAs).*⁶⁶

Thus, BDCP acknowledges the potential for both of these nonnative invasive clam species to consume, but ultimately discounts it in the Plan's conservation strategy. "The export of marsh production can help transfer the higher production of shallow-water habitats to the less productive deepwater habitats preferred by pelagic fish species such as delta smelt, but this process can be interfered with by nonnative clams [citation]," states BDCP.⁶⁷

Our point is: *Flow could be used to manage the nonnative invasive clams, but under BDCP it would not be.* To address the issue of getting food resources to Delta smelt, the more desirable of the two nonnative invasive clams to have to manage would be *Corbicula* since its filtration of the water column is less efficient than the other invasive clam. *Corbicula* also coexisted with all of the covered species in the Delta since the 1940s when it first arrived in California. Given this record of *Corbicula*, ***we find it undermines the credibility of BDCP's conservation strategy that there is no conservation measure in BDCP to constructively manage the nonnative invasive clams—because it would involve managing freshwater flows differently than is now done.***

BDCP's treatment of longfin smelt is just as problematic. The Plan, based on scientific research, blames longfin smelt decline on the late-1980s *Potamocorbula* invasion and its disruption of the foodweb on which longfin smelt relies. It claims that "increasing the density of zooplankton will be further achieved through reduced water diversions from the South Delta [because more water diversions would occur through the Twin Tunnels' north Delta intakes] (and associated phytoplankton and zooplankton entrainment)."⁶⁸

BDCP concludes that its activities will result in moderate positive change to zooplankton abundance for larval longfin smelt, low positive change to zooplankton abundance for juvenile longfin smelt, with low certainty for both.⁶⁹ ***The gap in knowledge represented by such low levels of uncertainty are put off into the BDCP adaptive management program. "Trust us," is the strongly implied message, "let us build the Tunnels, then the wetlands maybe later, and we will let you know."***

The report of an expert panel convened by American Rivers and the Nature Conservancy on BDCP also concluded of the nonnative invasive clams issue as analyzed from the March 2013 draft of the plan:

⁶⁵ *Ibid.*, Appendix 5.F, p. 5F-v, lines 26-42. Emphasis added.

⁶⁶ *Ibid.*, Appendix 5.F, p. 5F-vi, lines 1-14. Emphasis added.

⁶⁷ *Ibid.*, Chapter 3, p. 3.3-105, lines 18-20.

⁶⁸ *Ibid.*, Chapter 3, p. 3.3-126.

⁶⁹ *Ibid.*, Chapter 5, p. 5.5.2-13, lines 39-46, and p. 5.5.2-14, lines 1-4.

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The BDCP documents acknowledge (but mostly ignore) that grazing by clams that settle in or near restored subtidal areas may remove all or most of the phytoplankton production and some of the zooplankton. Grazing by clams and zooplankton (including microzooplankton) removed all of the phytoplankton production in the [low salinity zone] nearly all the time from late spring through fall during 1988 - 2008 [citation]. Whether clams settle in the newly restored areas is critical in determining whether the area can export any phytoplankton [citation].

...Nevertheless, this analysis raises significant questions about the putative subsidy from restored areas to estuarine foodwebs. To address this uncertainty, long before any actual restoration takes place a program of analysis, modeling, and experimental restoration should be undertaken.

...The idea that restored marsh and floodplain will export substantial amounts of zooplankton to the open waters of the estuary is not tenable. The ecology of shallow waters suggests that shallow areas are more likely sinks for zooplankton [because of clam grazing behavior]. Even if they were sources, simple mass-balance considerations indicate that the resulting export would produce at most a small enhancement of extant zooplankton of the open waters. This idea should be dropped from discussions of BDCP, although experimental work should press ahead to determine under what conditions marsh habitats could be sources of significant food for delta and longfin smelt in the open waters.⁷⁰

BDCP will not readily drop its line of magical thinking about food for fish because it is the core concept of its greenwashing strategy. Dropping would mean their “conservation strategy” would collapse like a house of cards.

For winter-run and spring-run Chinook salmon, the benefits of habitat-as-food-source the story is similar.⁷¹

The BDCP conservation strategy for salmonids (that is, the various runs of Chinook salmon as well as Central Valley steelhead rainbow trout) focuses on those life stages that occur in the Delta: juvenile salmon that have left their natal streams, are rearing along the way, and undergo smoltification (the physiological process that enables these fish to osmo-regulate saltier conditions they face in ocean water where they are headed) before emigrating to sea. This strategy includes restoration of tidal natural communities to increase rearing habitat in Suisun Marsh, Cache Slough, the west Delta and the south Delta restoration opportunity areas, as well as seasonal floodplain inundation, channel margin habitat and riparian natural communities. Each of these communities contributes to food production for diffusion and advection from shallow-water, low-velocity rearing habitat for juvenile salmonids. Conservation Measure 13 is intended to control invasive aquatic

⁷⁰ Jeffrey Mount, William Fleenor, Brian Gray, Bruce Herbold, and Wim Kimmerer, *Panel Review of the Draft Bay Delta Conservation Plan*, prepared for the Nature Conservancy and American Rivers, September 2013, p. 78, 82. Emphasis added. Accessible online at <http://mavensnotebook.com/wp-content/uploads/2013/09/FINAL-BDCP-REVIEW-for-TNC-and-AR-Sept-2013.pdf>. John Cain of American Rivers and Leo Winternitz of the Nature Conservancy presented the report's results to the Santa Clara Valley Water District on October 2013, reported in Maven's Notebook at <http://mavensnotebook.com/2013/11/26/mavens-minutes-santa-clara-valley-water-district-bdcp-workstudy-session-part-2-american-rivers-john-cain-and-the-nature-conservancys-leo-winternitz-discuss-the-bdcp/>. Mount presented this report's results orally as well to the Delta Independent Science Board on January 17, 2014. Emphasis added. See also Bruce Herbold, Donald M. Baltz, Larry Brown, Robin Grossinger, Wim Kimmerer, Peggy Lehman, Charles Si Simenstad, Carl Wilcox, and Matthew Nobriga, “The Role of Tidal Marsh Restoration in Fish Management in the San Francisco Estuary,” *San Francisco Estuary and Watershed Science* 12(1): 6 pages. Accessible online 7 April 2014 at <http://escholarship.org/uc/item/1147j4nz.pdf>.

⁷¹ Bay Delta Conservation Plan, Chapter 5, p. 5.5.4-22, lines 1-6.

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vegetation to reduce nonnative fish predator habitat cover, such as for largemouth bass. But food production is the chief reason for habitat restoration in BDCP.

There is considerable uncertainty in the pages of BDCP's Chapter 3 and Chapter 5 as to whether the habitat restoration efforts will work as intended. It appears from BDCP's analysis that Central Valley steelhead will have little to no use for seasonal floodplain inundation or channel margin habitat, and there is "high certainty" that channel margin habitat is of most use to emigrating steelhead smolts. Yearling spring-run Chinook salmon may also prefer to migrate rather than forage in these habitats.⁷² The food benefits are touted, but BDCP notes that for steelhead, zooplankton occurrence is of "low certainty" as a benefit because their seasonality may not match up for lack of "co-occurrence" and because ***nonnative invasive clams may consume most of the primary and secondary food resources created by new habitat production.*** Moreover, behaviorally, steelhead smolts prefer to migrate rather than rear when passing through the Delta.

Despite repeated acknowledgment that they threaten the near- and long-term productivity of habitat restoration efforts in the Delta, ***there is no conservation measure proposed in BDCP to manage either of the most abundant nonnative invasive clams.*** Invasive vegetation has its own conservation measure. But the single greatest biotic stressor that could consume most of the new food production from BDCP's habitat restoration program intended to benefit listed and covered species in the Delta goes unaddressed: ***what to do about Potamocorbula and Corbicula? The omission strains credulity.*** Both climate change and Twin Tunnels operations have the potential to reduce Delta outflows and cause X2, the low salinity zone in the Delta, to migrate further east and upstream in the decades to come. As X2 goes, the food production from BDCP restoration opportunity areas could be fully absorbed by *Potamocorbula* (which would spread eastward into the Delta, particularly in drier years) and somewhat by *Corbicula*, turning the western Delta and Suisun restoration areas from net exporters of food for Delta smelt and longfin smelt in open water into sinks for clam production instead.⁷³

2. Spreading Hydrodynamic Nightmares to the North Delta

BDCP fails the Endangered Species Acts' requirements for ecological assurances that the habitat conservation plan, with its proposed Twin Tunnels project and North Delta Intakes, not appreciably reduce the likelihood of survival and recovery of listed species. The BDCP application for incidental take permits should be rejected by the fishery agencies.

Our comments in this section focus on two hydrodynamic nightmares BDCP will create and worsen in the Delta: First, the massive disruption of the flow regime of the lower Sacramento River used seasonally and inter-annually by several distinct salmonid populations, two of which are highly vulnerable to the threat of extinction; and second, further reduction of Delta outflows and the eastward-moving position of X2 worsening the risks of entrainment, ***this time in the North Delta to go along with continuing drier year entrainment risks in the South Delta.*** This second nightmare threatens both longfin smelt and Delta smelt with extinction.

⁷² Delta Science Program, Independent Review Panel, *op. cit.*, note 27 above, p. 30.

⁷³ Researchers Lisa Lucas and Janet Thompson of the US Geological Survey found that phytoplankton biomass and productivity in the Delta do not necessarily correlate with either water depth or the residence time of water. ***The single most important factor that determined whether shallower water depth or greater residence time of water resulted in greater phytoplankton productivity was the absence of invasive nonnative clams.*** Lisa V. Lucas and Janet K. Thompson, "Changing restoration rules: Exotic bivalves interact with residence time and depth to control phytoplankton productivity," *Ecosphere* 3(12): Article 117, December 2012, 26 pages.

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In the Administrative Draft of the Bay Delta Conservation Plan issued in March 2013, the conservation strategy announced: “*The BDCP will fundamentally alter the hydrodynamics of the Delta.*”⁷⁴ This sentence has since been toned down to read, “The BDCP will modify the hydrodynamics (i.e., tidal flows) in the Delta channels,” but the original formulation is truer.⁷⁵ Overall, says BDCP, east to west flows will increase; the frequency and magnitude of reverse flows in Old and Middle River will decrease because of reduced south Delta pumping in most water year types. In the north Delta, flow patterns will “change” from increased diversions to Yolo Bypass with the proposed modifications to Fremont Weir. BDCP states:

These changes in flow patterns in the north Delta present ecosystem-level tradeoffs between habitat in the Yolo Bypass and the Sacramento River during the winter-spring migration period, resulting in both positive and negative effects on the migration and passage of fish through and within the Delta...⁷⁶

The Twin Tunnels project is *intended* to:

- Improve “hydrodynamic and water quality conditions that create barriers to movement and high susceptibility to predators,”
- Reduce “risk of entrainment of covered fishes by conveying from either the north or south Delta, depending on the seasonal distribution of their sensitive life stages,” and
- Create “new opportunities to restore tidal natural communities in the east and south Delta” by reducing entrainment risks for food produced in restored areas and all life stages of delta smelt and longfin smelt and juvenile salmonids and sturgeons using restored areas.⁷⁷ The flexibility that north and south Delta intakes would create—the Applicants hypothesize—would enable state and federal water exporters to “substantially reduce the entrainment of covered fish species while providing the desired average water supply.”⁷⁸

This is the stated rationale for calling the Twin Tunnels a “conservation measure.” *It is claptrap.* On one hand, the Tunnels will increase exports and the Delta’s loss of outflow at the same time, both wet and above normal years.⁷⁹ (Moreover, in drought years, the Bureau and the Department typically petition the State Water Board to have Delta water quality objectives waived, and the Board grants this request. There is little reason to believe the Twin Tunnels would change the outcome, meriting its continued designation as a BDCP “conservation measure.) On the other, the BDCP assumes it will reduce entrainment risk, but its own data shows otherwise as we will see.

BDCP’s stated water operations strategy for the Twin Tunnels project and their North Delta Intakes is to maximize their use during wet and above-normal years. It would refrain from using the North Delta Intakes during periods of each year when covered fish species would be present in the lower Sacramento River channel between Courtland and Walnut Grove where the intakes would be located. (The modeling assumptions for operating the North Delta Intakes appear to double as likely proposed flow and operational criteria that could be proposed to remake how the Delta is currently

⁷⁴ Administrative Draft of the Bay Delta Conservation Plan, March 2013, Chapter 5, *Effects Analysis*, p. 5.3-2, line 23. Emphasis added.

⁷⁵ Bay Delta Conservation Plan, November 2013, Chapter 5, *Effects Analysis*, p. 5.3-2, line 23.

⁷⁶ *Ibid.*, p. 5.3-2, lines 34-37.

⁷⁷ Bay Delta Conservation Plan, Chapter 3, p. 3.2-7, lines 24-34.

⁷⁸ *Ibid.*, Chapter 3, p. 3.2-8, lines 1-10.

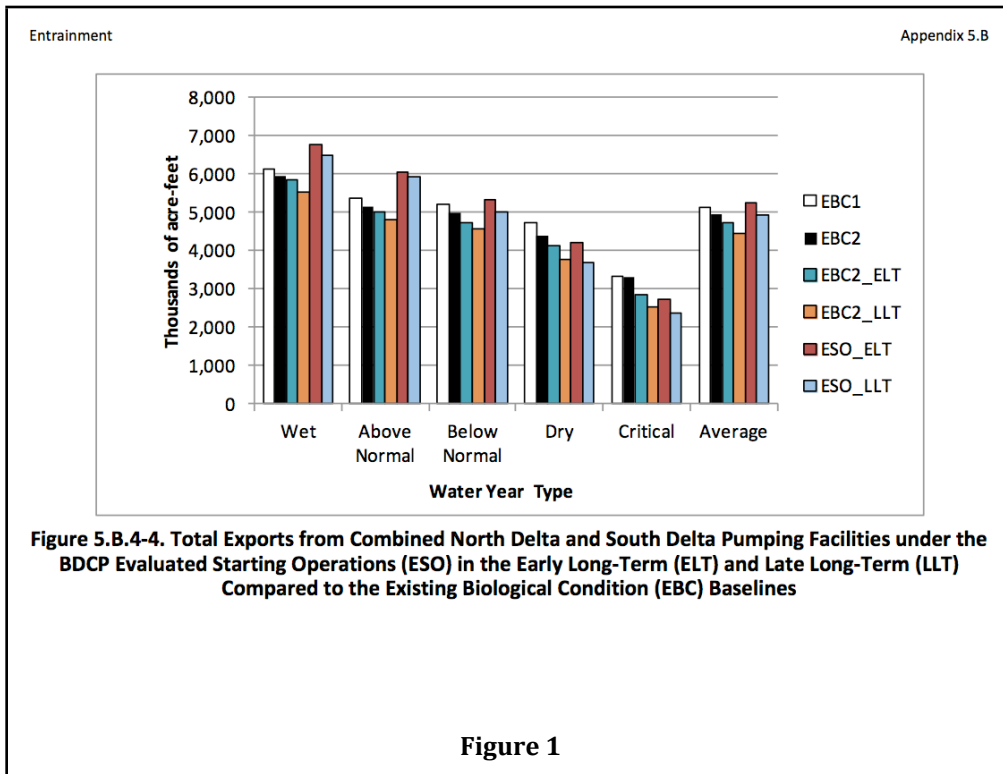
⁷⁹ We take up the matter of BDCP’s unacknowledged purpose of expanding opportunities for cross-Delta water market transfers in Section VII of this comment letter.

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regulated by the State Water Resources Control Board through its Bay-Delta Water Quality Control Plan and Water Right Decision 1641. We discuss this in our comments on the EIR/EIS in Section VII below.)

Figure 5.B.4-1 of Appendix 5.B on *Entrainment*, summarizes visually the average modeled water exports from both the North and South Delta intakes by water year, as well as total BDCP Twin Tunnels exports compared with Existing Baseline Condition scenarios with and without implementation of the Fall X2 requirement in the 2008 Delta Smelt biological opinion. This figure reveals that at key times of year, the Twin Tunnels will *increase* average monthly exports relative to existing baseline conditions by 2025 and 2060. It shows too that from December through August in wet and above normal years, the North Delta Intakes will enable the State Water Project and the Central Valley Project to export 300,000 to 350,000 acre-feet more water in each of the months of April and May than they can currently. About 75 to 80 percent of these increased export levels stems from being able to use the North Delta Intakes instead of the South Delta pumps to draw water from the Delta.

Figure 5.B.4-1 also shows that the North Delta Intakes will be used only minimally during below normal, dry, and critically dry water years. In these years, the South Delta intakes will continue to operate as they have in the past during these years. In the 82-year record on which CalSIM II modeling is based for BDCP purposes, just 38 years have been above normal or wet; the remaining 44 years are generally much drier (dry and critically dry years account for 30 (or 37 percent) of the remaining 44 water years). Both this figure and Figure 5.B.4-4 (here in Figure 1) show that the utility of the North Delta Intakes would decrease dramatically in drier weather patterns and climate conditions. It appears to us that the analyses in these figures rely on the existing variability of California’s hydrologic record and its existing frequency of water year types. What is the risk in terms to fish entrainment and cost-effectiveness of the Twin Tunnels project if in a future of climate change the proportion of dry years increases relative to wet years?



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Figure 1 (Figure 5.B.4-4 of BDCP) shows that, *on average*, combined Delta exports (North Delta plus South Delta intake/exports) will change little from current conditions whether BDCP operates with higher Fall X2 flows or not. ***But the Twin Tunnels and their North Delta Intakes will not be operated to the average year.*** They will be operated according to the type of water year California is in, year in and year out. In the wet and above normal years, combined Delta exports will jump dramatically by as much as 700,000 acre-feet in wet years and above normal relative to existing baseline conditions.⁸⁰ Indeed, it appears to us they expect to set Delta export records with the Twin Tunnels project for wet and above normal years. (Figure 5.B.4-4 indicates an average wet year export level of about 6.8 million acre-feet, while the record export year for the combined CVP and SWP projects was 6.67 million acre-feet in 2011, a wet year. This likely means that some wet years, when they occur in the future, will potentially enable combined exports north of 7 million acre-feet a year.)

In drier water year types, average combined exports keep pace with existing baseline conditions or are somewhat lower in future water years. However, further probing of Chapter 5 and the EIR/EIS's water transfer-related appendices reveals that BDCP intends for conservation measure 1's Delta facilities to expand dry and drought year capacity to arrange and consummate water transfers. They would occur in years when excess capacity to pump exists when Table A and CVP contract amounts to water contractors cannot be met by DWR and the Bureau (again, see Section VII for more discussion.)

We find other changed flow patterns from our review of the Bay Delta Conservation Plan:

- Flow splits in the area of the lower Sacramento River below Freeport would be dramatically altered once the North Delta Intakes go into operation. Consequently, the flow network changes for Elk, Steamboat and Sutter sloughs (on the right bank), and of Georgiana Slough and Delta Cross Channel (on the left bank) as distributaries from the Sacramento River between Freeport and Rio Vista. These aquatic crossroads are crucial to the survival of salmonid smolts and juveniles that emigrate from the Sacramento River basin to the Pacific Ocean.
- Potential reverse flows from Georgiana Slough into lower Sacramento in order to minimize movement of migrating salmonid smolts into the Central Delta where predation rates are higher.⁸¹ This is the first we heard that there would be *reverse flows on the Sacramento River as a result of putting the North Delta Intakes there.*⁸² For the Sacramento River, California's equivalent of the Mississippi River, to undergo reverse flows in its lower reach would be a travesty to the Delta and its aquatic ecosystems.

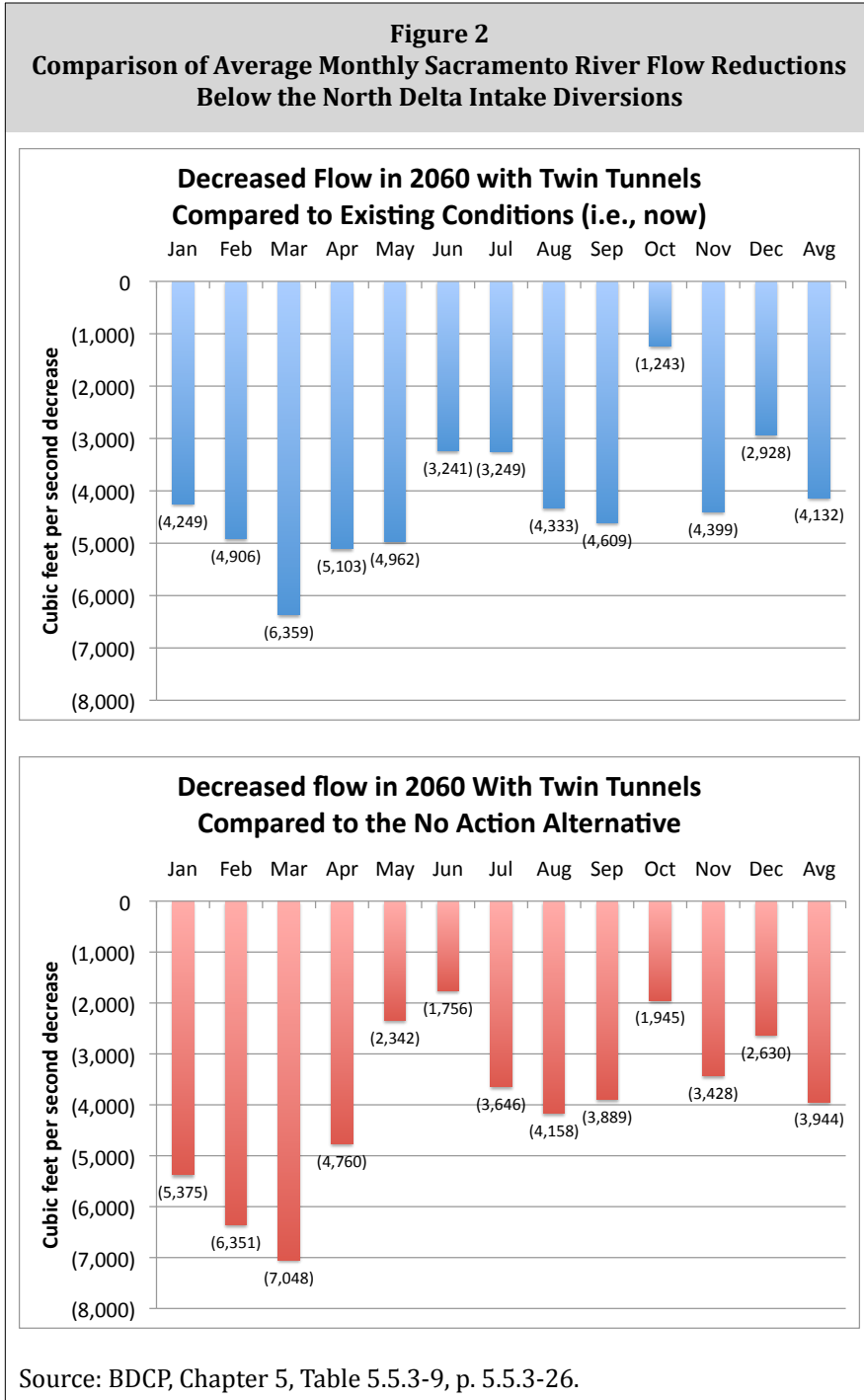
⁸⁰ *Ibid.*, Appendix 5.B, *Entrainment*, p. 5.B-19.

⁸¹ *Ibid.*, Chapter 3, p. 3.3-143, lines 11-20. "The north Delta intakes will be operated so as to not increase the incidence of reverse flows in the Sacramento River at the Georgiana Slough junction, thereby limiting the potential for covered salmonids to inadvertently migrate into the interior Delta. Juvenile salmonids can be drawn into alternative channels, such as Georgiana Slough and the Delta Cross Channel, and into the interior Delta region where survival has generally been shown to be lower than in the Sacramento River mainstem or Sutter and Steamboat Sloughs [citation]." Lines 11-16.

⁸² There is no disclosure of potential reverse flows in the Sacramento River that we found in Appendix 5.C, Attachment 5C.A, *Modeling Results*, in either the Sacramento at Freeport or Sacramento at Rio Vista flow tables (Tables C.A-22 and C.A-29). Flow results for Georgiana Slough are combined with the results for the Delta Cross Channel (located between Freeport, the North Delta Intakes and Rio Vista), so any upstream (reverse) flows in Georgiana Slough are submerged and cannot be verified by readers of BDCP.

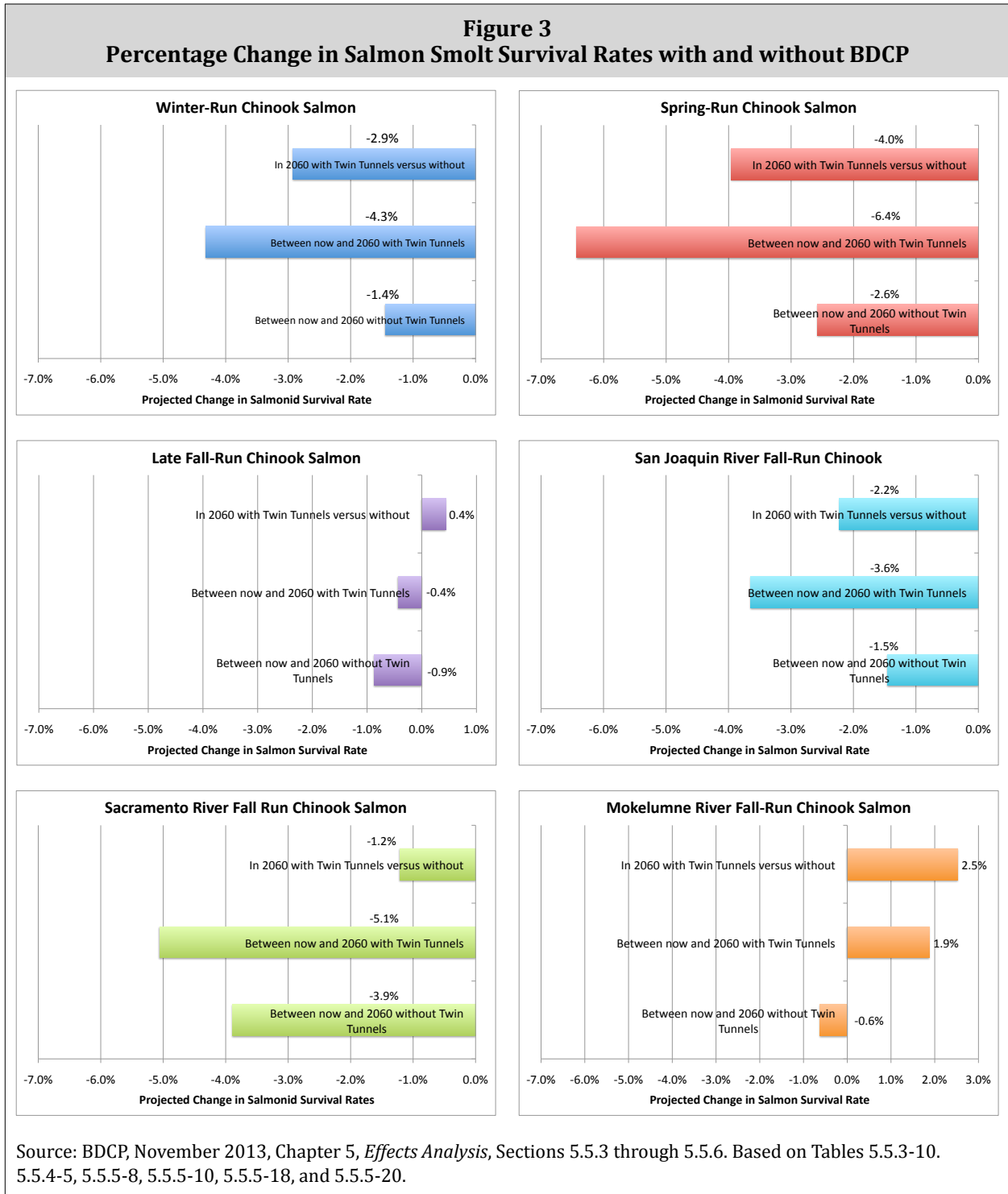
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- Reduced Sacramento River flows **below** the north Delta intakes. As shown below in Figure 2, the flow differences between present conditions and in 2060 with and without the Twin Tunnels varies across months. But in both cases, these charts, and the BDCP data table on which they rely, show direct reductions every month in every year. The average flow reduction is about 4,000 cubic feet per second.



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- The Bay Delta Conservation Plan modeling results reveal salmon smolt survival rates will decrease through the Delta as a result of Twin Tunnels operation in the North Delta (Figure 3).



The middle bars in each graph of Figure 3 show the comparison between present baseline conditions and 2060 with operation of a Twin Tunnels project and North Delta Intakes. For Winter-

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run Chinook, smolt survival through the Delta is expected by BDCP to *decrease* 4.3 percent. For Spring-run Chinook, smolt survival through the Delta is expected by BDCP to *decrease* by 6.4 percent. For Sacramento River Fall-run Chinook, smolt survival is expected to *decrease* 5.1 percent. For San Joaquin River Fall-run Chinook, smolt survival is expected to *decrease* 3.6 percent. (No model results were available for Central Valley steelhead.) ***These are significant, appreciable reductions to listed species during critical life stages as they move through the Delta.***

These decreases would come on top of massive long term declines in winter-run and spring-run Chinook salmon populations in the Sacramento River Basin, as documented by the US Fish and Wildlife Service’s Anadromous Fish Restoration Program (Figure 4). Adult escapement for both of these runs has reached dangerously low levels; they are extremely vulnerable to catastrophic events everywhere throughout their range, including in the Delta. Introduction of the Twin Tunnels right in the middle of their Delta migration corridor (only a small percentage of smolts are expected to take advantage of the Yolo Bypass diversion, see next section) could be one such foreseeable catastrophe for these populations of Chinook salmon.

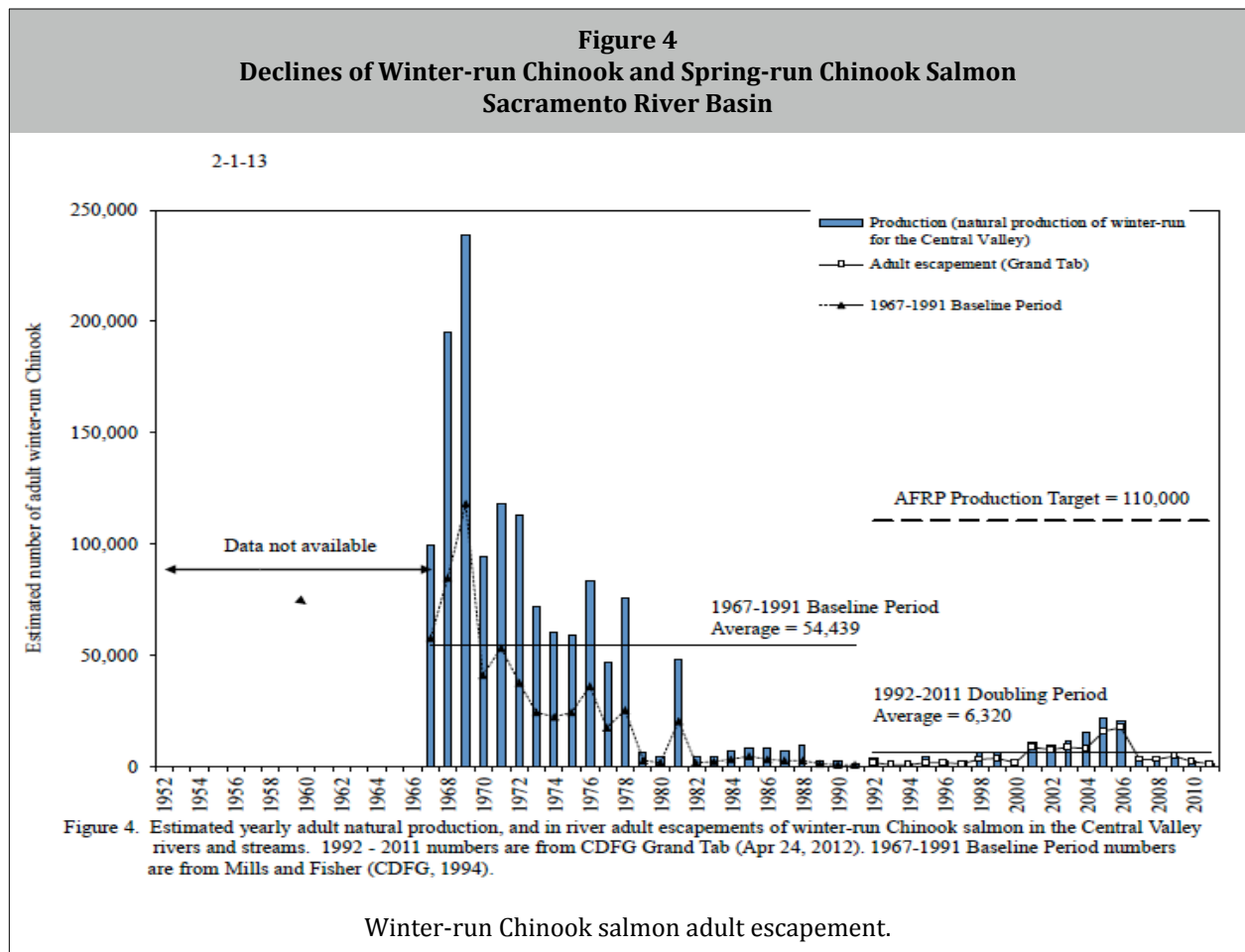


Figure 4
Declines of Winter-run Chinook and Spring-run Chinook Salmon
Sacramento River Basin

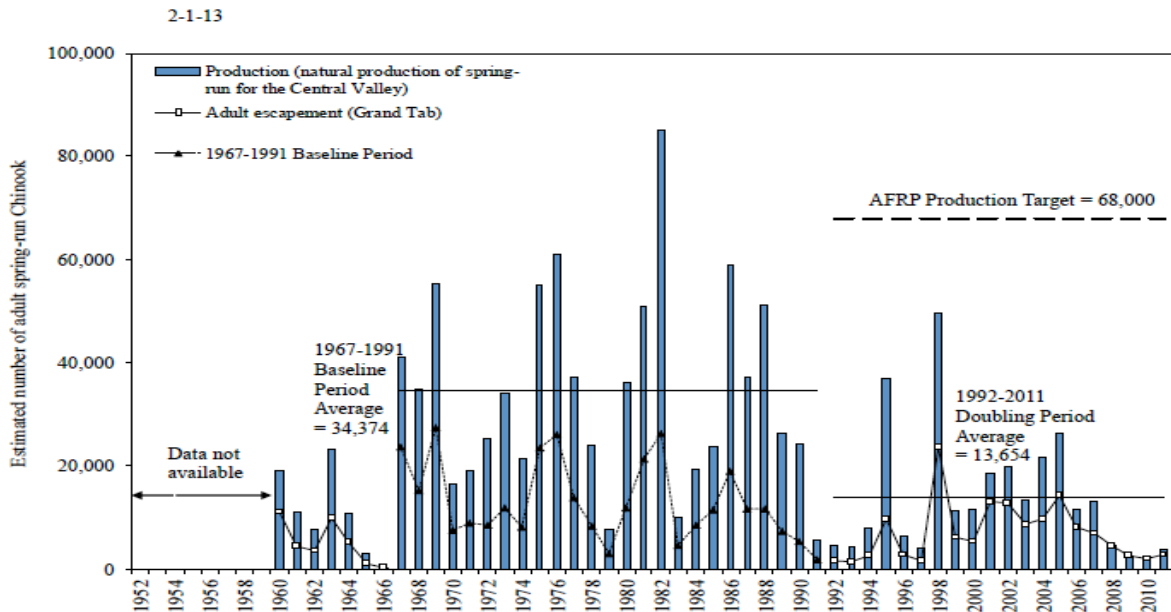


Figure 5. Estimated yearly adult natural production, and in-river adult escapements of spring-run Chinook salmon in the Central Valley rivers and streams. 1960 - 1966 and 1992 - 2011 numbers are from CDFG Grand Tab (Apr 24, 2012). 1967-1991 Baseline Period number are from Mills and Fisher (CDFG, 1994).

Spring-run Chinook salmon adult escapement.

Source: US Fish and Wildlife Service, Anadromous Fish Restoration Program, http://www.fws.gov/stockton/afrp/Documents/Doubling_goal_graphs_020113.pdf.

With Winter-run and Spring-run Chinook salmon as already-listed species, decreasing predicted trends in long-run survival rates for their smolts under BDCP activities would appreciably jeopardize the ability of these populations to avoid extinction.⁸³ Given that climate change threatens to reduce the size of cold water pools in upstream reservoirs and raise temperatures in upstream river reaches for these species, introducing operation of the Twin Tunnels project as a human-generated threat to survival of these salmon runs is unacceptable. **Therefore BDCP cannot fulfill the Endangered Species Acts' requirements for ecological assurances that the habitat conservation plan would not appreciably reduce the likelihood of the survival and recovery of listed species. The BDCP application for incidental take permits should be rejected by the fishery agencies.**

The other major hydrodynamic nightmare for fish posed by construction and operation of the Twin Tunnels project is whether the project's effects would increase the risk of entrainment (leading

⁸³ "Appreciable" is defined by the *Oxford English Dictionary* as "describing something that is large or important enough to be noticed."

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directly to take of covered and listed species of fish).⁸⁴ Within this issue there are a few specific concerns:

- Are modeled entrainment risks for fish reduced at the South Delta pumps under BDCP?
- What would be entrainment risks for listed species at the North Delta Intakes for the Twin Tunnels project?
- How does climate change interact with Twin Tunnels operation to affect entrainment risk?

For most covered fish species, according to Table 5.B.0-2 of BDCP⁸⁵, entrainment risk *at the South Delta export pumps* would decrease dramatically. Juvenile salmonids would see significant reductions in entrainment on the order of 50 to 75 percent, particularly during wet and above normal years when the North Delta Intakes would be used more intensively to divert lower Sacramento River flows for export. Entrainment risks for Winter-run and Spring-run Chinook salmon smolts would decrease also between 50 to 75 percent over the 50-year term of the incidental take permits.

This table, titled “Summary of Effects of the BDCP on Entrainment of Covered Fish Species,” provides modeled results only for the South Delta export pumps. There is no attempt to model results for entrainment risk at the North Delta Intakes. We could find no explanation of this omission. This information is crucial to evaluating BDCP’s goal that the Twin Tunnels would provide operational flexibility to help reduce entrainment and salvage risks for fish throughout the Delta. The table only discloses as its methods “screening effectiveness analysis” and “screen passage time” analysis, and claims as results “100% screened” intakes in the North Delta with “screen passage time lower with higher sweeping velocity, shorter screen, and smaller fish.” There are no quantified modeling results in which presence of listed species are correlated with times in which the North Delta Intakes would operate to indicate levels of entrainment that could occur.

This criticism holds true for Delta smelt and longfin smelt, two listed species that reside full-time (Delta smelt) or part-time (longfin smelt) in Delta channels and open water. Table 5.B.0-2 provides proportional entrainment regression results for larval and juvenile Delta smelt that show on average a 3 percent *decrease* in entrainment risk across all water year types at the South Delta pumps. Entrainment rates would decrease even further to between -16% to -24% at the South Delta pumps during wet and above normal years when the North Delta Intakes operate. Adult Delta smelt entrainment risks would be even further decreased in wet and above normal water years.

However, in drier years, when the North Delta Intakes would be used far less, ***larval and juvenile Delta smelt entrainment rates would increase over existing baseline conditions*** (i.e., relative to having no Twin Tunnels project operating in the future) throughout the 50-year term of the incidental take permits. This may have everything to do with use of the Twin Tunnels’ extra capacity to transport water transfers. But it appears water transfers were not modeled or evaluate for impacts in the EIR/EIS. This would be the situation for a majority of water years assuming that the future will be like the 82 years in the CalSIM II modeling activity on which these entrainment estimates rely in part. ***If California’s climate becomes drier (and more years in the future are below the present normal, dry or critically dry) then these entrainment risks would be***

⁸⁴ “Entrainment” is not equivalent to death of individual fish from different species. Rather, it is a measure of hydrodynamic conditions overcoming fishes’ swimming ability, forcing fish into water facilities that may result in their “salvage” and relocation. However, the process of handling fish during “salvage” operations can result in injury and death to fish. Entrainment can mean death as a result of predation, as in the case of fish winding up in Clifton Court Forebay where predator fish like bass species are well known to prey upon smaller fish like Delta smelt, longfin smelt, and juvenile salmonids. “Salvage” does not usually lead to salvation.

⁸⁵ BDCP, Chapter 5, *Effects Analysis*, Appendix 5.B, *Entrainment*, Table 5.B.0-2, p. 5B-vii.

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expected to increase. Water transfer diversions may also have something to do with this as well. The fact that they are positive in the BDCP analysis reveals that ecological assurances for Delta smelt are overly optimistic, even hyperbolic, for reducing entrainment risk overall for Delta smelt, *even at the South Delta pumps.* This means ***it is critical for the EIR/EIS to model and analyze the effects on Delta smelt and longfin smelt at the North Delta Intakes during dry and critically dry years, since DWR and the Bureau of Reclamation hope to increase water transfers in those years.***

Larval and juvenile longfin smelt entrainment risk averaged over all water year types would also decrease at the South Delta pumps, according to Table 5.B.0-2. However, BDCP makes no attempt to model larval longfin smelt risk by water year type. This is significant because according to the California Department of Fish and Game's 2009 effects analysis for the State Water Project incidental take permit for longfin smelt, larval longfin smelt can be entrained as larvae in the early spring in the western Delta and be too small to track. They grow along the way upstream through Old and Middle Rivers where they are counted as juveniles once they reach Clifton Court Forebay and the State Water Project fish salvage facilities later in the spring or early summer.⁸⁶

For the North Delta Intakes, BDCP indicates for "results" in Table 5.B.0-2 that the Intakes would be "100% screened" (as if that is a sure thing for avoiding entrainment, injury, or death at the intakes) and that "entrainment occurs in proportion to flow diverted, but the great majority of larvae would be downstream of the intake and not susceptible to entrainment." This language is employed for both larval Delta smelt and larval longfin smelt in the table. These assertions occur without support visible evidentiary support. The table also states that for juvenile and adult Delta smelt, there is "potential for screen contact-related mortality increases with increasing approach and sweeping velocity, by night, and with longer screens."

"Approach velocity" is flow speed whose direction is perpendicular to the face of the intake screens, and reflects the rate of diversion occurring at the Intakes. It is the cross-flow that the North Delta Intakes would generate in the flow-field of the lower Sacramento River as the Intakes are operated (that is, as they fill the Twin Tunnels). "Sweeping velocity" is the net speed of downstream flow parallel to the face of the intake screens. Generally, if the combined vector of flow is toward the Intake screen and the swimming ability (vector) of individual fish does not exceed that flow, the fish will be pushed against the screen, possibly pinned or impinged, injured or killed by the force of the intake diversion flow.

BDCP proposes for the North Delta Intakes the longest and largest fish screens ever attempted. (Imagine a fish screen as long and tall as some CalTrans sound walls along any urban California freeway, and you have some idea of the scale of the fish screens that are contemplated.)⁸⁷ Screens this size have never been used, let alone tested, as we understand the situation. While the screens would be designed to meet California Department of Fish and Wildlife and National Marine Fisheries Service fish screen design criteria, the sheer size of the North Delta Intake screens would be unprecedented.⁸⁸ Table 4-2 of Chapter 4 in BDCP provides general specifications for the North

⁸⁶ California Department of Fish and Wildlife, Effects Analysis: State Water Project Effects on Longfin Smelt, prepared by R.D. Baxter, M.L. Nobriga, S.B. Slater, R.W. Fujimura, February 2009, four parts. See discussion of "Juvenile Entrainment," p. 31. Accessible online 14 May 2014 at <http://www.dfg.ca.gov/delta/data/longfin-smelt/documents/LongfinSmeltIncidentalTakePermitNo.2081-2009-001-03.asp>.

⁸⁷ Schematic drawings of North Delta Intake structures (Figures 4-6 and 4-7, Chapter 4) omit the location or extent of fish screens proposed to protect fish from entrainment.

⁸⁸ California Department of Fish and Wildlife, "Fish Screening Criteria," accessible online 14 May 2014 at http://www.dfg.ca.gov/fish/Resources/Projects/Engin/Engin_ScreenCriteria.asp. See also National Marine Fisheries Service, *Fish Screening Criteria for Anadromous Salmonids*, Southwest Region, July 1997.

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Delta Intakes, and states that there will be a total cumulative fish screen length of 4,420 feet, or 0.84 miles, across three separate intakes. The screens are expected to range from 10 to 22 feet in height.⁸⁹

A team of scientists at UC Davis led by biologist Christina Swanson developed equations for fish screen designs with sweeping velocities to optimize protection of fish attempting to pass fish screens.⁹⁰ BDCP tested these equations but found them not to their liking:

The equations of Swanson and coauthors [citation] give very long screen passage times at certain sweeping velocity and approach velocity combinations, e.g., nearly 7,000 minutes [or about 117 hours, or nearly 5 days] for a 4.4 cm fish along a 2,000 foot screen with approach and sweeping velocities of 0.33 [centimeters per second]. Such estimates are far in excess of the duration of the experimental trials (120 minutes) used to derive the data and therefore should be treated with caution.⁹¹

Five days is indeed a very long time for a juvenile salmonid to be attempting to swim past what would seem like a never-ending cross-flow of water without also having additional food and opportunity to rest to sustain its journey through such a maelstrom. Such a modeled condition does not support BDCP's hoped-for reduction in salmonid entrainment through construction and operation of the North Delta Intakes and the Twin Tunnels project. Indeed, such results from Swanson's equations would lead one to conclude that building the North Delta Intakes in a crucial reach of the migration corridor of listed salmonid populations would be a recipe for salmonid jeopardy. BDCP clearly finds it easier to "treat the equations with caution" than admit the possibility that the fish screens would not work as BDCP has hyped.

Yet Swanson's work may be the "best available science" on which BDCP could rely, for BDCP presents no other more recent systematic treatment of the variables of fish behavior, fish screen design, and hydrodynamic conditions in the lower Sacramento River. ***If so, then DWR and the rest of the Applicants have shunned usage of the best available science to analyze their project, violating their duties under ESA.***

When it comes to entrainment of Delta smelt at the North Delta Intakes, BDCP soft-pedals their risk. They state that most of the time, Delta smelt at any life stage will be located downstream of the Intakes, and therefore at little risk of entrainment. For instance, they are all but absent in the fall months (September through December) from upstream Sacramento River locations in the Delta, as measured by the Fall Midwater Trawl. However, when one moves out of the shallow waters of BDCP's chapters 3 and 5 to the deeper, more open waters of Appendix 5.B on *Entrainment*, one finds

⁸⁹ Bay Delta Conservation Plan, Chapter 4, p. 4-9, lines 7-13.

⁹⁰ Christina Swanson, Paciencia S. Young, and James J. Cech, "Swimming in Two-Vector Flows: Performance and Behavior of Juvenile Chinook Salmon near a Simulated Sceded Water Diversion," *Transactions of the American Fisheries Society* 133(2): 265-278, 2004; Swanson, Young, and Cech, "Close Encounters with a Fish Screen: Integrating Physiological and Behavioral Results to Protect Endangered Species in Exploited Ecosystems," *Transactions of the American Fisheries Society* 134(5): 1111-1123, 2005; Swanson, Young, and Cech, "Close Encounters with a Fish Screen II: Delta Smelt Behavior Before and During Screen Contact," *Transactions of the American Fisheries Society* 136(2): 528-538, 2007; Swanson, Young, and Cech, "Close Encounters with a Fish Screen III: Behavior, Performance, Physiological Stress Responses, and Recovery of Adult Delta Smelt Exposed to Two-Vector Flows near a Fish Screen," *Transactions of the American Fisheries Society* 139(3): 713-726, 2010; Swanson, Young, and Cech, "Swimming Performance of Delta Smelt: Maximum Performance and Behavioral and Kinematic Limitations on Swimming at Submaximal Velocities," *Journal of Experimental Biology* 201(1998): 333-345. This latter article accessible online 14 May 2014 at <http://online.sfsu.edu/modelds/Files/References/Swanson1998JEB.pdf>.

⁹¹ Bay Delta Conservation Plan, Appendix 5.B, *Entrainment*, p. 5.B-303, lines 30-33.

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that BDCP is much less confident that Delta smelt would not be placed in harm's way by the North Delta Intakes and their sound-wall-scale fish screens:

[S]eine data do indicate that adult delta smelt do occur in the reach of the river where the proposed north Delta intakes would be sited....Overall, the results from the various surveys suggest that a low proportion of the delta smelt population would have the potential to occur in the reach of the Sacramento River where the north Delta intakes will be located (River miles 37-41). There is uncertainty in the proportion of the population that could occur in this reach [because seine sampling has, as of yet, not included documentation of the delta smelt population that now occupies the Cache Slough area].

Recent research suggests that delta smelt may use tidal currents to facilitate movement upstream by migrating to channel margins during ebb tides and into the channel during flood tides. [citation] Depending on which side of the channel the fish move to, such behavior may place delta smelt close to the channel margins and potentially close to the proposed north Delta intakes. Flows toward the intakes may also increase the chance of delta smelt within the vicinity encountering the screen. *The summary of percentage of flows diverted for salmonids (Tables 5.B.6-222 and 5.B.6-223) also encompasses the main period of potential delta smelt occurrence near the proposed north Delta intakes. The extent to which delta smelt would occur near the on-bank intakes is uncertain; monitoring of the north Delta intakes would provide data to reduce this uncertainty.*⁹²

Complicating matters still further is the fact that Delta smelt are highly sensitive to injury easily resulting in death. Glancing blows against fish screens or other structures for them can be fatal. They are already well-known for not surviving the handling and transport they already receive from salvage at the state and federal pumps' fish facilities.

Under conditions of climate change, X2 (the isohaline marker for the location of the Bay-Delta Estuary's low salinity zone) is expected to migrate upstream as Delta watershed runoff overall decreases in the future. Reduced Delta outflow resulting from Twin Tunnels operations will contribute to this trend. Delta smelt are well known to inhabit the area of Delta waters immediately upstream (toward fresher water) of X2. The further upstream X2 moves, the closer it gets to River Miles 37 through 41 where the North Delta Intakes would be located. BDCP's entrainment appendix acknowledges this possibility:

Delta smelt may occur more frequently in the north Delta diversions area under future climate conditions if sea level rise [and reduced Sacramento River inflow below Freeport] induces movement of the spawning population farther upstream than is currently typical.⁹³

In sum, BDCP Applicants do not know (nor do they reveal from modeling results) the proportion of the Delta smelt population that could be at risk of entrainment in this reach of the Sacramento River (River Miles 37-41) from the North Delta Intakes. BDCP does not know which side of the river Delta smelt may prefer on ebb tides, and why. BDCP lacks confidence in the Swanson team's equations for modeling fish behavior, fish screen design criteria and hydrodynamic parameters.

Yet the BDCP Applicants would naively forge ahead with construction and operation of the Twin Tunnels project despite such huge uncertainties posing grave risks for listed salmonid and smelt species. They build into the BDCP a number of monitoring and effectiveness actions that strongly imply, "Let us construct these systems and we will fix them later (much the way the State Water Project and Central Valley Project were justified when it came to fish impacts). **Trust us.**" And they include in "research actions" two potential studies that would:

⁹² *Ibid.*, p. 5.B-306, lines 2-3, 6-9, and 14-18. Emphasis added.

⁹³ *Ibid.*, p. 5.B-310, lines 17-19.

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Develop physical hydraulic model(s). If intake screen locations differ significantly in terms of river flow conditions or structure geometry, then more than one physical model study is needed. A physical model provides the capability to optimize hydraulics and sedimentation in the chosen river reach. Differences between the average channel velocity in the river and sweeping velocity adjacent to the screen face will be identified. Neutrally buoyant particles will be tracked to provide information on larval fish movement [citation].

Develop computational fluid dynamics model to provide information on how tidal changes and flow withdrawals affect flow conditions and sweeping velocities at screening locations.⁹⁴

The uncertainties acknowledged for these two research actions are, on one hand, the “relationship between proposed intake design features and expected intake performance relative to minimization of entrainment and impingement risks,” and on the other, the “evaluation of tidal effects and withdrawals on flow conditions at screening locations.” ***This reveals that fundamental scientific and design components of avoidance and minimization measures for listed species cannot assure protection and survival (let alone recovery) given the current state of scientific and engineering knowledge.***

Nowhere in BDCP is there a conservation measure to install fish screens on the South Delta export pumps or to improve operations of their fish salvage facilities as required by the 2000 CalFED Record of Decision.⁹⁵ BDCP Applicants are apparently not serious about protecting fish from the hydrodynamic nightmares they propose to inflict on the Delta’s listed species and aquatic ecosystems from the Twin Tunnels, the North Delta Intakes, and related Delta facilities in “conservation measure” 1.

The Delta’s fish face an extinction crisis. The Twin Tunnels would adversely modify designated critical habits and thus promote species extinction and preclude species recovery. The Twin Tunnels project is not a permissible project under the Endangered Species Act (ESA) because it would adversely modify designated critical habitat for at least five Endangered and Threatened fish species. BDCP’s own modeling results indicate that Tunnels operation would appreciably reduce the likelihood of survival and recovery of listed fish species in the Plan Area of the Bay Delta Conservation Plan.

We incorporate by reference a comments from the California Advisory Committee on Salmon and Steelhead Trout to the Director of the California Department of Fish and Wildlife dated February 26, 2014.⁹⁶ The Advisory Committee concludes among other things that: “The BDCP does not meet the requirements of Fish and Game Code 2820 for an NCCP and cannot legally be approved because it will contribute to the further decline of Sacramento River Winter Run and Spring Run Chinook salmon.” (Letter p. 1). The Advisory Committee also concludes that: “In summary, the Bay-Delta Conservation Plan does not meet the requirements of the California Endangered Species Act or the Natural Communities Conservation Plan Act to recover Sacramento River winter-run and spring-run Chinook salmon.” (Letter p. 4).

⁹⁴ *Ibid.*, Appendix 3.D, *Monitoring and Research Actions*, Table 3.D-3, p. 3.D-28,.

⁹⁵ CalFED Record of Decision, pages 26, 52, and 131. Accessible online June 3, 2014 at <http://calwater.ca.gov/content/Documents/ROD8-28-00.pdf>.

⁹⁶ Letter of California Advisory Commission on Salmon and Steelhead Trout to Charlton Bonham, Director, California Department of Fish and Wildlife, “Recommendation to deny incidental take permit and Natural Communities Conservation Plan for Bay Delta Conservation Plan,” February 26, 2014. Accessible online June 4, 2014, at http://www.friendsoftheriver.org/site/DocServer/Atc_13.pdf?docID=8313.

For the same reasons, the Twin Tunnels plan likewise does not meet the Section 10 requirements of the ESA and cannot legally be approved because it will contribute to the further decline of Sacramento River Winter Run and Spring Run Chinook salmon.

3. Stranding and Entrainment Risks of Seasonal Floodplain Enhancement Measure

BDCP fails the Endangered Species Acts' requirements for ecological assurances that the habitat conservation plan, with its proposed seasonal floodplain inundation of Yolo Bypass, will not appreciably reduce the likelihood of survival and recovery of listed species. Key assurance uncertainties are put off into the plan's adaptive management process. The BDCP application for incidental take permits should be rejected by the fishery agencies.

BDCP Applicants propose to take advantage of recent scientific findings that seasonal inundation of floodplains can expand food production for covered and listed anadromous and other fish species out of the mainstem channels they use to emigrate to the ocean or to other parts of the Delta's Central Valley watershed. The fish species that are targeted for this type of restoration approach, and the related changes to flow patterns and flood control facility operations, appear from our review of BDCP to include most runs of salmon and Sacramento splittail (which is a covered species but is not ESA-listed).⁹⁷ Juvenile salmon (but not Central Valley steelhead trout) and splittail are found to grow larger faster when floodplains are available for them to rear in (periods where they feed and grow). Such growth is found by scientists to improve overall fitness of emigrating salmon smolts for reaching adulthood, surviving the ocean phase of their life history, and eventually returning to natal streams to reproduce.

The Sacramento River Basin Flood Control Project is proposed by BDCP for some alterations in its southernmost reach, Yolo Bypass. This bypass extends from the Sacramento River just west of the town of Verona south to its outlet into the Cache Slough complex just north of Rio Vista along the Sacramento River as it concludes its route through the north Delta to Suisun Bay, a distance of about 38 miles. At the northern mouth of Yolo Bypass, high flood flows during and after storms spill over a structure along the right bank of the Sacramento River called Fremont Weir. In addition, flows from the Feather River, whose confluence with the Sacramento River is located at Verona, enter the Sacramento and raise the river level still further, backing those waters up and over Fremont Weir as well, enabling Yolo Bypass to take considerable flood flow pressure off of the mainstem of the Sacramento River, thereby protecting farmlands, the City of Sacramento, and other small communities further downstream from most flood peaks.

Adult salmon will sometimes choose upstream migration routes through Yolo Bypass trying to reach their natal stream or tributary of the Sacramento River, until they find Fremont Weir obstructing further upstream progress toward the Sacramento River. These fish sometimes head up the drainage canals that enter the Bypass from the Colusa Basin and from Cache Slough to Cache Creek, but may perish from the effects of stranding without having spawned successfully. If state fish wardens and biologists become aware, they organize rescue efforts to capture and relocate these fish into the Sacramento River so they may attempt to carry on their upstream travel. They are

⁹⁷ The main salmonid beneficiaries of Yolo Bypass inundation are Winter-run, Spring-run and Fall-run Chinook salmon, and Central Valley steelhead, which are emigrating substantially during periods (mid-November through May) that overlap with the December through April time frame of notched Fremont Weir spillage proposed under BDCP. However, Late Fall-run Chinook yearlings (November through early February) and young-of-the-year (mid-April through mid-May) will likely benefit least from seasonal inundation of Yolo Bypass. *Ibid.*, Chapter 3, Table 3.4.2-1, "Potential Operations pattern for Fremont Weir Gated Channel and Other Considerations," p. 3.4-57.

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often unsuccessful, and many fish are lost, as occurred in the summer of 2013 elsewhere in Yolo Bypass and other parts of the lower Sacramento Valley.⁹⁸

Juvenile Sacramento splittail can find their way into Yolo Bypass to spawn. Their larval and juvenile life stages rear in the shallow, warm and productive ponds and slow-moving floodplain flows. However, they too face a risk of stranding if too little water inundates the Bypass and ponds and channels dry out before their young can mature and emigrate to other Delta channels.

When Yolo Bypass is completely inundated, the wetted area there doubles the total wetted area of the Delta, according to BDCP. The Bypass is also considered inundated when the water level at Toe Drain at Lisbon Weir (at the south end of the Bypass) exceeds 8 feet NGVD.

BDCP Applicants propose to “notch” Fremont Weir so that Sacramento River flows will spill into the Yolo Bypass at lower flow levels. This will increase the amount of time water inundates areas of Yolo Bypass, and increase the amount of floodplain acreage that is stimulated into primary and secondary ecosystem productivity (from phytoplankton to zooplankton to various kinds of aquatic invertebrate organisms). The notch in Fremont Weir would be 225 feet long, as compared with the Weir’s existing one-mile length (5,000 feet), and would be operable with one or more gates to regulate spillage and flow to the Bypass. The notch would lower the spill elevation of the Weir from 33.5 feet to about 17.5 feet.⁹⁹ The Applicants propose an inundation regime for Yolo Bypass that would provide flows of 3,000 to 6,000 cfs for substantial increases in fish habitat during many years. Average water depths would generally be 2 to 3 feet, with velocities of less than 2 feet per second and water travel times in the Bypass would generally be 3 to 4 days. At 3,000 cfs of flow into the Bypass over the notched Weir, about 10,000 acres and at 6,000 cfs of flow, the inundated area would reach about 20,000 acres, according to BDCP.¹⁰⁰ The number of days the Bypass would inundate is projected by BDCP to more than triple, from 26 days (when Sacramento River flow exceeds 60,000 cfs) in the key December through April period to about 81 days (when Sacramento River flow would exceed just 20,000 cfs or so). We estimate that this investment of seasonal spillage at Fremont Weir would cost the Sacramento River between December and April about 480,000 acre-feet to about 960,000 acre-feet of flow depending on water year type, and would contribute by subtraction to the hydrologic and hydrodynamic mayhem in the lower Sacramento River that would adversely affect fish that did not enter Yolo Bypass.

BDCP identifies the key uncertainties as “Do the modifications at Yolo Bypass function as expected, and if so, how effective are they?” To answer that question, the Applicants identify a lengthy list of potential research actions to cope with this uncertainty:

- Evaluate the effectiveness of the fish passage gates at Fremont Weir.
- Evaluate the effectiveness of sturgeon ramps.
- Determine whether stilling basin modification has reduced stranding risk for covered fishes.

⁹⁸ Bill Jennings, “Massive loss of endangered Winter-run salmon,” July 28, 2013, online at <http://calsport.org/news/massive-loss-of-endangered-winter-run-salmon/>. “During April, May and early June, perhaps half of this year’s spawning population of endangered winter-run Chinook salmon were drawn into the irrigation channels of the Yolo Bypass and Colusa Basin and stranded. Approximately 300 fish were rescued and returned to the Sacramento River but most were lost. The majority of those rescued were in such poor condition that biologists doubted they would successfully spawn. Other winter-run were stranded in the Sutter-Butte Basin on the east side of the Sacramento but no rescues were attempted. This has been a recurring problem well known to state and federal fish agencies since the 1990s.”

⁹⁹ Bay Delta Conservation Plan, Appendix 5.C, Attachment 5C.A, Table C.A-12, p. 5C.A-60.

¹⁰⁰ *Ibid.*, Chapter 3, Conservation Strategy, p. 3.4-44, lines 2-3; Appendix 5.C, Attachment 5C.A, *Flow Results*, Section 5C.A.3.4.4, p. 5C.A-58, lines 3-16.

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- Determine whether Sacramento Weir improvements have benefited fish passage and minimized stranding risk.
- Determine effectiveness of Tule Canal/Toe Drain and Lisbon Weir improvements to reduce the delay, stranding, and loss of migrating salmon steelhead, and sturgeon.
- Determine growth rates of juvenile salmonids that have entered the Yolo Bypass during Fremont Weir operation.
- Document Sacramento splittail spawning and spawning success in Yolo Bypass during Fremont Weir operation.
- Evaluate whether the Lower Putah Creek realignment improves upstream and downstream passage by covered fish.
- ***Determine severity of predation effects on covered fish using the Yolo Bypass.***¹⁰¹

This last potential research action, concerning the potential predation effects in Yolo Bypass of enhancing fish passage and floodplain productivity to promote rearing needs far more advance planning and research than has occurred ***before the decision is made to remove a half million to a million acre-feet of water from the Sacramento River nearly every year to provide an alternative route to the comparatively efficient migration corridor of the mainstem lower Sacramento River.*** The BDCP Applicants put this research off into the dustbin of its adaptive management laundry list.¹⁰² There is no attempt to model or otherwise estimate the effect of seasonal floodplain inundation in Yolo Bypass on listed species survival rates. Such a modeling effort must factor in the degree to which predator fish would also seek to take advantage of seasonally inundated floodplain productivity, and whether the loss of additional flows from the Sacramento River mainstem channel (and its safer distributaries in the North Delta) contribute to a net increase or decrease of survival rates of listed salmon populations. There is also no mention of methylation of mercury occurring with increased wetting and drying of the floodplain, which can cause methyl mercury levels to spike in the floodplain. The State Water Resources has found that when Yolo Bypass is flooded, it becomes the dominant source of methylmercury to the Delta, and that restoration activities with the increase in wetting and drying periods could exacerbate the existing mercury problem.¹⁰³

4. Climate Change Analysis and Modeling Results

BDCP Applicants recognize that climate change is with us and that it must be accounted for in making plans for the future of California water and the Bay-Delta Estuary.

¹⁰¹ *Ibid.*, Table 3.4.2-3, “Key Uncertainties and Potential Research Actions Relevant to CM2,” p. 3.4-61. Emphasis added.

¹⁰² *Ibid.*, Appendix 3.D, *Monitoring and Research Actions*, provides additional detail on the depth and breadth of compliance, effectiveness monitoring and research actions that will be needed. This appendix contemplates for Conservation Measure 2 a total of 11 compliance monitoring actions, three effectiveness monitoring actions, and two research actions, one of which is described in our narrative here and contains nine sub-actions.

¹⁰³ State Water Resources Control Board, *2009 Periodic Review of the 2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin River Delta Estuary*, adopted resolution 2009-0065, p. 29. Accessible online 14 May 2014 at http://www.swrcb.ca.gov/waterrights/water_issues/programs/bay_delta/periodic_review/docs/periodicreview2009.pdf; and Chris Foe, Stephen Louie, and David Bosworth, *Task 2: Methyl mercury concentrations and loads in the Central Valley and Freshwater Delta*, CALFED, August 2008. Accessible online 14 May 2014 at http://mercury.mlml.calstate.edu/wp-content/uploads/2008/10/04_task2mmhg_final.pdf.

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The California Department of Water Resources projects sea level rise by 2030 at about 6 inches, and by 2060 at about 18 inches in the Delta.¹⁰⁴ Snowmelt will continue to decrease in California and more precipitation will fall as rain, so winter season runoff will increase this century while summer (warm) season runoff will decrease.¹⁰⁵ In addition, extreme weather events are expected to become larger and more frequent in many parts of California. During the 21st century, the Sacramento River Basin is expected to experience on average about 32 more hot days, 30 more frost-free in the cold season, 36 fewer extremely cold days, 47 fewer days below freezing, nearly two fewer 7-day cold spells, and a half day's worth of fewer "cold spells." The San Joaquin River Basin is expected to see 11 more hot days per year, 1.6 more "hot events," 40 more frost-free days in the cold season, 35 fewer extremely cold days, 36 fewer days below freezing, 1.2 fewer prolonged (7-day) cold spells, and 3 fewer days of cold spells than in the recent past.¹⁰⁶

To incorporate climate change effects into BDCP's extensive modeling effort, the Applicants' consultants relied on downscaled general circulation models to the regional level of California. The climate "normal" was taken to be the period of 1971 through 2000 (consistent with the National Oceanic and Atmospheric Administration's practice in climate modeling), in part because it represents the most recent climate time period commonly used for analysis (although it gets more difficult to know what is normal for California as our grasp of paleoclimate records indicates¹⁰⁷). For BDCP, future climate periods are denoted as "approximately 2025" (the mid-point year of 2011 through 2040, or the "early long term" [ELT] and 2060 (the mid-point year of 2046 to 2075, or the "late long term" [LLT]). BDCP chose the difference in temperature and precipitation among the two future periods to represent the increment of change attributed to climate change.

Because there are so many variables that go into climate models, there are numerous potential permutations that are grouped into large numbers of climate change scenarios. BDCP acknowledges four different potential approaches to projecting climate change effects in the Bay-Delta watershed, and settled on the "multi-model ensemble-informed approach." Their median projections of temperature and precipitation from this approach can be used to divide the scenarios' results into four quadrants. In addition, a fifth region was identified by BDCP that

samples from inner-quartiles (25th to 75th percentile) of the ensemble and represents *a central region of climate change*. In each of the five regions, the sub-ensemble of climate change projections, made up of those contained within the region bounds, is identified. The Q5 scenario is derived from the central tending climate projections and thus favors the consensus of the ensemble.¹⁰⁸

BDCP performed further testing on the climate change ensembles to test their sensitivity to a loss of variability in the climate change ensembles due to combining the ensembles. The state and federal fishery agencies agreed to accept BDCP's approach to climate change ensembles, their approach to

¹⁰⁴ *Ibid.*, Appendix 2.C, *Climate Change Implications and Assumptions*, Table 2.C-8, p. 2.C-13.

¹⁰⁵ *Ibid.*, p. 2.C-10, lines 2-4.

¹⁰⁶ *Ibid.*, Table 2.C-1, "Projected Weather Extremes in the Delta," p. 2.C-16.

¹⁰⁷ B. Lynn Ingram and Frances Malamud-Roam, *The West Without Water*, Berkeley, CA: University of California Press, 2014. Ingram and Malamud-Roam conclude that the American West, in which California figures prominently, will likely see much warmer and drier conditions punctuated by extreme flood events. It is arguable how use of central tendencies from the last 150 years of comparatively wet conditions in California can be used to model this expected future accurately.

¹⁰⁸ BDCP, Appendix 5A. 2, *Climate Change Approach and Implications for Aquatic Species*, p. 5.A.2-6, lines 15-19. Emphasis added.

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bounding the sensitivity of the various quadrants, and the reliance on the fifth quadrant as a “consensus” characterization of climate projections.¹⁰⁹

This approach to incorporating climate change effects into water resources and ecosystem planning is based on a fundamental fallacy in the era we are entering: that of “*stationarity*.” The assumption of stationarity means that planners and decision makers rely on the range, central tendency and variability of a known sequence of past records of various environmental attributes in planning activities for decision-making about the future—in short, they make decisions relying on a belief that the future will resemble California’s recent past.

Contemporary understanding of past climate records and future climate change forces us to break with the assumption of “stationarity.” Currently, California water resources planning, particularly for droughts, is premised on an assumption that the “worst case scenario” for drought contingencies is a six-year drought like the one California experience between 1987 and 1992. However, paleoclimate researchers have examined tree rings and sediment records from Great Basin and other lakes, the Bay-Delta estuary, and the Santa Barbara Channel, as well as geomorphological evidence. They find that there have been several extended 100 to 300-year periods in the last two millennia that have been as dry or drier than the last century of historical records available to California.¹¹⁰ Looking toward the future, other climate researchers and modelers find that “stationarity is dead.”

Stationarity is dead because substantial anthropogenic change of Earth’s climate is altering the means and extremes of precipitation, evapotranspiration, and rates of discharge of rivers [citation]. Warming augments atmospheric humidity and water transport. This increases precipitation and possibly flood risk, where prevailing atmospheric water-vapor fluxes converge [citation]. Rising sea level induces gradually heightened risk of contamination of coastal freshwater supplies. Glacial meltwater temporarily enhances water availability, but glacier and snow-pack losses diminish natural seasonal and interannual storage.¹¹¹

On one hand, BDCP cautiously acknowledges that the loss of stationarity has some merit, but clings on the other hand to its reliance on standard statistical “central tendencies.” Its climate change analyses acknowledge that “natural variability is often greater than the magnitude of change expected over several decades” under climate change conditions. But the Applicants begin working stationarity back into their modeling projections, because the modeling systems are what they have to work with:

In many water resource management areas, it is the extreme events (droughts and floods) that drive the decision-making and long-term planning efforts. Thus *there is a need* to combine the climate change signal with the range of natural variability *observed in the historical record*.

...[C]limate change is unlikely to manifest itself in a uniform change in values. In fact, the climate projections indicate that the changes are nonlinear, and shifts in the probability distributions are likely, not just the mean values.¹¹²

¹⁰⁹ *Ibid.*, p. 5.A.2-6, lines 20-44, and p. 5.A.2-7, lines 1-11.

¹¹⁰ Ingram and Malamud-Roam, *op. cit.*

¹¹¹ P.C.D. Milly, Julio Betancourt, Malin Falkenmark, Robert M. Hirsch, Zbigniew W. Kundzewicz, Dennis P. Lettenmaier, and Ronald J. Stouffer, “Stationarity is Dead: Whither Water Management?” *Science* 319(2008): 573-574, February. Accessible online at http://www.paztcn.wr.usgs.gov/julio_pdf/milly_et_al.pdf.

¹¹² Bay Delta Conservation Plan, Appendix 5.C, Attachment 5.A.2, *Climate Change Approach and Implications for Aquatic Species*, p. 5.A.2-8, excerpted from lines 2-12. Emphasis added.

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So BDCP embarked on a process of incorporating both the climate change signal and the natural variability of the historical record to create “an expanded series that allows use of the long-term observed records.” This kind of approach has been used in the Pacific Northwest and the lower Colorado River Basin, according to BDCP.¹¹³

BDCP’s “need to combine the climate change signal with the range of natural variability observed in the historical record” signals the Applicants’ unwillingness to operationalize the recognition that the past is no longer prologue in water resources planning. This is also signaled by their earlier statement that assumes that combining the various quadrants of climate change scenarios somehow represents “consensus.” ***Whose consensus? EWC believes this consensus belongs entirely to the Applicants supporting BDCP.*** A related question is “why need consensus around a central tendency in the future climate of California?” *Why not* develop plans as though California should expect an *increase* in the number of below normal, dry and critically dry years in the future as our climate changes and the shifts in precipitation and temperature play out? We doubt that scarce ratepayer and taxpayer funds would be spent for a Twin Tunnels project were that sort of planning effort undertaken.

So while BDCP has acknowledged the reality of climate change with rising temperatures, reductions in future snowpack, the shift of runoff from spring peaks to late winter peaks, and so on, it has retained stationarity to bracket future climate variability within the “fifth quadrant” that gathers the central tendencies of its climate change scenarios together. This “ensemble approach” may take account of climate change central tendencies, but those tendencies have little to do with how climate change is likely to unfold during the rest of the 21st century.

Even with this fundamental problem in the BDCP approach to climate change modeling and analysis, there are some important results to acknowledge here.

- Expected sea level rise is expected to range from 6 inches in 2025 to 18 inches in 2060.
- Tidal amplitude is uncertain and may be negated by habitat restoration activities in the Delta Estuary.
- Air temperatures are expected to increase at Central Valley Project and State Water Project reservoirs by 1.7 to 2.0 degrees F on average by 2060.¹¹⁴

BDCP confirms our characterization of their approach to climate modeling, stating, “The climate change adjustments to runoff and reservoir inflow did not modify the historical sequence of conditions; *the annual runoff sequence remained similar to the historical record with only incremental changes in each month.*”¹¹⁵ BDCP acknowledges implicitly it is assuming stationarity of the sequence of runoff events when the future is likely to be quite different in terms of both sequence and the frequency and magnitude of variable climate events, dry and wet. We question the efficacy of this approach to climate change. It serves the Applicants first and foremost, not the covered fish or the people of California as a whole, and it fails to provide assurances that BDCP relies on the best available climate change science.

¹¹³ *Ibid.*, p. 5.A.2-8, lines 14-19.

¹¹⁴ *Ibid.*, p. 5.A.2.2-10, Figure 5.A.2-3; and Table 5.A.2.3-2, p. 5.A.2-19. The reservoirs modeled include Trinity, Shasta, Oroville, Folsom, Whiskeytown, and New Melones.

¹¹⁵ *Ibid.*, p. 5.A.2-44, lines 11-13.

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Figure 5

Climate Change Approach and Implications for Aquatic Species

Appendix 5.A.2

Table 5.A.2.7-2. Percentage of Years with “Good” Conditions for Winter-Run Chinook Salmon Habitat Metrics in the Upper Sacramento River (from SacEFT)¹

Metric	EBC2	EBC2_ELT	EBC2_LLT	EBC2 vs. EBC2_ELT	EBC2 vs. EBC2_LLT
Spawning WUA ²	58	46	32	12	26
Redd Scour Risk	98	98	98	0	0
Egg Incubation	97	88	74	9	23
Redd Dewatering Risk	40	37	25	3	15
Juvenile Rearing WUA	32	32	31	0	1
Juvenile Stranding Risk	0	0	0	0	0

¹ Please refer to Appendix 5.C, *Flow, Passage, Salinity, and Turbidity* Attachment C.B, *SacEFT Documentation*, for definition of “good” for each performance measure.

² WUA=Weighted Usable Area.

Note: The SacEFT model classifies spawning habitat conditions based on WUA, which was derived from the River 2D simulation model, fitted to data obtained and parameterized by Mark Gard (U.S. Fish and Wildlife Service 2005a).

Although SacEFT operates on a daily time step, results are presented in terms of the percent of years that are classified as good, which is defined differently for each parameter analyzed (see SacEFT documentation for further details). SacEFT classifies spawning habitat conditions as good in 58% of the years under EBC2 (Appendix 5.C, Table 5.C.5.2-10).

BDCP projects climate change effects on fish upstream and in the Delta. Table 5.A.2.7-2 (excerpted above) shows that climate change’s effects on Winter-run Chinook salmon will reduce spawning habitat upstream dramatically, will decrease available cold water for egg incubation, and increase risks in the future of dewatering redds.¹¹⁶

¹¹⁶ *Ibid.*, Table 5.A.2.7-2, p. 5.A.2-106.

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Figure 6

Climate Change Approach and Implications for Aquatic Species

Appendix 5.A.2

Table 5.A.2.8-1. DSM2 Temperature Results for Delta Smelt in Plan Area

Subregion	Criteria	EBC2	EBC2_ELT	EBC2_LL	EBC2 vs. EBC2_ELT	EBC2 vs. EBC2_LL
Cache Slough	Median Spawning Day (Adult)	130	126	116	4	14
	Number of Stressful Days (Juvenile)	74	90	111	16	37
	Number of Lethal Days	0	0	1	0	1
East Delta	Median Spawning Day (Adult)	132	128	115	4	17
	Number of Stressful Days (Juvenile)	84	96	118	12	34
	Number of Lethal Days	0	0	2	0	2
North Delta	Median Spawning Day (Adult)	132	129	116	3	16
	Number of Stressful Days (Juvenile)	82	95	114	13	32
	Average Lethal Days	0	0	6	0	6
San Joaquin Portion of the South Delta	Median Spawning Day (Adult)	125	121	123	4	2
	Number of Stressful Days (Juvenile)	90	101	101	11	11
	Number of Lethal Days	0	0	0	0	0
South Delta	Median Spawning Day (Adult)	124	119	117	5	7
	Number of Stressful Days (Juvenile)	85	97	113	12	28
	Number of Lethal Days	0	0	1	0	1
Suisun Bay	Median Spawning Day (Adult)	134	129	121	5	13
	Number of Stressful Days (Juvenile)	73	87	111	14	38
	Number of Lethal Days	0	0	0	0	0
Suisun Marsh	Median Spawning Day (Adult)	131	125	117	6	14
	Number of Stressful Days (Juvenile)	73	88	109	15	36
	Average Lethal Days	0	0	0	0	0
West Delta	Median Spawning Day (Adult)	136	129	119	7	17
	Number of Stressful Days (Juvenile)	77	90	113	13	36
	Number of Lethal Days	0	0	0	0	0

In the Delta, water temperature is closely related to air temperature because of the relatively shallow channels in the Delta and the relatively slow flow velocities at certain times of year. BDCP projects in Table 5.A.2.8-1 (Figure 6, excerpted above) that for Delta smelt there will be significant increases in the median spawning day of the year for adult Delta smelt, and will occur two weeks earlier by 2060, and that the number of “stressful days” (defined as days with daily average temperatures of 68 to 77 degrees F) increases from about 10 to 13 weeks at present (about 74 to 90 days depending on the sub-area of the Delta) to nearly four months (with increases ranging from 11 to 38 more stressful days).¹¹⁷

BDCP modeling results suggest the Delta will become a more stressful place for Delta smelt to live than it is today with potentially fewer refuges to escape to, even with habitat restored under BDCP. No similar analysis is provided for longfin smelt or other covered resident fish species to enable either the fishery agencies or the public to discern whether habitat restoration efforts create

¹¹⁷ *Ibid.*, Table 5.A.2.8-1, p. 5.A.2-108.

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adequate refugia to which Delta smelt may escape from rising Delta water temperatures by either 2025, let alone 2060.

BDCP's climate change analysis also informs the modeled effects of the Twin Tunnels versus scenarios without the Twin Tunnels, as shown in the sequence of charts for February through June Delta outflow and X2 position in the Delta.

As indicated in Figure 7 (below), the Delta's low salinity zone (as measured by the position of X2, the 2 ppt isohaline) will migrate upstream over time due in part to sea level rise and decreased upstream runoff, and it will take more inflow to maintain the LSZ in the same position. Without more inflow, Delta smelt habitat will move close to the North Delta Intakes. Construction and operation of North Delta Intakes for the Twin Tunnels would significantly increase, not decrease, entrainment threats to Delta smelt and longfin smelt in the long-term especially when combined with the continuing threats posed by the South Delta export pumps in below normal, dry, and critically dry years.

In January 2014, civil engineer and hydraulic modeler Walter Bourez of MBK Engineers in Sacramento presented results to the Delta Independent Science Board of a modeling study he performed of BDCP operations for a number of non-BDCP water agencies and water contractors involved in the Central Valley watershed of the Bay-Delta Estuary.¹¹⁸ Bourez concluded from his modeling review of BDCP operations modeling that:

- There were "several shortcomings" with respect to climate change and operational adaptation to climate change.
- Using a more recently updated and improved version of CalSIM II incorporating operator adaptation to climate change, these shortcomings were corrected.
- Key operational results changed considerably as a result of modeling revisions:
 - Total Delta exports (South and North Delta sources) *increased* by about 200,000 acre-feet annually over current BDCP modeling results;
 - Total South Delta exports *decreased* by about 466,000 acre-feet on average relative to current BDCP modeling results; and
 - Total North Delta diversions *increased* by about 686,000 acre-feet on average relative to current BDCP modeling results.¹¹⁹

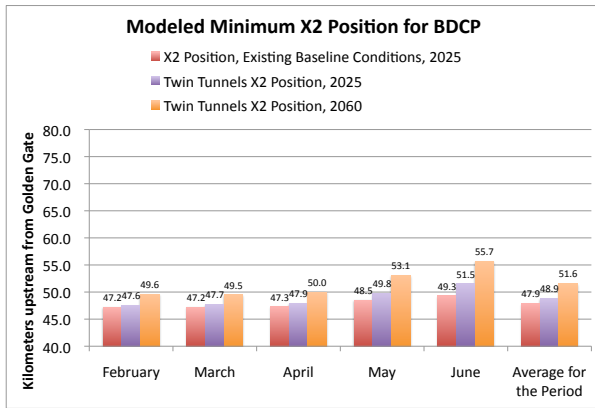
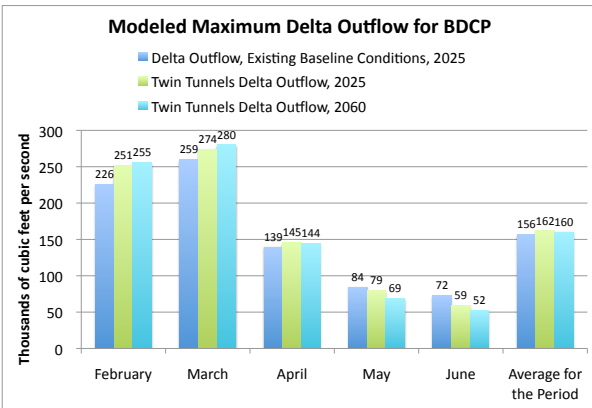
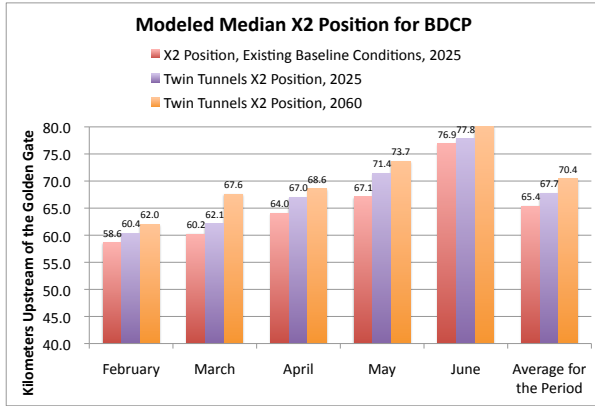
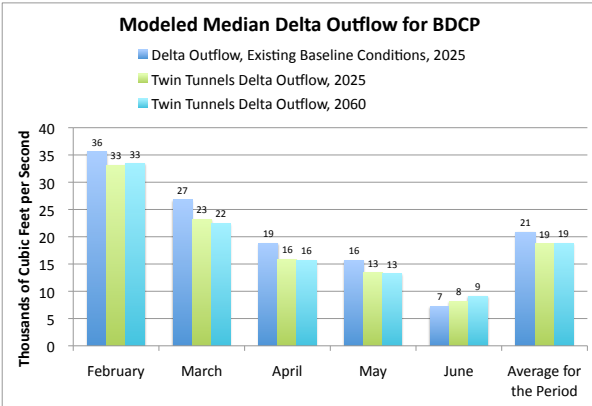
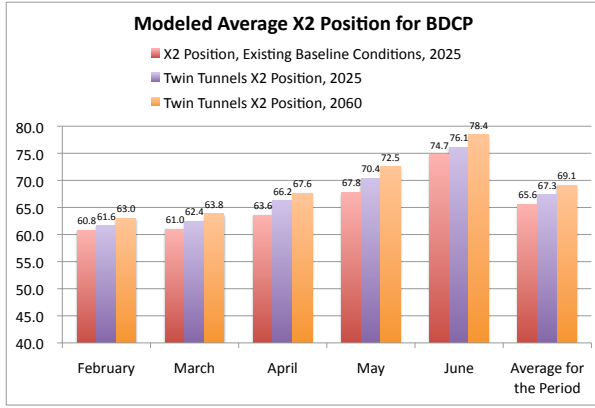
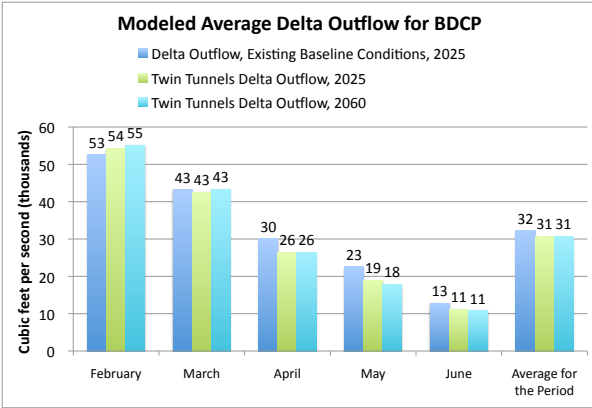
The export splits for north versus south Delta diversions changed dramatically, with much more exports occurring directly from the lower Sacramento River/North Delta Intakes than BDCP has previously disclosed, and total exports increased only somewhat.

¹¹⁸ MBK Engineers, *BDCP Operations Modeling Review*, January 17, 2014, presented to the Delta Independent Science Board, 21 slides. Bourez presented his results to the Delta Independent Science Board on January 17, 2014. Among the funders of Bourez's operational modeling review are Friant Water Authority, San Joaquin River Exchange Contractors, Contra Costa Water District, San Joaquin Tributaries Authority, East Bay Municipal Utilities District, Tehama Colusa Canal Authority, and the North Delta Water Agency.

¹¹⁹ *Ibid.*, slide 11.

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**Figure 7
Delta Outflow to Decrease in Future Scenarios with Twin Tunnels,
Average X2 Position to Move Eastward with the Twin Tunnels**



The average value is skewed somewhat by presence in the data of high outflow and low X2 years. The median is the value where half of all other values in the dataset are greater than the median value, and half are less. Delta outflow and X2 are inversely related. Greater outflow means less distance of X2 from the Golden Gate.

Sources: Bay Delta Conservation Plan, Appendix 5.C., Attachment 5C.A, Table C.A-41, p. 5C.A-174; and Table C.A-42, p. 5C.A-176.

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Mr. Bourez's water agency clients wanted to factor in climate change adaptation by water facility operators into their modeling assumptions. So they worked in an aspect of climate change into the operator side of the modeling, rather than in the hydrologic side.

Mr. Bourez explained to the Delta Independent Science Board, that BDCP's modeling effort began with the 2009 version of CalSIM II. BDCP's modeling effort was largely completed in 2010, and was not updated for release of the current set of public review documents, even though the California Department of Water Resources subsequently updated and improved CalSIM II. The MBK approach starts with reliance on the CalSIM II modeling used by DWR to construct the 2013 SWP reliability study. Mr. Bourez praised DWR's CalSIM II 2013 improvements, and stated his belief that had this version of CalSIM II been used by BDCP, it would have yielded a different answer than is now seen in BDCP's modeling results.¹²⁰ After altering the underlying CalSIM II assumptions, they layered on the BDCP facilities and operations.¹²¹ ***As a result of this disclosure by Mr. Bourez, it appears that the BDCP modeling effort is not based on the best available science as called for under the federal Endangered Species Act.***

Mr. Bourez also stated that it was "unrealistic" to model BDCP's High Outflow Scenario by placing all of the high outflow releases onto Oroville operations. The Coordinated Operation Agreement between DWR and USBR would require that this "debt" be repaid to the SWP somehow, but it is not revealed in BDCP modeling. However, NMFS specified that "high outflow scenario" (HOS) flows should not come from Shasta or Folsom in order to protect cold water pools. ***Therefore, water transfer programs would become the "source" to provide the flows needed for the high outflow scenario in BDCP.*** Water transfer market activity (which, in recent years, has relied heavily on groundwater substitution as the proxy supply enabling Sacramento Valley growers to sell surface water south of the Delta) would become the "source" to provide flows needed for the high outflow scenario in BDCP in drier years. (See our discussion in Section VII.) "There are no defined operating criteria for HOS as of yet," he stated. So actual operating criteria for the High Outflow Scenario remain, from a modeling standpoint, undefined, and impacts resulting from it go unrevealed in BDCP's existing modeling results.

Of the total combined exports increase, about 170 TAF would go to CVP south of Delta contractors, and 40 TAF (again, round numbers) would go to SWP contractors).¹²² Mr. Bourez stated that Delta outflow would *decrease* by about 200 TAF on average, although there would be an average increase across all water years in the month of October (largely from implementation of Fall X2 requirements under the Delta smelt biological opinion).¹²³

According to Mr. Bourez, ***there would be significantly higher North Delta diversions and much lower inflows to the Delta along the lower Sac River. This portends greater potential for reverse flows in Georgiana Slough.*** Over time as X2 migrates upstream due to climate change, it threatens to draw Delta smelt and longfin smelt closer to entrainment risk at the north Delta diversions especially in July and August (prime months for juvenile rearing and growth), even more than is implied in BDCP's present operational modeling. Greater usage of North Delta Intakes in October, as shown in Mr. Bourez's presentation, indicates greater risk of delayed passage for adult Fall-run Chinook salmon as they attempt to head to their natal streams to spawn, and greater risk of

¹²⁰ Mr. Bourez's remarks were recorded in the personal notes of Tim Stroshane, EWC consultant, present at the Delta Independent Science Board meeting, January 17, 2014.

¹²¹ MBK Engineers, *BDCP Operations Modeling Review*, January 17, 2014, presented to the Delta Independent Science Board, slides 7 and 8.

¹²² *Ibid.*, slide 12.

¹²³ *Ibid.*, slide 13.

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entrainment and impingement for juvenile Winter-run and Spring-run Chinook salmon and their smolts emigrating to the ocean in the fall.

Mr. Bourez's operational modeling review methodology included climate change adaptation practices that reservoir operators would employ. Factoring in such behavior at the major CVP and SWP reservoirs, Mr. Bourez's results found greater summertime storage in dry years when operators try to manage cold water pools for fish, and no dead pools. So this finding bodes improved upstream effects than now expected by BDCP modeling results on salmon rearing, spawning, and protection of redds as well as less chance of "superposition" competition among spawning fish for space in river gravels (where spawning females lay their redds atop previously laid redds due to a lack of sufficient wetted habitat in upstream locations).

We present Mr. Bourez's critical review of BDCP modeling as evidence that the best available science and methods were not employed in the development of the Bay Delta Conservation Plan nor its Environmental Impact Statement/Environmental Impact Report. Mr. Bourez readily acknowledges that his BDCP operational modeling review for MBK Engineers and their clients does not include the hydrological/climatic effects of climate change and is thus itself a limited form of analysis. ***But Bourez's remarks spotlight omissions and oversights in the conduct of BDCP modeling, including of climate change effects, that render the analyses of the documents released by BDCP Applicants in December 2013 inadequate to the task of providing ecological assurances needed by the fishery agencies to support issuance of incidental take permits to the BDCP Applicants.***

5. Real-Time Protective Operations and Adaptive Management

BDCP fails the Endangered Species Act's requirements for ecological assurances. The habitat conservation plan, through its anticipated reliance on extensive use of real-time operations (RTOs) and adaptive management, provides a highly unstable analytical basis for ecological assurances. This makes it likely that BDCP will appreciably reduce the survival and recovery of listed species. Key assurance questions are put off into the plan's adaptive management process. The BDCP application for incidental take permits should be rejected by the fishery agencies.

The current draft Bay Delta Conservation Plan fails to clearly distinguish between the roles of real-time protective water facility operations and adaptive management of operations.

Section 3.4.1.4.5 of Chapter 3, Conservation Strategy, in the Bay Delta Conservation Plan begins with this "Note to reader:"

At the time of this Public Draft, the applicants and Reclamation are continuing to coordinate with the permitting agencies on the details of the real-time operations procedures to be consistent with the operations of the SWP and the CVP. This section is therefore preliminary. The final BDCP document will describe operational criteria to guide project operations.¹²⁴

The fishery agencies are obligated by ESA regulations to cooperate with habitat conservation planning applicants to make their plans as effective as possible. The presence of a note like this indicates that there is still considerable controversy between the Applicants, Reclamation, and the fishery agencies over how "real-time operations" are to be handled in the context of Twin Tunnels operations. ***The issue is crucial because the complexity of "flexible" operations touted for the Twin Tunnels means that the North Delta Intakes must be operated in part according to whether listed or covered fish species are present in the vicinity of the Intakes to warrant***

¹²⁴ Bay Delta Conservation Plan, Chapter 3, *Conservation Strategy*, p. 3.4-26, lines 10-13.

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sharp reductions in diversions. If ESA-listed or BDCP-covered fish suddenly appear in the vicinity of River Miles 37 through 41 unexpectedly, the RTO team—at least in concept—would have the discretionary power to shut down or dramatically curtail diversions in order to protect the fish that are present. It is next to impossible to model RTOs; by definition they are not predictable, which is why they are called “real-time” operations.

The essential purpose of real-time operations (or “RTOs”), as described in BDCP, is to

maximize water supply for SWP and CVP relative to the Annual Operating Plan and its quarterly updates subject to providing the necessary protections for covered species. RTOs would be implemented on a timescale practicable for each affected facility and are part of the water operating criteria for CM1 [i.e., the Twin Tunnels project and related facilities], which will be periodically evaluated and possibly modified through the adaptive management program [citation]. The RTOs will satisfy Water Code Section 85321: “The BDCP shall include a transparent, real-time operational decision-making process in which fishery agencies ensure that applicable biological performance measures are achieved in a timely manner with respect to water system operations.”

When developing adjustments to Twin Tunnels operations in real-time, the RTO team¹²⁵ would consider covered species risks, actions needed to avoid adverse effects on covered fish species, water allocations currently or in future years, “end of year [reservoir] storage,” the San Luis Reservoir low point¹²⁶, delivery schedules for any SWP or CVP contractor, and “actions that could be implemented throughout the year to recover any water supplies reduced by actions taken by the RTO team.”¹²⁷ These criteria for consideration place a great deal of pressure on the RTO team to minimize water costs to North Delta Intake diversions, lest they be compensated later.

RTO team activities would be needed under BDCP not only at the North Delta Intakes, but at the Delta Cross Channel gates, Head of Old River gate, the Fremont Weir operable gate, and the “nonphysical barriers” intended to shoo fish away from certain channels without actually blocking river flows.

The RTO team will attempt to plan RTOs as part of BDCP’s “Annual Delta Water Operations Plan,” by anticipating periods when RTOs may be employed, alternative responses to be considered, the intended benefits to covered species, any expected effects on water supply, and the monitoring and analysis procedures used to track adjustments. RTOs will necessitate an elaborate range of accounting procedures since the state and federal water projects will not tolerate net losses of water exports just because covered fish show up unannounced and uninvited at the North Delta Intakes or the South Delta pumping plants.

This section of Chapter 3 in BDCP states some “salvage density triggers” for Old and Middle River flow adjustments between January 1 and June 15 affecting the South Delta export facilities.¹²⁸ At the

¹²⁵ The Real-Time Operations Team would comprise one representative each from the three state and federal fishery agencies and from DWR and the Bureau of Reclamation.

¹²⁶ San Luis Reservoir has a “low point” of about 300,000 acre-feet of storage below which the intakes for San Felipe Project contractors (Santa Clara Valley Water District and San Benito County Water District) are unable to withdraw water due to the potential for algal bloom contamination and other water quality concerns, due to the fact that when San Luis Reservoir gets that low, temperature and water quality conditions make it economically infeasible for San Felipe Project contractors to treat the water to an acceptable level for beneficial use.

¹²⁷ Bay Delta Conservation Plan, Chapter 3, p. 3.4-26, lines 34-39, and p. 3.4-27, lines 1-4.

¹²⁸ *Ibid.*, p. 3.4-28 to 3.4-29, Table 3.4.1-3.

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North Delta Intakes, RTO monitoring will manage bypass flow operations from December through June, but the “exact triggers and responses for RTO at the north Delta diversions are still under development.” Generally they are intended to manage north Delta diversion bypass flows:

- within a preset range when juvenile salmonids are emigrating downstream past the intakes.
- within a preset range when adult sturgeon are migrating upstream.
- within a preset range to avoid an increase in frequency and magnitude of reverse flows (and entrainment) at Georgiana Slough compared to baseline (Real-time adjustments to avoid reverse flows are primarily the responsibility of DWR operators with occasional input from RTO team as appropriate.)
- and to manage the distribution of pumping activities among the three north Delta and two south Delta intake facilities to maximize survival of covered fish species in the Delta and water supply.¹²⁹

A clear distinction of real-time operations from adaptive management activities has been submerged between the description of RTOs in the March 2013 administrative draft of BDCP and the November 2013 draft. In March 2013, RTOs were described as providing for “discretionary changes that may be taken for the purpose of providing additional benefits to covered fish species....Real-time operations do not substantially alter the values of water operations criteria, but provide a mechanism to alter those values for periods of a few days or weeks within specified bounds.” As performed at other Delta facilities such operational activities “have been found to produce substantial beneficial outcomes for salmonids and smelts—outcomes incremental to those predicted in the BiOps.”¹³⁰ The purpose of RTOs is to

increase fish benefits without compromising water supply availability provided under the Plan and its regulatory authorizations. Should the agencies choose to make a real-time operations adjustment to provide a short-term fisheries benefit, the resulting impact on water supply will be calculated. Subsequent real-time operational actions will be taken to restore any water supply impact resulting from the prior decision.¹³¹

The March 2013 version of the BDCP disclosed that “real-time operational decisions are separate and distinct from the adaptive management process.” RTOs are short-term adjustments to operations with subsequent compensations for water cost involved to the state and federal operators, while BDCP’s adaptive management process is intended to address adjustments that may be needed, based on best available science, in conservation measures, “including operational criteria,” should ongoing monitoring of Plan implementation suggest that changes are needed to improve “the effectiveness of the Plan and advance biological goals and objectives.” Adaptive management changes will be based on “best available science.”¹³²

None of this language from the March 2013 draft BDCP clarifying the differences between RTOs and the adaptive management process is retained in the current November 2013 version of BDCP. And yet there are clearly important and undisclosed relationships between the adaptive management process and RTOs. For example, operation of the Fremont Weir notch’s operable gate(s) may have to be the subject of adaptive management research if recommended by the adaptive management team. And yet, BDCP also contemplates that the gate(s) “may be subject to RTOs from November 10 through May 15, when Sacramento River flow is high enough to support the diversion of water into the Yolo Bypass.” It is unclear in the November 2013 Draft BDCP where

¹²⁹ *Ibid.*, lines 13-22.

¹³⁰ Administrative Draft Bay Delta Conservation Plan, March 2013, p. 3.4-20, lines 32-36.

¹³¹ *Ibid.*, p. 3.4-20, line 43, and p. 3.4-21, lines 1-5.

¹³² *Ibid.*, lines 6-14.

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RTOs stop and adaptive management begins, and there may be other such gray areas between adaptive management and real-time operations at the other facilities where RTOs will be carried out—and those will have to be coordinated with each other.

Without disclosure of the RTO triggers for the North Delta Intake and other proposed BDCP facilities' RTOs, and without clear delineation between where RTOs stop and adaptive management begins, it is impossible for decision makers to be adequately informed about the promise or problems of real-time operations and how they would be applied. This violates NEPA and CEQA. Moreover, the impossibility of modeling RTOs casts doubt using BDCP modeling as a guide to actual Twin Tunnels and other BDCP CM 1 facilities operations. Given the likely use of RTOs, the expected heavy reliance of BDCP on adaptive management for handling biotic and abiotic uncertainties, and the narrow definition of “foreseeable circumstances” that defines allowable modifications to the Plan (about which more below), ***the fishery agencies are faced with enormous potential for a grand bait-and-switch from the Applicants toward operations in the Delta once incidental take permits are issued. But by then, it will be too late for the fishery agencies to regain much control over real-time operations.***

The recently released “Stipulation Study” experiment in real-time operations intended to benefit Central Valley steelhead smolts’ migration routes and survival rates through the Delta provided little support for the potential effectiveness of real-time operations to protect salmonids from entrainment at the South Delta pumping facilities. It raises serious questions about the magnitude and timing of flow signals that would be needed to affect the migration routing of smolts, none of which are accommodated at present in BDCP and Twin Tunnels approaches to real-time operations and adaptive management.¹³³

6. Selenium Analysis and Residence Time of Delta Water Under BDCP

BDCP errs in assuming decreasing selenium loads during the term of the incidental take permits.

As noted above in Section III, there is another reason for concern about the likely expansion of the range of the nonnative invasive clam *Potamocorbula* in the Delta eastward into the Delta as sea level rises and with construction and operation of the Twin Tunnels. Not only does this clam filter-feed great volumes of food from the water column and threaten to undermine the productivity of habitat restoration efforts to be sponsored by the Bay Delta Conservation Plan; it turns out that *Potamocorbula* is a highly efficient bio-accumulator of the metalloid selenium. In high tissue concentrations, selenium can be either toxic or lethal. *Corbicula* is also known to bioaccumulate selenium, though not at the same rates as *Potamocorbula*.

The nonnative invasive clams are discussed in detail in Appendices 5.D, *Contaminants*, and 5.F, *Biological Stressors on Covered Fish*, out of sight of the Plan’s main chapters. In Section 5.F.6.4, BDCP states that increased selenium uptake in the food chain via invasive clams is *not* an anticipated result of covered activities. This is because, Appendix 5.F states, residence time of Suisun Bay water will not increase from BDCP activities

¹³³ California Department of Water Resources, *Stipulation Study: Steelhead Movement and Survival in the South Delta with Adaptive Management of Old and Middle River Flows*, prepared by David Delaney, Paul Bergman, Brad Cavallo, and Jenny Melgo, Cramer Fish Sciences, February 2014, 150 pages. Accessible online 15 April 2014 at http://baydeltaoffice.water.ca.gov/announcement/Final_Stipulation_Study_Report_7Feb2014.pdf.

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and an increase in residence time would be critical for increased uptake of selenium by the clam population. However, there is uncertainty associated with this conclusion because of the complexity of factors that determine selenium biogeochemistry and bioavailability.¹³⁴

Residence time is critical because the longer a parcel of water containing contaminants or other chemical stressors remains in the same general place, the greater potential there is for toxic interactions of those contaminants with organisms co-occurring in that water. Not only is there uncertainty associated with BDCP's conclusion that the clams would not experience increased uptake of selenium, but this conclusion is doubly suspect because Suisun Marsh and West Delta residence times are projected by BDCP to *increase* on a seasonal basis by 2025 under Twin Tunnels operations, as shown in Figure 8 below. How their residence times would increase and Suisun Bay's would not (given its direct hydraulic connection to the Marsh and West Delta) needs explanation from BDCP.

These charts summarize particle tracking studies that model the number of days it takes buoyant particles injected in various sub-regions of the Delta to exit the Delta, either via exports (as in the South Delta) or via Suisun Bay to San Pablo Bay. Each chart compares three scenarios: existing conditions at present, conditions in 2025 upon approximate completion and launch of Twin Tunnels operations, and conditions in 2060 with restoration projects completed and the Twin Tunnels in operation. ***As can be seen in these charts, all areas of the Delta will see dramatically increased residence time of water with completion and operation of the Twin Tunnels (red bars in Figure 8) as compared with blue bars representing existing conditions.*** Between 2025 and 2060 with the Twin Tunnels, the picture gets more complex, according to BDCP. Residence times continue to rise in the South, East, North and West Delta in all seasons and in the average measures every year under BDCP. But BDCP modeling projects that residence times will dramatically decrease by 2060 in both Suisun Marsh and the Cache Slough area.

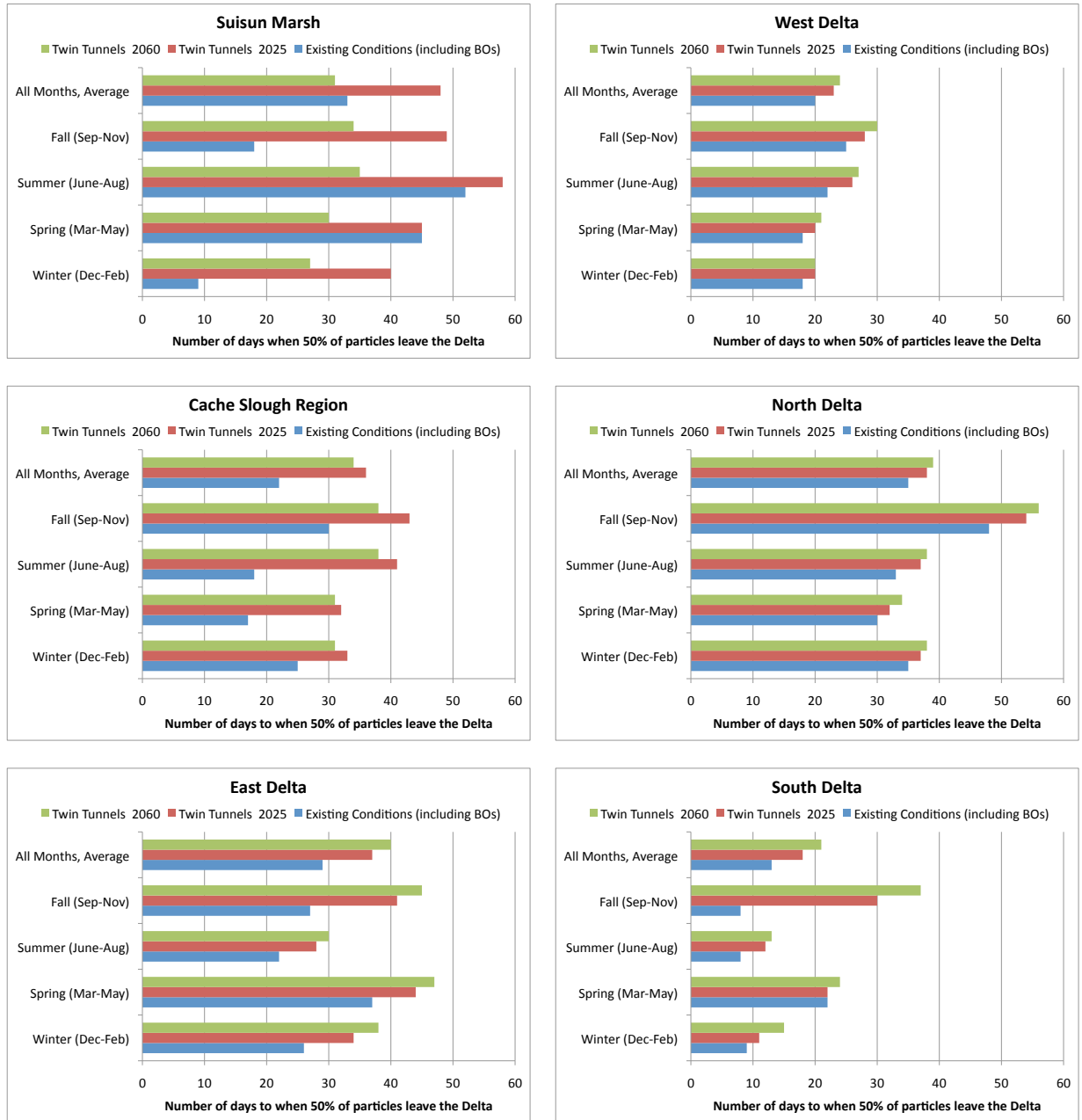
Consider the Cache Slough and Suisun Marsh charts season by season. In Suisun Marsh, the annual average residence time of water decreases by about one day, but in the fall residence times will increase by about 14 days and winter residence times will increase by about 18-19 days by 2060. Spring and summer residence times are already high now in Suisun Marsh (averaging about 45 and 52 days respectively) presumably due to current irrigation season diversions of inflow directly from the marsh as well as CVP and SWP export operations that force use of the Suisun Marsh Salinity Control Gates to protect water quality there. The early operations of the Twin Tunnels (by 2025 or thereabouts) are projected to maintain residence time at about 45 days before it is projected to decrease by 2060 to 30 days in the spring and from 58 to 35 days in the summer. Would this decrease be due to reoperation of the Suisun Marsh Salinity Control Gates combined with habitat restoration actions? If so, what are the mechanisms (either biotic or abiotic) the Applicants anticipate that would account for such dramatic decreases in residence time in Suisun Marsh under Twin Tunnels operations?

We also note that Suisun Marsh's residence times across each season will become much less variable if BDCP residence time modeling is correct. Under current conditions, this variability in residence time means that there are periods of the year, especially fall and winter, when shorter residence time means that Marsh channels are being flushed out with fresher waters (probably from irrigation return flows as well as early storm water runoff in to the Marsh watershed). What will the loss of that variability mean for water quality in the Marsh, and for longfin smelt, which is often found in Suisun Marsh channels during spring and summer months?

¹³⁴ *Ibid.*, Appendix 5.F, *Biological Stressors on Covered Fishes*, p. 5.F-123, lines 29-34.

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**Figure 8
Residence Time of Water in Various Delta Regions**



Source: Table 5C.5.4-14, p. 5C.5.4-84, Bay Delta Conservation Plan.

In Cache Slough in all seasons (a potential permanent refuge for Delta smelt, as hoped in BDCP), Twin Tunnels operations would only slightly decrease residence time of water between 2025 and 2060, and Twin Tunnels operations would have significant (i.e., greater than 10 to over 50 percent) *increases* in residence time from current conditions to Twin Tunnels operation by 2025. The Cache Slough area would be positioned at the downstream end of seasonally-inundated floodplain lands in Yolo Bypass, especially during winter and spring, which may account for flows that decrease residence time of water by 2060.

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West Delta residence time is significant here as well since that area is just downstream of Cache Slough outflow and just upstream of Suisun Marsh, so it most closely approximates the residence time of water present in Delta outflow to Suisun Bay. According to BDCP modeling presented in Figure 8 above, Twin Tunnels operations will *increase* residence time in all seasons and in the annual average, and residence time will increase under Twin Tunnels operation between 2025 and 2060. West Delta residence times retain their clear seasonally-increasing trend, where they are lowest in winter, increasing through spring and summer somewhat to fall when residence times are about 25 to 33 percent higher than in winter (e.g., 30 days of residence time in the fall versus 20 days under Twin Tunnels operations by 2060).

But residence time of water is projected to increase, sometimes significantly, throughout the rest of the Delta. Higher residence time means slower flow velocities in channels and open water areas. ***Slower flow velocities provide greater opportunity for dissolved selenium to enter partitioning processes in the water column and become more bioavailable.***

BDCP presents the details of its analysis of the risk of selenium contamination to the Delta in Appendix 5.D using two fish species, largemouth bass and sturgeon (either green or white) to represent predators at the top of distinct food webs found in the Delta. Only one of these foodwebs, however, is based on benthic bivalves like *Potamocorbula* and *Corbicula*, both of which can be consumed by sturgeon. Our comments will focus on BDCP's sturgeon related analysis, and highlight some unresolved issues that contribute to great uncertainties.

BDCP stresses in its analysis that the modeling results for sturgeon are "long-term, worst-case conditions" but do not explain how or why their results represent a worst-case condition.¹³⁵ This claim appears to be based on their argument that

Given the variability of concentrations at the individual level, decreasing concentrations in source waters to the Delta and Suisun Bay expected as described above, and the uncertainties in the water concentration modeling and subsequent bioaccumulation modeling presented above, it is unlikely that the increases in whole body Se [selenium] for sturgeon modeled would be measurable in the environment, and there is also uncertainty about the biological significance of these increases, given the uncertainty of the actual threshold for biological effects in sturgeon.¹³⁶

The analysis in Appendix 5.D then claims that "discharges of selenium to the Delta will continue to decrease in accordance with regulatory requirements, specifically for the North San Francisco Bay Refineries, and agricultural discharges in the San Joaquin Valley."¹³⁷ The analysis further assumes that continuing future decreasing concentrations of selenium in source waters are due to the Grassland Bypass Project, an area of the western San Joaquin Valley west of Firebaugh and southwest of Los Banos.

BDCP acknowledges that habitat restoration activity in the Delta could mobilize selenium in the sediments and soils of proposed restoration areas, particularly in the South Delta.¹³⁸ Despite what BDCP stated in Appendix 5.F about Suisun Bay residence time, in Appendix 5.D, BDCP states that Suisun Bay "is also of concern" because of *Potamocorbula* densities there. High residence time in this area could lead to "increased selenium bioaccumulation" in sturgeon. This section adds:

¹³⁵ *Ibid.*, p. 5.D-33, line 26.

¹³⁶ *Ibid.*, p. 5.D-34, lines 1-4.

¹³⁷ *Ibid.*, p. 5.D-33, lines 27-29.

¹³⁸ Bay Delta Conservation Plan, Appendix 5.D, *Contaminants*, p. 5.D-35, lines 15-23.

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CalSIM modeling results indicate that *outflow and residence time in Suisun Bay will not change substantially under the BDCP*. Comparison of the monthly mean residence time (averaged over the years 1992 through 2003) indicates that residence time in Suisun Bay may change from a decrease of 13 days to an increase of 5 days.¹³⁹

This description of un-presented CalSIM II results is at best unclear, and conflicts with BDCP's earlier reported claim that residence time *decreases* in Suisun Bay under Twin Tunnels operation. It is followed by this conclusion:

Given the decrease in loading of selenium to the Delta...and that the selenium would be mobilized into the food chain under a narrow set of conditions, the overall effects within the Plan Area [the Delta] are likely low. The potential is highest for increased mobilization of selenium in and near the San Joaquin River and the South Delta ROAs [restoration opportunity areas], where selenium concentrations in soils are expected to be highest, and potentially in Suisun Bay where filter feeders are the food source for benthic feeding covered fish species.¹⁴⁰

BDCP and the fishery agencies would err to premise their analysis of selenium toxicity risk to Delta ecosystems on the Grassland Bypass Project resulting in steadily decreasing selenium concentrations in source water from the San Joaquin River to the Delta on into the future.

There is evidence that much of the selenium load and concentration reductions that have been achieved so far have come from land retirement in the Grassland and northern Westlands Water District area. Even the State Water Resources Control Board, which has maintained a relatively light regulatory touch, approved a basin plan amendment for Grassland Bypass Project that only goes through 2019 when it must decide whether another extension for the project is warranted.

Grassland Bypass Project attempts to bioconcentrate selenium in salt-tolerant plants and discharge remaining effluent into a segment of the San Luis Drain that ultimately drains into Mud Slough (north), thence to the San Joaquin River. This method is insufficient to reduce the selenium threat to the sloughs tributary to the San Joaquin River. So the Grassland drainers obtained a grant through Panoche Drainage District to attempt a pilot project to treat selenium-contaminated drainage. The facility is estimated to cost \$37 million, or about \$78,000 per acre-foot of treated drainage water. The efficacy of treating this water has yet to be proven, particularly given the fact that its cost per acre-foot of drainage treated far exceeds most other technologies for recycling water. There are indications that the treatment project will not prove to be cost-effective. Its discontinuance would undermine a key assumption of BDCP's analysis of selenium as a contaminant stressor in the Delta.

Mostly, the reduced selenium loads in the San Joaquin River appear attributable at best to retirement of lands from irrigation service. What drainage is generated in the Grassland area and in the Westlands Water District is largely held on-site as groundwater drainage containing selenium, and selenium in soil and source rock upslope of these lands. The longer irrigation continues on these lands, the more selenium drainage and soil contamination will build up. Flood events can mobilize pulse loads that can be quite large (see "context" discussion above and Table 2), and their toxicity long-lasting in downstream water bodies from Mud Slough all the way to the Delta and Suisun Marsh.

Retirement of the drainage impaired lands of the western San Joaquin Valley has been found time and again to be the most cost-effective solution to the problem of selenium-tainted irrigation

¹³⁹ *Ibid.*, p. 5.D-36, lines 6-9. Emphasis added.

¹⁴⁰ *Ibid.*, p. 5.D-37, lines 11-17.

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drainage.¹⁴¹ Land retirement is the best and cheapest option for slowing the rate at which selenium loads and concentrations reach the Delta, and for sequestering selenium in its source rock and soils longer into the future. Stop applying water exported from the Delta to these lands so that no more seleniferous drainage is intentionally created. The natural reservoir of selenium has been documented to hold up to at least another 300 years' worth of tainted drainage at current rates.¹⁴² The National Research Council's 2012 report on Bay-Delta sustainable water management cited this selenium reservoir as well, stating in part:

Irrigation drainage, contaminated by selenium from those soils, is also accumulating in western San Joaquin Valley groundwaters. The problem is exacerbated by the recycling of the San Joaquin River when water is exported from the delta. While control of selenium releases has improved, how long those controls will be effective is not clear because of the selenium reservoir in groundwater.

...Other aspects of water management also could affect selenium contamination. For example, infrastructure changes in the delta such as construction of an isolated facility could result in the export of more Sacramento River water to the south, which would allow more selenium-rich San Joaquin River water to enter the bay. The solutions to selenium contamination must be found within the Central Valley and the risks from selenium to the bay are an important consideration in any infrastructure changes that affect how San Joaquin River water gets to the bay.¹⁴³

Of course, ending the imports of Delta waters to the western San Joaquin Valley's to irrigate drainage impaired lands could reduce the need for deliveries to the San Luis Unit of the Central Valley Project by up to a million acre-feet per year. ***This reduction in deliveries through the CVP could provide by itself dramatically improved reliability of other CVP contractors' allocations, without the investment of billions for the Twin Tunnels project and BDCP.***

But in the absence of such adjustments to how drainage impaired lands are managed by local irrigators and the US Bureau of Reclamation, and in the absence of any action by the Bureau to end deliveries to these lands in the San Luis Unit, there appears no end to the vicious cycle of selenium transport to the Delta and Suisun Bay via the San Joaquin River. ***BDCP errs in assuming decreasing selenium loads during the term of the incidental take permits.***

7. Temperature Conditions and Cold Water Pool Management

The Draft EIS/EIR analysis of cold water carryover storage is misleading and inaccurate. The EIS/EIR does not disclose significant impacts to cold water storage and decreased downstream salmon survival as a result of warming rivers.

¹⁴¹ "Land retirement is a key strategy to reduce drainage because it can effectively reduce drainage to zero if all drainage-impaired lands are retired." Page 2, USGS Open File Report 2008-1210, Technical Analysis of In-Valley Drainage Management for the Western San Joaquin Valley, California. Accessed at <http://pubs.usgs.gov/of/2008/1210/of2008-1210.pdf>.

¹⁴² T. Stroshane, [*Testimony on Recent Salinity and Selenium Science and Modeling for the Bay-Delta Estuary*](#), plus appendices, prepared for the California Water Impact Network, August 17, 2012, for Workshop #1, Ecosystem Changes and the Los Salinity Zone, before the State Water Resources Control Board.

¹⁴³ National Research Council, Committee on Sustainable Water and Environmental management in the California Bay-Delta, *Sustainable Water and Environmental Management in the California Bay-Delta*, Washington, DC: The National Academies Press, 2012, p. 94. Accessible online 8 May 2014, at http://www.nap.edu/catalog.php?record_id=13394.

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Reservoir minimum storage is defined as the amount of water in a reservoir at the end of the water year at the end of September (EOS), also referred to as carryover storage. The purpose is to ensure that there is enough cold water in reservoirs for salmon to have suitable temperatures downstream of dams for holding, spawning, incubating and rearing. Only two of the major CVP reservoirs have minimum storage criteria- Shasta and Trinity. The Sacramento River and the Trinity River both have temperature water quality objectives contained in their respective Water Quality Control Plans (Basin Plans), approved by the Central Valley¹⁴⁴ and North Regional Water Quality Control Boards,¹⁴⁵ the SWRCB and the U.S. Environmental Protection Agency as state and federal clean water act standards. The intent of the Shasta and Trinity minimum storage requirements is to meet the downstream Basin Plan Temperature objectives.

The minimum storage requirements for Shasta and Trinity reservoirs are contained in Biological Opinions by the National Marine Fisheries Service dated 2009¹⁴⁶ and 2000¹⁴⁷, respectively. Lake McClure, owned and operated by the Merced Irrigation District has “minimum pool” requirements in its SWRCB water permits for Bagby, Exchequer (Lake McClure) and Snelling reservoirs.¹⁴⁸

The Draft EIS/EIR analysis claims that there will be no significant impacts to cold water storage in Shasta and Trinity reservoirs from operation of BDCP. The EIS/EIR claims that long term impacts to cold water reservoir storage in Shasta, and Trinity are a result of climate change and not BDCP operations. However, at the January presentation by Walter Bourez (described elsewhere in Section III), he stated that it was "unrealistic" to model BDCP's High Outflow Scenario by placing all of the high outflow releases onto Oroville operations. The Coordinated Operation Agreement between DWR and USBR would require that this “debt” be repaid to the SWP somehow, but it is not revealed in BDCP modeling.

¹⁴⁴ See Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Table III-4, page III. 8.0, accessed at http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/index.shtml

¹⁴⁵ See Water Quality Control Plan for the North Coast Region, Table 3-1, page 3-6.00, accessed at http://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/basin_plan.shtml

¹⁴⁶ <http://www.epa.gov/espp/litstatus/wtc/carbama-biop-4-20-09.pdf>

¹⁴⁷ http://www.fws.gov/arcata/fisheries/reports/technical/TREIS_BO_NMFS.pdf

¹⁴⁸ For a description of the Merced Irrigation District's Minimum Pool requirements in their SWRCB water licenses, see page 5 of SWRCB temporary urgency order for licenses 11395 and 11396 (Applications 16186 and 16187), accessed at http://www.waterboards.ca.gov/waterrights/water_issues/programs/applications/transfers_tu_orders/docs/mid_temp_order_mod052214.pdf

“IV. MID shall maintain the water surface elevation in its reservoirs as high as possible, consistent with operational demands throughout the period April through October each year, and shall maintain minimum pools of the following capacities for operation of the project and maintenance of fish and wildlife:

Bagby Reservoir	30,000 af
Exchequer Reservoir	115,000 af
Snelling Reservoir	20,000 af”

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Absent a replacement source of water such as water transfers that was not modeled either, the additional Delta outflows would come from Shasta, Trinity and Folsom, thereby reducing minimum storage, cold water pools and the ability to meet downstream temperature objectives. The Draft EIS/EIR's evaluation of minimum storage and the ability to meet Basin Plan temperature objectives as well as NMFS' target minimum pool objectives for various listed salmonids is therefore inadequate.

In addition, while the EIS/EIR evaluated the impact of climate change on minimum storage and the ability to meet Basin Plan temperature objectives, as we previously discussed, the BDCP climate change models use a "fifth quadrant" that assumes stationarity (see Climate Change discussion above) in climate change. For reasons previously discussed in the EWC comments, this is inadequate to predict the range of future climate conditions, including, but not limited to runoff volume and timing, reservoir inflow temperatures, reservoir heating and in-river heating. Thus the evaluation of climate change on reservoir operations and water temperatures (Appendix 29C) is inadequate and inaccurate.

A September 12, 2012 string of e-mails from the National Marine Fisheries Service¹⁴⁹ obtained through the Freedom of Information Act reveals the conflict between meeting Trinity River Basin Plan temperature objectives and protection of salmonids in the Sacramento River through meeting Shasta storage targets from BDCP. "Combined Scenario 5" (CS-5) is an attempt by the fishery agencies and BDCP proponents to provide adequate Delta outflows while meeting Sacramento River temperature objectives. Unfortunately, as indicated by the e-mail string, changing the timing of Trinity River exports to the Sacramento River causes summer temperature violations on the Trinity River. CS-5 did not resolve the problem and the problem has apparently been ignored by modeling all Trinity operations the same, even though it is highly unlikely that operations will mimic the modeling. Again, the Draft EIS/EIR does not disclose impacts to Shasta and Trinity temperature compliance and reservoir storage requirements.

The BDCP and its EIR/EIS claims that the Applicants are not obligated to show or analyze potential and probable impacts to the Trinity River due to implementation of the project because the modeling utilized assumed incorrectly that there would be no changes in operations of the Trinity River Division of the CVP. However, even under Existing Conditions and No Action Alternatives, as well as all other alternatives, the Trinity River and lower Klamath rivers are at great risk of catastrophic fish kills similar to 2002¹⁵⁰ and 1977¹⁵¹ from warm water, low flows and crowded conditions for returning adult salmon and steelhead as well as rearing hatchery

¹⁴⁹ See September 12, 2012 e-mail string between Seth Naman, Michael Tucker, Garwin Yip, Bruce Oppenheim and Ann Garrett, NMFS, accessed at https://www.c-win.org/webfm_send/436

¹⁵⁰ For information on the historic and unprecedented 2002 salmon fish kill in the lower Klamath River, see reports by the US Fish and Wildlife Service, California Department of Fish and Game and the Yurok Tribe respectively at http://www.fws.gov/arcata/fisheries/reports/technical/Klamath_River_Dieoff_Mortality_Report_AFWO_01_03.pdf and <http://www.pcffa.org/KlamFishKillFactorsDFGReport.pdf> and <http://www.yuroktribe.org/departments/fisheries/documents/FINAL2002FISHKILLREPORTYTFP.pdf>.

¹⁵¹ For a description of the loss of 500,000 yearling salmon and 200,000 advanced steelhead fingerlings at the Trinity River Hatchery during the 1977 drought see http://www.c-win.org/webfm_send/406.

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juveniles. Things have to change with how the Trinity River is managed; the questions are what is to be done? How will new Trinity River management approaches that address paper water and cold water pool management for the benefit of fish and the Trinity River watershed communities? And finally, how to ensure the Bureau follows the rules?

There is nothing in the BDCP Draft project documentation to assure that the Trinity River and its beneficial uses will be protected for existing or future CVP and SWP operations. To the contrary, BDCP predicts a decline in cold water storage in Trinity Lake due to “*a combination of higher runoff in January and February that cannot be captured due to flood storage limitations, higher releases to meet Fall X2, and lower carryover storage from previous years due to higher releases for Fall X2 in wet and above normal years, and increased system demands by water rights holders, especially in El Dorado, Placer and Sacramento counties.*” (DEIS/R, page 5-60) Furthermore, the DEIS/R states that “The frequency of Trinity, Shasta, and Folsom Lakes dropping to dead pool storage would increase by about 10% under the No Action Alternative as compared to Existing Conditions.” (DEIS/R, page 5-61) However, despite these risks, BDCP does nothing to mitigate or prevent catastrophic loss of cold water storage and basic flows to keep fish in good condition below Trinity and Lewiston Dams.

Regardless of how the BDCP is modeled, removal of pumping constraints in the Delta will increase the risk to the Trinity and Lower Klamath rivers of losing the cold water stored in Trinity Lake to out of basin export. It is essential to note that Trinity River water provides beneficial uses for Coho and Chinook salmon, as well as steelhead, Pacific Lamprey, green sturgeon and other species important to Tribal, recreational and commercial fishing communities.

The Trinity Record of Decision fishery flows and the 50,000 AF Humboldt County area of origin reservation of water are components of the 1955 Trinity River Division (TRD) federal legislative authorization (PL 84-386) as amended by the 1992 Central Valley Project Improvement Act (PL 102-575, Section 3406(b)(23)).

Trinity River temperature objectives to protect salmon and steelhead have been adopted by the North Coast Regional Water Quality Control Board¹⁵², the State Water Resources Control Board and USEPA¹⁵³, but have not been put into water permit requirements for the Bureau of Reclamation. In 1958, the Bureau of Reclamation, pursuant to section 8 of the 1902 Reclamation Act applied to the state for water rights to operate the TRD, but those water rights contain minimum fishery flows of only 120,500 AF. Trinity ROD flows and Humboldt County’s 50,000 AF amount to a weighted annual average of 644,000 AF. Modeling for BDCP should include Humboldt County’s 50,000 AF, but does not. The complete failure to include variables such as the question of the 50,000 AF due to Humboldt County from original Trinity River contract obligations reveals the absolute inadequacy of the BDCP Draft EIS/R in analyzing potential and probable impacts of the project on the Trinity and Lower Klamath Rivers.

Reclamation has admitted that it does not operate to any specific carryover storage requirement

¹⁵² “Water Quality Control Plan for the North Coast Region” Footnote 5, Table 3-1, page 3-8.00: Accessed at http://www.waterboards.ca.gov/northcoast/water_issues/programs/basin_plan/083105-bp/04_water_quality_objectives.pdf

Daily Average Not to Exceed	Period	River Reach
60°F	July 1- Sept 15	Lewiston to Douglas City Bridge
56°F	Sept 15-Oct 1	Lewiston to Douglas City Bridge
56°F	Oct 1- Dec 31	Lewiston to North Fork Confluence

¹⁵³ See letter from USEPA Region IX Administrator to Chairman of California SWRCB approving Trinity River Basin Plan temperature objectives, March 13, 1992. Accessed at http://www.c-win.org/webfm_send/416

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and does not consider water quality objectives¹⁵⁴ contained in the “Water Quality Control Plan for the North Coast Region” (Basin Plan) as water permit terms and conditions.

Reclamation does consider Water Right Order 90-05 (WRO 90-05) to be a permit term and condition. WRO 90-05¹⁵⁵ includes Trinity River North Coast Basin Plan temperature requirements for the September 15- December 31 period but omits the Basin Plan temperature objective for the Trinity River July 1- September 15 period. Additionally, the WRO 90-05 September 15 through December temperature requirement only applies to transfers of Trinity River water to the Sacramento River for temperature control. All other uses of Trinity River water sent to the Sacramento River are not covered by the temperature requirements of WRO 90-05. Reclamation refuses to acknowledge that North Coast Basin Plan requirements are Clean Water Act Section 313 standards that they must comply with because they are not water permit terms and conditions.¹⁵⁶ Thus, comprehensive Trinity River Basin Plan temperature objectives should be included in Reclamation’s water permits. Failure to even mention or include analysis of this variable in the BDCP environmental documentation is another serious omission that confirms the inadequacy of the project review in terms of probably and potential impacts on the Trinity River.

The NMFS 2000 Biological Opinion¹⁵⁷ for the Trinity River, is not even mentioned in the BDCP DEIS/ DEIR. It includes a minimum carryover storage on September 30 of 600,000 AF and requires reconsultation if storage falls below that level. However, other analyses have found that a 600,000 AF minimum carryover storage is inadequate. A 2012 report by Reclamation found that September 30 carryover storage requirement of less than 750,000 AF is “*problematic*” in meeting state and federal Trinity River temperature objectives protective of the fishery.¹⁵⁸

In 1992 Balance Hydrologics found that a minimum carryover storage of 900,000 AF was necessary to meet Basin Plan temperature objectives.¹⁵⁹

Analyses completed for Trinity County for the Trinity Record of Decision by Kamman Hydrologics indicated that September 30 carryover storage of at least 1.2 million AF on September 30 is necessary at the beginning of a simulated 1928-1934 drought in order to meet Basin Plan temperature objectives.¹⁶⁰ We are now into a third year of drought and Trinity Lake storage is below levels necessary to survive a historic multi-year drought such as 1928-1934. The risk already exists and BDCP does nothing to reduce the risk; in fact it threatens to increase it. Of

¹⁵⁴ See 2/23/11 letter from Paul Fujitani, Chief of CVP Ops to Brian Person, Chairman Trinity Management Council; accessed at: http://www.c-win.org/webfm_send/141

¹⁵⁵ http://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/orders/1990/wro90-05.pdf

¹⁵⁶ Ibid http://www.c-win.org/webfm_send/416

¹⁵⁷ National Marine Fisheries Service (2000), Biological Opinion for the Trinity River Record of Decision, accessed at: http://www.fws.gov/arcata/fisheries/reports/technical/TREIS_BO_NMFS.pdf

¹⁵⁸ See Bender MD (2012) Trinity Reservoir Carryover Storage Cold Water Pool Sensitivity Analysis. Technical Memorandum No. 86-68220-12-06, U.S. Bureau of Reclamation, Technical Service Center, Denver, CO. Accessed at <http://odp.trrp.net/Data/Documents/Details.aspx?document=1813>

¹⁵⁹ See Balance Hydrologics (6/26/1992) “The Need for Standards for Minimum Carryover Storage in Trinity Reservoir” Accessed at <http://tcrd.net/trl-stor.htm>

¹⁶⁰ Memorandum from Greg Kamman to Tom Stokely and Mike Deas on Carryover Storage Analysis Simulated (1928-34) Period, 5/22/1998. Accessed at http://www.c-win.org/webfm_send/414

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particular relevance for this comment letter, the failure to analyze this risk or consider this variable in the BDCP Draft EIR/S demonstrates again the inadequacy of the project review.

Furthermore, Reclamation's Mid-Pacific office also produced a preliminary technical memorandum on the problem of excessive heating of Trinity Dam releases¹⁶¹ when they pass through the shallow 7-mile long Lewiston Reservoir. While Trinity Dam releases are normally 43-44°F, summer heating in Lewiston Reservoir can be severe unless approximately 1,800 cfs is being released from Trinity Dam. Given that Trinity River summer base flows are only 450 cfs, water must be diverted to the Sacramento River to keep the Trinity River cold enough to meet Basin Plan temperature objectives. However, during severe drought or under certain operational circumstances, there may not be adequate water to provide base fishery flows and to divert water to the Sacramento River to keep the Trinity River cold. Several structural solutions have been identified in Reclamation's preliminary technical memorandum; however, a full feasibility study and environmental document would need to be prepared to select a solution and no such plans exist at this time.

Therefore, in order for the Trinity River to be protected, BDCP and its EIR/EIS must at a minimum include a recommendation that the SWRCB convene a Trinity-specific water right hearing as directed in SWRCB Water Quality Order 89-18.¹⁶² The water right hearing shall license Reclamation's eight Trinity River water permits as follows:

- Conformance with the instream fishery flows contained in the Trinity River Record of Decision.
- Provision for release of Humboldt County's 50,000 AF in addition to fishery flows per the 1955 Trinity River Act.
- Inclusion of permit terms and conditions to require Reclamation to comply with the Trinity River temperature objectives contained in the Water Quality Control Plan for the North Coast Region (NCRWQCB) for all relevant time periods and for all uses of Trinity water diverted to the Sacramento River.
- A requirement to maintain an adequate supply of cold water in Trinity Reservoir adequate to preserve and propagate all runs of salmon and steelhead in the Trinity River below Lewiston Dam during multi-year drought similar to 1928-1934.
- Eliminate paper water in Reclamation's Trinity River water rights.
- Require Reclamation to solve the temperature issue in Lewiston Reservoir through a feasibility study and environmental document to follow up on the 2012 preliminary technical memorandum by Reclamation.

¹⁶¹ See USBR (2012) Lewiston Temperature Management Intermediate Technical Memorandum, Lewiston Reservoir, Trinity County, California. Report by U. S. Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA. accessed at <http://odp.trrp.net/Data/Documents/Details.aspx?document=1814>

¹⁶² See SWRCB Water Quality Order 89-18 (pages 18 and 19) at http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/1989/wq1989_18.pdf

8. Methyl Mercury

The fishery agencies should disapprove the Bay Delta Conservation Plan and deny issuance of incidental take permits because the Plan lacks sufficient ecological assurances that it will mitigate methylmercury production and bioaccumulation resulting from construction and operation of the proposed Twin Tunnels Project and the construction and management of new habitat restoration associated with BDCP conservation measures 2 through 11.

Conservation Measure 12, *Methylmercury Management*, is ***intended*** to mitigate the potential effects of methylmercury (MeHg) mobilization into bioavailability and bioaccumulation resulting from water and habitat development activities of the Bay Delta Conservation Plan. But CM 12 does not pretend that its provisions represent mitigation.

At this time, there is no proven method to mitigate methylation and mobilization of mercury into the aquatic system resulting from inundation of restoration areas. ***The mitigation measures described below are meant to provide a list of current research that has indicated potential to mitigate mercury methylation.***¹⁶³

This means that CM 12 is itself not a mitigation method at all, but a list of adaptive management issues to be handled later. Again, ***the implied message is “trust us” to build the Twin Tunnels project and BDCP will handle this problem later.*** Sulfur, carbon and acid-rich environments are conducive, in the presence of many different kinds of wetland bacteria, to methylation of elemental mercury into MeHg. These research approaches include:

- Characterize soil mercury concentrations and loads on a project-by-project basis.
- Sequester MeHg using low-intensity chemical dosing techniques using metal-based coagulants like ferric sulfide or poly-aluminum chloride. These flocculants bind with dissolved organic carbon and MeHg to flocculate and deposit mercury out of solution.
- Minimize microbial methylation activity in restored wetlands.
- Design restored wetland habitat to enhance photodegradation of MeHg.
- Remediate sulfur-rich sediments with iron to prevent the biogeochemical reactions that methylate mercury.
- Cap mercury-laden sediments (essentially entomb and bury them permanently to keep from mobilizing and methylating mercury).

Little is understood by scientists about how methylation of mercury actually occurs chemically, except that they know that bacteria common to wetlands facilitate the process.¹⁶⁴ The single largest increase in food web MeHg bioaccumulation occurs between its aqueous form taken up by algal cells or phytoplankton. Alpers et al (2008, part of the Delta Regional Ecosystem Restoration Implementation Plan, or “DRERIP”) report that this concentration increases typically in the range of 10⁵ to 10⁶. Consumption of algae and phytoplankton by higher trophic levels of the food web are much less bioaccumulative. ***But the huge concentration increase at the bottom of the food web is sufficient to pass on MeHg in concentrations that can be harmful to higher consumers in the food web such as fish and human beings.***¹⁶⁵

¹⁶³ Bay Delta Conservation Plan, Chapter 3, Section 3.4.12, *Methylmercury Management*, p. 3.4-260, lines 17-21.

¹⁶⁴ Charles N. Alpers, et al, *Sacramento-San Joaquin Delta Regional Ecosystem Restoration Implementation Plan, Ecosystem Conceptual Model: Mercury*, prepared January 24, 2008, pp. 12-13. Accessible online at <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=6413>. “The net formation of ...(MeHg) in sediment and/or water is the result of competing microbiological and abiotic reactions...”

¹⁶⁵ *Ibid.*, p. 19.

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Mercury's toxicity depends on the path by which humans, fish, and wildlife are exposed. Methylmercury is highly toxic and can pose a variety of human health risks, according to the DRERIP conceptual model. It can concentrate as high as 95 percent of the total amount of mercury found in fish muscle tissue, though MeHg in fish can be lower and more variable.¹⁶⁶ Illness from MeHg can take the form of loss of sensation in the hands and feet, and in extreme cases loss of gait coordination, slurred speech, blindness, and mental disturbances. For pregnant women, exposure of the fetus and young children can lead to cerebral palsy and/or mental retardation many months after birth, all effects that indicate MeHg's ability to cross the placenta as well as the blood-brain barrier. It can be excreted in breast milk consumed by babies.¹⁶⁷

There are numerous factors that affect the ecological mobilization and eventual health effects on fish and wildlife of MeHg, as shown in the DRERIP models. Fish can experience altered hormone expression, reduced spawning success and reduced reproductive output, liver necrosis, and altered predator avoidance behavior. More subtle behavioral effects may occur at lower concentrations of MeHg.¹⁶⁸ The greatest concentrations of MeHg in tissue of fish and wildlife (birds and mammals) are derived through dietary exposure—consumption of lower trophic level species that are contaminated with MeHg.

The DRERIP conceptual model of mercury summarized limitations of the state of MeHg research relating to wetland restoration:

The major limitation regarding effects for fish and wildlife is the lack of species-specific toxicity information on those organisms most at risk in the San Francisco Bay-Delta Estuary. Current threshold levels are all based on species such as loons or mallards which may have different sensitivities (higher or lower) than birds such as Forster's terns, black-necked stilts, least terns, and clapper rails, which have concentrations that may put them at risk to impairment from mercury....Moreover, to our knowledge, there is currently no information related to mercury concentrations in aquatic mammals in the Delta. Our toxicity assessment indicates that species found in the Delta, such as otters, may be sufficiently sensitive to mercury that there is substantial risk of impairment. Finally, it is clear that *there is currently little if any information on effects of methyl mercury on amphibians and reptiles*, and we are aware of little data on exposure of such taxa to methyl mercury in the Delta or possible effects.¹⁶⁹

The research "measures" BDCP proposes do not include basic toxicological research into mercury's effects on these and other fish and aquatic species found in the Delta.

The CM 12 measures (since they do not "mitigate" for CEQA or NEPA purposes as part of the project's evaluation) are acknowledged by BDCP to have challenges associated with them, as the EIR/EIS concludes concerning NEPA findings:

Because of the uncertainties associated with site-specific estimates of methylmercury concentrations and the uncertainties in source modeling and tissue modeling, the effectiveness of methylmercury management proposed under CM12 to reduce methylmercury concentrations would need to be evaluated separately for each restoration effort, as part of design and implementation. Because of this uncertainty

¹⁶⁶ *Ibid.*, p. 26.

¹⁶⁷ *Ibid.*, pp. 27-28.

¹⁶⁸ *Ibid.*, pp. 29-36. General types of effects on fish and wildlife include DNA alteration, tissue and organ damage, abnormal development, reproductive toxicity and endocrine disruption, behavior problems, immune-system effects, and population-level effects.

¹⁶⁹ *Ibid.*, p. 37. Emphasis added.

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and the known potential for methylmercury creation in the Delta this potential effect of implementing CM2-CM22 is considered adverse.¹⁷⁰

The idea in CM12 of minimizing microbial methylation activity is especially problematic. The EIR/EIS states that such an approach could defeat the purpose of doing all the habitat restoration BDCP proposes.

...[T]his approach could limit the benefit of restoration areas by limiting the amount of carbon supplied by these areas to the Delta as a whole. In some cases, this would run directly counter to the goals and objectives of the BDCP. This approach should not be implemented in such a way that it reduces the benefits to the Delta ecosystem provided by restoration areas.

In other words, taking the step of removing from new wetlands habitat the same bacteria that help recycle other nutrients yet cause methylation of mercury would dramatically reduce the productivity of these same newly inundated wetlands to such an extent that it “would run directly counter to the goals and objectives of the BDCP,” as the EIR/EIS states. This approach to managing methylation of mercury would destroy the very habitat producing strategy that is intended by BDCP to help restore food supplies and ecosystem productivity to the Delta. But with it comes the likelihood that the legacy contamination of mercury in the Delta from the Gold Rush era could reignite an epidemic of mercury toxicity in Delta ecosystems if not managed extremely carefully.

Other proposed “mitigations” may have potential for addressing MeHg occurrence, but the apportionment of these engineering parameters (tamping down sulfide with iron; relying more on photodegradation of MeHg, and so on, short of capping and entombing MeHg-laden sediments) could boost productivity, but may limit other wetland design parameters. For instance, nonnative invasive clams like *Potamocorbula* thrive in shallower, saltier conditions, and photodegradation could be best achieved in shallow wetland regimes. ***Suffice it to say that methylmercury contamination in the Delta makes habitat restoration success far from assured for the purposes of BDCP, especially given other uncertainties we have identified in our comments.***

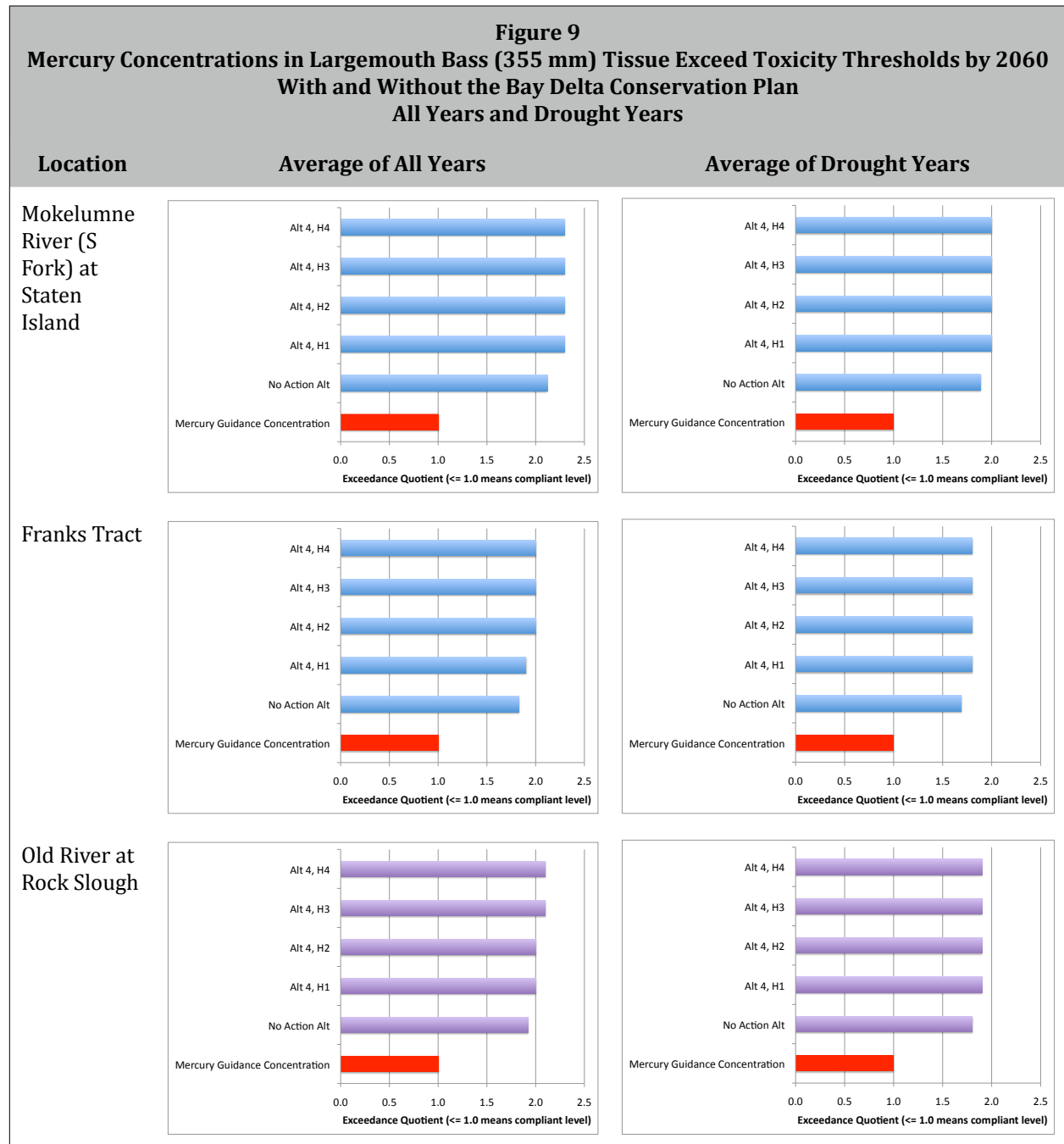
BDCP documents provide little insight into the geographic extent and occurrence of sediment-based MeHg. Figure 8-28 of the EIR/EIS provides largemouth bass tissue mercury concentrations at different locations around the Bay. Fish move around, however. This map, however, provides no insight for decision makers as to where sediment in the Delta carry mercury concentrations. Nearly every BDCP conservation measure involves some amount of construction activity and CMs 4 through 7 involve thousands of acres in the Delta slated for habitat restoration construction and inundation. Construction activity could cause mercury concentrations in water to spike as sediments are disturbed. Once disturbed, mercury can become more bioavailable and thereby sharply increase risk of bioaccumulation into Delta food webs and into human fish consumption.

The BDCP EIR/EIS reveals that mercury concentrations in largemouth bass fish tissue already exceed mercury guidance concentrations recommended by the US Environmental Protection Agency. For each alternative evaluated in the EIR/EIS, mercury in fish tissues is likely to rise by 2060 with or without implementation of the Bay Delta Conservation Plan. BDCP’s modeling results show that mercury fish tissue concentrations will worsen with BDCP activity in many parts of the Delta by 2060. Central Delta locations are projected to have higher mercury tissue concentrations than do areas where flows are greater and there is more open water, such as near the mouths of the San Joaquin and Sacramento rivers.

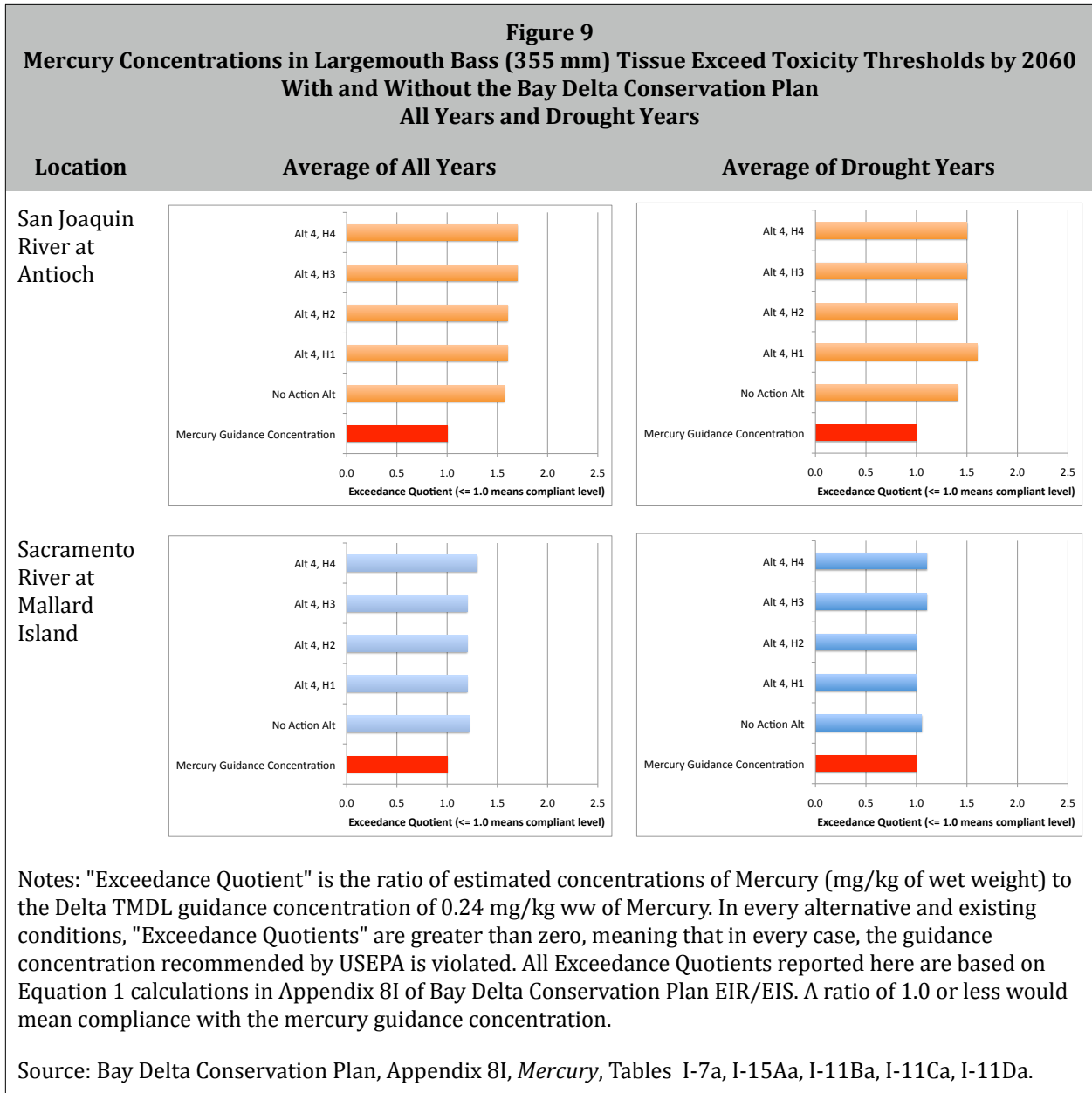
¹⁷⁰ Bay Delta Conservation Plan Environmental Impact Report/Environmental Impact Statement, Chapter 8, *Water Quality*, p. 8-260, lines 30-35; p. 8-446, lines 39-42, and p. 8-447, lines 1-2. Hereafter “BDCP EIR/EIS” or “EIR/EIS.”

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But in all cases, the existing mercury guidance concentration is exceeded by at least 20 percent to as much as twice the level recommended for fish tissue (Figure 9). And at these locations it appears BDCP activity consistently worsens conditions relative to the No Action Alternative.



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C. No Surprises and Unforeseen Circumstances

If such funding assurances to support permanent selenium sequestration, management and disposal is not forthcoming from the Applicants, the fishery agencies should disapprove the Bay Delta Conservation Plan and deny issuance of incidental take permits because the Plan lacks sufficient ecological assurances that it will not appreciably reduce the likelihood of survival and recovery of listed species covered by the Plan.

Changed circumstances are those events and processes affecting a species or geographic area covered by the BDCP that have been “reasonably anticipated by “the Permittees” and the federal

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fishery agencies.¹⁷¹ Such circumstances are acknowledged within the scope of the Implementing Agreement for BDCP.

Unforeseen circumstances are those events and processes “that could not reasonably have been anticipated by the Permittees” and the fishery agencies at the time of BDCP’s negotiation and development, and that “result in a substantial and adverse change in the status of a Covered Species, and in the context of the NCCPA, means changes affecting one or more species, habitat, natural community, or the geographic area covered by a conservation plan that could not have been anticipated at the time of Plan development, and that result in a substantial adverse change in the status of one or more Covered Species.”¹⁷²

If unforeseen circumstances arise, states the State’s NCCPA law:

additional land, water, or financial compensation or additional restrictions on the use of land, water, or other natural resources shall not be required without the consent of plan participants for a period of time specified in the implementing agreement, unless [CDFW] determines that the plan is not implemented consistent with substantive terms of the implementing agreement.¹⁷³

Similar language applies in federal regulations implementing the Endangered Species Act.¹⁷⁴ In short, changed circumstances are defined and incorporated in the habitat conservation plan and adaptive management program; unforeseen circumstances are excluded from the plan. Unless the fishery agencies can justify the need for the Applicants to mitigate effects of such circumstances, the BDCP Applicants would be immune to changes in how their BDCP activities could be regulated for the next 50 years—the very definition of “regulatory stability.”¹⁷⁵

The November 2013 Draft Bay Delta Conservation Plan lists the following as the only “changed circumstances” through which modifications to the Plan may be made (that is, these are the foreseeable changed circumstances which may involve modification of the Plan):

- Levee failures
- Flooding
- New species listing
- Drought
- Wildfire
- Toxic or hazardous spills
- Nonnative invasive species or disease
- Climate change beyond certain parameters
- Vandalism¹⁷⁶

¹⁷¹ “The Permittees,” according to the Draft July 2013 Implementing Agreement, are “DWR and the SWP/CVP Contractors” according to Section 3.43. Under the Natural Communities Conservation Planning Act, “changed circumstances” are defined as “reasonably foreseeable circumstances that could affect a Covered Species or the Plan Area.” *Ibid.*, Section 3.12, p. 7.

¹⁷² *Ibid.*, Section 3.56, p. 12.

¹⁷³ California Fish and Game Code Section 2829(f)(2), cited in BDCP, Chapter 6, *Plan Implementation*, p. 6-30, lines 9-13.

¹⁷⁴ 50 CFR Part 17.22(b)(5)(iii).

¹⁷⁵ BDCP refers to application of the No Surprises policy to its actions and activities as “regulatory stability.”

¹⁷⁶ *Ibid.*, p. 6-45, lines 23-30.

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The Bay Delta Conservation Plan would exclude from defined “changed circumstances” in its scope features of state and federal water project operations in the Delta watershed that are endemic to current impacts in and upstream of the Delta.

In our view, continuing to irrigate western San Joaquin Valley drainage impaired lands under operation of the Twin Tunnels constitutes a foreseeable circumstance under the Endangered Species Act. Yet it is not a “toxic or hazardous spill” as BDCP interprets this circumstance.¹⁷⁷ It is foreseeable, as well, that the Grassland Bypass Project may not result in decreasing concentrations and loads of selenium to downstream water bodies along and including the San Joaquin River, the Delta, and Suisun Bay and Marsh. A lot can happen in 50 years—the duration of the incidental take permits—to cause increased discharge of selenium loads into the San Joaquin River. Unlike methyl mercury contamination which has its own conservation measure, there is no BDCP conservation measure to address potential selenium contamination. BDCP success is premised, in pertinent part, on selenium concentrations decreasing, despite foreseeable scenarios in which local land values could collapse, federal and state budgets contract (not unlike what happened in 2007 through 2010 nationally and throughout California). Political decisions can be made that delete grant or other funding support for experimental reverse osmosis and other treatment technology. Even a new distillation process¹⁷⁸ that has lower energy costs still yields solid residues that must be disposed of—and selenium residues often exceed allowable concentrations, above which they have been classified as hazardous waste.

At a minimum therefore, selenium contamination must be included in Chapter 6’s list of “changed circumstances.” The potential cost to the BDCP Applicants (which include Westlands Water District and Kern County Water Agency, whose regions include areas where at a minimum selenium treatment and source control are pressing concerns) of maintaining selenium sequestration in the upper San Joaquin Valley must be accounted for and included in the real costs of BDCP.

There is a clear nexus between prospective operation of the Twin Tunnels and therefore the need for continuing long-term selenium management. Assuming that BDCP moves forward to obtain incidental take permits, via the Twin Tunnels it will continue deliveries to drainage impaired lands of the western San Joaquin Valley. It follows that funding assurances provided by the Applicants to the fishery agencies must include diligent, continuous, and full financing for continuation of the Grassland Bypass Project and other selenium treatment activities under way in the western and southern San Joaquin Valley. Funding assurances should also include provision for sequestering, managing and disposing of selenium hazardous waste streams and other naturally occurring contaminants from the western San Joaquin Valley’s drainage impaired lands. This will ensure they are properly managed for the long term. ***If irrigation of these impaired lands is perpetuated by some Applicant agencies benefiting from the Twin Tunnels project, the Applicants must pay their fair share of costs of sequestering, managing, and disposing (that is, from cradle to grave) of the hazardous selenium contaminant waste that is generated from irrigating***

¹⁷⁷ *Ibid.*, 6-39 to 6-40, Section 6.4.2.2.6, *Toxic or Hazardous Spills*. Such spills are defined to occur only in the Plan Area as “resulting from a BDCP action.” The scope of remedial actions would be limited to 4,000 acres of reserve system lands, inclusive of restoration sites. This is a very narrow definition that clearly excludes the foreseeable, if undesirable, circumstance of increased selenium loading via the San Joaquin River to the Plan Area. To BDCP this is “unforeseeable.” This means that what is unforeseeable, under the NCCPA and Section 10 of the ESA is in the eye of the beholder, independent of socially knowable possibilities.

¹⁷⁸ Kevin Fagan, “Purifying water by using the sun: Solar desalination system appears to be cost-effective,” *San Francisco Chronicle* March 18, 2014, p. A1, A9.

western San Joaquin Valley soils contaminated with selenium and other naturally-occurring contaminants.

D. Undue, Improper and Excessive Reliance on Adaptive Management

The Bay Delta Conservation Plan relies to excess on adaptive management to defer water and fishery management decisions and actions until such time that gaps in scientific conceptual models are filled. The standard for action to protect and recover listed species under the federal ESA is not perfected knowledge and fully discovered mechanisms; rather the standard is for the fishery agencies to act based on the “best available scientific knowledge.”

The EWC does not see how adaptive management can be accomplished on behalf of listed species in the Bay Delta Estuary with No Surprises rules applied to their protection and recovery. “Regulatory stability” and “adaptive management” mutually contradict each other.

There are numerous areas where unanswered scientific questions about each of the conservation measures are put off into “adaptive management.” *This is not in the least a “conservation strategy” but a thinly veiled attempt to justify a monstrous water project in a location that is crucial to key life stages of several listed fish species and would likely contribute to their extinction. Having such a large “adaptive management” program is hardly a sign of the Bay Delta Conservation Plan’s sophistication and virtue. It is a sign of looming disaster unless it is stopped in its tracks.*

Other areas where adaptive management is invoked include:

- Fish screen technology; flow vectors (approach vs. sweeping velocities) and where Delta smelt and salmon smolt vulnerabilities discounted by BDCP (described above).
- Evaluation of Yolo Bypass fisheries enhancement actions under Conservation Measure 2 (also discussed above).
- Conservation Measure 16’s non-physical fish barriers
- Predators usage of restored habitats
- Spring outflow importance for longfin smelt
- Fall X2 and outflow importance for Delta smelt
- Methylmercury “management”

Most fundamentally, however, BDCP is an experiment with real-life (or likely “real extinction”) consequences. This is evident in the remarks to the Delta Stewardship Council by Carl Wilcox of the California Department of Fish and Wildlife. In his remarks, Wilcox emphasizes how BDCP grapples with uncertainty about how things would work out through plan implementation.

“The level of assurances are how the conservation plan is structured to allow for implementation,” said Mr. Wilcox, “and that’s one of the things that we’re wrestling with right now is how to structure that so that there’s more certainty. To some degree, what you see in the decision tree, relative to the idea of [whether] habitat really works or other stressor conservation measures, can potentially offset the need for outflow and that kind of thing, and that’s a key component of it. ... The concept there is that *there’s more certainty in the effects of flow based on what we know over 40 years as opposed to some of the other aspects, and we’re going to have to learn about those through the [adaptive management](#) process.*”¹⁷⁹

¹⁷⁹ Maven’s Notebook, “The Bay Delta Conservation Plan’s regulatory assurances discussed at the Delta Stewardship Council Meeting,” March 12, 2014 coverage of the Council’s February 27, 2014, meeting. Accessible online 7 April 2014 at <http://mavensnotebook.com/2014/03/12/the-bay-delta-conservation-plans-regulatory-assurances-discussed-at-the-delta-stewardship-council-meeting/>. Emphasis added.

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If we read this quote correctly, Mr. Wilcox informed the Delta Stewardship Council that the scientific enterprise that is BDCP knows more about the effects of flow than is known about the likely effects of habitat restoration in the Plan Area of BDCP.

It is wise public policy to emphasize use of the known over the unknown in public and environmental affairs. BDCP apparently inhabits a world where it quests into the unknown on behalf of a monstrous water project.

The Delta Stewardship Council's Delta Science Program retained an Independent Review Panel to evaluate the Effects Analysis of the Bay Delta Conservation Plan. That panel summarized its critique of uncertainty and adaptive management in BDCP this way:

The concept of adaptive management is appropriately described and allocated a prominent role in the implementation structure. However, the commonly acknowledged process of adaptive management is easily misunderstood and misapplied, often resulting in a loss of rigor and commitment in application. Because of the extensive uncertainties surrounding the assumptions and predictions of the BDCP, the Panel strongly emphasizes institutionalizing an exceedingly rigorous adaptive management process. This is critical in order to avoid the high risk associated with ecological surprises that will be difficult or impossible to reverse once they have occurred. BDCP must make a commitment to the fundamental process, and specifically the required monitoring and independent science review, not just the concept of adaptive management.¹⁸⁰

While the adaptive management plan is considerably more developed in the BDCP..., it remains characterized as a silver bullet but without clear articulation about exactly how key assumptions will be vetted or uncertainties resolved to the point that the BDCP goals and objectives are more assured.¹⁸¹

Perhaps the largest challenge to achieving the stated goals and objectives of the BDCP is how many of these critical uncertainties can be addressed by adaptive management given the baseline and the required monitoring? For example, some of the key uncertainties identified in the Effects Analysis [citation], often associated with conservation measures 4, 5, 7, and 11, include:

- The ability of the restored habitat to meet the objectives and expected outcomes, including the time it takes to meet the biological objectives....
- The risk that the restored habitat will be colonized by invasive species such as nonnative submerged vegetation, nonnative predatory fish, and/or clams. (Hardly uncertain, but controllable?)
- The change in magnitude of predation mortality on covered fish. (Doesn't this require an existing reliable estimate[] of predation mortality?)
- Food web responses to habitat restoration actions on both a local and a regional scale.
- The Risk of adverse effects resulting from unsuitable changes in water quality and exposure to toxic contaminants. (How much can be modeled?)
- The proportion of the covered species population that actively inhabit restored habitats and the change in growth rate, survival abundance, life-history strategies, and population dynamics. (A very difficult baseline to quantify!)¹⁸²

The fishery agencies are asked to issue incidental take permits that would grant a *carte blanche* to BDCP and the Twin Tunnels project to experiment on a patient (the Bay-Delta Estuary) which is at present on life support, already hammered by waivers of water quality objectives to boost exports

¹⁸⁰ Delta Science Program, Independent Review Panel, *op. cit.*, note 27 above, p. 9.

¹⁸¹ *Ibid.*, p. 41.

¹⁸² *Ibid.*, p. 43.

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to San Joaquin Valley growers under the guise of protecting “health and safety” during the current drought.

The BDCP Implementing Agreement will be crucial to determining how the BDCP is translated into concrete actions. It is part of the package of documents that comprise the full application for incidental take permits to the fishery agencies. The Agreement is supposed to identify how conflicts between the Applicants and the fishery agencies will be resolved for the 50-year term of the permits. Mr. Wilcox also informed the Council:

“There are meet and confer provisions within the implementing agreement and allowed for under the Act to remedy this situation short of pulling the permit,” said Mr. Wilcox, “and mechanisms, particularly through the adaptive management process, to look at how effective any particular conservation measure may be within the context of the plan and whether or not resources that are associated with that one may be better put towards achieving other objectives.”

“I don’t know that there’s a clear answer,” he said. “It’s a relatively dynamic process short of just being totally out of compliance and having to reassess the situation in moving forward. Keep in mind that in the context of NCCPA, this is a conservation plan – it’s not a mitigation plan so at some point, you may revert to standard permitting processes if all else fails.”¹⁸³

We quote Mr. Wilcox at some length here, because he was not very clear in his presentation. A lack of clarity in thinking and speaking signals to those listening that the speaker is himself not very clear on what is at stake with implementing BDCP. What, for example, will be the role in adaptive management in determining whether permits should be revoked or not? What will be the role of adaptive management, if any, for determining whether the biological goals and objectives of BDCP need to be changed, and if so how does the Implementing Agreement handle that? We anticipate taking up these questions in our supplemental comments on the Implementing Agreement in late July 2014.

The complexity of BDCP quickly spirals once one starts to ask such questions. Whatever happened to the “KISS” principle, “keep it simple, stupid”?

The National Research Council’s committee on Sustainable Water and Environmental Management of the Bay Delta Estuary suggested using a technique to determine whether adaptive management is an appropriate strategy before it is undertaken. The technique probes three direct criteria:

- the existence of information gaps
- good prospects for learning at an appropriate time scale compared to management decisions, and
- the presence of opportunities for adjustment.¹⁸⁴

In the case of BDCP, the NRC committee concluded that adaptive management is appropriate for use in BDCP, but further concluded that “BDCP needs to address...difficult problems and integrate

¹⁸³ Maven’s Notebook, “The Bay Delta Conservation Plan’s regulatory assurances discussed at the Delta Stewardship Council meeting,” March 12, 2014. Accessible online at <http://mavensnotebook.com/2014/03/12/the-bay-delta-conservation-plans-regulatory-assurances-discussed-at-the-delta-stewardship-council-meeting/>.

¹⁸⁴ National Research Council, Panel to Review California’s Bay Delta Conservation Plan, *A Review of the Use of Science and Adaptive Management in California’s Draft Bay Delta Conservation Plan*, Washington, DC: National Academies Press, 2011 p. 39. Accessible online 7 April 2014 at http://www.nap.edu/catalog.php?record_id=13148. Emphasis added.

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conservation measures into the adaptive management strategy ***before there can be confidence in the adaptive management program.***” The NRC committee also stressed that it is critical that the results of adaptive management efforts have a mechanism by which the information is incorporated into management decision making.

Alas, there are no guarantees that scientific findings can successfully and meaningfully inform intensely political water decisions by mostly bureaucratic water managers. We are concerned the scientists place too much faith in the water and environmental managers who will govern the Twin Tunnels and implement BDCP. There is no reason, after 40,000 pages of BDCP, to think that the Twin Tunnels will be operated with any more environmental sensitivity than the existing Delta export pumping plants are today when it comes to the public trust values of the Delta, the recovery of listed species, the senior water right holders, and the rate payers of state and federal water contractors on the receiving end of water exported from the Delta by the state and federal water projects, be they farmers or suburbanites.

The alternative is to regulate the Delta on the basis of ***the precautionary principle***: First, do no harm. If you aren’t sure what you’re doing, you should proceed slowly and carefully, or perhaps not at all. Better safe than sorry.¹⁸⁵ If you must, export water from the Delta responsibly, not profligately.¹⁸⁶

Please also see Section V.B of these comments for additional comments on the relationship of adaptive management to BDCP’s governance structure.

¹⁸⁵ Peter Montague, “The Uses of Scientific Uncertainty,” *Rachel’s Environment and Health Weekly* #657, July 1, 1999.

¹⁸⁶ See Environmental Water Caucus, *Responsible Exports Plan*, 2013. Accessible online 14 May 2014 at <http://ewccalifornia.org/reports/responsibleexportsplanmay2013.pdf>.

IV. BDCP fails to provide adequate funding assurances.

The Bay Delta Conservation Plan's economic analysis¹⁸⁷ is inadequate to the purpose of providing funding assurances needed to meet the required statutory findings by which the fishery agencies may issue incidental take permits.¹⁸⁸

The purpose of the Bay Delta Conservation Plan's economic analysis is to demonstrate the Twin Tunnels' financial feasibility for the Applicants (DWR, the Bureau, and the state and federal water contractors, who are the primary source of the Tunnels' investment capital). Such an analysis is required under the federal and state Endangered Species Acts to demonstrate funding assurances required to implement the habitat conservation plan.

BDCP's economic analysis should not be construed as adequate economic and financial justification for the people of California to support the proposed BDCP facilities. BDCP's economic analysis is also aimed to persuade water contractors to commit to funding and receiving water from the proposed Twin Tunnels project.

Such a separate and distinct evaluation differs from whether the facilities are a good enough investment for the people of California given the ecological condition of the Delta and concerns about the long-term sustainability of north state groundwater resources. Such an evaluation demands a public trust balancing, including use of Benefit-Cost Analysis, discussed earlier in these comments.¹⁸⁹

Congress requires the federal fishery agencies to adhere to a policy of "No Surprises." The fishery agencies are to impose no new mitigation requirements (such as additional money, land, or water) on applicants once an incidental take permit is issued without consent of the BDCP Applicants. The fishery agencies are also authorized under the Endangered Species Act and through statutory criteria of issuance for incidental take permits, to seek and receive assurances of funding from those same applicants that will cover "unforeseen circumstances" and to weigh benefits and costs of alternative courses of action, to ensure that the BDCP will be implemented as agreed.¹⁹⁰

The BDCP economic analysis focuses exclusively on the benefits and costs that would be experienced by the state and federal water contractors. This assessment is presumed to provide sufficient financial assurances to the fishery agencies.

¹⁸⁷ The BDCP economic analysis is defined here as those portions of Chapter 8, Chapter 9, and Appendices 9.A and 9.B that address costs, benefits, net benefits, affordability, price and income elasticity of demand for water, and comparison of water supply alternatives.

¹⁸⁸ The federal ESA's incidental take permit process in Section 10 for requiring financial assurances is neither designed nor intended to address *all* concerns that may be associated with a project of such massive scope and complexity as the Twin Tunnels project. The criteria of assurances and practicability mandated for habitat conservation plan (HCP) review under the federal Endangered Species Act are not sufficiently broad to accommodate all of the economic issues raised by the Twin Tunnels project and BDCP.

¹⁸⁹ See ECONorthwest, *Bay-Delta Water: Economics of Choice*, Eugene, OR, January 11, 2013, 34 pages. Accessible online 8 June 2014 at http://www.c-win.org/webfm_send/282.

¹⁹⁰ See footnote 9, above.

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Funding Assurances

The most credible assurances of funding from the state and federal water contractors result from an economic benefits analysis...and two primary conclusions of the analysis.

- The costs of CM1 [the Twin Tunnels facilities] and associated mitigation are *affordable* by the ratepayers of the urban and agricultural agencies receiving federal and state water supplies delivered through the Delta.
- *The benefits* of the preferred project to these ratepayers *will exceed the total costs* of CM1 and associated mitigation. Thus, the relevant water contractors have an underlying economic incentive to implement CM1.¹⁹¹

Chapter 8 of BDCP asserts that assurances of funding from the state and federal water contractors are anchored in the “direct economic benefits of the BDCP to their customers.” Contractors’ support for BDCP is “essential” to implementing the plan. Summing up the importance of economic analysis in BDCP’s case, Chapter 8 states:

There is no inducement for water purveyors to participate if costs of the Plan exceed costs without BDCP. *The best assurance of contractor funding for the BDCP proposed action is if there is a business case to be made for it; that is, if the economic benefits of the BDCP are well in excess of the present value of the costs that are assumed to be assigned to the contractors.*¹⁹²

Actually, showing a net positive benefit for BDCP is not the sole criterion by which funding assurances can be meaningfully demonstrated to the fishery agencies. Other key criteria go into making a sound business case for a large infrastructure project. The Environmental Water Caucus identifies four other aspects to making a sound business case that are ignored or poorly handled in BDCP’s economic analysis:

- Are assumptions reasonable?
- Are there less costly alternatives to increase water supply reliability?
- Is the project affordable to potential water contractors and customers?
- Who would “step up” to bail out the project if anticipated financial commitments fail?

BDCP Chapter 8 summarizes the implementation costs and sources of funding for the entire conservation strategy.¹⁹³ In that chapter, Tables 8-33 through 8-36 present undiscounted and discounted capital and operating/maintenance costs for the entire conservation strategy (i.e., all 22 conservation measures). Table 8-37 shows the costs that the state and federal water contractors appear willing to bear in support of BDCP.¹⁹⁴

¹⁹¹ BDCP, Chapter 8, p. 8-98. Emphasis added.

¹⁹² *Ibid.*, p. 8-102. Emphasis added. Footnote 69 on this page adds, “Other economic costs and benefits beyond those evaluated to date are being assessed by DWR and are expected to be released prior to completion of the BDCP.”

¹⁹³ “Conservation strategy” refers to all of the Conservation Measures 1 through 22 that are described in Chapter 3 of BDCP.

¹⁹⁴ Bay Delta Conservation Plan, Chapter 8, *Implementation Costs and Funding Sources*, Table 8-37, pp. 8-65 and 8-66.

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Ninety-five percent of the water contractors' investment in BDCP is to support the construction and operation of the water facilities described in BDCP's Conservation Measure 1.¹⁹⁵

Compared with the entire BDCP conservation strategy (including 20 additional conservation measures), the contractors' funding assurances account for 68 percent of all BDCP costs disclosed to date.¹⁹⁶ The state and federal governments supposedly pay for none of the water facilities and operation costs, according to Chapter 8 of BDCP. Their contributions are confined to use of existing funding programs for various aspects of research and restoration. Two new, undrafted and unapproved water bonds are proposed to account for another 15.2 percent of BDCP funding sources, primarily for restoration. These imaginary bonds would account for \$3.7 billion of the state's proposed contribution of \$4.1 billion to BDCP restoration activities. Federal agencies would contribute another \$3.5 billion to these activities.

The BDCP economic analysis assesses the relative benefits of the BDCP proposed action and other take alternatives relative to a pair of existing flow scenarios for the Delta without BDCP. It also provides the contractors with a sensitivity analysis, based on the outcomes of the two "Decision Tree" processes. The "Decision Tree" processes bracket this sensitivity analysis and will determine whether greater outflows benefiting listed fish species will occur in the spring and in the fall.¹⁹⁷

The BDCP evaluates a total of nine alternatives (including the Applicants' preferred alternative) by comparing direct benefits and costs to the contractors. The direct benefits measured in the study are water supply reliability, water quality, and seismic risk reduction. Costs are estimated only for the capital and operating components of the Twin Tunnels and other water facilities in Conservation Measures 1 and 2. Interest payments on bonds and a contingency factor for cost-overruns are omitted.

A. Unreasonable Baseline Assumptions

There is great instability and uncertainty in the future of water exports from the Delta. Taking account of the range of reasonably foreseeable future of Delta exports shows dramatic effects on the Twin Tunnels' incremental water cost and financial performance. This instability fatally undermines BDCP's capacity to provide credible funding assurances.

In Table 9.A-2 of Appendix 9.A in BDCP (which is taken directly from BDCP), total estimated costs are subtracted from total estimated benefits to arrive at a net benefits estimate for each alternative or scenario. Of the alternatives, the BDCP economic analysis finds that only Alternatives D and E would have negative net benefits (net costs) to the water contractors, due mainly to restricted Tunnels conveyance capacity or restrictive operating rules.

¹⁹⁵ CM 2 facilities for Yolo Bypass Fisheries Enhancement are just 4.7 percent of combined costs of Conservation Measures 1 and 2. These facilities include: Clifton Court Forebay, Banks Pumping Plant, Skinner Fish Protective Facility, Barker Slough Pumping Plant, North Bay Aqueduct, New State Water Project diversions at the North Delta Intakes (including fish screens), the Twin Tunnels and related conveyance facilities (pumps, surge towers, forebays, afterbays, etc.), and temporary barriers in the Delta. See also Bay Delta Conservation Plan, Chapter 4, *Covered Actions*, Section 4.2.

¹⁹⁶ Bay Delta Conservation Plan, Chapter 8, *Implementation Costs and Funding Sources*, Table 8-37, pp. 8-65 and 8-66.

¹⁹⁷ BDCP calls for two separate outflow decisions in the Decision Tree process, but the economic analysis evaluates only the two outcomes where BDCP either completely "wins" or "loses" because this approach brackets all possible outcomes of the process. "Winning" would result in lower Delta outflow results with higher exports. "Losing" would result in higher Delta outflows and lower exports. Winning one and losing another flow decision is likely between these two poles of the range of outcomes.

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Figure 10

Table 9.A-2. Summary of State and Federal Water Contractor Economic Benefits and Costs (\$ millions)

Alternative or Scenario Description			Total Benefits and Costs ^{a, b}		
Alternative or Scenario	Facility Size (cfs)	Average Annual Water Deliveries (MAF)	Total Benefits ^c	Total Costs ^d	Net Benefits
BDCP Proposed Action High-Outflow Scenario	9,000	4.705	\$18,011	\$13,472	\$4,540
BDCP Proposed Action Low-Outflow Scenario ^e	9,000	5.591	\$18,826	\$13,487	\$5,339
A: W Canal 15,000 cfs	15,000	5.009	\$23,187	\$11,110	\$12,076
B: Tunnels 6,000 cfs	6,000	4.487	\$14,445	\$12,347	\$2,098
C: Tunnels 15,000 cfs	15,000	5.009	\$23,187	\$15,641	\$7,545
D: Tunnels: 3,000 cfs	3,000	4.188	\$8,923	\$10,240	-\$1,317
E: Isolated 15,000 cfs	15,000	3.399	-\$8,697	\$15,711	-\$24,407
F: Through Delta	N/A	4.172	\$12,060	\$5,233	\$6,826
G: Less Tidal Restoration	9,000	4.705	\$18,011	\$13,432	\$4,579
H: More Restoration	9,000	4.705	\$18,011	\$13,505	\$4,506
I: Fixed Spring Outflow	9,000	4.338	\$13,417	\$13,472	-\$55
Existing Conveyance High-Outflow Scenario	N/A	3.446			
Existing Conveyance Low-Outflow Scenario	N/A	3.889			

Notes:

^a Construction is assumed to begin in 2015. BDCP operations are assumed to begin in 2025.

^b All values are in 2012 \$ (millions), and are discounted to present value using 3% real discount rate.

^c Benefits are calculated out to year 2075.

^d Costs are calculated out to year 2075.

^e Benefits for the BDCP Proposed Action Low-Outflow Scenario are calculated relative to the Existing Conveyance Low-Outflow Scenario, which assumes Scenario 6 operations, no Fall X2, no north Delta diversions.

cfs = cubic feet per second; MAF = million acre-feet

The BDCP economic analysis compares the nine alternatives (identified in Chapter 9) to the BDCP Proposed Action High Outflow Scenario as well as to an “Existing Conditions High Outflow Scenario.” The “Existing Conditions” scenarios argue that the Twin Tunnels’ benefits lie in supposedly preserving existing export levels. Principal author Professor David Sunding likens this benefit to a homeowner investing in his or her home’s foundation to shore up its overall seismic

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strength. It may generate no additional usable space of value, but is intended to protect the home's investment value against earthquake damage for the long term.¹⁹⁸

BDCP Director Jerry Meral also stated to the Water Association of Kern County on July 23, 2013, that "Protecting our 5.5 million acre-feet of exports has got to be our number one priority."¹⁹⁹ His statement indicates that, in the absence of additional storage to create new yield (another issue unto itself), the Twin Tunnels yields very little, if any, "new" water over existing Delta exports. Thus, the cost of *incremental water preserved* is the "baseline" against which the Twin Tunnels' cost is measured in the BDCP economic analysis.

The labeling in Table 9.A-2 of the preservation scenarios as "existing" for future of Delta exports without Twin Tunnels does not match recent experience with Delta export pumping, and misleads readers. Since Water Rights Decision 1641 took effect in 2000 and the biological opinions by NMFS and US Fish and Wildlife Service took effect in 2009, annual south-of-Delta exports have averaged 5.4 million acre-feet. What is going on with the Twin Tunnels' "existing scenarios"?

Unlike Professor Sunding's analogy to replacing the foundation of a house, BDCP's economic analysis describes another rationale for assuming that the future of Delta exports without the Twin Tunnels will be much lower than in the recent past.²⁰⁰

A reasonable translation of this explanation is that in the next few years, and in the event that the Twin Tunnels project is not permitted, built and operated, BDCP assumes the fishery agencies and the State Water Resources Control Board will take concrete steps to reduce exports to protect public trust resources in the estuary and shore up recovery of listed species in the Delta watershed. The proponents of BDCP are essentially positing a bet against their ability to prevent estuarine protection flows in order to provide a large increment of "preserved" export levels that could help justify the Twin Tunnels project.

This "bet" is highly speculative. In the event there is no Twin Tunnels project, it is equally, if not more, plausible that in the long-term a "without Twin Tunnels" future entails continuation of export restrictions contained in the Delta smelt and salmonid biological opinions from the US Fish and Wildlife Service and the National Marine Fisheries Service. According to the State Water Resources Control Board, these biological opinions establish export limitations that would keep the long-term average south-of-Delta exports to about 5.1 million acre-feet annually.²⁰¹ The BDCP environmental impact report/statement (EIR/S) states that the average annual water cost to Delta exports of the 2009 biological opinions is about 703,000 acre-feet.²⁰² Subtracting this increment from the Dayflow average south of Delta exports since 2000 yields a biological opinion range of Delta exports of 4.66 to 5.1 million acre-feet for a "without Twin Tunnels" scenario.

¹⁹⁸ Maven's Notebook, "Dr. Sunding makes his case for the BDCP to Metropolitan's Special Committee on the Bay-Delta," accessed online July 29, 2013, at <http://mavensnotebook.com/2013/07/29/dr-sunding-makes-his-case-for-the-bdcp-to-metropolitans-special-committee-on-the-bay-delta/>.

¹⁹⁹ Video of Meral's remarks to the Water Association of Kern County on July 23, 2013, were accessible online at <http://baydeltaconservationplan.com/News/News/13-07-31/NaturalResourcesDeputySecretaryProvidesUpdateonBDCPtoWaterAssociationofKernCounty.aspx>.

²⁰⁰ BDCP, *op. cit.*, Appendix 9.A, p. 9.A-1, lines 35-40, and p. 9.A-2, lines 1-9.

²⁰¹ State Water Resources Control Board, *Comments on the Second Administrative Draft Environmental Impact Report/Environmental Impact Statement for the Bay Delta Conservation Plan*, July 5, 2013, Attachment 2.

²⁰² Admin Draft BDCP *Environmental Impact Report/Statement*, 2013, Chapter 5, p. 5-52.

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What is the most realistic amount of exports that will be preserved in order to measure its value appropriately? Answering this question depends on what future actions will be taken about the Delta's health by the fishery agencies and the State Water Resources Control Board without the Twin Tunnels project in place.²⁰³ This results in tremendous uncertainty about benefits and financial strength of BDCP. It also means great instability in the net benefits to be expected for Applicants and their agricultural and urban customers. ***This instability is fatal to the confidence assignable to BDCP funding assurances.***

Moreover, we suspect BDCP officials foment confusion about Twin Tunnels export activity. As we describe below in Section VII, actual usage of the Tunnels for cross-Delta water transfer market activity would likely increase exports in drier and drought years. The market for cross-Delta transfers doesn't materialize unless contractual allocations go below 50 percent of Table A amounts for State Water Project contractors and 40 percent of contract amounts for CVP contractors. BDCP claims they did not model water transfer behavior, so it appears to us the Delivery volumes in Figure 10 could be understated because water market transfer activity using Twin Tunnels capacity is omitted. They appear to be talking strictly about contractual deliveries.

B. BDCP's Costs Are Higher Than Alternative and More Reliable Supplies Compared to other sources of potential new water supply in California, the Twin Tunnels project ranges from the high end of these alternative sources to being infeasible altogether, depending on financing assumptions used in the BDCP analysis.

To understand whether BDCP's proposed action is a good investment, its cost must be compared with those of other potential sources of water supply. Such alternatives include the take alternatives in the BDCP economic analysis, as well as alternative forms of supply such as recycling, desalination, storm water recovery, improvement of existing Delta levees, and such. In order to compare apples to apples, incremental cost estimates for each alternative are needed to make such a comparison possible.

EWC's analysis in **Attachment 2** to this comment letter also shows that several moderate and low-export Twin Tunnels project scenarios become infeasible if lower and very plausible estimates of "preserved" export levels are used. If the existing modeled water cost of the biological opinions is subtracted from average south-of-Delta exports the last 15 years or so, the future without Twin Tunnels' exports could average about 4.66 million acre-feet. This "preserves" about 45,000 acre-feet worth of exports. ***At that reduced level of "supply preservation" the incremental cost of Twin Tunnels water skyrockets from \$723 to over \$20,200 per acre-foot.*** Other scenarios fail to preserve exports and become infeasible as a result (that is, they have negative incremental costs). In **Table A2-1 in Attachment 2**, the low outflow (that is, high average exports of 5.591 million acre-feet per year) without-Twin-Tunnels scenario would have an annualized cost per acre-foot of about \$979. This is nearly twice the per unit cost of water from the Twin Tunnels project using BDCP assumptions for future exports.

²⁰³ Rodney T. Smith, *Hydrowonk Blog*, posted October 9, 2013. Dr. Smith's serial examination of BDCP economics, yield, and finances are essential reading for those interested in these BDCP issues, whether one agrees or not. His blog posts on BDCP commenced July 30, 2013 and continued through October 9, 2013. Regarding these baseline water supply issues, Dr. Smith observed, "None argue that the no tunnel scenario would yield less water than projected by DWR. All argue that there will be significantly more water than projected by DWR. If this proves the case, the annual cost of BDCP water will easily exceed \$1,000/AF (inflation adjusted)." Accessible online 11 April 2014 at <http://hydrowonk.com/blog/2013/10/09/hydrowonks-take-on-the-bdcp/>.

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Figure 11

Assessing Southern California Water Strategies									
Strategy	2025 Regional Potential (TAF*)	Typical Project Characteristics							
		Timeframe (years)	Drought-Proof (Reliability)	Risk (Project Aborted)	Enviro Opinion	GHG	Initial Cap. Cost (\$Millions)	Annual Oper. Cost (\$Millions)	30-yr cost Treated (\$/AF)
<i>Strategies to Replace or Augment Imported Water</i>									
Urban Water Conservation	1,100+	0-2	●	●	●	●	\$0	\$0.5	\$210
Local Stormwater Capture	150+	3-5	●	●	●	●	\$40-\$63	\$1-\$3.5	\$350+
Recycling	450+	6-10	●	●	●	●	\$480	\$30	\$1,000
Ocean Desalination	150+	6-10	●	●	●	●	\$300	\$37	\$1,000+
Groundwater Desalination	TBD	6-10	●	●	●	●	\$24	\$0.7	\$750-\$1,200
<i>Strategies to Increase Imported Water</i>									
Transfers-Ag to Urban	200+	1-5	●	●	●	●	n/a	n/a	\$700+
<i>Strategies to Increase Reliability</i>									
Inter-agency Cooperation	**	0-5	●	●	●	●	low	low	n/a
Groundwater Storage	1,500+	3-5	●	●	●	●	\$68-\$135	\$13	\$580
Surface Storage	0	10+	●	●	●	●	\$2,500+	\$7.5-\$15.5	\$760-\$1,400

*TAF-Thousand Acre-Feet
** Improves reliability and efficiency of existing supplies
Source: LAEDC

● Favorable
 ● Neutral
 ● Unfavorable

LAEDC Consulting Practice

How do these incremental water costs of the proposed Twin Tunnels project fit in with the cost of other alternative sources of water for California? Figure 11 draws on cost data from recycling and desalination projects in southern California summarized by the Los Angeles Economic Development Corporation (LACEDC).²⁰⁴ Recycling project costs range between \$210 for urban water conservation supplies to \$1400 per acre-foot for new surface storage supplies. Twin Tunnels water would fall within this range (\$530 to \$715 per acre-foot) if BDCP assumptions about future Delta exports are to be believed.

But if future Delta exports without the Twin Tunnels were to follow the status quo, the range of “status quo” Delta exports yields an annualized water cost of \$970 to \$20,000 per acre-foot for the

²⁰⁴ Los Angeles County Economic Development Corporation, *Where Will We Get the Water? Assessing Southern California’s Future Water Strategies*, 2008. Accessible online 13 August 2013 at <http://laedc.org/reports/WhereWillWeGettheWater.pdf>.

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Twin Tunnels project. This would move Twin Tunnels' relative affordability to the high end of the range of new water supplies, and even well beyond.

C. BDCP's Affordability Analysis Fails to Support Financial Assurances

The BDCP analysis of water affordability from the Twin Tunnels project is deeply flawed and fails to support the demand-side basis of financial assurances needed to make statutory findings for issuance of incidental take permits. The fishery agencies should reject BDCP incidental take application for lack of adequate funding assurances.

The questions "who pays?" and "how affordable is Twin Tunnels water?" are inadequately addressed by the BDCP economic analysis. The poor quality of the analysis undermines the credibility of BDCP's claims for offering adequate funding assurances to the fishery agencies.

Currently, agricultural water contractors pay anywhere from \$7 to \$112 an acre-foot in the Central Valley Project, according to Bureau cost allocation and repayment data online.²⁰⁵ The average equivalent unit cost of State Water Project water to San Joaquin Valley water contractors (most of whom are agricultural) is about \$52 an acre-foot in 2012. ***The new water from the Twin Tunnels project is on its own terms a very expensive water supply for growers in San Joaquin Valley agricultural water and irrigation districts.***

Many aspects of the financing and governance plans for the Bay Delta Conservation Plan are still in discussion behind the scenes.

The exorbitant cost of the Twin Tunnels in the Bay Delta Conservation Plan must be part of the fishery agencies' analysis of whether BDCP meets the funding assurance criterion of issuance. At this stage, the precise mechanisms by which the Twin Tunnels will be financed are unclear.²⁰⁶ Chapter 8 states that the state and federal water contractors will be the sole funders of all water facilities and operations (Conservation Measures 1 and 2).²⁰⁷ For what ensues here, the analysis assumes that the SWP Applicants issue revenue bonds to raise their share of needed capital. Chapter 8 notes too that while the Twin Tunnels project could be financed with general obligation bonds (which relies on the full faith and credit of all taxpayers in a jurisdiction, or statewide, if issued by the state of California) or revenue bonds, the latter are believed to be the more likely form of financing employed to raise capital for constructing the facilities for Conservation Measures 1 and 2 of BDCP. Because they are backed solely by revenues from use of the facilities, they carry a higher interest rate compared with general obligation bonds (which would be backed by the full faith and credit of the State of California). This results in higher aggregate interest costs for the Twin Tunnels investment.

BDCP Chapter 8 asserts the affordability of the Twin Tunnels project to the ratepayers of the urban and agricultural agencies without demonstrating it:

²⁰⁵ US Bureau of Reclamation Rate Books, 2013 Schedule A-1. Accessible online 17 July 2013 at <http://www.usbr.gov/mp/cvpwaterrates/ratebooks/index.html>.

²⁰⁶ San Diego County Water Authority General Manager Maureen Stapleton wrote to BDCP director Gerald Meral in August 2012 that the project "is anticipated to be financed through project revenues," meaning revenue bonds. Letter of Maureen Stapleton, General Manager, San Diego County Water Authority, to Gerald Meral, Deputy Secretary California Natural Resources Agency, August 28, 2012, p. 3. Letter attached to this memorandum.

²⁰⁷ BDCP, Chapter 8, Table 8-41, "Summary of Estimated Funding by Entity, Sources, and Plan Component," p. 8-74.

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- Total personal income of all counties integrated into the state and federal water systems comes to \$1.1 trillion and BDCP annual costs to ratepayers represents about 1/1000th of this total personal income. This, claims Chapter 8, is “far below the cost thresholds typically used for evaluating ability to pay.”²⁰⁸
- Per capita costs for BDCP water conveyance facilities compare favorably with those of other large-scale water projects in California, at \$580 per person (assuming a benefiting population of 25 million).²⁰⁹

These rationales are weak at best.

Concerning the first point, total personal income is an aggregated measure of income. It does not take account of the distribution of income amongst the households in a region or jurisdiction, and it fails to take account of the costs those households already face for other goods and services they purchase in the local and regional economy. Using such a rule of thumb of BDCP financing costs (i.e., “1/1000th of total personal income”) is woefully inadequate measure of affordability when it comes to a project the scale of the Twin Tunnels and BDCP.

Water affordability analysis must identify and justify criteria for a reasonable cost of a particular good, such as water, and a reasonable portion of a family or household budget in which the cost of water would be thereby recognized as “affordable.” (This approach is typically employed in housing affordability analysis.) Chapter 8 analysis provides no such rationale, and does not offer any reasoned analysis as to why “1/1000th of total personal income” represents a reasonable criterion. A proper economic analysis of affordability would identify what people pay now for water in these same counties, evaluate it in relation to their disposable income, and evaluate how a change in the price might affect their demand for water consumption. No such analysis is provided by the Applicants in the BDCP economic analysis.

Household income affects water consumption. Increasing income is often correlated with rising demand for water usage:

The *intuition* for this relation is that wealthier individuals have a less restrictive budget, which allows them to use water more intensively in each of its uses, and water can be used within the household in new ways [such as installing lawn sprinklers]. As incomes grow, *holding other factors constant*, household water consumption will likely increase.²¹⁰

This idea is the *income elasticity of demand* for water. It is a positive expression: the more wealth one has, the more water one is likely to use. It is also true that if the price of water rises, people usually respond by consuming *less* water, regardless of their income. This idea, the *price elasticity of demand*, indicates that *price* and demand for water are negatively related: the higher the price of water goes, the less of it one is likely to consume, subject to biophysical limits of our need for water.

The BDCP economic analysis acknowledges the price elasticity of demand for water in its discussion of the benefits of the Twin Tunnels’ supposed impact on water supply reliability. But it is unclear, even doubtful, that this concept was applied in BDCP’s economic analysis. As supplies decrease,

²⁰⁸ BDCP, Chapter 8, p. 8-99.

²⁰⁹ BDCP, Chapter 8, Table 8-53, p. 8-101.

²¹⁰ BDCP, Appendix 9.A, page 9.A-16. Emphasis added.

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operating costs of suppliers remain relatively fixed. Water rates would have to rise for the supplier to avoid a fiscal deficit. But as water rates rise, demand decreases, so water agency revenues often decrease, a vicious circle or negative feedback loop for the agency.

The BDCP economic analysis actually provides an entire page listing price elasticities of water demand for urban water agencies in California that may commit to paying for Twin Tunnels water.²¹¹ Three are from the Bay Area (Zone 7, Alameda County Water District, and Santa Clara Valley Water District). Their price elasticities are all under -0.2, meaning that for a unit change in the price of water, demand would fall 20 percent (again, the negative sign means that price and demand are inversely related). Generally, price elasticities are higher among southern California water agencies, ranging from -0.146 in San Marino to -0.324 in the city of Fullerton (Orange County). The diversity of these agencies' price elasticities likely reflects the income diversity of their customer bases: the higher the incomes in different customer bases, the lower their price elasticity of demand (and therefore the more indifferent wealthier communities may be to cost-of-water price signals).

The Environmental Water Caucus would like to know: why are there no analogous price elasticities of demand for the agricultural water agencies' areas (or some other appropriate elasticity of demand with respect to water that is applicable in their regions)? Nothing at all similar for agricultural water agencies is provided in the BDCP economic analysis nor anywhere else in BDCP Chapters 8 and 9, although agricultural price elasticities of demand are surely well studied. These elasticities would be essential for helping the fishery agencies evaluate how demand for water would change among both agricultural and urban water users, given the incremental costs of Twin Tunnels water. This test must be conducted, yet it has not been provided in BDCP economic analysis.

Similarly, the focus on total personal income using a fractional ratio as the basis for judging affordability of Twin Tunnels stands out at best as odd, at worst as highly inadequate for evaluation of financial assurances BDCP hopes to provide to the fishery agencies. It neglects the effects of the price of water on demand in urban and agricultural water use sectors, and is therefore inadequate economic justification and analytical support to the contention by BDCP that Twin Tunnels water would be affordable to Applicants' customer bases. ***The BDCP economic analysis should be rejected by the fishery agencies as a supposed "assurance" of the financial strength of BDCP.***

As noted above, BDCP Chapter 8 also argues that per capita allocation of the capital costs of BDCP is a valid and meaningful approach in comparison with other per capita costs of other major water projects.

There are large problems with such a comparison. First, customers don't just pay for capital costs. They also pay revenues through their water bills to cover operating and maintenance costs and interest on bonded indebtedness to pay off capital projects. (That is an advantage in economic analysis of using an annualized cost that takes account of interest rate, term, and principal, analogous to calculating payments on a mortgage.) Customers also pay more through their water bills when there are capital cost over-runs. At least one of the projects listed in BDCP Chapter 8, a locally-built project called the Coastal Branch of the California Aqueduct to Santa Barbara County, suffered cost overruns and other undisclosed costs. The construction cost overrun was from \$270 million to \$600 million at completion. The remainder of previously undisclosed costs were interest, operations, maintenance and energy amounting to a final total of \$1.6 billion. The costs of these

²¹¹ BDCP, Appendix 9.A, Table 9.A-4, page 9.A-32.

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overruns and extra costs are still being paid by Santa Barbara County residents between Santa Maria and Carpinteria.²¹²

Second, the comparison of per capita costs of major capital water projects is far too blunt an instrument of analysis to be meaningful. It ignores the reality of how any given project is actually paid for by most consumers of water: through their monthly or bi-monthly water bills. It ignores whether their consumption is metered. It ignores a multitude of factors that figure into how much water households and businesses consume across different regions and how much income each household can put to paying extra for water.

Finally, the per capita cost analysis does not indicate over what time period the repayment of per capita cost would be required.

Thus, BDCP's "business case" to the fishery agencies is poor indeed. ***These are significant reasons to doubt the funding assurances currently provided in BDCP. If they are provided as part of the actual BDCP application for incidental take permits, they should be rejected by the fishery agencies.***

D. Lack of "Step-Up" Provisions in BDCP Financing Plan

The Twin Tunnels financing plan remains highly uncertain and fails to meet the requirements of funding assurances needed to make statutory findings for issuance of incidental take permits.

The final component of evaluating the "business case" supporting BDCP's claim of funding assurances to the fishery agencies is the question of who "steps up" to bail out the Twin Tunnels project if Applicant agencies and their customers decline to participate, or default after it is completed and goes into operation. Answers to this question are crucial for all involved in the decision whether to issue incidental take permits: the Applicants (including the state and federal governments, and the major water contractors supporting BDCP) as well as the fishery agencies responsible for permit issuance.

1. State Water Project Contractors

One approach to funding assurance that addresses the issue of what occurs in the event the Twin Tunnels project fails was provided in a 2012 letter by the San Diego County Water Authority (SDCWA) to then-BDCP director Jerry Meral.²¹³ SDCWA is the largest customer for imported water from the Metropolitan Water District of Southern California (MWD), which is in turn the largest SWP contractor. SDCWA in 1991 took 95 percent of its water from MWD, but now takes only about 45 percent.

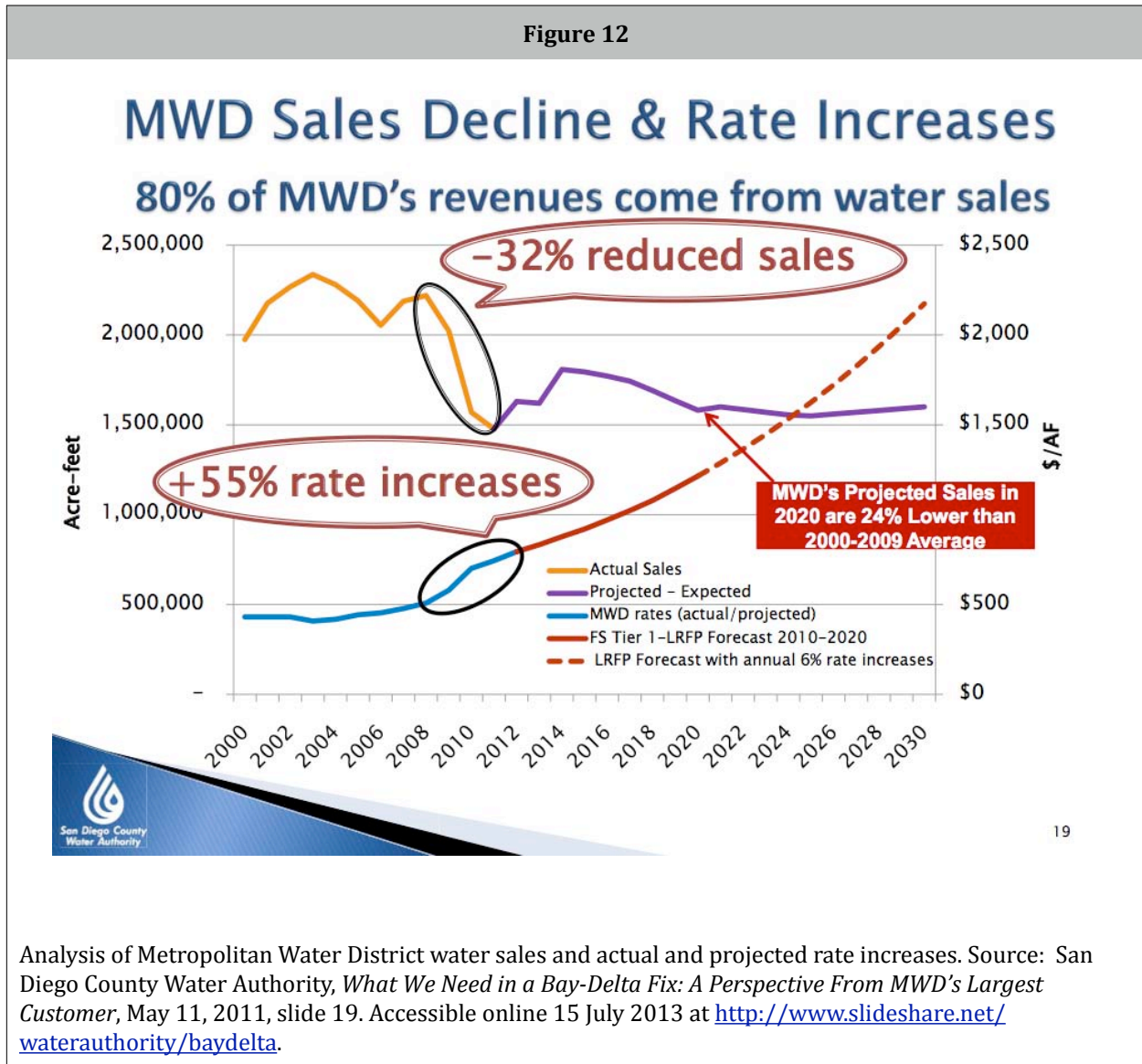
SDCWA argued to Meral that MWD is struggling fiscally. MWD water sales declined 30 percent between 2008 and 2012, and are projected to level off over time. As can be seen from Figure 12, MWD's water rates were in the vicinity of \$750 in 2012 and are projected to climb higher in the future.

²¹² California Water Impact Network, *Why We Cannot Afford the Proposed Peripheral Canal/Tunnel: The Santa Barbara County Experience*, July 26, 2012. Accessible online at <https://www.c-win.org/content/c-win-press-release-report-documents-huge-cost-overruns-santa-barbara%E2%80%99s-state-water.html>.

²¹³ Letter of Maureen A. Stapleton, General Manager of San Diego County Water Authority, to Dr. Gerald Meral, Deputy Secretary of the California Natural Resources Agency, August 28, 2012, 8 pages. Hereafter cited as "Stapleton letter."

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A 2011 study of the 2010 urban water management plans of MWD's 11 largest member agencies found that by 2035 only three agencies plan to increase the share of their water supply obtained from imports by MWD.²¹⁴ Their increased shares of imports would be very small (1 to 5 percent). West Basin Municipal Water District, and the cities of Long Beach and Los Angeles plan reductions in both the share of imported water from MWD and the absolute amounts of those imports as well. Together their absolute reductions are projected to total 141,300 acre-feet per year.²¹⁵



²¹⁴ Central Basin Municipal Water District, Three Valleys Municipal Water District, and Eastern Municipal Water District.

²¹⁵ Phillips, C. 2013. *Imported vs. Local Water Supplies: The Planning Decisions Facing Southern California Water Agencies*, Goldman School of Public Policy, University of California, Berkeley, August 3, 2011. Central Basin Municipal Water District plans no increase in the absolute amount of its MWD imports. Accessible online 15 July 2013 at http://switchboard.nrdc.org/blogs/bnelson/Local%20vs%20Imported_Final%208-4-11.pdf.

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For the eleven largest MWD member agencies, they project demand growth of just 103,775 acre-feet by 2035 an average of under 400 acre-feet per member agency per year.²¹⁶

The City of Santa Monica has vowed to become completely free of imports from MWD by 2020 while simultaneously reducing its current rate of imports from 85 percent in to 33 percent in 2012. In 1995, the City had to close five drinking water wells and replace the supplies with imports from MWD. In 2012, the City completed a water treatment plant that accounts for the recent reduction in its imports.

As a consequence of these and other actions by local water agencies in urban southern California, demand for MWD imports has weakened significantly. MWD imports include water not only from the State Water Project exporting from the Delta but Colorado River Aqueduct imports as well.

The weakening of demand for MWD imports reflects the flexibility and consumer sovereignty that MWD member agencies (including San Diego County Water Authority) exercise and enjoy. This consumer sovereignty enables them to consider and act on developing alternative local supplies rather than import costly water from MWD for which they may prefer not to pay.²¹⁷ (Many of these supply alternatives are likely to be more drought-resilient than the Twin Tunnels, which is dependent on snowpack, reservoir storage, and river runoff.)

In this fashion, MWD's high water rates and policy of allowing member agencies to opt out of taking imports are stimulating the very local and regional water self-sufficiency mandated in the Delta Reform Act of 2009.²¹⁸

This same consumer sovereignty will make it difficult for MWD to cobble together adequate financial assurances or guarantees.

SDCWA informed Meral in August 2012 that Metropolitan Water District's member agencies are not required to buy water from MWD because they have not and "will not" sign contracts that require member agencies to make regular fixed purchases from MWD whether or not they take water. (This type of contract is known as "take or pay.") SDCWA draws out the political and financial implications of MWD supporting a project for which it cannot assure repayment of the revenue bonds:

...because the project is anticipated to be financed through project revenues, we are informed that bond underwriters are expected to require a 'step up' provision by which each BDCP participant in BDCP-related bonds pledges to assume the obligations of defaulting participants.[] [I]t is conceivable that some

²¹⁶ This is worked out as 103,775 acre-feet divided by a 25 year planning horizon divided by 11 member agencies. This yields an average of about 377 acre-feet per member agency per year, rounded up to 400.

²¹⁷ Maven's Notebook, [Assembly oversight hearing on the funding structure and economic impacts of the Bay Delta Conservation Plan \(part 3\): San Diego County Water Authority & Contra Costa Water District share their concerns](#), February 21, 2014. See especially remarks of Dennis Cushman, Assistant General Manager of San Diego County Water Authority.

²¹⁸ California Water Code Section 85021, stating: "The policy of the State of California is to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency. Each region that depends on water from the Delta watershed shall improve its regional self-reliance for water through investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects, and improved regional coordination of local and regional water supply efforts."

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of the BDCP participants may default, which would cause remaining participants, including MWD, to assume a greater portion of the debt. It is important that Chapter 8 analyze the possible effects of the 'step up' provisions on MWD and the other participants in the BDCP.²¹⁹

The BDCP economic analysis has so far not provided that analysis. If remaining participants must step up, that means their costs of Twin Tunnels project water will rise in order to meet repayment obligations to bondholders. The lack of such assurances at present means that BDCP underestimates the costs and affordability of its Twin Tunnels project.

In 2011, SDCWA pledged to support BDCP by committing (in a Powerpoint presentation and later in a 2013 media release²²⁰ and in their official comments on BDCP, dated May 30, 2014²²¹) to a firm, long-term contract to pay for its share of water and facilities, so long as other MWD member agencies do too.²²² Property taxes have been suggested as "the ultimate security" for BDCP repayment obligations of contractors, but property tax increases would probably require voter approval. SDCWA recommends that Meral include in BDCP "a careful legal analysis of MWD taxing authority...if taxes are contemplated as additional back-up security for project [bonded] debt." SDCWA concluded bluntly that:

At a minimum, state water contractors that are wholesale water agencies must demonstrate that their customers—the member agencies or units that buy their water and provide their revenues—have take-or-pay contracts or other enforceable commitments to pay the fixed costs of the project commensurate with the term of the BDCP obligation [i.e., 50 years].²²³

²¹⁹ Stapleton letter, *op. cit.*, p. 3.

²²⁰ San Diego County Water Authority, "Water Authority Seeks Right-Sized, Cost-Effective Bay-Delta Plan," July 25, 2013. Accessible online 13 August 2013 at <http://www.sdcwa.org/water-authority-seeks-right-sized-cost-effective-bay-delta-plan>.

²²¹ Letter of Maureen A. Stapleton, General Manager, San Diego County Water Authority to Ryan Wulff, National Marine Fisheries Service, *Re: Draft EIR/EIS for the Proposed Bay Delta Conservation Plan, Alameda, Contra Costa, Sacramento, Solano, and Yolo Counties*, May 30, 2014, 19 pages plus attachments. Accessible online 8 June 2014 at <http://www.sdcwa.org/sites/default/files/files/news-center/top-issues/05-30-14%20BDCP%20Comment%20Ltr.pdf>

²²² San Diego County Water Authority, *What We Need in a Bay-Delta Fix: A Perspective by MWD's Largest Customer*, May 11, 2011, slide 25. Accessible online 15 July 2013 at <http://www.slideshare.net/waterauthority/baydelta>.

²²³ Stapleton, *op. cit.*, note 16, p. 4. Metropolitan Water District has 26 member agencies, 12 of whom serve as wholesalers to another 251 cities and communities in southern California. MWD contracts for about 50 percent of State Water Project's total Table A amount. Kern County Water Agency has 13 "member units" in Kern County region, and contracts with the State Water Project for about 25 percent of the total Table A amount. See also Stapleton's letter of May 30, 2014, *op. cit.*, to BDCP; and SDCWA's News Release, "Water Authority Seeks Clarity About Bay-Delta Financing Plan," June 3, 2014. Accessible online 8 June 2014 at <http://www.sdcwa.org/water-authority-seeks-clarity-about-bay-delta-financing-plan> where it states: "Since MWD derives more than 80 percent of all its revenues from water sales, a decreasing sales base over the long term would force some MWD member agencies to shoulder more of the cost of Bay-Delta upgrades than expected. The Water Authority has repeatedly called for MWD member agencies to provide firm financial commitments to demonstrate their need for the project and pay their fair share of MWD's fixed costs related to the Bay-Delta, but they have refused to do so."

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Without such a “due diligence” analysis of BDCP funding, wrote SDCWA, the plan “faces a potential cascading collapse of funding.”

BDCP’s current economic analysis continues to be silent on this issue, despite SDCWA’s warning 22 months ago. Chapter 8 does include a section on bond financing, but it is merely introductory.²²⁴

Whether revenue bonds are issued by the state or by highly rated water contractors, the problem of repayment arrangements remains unresolved at least until further releases of information from BDCP are available. How would the state or the bond-issuing entity make state water contractors and their member agencies commit to “take-or-pay” BDCP financing given the project’s exorbitant cost and the relative competitiveness of other local supply alternatives?

2. Central Valley Project Contractors

Important questions surround the ability and willingness to pay for the Twin Tunnels project of Central Valley Project water contractors. Agricultural water agencies make up about 90+ percent of both cost allocations and water deliveries within the Central Valley Project. Do CVP contractors currently repay all of the costs of existing CVP facilities? Are they on schedule to do so? If not, how are shortfalls defrayed, and what do they still owe?

Would congressional action be needed to authorize the Bureau of Reclamation to finance its share of BDCP capital costs? What is the existing financial condition of CVP agricultural contractors to afford and support BDCP financing through agricultural water rates? BDCP’s economic analysis is silent on these and other such matters.

Presently, CVP water contractors lag on repaying the costs of existing CVP facilities, according to a March 2013 review by the US Department of the Interior, Office of Inspector General (IG).²²⁵ The IG found:

- The current rate-setting process contributes to repayment uncertainty.²²⁶
- Contract provisions limit repayment of project costs.²²⁷
- By 2030, when CVP capital facilities are required by Congress to be paid off, repayment could be short by between \$330 million to \$390 million.²²⁸

²²⁴ This section states that the State Water Project is a highly rated financial risk, due in part to the fiscal strength of its water contractors (the largest of whom are Metropolitan Water District and Kern County Water Agency). It provides a highly simplified example of four bond issues that could finance Conservation Measure 1 facilities (i.e., Twin Tunnels).¹⁷² These issues could finance \$15.575 billion based on interest rates ranging from 6.132 to 6.135 percent. The example does not provide any estimate of total interest costs per issue (and per acre-foot for that matter) on the financed amount at these rates.¹⁷³ **Total interest cost fully amortized over 40 years given these bond terms would come to about \$26.3 billion, bringing BDCP’s total costs to \$42 billion.**

²²⁵ US Department of the Interior, Office of Inspector General, *Central Valley Project, California: Repayment Status and Payoff*, Report No. WR-EV-BOR-0003-2012, March 2013. Hereafter, DOI, *CVP Repayment Status*. Accessible online 15 July 2013 at <http://www.doi.gov/oig/reports/upload/WR-EV-BOR-0003-2012Public.pdf>.

²²⁶ DOI, *CVP Repayment Status*, p. 4.

²²⁷ *Ibid.*, p. 5.

²²⁸ *Ibid.*, pp. 6-7.

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- Municipal and industrial contractors face an annual operating and maintenance deficit of about \$55 million annually by 2030 as well.²²⁹
- Power customers “will pay any costs above the irrigation contractors’ ability to pay,” meaning that when irrigation revenues fail to cover costs (such as when actual deliveries are less than projected deliveries), revenues from power sales within the CVP are used to reduce or eliminate those deficits.²³⁰

A 2008 study for the Delta Vision Blue Ribbon Task Force found that nearly \$1.3 billion is owed by CVP contractors for the capital facilities of the project. Of this amount, San Joaquin Valley and Sacramento contractors have together repaid about 21.5 percent of this cost.

Repayment of CVP costs by the contractors is shifting, however. Just five years ago, San Joaquin Valley irrigation contractors had repaid just 19.4 percent of their allocated costs of \$955 million, but within five years, Bureau accounting records indicate that collectively they have now repaid nearly half of their project costs (48.3 percent) even though their allocated capital costs rose to just over \$1 billion. The surge in repayments was led by Friant-Kern and Madera Canal-area contractors, neither of whom would benefit directly from Twin Tunnels imports.

By contrast, CVP irrigation contractors on the west side of the San Joaquin Valley—who are among BDCP’s Applicants and most ardent supporters—continue to lag on repayment of their existing allocated CVP costs. The irrigators of the Delta-Mendota Canal and Pool units, the San Luis unit (both Fresno and Tracy), and the Cross Valley Canal in Kern County all have repaid less than 27 percent of allocated project costs, though facilities like the Delta Mendota Canal and the San Luis Canal have existed since the 1950s and 1960s. This appears to be the case despite the fact that irrigation contractors with these CVP units by law pay no interest on their contracts (while municipal and industrial contractors do).

Along the San Luis Canal where Westlands Water District is the primary irrigation contractor, just 22.7 percent of the nearly \$460 million in allocated capital costs for the Canal unit has been repaid, leaving about 77 percent that must be repaid by 2030 under congressional repayment requirements, now just 16 years away. This amounts to about \$20 million per year between now and 2030.²³¹

Furthermore, unlike urban water agencies whose landowners can be held financially responsible through taxes and liens in the event of BDCP bond default, agricultural water agency customers will apparently not be held responsible. Westlands Water District’s manager has stated:

The security on the bonds is the [Westlands] district’s revenue, *not* the landowner’s land. In a worst case,

²²⁹ *Ibid.*, p. 7

²³⁰ Thus, while M&I contractors provide only a slight subsidy to agricultural contractors, the CVP is structured so that hydroelectric power revenues are used to defray operating deficits in the accounts of each irrigation contractor. *Ibid.*, p. 7; see also Entrix, Inc., *Overview on Central Valley Project Financing, Cost Allocation, and Repayment Issues*, provided to the Delta Vision Blue Ribbon Task Force, September 18, 2008, p. 11. Accessible online 15 July 2013 at http://deltavision.ca.gov/ConsultantReports/CVP_Financing_and_Repayment_Summary_9-18-08.pdf. The power subsidy to irrigation contractors is confirmed on page 11 of this document.

²³¹ Entrix, Inc., *op. cit.*, note 34, Table 4, p. 17; US Department of Interior, Bureau of Reclamation, Mid-Pacific Region Office, “Schedule of Construction Costs Allocation by Contractor,” Schedule A-2Bb, December 2012.

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we file for bankruptcy. That's what the District could do. The landowners' land is not security.²³²

The Plan does not disclose who will be responsible for paying off the revenue bonds if Westlands and other water agencies default on their bonds because they cannot make their payments.

Lack of a financing plan means the Bay Delta Conservation Plan and the project description in its EIR/EIS are incomplete, cannot deliver funding assurances to the fishery agencies, and therefore cannot be legally meet the statutory findings the fishery services must make under Section 10 of the federal Endangered Species Act, and fulfill disclosure requirements of the California Environmental Quality Act and National Environmental Policy Act.

²³² Transcript of January 14, 2014, meeting of Westlands Water District Board of Directors, page 7. Accessible online 8 June 2014 at http://www.c-win.org/webfm_send/434.

V. BDCP fails to provide governance and implementation support for compliance with its long-term funding and ecological assurances.

There are numerous questions raised by BDCP's implementation plan and governance structure. Few of these questions are adequately answered at this time. Some questions have to do with funding of the Twin Tunnels projects and the habitat restoration and other conservation measures included in the Bay Delta Conservation Plan.

Other questions, though, have also to do with basic rules of decision-making and due process that are neglected in Chapters 6 and 7 of the BDCP, and in a July 2013 draft of the Implementing Agreement obtained from the US Fish and Wildlife Service this spring.

Questions bear on whether iron-clad assurances are in place prior to approval of the BDCP and issuance of incidental take permits by the fishery agencies. Other questions bear on the *how* of implementing BDCP. There is little about the questions and how they are answered by BDCP at present that inspire confidence and trust. Now is the time for the fishery agencies to insist on more answers from the BDCP Applicants. ***After signing the Implementing Agreement and issuing the incidental take permits, it will be too late.***

A. Ecological assurances are unsupported by governance in the Bay Delta Conservation Plan.

There are many ways in which the BDCP plan for governance and implementation fails to support long-term ecological assurances. First, the Biological Goals and Objectives are severed from compliance with incidental take permit conditions, as we described in Section III. Second, the recovery requirement in the Delta Reform Act (Water Code Section 85320(b)(2)(A) means that the ecological assurances are unsupported and virtually meaningless because the Applicants will be free from being held to account by enforceable constraints on their actions. For reasons described elsewhere in these comments, the Applicants have a poor track record minimizing the ecological effects of exporting water from the Delta.

Incidental take limits have not yet been quantified. Consequently there is no quantified basis on which to issue and enforce incidental take limits, certainly nothing available for the public to evaluate and assess.

Statutory findings cannot be made by the fishery agencies in support of issuing incidental take permits, based on modeling results generated from BDCP's analytic efforts to date.

The Authorized Entity Group (AEG) is given authority to make final decisions over how the conservation measures 2 through 22 are handled (DWR and the US Bureau of Reclamation plan to retain full ownership and management responsibility and control over their respective water project operational activities). AEG's responsibilities include:

- Oversight and management of funding and resources.
- Contracting out for services.
- ***Oversight and administration of all conservation measures.***
- ***Implementation of outreach, compliance monitoring, and reporting requirements.***
- BDCP's Annual Work Plan and Budget.

The Environmental Water Caucus is deeply concerned that the water project operators and their contractors will be responsible for administering all of the non-water project conservation

measures. ***If this means all taxpayer funding for habitat restoration will be controlled by the Implementing Office subject to AEG oversight, we view this as a non-starter.*** BDCP is saying it will depend for much of its habitat restoration and other conservation measure funding on voter-approved bond funds. These funds, should voters approve them, represent over 52 percent of the \$7.3 total estimated funds needed for conservation measures 2 through 22.²³³ BDCP's Implementation Office and Authorized Entity Group should not be entrusted with direct control over this much in taxpayer funds. ***The contractors claim they would put up just 10 percent of the funds for habitat restoration and other conservation measures, but would apparently exercise full control over how all \$7.3 billion in funding for conservation measures 2 through 22 would be managed. We believe this represents an inherent conflict of interest, perhaps even a gift of public funds.*** The same AEG members oversee water project operations closely (if not through formal AEG actions, then through daily interaction over water allocations, deliveries, and many other project-related issues) and yet would be making final decisions about implementation of habitat restoration conservation measures as well. The metaphor of the fox guarding the chicken coop comes all too easily to mind.

We have identical concerns about the Authorized Entity Group having final say over compliance monitoring and reporting requirements. As we have noted elsewhere in these comments, these requirements have been poorly specified. Effectiveness monitoring is left out of this list as well, though it is incorporated into BDCP's appendix concerning research, monitoring and adaptive management. This implies all too loudly that BDCP Applicants likely care little whether habitat restoration projects and projects of other conservation measures effectively or not.

B. It is impossible for a project/plan the scale of BDCP to adhere to both the “No Surprises Rule” and operate an effective adaptive management program.

The problem of the large role given BDCP's adaptive management program comes into greater focus when the governance of the program is described.

As a cadre of professional scientists, the BDCP Adaptive Management Team would be charged with framing hypotheses relevant to BDCP research needs, conducting the research, and presenting results and recommendations to the Implementation Office's Science Manager. (These recommendations may address a change in how a biological goal or objective is achieved, or may even attempt to recommend a change to a biological goal or objective.) The Team is to operate, according to BDCP's governance rules, on a consensus basis.²³⁴ But if the Adaptive Management Team fails to reach consensus on its recommendations, what then?

The Authorized Entity Group and the Permit Oversight Group²³⁵ are given “joint” responsibility for making the final decision on the matter posed by the Adaptive Management Team. This joint responsibility goes undefined in both BDCP and the July 2013 Implementing Agreement.

²³³ BDCP, Chapter 8, *Implementation Costs and Funding Sources*, Table 8-37, p. 8-65 to 8-66.

²³⁴ BDCP, Chapter 7, *Implementation Structure*, Table 7-1.

²³⁵ Membership of the Authorized Entity Group consists of four individuals representing the California Department of Water Resources, the US Bureau of Reclamation, state water contractors, and federal water contractors. Membership of the Permit Oversight Group consists of three individuals representing the US Fish and Wildlife Service, the National Marine Fisheries Service, and the California Department of Fish and Wildlife.

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Questions: How will votes be handled when all members of the joint AEG/POG are present? By what quorum rules will they operate? Will decisions arrived at by rule of majority, super-majority, or consensus? Will these groups have alternates representing each agency so that no agency is excluded from making decisions when needed?

We note that this “AEG/POG” joint role crops up a lot (as shown in Table 7-1 of BDCP), when it comes “to deciding the matter” under adaptive management and monitoring. There would be seven members of this “joint” body: Four representing water agencies, three representing fishery agency regulators. ***This is an unacceptable and inequitable allocation of voting power when it comes to achieving the co-equal goals of both BDCP and the Delta Reform Act. It gives greater weight to water project operations and deliveries than to protection and restoration of the Delta ecosystem and recovery of listed species*** as called for in California Water Code Section 85320 (see discussion in Section VI on this law). We recognize, however cynically, that it is consistent with the overall thrust of the Bay Delta Conservation Plan and its likely outcomes. It is also consistent, alas, with “No Surprises” policy.

Moreover, we believe that this allocation of power within BDCP’s implementing structure reflects a compelling need for the Applicants (as reflected in the membership of the AEG) to privilege the No Surprises rule over adaptive management. Achieving biological goals and objectives on behalf of the covered and listed species within BDCP will have a lower priority, given this institutional design, consistent with the statement in the Biological Goals and Objectives we cited in Section III.

The No Surprises rule is central to the adaptive management role within BDCP. Nowhere is this clearer than in the May 2014 draft implementing agreement for BDCP. As part of their deliberations, states the agreement, “the Authorized Entity Group and the Permit Oversight Group shall adhere to the following “legal, policy, and regulatory principles”:

- The scope and nature of a proposed adaptive response will be considered within the totality of the circumstances, including *the degree to which the change is reasonably expected to offset the impacts of Covered Activities or Associated Federal Actions and Plan implementation or to better achieve the biological objectives.*
- The proposed adaptive management action must be consistent with the legal authority of the entity responsible for effectuating the action.
- The Adaptive Management process will be used to help ensure that Conservation Measures are in conformity with the ESA and NCCPA permit issuance criteria throughout the course of Plan implementation. Changes will be limited to those actions reasonably likely to ensure that (1) the impacts (or levels of impacts) of a Covered Activity or Associated Federal Action on Covered Species that were not previously considered or known are adequately addressed or (2) a Conservation Measure or suite of Conservation Measures that are less than effective, particularly with respect to effectiveness at advancing the biological goals and objectives, are modified, replaced or supplemented to produce the expected biological benefit.
- The strength of the scientific evidence linking the proposed change to a Conservation Measure and to the ability of the Plan to achieve the relevant biological objective or objectives.
- An assessment will be made of a potential adaptive change so that the desired outcome(s) will be achieved with the least resource costs. As long as equal or greater biological benefits can be achieved, adaptive responses should favor changes that minimize impacts to water supply or reliability.
- Prior to any decision to change a Conservation Measure in a manner that would potentially result in the modification of water supplies consistent with Section [10.3.7], non-operational

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alternatives will be considered and, if such alternatives are rejected, the Adaptive Management Team will provide an explanation provided [*sic*] as to why they were not sufficient to address the effects of the Covered Activity, or Associated Federal Action, or achieve the biological objective(s) of the Plan.²³⁶

Thus, adaptive management to achieve biological goals and objectives will be subservient to the No Surprises rule's protection of "no net loss to exports" (see our discussion of Real-Time Operations, Section III, above) carries into BDCP implementation. ***This conflicts utterly with the Delta Reform Act's vaunted "co-equal goals."*** Their co-equal stature would be honored in the breach by how voting power is allocated within BDCP's implementation structure. ***Once the ink is dry on BDCP's incidental take permits and the implementing agreement, the burden of proof of any BDCP and/or Twin Tunnels project harm to covered species lies with the scientists and the regulators—for the next 50 years.*** Any case regulators and adaptive management team attempts to build on behalf of some change to either biological goals and objectives or to any conservation measure must be compelling, iron-clad, bullet-proof. And, in the context of BDCP governance, the Authorized Entity Group may still veto it.

Put another way, the No Surprises rule reverses the relationship between the Applicants and the fishery agencies, once the incidental take permits are issued: "No Surprises" places the burden of proof on the fishery agencies to conduct scientific research to support changes in BDCP, or suspension or revocation of its permits.

As we have already commented, there are numerous reasons why this habitat conservation plan is a bad deal for the fishery agencies and the people of California and the United States of America. BDCP modeling results indicate its "conservation strategy" will perform poorly when measured against existing environmental, economic, and fiscal conditions and criteria. ***BDCP proposes to stack the deck of its governance in favor of water operations in flagrant violation of the Delta Reform Act's co-equal goals and the state and federal endangered species acts. BDCP's governance program cannot and will not support and sustain the ecological assurances to the fishery agencies that would adaptively manage the conservation strategy as a whole to achieve its biological goals and objectives, and not appreciably reduce the likelihood of the survival and recovery of listed species.***

C. The Bureau of Reclamation's exclusion from BDCP complicates BDCP's ability to provide and sustain ecological and funding assurances.

We note that the No Surprises rule does not apply to federal agencies like the Bureau of Reclamation because federal agencies are ineligible to participate in habitat conservation plans under Section 10 of the federal ESA.²³⁷ The Bureau must instead provide a biological assessment under Section 7 of the ESA as part of consultation with federal fishery agencies. The EIR/EIS is also intended to "inform a biological assessment that Reclamation will submit to the US Fish and Wildlife Service

²³⁶ *Draft Implementing Agreement for the Bay Delta Conservation Plan*, by and among the US Bureau of Reclamation, US Fish and Wildlife Service, National Marine Fisheries Service, California Department of Water Resources, California Department of Fish and Wildlife, and State Water Project/Central Valley Project Contractors, Draft, released May 2014, Section 10.3.5.1.2, p. 35. Emphasis added. Hereafter cited as "*Draft 2014 Implementing Agreement.*"

²³⁷ *Draft Implementing Agreement for the Bay Delta Conservation Plan*, by and among the US Bureau of Reclamation, US Fish and Wildlife Service, National Marine Fisheries Service, California Department of Water Resources, California Department of Fish and Wildlife, and State Water Project/Central Valley Project Contractors, Draft, July 2013, Section 13.3.2, p. 42. Hereafter cited as "*Draft 2013 Implementing Agreement.*"

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[USFWS] and the National Marine Fisheries Service [NMFS] to support an ESA Section 7 consultation.”²³⁸

This asymmetry among the water project owners (i.e., DWR can participate in BDCP directly because it is a non-federal agency) poses an implementation challenge to the Applicants. Federal water contractors cannot obtain the same “no surprises” regulatory stability that the state axis of water agencies may enjoy under BDCP and Section 10 of the ESA. Instead, BDCP signatories will include officials of the Department of Water Resources, the California Department of Fish and Wildlife, NMFS and USFWS. The Bureau, according to BDCP officials will execute two new memoranda of understanding (MOUs) that they say will also receive public review, but when these documents will be available, and for how long, has not yet been announced. According to BDCP officials the two MOUs will address the Bureau’s “commitment to the BDCP as a whole” to be co-signed by DWR officials at a minimum, and the second will address operation of the Twin Tunnels project and will presumably include wheeling arrangements as BDCP’s Chapter 7 anticipates.²³⁹

Still, without the Bureau staking itself to funding, operational, and ecological management commitments that all other BDCP Applicants sign onto in the Implementing Agreement, overall assurances are structurally weakened, subject to near-term and long-term vagaries and uncertainties of congressional policies (like the Anti-Deficiency Act) and politics.

D. Financial assurances are unsupported in the Bay Delta Conservation Plan.

As noted previously, the funding plan for BDCP is incomplete and poorly specified. This unfinished business also is reflected in the draft July 2013 Implementing Agreement.²⁴⁰ Preliminary review of the May 30, 2014, draft Implementing Agreement indicates that while the Funding section is now populated with words, the verbiage says little new from what is presented in Chapter 8 of BDCP. However, the new verbiage on funding contains two disconcerting passages:

In the event of a shortfall in State or federal funding, a Fish and Wildlife Agency(ies) shall not suspend or revoke the State and/or Federal Permits or invalidate Reclamation’s take statement if the shortfall in funding is determined to be likely to have no more than a minimal effect on the capacity of the Plan to advance the biological goals and objectives.²⁴¹ (p. 47)

"Actions that may be considered to address such shortfalls include adjusting the scope of the Plan in proportion to the public funding shortfall.²⁴² (p. 48)

This draft continues to provides no insight into **how** BDCP will be financed, which water contractors will definitely participate.

The federal Endangered Species Act requires that habitat conservation plans specify that the “applicant will ensure adequate funding for the plan will be provided” for conservation actions that minimize and mitigate impacts on species covered by the plan. At a minimum this means that BDCP:

²³⁸ BDCP EIR/EIS, Chapter 1, *Introduction*, p. 1-18, lines 3-5.

²³⁹ Personal notes of Tim Stroshane from California Department of Water Resources conference call, May 28, 2014.

²⁴⁰ *Draft 2013 Implementing Agreement.*, Section 12, *Funding*, pp. 38-40. Placeholders for obligations of the Authorized Entities and the fishery agencies contain no descriptions of funding.

²⁴¹ *Draft Implementing Agreement*, released May 30, 2014, p. 47.

²⁴² *Ibid.*, p. 48.

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- Must ensure funding over the lifetime of the permit.
- Cannot rely on federal funding to “ensure” funding of the plan in light of the “Anti-Deficiency Act and the availability of appropriate funds.”
- Must provide “remedies for failure to meet funding obligations by signatory measures”.
- “Cannot rely on speculative future actions of others” for funding, which would include voter approval of bond funds. And
- Must be backed by a guarantee by the applicant to ensure funding for all plan elements.

BDCP fails to meet any of these criteria as reflected in case law on habitat conservation plan funding assurances.²⁴³

BDCP’s analysis of supply and demand for Twin Tunnels water deliveries is grossly inadequate. Demand has not been demonstrated to exist for continuing imports from the Delta by Metropolitan Water District customers, as noted above. And the junior water rights of the state and federal water projects generally will not be improved in their priority position by obtaining new points of diversion on the lower Sacramento River at this late date. State and federal water supply reliability in the Delta will continue to be poor over the long haul, which will dampen sales and demand, which will in turn reduce the financial strength and capacity of the State Water Project in the long run, which could undermine their ability and willingness to continue funding implementation of the Bay Delta Conservation Plan. As discussed above, the largest CVP contractor already has plans to declare bankruptcy if that district cannot make payments, in order to avoid any liabilities for its landowners. This is an irresponsible exit strategy.

For lack of a financing plan, statutory findings about funding assurances cannot be reasonably made by the fishery agencies in support of issuing incidental take permits.

E. Will the State of California contract away its fiduciary responsibility to enforce the Public Trust Doctrine if one of its public trust agencies, the Department of Fish and Wildlife, signs the Implementing Agreement for BDCP and issues incidental take permits with a term of 50 years?

Local cities and counties are not allowed to contract away their police powers, including in matters of land use and subdivision in regulating new development. The State of California has fiduciary responsibility to protect the public trust.²⁴⁴ We are concerned that the State of California may tie its hands illegally and unnecessarily when it comes to enforcing the protection of public trust resources in the Delta, some of which are fish and wildlife.

The California Department of Fish and Wildlife is responsible for at least a portion of the state’s obligation to protect the public trust. The State Water Resources Control Board is also an agency of the State of California that is charged with protecting the public trust through its regulation of water rights and water quality. We understand that the State Water Board is not to be a signatory to the Bay Delta Conservation Plan Implementing Agreement, but we remain deeply concerned that even one state agency possibly signing away its authority to protect the public trust beyond the confines of BDCP might be signing it away for any and all others with current public trust responsibility. The BDCP and its EIR/EIS should address this matter squarely.

²⁴³ 16 USC 1539(a)(2)(B)(iii); *National Wildlife Federation v. Babbitt*, 128 F.Supp.2d 1274, 1294-95 (E.D. Cal., 2000); *Southwest Center for Biological Diversity v. Bartel*, 470 F.Supp.2d 1118, 1155 (S.D. Cal., 2006); and *HCP Handbook*, pp. 3-33 to 3-34.

²⁴⁴ *National Audubon Society v. Superior Court of Alpine County*, 658 P.2d 709 (Cal. 1983).

F. The Stakeholder Council as presently proposed excludes representatives of environmental justice communities.

BDCP's governance structure includes a "stakeholder council." This entity "will be formed to provide opportunities for interested parties to consider, discuss, and provide input on matters related to" BDCP implementation.

It appears to our member groups that the stakeholder council is to serve as a forum to help the BDCP implementation office gauge how it is perceived by "interested parties" like local elected and appointed officials, state, federal, and regional agencies (Delta-focused and the Central Valley Flood Protection Board), the counties, three "local government" seats, and the lay public. It also appears to us that the stakeholder council will "develop its own process to consider and provide input regarding the various aspects of BDCP implementation" and an opportunity to get and disseminate information about BDCP activities to their constituencies. It provides three seats for "conservation groups with expertise in fish and wildlife management, and or the management of aquatic habitats and other natural lands."²⁴⁵

This structure excludes representatives of environmental justice communities. It should be clear from our comments, and from Attachment 1, that BDCP poses important environmental justice issues for this community, including access to public arenas about water and fish in the Delta (i.e., public participation and information), subsistence fishing and public health, recreating, jobs, agricultural employment, and housing. If BDCP continues, the Stakeholder Council needs to reach out to include EJ communities of the Plan Area.

G. The meetings of both the Authorized Entity Group and the Permit Oversight Group must comply with the Brown Act.

The "current thinking" of BDCP officials appears to us to limit as much as possible public access to the affairs of the Authorized Entity Group and the BDCP Implementation Office. This retrenchment, is reflected in language changes to the draft IAs from July 2013 to May 2014. The July 2013 Draft Implementing Agreement of BDCP states:

The Authorized Entity Group will meet on a schedule of its own choosing, but at a minimum on a quarterly basis. [It] may also be convened by the Program Manager, as needed, to review issues that arise during the implementation of the Plan, including proposed amendments to the Annual Work Plan and Budget. The Authorized Entity Group will also meet with the Permit Oversight Group..., at least on a quarterly basis to review Plan implementation issues, including those related to the adaptive management and monitoring program and the restoration and preservation of habitat.

The Authorized Entity Group will institute procedures with respect to public notice of and access to its meetings with the Permit Oversight Group. The date, time, and location of the meetings will be posted on the BDCP web site at least 10 days prior to such meeting. The meetings will be held at locations within the City of Sacramento or the legal Delta. All meetings will be open to the public.²⁴⁶

The May 2014 draft Implementing Agreement retains the first paragraph in its entirety, but amends the second so that the AEG *reduces its obligations to the public* from "All meetings will be open to the public" to merely informing the public via the BDCP web site of what decisions the AEG has made after the fact.:

²⁴⁵ *Ibid.*, Section 14.6.2, p. 56.

²⁴⁶ *Draft Implementing Agreement*, July 2013, Section 14.3.3, p. 52.

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The Authorized Entity Group shall have the responsibility to inform the public of its deliberations and decisions. As such, the Program Manager will ensure that the public receives notice of upcoming meetings of the Authorized Entity Group, that meeting agendas are posted prior to such meetings, and that any decisions of the Authorized Entity Group are made available through the BDCP web site. *On a periodic basis, the Authorized Entity Group will hold meetings that are open to the public.* The Authorized Entity Group will institute procedures with respect to public notice of and access to these meetings and to any public meetings it holds with the Permit Oversight Group. The date, time, and location of the meetings will be posted on the BDCP website at least ten (10) days prior to such meetings. The meetings will be held at locations within the City of Sacramento or the legal Delta.²⁴⁷

This is woefully insufficient for promoting meaningful informed public participation about Delta and BDCP affairs. ***All AEG should be publicly accessible and subject to California's Brown Act, which establishes standards for open meeting practices by all public agencies in California.*** After all, BDCP and its Applicants hope to receive and/or coordinate habitat restoration and other conservation measures with billions of dollars of taxpayer funds that will directly affect the management of water exports from the Delta, a matter affecting nearly every part of California. ***At a minimum, the Implementing Agreement and the BDCP must commit to rigorous compliance with the provisions and practices of open government called for in the Brown Act.***²⁴⁸

The Applicants should also commit to having the Implementing Office create and maintain a state-of-the-art web site that facilitates the public's access to information, including real-time data, reports, etc., unlike tight-lipped web sites run by several prospective BDCP applicants. ***Expanding the State Water Project's already domineering and paternalistic presence in the Delta means the Applicants wanting to do so must undertake greater responsibility and responsiveness to the public for its management and accountability, not less.***

²⁴⁷ Draft Implementing Agreement, released May 30, 2014, Section 15.3.3, *Meetings of the Authorized Entity Group*, p. 60.

²⁴⁸ The Brown Act is contained in section 54950 *et seq.* of the Government Code.

VI. BDCP is contrary to law

BDCP's draft July 2013 Implementing Agreement says (twice) that "all activities undertaken pursuant to this Agreement, the BDCP, or the Permits must be in compliance with all applicable local, state and federal laws and regulations."²⁴⁹ The May 2014 Implementing Agreement contains this identical provision.²⁵⁰ This section of EWC's comments describes the many ways that BDCP fails to comply with many other applicable laws and regulations.

The Bay Delta Conservation Plan and its Project Objectives and Purpose and Need for BDCP do not comply with existing state or federal law. The EWC documents these failures to comply with established law in this section and the following section where compliance deficiencies are itemized with respect to the National Environmental Policy Act and the California Environmental Quality Act.

- 13 The purposes of the proposed actions are to achieve the following.
- 14 1. Consider the applications for incidental take permits⁶ for the covered species that authorize take
15 related to the actions listed below.
- 16 a. The operation of existing SWP Delta facilities.
- 17 b. The construction and operation of facilities and/or improvements for the movement of
18 water entering the Delta from the Sacramento Valley watershed to the existing SWP and CVP
19 pumping plants located in the southern Delta.
- 20 c. The implementation of any conservation actions that have the potential to result in take of
21 species that are or may become listed under the ESA, pursuant to the ESA at section
22 10(a)(1)(B) and its implementing regulations and policies.
- 23 2. Improve the ecosystem of the Delta by implementing the actions listed below.
- 24 a. Providing for the conservation and management of covered species through actions within
25 the BDCP Planning Area that will contribute to the recovery of the species.
- 26 b. Protecting, restoring, and enhancing certain aquatic, riparian, and associated terrestrial
27 natural communities and ecosystems.
- 28 c. Reducing the adverse effects on certain listed species due to diverting water.
- 29 3. Restore and protect the ability of the SWP and CVP to deliver up to full contract amounts, when
30 hydrologic conditions result in the availability of sufficient water, consistent with the
31 requirements of state and federal law and the terms and conditions of water delivery contracts
32 held by SWP contractors and certain members of San Luis Delta Mendota Water Authority, and
33 other existing applicable agreements.
- 1 The above Purpose Statement reflects the intent to advance the coequal goals set forth in the
2 Sacramento-San Joaquin Delta Reform Act of 2009 of providing a more reliable water supply for
3 California and protecting, restoring, and enhancing the Delta ecosystem. The above phrase—*restore*
4 *and protect the ability of the SWP and CVP to deliver up to full contract amounts*—is related to the
5 upper limit of legal CVP and SWP contractual water amounts and delineates an upper bound for
6 development of EIR/EIS alternatives, not a target. It is not intended to imply that increased
7 quantities of water will be delivered under the BDCP. As indicated by the "up to full contract
8 amounts" phrase, alternatives need not be capable of delivering full contract amounts on average in
9 order to meet the project purposes. Alternatives that depict design capacities or operational
10 parameters that would result in deliveries of less than full contract amounts are consistent with this
11 purpose.

²⁴⁹ *Draft 2013 Implementing Agreement*, Sections 23.6 and 23.22. It will be essential to retain one or both of these clauses in the final version.

²⁵⁰ *Draft 2014 Implementing Agreement*, Section 24.5, p. 89. Section 24.20, p. 92, also states "This Agreement will be governed by and construed in accordance with the laws of the United States and the State of California."

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Source: BDCP Draft Environmental Impact Statement/Report, Chapter 2, *Project Objectives and Purpose and Need*, pp. 2-4 to 2.5.

The CEQA-oriented Purpose Statement is similar.²⁵¹

Our comments in this section focus on many ways in which BDCP violates the Delta Reform Act of 2009, the California Water Code, the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act, the federal Endangered Species Act, the California Constitution's ban on waste and unreasonable use and unreasonable method of diversion of water, and the Public Trust Doctrine. We make a case for excluding the Bay Delta Conservation Plan from the Delta Plan. The Purpose and Need statement, intended to comply with National Environmental Policy Act requirements, is excerpted here; in Section VII we describe how the omission of the Twin Tunnels' role in expanding California's cross-Delta water transfer market from the EIR/EIS's purpose and need violates both CEQA and NEPA. And we recommend BDCP's Implementation Office come under the Brown Act to ensure public access and well-noticed open meetings, in Section VI.

A. BDCP is contrary to the Delta Reform Act.

BDCP Applicants construe their responsibilities under the Delta Reform Act of 2009 far too narrowly. That analysis focuses almost entirely on Water Code Section 85320, which sets out special findings the California Department of Fish and Wildlife must make, and briefly describes an appeal process to the Delta Stewardship Council.²⁵² There are numerous other sections with which BDCP must also comply, and which are ignored in the limited policy analysis provided by BDCP in the EIR/EIS and its appendices.

1. BDCP and its environmental impact report and statement fail to properly consider what it will take to recover Delta ecosystems and restore fisheries.

California Water Code Section 85320 lays out a process through which BDCP must go before the California Department of Fish and Wildlife prior to receiving approval of its natural communities conservation plan and incidental take permit application package and issuance of incidental take permits. Section 85320(b)(2) lists among the special findings CDFW must make:

*(A) A reasonable range of flow criteria, rates of diversion, and other operational criteria required to satisfy the criteria for approval of a natural community conservation plan as provided in subdivision (a) of Section 2820 of the Fish and Game Code, and other operational requirements and flows necessary for recovering the Delta ecosystem and restoring fisheries under a reasonable range of hydrologic conditions, which will identify the remaining water available for export and other beneficial uses.*²⁵³

BDCP cannot demonstrate compliance with, and the Department of Fish and Wildlife will be unable to sustain, this required finding without abusing its discretion to interpret this law.

²⁵¹ BDCP Draft Environmental Impact Statement/Report, Chapter 2, *Project Objectives and Purpose and Need*, pp. 2-2, lines 21-35; 2-3, lines 1-38; and 2-4, lines 1-6. Hereafter cited as "EIR/EIS."

²⁵² This narrow treatment is exemplified in EIR/EIS, Appendix 3A, *Identification of Water Conveyance Alternatives, Conservation Measure 1*, Table 3A-15, p. 3A-149. It erroneously assumes that hydrologic conditions, flow criteria, diversion rates, and conveyance designs are the universe of appropriate selection criteria for "a reasonable range of alternatives" for BDCP.

²⁵³ Emphasis added.

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BDCP modeling results show decreased salmonid survival rates, increased Delta smelt entrainment risk (including at the North Delta intakes), eastward migration of X2, reduced Delta outflow, and longer residence times of water passing through the Delta. The trend of each of these indicators is away from the criterion in Water Code Section 85320(b)(2)(A), which calls for flows necessary for recovering the Delta ecosystem and restoring fisheries under a reasonable range of hydrologic conditions.

The BDCP fails to identify the amount of flow necessary for recovering the Delta ecosystem and restoring fish populations, and *only then* identify the *remaining* amount of water for export and other beneficial uses. For example, if the amount of flow required to recover the Delta ecosystem and restore fisheries corresponds to at least the amount identified in the SWRCB's August 2010 flow criteria report, along with corresponding levels for other areas of the system, then the EIR/EIS must include an alternative that reserves such flows for instream purposes and *then* identifies remaining water for exports and other beneficial uses. (Alternatively, the EIR/EIS could itself analyze the amount of flow that would recover the Delta and restore fish populations through new alternatives that provide additional in-Delta flows over and above what the SWRCB recommended.) Without a single alternative assessing the flows needed to “[recover] the Delta ecosystem and [restore] fisheries” first and foremost, the BDCP fails to meet the requirements of the Delta Reform Act.

Moreover, only *one* alternative, Alternative 8, approximates “other operational requirements and flows necessary for recovering the Delta ecosystem and restoring fisheries.” This is the only alternative that gestures toward complying with the additional provision of this section that after “identifying the flows necessary for recovering the Delta ecosystem and restoring fisheries...” then identifies “the remaining water available for export and other beneficial uses.” Alternative 8 indicates that once public trust flows needed to recover the Delta and restore fisheries are supplied, there will only be on average about 3.1 million acre-feet of exports available for “export and other beneficial uses.” Even so, the EIR/EIS evaluation of Alternative 8 analyzes neither quantitatively nor qualitatively whether the Delta ecosystem will recover and fisheries will be restored to the point of meeting the goal of ecosystem recovery in the Delta. Moreover, it will also construct a Twin Tunnels Project on the scale of Alternative 4 with all the attendant hydrodynamic problems associated with that alternative. In salmonids’ case, federal and state statutory abundance doubling goals should be the standard against which Water Code Section 35820(b)(2)(A) should be evaluated, but the EIR/EIS fails to provide that evaluation.²⁵⁴

2. BDCP and its environmental impact report and statement fail to properly comply with the Delta Reform Act’s co-equal goals.

The Delta Reform Act’s “co-equal goals” are defined as:

the two goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place.²⁵⁵

The Bay Delta Conservation Plan fails to protect, restore, and enhance Delta ecosystems through recovery and survival of listed species, as we have described above in our comments in Section III above.

²⁵⁴ We refer here to the Central Valley Project Improvement Act of 1992, Section 3406(b)(1), and California Fish and Game Code Section 6902(a).

²⁵⁵ California Water Code Section 85054.

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Thus, the Bay Delta Conservation Plan also fails to “improve the water conveyance system,” as required by Water Code Sections 85020(f). This section does not set forth criteria or standards by which improvements to the conveyance system of the Delta are to be judged. But when viewed from the standpoint of the supposedly co-equal goals of the Delta Reform Act, the Twin Tunnels project unbalances the coequal goals. It fails (as do most of CMs 2 through 22) to protect, restore and enhance the Delta ecosystem. Thus, its proposed conveyance system, the Twin Tunnels project, cannot be found to “improve the water conveyance system” over what exists in the Delta now. And its hoped-for water supply reliability may fall short because California’s climate is likely to yield fewer wet and above normal years on which Twin Tunnels water supply reliability claims depend.

The BDCP also fails to comply with California Water Code Section 85020(g) which states:

“The policy of the State of California is to achieve the following objectives that the Legislature declares are inherent in the coequal goals for management of the Delta:
...(g) Reduce risks to people, property, and state interests in the Delta by effective emergency preparedness, appropriate land uses, and investments in flood protection.”

The BDCP does not comply with WC Section 85020(g) because it does not consider any Delta levee improvements in its project purpose/objectives, nor among the other measures of its conservation strategy. In fact, BDCP’s EIR/EIS affirmatively excludes Delta levee improvements in its analysis of cumulative impacts (see Section VII below). It only considers new Delta conveyance as a means of reducing future impacts to water deliveries from sea level rise and seismic or other levee failure. It does not consider Delta levee improvements as a means of reducing flood risk not only to water conveyance , but also to the people, places and infrastructure of the Delta.

The omission of Delta levee improvements flies in the face of the Delta Protection Commission’s Economic Sustainability Plan that states that levees can be brought up to the PL 84-99 standard to reduce the probability of catastrophic levee failure for \$2 to \$4 billion. To be consistent with Water Code Section 85020(g), BDCP would have to include a goal (and implementing conservation measures and funding assurances) to improve critical Delta levees for both ecosystem restoration and water supply reliability.

3. BDCP and its environmental impact report and statement fail to comply with Water Code Section 85021

It is state policy to reduce reliance on diversions from the Delta (Water Code Section 85021²⁵⁶). However, the project objectives and purpose call for “full contract deliveries” to CVP and SWP contractors. According to USEPA²⁵⁷, that volume of water is 7.43 million acre-feet, nearly a million acre-feet more than the maximum amount of water ever diverted from the Delta in a single year. This BDCP outcome would increase, not reduce, reliance on the Delta for imported water. While the federal purpose clarifies that alternatives providing less than full contract deliveries is acceptable, the objective/purpose to work toward meeting full CVP and SWP contract deliveries is clearly an attempt to increase Delta diversions, not reduce them. This is a fundamental flaw in the BDCP EIR/EIS.

Figure 5.B.4-4, cited above, Section III, shows BDCP modeling results that show the state and federal export pumps will increase reliance on the Delta in wet and above normal years. It should also be

²⁵⁶ See footnote 217, above.

²⁵⁷ See June 2010 letter from USEPA to USBR, NMFS and USFWS. Accessed at http://www.c-win.org/webfm_send/150

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noted that in drought years, the Bureau and DWR habitually petition the State Water Resources Control Board to have Delta water quality standards waived on vague grounds of protecting “health and safety” for their contractors. The Board has yet to refuse these requests, in defiance of legal due process, and there is no reason to think that they would if a Twin Tunnels system is constructed and operated in a manner vastly different that what is modeled in BDCP and the EIR/EIS. In any event, BDCP modeling and expected reliance on “real-time operations” will continue and expand reliance on the Delta for exports.

By definition of the project’s purpose, need, and design of each of the alternatives, BDCP violates California Water Code Section 85021, which requires reduced reliance on the Delta for future water supplies among those already depending on the Delta. The project’s operational goals focus on increasing reliance on the Delta for North Delta Intake diversions during wet and above normal years, while continuing emphasis on South Delta diversions for export in all other water years.²⁵⁸

BDCP Applicants fail to demonstrate in BDCP documents what they have done locally and regionally to decrease their reliance on Delta imports/exports and yet still justify each of their needs for the Twin Tunnels project, so there is no analysis provided in the EIR/EIS or in the Bay Delta Conservation Plan that shows actions by the Applicants that would counteract this apparent increase in reliance on Delta exports by BDCP.

BDCP’s obsessive focus on full contract deliveries, north Delta diversions to the Twin Tunnels, and extensive habitat restoration come at exclusion of other potential actions. The coequal goals of the 2009 Delta Reform Act can be met by other activities less disruptive to the Delta such as levee improvements, increased Delta outflows and regional self-reliance for water through investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects, and improved regional coordination of local and regional water supply efforts. But no such actions are analyzed in the EIR/EIS by the Applicants.

Finally, as we describe more fully in Section VII, an undisclosed purpose and need for the Twin Tunnels is to expand California’s cross-Delta water transfer market. This transfer activity will occur typically in years when State Water Project contractual allocations are 50 percent or lower, and Central Valley Project contractual allocations are 40 percent or lower. As climate change in California unfolds, these transfer market triggers are likely to increase, solidifying increased, not decreased reliance on the Delta. This is contrary to Water Code Section 85021.

4. BDCP and its environmental impact report and statement fail to demonstrate compliance with 85086(c)(1) by eliminating consideration of the Delta flow criteria adopted by the State Water Board in August 2010.

Water Code Section 85086(c)(1) states that *“For the purpose of informing planning decisions for the Delta Plan and the Bay Delta Conservation Plan, the board shall, pursuant to its public trust obligations, develop new flow criteria for the Delta ecosystem necessary to protect public trust resources.”* However, the BDCP project objectives/purpose statements do not even mention the SWRCB’s 2010 “Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem.” While strict compliance with the SWRCB’s flow criteria is not required, it is required by the Delta Reform Act that they be used for planning purposes for BDCP, yet it is not analyzed in the EIR/EIS. BDCP only puts forward alternatives that construct habitat and generally decrease Delta outflow. But it does not consider that aquatic ecosystem restoration could be achieved by increased Delta

²⁵⁸ Bay Delta Conservation Plan EIR/EIS, Chapter 5, Water Supply, Figures 5-22 (wet years) and 5-23 (dry years).

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outflows. The Delta Flow Criteria report in fact pointedly states that flow and habitat are both needed to recover the Delta. ***Therefore, the BDCP project objectives and purpose are inconsistent with yet another section of the Delta Reform Act.***

The 2010 Delta Flow Criteria Report²⁵⁹ was rejected as an alternative by BDCP Applicants on grounds that modeling showed that the State Water Board's flow criteria would allegedly result in widespread dead pools in and depleted deliveries from upstream reservoirs, which would violate BDCP EIR/EIS alternative screening criteria. The Board included DWR's analysis as an appendix to the Draft Delta Flow Criteria report in July 2010. Once out for public review, the modeling results (Appendix B "Water Supply Modeling" of the draft report) were roundly criticized from many quarters, because it exceeded the charge of Water Code Section 85086, had not been included for expert and public review in the informational proceedings, and had not been peer-reviewed prior to its release. In putting the water supply impact appendix forward, DWR tried hard to reframe the agenda of the Delta Flow Criteria process after the proceeding yielded results they did not like. The primary reason reservoirs would go to dead pool in their analysis was that the modeling criteria simultaneously maximized Delta inflows, outflows, and south of Delta deliveries at the expense of prudent carry-over for dry year or drought conditions. CVP and SWP operators made a related point to consulting engineer and modeler Walter Bourez when interviewed about BDCP modeling in 2013 that they would not operate the reservoirs that way; they would definitely try to optimize reservoir releases for meeting Delta water quality objectives, manage cold-water pools, while meeting senior water rights and making releases available for deliveries as best they could.²⁶⁰ The approved report in August 2010 does not include DWR's suspect modeling appendix.

The point of the Delta flow criteria proceeding was to answer the question of "what flows do fish need?" ***This is needed to determine the public trust instream flow needs for the Delta. Under the public trust doctrine and Water Code Section 85320, only what flows remain after such analysis should be allocated to SWP and CVP contractors. Deletion of the DFC report as a BDCP alternative removed a scientifically informed and reasonable option from consideration, yet another disservice of this EIR/EIS.***²⁶¹

²⁵⁹ See footnote 59 above.

²⁶⁰ Of the assumptions disclosed for the impact analysis in the 2010 modeling effort by DWR, the analysis assumes "full entitlements for CVP and SWP contractors." This was and is still not a reasonable assumption, given the constraints placed on CVP and SWP Delta operations to keep their uses and diversions reasonable under the law. "Full entitlements" is also an ambiguous term; it could be interpreted as full contractual entitlements regardless of water year type, or according to water year type. It could also mean "no net loss to exports," as well. This ambiguity is neither identified nor clarified in DWR's 2010 modeling of impacts in 2010. The California Water Impact Network and the California Sportfishing Protection Alliance pointed out to the State Water Board that it was application of "full entitlements" to Delta exports and water project operations in the Delta that led to the Legislature's passage of Water Code Section 85086 and to preparation of the Delta Flow Criteria Report in the first place. Letter of Carolee Krieger and Bill Jennings to Charles Hoppin, Chair, State Water Resources Control Board, "Comment Letter - Draft Delta Flow Criteria Report," July 28, 2010, 2 pages. Accessible online 12 May 2014 at http://www.swrcb.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/comments072910/carolee_krieger.pdf.

²⁶¹ Appendix 3A, p. 3A-67, lines 40-48 to p. 3A-68, lines 1-14; and Draft Delta Flow Criteria report accessible online 4 May 2014 at http://www.swrcb.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/.

5. BDCP and its environmental impact report and statement fail to demonstrate how its Twin Tunnels complies with the Reasonable Use and Public Trust Doctrines, mentioned in Water Code Section 85023, which states that these doctrines are “particularly important and applicable in the Delta.”

The EWC has located no analysis in the BDCP documents that evaluate the proposed/preferred alternative from the standpoint of its compliance with Article X, Section 2 of the California Constitution, or of its compliance with the Public Trust doctrine. Evaluation of this action is required by Water Code Section 85023 to demonstrate this compliance.

6. BDCP and its environmental impact report and statement fail to demonstrate compliance with Water Code Section 85031(a), specifically area of origin laws and doctrines that apply to the Delta.

This section of the California Water Code requires that actions contemplated under the Delta Reform Act comply with area of origins water rights statutes. BDCP fails to demonstrate through its modeling results that it complies with Water Code Sections 12200-12205 (the Delta Protection Act of 1959). Delta outflow is reported by BDCP to decrease while residence times of water in the Delta increase. In-Delta salinity levels are projected by BDCP to increase which will reduce the quality of water for in-Delta agricultural uses for irrigation and the beneficial uses enjoyed by environmental justice communities whose members rely on subsistence fishing in the Delta for a significant portion of their diet and nutrition. Reverse flows on the lower Sacramento River will increase, which may injure neighboring water right holders. And subsistence fishers may be harmed by worsening mercury and selenium concentrations contaminating fish tissues in the long term, resulting from BDCP water operations and habitat restoration activity. ***BDCP has conducted no analysis of in-Delta water demand and subsistence fishing patterns represented by these beneficial uses when it conducts its operational studies of the BDCP and the Twin Tunnels project. These uses are protected by the Delta Protection Act of 1959.***

BDCP also fails to demonstrate how the proposed Twin Tunnels project complies with county and area of origin laws.

In addition, BDCP fails to identify the role of the ***Delta common pool*** in shaping the experiences of environmental justice communities and the informal ways in which they make use of Delta habitat, fish, and other resources for their subsistence and recreation. They are beneficial users of water via the common pool and its public trust resources. The California Department of Water Resources recognizes the Delta common pool for purposes of analyzing and regulating water transfers.²⁶² BDCP must recognize the common pool as it contemplates its development schemes.

The Delta Protection Act of 1959 affirms area of origin water rights in the Delta. It declared that “a general law cannot be made applicable to [the] Delta and that the enactment of this law is necessary for the protection, conservation, development, control and use of the waters in the Delta for the public good.”²⁶³

The Delta Protection Act of 1959 further states that maintenance of an adequate water supply in the Delta and provision of Delta exports to areas of water deficiency “is necessary to the peace, health, safety and welfare of the people of the State” consistent with area of origin rights of all other areas

²⁶² California Department of Water Resources, *op. cit.*, footnote 27, above, p. 3.

²⁶³ California Water Code Section 12200.

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recognized in the Water Code.²⁶⁴ This law requires the State Water Project and the Central Valley Project to provide salinity control and “an adequate water supply for the users of water in the Sacramento-San Joaquin Delta.”²⁶⁵ It further prohibits any “person, corporation, or public or private agency or the State or the United States” from diverting water from the Delta “**to which the users within said Delta are entitled.**” Moreover, “in determining the availability of water for export from the Sacramento-San Joaquin Delta **no water shall be exported which is necessary**” to meet the Delta Protection Act’s requirements.

In determining the water available for export from the Delta, the law requires that “no water shall be exported which is necessary to meet” the requirements of the Delta Protection Act.²⁶⁶ Passage of the Delta Protection Act predates the water rights of the State Water Project in the Delta.

Unfortunately, this law has never been adequately enforced in the Delta because the availability of water has never been determined by the State Water Resources Control Board or its precedent agencies. Moreover, in-Delta demand for various beneficial uses of water has also never been studied, though Appellate Justice John Racanelli directed the State Water Board to do so in 1986 as part of its water quality planning role. The State Water Board has never conducted water availability analysis for its water quality control plans or its implementing water rights decisions, even though required to in the Racanelli Decision.²⁶⁷

But the State’s persistent inattention to court direction does not mean the common pool protections called for in the Delta Protection Act of 1959 lack authority. The water rights and beneficial uses protected by this law protect the rights of environmental justice community subsistence anglers and community members at play on the shores and in the waters of the Delta. Appellate Justice John Racanelli long ago required the State Water Board that its public trust and Clean Water Act obligations were to protect water rights and all other beneficial uses of water whether they were the subject of water rights claims or not. This means that the beneficial uses of environmental justice communities must also be protected. ***The State has failed to fulfill its obligation to follow water quality and water rights law and now the BDCP Applicants fail to conceive of the regulatory setting and affected environment of the proposed action broadly enough to account for the importance of the Delta common pool for environmental justice communities in the Plan Area.***

7. BDCP and its environmental impact report and statement fail to demonstrate how its proposed new points of diversion for the State Water Project will comply with Water Code Section 1700, et seq.

²⁶⁴ California Water Code Section 12201.

²⁶⁵ California Water Code Section 12202.

²⁶⁶ California Water Code Section 12205.

²⁶⁷ *United States v. State Water Resources Control Board* (1986) 182 Cal.App.3d 82. Justice Racanelli wrote, “In performing its dual role [of regulating water quality and water rights]...the Board is directed to consider not only the availability of unappropriated water but also *all* competing demands for water in determining what is a reasonable level of water quality protection [citation]. In addition, the Board must consider ‘past, present, and probable future beneficial uses of water [citation] as well as ‘[water] quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area.’ Water quality protection is achieved in part by the Board’s regulation of water rights as an implementation tool.

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This section of the California Water Code addresses State Water Board regulation of changes in the point of diversion, place of use, or purpose of use. The BDCP is required by the Delta Reform Act to comply with the California Water Code.²⁶⁸ The BDCP Applicants provide no analysis in either the BDCP or its EIR/EIS as to whether the proposed Twin Tunnels project and its habitat conservation plan comply with the California Water Code.

The North Delta Intakes for each of the alternatives will represent changes in the point of diversion of the State Water Project. No analysis of whether these proposed changes would potentially injure neighboring water rights holders is provided in either the water supply section or the surface water treatments of the EIS/EIR.

In addition, Conservation Measure 21, *Nonproject Diversions* contemplates actions to minimize entrainment of covered fish in smaller agricultural diversions that are unrelated to the mega-diversions of the state and federal Delta export pumps. These actions include

consolidating relocating, screening, removing, or otherwise remediating the harmful diversions. Remediation would be achieved via the methods described below, and also through the removal of some diversions in areas where cultivated lands or managed wetlands are converted into natural community types that do not require consumptive use of surface waters....The number and size of the diversions that will be eliminated as a result of restoration of natural community types are not precisely known, because the affected parcels have not yet been identified, and, moreover, some existing diversions may be remediated before restoration actions occur.²⁶⁹

The EWC believes this “conservation measure” directly threatens in-Delta water users with loss of their diversions by harassment. “Remedial actions” contemplated by BDCP’s Implementation Office would identify landowners who operate diversions identified by the technical team for CM 21 as “a high priority for remediation” who will be “invited to participate in CM21 “subject to funding availability.” Such landowners, it appears, would sign “a certificate of compliance committing them to the process and terms of this conservation measure.”²⁷⁰

The EWC finds this to be the height of hypocrisy for the lead BDCP Applicant, the California Department of Water Resources, to be planning to remediate nonproject diversions when DWR includes in BDCP no plans whatsoever to install fish screens at the Banks Pumping Plant—screens which were planned as part of the CalFED Record of Decision in 2000, but which were scrapped when state and federal water contractors refused to pay for them. The “nonproject diversions” targeted by BDCP are small indeed compared to the horrific salvage operations carried out at the state and federal pumping plants on a daily basis.

Conservation Measure 21 appears to be a thinly veiled program to eliminate water diversions that might otherwise assert water rights in the north Delta that could otherwise be injured by the North Delta Intakes of the Twin Tunnels project. Eliminating these nonproject diversions through a “conservation measure” in advance of obtaining the water rights permits will

²⁶⁸ California Water Code § 85031(c), which states, “Nothing in this diversion [meaning Division 35, the Delta Reform Act of 2009] supersedes, limits, or otherwise modifies the applicability of” the provisions of the California Water Code that address changing a point of diversion, a use, place or purpose of use of water, “including petitions related to any new conveyance constructed or operated” as may be approved by the California Department of Fish and Wildlife under Water Code Section 85320.

²⁶⁹ Bay Delta Conservation Plan, Chapter 3, Section 3.4.21, *Conservation Measure 21 Nonproject Diversions*, p. 3.4-339, lines 20-27.

²⁷⁰ BDCP, Chapter 3, *Conservation Strategy*, p. 3.4-341, lines 201-23.

facilitate the State Water Board's ability to make a finding of "no injury" to other water rights holders in the north Delta.

Similarly, conversion of privately-owned agricultural land to restored habitat under the BDCP's other restoration-focused conservation measures would also reduce or eliminate water diversions that might otherwise assert water rights in the north Delta that could otherwise be injured by BDCP's new points of diversion.

B. The Bay Delta Conservation Plan will injure other water right holders in the Delta in violation of California water law.

BDCP fails to identify other water right holders in the Plan Area, and those that would be directly and indirectly affected by North Delta diversions, installation of new flow and fish control structures. Most are right holders senior to SWP and CVP water rights in the Delta. New diversions and facilities do not improve the priority of SWP and CVP water rights.

While in recent years many Delta water rights were challenged, the vast majority were found after extensive investigation by the Delta Water Master to be robust and supported by substantial evidence.²⁷¹

It appears to us that the only consideration of water rights injury that BDCP has undertaken is from Appendix 3A of the EIR/EIS, shown below, in relation to screening of alternatives.

BDCP asks whether alternatives would "result in impairment" (the legal term here ought to be "injury") of existing senior water rights in the Delta's watershed "who are not applicants for incidental take authorization" under BDCP. The first sentence of "results" states that BDCP alternatives "that have been consistent with the three levels of screening criteria" would not "require changes in legal rights". In the event that senior water right holders were injured, it is DWR's rights, and perhaps those of the Bureau's in the Delta, that would "require changes" to their water rights permits. This must be the case because it would have to follow California's law of water rights priorities. Moreover, the last clause of the first sentence adds, "although legal ownership may change due to sale of property."

In Figure 13, we interpret the first sentence to mean "none of the BDCP alternatives would injure legal water right holders because we would compensate them for their property as required by the 5th amendment of the US Constitution," requiring just compensation from the government when taking private property for some public use or benefit.

However, the second part of this answer, relating to why two other alternatives (including the State Water Board's 2010 Delta Flow Criteria alternative) incorrectly states that "these alternatives would result in reductions in water deliveries to Sacramento River water rights holders in order to achieve the flow and water quality objectives in these operations alternatives." ***This explanation is a distortion. It fails to acknowledge that the vast majority of Sacramento River water rights holders are senior to the rights of the Bureau on the Sacramento River. It ignores the State Water Project's even more junior priority on the Feather River and in the Delta. This explanation is only possible when reasonable alternatives are interpreted to reflect the narrow objectives and purposes BDCP (especially the California Department of Water Resources) has improperly construed from the Delta Reform Act of 2009.***

²⁷¹ Craig M. Wilson Delta Watermaster, *Water Right Compliance and Enforcement in the Delta*, A Report to the State Water Resources Control Board and the Delta Stewardship Council, presented February 7, 2012, 9 pages. Accessible online April 28, 2014, at http://www.swrcb.ca.gov/board_info/agendas/2012/feb/020712_9_with%20report.pdf.

Figure 13

Table 3A-17. Determination of Consistency of with Legal Rights of Entities that are Not BDCP Participants

If the answer to this question is "Not Likely" or "Unknown," the alternative would be considered in the EIR/EIS. If the answers to this question are "LIKELY" or "YES," the alternative would not be considered in the EIR/EIS.	
Measures of Consistency	Results
Would the potential alternative result in the impairment of existing senior water rights in the Sacramento-San Joaquin Rivers watershed who are not applicants for incidental take authorization through the proposed Bay Delta Conservation Plan?	No for the range of conveyance alternatives that have been consistent with the three levels of screening criteria would not require changes in legal rights although legal ownership may change due to sale of property. However, the answer would be Likely for Second Screening Dual Conveyance Alternative 8A, which includes operations alternatives based on Scenario 7a, and Second Screening Dual Conveyance Alternative 9A, which includes operations alternatives based on the State Water Resources Control Board 2010 Flow Recommendations for Delta Ecosystem. Based upon preliminary model analyses, both of these alternatives would result in reductions in water deliveries to Sacramento River water rights holders in order to achieve the flow and water quality objectives in these operations alternatives.

In both "results" in Table 3A-17, DWR and BDCP Applicants reveal themselves as the predators—preying on smaller water right holders as part of a conniving water grab—for new water supply that our member groups have long suspected them of being.

C. The Bay Delta Conservation Plan will degrade water quality and harm beneficial uses in the Delta in violation of the federal Clean Water Act and the California Porter-Cologne Water Quality Control Act.

The BDCP and its EIR/EIS acknowledges (even factoring in climate change effects) that residence time of water in the Delta will increase, Delta outflow will decrease, mercury and selenium in fish tissues will increase, raising public health concerns. And salinity levels will increase throughout the Delta, creating water quality havoc for boaters, agricultural irrigators, and sport- and subsistence fishing. We document these findings and concerns in Sections III and VII of this comment letter.

BDCP's stated objectives and purpose for water quality are only in relation to physical and operational improvements to the state and federal water projects in the Delta. In BDCP's view, environmental water quality and human public health are secondary to the quality of water exported by the state and federal water projects. No mention is made of improving water quality for communities whose water supplies are adversely affected.

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These impacts would be adverse under NEPA.²⁷² They would be part and parcel of approving BDCP; to approve BDCP entails acceptance by the fishery agencies that these other significant and unavoidable, adverse effects will occur. In making such approvals, the EWC contends that making such a decision would be arbitrary and capricious of the agencies, and therefore be contrary to law under the federal Clean Water Act and the state Porter-Cologne Water Quality Control Act (see our analysis below Section VII).

D. The Bay Delta Conservation Plan will continue and promote further wasteful and unreasonable uses of water and methods of diversion of water, contrary to Article X, Section 2 of the California Constitution and California Water Code Section 100.

BDCP would be contrary to Article X, Section 2 of the California Constitution and California Water Code Section 100 because it violates:

- Various sections of the Delta Reform Act of 2009 identified here in Section VI.
- State and federal clean water legislation and regulation.
- California Water Code's no injury rule.
- Ecological and funding assurance requirements of the state and federal ESAs and state NCCPA.
- The Delta Protection Act of 1959 - the Delta's area of origin water rights.

E. ESA and NEPA violations are precluding meaningful public review.

The Twin Tunnels would divert enormous quantities of water from the Sacramento River near Clarksburg, California.²⁷³ As a result of this massive diversion, enormous quantities of water that presently flow through the Sacramento River and sloughs to and through the Sacramento-San Joaquin Delta would not reach the Delta, and flows would be reduced in the Sacramento River and sloughs. Also, there would be adverse cumulative effects ranging from rising sea levels and reduced snowpack and runoff due to climate change to changes in upstream reservoir operations and current preservation of flows for fishery purposes all the way upstream to the Shasta, Trinity, Oroville, and Folsom reservoirs. The Twin Tunnels are identified as Alternative 4, the California Department of Water Resources (DWR)' Preferred Alternative.²⁷⁴

The Sacramento River Winter Run Chinook Salmon is listed as an endangered species under the ESA. The Central Valley Spring Run Chinook Salmon, Central Valley Steelhead, Southern Distinct Population Segment of North American Green Sturgeon, and Delta Smelt, are listed as threatened species under the ESA. The reaches of the Sacramento River, sloughs, and the Delta that would lose significant quantities of freshwater and freshwater flows through operation of the proposed Twin Tunnels are designated critical habitats for each of these five listed endangered and threatened fish species. Yet in complete disregard of these undisputed facts, no Biological Assessment has been prepared and issued by the federal Bureau of Reclamation with respect to the Twin Tunnels project. Also, no final or even draft Biological Opinion has been prepared by the National Marine Fisheries

²⁷² BDCP EIR/EIS, *Executive Summary*, Table ES-9 reports several adverse water quality effects of the proposed action: WQ 11, 13, 14, and 25 We argue that they fail to find adverse effects where they should in WQ-12, and 26..

²⁷³ Comments in this section are drawn from Letter of E. Robert Wright, Senior Counsel, Friends of the River, "Preliminary comments on fundamental BDCP Violations of the ESA," March 6, 2014. Accessible online June 4, 2014, at http://www.friendsoftheriver.org/site/DocServer/Atc_12.pdf?docID=8312.

²⁷⁴ BDCP Draft EIR/EIS, page 3-3.

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Service (NMFS) or U.S. Fish and Wildlife Service (USFWS) with respect to the impacts of the operation of the Twin Tunnels on the five listed species of fish or their critical habitats.

The failure to prepare Biological Assessments and Biological opinions prior to issuing the BDCP draft Plan and EIR/EIS for what in the absence of those documents deliberately causes uninformed public review is astonishing. The Ninth Circuit Court of Appeals has repeatedly held that: “Any possible effect, whether beneficial, benign, adverse or of an undetermined character, triggers the formal consultation requirement.”²⁷⁵ We doubt that even the ardent advocates for the Twin Tunnels who prepared the 40,000 pages of BDCP advocacy documents would contend that taking large quantities of water away from the River, sloughs, and Delta does not have “any possible effect, whether beneficial, benign, adverse or of an undetermined character.”

The ESA Regulations (50 C.F.R. § 402.14(a)) require that “Each Federal agency shall review its actions *at the earliest possible time* to determine whether any action may affect listed species or critical habitat. If such a determination is made, formal consultation is required. . . .”²⁷⁶ The Biological Assessments and Biological Opinions are the written documents that federal agencies must prepare during the ESA consultation process. The NEPA Regulations require that “To the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with environmental impact analyses and related surveys and studies required by the . . . Endangered Species Act. . . .”²⁷⁷

The Biological Opinion is to determine “whether the action, taken together with cumulative effects, is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.” 50 C.F.R § 402.14(g)(4).

Consequently, against this threat of extinction, conducting the draft EIR/EIS public review and comment stage without Biological Opinions or even Biological Assessments and draft Biological Opinions, leaves the public in the dark and violates both the ESA and NEPA. Conducting the NEPA environmental draft process prior to and in a vacuum from the ESA consultation process violates the ESA command to carry out the ESA process “at the earliest possible time” and violates the NEPA command to conduct the NEPA and ESA processes “concurrently” and in an “integrated” manner.

In the absence of answers to basic questions including ESA questions about jeopardy of listed fish species and adverse modifications of designated critical habitats, the draft BDCP EIR/EIS is not sufficient for informed review by the public and the decision-makers. It will be necessary at minimum under the ESA, NEPA and CEQA for the federal and state agencies to prepare, issue, and circulate for public review a **new draft** EIR/EIS concurrently with and integrated with Biological Assessments and Biological Opinions.²⁷⁸ Then, and only then, would the public and the decision-makers have the opportunity to engage in meaningful analysis of a preferred project alternative and informed comparison with other alternatives.

²⁷⁵ *Western Watersheds Project v. Kraayenbrink*, 620 F.3d 1187, 1210 (9th Cir. 2010). *Accord, Karuk Tribe of California v. U.S. Forest Service*, 681 F.3d 1006, 1027 (9th Cir. 2012)(en banc), *cert. denied*, 133 S.Ct. 1579 (2013); *Cal. ex rel. Lockyer v. U.S. Dept of Agric.*, 575 F.3d 999, 1018 (9th Cir. 2009).

²⁷⁶ *Karuk Tribe of California v. U.S. Forest Service*, 681 F.3d 1006, 1020.

²⁷⁷ 40 C.F.R. § 1502.25(a).

²⁷⁸ 40 C.F.R. §§ 1502.9(a); 1502.25(a) (NEPA); 14 Code Cal. Regs. §§ 15065(a)(1); 15088.5(a)(CEQA).

F. The Bay Delta Conservation Plan violates the Public Trust Doctrine.

BDCP would further divert and degrade the Delta common pool thereby violating the rights of environmental justice communities to continue fishing in locations that would be altered and enclosed by BDCP facilities and restoration projects. The presence of this common pool in the Delta makes it subject to regulation under the Public Trust Doctrine. The state of California has a fiduciary responsibility to protect this common pool resource in all its dimensions for the common heritage of the people of California.

The State Water Project and federal Central Valley Project are coordinated water systems. Their operations upstream of the Delta and within the Delta have contributed greatly to the demise of migratory and resident fish, and BDCP documents provide ample evidence of the likelihood that operation of the North Delta Intakes will:

- Degrade water quality by increasing residence time of water and reducing Delta outflow;
- Harm Delta smelt by reducing Delta outflow, pulling X2, the low salinity zone isohaline, further east, placing Delta smelt at greater risk of entrainment and take at the North Delta intakes, in addition to the 60 percent of years (below normal, dry, and critical years) when Delta smelt will still face entrainment risk from the south Delta export pumps.
- Reduce winter-run Chinook and spring-run salmon survival rates through the Delta by introducing the North Delta intakes along the lower Sacramento River, diverting Sacramento River flows upstream into Yolo Bypass for floodplain inundation and seasonal habitat restoration.
- Fail to control biotic and abiotic stressors on listed fish species in the Delta, including invasive nonnative bivalves, submerged aquatic vegetation, methylmercury formation from construction and restoration of habitat, and increased selenium contamination well in excess of recommended toxicity thresholds, despite upstream source control activities.

These and other effects of the Bay Delta Conservation Plan and its proposed Twin Tunnels project (described in Conservation Measure 1) would, if implemented, violate the Public Trust Doctrine.

G. The Bay Delta Conservation Plan must be excluded from the Delta Plan because of these failures.

The Bay Delta Conservation Plan must be excluded from the Delta Plan it fails to comply with:

- Water Code Section 85320 in its entirety.
- Requirements to fulfill numerous ecological and funding assurances as documented above for the Bay Delta Conservation Plan itself.
- The Delta Reform Act of 2009 provisions identified here in Section VI.
- The reasonable use doctrine framed in California's Constitution and Water Code Section 100.
- The Public Trust Doctrine.

The Bay Delta Conservation Plan calls for construction and launch of operation of the Twin Tunnels project prior to the vast majority of habitat restoration activities getting financed and undertaken. This places the cart of water development before the horse of habitat restoration.

When it comes to protecting public trust resources in the Delta, this reversal of priorities (placing water supply reliability development ahead of habitat restoration) places Delta ecosystems at great risk of collapse, not recovery; places Delta listed fish species at great risk of extinction, not restoration to once robust and sustainable populations.

VII. Specific Comments on the EIR/EIS

The Bay Delta Conservation Plan EIR/EIS is an essential component of the application package to be submitted for federal incidental take permits, together with an implementing agreement and habitat conservation plan (or natural communities conservation plan in the case of application for such a permit from the California Department of Fish and Wildlife). Without an adequate EIR/EIS, the application package is incomplete and statutory findings cannot be met, issuance of the incidental take permits may be delayed or denied.

The BDCP EIR/EIS is plagued by its length and complexity. With nine alternatives and eight operational scenarios besides the No Action Alternative, every chapter of this document is at least 100 pages long, far longer than most lay readers have the time for, and far longer than most busy professional reviewers have time to parse and analyze.

Several of the chapters have lengthy and/or numerous technical appendices containing supporting detailed analyses. Similar topics can be scattered throughout six or eight different sections or appendices or chapters of the EIR/EIS. This dispersion of information and analysis creates multiple needles in multiple haystacks, easily defeating the full disclosure of accessible information about the proposed action as required by CEQA and NEPA. The EIR/EIS's Fish and Aquatic Species Chapter 11 just by itself contains 3,055 pages—4,700 pages when four related appendices are included. Review of this in tandem with the fish related appendices of the EIR/EIS's "project description"—the Bay Delta Conservation Plan in its full entirety—runs the total page count for reviewing just for fish issues into the vicinity of 10,000. Of necessity, lay readers must be strategic if they are to gain any insight into the environmental effects of the Bay Delta Conservation Plan.

The EIR/EIS's Executive Summary and index helps to a limited degree with this, but the former is not a complete summary.²⁷⁹ ***It omits summaries of the impacts and mitigation measures on the last chapters of Environmental Justice and Growth Inducement. It contains no summary of cumulative impacts in the EIR/EIS.***

In order to fulfill its paramount policy requirement under both the National Environmental Policy Act and the California Environmental Quality Act, the EIR/EIS should at a minimum be revised to include summaries at the opening of every chapter that enable readers to ascertain rapidly the key findings for impacts and mitigation measures, by alternative. The summary should also state in what sections the key analyses are located, since BDCP groups narrative content under certain alternatives because effects might be similar across alternatives. This should be identified up front in each chapter. But these documents (BDCP and its EIR/EIS), by their sheer size and complexity, still defy and defeat CEQA and NEPA requirements. Readers must be able to understand it so that public decision makers may make well-informed decisions about the Plan and its Alternatives within. The EWC had one person working nearly full-time since the documents were released in December 2013 and could not review its entirety. The BDCP documents' size, complexity, and dispersion of information make this impossible, despite the six-month-long comment period.

²⁷⁹ BDCP's EIR/EIS does include a general topic index, but it is not detailed enough to make its use efficient for a reader seeking specific information—one must track down each specific index page in different files. We estimate that a complete volume, hard copy of the BDCP documents costs between \$3,000 to \$6,000 to print and bind.

A. The EIR/EIS and Bay Delta Conservation Plan documents are incomplete because the California Department of Water Resources has been unable to collect necessary environmental survey and geotechnical data from Delta lands directly related to habitat restoration and Conservation Measure 1 facilities.

Delta landowners have successfully resisted having to permit entry to professional scientists and engineers representing the California Department of Water Resources to conduct surveys and gather data on environmental and cultural resource conditions, and surface and subsurface geotechnical conditions.²⁸⁰

Because DWR has been unable to complete the environmental, cultural, and geotechnical studies it needs to perform an adequate project-level setting and impact analysis of all biological, cultural and geotechnical/engineering resources in the Delta, the setting and impact analyses concerning these resources are necessarily deficient from the standpoint of providing full disclosure of affected environmental conditions and project effects, whether beneficial or adverse. Therefore, the BDCP Draft EIR/EIS will need to be revised, once these data are obtained, and recirculated as a Draft EIR/EIS in order to ensure the public and relevant decision makers receive full disclosure of these resources and potential impacts of BDCP.

The BDCP Applicants' presentation in Chapter 18, *Cultural Resources*, is intended to reassure lay readers and decision makers that they have performed due diligence in their efforts to document and report on cultural resources in the EIR/EIS.

A number of standard methods such as record searches and site visits were used to determine the types and location of known cultural resources that could be affected by BDCP alternatives. Record searches were conducted and aerial photography was used for the entire study area. In addition, *surveys were conducted in accessible areas.*²⁸¹

But to their credit, they acknowledge that "for numerous practical reasons...not all potential cultural resources in the study area could be identified."²⁸² This is a fatal flaw of the EIR/EIS because it means that the BDCP Applicants fail to discharge all of their duties to identify and analyze all cultural resources under NEPA, CEQA, and state and federal cultural resource laws like the National Historic Preservation Act and the Native American Graves Protection and Repatriation Act, which

²⁸⁰ The California Department of Water Resources acknowledges that it "has been unable, despite diligent efforts, to gain access to all of the private properties within the Delta on which it would like to conduct ground surveys, Environmental Site Assessments, and engineering, biological, geotechnical, archaeological, floral and faunal studies. Although DWR has been able to conduct some of the geotechnical studies it contemplated originally [by doing them off-site in neighboring river channels], it has not been able to conduct all such studies because of the court order issued April 8, 2011. DWR has challenged that court decision and is currently seeking access to land in the Delta for the purpose of conducting the geotechnical activities through the use of eminent domain. In short, DWR has done all that is reasonably feasible under the circumstances to conduct thorough investigation of all of the BDCP alternatives." BDCP EIR/EIS, Chapter 4, Appendix 4A, *Summary of Survey Data Collection Efforts*, p. 4A-11, lines 2-10. DWR lost its challenge, however, in the appellate court. See California Court of Appeal, Third Appellate District (San Joaquin), *Property Reserve, Inc. v. The Superior Court of San Joaquin County and the California Department of Water Resources*, (2014) 224 Cal.App.4th 828.

²⁸¹ BDCP, EIR/EIS, Chapter 18, *Cultural Resources*, p. 18-1, lines 25-27.

²⁸² *Ibid.*, p. 18-2, lines 20-21.

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they must do for the EIR/EIS to be considered adequate with respect to cultural resource characterization and analysis.

A primary reason is the fact that, in order to evaluate whether particular sites were “historic resources” or “unique archeological resources,” invasive and even destructive techniques would have had to be used. Another factor was the sheer size of the study area, which made it impossible to evaluate every potential resource within any reasonable timeframe and at any reasonable cost. Moreover, the professional cultural resource specialists concluded that reasonable samples, combined with record searches and analyses of aerial photographs, would allow them to sufficiently characterize the nature of the resources and the likely effect within the footprint of the BDCP alternatives. In addition, every effort is made to avoid and minimize effects on significant cultural resources, including historic properties and historical resources. Finally, much of the Plan Area—particularly portions that could be affected by BDCP alternatives—was not legally accessible.[citation]²⁸³

In other words, in translation: “It’s probably better that we didn’t have access to particular sites because our sampling methods might have harmed the resources. The Plan Area, made up of the legal Delta, Suisun Marsh, and Yolo Bypass, was too big for us to inventory all the cultural resources therein because we didn’t have enough time and enough budget to do it. So, we relied on remote sensing techniques and archival records research to try to make up for that. We promise to try to avoid and minimize harm to cultural resources in the Plan Area. But (pesky) Delta landowners wouldn’t let us on the lands where the alternatives would actually go, so we don’t have everything we’re supposed to have to comply with CEQA and NEPA. But we tried really hard to overcome these limitations.” (We note in passing that this is the first time we have heard BDCP complain about its own self-inflicted Study Area.)

In court with the Delta landowners, however, California Department of Water Resources witness related a different story in testimony during the recent *Property Reserve* case.

7. Environmental studies, evaluations and assessments described herein are required to gather information to assess project feasibility, investigate project design alternatives, prepare the appropriate environmental documents, obtain information to identify necessary permits and define the appropriate mitigation for project impacts. Temporary entry onto the subject properties is necessary to define the current environmental setting and to perform general environmental reconnaissance of the area, as well as biological, archaeological and hydrological assessments. Assessments are surveys that are carried out within the study area of proposed project footprints and alignments that include alternative routes and projected feature sites associated with the alignments being studied. In addition, assessments must be carried out within the proposed alignments, up to five-hundred (500) feet on either side of the center-lines of alignments studied, and within and along proposed temporary right-of-ways, access roads and construction lay-down areas studied for future project alignments.²⁸⁴

DWR’s environmental manager makes a compelling case that the absence of information otherwise obtainable from on-site surveys, including of archaeological resources, is vital to DWR’s objective of designing, permitting, constructing, and operating the facilities called for in Conservation 1 of BDCP. Yet the BDCP Applicants (of which DWR is the lead applicant) try to put the best face on the lack of complete cultural resources information due to the lack of access to lands along the alignments of BDCP alternatives. DWR wants it both ways, depending on the context in which it is speaking. However, ***it remains true that they need the survey information for properly designing, permitting, constructing and operating the project, which the EIR/EIS must disclose, yet does***

²⁸³ *Ibid.*, p. 18-2, lines 21-31.

²⁸⁴ *Declaration of DWR Environmental Program Manager Derrick Adachi in Support of DWR’s Petition for Right of Entry*, signed September 1, 2010, provided to the trial court in the case under penalty of perjury.

not. The EIR/EIS is fatally inadequate on these grounds, in addition to other reasons we supply in our comments.

We describe additional issues with Delta cultural resources and the conduct of this EIR/EIS below in our comments on setting and impacts issues.

B. The EIR/EIS and Bay Delta Conservation Plan documents were not noticed, let alone properly noticed to or translated for the Delta's environmental justice communities.

Federal and state laws require agencies to consider environmental justice and to prohibit discrimination in their decision making processes. Title VI of the Civil Rights Act of 1964 and related statutes require that there be no discrimination in Federally assisted programs on the basis of race, color, national origin, age, sex, or disability (religion is a protected category under the Fair Housing Act of 1968). Federal Executive Order (EO) 12898 (1994) requires Federal agencies, including the United States Bureau of Reclamation, to make environmental justice part of their mission and to develop environmental justice strategies. The Presidential Memorandum accompanying the Executive Order specifically singles out NEPA, and states that “[e]ach Federal agency must provide opportunities for effective community participation in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving the accessibility of public meetings, crucial documents, and notices.”

The Bureau of Reclamation has put meager administrative resources into preparing guidance for its activities on environmental justice. The Bureau relies for cover on this issue by taking US Department of the Interior goals as its own. Interior Department Goal 1 states that “The Department will involve minority and low-income communities as we make environmental decisions and assure public access to our environmental information.”

Interior Department Goal 3 states:

The Department will use and expand its science, research, and data collection capabilities on innovative solutions to environmental justice-related issues (for example, assisting in the identification of different consumption patterns of populations who rely principally on fish and/or wildlife for subsistence).²⁸⁵

In other words, the Department of the Interior, and by extension the Bureau of Reclamation and the US Fish and Wildlife Service appear to expect to foster adaptation of environmental justice communities to federal actions. However, BDCP and its EIR/EIS take no responsibility for meeting either the first goal or the third goal in the Department's Environmental Justice plan.

The State of California has defined “environmental justice” as: “the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.” Additionally, California has enacted Government Code 11135(a), which states:

No person in the State of California shall, on the basis of race, national origin, ethnic group identification, religion, age, sex, sexual orientation, color, genetic information, or disability, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered by the state or by any state agency, is funded directly by the state, or receives any financial assistance from the state.²⁸⁶

²⁸⁵ “Environmental Justice” web on the Bureau of Reclamation's web site, accessible online at http://www.usbr.gov/cro/sub_ej.html.

²⁸⁶ California Government Code Section 11135(a)

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NEPA regulations define impacts or effects to be analyzed as including “ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative.”²⁸⁷

Over 35 percent of the people directly affected by negative socio-economic and environmental impacts described in the Bay Delta Conservation Plan, and commented on herein, are members of environmental justice communities, a majority of whose first-spoken language is not English. Figure 28-1 of the EIR/EIS maps the location of census tracts whose populations have significant percentages of Hispanic/Latino population in them. They reside throughout the Delta. Figure 28-2 of the EIR/EIS shows the geographic distribution of Delta residents whose incomes are below the poverty line in 2010. These Delta-area residents include farm workers within the Delta, poor residents living in rural Delta communities and town and cities of the legal urban Delta, and subsistence fishing communities found within the legal Delta and its surrounding areas.

Impacts from BDCP are expected to include relocation from their homes, loss of jobs, inability to fish for nutrition, higher water rates as urban municipal water systems will be forced to upgrade their water treatment systems, exposure to increased water contaminants like methylmercury, selenium, salt, pesticides, and other chemical toxins when recreating at county and state parks within the Delta, and inability to navigate water ways when fishing or to reach communities in a timely fashion during the 10-year construction period.

These same residents of the Plan Area and the greater Delta region have not been made aware of the project or its potential impacts on their lives and communities.

BDCP recognized that it needed to perform outreach to environmental justice communities as early as 2008 when it was preparing for a series of public workshops throughout the Delta’s communities. Unfortunately, BDCP has left few traces of what EJ outreach it may have done in its extensive archive of meetings and plan documents online and in its meeting schedule involving other stakeholders.

We find only these documents that have been translated into Spanish. BDCP documents, as far as we can tell, were translated into no other languages besides English and Spanish. But where there were over 40,000 pages in English, there were just 22 pages generated by BDCP in Spanish, including one web page (which printed to two pages). The pages made available in Spanish were promotional/informational brochures. The image in Figure 14 indicates the Spanish archive of BDCP documents at www.baydeltaconservationplan.com as of April 29, 2014.

EWC member groups Restore the Delta (RTD), the Environmental Justice Coalition for Water (EJCW), and EWC consultants have researched this situation further. Our research finds that:

- Title VI of the federal Civil Rights Act of 1964 requires that “No person in the United States shall, on the ground of race, color, or national origin, be excluded from participating in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.” While BDCP’s funding assurances are far from clear, its funding plan in Chapter 8 of BDCP clearly indicates it anticipates obtaining at least some Federal financial assistance.

²⁸⁷ 40 CFR Section 1508.8(b).

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Figure 14

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- Executive Order 12898 states in pertinent part that “Each Federal agency shall conduct its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under, such programs, policies, and activities because of their race, color, or national origin.”²⁸⁸ This Executive Order further requires that each Federal agency may, whenever practicable and appropriate, translate crucial public documents, notices, and hearings relating to human health or the environment for limited English speaking populations. As

²⁸⁸ Executive Order, 12898, published in *Federal Register* 59(32): February 16, 1994, section 2-2. Accessible online 13 May 2014 at <http://www.archives.gov/federal-register/executive-orders/pdf/12898.pdf>.

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important, the Order also states that “Each Federal agency shall work to ensure that public documents, notices, and hearings relating to human health or the environment are concise, understandable, and readily accessible to the public.”²⁸⁹

- There have been no notices of Bay Delta Conservation Plan community meetings or on the release of the project in any foreign language during 2014. (The official public review draft was released in December 2013.)
- An EWC request via email made through www.baydeltaconservationplan.com on April 8, 2014, to receive a copy of the Environmental Justice Community Survey Summary Report prepared by DWR and cited in the Draft EIR/EIS, Chapter 28, went unanswered until April 25, 2014. BDCP consultant’s reply stated that the report “is available electronically at the DWR repository located at 3500 Industrial Blvd., Room 117, West Sacramento, CA 95961. The DWR document repository is open during regular business hours and closed on State and Federal holidays.” Thus, even a request to receive a copy of the report, in a day and age when email and online file-sharing can provide nearly instantaneous transmittal of information, and is widely and often freely available, was met with an invitation to visit DWR’s West Sacramento repository where an electronic version could be made available. Modern communication conveniences were apparently unavailable at the repository to fulfill this environmental justice related request until May 2nd.
- Hispanic and Asian community groups throughout the Delta region report no outreach to them concerning BDCP.
- Hispanic publications in San Joaquin County report that they received no media releases concerning community meetings on BDCP, on the release of BDCP-related documents, nor on how to participate in the comment period on BDCP documents.
- Regarding BDCP public community meetings held around the state: it appears there were no translators present, as BDCP claims. If they were, signage was not provided, nor was there indication that members of the public could ask for an interpreter at these meetings. This, combined with absence of BDCP-related media outreach to non-English language publications in the Delta region, means that as much as 40 percent of the Delta’s population was precluded from participating in the comment period through May 30th, when the period was extended to July 29th.

With BDCP anticipating it would receive federal funds, the Applicants, despite being either agencies of the State of California or subdivisions of the State, must comply with Executive Order 12898. DWR has dragged its feet providing requested documents that relate to EJ issues during this comment period. Adding insult to the project's likely injuries to EJ communities, BDCP organizers made no effort that our member groups could find to reach out to EJ communities upon release of the December 2013 Plan and EIR/EIS documents in violation of standard environmental justice procedures during state and federal environmental review. This record represents a complete failure to fully inform the interested Delta region's public in violation of the spirit and letter of both the National Environmental Policy Act and the California Environmental Quality Act.

²⁸⁹ *Ibid.*, Section 5-5(b) and (c).

C. The EIR/EIS is incomplete because the project description and description of alternatives fails to include analysis of the role and significance of the Implementing Agreement that is required for the incidental take permit application package by the fishery agencies.

The BDCP Implementing Agreement was released on May 30, 2014, very late in the overall BDCP public review process. This document represents the “current thinking” about that project from its proponents, according to BDCP officials. The Agreement is an essential part of implementing the governance of BDCP, which means that it must reach into every aspect of its 22 conservation measures and be accounted for in most if not all of the Draft EIR/EIS on BDCP. However, the current EIR/EIS does not “benefit” from the current thinking on BDCP, and the EWC’s comments on the Draft IA will reflect the myriad ways the EIR/EIS fails to account for the role played in the BDCP framework by the Draft IA. Still unavailable to this public review process of the Bay Delta Conservation Plan are separate memoranda of understanding between the US Bureau of Reclamation and the California Department of Water Resources, which are intended to execute terms of Reclamation’s extra-legal participation in and commitment to the policies and programs of the Bay Delta Conservation Plan, and the operational aspects of the Twin Tunnels project. ***Because these three agreements have not been reviewed or evaluated in the Draft EIR/EIS, the EIR/EIS should be revised to reflect their inclusion and recirculated as a draft document for further public comment.***

The Natural Community Conservation Planning Act requires each conservation plan to include an IA which contains, among other things, “provisions for establishing the long-term protection of any habitat,” “provisions ensuring implementation of the monitoring program and adaptive management program,” and “mechanisms to ensure adequate funding to carry out the conservation actions”²⁹⁰

For purposes of the BDCP, the IA commemorates commitments from each party under the BDCP specifying their contribution to the cost, construction, governance, and operation of the proposed project. The IA is an integral and indispensable necessity to the development and function of the BDCP. However, the BDCP Applicants who expect to benefit from the BDCP, have failed to establish each party’s contribution to the cost, construction, and operation of the BDCP. Without the draft IA, it is not possible for the public to meaningfully review the draft BDCP and EIR/EIS. Accordingly, the absence of the draft IA has resulted in a violation of the National Environmental Policy Act (NEPA).²⁹¹ Our supplemental comments will examine this matter further.

Critical information is missing from the review process. For example, the BDCP proponents have been internally admitting the obvious to the State, that “The cost of the BDCP is high, and there is significant concern that it will increase. Recent experience shows that the cost of large public works projects tends to increase during construction. The cost of the BDCP is so high there is no room for any increase in cost.”²⁹² Another example is that the BDCP proponents seek a level of “water supply reliability of approximately 75% for both SWP and CVP water service contractors.”²⁹³

²⁹⁰ Cal. Fish & G. Code § 2820(b).

²⁹¹ NEPA regulation 40 C.F.R. § 1502.25, Endangered Species Act (ESA) regulations 50 CFR § 17.22(b)(1)(i); § 222.307(b)(4), the California Environmental Quality Act (CEQA), and the Natural Communities Conservation Planning Act (NCCPA).

²⁹² Anonymous, “Critical Issues” memorandum, January 27, 2014, a one-page document obtained via a Freedom of Information Act request made to and released from the US Fish and Wildlife Service. Cited hereafter as “Critical Issues.”

²⁹³ “Critical Issues.”

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The water contractors also seek “Strong regulatory assurances [to] increase the willingness of local public agencies to fund the BDCP and construction of the new conveyance facilities [tunnels].”²⁹⁴ Commitments like these would significantly worsen the already horrendous impacts on endangered fish species, the Sacramento River, and the San Francisco Bay-Delta resulting from operations of the massive Twin Tunnels. And they are not examined in the EIR/EIS.

It is also not possible for the public to meaningfully review the draft BDCP and EIR/EIS because of the failures, violating both the ESA and NEPA, of the federal agencies to have prepared the Biological Assessments and Biological Opinions required by the ESA relating the Bureau’s Section 7 “participation” in BDCP.²⁹⁵

This absence of the critical information for public review and review by the decision-makers that would be found in the tardy Implementing Agreement, the missing MOUs between the Bureau and DWR, Biological Assessments, and Biological Opinions makes a mockery of the environmentally informed public and decision-maker review provisions and purposes of NEPA, CEQA, and the ESA. In addition, ***absence of this essential information unlawfully segments and postpones the review of those documents from the current review of the Draft BDCP Plan and Draft EIR/EIS.***

1. The late release of the Draft BDCP Implementing Agreement violates NEPA and its implementing regulations.

Under NEPA, each EIS must contain a discussion of the “environmental impacts of the proposed action . . .” 42 U.S.C. § 4332(C)(i). An EIS “shall provide full and fair discussion of significant environmental impacts and shall inform decision-makers and the public of the reasonable alternatives which would avoid or minimize adverse impacts . . .” 40 C.F.R. § 1502.1.

The Draft BDCP Chapters 6, 7, and 8 frequently refer to the IA as a regulatory force of the BDCP operations, ensuring that the project will operate in accordance with law. Nowhere does the Draft BDCP or EIR/EIS list the terms or specific provisions that the IA will contain. Thus, the IA’s terms and requirements are not integrated and analyzed in the EIR/EIS for the public or decision makers to review. Because the IA will directly relate to impacts and mitigation, it is a critically important component of the environmental review mandated by NEPA. Without the IA, it is impossible for the EIR/EIS to provide a “full and fair discussion” of the impacts and mitigation measures.

Consequently, the EIR/EIS is incomplete and insufficient to provide meaningful public review of BDCP impacts and mitigation measures.

Under NEPA regulations, “To the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with environmental impact analyses and related surveys and studies required by the . . . Endangered Species Act . . .”²⁹⁶ Thus, agencies must prepare environmental impact review documents concurrently.

Because the BDCP is expected to result in the take of endangered and threatened species, the parties must acquire an incidental take permit (ITP) before implementing the BDCP.²⁹⁷ A party

²⁹⁴ “Critical Issues.”

²⁹⁵ These violations have been pointed out to you previously in comment letters by Friends of the River dated June 4, August 13, September 25, and November 18, 2013, their comment letters of January 14, and March 6, 2014, and at Friends of the River’s meeting with federal agency representatives in Sacramento on November 7, 2013.

²⁹⁶ 40 C.F.R. § 1502.25.

²⁹⁷ 16 U.S.C. § 1539(a)(1).

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applying for an ITP must submit a conservation plan that specifies, among other things, “what steps the applicant will take to *minimize and mitigate such impacts*, and the *funding that will be available to implement such steps . . .*.”²⁹⁸ The Draft BDCP and EIR/EIS lack this information and suggest that it will appear in the IA.

Accordingly, the BDCP is incomplete without the IA because the BDCP does not specify any commitments the parties have made to fund and promote mitigation measures. As an impact analysis, the IA was required to have been prepared concurrently with the EIS. Nevertheless, the parties to the BDCP have failed to produce even a draft IA specifying their individual commitments to ensuring the integrity of the project. This has resulted in the staggered or piecemeal environmental review that NEPA Regulation 40 C.F.R. § 1502.25 prohibits.

**2. The late release of the Draft BDCP Implementing Agreement violates
ESA Regulations.**

The BDCP is the heart of an application for an ITP. All applications for ITPs must include a “complete description of the activity sought to be authorized. . . .”²⁹⁹ Further, all conservation plans must include “steps . . . that will be taken to monitor, minimize, and mitigate [the] impacts, and the funding available to implement such measures”³⁰⁰ Before approving a conservation plan, the government must provide notice of the application and an opportunity for the public to review the application.³⁰¹

The Draft BDCP fails to provide a complete description of the project because it does not specify the steps that will be taken to mitigate impacts and fund such mitigation. Instead, it insists that the IA will clarify details concerning mitigation measures and funding, which at present the IA does not. Consequently, the Draft BDCP and EIR/EIS lack critical information concerning how the conservation plan will address mitigation and funding requirements, rendering the review period inadequate under ESA Regulations.

**3. The late release of the Draft BDCP Implementing Agreement violates
CEQA.**

Under CEQA, California agencies must make draft EIRs available for public review and comment.³⁰² An EIR “shall include a detailed statement setting forth . . . [a]ll significant effects on the environment of the proposed project” and “[m]itigation measures proposed to minimize significant effects of the environment”³⁰³ Regulations define *project* to mean “the *whole of an action*, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment”³⁰⁴ Before approving a proposed project, the “lead agency shall determine whether a project may have a significant effect on the

²⁹⁸ 16 U.S.C. § 1539(a)(2)(A)(ii) (emphasis added).

²⁹⁹ 50 C.F.R. § 17.22(b)(1)(i).

³⁰⁰ 50 C.F.R. § 222.307(b)(5)(iii).

³⁰¹ 16 U.S.C. § 1539(c).

³⁰² 14 CCR § 15087.

³⁰³ Cal. Pub. Res. Code § 21100(b).

³⁰⁴ 14 CCR § 15378(a). Emphasis added.

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environment based on *substantial evidence* in light of the whole record.”³⁰⁵ *Substantial evidence* does not include “speculation” or “unsubstantiated opinion”; on the contrary, *substantial evidence* includes “facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts.”³⁰⁶ Courts applying CEQA have held over and over that:

An accurate, stable and finite project description is the sine qua non [absolutely indispensable requirement] of an informative and legally sufficient EIR. [Citation]. However, a curtailed, and enigmatic or unstable project description draws a red herring across the path of public input. [citation] Only through an accurate view of the project may the public and interested parties balance the proposed project’s benefits against its environmental cost, consider appropriate mitigation measures, assess the advantages of terminating the proposal and properly weigh other alternatives.³⁰⁷

The IA is part of the project but was not even placed before the public for review until late during the Draft EIR/EIS public review period. Because the IA will contain critical project information that is not in the Draft EIR/EIS, the Draft EIR-EIS does not describe the *whole of the action*. Consequently, the EIR-EIS fails to provide an “accurate view of the project” and the public is prevented from understanding how the proposed project will operate. Further, this missing information demonstrates that the incomplete EIR/EIS fails to support its conclusions as to the impacts of the project. Whereas CEQA requires environmentally informed agency decisions, the absence of the IA prevents the agencies from forming decisions based on fully available information. Instead, the agencies rely on speculation as to what the terms of the IA might include.

4. The late release of the Draft BDCP Implementing Agreement violates NCCPA.

The NCCPA requires that any draft documents associated with an NCCP are made available for public review and comment.³⁰⁸ As mentioned above, the NCCPA requires the NCCP to include an IA.³⁰⁹ The Act further imposes a “requirement to make available in a *reasonable and timely manner* . . . planning documents associated with a natural community conservation plan that are subject to public review.”³¹⁰

Because the impact and mitigation analyses in the EIR/EIS must rely on the IA for full disclosure, the government agencies needed to make the draft IA available at the same time as the draft EIR/EIS in order to meet the *reasonable and timely manner* requirement. ***Releasing the draft IA months after the Draft EIR/EIS is neither reasonable nor timely because the government could have waited for completion of the draft IA before releasing the draft EIR/EIS.***

The government’s plans to hold a 60-day public comment period for the draft IA after the Draft BDCP and Draft EIR/EIS comment period closes will not cure this defect in the overall review process. Staggering the release and comment periods for BDCP documents deprives the public of adequate review opportunities in two ways. First, once the government releases the Draft IA

³⁰⁵ Cal. Pub. Res. Code § 21082.2(a). Emphasis added.

³⁰⁶ Cal. Pub. Res. Code § 21082.2(c).

³⁰⁷ *San Joaquin Raptor Rescue Center v. County of Merced*, 149 Cal.App.4th 645, 672 (2007). Internal citations omitted.

³⁰⁸ Cal. Fish & G. Code § 2815.

³⁰⁹ Cal. Fish & G. Code § 2820(b).

³¹⁰ Cal. Fish & G. Code § 2815. Emphasis added.

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containing specific details concerning BDCP operation, interested parties' understanding of the project will change. ***New information released in the IA can and is expected by BDCP officials to supersede comments received during the Draft BDCP and EIR/EIS comment period, undermining the integrity of the comment period. To ensure that interested parties have an adequate opportunity to review and comment on the project, all documents relating the BDCP need to be available for comment at the same time, and for the same length of time.***

Second, a 60-day comment period is drastically insufficient to provide interested parties enough time to review the IA and use the EIR/EIS to understand its effects on BDCP operations. Interested parties will need to both review the draft IA and determine how it alters 40,000+ pages of BDCP documents. Accomplishing this type of review in a mere 60 days is impossible. Limiting the draft IA comment period to 60 days will effectively ensure that interested parties are incapable of meaningfully reviewing the totality of the BDCP.

In order to provide meaningful public review, the BDCP federal and State agencies need to hold a new Draft BDCP comment period with *every* BDCP document—Implementing Agreement, Biological Assessments and Biological Opinions, the draft MOUs between DWR and the Bureau, and Draft BDCP Plan and Draft BDCP EIR/EIS-- available for public review and comment during the same time period. Additionally, the new comment period must remain open for at least four months. NEPA regulation 40 C.F.R. 1502.7 declares that the text of an EIS for "proposals of unusual scope or complexity shall normally be less than 300 pages." Here, there are already 40,214 pages of released documents which represent 20% more pages than the 32 volumes of the last printed edition of the Encyclopedia Britannica. The government's original four month comment period and subsequent two-month extension effectively conceded that extended public review periods are necessary for a project as massive as the BDCP.

Conclusion

The absence of the Draft IA during the Draft BDCP and Draft EIR/EIS comment period has violated NEPA, CEQA, ESA, and NCCPA. These violations have rendered the comment period inadequate to support meaningful public review and comments. In order to remedy these violations, the government must release the Draft IA and open a new, four-month Draft BDCP comment period with every BDCP document available for public review and comment. Beyond these violations of law, the government must open a new public comment period to restore any public confidence in the integrity of the BDCP. It is absurd to expect the public to trust the BDCP process without full disclosure of the project's impacts, costs, contractual relationships, and who will pay those costs.

5. Omission of needed biological assessments and biological opinions from the package of BDCP documents for public review violates NEPA.

As a result of discussion between representatives of EWC member group Friends of the River at a November 7, 2013 meeting with federal agency BDCP representatives, it was confirmed that the factual matters set forth in Friends of the River's September 25, 2013, comment letter are correct. ***First***, it is correct that the Sacramento River Winter-Run Chinook Salmon is listed as an endangered species under the ESA. Likewise, it is correct that the Central Valley Spring-Run Chinook Salmon, Central Valley Steelhead, Southern Distinct Population Segment of North American Green Sturgeon, and Delta Smelt, are listed as threatened species under the ESA. ***Second***, it was confirmed that the reaches of the Sacramento River, sloughs, and the Delta that would lose significant quantities of freshwater and freshwater flows through operation of the proposed Twin Tunnels are designated critical habitats for each of these five listed endangered and threatened fish species. ***Third***, it was confirmed that no Biological Assessment has been prepared and issued by the federal Bureau of Reclamation with respect to the Twin Tunnels project. ***Fourth***, it was confirmed that no final or

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even draft Biological Opinion has yet been prepared by NMFS or USFWS with respect to the impacts of the operation of the Twin Tunnels on the five listed fish species or their critical habitats.

NMFS reiterated its previous “Red Flag” comment in 2013 that the Twin Tunnels threaten the “potential extirpation of mainstem Sacramento River Populations of winter-run and spring-run Chinook salmon over the term of the permit. . . .”³¹¹ In comments on the Administrative Drafts, the EPA explained that “many of these scenarios of the Preferred Alternative ‘range’ appear to decrease Delta outflow³¹², despite the fact that several key scientific evaluations by federal and State agencies indicate that more outflow is necessary to protect aquatic resources and fish populations.”³¹³

Legal precedent underscores this need: “The goal of the ESA is not just to ensure survival but to ensure that the species recover to the point it can be delisted.”³¹⁴ Pursuant to the commands of the ESA, each federal agency “shall . . . insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered or threatened species *or result in the destruction or adverse modification of [critical] habitat of such species.* . . .”³¹⁵

And: “[T]he purpose of establishing ‘critical habitat’ is for the government to carve out territory that is not only necessary to the species’ survival but also essential for the species’ recovery.”³¹⁶

Also: “existing or potential conservation measures outside of the critical habitat cannot properly be a substitute for the maintenance of critical habitat that is required by Section 7 [of the ESA, 16 U.S.C § 1536].”³¹⁷

The failure to prepare the ESA and National Environmental Policy Act (NEPA) required Biological Assessments and Opinions analyzing the threatened adverse modification of critical habitats renders the draft EIR/EIS essentially worthless as an environmental disclosure and informational document under NEPA. The draft EIR/EIS is also premature and unlawful under the ESA.

The ESA Regulations require that “Each Federal agency shall review its actions *at the earliest possible time* to determine whether any action may affect listed species or critical habitat. If such a determination is made, formal consultation is required. . . .”³¹⁸ The Biological Assessments and Biological Opinions are the written documents that federal agencies must prepare during the ESA consultation process. The NEPA Regulations require that “To the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with

³¹¹ NMFS Progress Assessment and Remaining Issues Regarding the Administrative Draft BDCP Document, Section 1.17, 12, April 4, 2013.

³¹² BDCP EIR/EIS, Chapter 5, *Water Supply*, p. 5-82.

³¹³ EPA Comments on Administrative Draft EIR/EIS, III Aquatic Species and Scientific Uncertainty, Federal agency Release, July 18, 2013.

³¹⁴ *Alaska v. Lubchenko*, 723 F.3d 1043, 1054 (9th Cir. 2013), citing *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service*, 378 F.3d 1059, 1070 (9th Cir. 2004).

³¹⁵ 16 U.S.C. § 1536(a)(2)(emphasis added).

³¹⁶ *Gifford Pinchot*, 378 F.3d 1059, 1070.

³¹⁷ *Gifford Pinchot*, 378 F.3d 1059, 1076.

³¹⁸ 50 C.F.R. § 402.14(a); and *Karuk Tribe of California v. U.S. Forest Service*, 681 F.3d 1006, 1020 (9th Cir. 2012) (en banc)(emphasis added), *cert. denied*, 133 S.Ct. 1579 (2013).

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environmental impact analyses and related surveys and studies required by the . . . Endangered Species Act. . .”³¹⁹ “ESA compliance is not optional,” and “an agency may not take actions that will tip a species from a state of precarious survival into a state of likely extinction.”³²⁰

The Biological Opinion is to determine “whether the action, taken together with cumulative effects, is likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat.”³²¹

Consequently, against this threat of extinction, conducting the draft EIR/EIS public review and comment stage without Biological Opinions or even Biological Assessments and draft Biological Opinions, leaves the public in the dark and violates both the ESA and NEPA. Conducting the NEPA environmental draft process prior to and in a vacuum from the ESA consultation process violates the ESA command to carry out the ESA process “at the earliest possible time” and violates the NEPA command to conduct the NEPA and ESA processes “concurrently” and in an “integrated” manner.

The public and the decision-makers now have what they do not need: 40,000 pages of advocacy from the consultants including self-serving speculation that the adverse effects of reducing flows in the Sacramento River, sloughs, and Delta will be offset. ***The public and the decision-makers do not have what they do need and are entitled to by law:*** the federal agency Biological Assessments and Biological Opinions required by the ESA and NEPA.

This draft EIR/EIS circulated prior to preparation and circulation of federal agency prepared Biological Assessments and Biological Opinions is “so inadequate as to preclude meaningful analysis,”³²² because the public and decision-makers do not have the basic federal agency analyses required by the ESA to determine whether DWR’s preferred alternative—the Twin Tunnels—is even a lawful alternative, let alone an environmentally acceptable alternative.³²³

D. The EIR/EIS fails to properly explain and justify the underlying purpose and need for the Bay Delta Conservation Plan.

An Environmental Impact Statement must explain the “*underlying* purpose and need” to which the lead agency responds in proposing alternatives, including the proposed action.³²⁴ It is important because it explains why the agency and the Applicants here undertake the proposed action and what they hope to achieve by doing it.

³¹⁹ 40 C.F.R. § 1502.25(a).

³²⁰ *National Wildlife Federation v. National Marine Fisheries Service*, 524 F.3d 917, 929-30 (9th Cir. 2008).

³²¹ 50 C.F.R. § 402.14(g)(4).

³²² 40 C.F.R. § 1502.9(a).

³²³ The Environmental Water Caucus further incorporates by reference letters of E. Robert Wright, Senior Counsel, Friends of the River, to Bay Delta Conservation Plan officials with the dates of November 18, 2013; August 13, 2013, and June 19, 2013. They are Attachments 3, 4, and 5 to these EWC Comments. These letters indicate low little substantive change in the quality of documents released by and about BDCP during 2013 occurred by the December 2013 release of the public review draft documents.

³²⁴ 40 CFR 1502.13. Emphasis added.

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Getting the purpose and need statement³²⁵ right is crucial in and of itself. It also shapes the definition, screening and selection of alternatives. Review of a “reasonable range” of alternatives is vital under both CEQA and NEPA because meaningful comparisons between different courses of action that address the purpose and need statement are essential for good decision making.

The EIR/EIS states:

One of the primary challenges facing California is how to comprehensively address the increasingly significant and escalating conflict between the ecological needs of a range of at-risk Delta species and natural communities that have been and continue to be adversely affected by a wide range of human activities, while providing for more reliable water supplies for people, communities, agriculture, and industry.³²⁶

BDCP EIR/EIS’s purpose and need statement then moans and groans: Conflicts between species protection and Delta water exports have become more pronounced, says EIR/EIS Chapter 2. Recent outcomes of “continuing court decisions” over CVP/SWP operations criteria (apparently a reference to the string of decisions coming from the federal Eastern District Court in Fresno over the Delta smelt and salmonid biological opinions. Other factors affect the Delta—continuing land subsidence, “seismic risks and levee failures,” and “sea level rise” exacerbate these conflicts, claim the Applicants, rendering conditions in the Delta “unsustainable.” And so, “fundamental system change to the current system is necessary” to achieve the two co-equal goals of providing a more reliable water supply for California and protecting, restoring and enhancing the Delta ecosystem.

This bluster and hand-waving vents the Applicants’ frustrations with recent court decisions, but does little to advance understanding of the project or justify BDCP’s purpose and need. These decisions increased needed protections for endangered Delta smelt and salmonids, protections, actions that were not otherwise forthcoming from the State Water Resources Control Board (whose fiduciary responsibility it is to protect public trust resources in the state’s water ways). These decisions ultimately aim to make the CVP and SWP operations better able to comply with the California Constitution’s ban on wasteful and unreasonable uses and methods of diversion of water. The purpose and need statement resorts to unsubstantiated assertions about seismic risks to spread fear of earthquakes and of adaptation to sea level rise. It fails utterly to consider whether the legislatively-established co-equal goals can be achieved **without** resorting to further alterations of Delta hydrology and ecology. As noted in Section VI above, it provides no analysis of how and whether the Applicants have acted to reduce reliance on Delta imports.

The Purpose and Need statement incorrectly and inaccurately conflates the Applicants’ desires for a more reliable water supply from the Delta with California’s diverse water supply needs.

The analysis of California’s future water supply needs must rely on a more detailed and careful evaluation of supply, demand, cost of alternative water supplies, and price (i.e., water rates). Neither

³²⁵ “Purpose and need” and “purpose and need statement” are NEPA-related terms. The similar concept is the statement of project objectives referred to in CEQA. Our comments intend that the NEPA terms mean both “purpose and need” as well as project objective statements that are required in these environmental review documents.

³²⁶ BDCP EIR/EIS, Chapter 2, *Project Objectives and Purpose and Need*, p. 2-1, lines 12-16. See also footnote 251 above.

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Appendix 1C of the EIR/EIS, nor the EIR/EIS chapters, nor the Bay Delta Conservation Plan provide such an analysis.³²⁷

What is BDCP's underlying purpose? At this point in our comments, we have long since documented why BDCP will fail to "restore, enhance, and protect" the Delta ecosystem: salinity will increase, residence time of water will increase, modeling results for toxic contaminants in fish tissues like methylmercury and selenium increase, Delta outflows will decrease, the low salinity zone measured by X2 will migrate further east (after climate change effects are accounted for), rates of entrainment for Delta smelt in the north Delta are likely to increase, and at least four different races of salmonid smolts are expected to have decreased survival rates through the Delta over the course of North Delta diversion operations through 2060.

The statements of purpose and need and project objectives fail to explain *why* some kind of conveyance is needed, emotional bluster aside. Must *more reliable supplies* have to mean *more supplies*? Why is greater reliability of Delta supplies needed, and must they come from the Delta? Are there more supplies BDCP is not directly disclosing in its Plan and EIR/EIS? Reliable water supplies can have engineering, climatic, legal, technological, and economic (in terms of supply, demand and price) meanings. With so many ways to interpret the phrase "water supply reliability," BDCP's purpose and need statement obscures the underlying purpose and need for BDCP and the Twin Tunnels project.

BDCP fails to adequately inform lay readers and decision makers alike about what alternative approaches to water supply reliability may entail, whether some are more ecologically effective, more cost-effective, more technologically and climatically workable, or have more senior water rights to support more reliable water development.

The BDCP indicates in its economic analysis on one hand that the project would maintain and restore the ability of the state and federal water projects to divert and export similar levels of water over time. The No Action Alternative is expected to yield average Delta exports of about 4.4 million acre-feet annually, which is lower than current average Delta exports of the last 15 years of about 5.5 million acre-feet. BDCP EIR/EIS's nine alternatives would have annual Delta exports ranging between 3.1 to 5.5 million acre-feet on average.³²⁸ Alternative 4's four operational scenarios would range from 4.4 to 5.4 million acre-feet.

³²⁷ *Ibid.*, Chapter 1, Appendix 1C, *Demand Management Measures*. This appendix concludes: "Demand for water continues to be much greater than available supplies if only because many groundwater basins south of the Delta are in overdraft. Aggressive implementation of [demand management measures] could contribute towards reducing this imbalance, but the reductions from even the most aggressive conservation programs will not be enough to eliminate the water supply deficit....[M]eeting the water supply and environmental objectives of the BDCP will require the implementation of a wide range of environmental and water management programs. Water conservation is a critical element in the portfolio programs, and the objectives of the BDCP will only be achieved through implementing a comprehensive water supply and environmental management, not solely through water conservation." The appendix fails to consider cost and price issues associated with water usage. And its characterization of the limitations of conservation is an argument employing a straw man: no one seriously believes that we can conserve our way out of the state's future water demand issues, just as no one seriously believes that we can build enough storage and conveyance to eliminate those same issues.

³²⁸ *Ibid.*, *Executive Summary*, Table ES-11, p. ES-55.

Figure 14

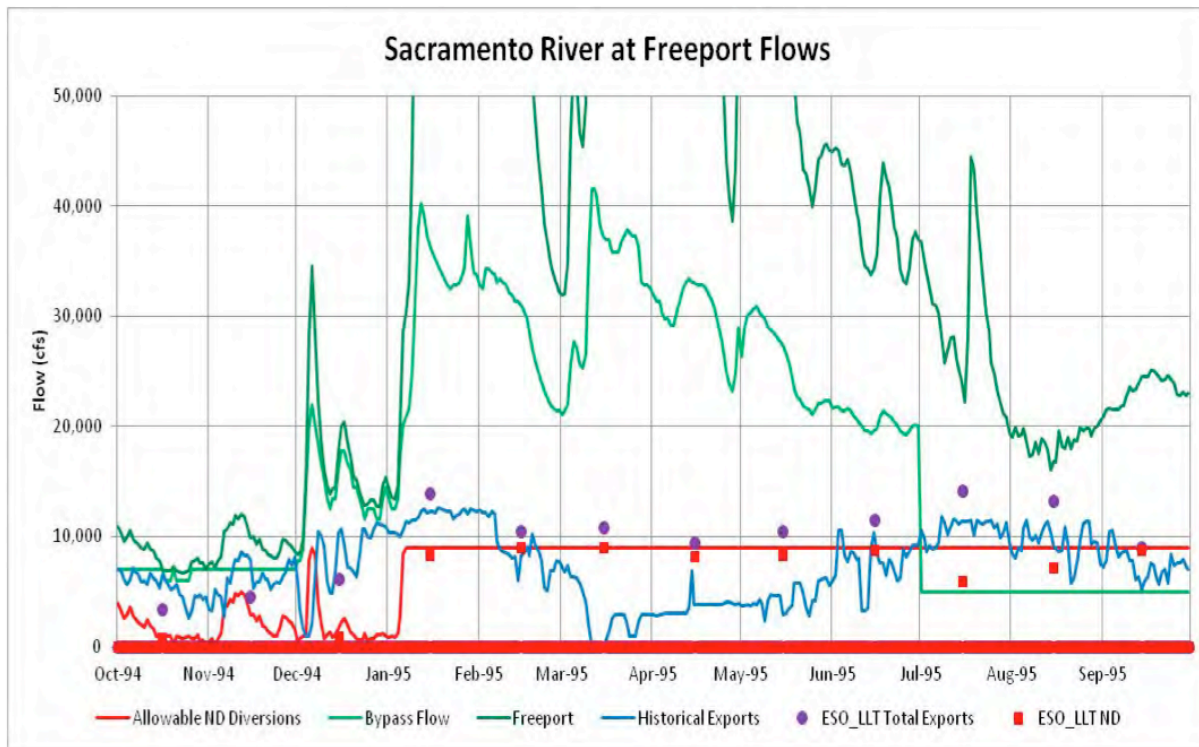


Figure C.A-58. Sacramento River at Freeport Daily Flow and Allowable BDCP North Delta Diversions for ESO (9,000 cfs capacity) with Bypass Flow Requirements in WY 1995

Figure 5.B.4-4 in Figure 1 of Section III showing average total BDCP exports by water year type, indicates that the Twin Tunnels' North Delta diversions will significantly increase total exports in wet and above normal years. In the Chapter 5, *Effects Analysis*, Appendix 5C, Attachment 5C.A, BDCP illustrates (Figure 14 above) how North Delta diversions could be routinely used to export *more* supplies during wet and above normal years than it now does. This appendix uses water year 1995 to describe how, had the North Delta Diversions been in operation that year with its attendant bypass and operational flow criteria, full capacity diversions of 9,000 cfs (red line at left) could occur from early January through September of that year, while without the tunnels, south Delta exports (blue line at left) were considerably less than that capacity from March through May.³²⁹

BDCP's purpose and need statement fails to clarify, disclose, and distinguish that one *underlying* purpose of BDCP's North Delta Diversions is to *retain* average exports over time compared with today while another purpose is to actually *increase* exports in wet and above normal years). We further examine this confusion in BDCP's purpose and need statement below.

BDCP also fails to disclose as an underlying purpose its intention to use the Twin Tunnels facility (the facilities identified in "Conservation Measure 1") to increase water market transfer activity whenever tunnels and pumping capacity permits. This will be especially operable, as appendices to

³²⁹ BDCP, Appendix 5, Attachment 5C.A, *CALSIM and DSM2 Modeling Results for the Evaluated Starting Operations Scenarios*, Figure C.A-58, p. 5C.A-113.

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Chapter 5 (EIR/EIS) acknowledge, when State Water Project allocations are 50 percent of Table A amounts or below, or CVP agricultural allocations are 40 percent or below, or when both projects' allocations are at or below these levels. Below these thresholds, according to BDCP, "supplemental demand" occurs among state and federal water contractors, indicating that a water transfer program for cross-Delta transfers will be inaugurated by the Bureau of Reclamation and the Department of Water Resources. We comment later about related omissions from the EIR/EIS's setting/affected environment and impact/effect analyses that follow from BDCP omitting this as a key purpose of the Twin Tunnels project and Conservation Measure 1. These omissions affect Chapters 5 (water supply) and 7 (groundwater) of the EIR/EIS chiefly.

Also, as we have pointed out above in our discussion of entrainment risk and fish screens related to the North Delta intakes, that the BDCP and its Twin Tunnels project fails to meet the stated purpose of "reducing the adverse effects on certain listed species due to diverting water." Placement of the North Delta intakes in the lower Sacramento River places a large amount of pumping and diversion capacity in the midst of both listed salmonids' migratory corridor and in close proximity to the Low Salinity Zone, which provides important habitat for listed pelagic species like Delta smelt and longfin smelt. None of these species fare better under BDCP, according to BDCP modeling results.

In our discussion of funding assurances, we also pointed out that the economic demand for Twin Tunnels water, which will be costly, may be much less than the Applicants anticipate. Their purpose and need statement have, in particular, failed completely to evaluate the need for the project by conducting a comprehensive economic analysis of future demand for Twin Tunnels water from both the municipal/industrial and agricultural water-user sectors. To the contrary, we have cited sources from among Metropolitan Water District of Southern California member agencies that indicate demand may not be nearly as strong as the Applicants hope.

Economist Jeffrey Michael of the University of the Pacific has also made a detailed critique of the BDCP economic analysis' treatment of demand for Twin Tunnels water. Dr. Michael found that BDCP employed outdated growth forecasts for southern California counties to overestimate water shortages that BDCP proposes to address.³³⁰ Our review of the November 2013 documents find no changes to the BDCP purpose and need that would significantly change Dr. Michael's view.

E. The EIR/EIS fails to provide an adequate and reasonable range, descriptions, and justifications of alternatives.

Fundamental threshold violations of the National Environmental Policy Act (NEPA), California Environmental Quality Act (CEQA), and the Endangered Species Act (ESA) are being carried out right now by the Bay Delta Conservation Plan (BDCP) process. The lead federal and State agencies have failed to develop a range of reasonable alternatives to new upstream conveyance such as the massive Twin Tunnels. The Twin Tunnels would increase rather than decrease the capacity for exports from the San Francisco Bay-Delta by diverting enormous quantities of freshwater from the lower Sacramento River upstream from the Delta near Clarksburg.

1. The EIR/EIS fails to provide a reasonable range of alternatives.

Both CEQA and NEPA require that environmental review provide a reasonable range of alternatives in light of the purpose and need for the project. The BDCP EIR/EIS's screening process over several years eventually settled on nine alternatives besides the No Action Alternative. The Applicants also created eight separate operational scenarios, A through H, reflecting different operational modeling

³³⁰ Jeffrey Michael, "New BDCP Economic Studies Use Outdated Growth Forecasts to Project an Artificial Water Shortage," *Valley Economy* (blog), June 4, 2013. Accessible online 11 April 2014 at <http://valleyecon.blogspot.com/2013/06/new-bdcp-economic-studies-use-outdated.html>.

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assumptions for each of the nine alternatives. To complicate matters more, Alternative 4 (the NEPA-preferred alternative) has four distinct operational modeling scenarios H1 through H4. So, there are really 12 alternatives total, and 11 operational scenarios overall.

Of these alternatives, just one is for a “through-Delta” approach to conveyance. One relies on an operational scenario that attempts to meet a Delta inflow criterion of 55 percent of unimpaired flow, instead of the 75 percent of unimpaired flow Delta outflow criterion called for by the State Water Resources Control Board in its 2010 Delta flow criteria report.³³¹ Another alternative contains just one North Delta intake and one tunnel, but excises the other water program innovations called for in the original “Portfolio Alternative” concept which would take the difference in cost with Alternative 4 (the preferred alternative) and invest it in a comprehensive set of statewide water conservation, recycling, storm water capture, desalination, and other water supply investments that reduce reliance on the Delta for imported water.

A reasonable and feasible alternative that should have been considered is one that reduces reliance significantly on the Delta for imported supplies ***without relying on new conveyance schemes***. Alternative 8 (the dual conveyance design with Scenario F operational modeling criteria including 55 percent of unimpaired flow for Delta outflow) does not meet this criterion because it relies on investment in an expensive dual conveyance approach but its operational modeling scenario restricts Delta exports.

The EWC offered that its Reduced Exports Plan could serve as an alternative that did not rely on new conveyance. It would limit Delta exports to much the same level (about 3 million acre-feet on average annually) as that of Alternative 8 but would not include investment in a dual conveyance (Twin Tunnels) scheme. EWC staff transmitted the request for consideration twice to BDCP director Jerry Meral on December 17, 2012, and again on February 11, 2013.

Moreover, as we established in Sections III and VI of our comments, the Bay Delta Conservation Plan does not “improve the conveyance system” in the Delta. “Improvement” should improve not only water supply reliability but also protect, enhance, and restore Delta ecosystems as co-equal in legal status.

2. The EIR/EIS provides only “slight” differences in operational scenarios for the BDCP alternatives.

The BDCP EIR/EIS itself acknowledges that the differences among most of the alternatives are slight. The basis for the operational scenarios is the fact that the State Water Resources Control Board regulates existing Delta facilities of the CVP and SWP according to water quality and operational objectives. In addition, the US Fish and Wildlife Service and National Marine Fisheries Service issued biological opinions that require additional operational regulations on Delta facilities. BDCP’s operational scenarios (as modifications to alternatives) would “require additions to, modification of, or elimination of some of the existing Delta operational rules.” Changes in the operational rules may cause changes in Delta channel flows, outflows and exports, as well as to the fate of fish and ecosystems and other human and non-human beneficial users in the Delta. BDCP EIR/EIS’s Executive Summary further states:

Because each alternative has a *slightly different* set of applicable rules...and varying north Delta intake capacities, each BDCP alternative would have *slightly different* Delta operations in many months. Although the monthly Delta inflows, Delta channel flows, Delta outflow, and Delta exports may be *slightly different*

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for each BDCP alternative (as simulated using the CALSIM model), the basic changes in flow (patterns)...would likely cause differences in the aquatic habitat conditions for covered species..."³³²

And indeed, ***those differences are relatively slight when it comes to measures like Delta outflow.*** Table ES-11 shows that for Alternatives 1 through 9 (inclusive), Delta outflow would vary only within the range of a 7 percent decrease to a 9 percent increase. The highest outflow registers from Alternative 8, which applies a 55 percent of unimpaired flow criterion to achieve this modest 9 percent increase in Delta outflow, well below the 75 percent of unimpaired flow called for in the Delta Flow Criteria Report of 2010. No attempt is made in the Executive Summary to summarize what effect on fish these “slight” changes in Delta outflow would have.

While the percent increases for Delta exports that would result for each alternative are in the double digits, a more meaningful measure is the near zero-sum relationship that visible in a comparison of the magnitudes of Delta outflow and Delta export change. Table ES-11 also reveals that for most dual conveyance alternatives, the decrease in Delta outflow is nearly all accounted for by the increase in Delta exports, ***again with slight exceptions*** (Table 1).

Table 1		
Alternative	Change in Delta Outflow (1,000s of Acre-feet)	Change in Delta Exports (1,000s of Acre-feet)
1	(1,081)	1,025
2	(647)	636
3	(985)	938
4-H3	(516)	505
4-H1	(982)	821
4-H2	(463)	269
4-H4	(123)	(27)
5	(347)	346
7	683	(682)
8	1,447	(1,329)

Source: BDCP, *Executive Summary*, Table ES-11, p. ES-55. Values in parentheses represent decreases in flow or exports.

We recognize that Alternative 9 would change existing Delta flow patterns dramatically. However, the EIR/EIS (understood as the totality of the BDCP conservation plan, appendices, etc.) does not study this alternative and its effects on fish nearly to the degree that the dual conveyance or isolated conveyance alternatives are studied. Even BDCP acknowledges, in summarizing Table ES-11 that

³³² BDCP, *Executive Summary*, p. ES-50, lines12-18. Emphasis added.

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“Although there were some larger changes in monthly reservoir release flows or Delta outflows and exports, *these annual average values show that the BDCP alternatives would result in only moderate changes in Delta outflow or south Delta exports.*”³³³

In our view, BDCP Applicants have not complied with the CEQA and NEPA requirements to consider and evaluate a reasonable range of alternatives. BDCP has instead come up with a number of alternatives that for the most part accomplish their stated purpose and need through narrowly optimizing operational scenarios among a dozen largely similar designs off of three primary conveyance alignments (West Delta, tunnel, and isolated eastern Delta). ***They have accomplished a feat of engineering optimization, but failed to meet CEQA and NEPA requirements to select and analyze a reasonable range of alternatives.***

3. The EIR/EIS provides no substantive variation in either biological goals and objectives or conservation measures 2 through 22 as part of assembling reasonable alternatives to the proposed action alternative.

The lack of alternatives on the habitat restoration and other stressors side of the Bay Delta Conservation Plan is the same sort of CEQA and NEPA failure, if not even worse. The same twenty other conservation measures (numbers 2 through 21) are essentially retained throughout the consideration of BDCP alternatives. Table ES-8 in the Executive Summary of the EIR/EIS demonstrates that, like the BDCP operational scenarios, ***there are only slight differences between alternatives when it comes to the habitat restoration (“conservation”) elements of BDCP.*** Variations in the extent of tidal habitat, seasonally inundated floodplain, and channel margin habitat affecting Alternatives 5 and 7 only are noted in this table. Alternative 9, the “through-Delta” alternative, would make no alteration in the alignment of water ways, so its conservation elements are uniformly “similar but expected different locations for restoration or enhancement actions could be chosen.”³³⁴

The success of tidal wetland habitat restoration depends on the likelihood of tidal processes advecting food from shoreline locations out into open water to provide benefits to Delta smelt, and longfin smelt. As we showed in Section III above, BDCP’s optimistic level of food export is not supported by most Delta estuarine ecologists. One important reason is the presence of the nonnative invasive overbite clam population, which filter feeds the open water column intensively every day and can strip it free of pelagic foodstuffs on which the smelts rely.

Given that BDCP fails utterly to protect, restore and enhance populations of listed species, nor can it be certain that its habitat restoration conceptual plans will work as intended, its approach to habitat conservation plan alternative elements is even narrower than the operational scenarios concocted for conveyance alignment alternatives that are only “slightly different” from each other.

In addition to this extremely narrow range of “conservation” elements in the alternatives, the “other stressors” conservation measures are similarly straitjacketed. These “conservation measures” address:

- Methylmercury management
- Nonnative submerged and floating aquatic vegetation in tidal habitat restoration
- Dissolved oxygen levels in the Stockton Deep Water Ship Channel
- Predator control on covered fish at hot spots

³³³ *Ibid.*, p. ES-54, lines 27-29. Emphasis added.

³³⁴ *Ibid.*, Table ES-8, p. ES-37.

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- Nonphysical fish barriers
- Reduction of “illegal harvest” of covered fish species
- Smelt hatchery
- Urban storm water pollution control
- Reduction of invasive species from recreational vessels
- Fish screen installation on non-project diversions

These are all apparently unchanged across the range of BDCP alternatives. A reasonable range of “other stressor” alternatives, given the scientific uncertainties identified earlier in these comments, would at least include provisions for using flow to manage the overbite clam (*Potamocorbula amurensis*) and manage selenium in the Plan Area and the Delta’s Central Valley watershed (mainly the western San Joaquin Valley). This would entail developing a conservation measure containing different levels of flow variation aiming to consider which would reduce habitat suitability for the overbite clam while also creating hydrologic conditions in which selenium partitioning would be less likely to occur.

No range of such reasonable alternatives are developed, let alone considered, in the BDCP EIR/EIS. This is deficiency is fatal to the adequacy of the EIR/EIS.

4. The EIR/EIS process failed to Develop any Alternatives Increasing Flows by Reducing Exports

Of the 15 “action alternatives” evaluated in the Draft EIR/EIS, all save one alternative, Alternative 9—Through-Delta—would construct, and then operate for decades new upstream conveyance ranging from a diversion capacity of 3000 cubic feet per second (cfs) to 15,000 cfs.³³⁵ Nine of the so-called “alternatives” have a North Delta diversion capacity of 15,000 cfs.³³⁶ The Preferred Alternative 4 is claimed to have a capacity of 9000 cfs but as we have pointed out previously, that claim is false as the Twin Tunnels have the capacity of 15,000 cfs or greater and it would be relatively easy to add two new intakes down the road to use the full capacity of the Tunnels.³³⁷

The BDCP process also claims to have considered 11 “alternatives” as “take” alternatives pursuant to the ESA. (BDCP Plan, Chapter 9, Alternatives to Take, table 9-7, p. 9-20). Of the 11 “take alternatives” all save one, alternative F, Through Delta, would construct, and then operate for decades new upstream conveyance by way of Twin Tunnels similar to the descriptions of the “alternatives” contained in the Draft EIR/EIS. The Preferred Alternative 4 from the Draft EIR/EIS is referred to as the BDCP Proposed Action in Chapter 9 of the Plan.

To be clear, 14 of the so-called 15 “alternatives” in the Draft EIR/EIS and 10 of the so-called 11 “take alternatives” are not true alternatives at all. They are all peas out of the same pod that would create new upstream conveyance to divert enormous quantities of freshwater away from the lower Sacramento River, sloughs, and San Francisco Bay-Delta for export south. There is nothing new in this blinding of the BDCP process to development or at least consideration of a range of reasonable alternatives to construction and operation of new upstream conveyance. Three years ago the National Academy of Sciences declared in reviewing the then-current version of the draft BDCP that: “[c]hoosing the alternative project before evaluating alternative ways to reach a preferred outcome

³³⁵ Draft EIR/EIS, Executive Summary, Table ES-5, pp. ES 28-30.

³³⁶ *Ibid.*

³³⁷ Friends of the River (FOR) August 13, 2013 BDCP comment letter, Attachment 2 to FOR January 14, 2014 BDCP comment letter.

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would be post hoc rationalization—in other words, putting the cart before the horse. Scientific reasons for not considering alternative actions are not presented in the plan.”³³⁸

5. The EIR/EIS failed to consider alternatives developed for the BDCP lead agencies.

In addition to failing to develop a range of reasonable alternatives, the BDCP lead agencies have also failed to even consider reasonable alternatives handed to the State on a silver platter. Friends of the River is a California nonprofit public interest organization devoted to river protection, conservation and restoration. Friends of the River is also a member of the Environmental Water Caucus (EWC). The EWC is a coalition of over 30 nonprofit environmental and community organizations and California Indian Tribes. In our November 18, 2013 comment letter we urged those carrying out the BDCP to review the “Responsible Exports Plan” proposed by the EWC:

[A]s an alternative to the preferred tunnel project. This Plan calls for reducing exports from the Delta, implementing stringent conservation measures but no new upstream conveyance. This Plan additionally prioritizes the need for a water availability analysis and protection of public trust resources rather than a mere continuation of the status quo that has led the Delta into these dire circumstances. Only that alternative is consistent with the EPA statements indicating that more outflow is needed to protect aquatic resources and fish populations. The EWC Responsible Exports Plan is feasible and accomplishes project objectives and therefore should be fully analyzed in a Draft EIS/EIR.”³³⁹

We specifically pointed out that the plan was online.³⁴⁰ The failure in the BDCP process to consider the Responsible Exports Plan alternative is inexplicable given that a similar, earlier version of the plan, EWC’s “Reduced Exports Plan” of December 2012 was presented by Nick Di Croce, Co-Facilitator of the EWC to then-California Resources Agency Deputy Secretary Jerry Meral and other BDCP agency officers in December 2012 and presented to then-Deputy Secretary Meral again in person on February 20, 2013, in his office in the Resources Agency building. The Reduced Exports Plan had previously been presented in May of 2012 at the Federal/State/NGO meeting in San Francisco. As stated by Co-Facilitator Di Croce in his December 2012 message to Deputy Secretary Meral:

Now that the project is nearing its EIR/EIS stage, we feel it is important to formally present it [Responsible Exports Plan] to you and request that you get it on the record as an alternative to be evaluated. We have done this with the Delta Stewardship Council and it is included as one of the Delta Plan alternatives being evaluated. As you know, CEQA and NEPA both require a full range of reasonable alternatives to be evaluated. And as far as we know, there are no alternatives being evaluated that do not include new conveyance, except for the No Action alternative; this is certainly not a No Action alternative.³⁴¹

We attached (for BDCP.Comments@noaa.gov) and incorporated by this reference a copy of the 39-page “Responsible Exports Plan” of May 2013 (as well as a copy of the “Reduced Exports Plan” of December 2012) to this comment letter as setting forth a feasible alternative that must be considered in the BDCP process.

³³⁸ National Academy of Sciences, Report in Brief at p. 2, May 5, 2011.

³³⁹ FOR November 18, 2013 comment letter at p. 3, Attachment 4 to FOR January 14, 2014 comment letter.

³⁴⁰ *Ibid.*, p. 3, footnote 1. The EWC Responsible exports Plan was and still is online at <http://www.ewccalifornia.org/reports/resonsibleexpltspanmay2013.pdf>.

³⁴¹ December 15, 2012 email from Di Croce to Meral.

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Actions called for by the Responsible Exports Plan alternative include no development of new upstream conveyance; reducing exports to no more than 3,000,000 acre-feet in all years in keeping with State Water Resources Control Board (SWRCB) flow criteria; water efficiency and demand reduction programs including urban and agricultural water conservation, recycling, storm water recapture and reuse; reinforced levees above PL 84-99 standards; installation of improved fish screens at existing Delta pumps; elimination of irrigation water on drainage-impaired farmlands south of the Bay-Delta; return the Kern Water Bank to State control; restore Article 18 urban preference; restore the original intent of Article 21 surplus water in SWP contracts; conduct feasibility study for Tulare Basin water storage; provide fish passage above and below Central Valley rim dams for species of concern; and retain cold water for fish in reservoirs.

The Responsible Exports Plan alternative calls for a statewide benefit-cost analysis to determine economic desirability of any plan or alternative; water availability analysis to align water needs with availability; protecting the Delta ecosystem pursuant to public trust obligations; and meeting NCCP recovery standards for listed fish species. Other obvious alternatives would include actions ranging from meeting ESA recovery standards for listed fish species to halting the planting of almond orchards that cannot be fallowed in dry years on desert lands receiving export waters to consideration of the development of desalinated water supplies as is being done in the San Diego County Water Authority.³⁴²

Instead of enthusiastically embracing the duties mandated by our environmental laws to develop and consider a range of reasonable alternatives the BDCP proponents have concealed or misrepresented reasonable alternatives presented to them. The EWC Responsible Exports Plan has simply been concealed from the public and ignored. It is invisible in the alternatives chapters in the BDCP Plan and Draft EIR/EIS, nor is its consideration and rejection recorded in Appendix 3A of the EIR/EIS.

In addition to the EWC alternative, the Natural Resources Defense Council (NRDC) and several other environmental organizations and public agencies presented and requested consideration of the conceptual "Portfolio" alternative in December 2012. Like the EWC Plan, the Portfolio alternative emphasizes investment in such modern measures as

local water supply tools including conservation, water recycling, and other approaches, [that] can provide reliable, sustainable and plentiful new sources of supply that will also be cost-effective over the long run. These sources can also be provided rapidly through additional investments. There is approximately as much new water available from these new water supply sources as is currently exported from the Delta." (Portfolio alternative).

Unlike the EWC Plan, the Portfolio alternative also proposes a new 3,000 cfs tunnel conveyance. The California Resources Agency began disparaging the Portfolio alternative almost immediately on its website. Then, after the release of the 40,000 pages of BDCP documents in December 2013, the government agencies running the BDCP website stopped posting any correspondence or comments from the public. The overt hostility of the State BDCP agencies to any evaluation and explanation of alternatives to the Twin Tunnels is revealed by the spectacle of the February 19, 2014 letter and its attachment from Resources Secretary John Laird to NRDC Litigation Director Kate Poole disparaging the Portfolio alternative. What is ludicrous about this is that the Resources Agency posted its anti-Portfolio advocacy on its website without also posting the Portfolio alternative itself that the Resources Agency complains about.

³⁴² BDCP, Chapter 9, p. 9-43.

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Like the EWC Responsible Exports Plan alternative, the Portfolio alternative is hidden from public view in the Draft BDCP Plan and Draft EIR/EIS. The logical conclusion is that the Twin Tunnels proponents are afraid of the appeal of the Responsible Exports Plan alternative and the Portfolio alternative if these alternatives are fairly and openly presented in the BDCP documents out for public review and comment.

6. Crashing Fish Populations Cry Out for Evaluation of Alternatives Increasing Flows

There should be a range of alternatives in the BDCP Draft EIR/EIS starting with the Responsible Exports Plan and related variants of that alternative. As pointed out in our previous comment letters several listed fish species are already in catastrophic decline in the subject area.³⁴³ The reaches of the Sacramento River, sloughs, and the Delta that would lose significant quantities of freshwater and freshwater flows through operation of the proposed Twin Tunnels are designated critical habitats for listed endangered and threatened fish species including Winter-Run Chinook Salmon, Central Valley Spring-Run Chinook Salmon, Central Valley Steelhead, Southern Distinct Population Segment of North American Green Sturgeon, and Delta Smelt.

As explained last year by the U.S. Fish and Wildlife Service (USFWS) “There is clear evidence that most of the covered fish species have been trending downward.”³⁴⁴ The National Marine Fisheries Service (NMFS) has pointed out that the Twin Tunnels threaten the “potential extirpation of mainstem Sacramento River Populations of winter-run and spring-run Chinook salmon over the term of the permit. . .”³⁴⁵ As explained by EPA in its 2013 letter to the SWRCB, “The State Board. . . has recognized that increasing freshwater flows is essential for protecting resident and migratory fish populations.”³⁴⁶ The EPA has also explained with respect to Administrative Drafts of the BDCP documents that “many of these scenarios of the Preferred Alternative ‘range’ appear to decrease Delta outflow (p. 5-52), despite the fact that several key scientific evaluations by federal and State agencies indicate that more outflow is necessary to protect aquatic resources and fish populations.”³⁴⁷

The Delta Reform Act requires that:

For the purpose of informing planning decisions for the Delta Plan and the Bay Delta Conservation Plan, the board [SWRCB] shall, pursuant to its public trust obligations, develop flow criteria for the Delta ecosystem necessary to protect public trust resources. In carrying out this section, the board shall review existing water quality objectives and use the best available scientific information. The flow criteria for the Delta ecosystem shall include the volume, quality, and timing of water necessary for the Delta ecosystem under different conditions.³⁴⁸

³⁴³ March 6, 2014 letter, January 14, 2014, letter and its four attachments.

³⁴⁴ USFWS Staff BDCP Progress assessment, Section 1.2, p. 4, April 3, 2013.

³⁴⁵ NMFS Progress Assessment, Section 1.17, 12, April 4, 2013.

³⁴⁶ EPA letter to SWRCB re: EPA’s comments on the Bay-Delta Water Quality Control Plan; Phase 1; SED, pp. 1-2, March 28, 2013.

³⁴⁷ EPA Comments on Administrative Draft EIR/EIS, III Aquatic Species and Scientific Uncertainty, Federal Agency Release, July 18, 2013.

³⁴⁸ California Water Code § 85086(c)(1).

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The SWRCB did develop flow criteria, published online.³⁴⁹ The criteria include:
75% of unimpaired Delta outflow from January through June;
75% of unimpaired Sacramento River inflow from November through June; and
60% of unimpaired San Joaquin River inflow from February through June.

These recommendations have not been the basis for the BDCP Twin Tunnels preferred project and would preclude development of the preferred alternative making that alternative infeasible pursuant to water quantity and quality considerations. In contrast, EWC's Responsible Exports Plan alternative reduces exports to increase flows and is designed to comply with SWRCB flow criteria. On the one hand, the BDCP Draft EIR/EIS used but rejected on spurious grounds the SWRCB flow criteria to evaluate alternatives. And on the other hand, the BDCP process does not await completion of pending SWRCB proceedings to update flow objectives.

The basic, flawed BDCP premise that taking water away from the fish and their habitats will be good for them is both nonsensical and contrary to science. As the EPA has noted, "[t]he benefits of increasing freshwater flows can be realized quickly and help struggling fish populations recover."³⁵⁰ But in any event, it is necessary that the BDCP process develop and consider a range of reasonable alternatives that instead of decreasing Delta outflow, increase Delta outflow. Fair evaluation and consideration of a range of alternatives reducing exports would be a required first step in that process.

Alternatives reducing exports are consistent with the claimed project purpose of "Reducing the adverse effects on certain listed species due to diverting water."³⁵¹ Such alternatives are also consistent with findings that "the Delta is now widely perceived to be in crisis. There is an urgent need to improve the conditions for threatened and endangered fish species within the Delta."³⁵² On the other hand, the stated purpose to "restore and protect the ability of the SWP and CVP to deliver up to full contract amounts"³⁵³ is contrary to the prevalence of "paper water" reflected by "information indicating that quantities totaling several times the average unimpaired flows in the Delta watershed could be available to water users based on the face value of water permits already issued."³⁵⁴ Alternatives such as the Responsible Exports Plan alternative are 21st century alternatives focused on efficient, cost-effective measures to establish a more reliable water supply such as conservation and recycling as opposed to costly huge new delivery projects further depleting our rivers and the San Francisco Bay-Delta.

Alternative 9, through-Delta, is **not** the Responsible Exports Plan alternative. Alternative 9 comes from the BDCP Steering Committee back in 2010.³⁵⁵ Without new upstream conveyance, Chapter 9 of the BDCP Plan discussing Alternatives to Take does concede that Take alternative F (similar to Draft EIR/EIS alternative 9) would result in less take over the decades of project operations than the BDCP Proposed Action—the Twin Tunnels—of Central Valley fall and late fall-run Chinook Salmon (p. 9-90); Central Valley Steelhead (p. 9-98); Sacramento Splittail (p. 9-104); White and

³⁴⁹ See footnote 59 above.

³⁵⁰ EPA comments on the Bay-Delta Water Quality Control Plan; Phase 1; SED, March 28, 2013 at 1.

³⁵¹ BDCP Draft EIR/EIS, Executive Summary, p. ES-10

³⁵² *Ibid.*

³⁵³ *Ibid.*

³⁵⁴ *Ibid.*, p. ES-11.

³⁵⁵ BDCP Draft EIR/EIS Executive Summary, p. ES -30; Chapter 3, p. 3-6

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Green Sturgeon (p. 9-112); and Pacific and River Lamprey (p. 9-121). But as we stated in Section III of our comments above, these are relative take assessments, not absolute take amounts. The appendix to Chapter 9 also concedes that the through-Delta alternative would result in greater net economic benefits to the water exporters than would result from development of the Twin Tunnels. (Chapter 9, appendix A, Table 9.A-2 at p. 9.A-4). The BDCP proponents, however, load up their so-called through-Delta alternative with construction features not included in the Responsible Exports Plan and then label the through-Delta alternative as resulting in greater take than the BDCP Proposed Action during construction.

Likewise, Draft EIR/EIS alternative 5 which includes a 3000 cfs Tunnel is not the Portfolio alternative. Alternative 5 (Take alternative D) comes from the BDCP Steering Committee back in 2010.³⁵⁶

None of the useful and implementable water supply availability action measures in the Responsible Exports Plan alternative or the Portfolio alternative have been included as alternatives or portions of alternatives in the BDCP Draft EIR/EIS currently out for public review and comment. The BDCP Applicants have “tunnel vision” confined to the sole alternative of developing new upstream conveyance. Moreover, there is no consideration of the opportunity cost that would result from construction and operation of the Twin Tunnels costing many billions of dollars. Those billions of dollars would be lost to developing such modern water supply measures as conservation and recycling.

7. The Absence of a Range of Reasonable Alternatives Violates CEQA, NEPA and the ESA

The failure to include a range of reasonable alternatives violates CEQA. An EIR must “ describe a range of reasonable alternatives to the project. . . which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives.”³⁵⁷ “[T]he discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.”³⁵⁸ Recirculation of a new Draft EIR/EIS will be required by CEQA Guidelines section 15088.5(a)(3) because the Responsible Exports Plan alternative and other alternatives that would reduce rather than increase exports have not been previously analyzed but must be analyzed as part of a range of reasonable alternatives.

In addition, EIR conclusions must be supported by substantial evidence. “Argument, speculation, unsubstantiated opinion or narrative” “does not constitute substantial evidence.”³⁵⁹ All that the BDCP Draft EIR/EIS contains to support the Preferred Project alternative is argument, speculation, unsubstantiated opinion, narrative and saying “we don’t know.” For example, the Draft EIR/EIS made “no determination (ND)” findings under NEPA as to whether the Twin Tunnels, even after “mitigation,” would have adverse impacts on spawning, incubation habitat, and migration

³⁵⁶ BDCP Draft EIR/EIS Executive Summary, p. ES-29.

³⁵⁷ 14 Code Cal. Regs (CEQA Guidelines) § 15126.6(a).

³⁵⁸ CEQA Guidelines, § 15126.6(b).

³⁵⁹ CEQA Guidelines, § 15384.

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conditions for winter-run Chinook salmon³⁶⁰ and spring-run Chinook salmon³⁶¹; and migration conditions for fall-run Chinook salmon³⁶², steelhead³⁶³, green sturgeon³⁶⁴, and white sturgeon.³⁶⁵ A new Draft EIR/EIS must be prepared and recirculated because “the draft EIR[/EIS] was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded.”³⁶⁶

The rules under NEPA are similar. Under the NEPA Regulations, “This [alternatives] section is the heart of the environmental impact statement. The alternatives section should “sharply” define the issues and provide a clear basis for choice among options by the decision-maker and the public.³⁶⁷ The EIS alternatives section is to “Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.”³⁶⁸ Moreover, if “a draft statement is so inadequate as to preclude meaningful analysis, the agency shall prepare and circulate a revised draft of the appropriate portion. The agency shall make every effort to disclose and discuss at appropriate points in the draft statement all major points of view on the environmental impacts of the alternatives including the proposed action.”³⁶⁹

Instead of discussing all major points of view, lost in the 40,000 pages of BDCP Plan and Draft EIR/EIS advocacy and speculation by the consultants who prepared the documents are any alternatives reducing exports and increasing flows instead of constructing and operating expensive new upstream diversions with the capacity to increase exports and reduce flows. Under NEPA as well as CEQA, recirculation of a new Draft EIR/EIS will be required because of the extreme deficiencies in the Draft EIR/EIS out for public review at this time. The deficiencies in the Draft EIR/EIS cannot and will not be evaded by responses to comments in a Final EIR/EIS.

With respect to the ESA, we have repeated several times over the past year that the failure of the federal agencies to have prepared the ESA required Biological Assessments and Opinions violates both the ESA Regulations³⁷⁰ “at the earliest possible time” requirement and the NEPA Regulations³⁷¹ “concurrently with and integrated with” requirement.³⁷² The missing Biological Assessments and

³⁶⁰ Draft EIR/EIS, Executive Summary p. ES-73.

³⁶¹ *Ibid.*, p. ES-75.

³⁶² *Ibid.*, p. ES-77.

³⁶³ *Ibid.*, p. ES-79.

³⁶⁴ *Ibid.*, p. ES-81.

³⁶⁵ *Ibid.*, p. ES-83.

³⁶⁶ CEQA Guidelines § 15088.5(a)(4).

³⁶⁷ 40 C.F.R. § 1502.14.

³⁶⁸ § 1502.14(a).

³⁶⁹ § 1502.9(a).

³⁷⁰ 50 C.F.R. § 402.14(a).

³⁷¹ 40 C.F.R. § 1502.25(a).

³⁷² FOR January 14, 2014 comment letter and its four attachments.

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Biological Opinions would be essential to any meaningful public review and comment on a project claimed to be responsive to crashing fish populations.

As conceded by BDCP Chapter 9, Alternatives to Take, the analysis of take alternatives must explain “why the take alternatives [that would cause no incidental take or result in take levels below those anticipated for the proposed actions] were not adopted.”³⁷³ Here, the lead agencies failed to even develop let alone adopt alternatives reducing exports and increasing flows to eliminate or reduce take. The agencies ignored the Responsible Exports Plan (Reduced Exports Plan version) alternative and the Portfolio alternative that were handed to them on a silver platter a full year *before* they issued the Draft Plan and Draft EIR/EIS for public review and comment.

In short, the fundamental flaws in the alternatives sections in the BDCP Draft EIR/EIS and Chapter 9 of the BDCP plan have led to a Draft EIR/EIS and Alternatives to Take analysis so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment is precluded.”

The most important and fundamental planning decision in the history of the Delta will be whether or not to on the one hand finally begin to reduce Delta export reliance on the Delta so its ecosystems and listed fish species may recover, or on the other hand to develop massive, new Twin Tunnels conveyance. An epic choice will be made between those two basic options. The BDCP Plan and Draft EIR/EIS are at this time fatally deficient for informing this epic choice. At stake is whether five or more endangered and threatened species of fish go extinct just to increase Delta exports. Delta exports may come and go, but extinction is forever.³⁷⁴

8. The EIR/EIS fails to provide alternative descriptions at an equal level of detail.

The Bay Delta Conservation Plan *is* the proposed action description for the EIR/EIS. It contains about 9,000 pages, including appendices and attachments. Chapter 8 discusses alternatives to take, but these alternatives to take differ from the alternatives to the EIR/EIS. These differences are briefly described and summarized. But the bulk of the 9,000 pages is spent describing and analyzing the proposed action alternative, which is the Bay Delta Conservation Plan with its Twin Tunnels project as “Conservation Measure 1.” By contrast, the entirety of EIR/EIS Chapter 3, Description of Alternatives is 212 pages. While Alternative 4 (the proposed, preferred action) is provided with a “project-level” analysis that amounts to nearly 9000 pages, the other alternatives are provided only with what is contained in Chapter 3 and a sequence of Map Books for each alternative’s alignment. There is no effects analysis or similar list of covered actions. This violates NEPA’s requirement that alternatives be considered at an equal level of detail.

9. The EIR/EIS fails in its “project-level” analysis of Conservation Measure 1 (the Twin Tunnels project) because it omits important details.

³⁷³ BDCP Plan, Chapter 9, pp. 9-1, 9-2.

³⁷⁴ Comments to this point on the inadequacy of BDCP alternatives being inadequate are also reported in the letter from E. Robert Wright, Senior Counsel, Friends of the River to BDCP officials, “Comment Letter re Failure of BDCP Draft Plan and Draft EIR/EIS to Include a Range of Reasonable Alternatives Including the Responsible Exports Plan Submitted by the Environmental Water Caucus,” May 21, 2014. Accessible online at http://www.friendsoftheriver.org/site/DocServer/Cmt_814.pdf?docID=8701.

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Despite being listed in specifications in Chapter 4 of the BDCP, fish screens are not shown on either schematic site plans or conceptual renderings of North Delta intake structures³⁷⁵, though general specifications are described in the project description (that is, Chapter 4 of the BDCP) and the fish screens are claimed by BDCP to be important mitigations of the Intakes' potential effects on covered species.³⁷⁶

Moreover, the "project-level" designs that are provided are typically "schematic" or "conceptual" and do not represent near-construction phase treatments of the Twin Tunnels project in "Conservation Measure 1." Public statements by BDCP and DWR officials regularly still indicate that even after eight years in the planning stages, the Twin Tunnels project portion of BDCP is only 5 to 10 percent designed at this point. The map books showing alignment for each action alternative fails to provide sufficient detail for use of the BDCP EIR/EIS in obtaining various other permits besides incidental take permits, such as streambed alteration permits from the California Department of Fish and Wildlife, or the wetlands alteration permits that would be needed from the US Army Corps of Engineers.

The EIR/EIS also fails to provide adequate project-level detail about neighboring water right holders in the immediate vicinity of the North Delta Intakes and at various points along the alignment. The State Water Board will require information like this in order to make findings as to whether other water right holders in the Delta may be injured or not by construction and operation of the Twin Tunnels project of "Conservation Measure 1." This is needed to show that the project complies with the "no injury rule" of California water rights law. BDCP must comply with all applicable laws, as required in the Implementing Agreement.

10. The EIR/EIS lacks information sufficient to satisfy statutory findings needed to issue incidental take permits for any of the alternatives.

Despite its 9,000 page proposed action description and a 30,000 page EIR/EIS, the EIR/EIS lacks information that demonstrates it can make statutory findings under the ESA and Natural Communities Conservation Planning Act required of the fishery agencies that the Bay Delta Conservation Plan can meet its ecological and funding assurances over the 50-year term of the plan. See our comments in Sections III, IV, and VI above. It fails to provide incidental take thresholds for covered and listed fish species, essential information for fishery agencies relying on these documents to issue incidental take permits. It lacks an evaluation of whether adequate ecological and funding assurances are provided in BDCP to satisfy statutory finding requirements under the state and federal endangered species acts.

11. The EIR/EIS fails to provide an adequate project description under CEQA and violates the equal level of detail analysis required under NEPA.

What constitutes the project description for the BDCP and its EIR/EIS? We are confused. Chapter 1 of the BDCP EIR/EIS contains footnote 3 which states:

The full Draft EIR/EIS should be understood to include not only the EIR/EIS itself and its appendices but also the proposed BDCP documentation including all appendices. For example, the Chapter 5, *Effects Analysis*, and its associated appendices are repeatedly referred to herein and include much of the

³⁷⁵ BDCP Chapter 4, *Covered Activities and Associated Federal Actions*, Figure 4-6.

³⁷⁶ *Ibid.*, Table 4-2, p. 4-9.

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substantial evidence supporting the environmental analysis and conclusions herein, and Chapter 3, *Conservation Strategy*, more fully describes the proposed project.

However, footnote 3 in Chapter 3, *Description of Alternatives*, of the EIR/EIS states:

As described in Chapter 1...the full Draft EIR/EIS should be understood to include not only the EIR/EIS itself and its appendices but also the proposed BDCP documentation including all appendices.

This footnote is appended to a textual statement that Alternative 4 is the CEQA preferred alternative and is consistent with the proposed BDCP published concurrently with the EIR/EIS. The footnote in Chapter 3 thus strongly implies that Chapter 5, *Effects Analysis*, and its associated appendices are part of the project description of the EIR/EIS.

This contrasts with footnote 3 of Chapter 1 of the EIR/EIS which indicates that Chapter 5, *Effects Analysis* supports much of the substantial evidence supporting the EIR/EIS's environmental analysis and conclusions. It also singles out Chapter 3 as really representing the proposed project description, since it contains the Conservation Strategy in its entirety. Attentive readers may be left confused whether the entire BDCP is also part of the EIR/EIS or whether certain portions serve the EIR/EIS in parallel, while other sections, such as the governance, implementation, alternatives to take, benefit cost analysis, and existing conditions are not given direct relevance in the EIR/EIS proper. It is possible that one must think of the EIR/EIS's project description as containing the effects analysis, which blurs the categories of analytic legal requirements under both CEQA and NEPA.

Is one of these footnotes more correct than the other? How should readers understand the BDCP as the project description that also contains an effects analysis? If as the preferred alternative, it contains an effects analysis, then the NEPA alternatives analysis of this EIR/EIS fails to incorporate the same level of detail for each alternative, particularly when it comes to having robust effects analyses of alternatives like Alternative 5 (the single intake, 3000 cfs alternative), Alternatives 8 (with its 55 percent of unimpaired flow operational modeling scenario) and 9 (the through-Delta alternative providing a fish-freeway along Old River for salmonid migration). None of these three alternatives can be construed as having received the same level of analysis and scrutiny for NEPA purposes as the other six (or nine, depending on how one counts) alternatives.

12. The project description fails as a habitat conservation plan under Section 10 of the federal Endangered Species Act and Section 2820 of the state Natural Communities Conservation Planning Act.

Refer to comments above on the Bay Delta Conservation Plan about how BDCP fails to contribute to the survival and recovery of listed species, in Section III above.

We also incorporate by reference the Delta Science Program Independent Review Panel's Phase 3 review of of the BDCP Effects Analysis. This review finds in pertinent parts that:

- The Effects Analysis was difficult to review and comprehend because its presentation is "fragmented" and its main conclusions are "sometimes inconsistent with the technical appendices." The EWC has pointed out this problem occurs in several key areas of the BDCP.
- There is an "apparent disconnect between the assessments of the levels of scientific uncertainty presented in Chapter 5 [the Effects Analysis, which is part of the proposed action description] versus what is characterized in the technical appendices."

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- There is a “lack of an integrated or quantitative assessment of net effects...” which results in BDCP conclusions in Chapter 5 resembling sales pitches about “potential effects” or “intended effects” stemming from someone’s professional judgment or preference rather than projected or forecasted effects derived from a reproducible methodology.³⁷⁷

13. The project description relies improperly on adaptive management to paper over gaps in how the BDCP would be implemented, thereby improperly defeating the requirement of providing in the EIR/EIS a stable project description and alternatives analysis.

Refer to comments above on the Bay Delta Conservation Plan and how it employs adaptive management to excess, in Section III above.

The Delta Science Program Independent Review Panel states that while adaptive management is identified as a needed component of BDCP, “it remains characterized as a silver bullet but without clear articulation about how key assumptions will be vetted or uncertainties resolved to the point that the BDCP goals and objectives are more assured.”³⁷⁸

F. The EIR/EIS fails to provide adequate disclosure of the Setting and Affected Environment of the Bay Delta Conservation Plan and its Twin Tunnels Project.

The EIR/EIS fails to provide adequate setting and affected environment disclosure in several key areas:

- ***Environmental Justice:*** Failure to identify the human right to water, the Delta common pool resource and the state constitutional protection of fishing rights for all Californians in the state’s public water ways.
- ***Water Supply:*** Over-appropriation of water rights claims in the Central Valley watershed of the Delta.
- ***Water Quality Regulatory Regime Change and Violation Priors:*** BDCP operational modeling criteria will require new water quality objectives in the Delta. The California Department of Water Resources and the US Bureau of Reclamation have chronically violated South Delta salinity objectives since 2006, when a cease and desist order was first issued by the State Water Resources Control Board.
- ***Land Use and the Delta as Place.***
- ***Cultural Resources.***

³⁷⁷ Independent Review Panel, *op. cit.*, footnote 41, pp. 5-6.

¹⁹¹ *Ibid.*, p. 9.

1. The EIR/EIS fails to disclose the full environmental justice setting, including California’s human right to water, the Delta common pool resource recognized in area of origins water rights law, and the state constitutional right to fish in state water ways in the setting/affected environment of Chapter 28, or any other chapter.

Chapter 28, Environmental Justice is over 100 pages long, and is mired in the complexity of the nine/twelve BDCP alternatives without any kind of summary of impacts.

The maps in Chapter 28 identify census blocks, block groups or tracts as raster data but fail to show the location and place names of specific communities where environmental justice communities are concentrated. This obscures where these communities are arrayed spatially, despite many of them being mentioned in the setting/affected environment description. It is like a data dump lacking any interpretive framework.

Moreover, Chapter 28 fails to identify the Delta common pool resource and the beneficial uses it supports as evidence of environmental justice-related area of origin water rights. They are an integral part of the demand for water as instream flows needed to sustain the fisheries on which subsistence fishers rely. See our discussion above in Section VI.

The EIR/EIS also fails to incorporate into Chapter 28 any reference in the regulatory setting to Assembly Bill 685, the “Human Right to Water” law in California.³⁷⁹ This law established, first, that “every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes.” It then requires that all relevant state agencies shall consider this state policy when “revising, adopting, or establishing policies, regulations and grant criteria when those policies, regulations, and criteria are pertinent to the uses of water described in this section.

Environmental justice communities are present throughout the Delta. Their members fish, swim, work and live in and near Delta waters. Delta waters are useful and beneficial to them for naturally propagating and enhancing fish and other species which they cook for human consumption, despite their often low-income or impoverished social and economic status. Among the BDCP Applicants is the California Department of Water Resources. AB 685 requires DWR as a state agency to incorporate low-income and disadvantaged communities in the Plan Area into its Bay Delta Conservation Plan. It does not.

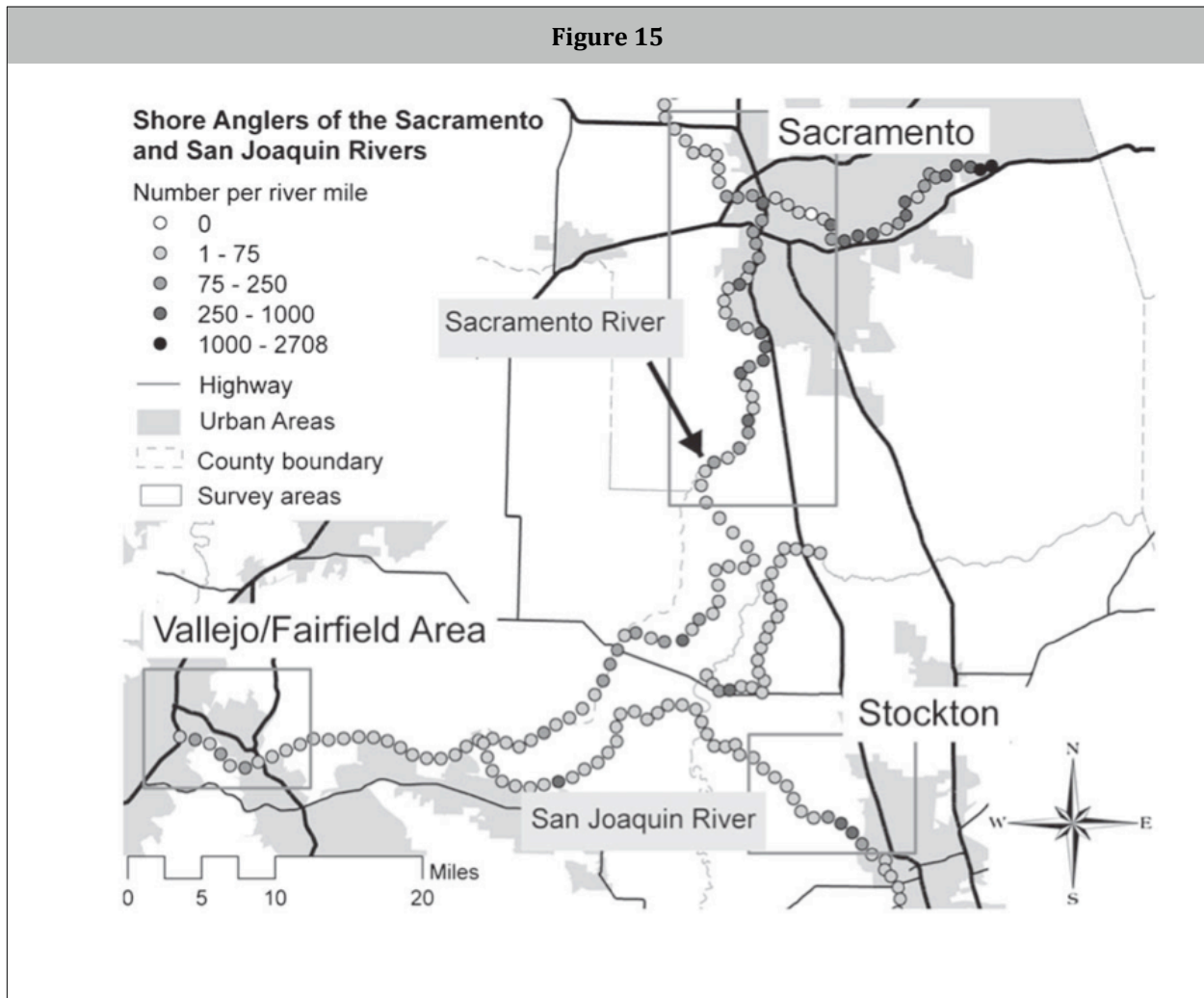
Chapter 28 of the BDCP EIR/EIS contains no description of AB 685 and fails to incorporate into the scope of the EIR/EIS a description of whether there are any environmental justice communities in the Plan Area which have inadequate water supplies or are otherwise reliant on the waters of the Delta for human consumption, cooking, and sanitary purposes. This omission renders the EIR/EIS inadequate to meet NEPA and CEQA requirements for full disclosure in order to fully inform decision makers and the public.

Chapter 28 of the EIR/EIS fails to correlate environmental justice communities’ locations with environmental inequality burdens of hazards in the Delta. The maps in Chapter 28 show only the relation of environmental justice communities to the grouped alignments of the BDCP alternatives. This fails to disclose existing and potential vulnerabilities and inequalities of these communities in the Delta in relation to the Bay Delta Conservation Plan alternatives. See Attachment 1 to these comments for a more in-depth analysis of the ***social vulnerabilities and the environmental***

³⁷⁹ California Water Code Section 106.3. Signed into law by Governor Jerry Brown, September 25, 2012.

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inequalities in the Delta Region (i.e., the Plan Area). Some of these hazards include mercury contamination of fish and levee vulnerability to flood hazards.



Chapter 28 of the EIR/EIS also fails to adequately characterize the geographic and social extent of subsistence fishing activity available from recent academic environmental justice literature (Figure 15). Shilling and others have recently addressed the lack of data correlating fish consumption, subsistence fishing, and public health consequences of mercury contamination and other toxins.³⁸⁰

Shilling, et al (2010) found that subsistence fishers commonly caught and consumed Chinook salmon, Sacramento splittail, steelhead, and sturgeon (among the listed and covered species of the Bay Delta Conservation Plan). They also consumed a wide variety of introduced nonnative fish common in the Delta, several of which are not addressed by BDCP, including shad, bluegill, carp, catfish, crappie, largemouth bass, striped bass, pike minnow, Sacramento sucker, and sunfish. In a recent survey, these commonly eaten fish contained measurable concentrations of mercury in their tissues.³⁸¹ Hmong, Vietnamese, and Lao community members were found by Shilling, et al, among

³⁸⁰ Fraser Shilling, Aubrey White, Lucas Lippert, and Mark Lubell, "Contaminated fish consumption in California's Central Valley Delta," *Environmental Research* (2010), doi:10.1016/j.envres.2010.02.002.

³⁸¹ *Ibid.*, Table 1.

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the most active subsistence fishers among environmental justice communities, but also include African-Americans, Latinos, and people of Russian descent. Few were aware of health advisories issued by state agencies warning that people should limit their consumption of fish caught in the Delta due to mercury contamination.³⁸²

In addition to mercury contamination concerns, sturgeon and catfish are among the benthic fish predators in the Delta. Sturgeon are well-known to feed on *Potamocorbula amurensis*, the invasive nonnative clam that bioaccumulates selenium intensively, in addition to concerns about mercury consumption. Are there studies showing whether catfish consume the nonnative invasive overbite clam, *Potamocorbula*? ***BDCP should research this question and report back on this subject in the recirculated Draft EIR/EIS. This will be needed because of other serious omissions and deficiencies of the BDCP documents. The hydrodynamic conditions and the uncertainties involved with future selenium loading to the Delta, could lead to greater selenium contamination through benthic food web pathways to bioaccumulation.*** See our comments about selenium and methylmercury, in Sections II and III. This increased contamination, regardless of water year type, could have significant public health consequences for environmental justice communities in the Plan Area, of which the EIR/EIS fails to take account, including in Chapter 25, Public Health.

2. The EIR/EIS fails to acknowledge the over-appropriation of water rights in the Setting and Affected Environment.

Please refer to our comments above, Section II. The absence of the over-appropriation of water from the Setting/Affected Environment of Chapters 5, 6, and 7 means that members of the public cannot form a clear picture of current affairs with water rights in the Central Valley watershed of the Delta. The Setting/Affected Environment section of Chapter 5 fails to disclose that the North Delta intakes would be new points of diversion requiring review and approval of new water rights permits by the State Water Resources Control Board. Without this context, the EIR/EIS improperly defeats its own purpose under NEPA and CEQA to disclose fully the setting as a baseline for evaluating water rights and water supply impacts of alternatives and recommending mitigation measures.

3. The EIR/EIS fails to disclose as a point of controversy DWR and the Bureau's continuing failure to conduct program-level environmental review of cross-Delta water transfers, preferring instead to conduct project-level review under alleged "emergency" conditions on a year-by-year basis.

The California Department of Water Resources conducted a program EIR on its cross-Delta water transfer program in 1993, but apparently never certified it. In 2000, DWR issued a Drought Contingency Plan in which it promised to prepare a program EIR for a long-term approach to water transfers that went from the Sacramento Valley to the San Joaquin Valley, across the Delta. That EIR was never prepared. The DWR and the Bureau of Reclamation have since 2008 prepared annual environmental documents that address "emergency" water supply situations that they have failed to plan adequately for despite the fact that the state and federal governments have known since the 1930s that California's climate delivers three to six year droughts with some regularity.

³⁸² *Ibid.*, Table 3. See also J.A. Davis, B.K. Greenfield, G. Ichikawa, and M. Stephenson, "Mercury in sport fish from the Sacramento-San Joaquin Delta region," California, USA," *Science for the Total Environment* 391 (2008): 66-75. Accessible online 14 April 2014 at http://www.researchgate.net/publication/223890520_Mercury_in_sport_fish_from_the_SacramentoSan_Joaquin_Delta_region_California_USA/file/79e4150b531bc58db0.pdf.

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Paleoclimatologists have assembled evidence, cited earlier in this comment letter, that indicate that dry periods can last on the scale of centuries in California's recent geologic history. DWR and the Bureau have promised orally since 2009 to prepare a program-level environmental document for cross-Delta water transfers, but have deferred completing it for at least another year this year. None of this history is recounted in the Setting/Affected Environmental section of Chapter 5 even though it is vital to understanding the project's purpose and need and water supply impacts.

EWC members groups have actively commented on and successfully challenged "emergency" bases for these transfers and won in recent years.³⁸³ DWR and the Bureau acknowledge their intention to continue arranging cross-Delta water transfers using Delta export facilities as best they can, but continue to shirk their responsibility to refrain from serial projects under NEPA and CEQA when it is clear they operate as long-term, recurring water transfer programs. BDCP would continue this chronic misbehavior, however. The EIR/EIS states:

This EIR/EIS provides project-level CEQA/NEPA coverage for the flow of water in-Delta and south-of-Delta associated with all project and non-project water transactions. There is no maximum on the amount of water that can be conveyed through or delivered from the Delta as long as it is consistent with the operational criteria described in [Conservation Measure 1 of BDCP and the Chapter 5 Effects Analysis], and it is not limited by other factors including hydrological, regulatory and contacts [sic] conditions. *Because specific agreements have not been identified for water transfers and other non-project voluntary water market transactions, project-level analysis of impacts upstream of the Delta is highly speculative and this EIR/EIS does not constitute the CEQA/NEPA coverage required for any specific transaction. Rather, it provides an analysis of how transfers relate to the BDCP facilities. Any future water transfers will require separate approvals as outlined below. The analysis of any potential upstream impacts is not a part of this EIR/EIS and must be covered pursuant to separate laws and regulations once the specific transfer has been proposed.*³⁸⁴

Any transfers conveyed through BDCP facilities will need to satisfy all of the applicable requirements in force at the time of the transfer's approval. This EIR/EIS does not comprise the CEQA/NEPA coverage required for any specific transfer approval. Rather, it provides an analysis of how transfers relate to the operation of BDCP facilities and covers the movement of water once it has been brought to the Delta through transfers and other types of transactions. *Any future water transfers will require separate approvals, including separate coverage of any upstream source area impacts.*³⁸⁵

This is faulty reasoning under NEPA and CEQA. It constitutes piece-mealing of BDCP with respect to its water transfer role and the recurring annual character of DWR's and the Bureau's water transfer programs. Piece-mealing is illegal under CEQA and NEPA.

The California Environmental Quality Act defines a "project" to mean "an activity which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment, and which is" undertaken by any public agency, supported through monetary or contractual arrangements from one or more public agencies, or involves issuance to a person of a lease, permit, license, certificate or other such entitlement by one or more public

³⁸³ *Butte Environmental Council, California Sportfishing Protection Alliance, and California Water Impact Network v. California Department of Water Resources, et al*, Superior Court of State of California, Alameda County, RG09446708, filed March 15, 2010. Accessible online 12 May 2014 at <http://www.c-win.org/sites/default/files/OR010%20Order%20and%20Decision%20on%20Petition%20for%20Writ.pdf>.

³⁸⁴ BDCP EIR/EIS, Chapter 5, *Water Supply*, p. 5-28, lines 30-42. Emphasis added.

³⁸⁵ *Ibid.*, p. 5-41, lines 27-33.

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agencies.³⁸⁶ The CEQA Guidelines further define a “project” to mean the “whole of an action” that would cause direct or reasonably foreseeable indirect physical environmental changes.³⁸⁷

CEQA case law has resulted in the definition of “project” receiving a broad interpretation in order to maximize environmental protection. Plans or programs are typically schemes in which multiple actions are coordinated or facilitated within a framework of policies that govern the sequence or series of those actions. In performing CEQA analysis of a plan or program, then, agencies should not “piecemeal” or “segment” a project by splitting it into two or more segments.³⁸⁸ CEQA prohibits piece-mealing because to segment a project can submerge the cumulative impact of individual environmental impacts. In *Laurel Heights Improvement Association v. Regents of the University of California* (1988) 47 Cal. 3d 376, 396 [253 Cal. Rptr. 426] the court declared that environmental reviews must “include an analysis of the environmental effects of future expansion or other action if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects.”

Under NEPA, federal agencies may not chop or segment a proposed action into small pieces to avoid the application of NEPA or to avoid a more detailed assessment of environmental effects of an overall action.³⁸⁹ In this instance, it is clear from our analysis (see below) on water supply impacts of the proposed Twin Tunnels project that ***expanding water transfers is an important unrevealed yet underlying purpose and need for the proposed Bay Delta Conservation Plan.*** Enlarging the conveyance capacity of the Delta facilities through construction and operation of the North Delta Intakes and Twin Tunnels project is part and parcel of expanding the ability of DWR and the Bureau to arrange and carry out more cross-Delta water transfers in the future. This purpose is not revealed in BDCP’s purpose and need statement.

The Delta pumps are currently unlikely to have available capacity for transfers at the start of the irrigation season under conditions imposed by the Biological Opinions. *This constraint may be removed, however, if the transfer water is moved in BDCP facilities.*³⁹⁰

Under the BDCP alternatives, if export conveyance capacity were available constantly throughout the period of April through October, then the reservoir elevations would remain at their without-Transfer levels.

This second statement in particular signals that the North Delta Intakes and Twin Tunnels project would increase capacity to deliver water (see Figure 14 above), and the EIR/EIS asserts that groundwater substitutions for foregone surface water from senior water rights holders in the Sacramento Valley would reduce or remove the need to release precious surface water from CVP and SWP upstream reservoirs. Groundwater substitution transfers have been the preferred type of transfers in recent California water market transfers experience. The primary source of

³⁸⁶ California Environmental Quality Act, §21065.

³⁸⁷ CEQA Guidelines, §15378.

³⁸⁸ “This approach ensures ‘that environmental considerations not become submerged by chopping a large project into many little ones, each with a potential impact on the environment, which cumulatively may have disastrous consequences.’ *Burbank-Glendale-Pasadena Airport Authority v. Hensler* (2d Dist. 1991) 233 Cal. App. 3d 577, 592 [284 Cal Rptr. 498], cited in Michael Remy, Tina A. Thomas, James G. Moore, and Whitman F. Manley, *Guide To CEQA*, 11th ed., Point Arena, CA: Solano Press Books, 2007, p. 89.

³⁸⁹ 40 CFR 1508.25(a)(1).

³⁹⁰ BDCP EIR/EIS, Chapter 5, *Water Supply*, Appendix 5C, p. 5C-17, lines 34-36.

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groundwater available to substitute for foregone surface water supplies from “willing sellers” is the Sacramento Valley’s aquifers.

Indeed, Appendix 5C reads quite a lot like a marketing brochure for DWR’s and the Bureau’s expanding water transfer market:

Agencies could engage in groundwater substitution transfers with Anderson Cottonwood Irrigation District, Glenn-Colusa Irrigation District, Maxwell Irrigation District, Natomas Central Mutual Water Company, River Garden Farms, Reclamation District 108, other Sacramento River Settlement Contractors, Butte Water District, Garden Highway Water District, Sutter Extension Water District, Western Canal Water District, Yuba County [Water Agency], and Merced [Irrigation District].³⁹¹

As noted elsewhere, the availability of cross-Delta transfer capacity is frequently an issue under existing conditions. The potential cross-Delta transfer volume may be limited by the capacity of the export facilities, by regulatory constraints, and by the availability of water for transfer from willing sellers upstream of the Delta. *The provision of added capacity to the export pumps through BDCP facilities [i.e., the North Delta Intakes and Twin Tunnels project] would ease the through-Delta and timing constraints of moving the transfer water.* There would still need to be remaining capacity in the export pumps beyond that required for project water to move the transfer water south from that point, capacity that would generally be available in the dry year types but problematic in other year types.³⁹²

All of these potential “willing sellers” are located in the Sacramento Valley, except for Merced Irrigation District.

Failure to disclose this controversy over program-level environmental review bears on the piecemeal issue. Every year since 2008, DWR and the Bureau have proposed and prepared to implement cross-Delta water transfers and now BDCP proposes to increase cross-Delta water transfer activity. Regardless of whether “project-level” individual transfer agreements occur, the EIR/EIS is deficient for failing to disclose the environmental review controversy involved in cross-Delta water transfers, and consequently failing to include DWR and USBR water transfer program review at the program level of specificity. BDCP should review the likely effects of cross-Delta water transfers on the Plan Area and the study area of the Sacramento Valley watershed from which most transfers originate based on how BDCP would facilitate such increased activity.

This is a serious deficiency of the EIR/EIS and requires revision of the document and eventual recirculation to the public. It compromises full disclosure of purpose and need, setting/affected environment, and impacts of the proposed action.

4. The EIR/EIS fails to disclose present and recent past groundwater conditions in the Sacramento Valley and in the Delta.

The setting section of Chapter 7, *Groundwater*, fails to include a map of recent groundwater elevations throughout the Central Valley watershed of and in the Delta. This would be the *existing condition* of groundwater and it goes undisclosed. Maps of DWR-defined sub-basins, while descriptive of what DWR thinks are significant groundwater regions, do not provide this information. Maps of such sub-basins are insufficient for lay readers and decision-makers to learn of the existing groundwater elevations so they may evaluate the true significance of the groundwater elevation impact maps that come later in the EIR/EIS. Even Figure 7-6 is insufficient. It records the “forecasted peak groundwater level *changes* in the San Joaquin and Tulare Export

³⁹¹ *Ibid.*, p. 5C-18, lines 9-15.

³⁹² *Ibid.*, p. 5C-23, lines 22-29.

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Service Areas” for the No Action Alternative “as compared to existing conditions,” but this too is not the same as simply mapping existing groundwater elevations throughout the Central Valley (including the Sacramento Valley and Delta as well). This map portrays the *difference* between existing conditions and no action by 2060. Thus, no CEQA-mandated baseline information on groundwater elevations is provided in Chapter 7. This impairs understanding of current groundwater conditions by the public and decision-makers, and violates CEQA and NEPA

Similarly, the No Action Alternative groundwater elevation condition (projected to 2060 without BDCP) is not provided. Chapter 7 thus fails to give readers and decision makers a clear sense of what could be expected as to where Central Valley and Delta groundwater elevations would be found in 2060 if no action was taken.

None of the maps in Chapter 7 include the Sacramento Valley. The chapter claims this Valley’s aquifers are “full.” but this does not show us the geographical extent of the Sacramento Valley groundwater basin and its relationship to the Delta and San Joaquin Valley.

The word “overdraft” is not employed in the setting description of groundwater production and use in the descriptions of the San Joaquin River Basin. This is so despite the fact that the San Joaquin River Basin setting discussion does discuss “land subsidence,” which is an effect of overdraft. It obscures the reality of overdraft there:

The majority of land subsidence in the southern portion of the San Joaquin Valley [which is the Tulare Lake Basin] groundwater basin is considered to have been caused by groundwater pumping where the Corcoran Clay is present. *Groundwater withdrawal has lowered groundwater levels*, which allows the compression of the Corcoran Clay and other fine-grained units where groundwater supports the aquifer framework, resulting in inelastic subsidence and causing the overlying ground to lower. Once the inelastic compression occurs, it cannot be restored.³⁹³

As we understand groundwater withdrawals, if they lower groundwater levels or elevations, that means they exceed the *safe yield* of the groundwater basin. This is the definition of when a basin is considered overdrafted. This definition appears to be applied to the Tulare Lake Basin, however:

Most groundwater subbasins in the Tulare Lake watershed are in a state of overdraft as a consequence of groundwater pumping that exceeds the basin’s safe yield [citation]. As a result the aquifers in these groundwater basins contain a significant amount of potential storage space that can be filled with additional recharged water. Groundwater banking is the storage of excess water supplies into aquifers during wet periods for later withdrawal and use during dry periods [citation]. The stored water is used through conjunctive use programs by users directly overlying the basin, or it is conveyed to users in regions outside of the groundwater basin. Water for storage may be imported from other regions or agencies for temporary or long-term storage and subsequent export from the basin.³⁹⁴

This disclosure about conjunctive use and storing water underground is relevant to the water transfer market to which we allude earlier. This information is important to the setting but has no context associated with the underlying purpose and use of water supplies to be delivered by BDCP. In fact, this empty storage space is generated by overdraft of naturally occurring groundwater supplies, which were once abundant in the San Joaquin Valley and Tulare Lake Basin regions.

Chapter 7 of the EIR/EIS provides a brief descriptive overview of groundwater resources and conditions in the Sacramento Valley. It fails to mention that in recent years when the Bureau of

³⁹³ *Ibid.*, Chapter 7, *Groundwater*, p. 7-18, lines 15-20. Emphasis added.

³⁹⁴ *Ibid.*, p. 7-20, lines 38-44, and p. 7-21, lines 1-2.

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Reclamation and the California Department of Water Resources operated water transfer programs (e.g., in 2009, 2010, and 2013) groundwater substitution transfers were employed to a large degree to replace surface water supplies sold by senior water right holders in the Sacramento Valley.

It also fails to disclose that the Sacramento Valley is the focus of considerable planning, engineering, and hydrogeological research into the Valley's potential for use as the state's largest reservoir for conjunctive use water management. In recent years, the Glenn Colusa Irrigation District and the Natural Heritage Institute are studying this potential in hopes of positioning Glenn Colusa Irrigation District as a major broker of water transfers and groundwater substitution sources for "willing sellers" of water from the Sacramento Valley.

In its history of cross-Delta water transfers, BDCP also fails to identify just how many, or what percentage (by number and by transferred volume) of water transfers involved groundwater substitutions. Such information is important for gaining insight into potential future cross-Delta water transfer activity by transfer type (i.e., groundwater substitution).

The setting/affected environment portion of Chapter 7 also fails to acknowledge the Delta-wide practice of "sub-irrigation." It is a conscious Delta farming practice that manages salt and sustains their lands fertility. It is practiced from the lower lands of the southern Delta to the south banks of the Sacramento River,

The extent reaches from the lower lands of the southern Delta to the south banks of the Sacramento River (as shown in the 1991 map below). The Department of Water Resources studied application of irrigation water and associated drainage in the Delta in 1954 and 1955 prior to the State Water Project. It found that salt in Delta lowlands (a substantial portion of which occur in the South Delta) varied widely by month, with most of it accruing in Delta island soils during the irrigation season. By applying water to Delta island fields during winter months, however, farmers leached salts out of Delta soils. Department of Water Resources engineers concluded at the time that:

The Delta Lowlands act as a salt reservoir, storing salts obtained largely from the channels during the summer, when water quality in such channels is most critical and returning such accumulated salts to the channels during the winter when water quality there is least important. Therefore agricultural practices in that area enhanced rather than degraded the good quality Sacramento River water en route [*sic*] to the [Central Valley Project's] Tracy Pumping Plant.³⁹⁵

The Board's own 1978 Water Quality Control Plan comments on this irrigation practice. High groundwater table conditions in Delta lowlands coupled with the erodible and settling organic soils there

Make subirrigation a desirable method of water application for crop production. Subirrigation is the delivery of water to plant roots by capillary action from the underlying saturated soil strata, and is the primary method of irrigation in the Delta organic soils. (RT Vol. XX, pp. 112-115) *As practiced in the Delta, subirrigation may be the most efficient irrigation process in California from the standpoint of net water consumption.* (RT Vol. XIII, pp. 107-108). *However, because of soil and crop management constraints, this form of irrigation must be tied to a winter leaching program to remove salts accumulated in the root zone.* (RT Vol. XII, p. 47).

The Board's 1991 Water Quality Control Plan for the Bay-Delta Estuary also mentions Delta organic soils and the practice of subirrigation to maintain them, stating that "subirrigation is an irrigation

³⁹⁵ California Department of Water Resources, *Investigation of the Sacramento-San Joaquin Delta. Report No. 4, Quantity and Quality of Waters Applied to and Drained from the Delta Lowlands*, July 1956, p. 30.

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technique by which water is delivered to the crop root zone by horizontal flow through the soil from the spud ditches.”³⁹⁶ The Board adds in a footnote about winter ponding that:

Winter ponding, currently in use in the Delta, is the practice of flooding large agricultural field areas for the purpose of controlling weeds, and reducing salt in the upper region of the soil profile. Other benefits are recreation, and possibly salt leaching.³⁹⁷

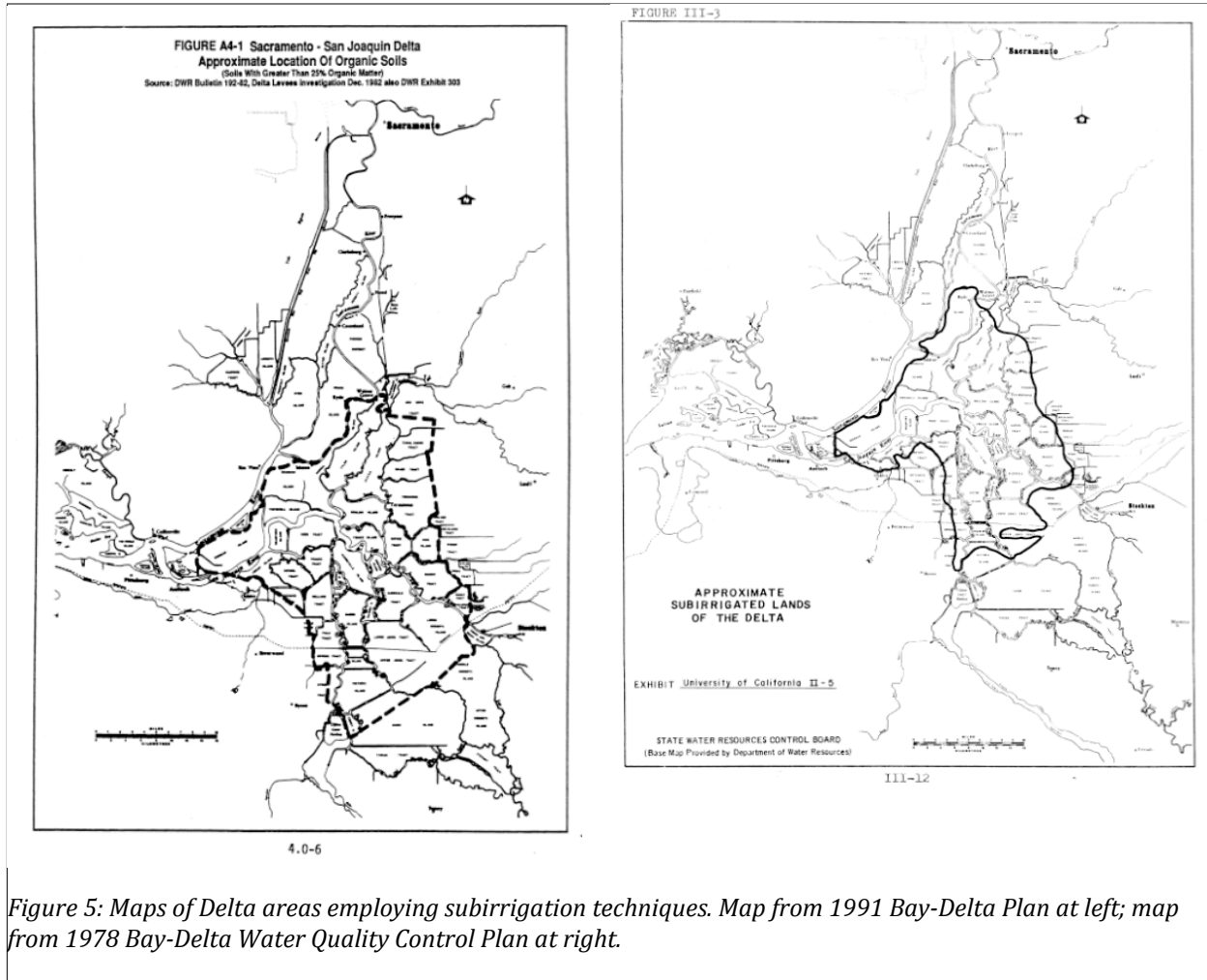


Figure 5: Maps of Delta areas employing subirrigation techniques. Map from 1991 Bay-Delta Plan at left; map from 1978 Bay-Delta Water Quality Control Plan at right.

Both the 1978 and 1991 Water Quality Control Plans present maps showing where subirrigation practice were applied. Dante Nomellini of Central Delta Water Agency confirmed to Tim Strohane, consultant to the California Water Impact Network, that subirrigation practices continue in the water agency’s service area today.³⁹⁸

The BDCP EIR/EIS fails to include a description of this irrigation practice involving subsurface flow of water in the Delta and where it occurs. Indeed it is the subirrigation and winter leaching

³⁹⁶ State Water Resources Control Board, *Water Quality Control Plan for San Francisco Bay/Sacramento-San Joaquin Delta Estuary Technical Appendix*, 91-16WR, May 1991, p. 4.0-5.

³⁹⁷ *Ibid.*

³⁹⁸ Nomellini to Strohane, personal communication to Tim Strohane, February 15, 2013.

practices that sustain irrigated cultivation there. BDCP must analyze the occurrence and locations at a project level with respect to construction and operational activities of its Conservation 1 and Twin Tunnel Delta facilities. Without such detailed treatment, BDCP fails to account for the full nature of the agricultural beneficial use and irrigation practice.

5. The EIR/EIS fails to disclose that operational modeling criteria scenarios used for alternatives analysis and evaluation would have to be adopted as new water quality objectives for the Bay-Delta Estuary by the State Water Resources Control Board, and further fails to disclose comparison of what objectives exist now in the Delta with each of the eight operational scenarios.

As we noted above, there are eight/eleven operational modeling scenarios applied to the nine/twelve design alternatives in the EIR/EIS analysis. A large but wholly implicit assumption through the BDCP and its EIR/EIS is that any one of these alternatives would require wholesale revision to the water quality control objectives of the Bay Delta estuary, now the responsibility of the State Water Resources Control Board. The setting sections of Chapter 5, 6, 7, and 8 (comprising water supply, surface water, groundwater, and water quality) contain no descriptions of the existing water quality objectives as they apply to flow and operational actions by the state and federal water facilities in the Delta. The Executive Summary only hints at this matter, titling one section “New Rules for North Delta Diversions.” However, this section also makes no mention of the regulatory regime change that would apparently be required of the State Water Board.³⁹⁹

This is necessary for the public and decision makers to understand because addition of North Delta intake diversions will change hydrodynamics and water quality throughout the Delta. ***The Delta’s hydrologic regime will change fundamentally, as we noted above in Section III.*** The State Water Board will be forced to take up not only whether and how to approve any change in the point of diversion (i.e., BDCP’s water rights), but how and whether to utilize any or all of the operational modeling criteria used to structure and describe the impacts of the North Delta diversions on the entire Delta and beyond (i.e., its water quality objectives). ***As a result, the Delta’s water quality regulation regime will be forced to change fundamentally.*** This obvious and logical result is entirely ignored by the EIR/EIS. As currently described, there is no legal reason why the North Delta diversions will be operated in the manner described in these documents ***except that the operational modeling criteria that the Applicants apply to its analysis and description become the water quality objectives of the BDCP-dominated regulatory regime.*** This appears to be BDCP’s arrogant assumption about what happens to Delta water quality regulation. But it is nonetheless just an assumption, and to comply with NEPA and CEQA full-disclosure requirements, the required action for “regime change” by the State Water Board must be acknowledged and analyzed.

Further complicating this picture is the role and regulation by SWRCB of “Real-Time Operations [RTOs].” The quality of real-time operations forces, we believe, a fundamental issue: are society’s actions managing Delta listed fish species to remain under the rule of law, or will they become ruled by carefully selected individuals?

Yet these operating criteria, when applied in BDCP’s massive modeling effort, demonstrably fail to meet basic assurances for the federal and state habitat conservation planning and incidental take permit requirements, as we have shown earlier in these comments. RTOs, BDCP Applicants

³⁹⁹ *Ibid.*, Executive Summary, Section ES.9.1.4, “New Rules for North Delta Diversions,” pp. ES-52 to ES-53.

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acknowledge, cannot be modeled.⁴⁰⁰ The EIR/EIS fails to disclose the existing regulatory setting, the likelihood that dramatic change in the water quality/flow/rights regulatory framework will be necessary to accommodate BDCP, and consequently defeats NEPA and CEQA requirements to fully inform the public and decision-makers on such crucial issues.

6. The EIR/EIS fails to disclose in the regulatory setting of Chapter 8, *Water Quality*, that interior Delta salinity objectives are chronically violated by the Bureau of Reclamation and the Department of Water Resources. These objectives are routinely waived by the State Water Resources Control Board in drought years.

The regulatory baseline of water quality control of DWR and Bureau past practice with Delta salinity regulation is ignored in the regulatory setting of Chapter 8, *Water Quality*, in the Draft EIR/EIS. The Bureau of Reclamation and the Department of Water Resources are responsible under D-1641 for achieving Delta water quality objectives (for both flow and salinity). The Board does not review available data to determine whether the Bureau and the Department meet water quality objectives. The State Water Board has never evaluated its water quality control plans or its water right decisions in the Delta, although the Legislature compelled the Department to do so in 2006 before its responsibility kicked in under D-1641.⁴⁰¹ The Bay Delta Conservation Plan and its EIR/EIS Chapter 8 fails to describe how the Plan and the Twin Tunnels project would affect the Bureau and DWR's ability to meet ongoing Delta salinity and flow objectives.

Table 2 is based on salinity data from Old River near Tracy Boulevard. It reveals a consistent pattern of the Bureau and DWR violating the salinity standard at station P-12: Since August 2006, ***the Bureau and DWR have violated the salinity standard at this station for nearly 2.8 years out of the last 8, about one-third of the time.*** And it does not matter whether the objective in force is during the irrigation season (April 1 to August 31) or during the winter season (September 1

⁴⁰⁰ This is most explicitly noted in BDCP Appendix 5.C, Attachment 5C.A, *CALSIM II and DSM2 Modeling Results for the Evaluated Starting Operations Scenarios*, pp. 5C.A-157 to 162. Old and Middle River flow real-time operations are an example, p. 5C.A-157, lines 31-44. "The magnitude of the export restrictions [relating to Old and Middle River flows] cannot be simulated accurately with CALSIM because the limits will be adaptively specified by the USFWS smelt working group, based on real-time monitoring of fish and turbidity and temperature conditions. The assumed restrictions provide a representative simulation compared to D-1641 conditions without any OMR restrictions." Moreover, real-time operations pose dramatic uncertainties for South Delta export operations with real-time adaptive operations in place. "If the least restrictive OMR flow of -5,000 cfs were allowed for 6 months (January-June), a maximum of 1,800 taf per year could be pumped (assuming the San Joaquin River diversion to Old River satisfied the 35% of the net Delta depletion that is south of the OMR flow stations. But because of the 1,500 cfs limit on exports in April and May (2009 NMFS BiOp), the maximum exports would be 1,400 taf per year. If the OMR restriction was reduced to -2,500 cfs for the 6 months (with 1,500 cfs in April and May), a total of 780 taf could be pumped from the South Delta. This is a very dramatic reduction for the CVP and SWP exports which historically have exported about half (45%) of the total exports during these months. This uncertainty in the potential south Delta exports is a consequence of the adaptive management framework for the 2008 USFWS BiOp and 2009 NMFS BiOp actions regarding OMR flow." Since BDCP contemplates real-time operations in several other Delta and Yolo Bypass locations, uncertainties will compound for planning operations, exports, and outflows.

⁴⁰¹ California Department of Water Resources, *Description of Department of Water Resources Compliance with State Water Resources Control Board Water Right Decision 1641*, Response to Senate Bill 1155 Enacting California Water Code Section 138.10, January 2006, 67 pages. Accessible online 8 May 2014 at http://baydeltaoffice.water.ca.gov/announcement/D1641_final.pdf.

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through March 31). The irrigation season objective of 700 mS/cm EC⁴⁰² (on a 30-day running average) has been violated about 1½ years (501 days) since 2006. The winter season objective of 1000 mS/cm EC (also on a 30-day running average) has been violated almost exactly for a year’s worth of days.

Table 2			
Interior South Delta Salinity Violations - Old River near Tracy Boulevard Bridge			
From	To	Number of Days (inclusive of dates)	Salinity Standard Violated (EC = microSiemens/cm)
April 1, 2007	May 30, 2007	60	700 EC
July 6, 2007	August 31, 2007	57	700 EC
March 8, 2008	March 28, 2008	21	1000 EC
April 1, 2008	April 26, 2008	26	700 EC
June 15, 2008	August 31, 2008	47	700 EC
December 10, 2008	May 9, 2009	151	1000 EC
June 22, 2009	August 31, 2009	72	700 EC
September 2, 2009	September 20, 2009	19	1000 EC
November 26, 2009	February 12, 2010	79	1000 EC
March 24, 2010	April 25, 2010	32	1000 EC/700 EC as of April 1
August 25, 2010	August 31, 2010	6	700 EC
March 5, 2012	May 27, 2012	23	1000 EC/700 EC as of April 1
July 30, 2012	August 31, 2012	33	700 EC
January 27, 2013	February 23, 2013	28	1000 EC
April 1, 2013	May 7, 2013	37	700 EC
June 12, 2013	August 31, 2013	81	700 EC
December 25, 2013	March 31, 2013	96	1000 EC
Total Violation Days Since 2007 by Bureau of Reclamation and the Department of Water Resources		868	501 days 700 EC standard violated; 367 days 1000 EC standard violated.
Source: California Data Exchange Center, Station = OLD; AquAlliance.			

⁴⁰² “mS/cm” means “micro-Siemens per centimeter,” a measure of electrical conductivity.

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In addition, this table indicates that the irrigation season violations routinely occur during dry years (2007 through 2009) often beginning June to early July and lasting all the way to August 31, when the salinity objective at this station rises from 700 EC to 1000 EC. This pattern recurred in July 2012 and again in 2013.

Violations also occur at the transition from the winter season objective to the spring objective. Although dry years are when the bulk of their salinity violations occur, there were two winter-period violations totaling 111 days (nearly four months) in the fall and winter of Water Year 2010, a comparatively normal year.

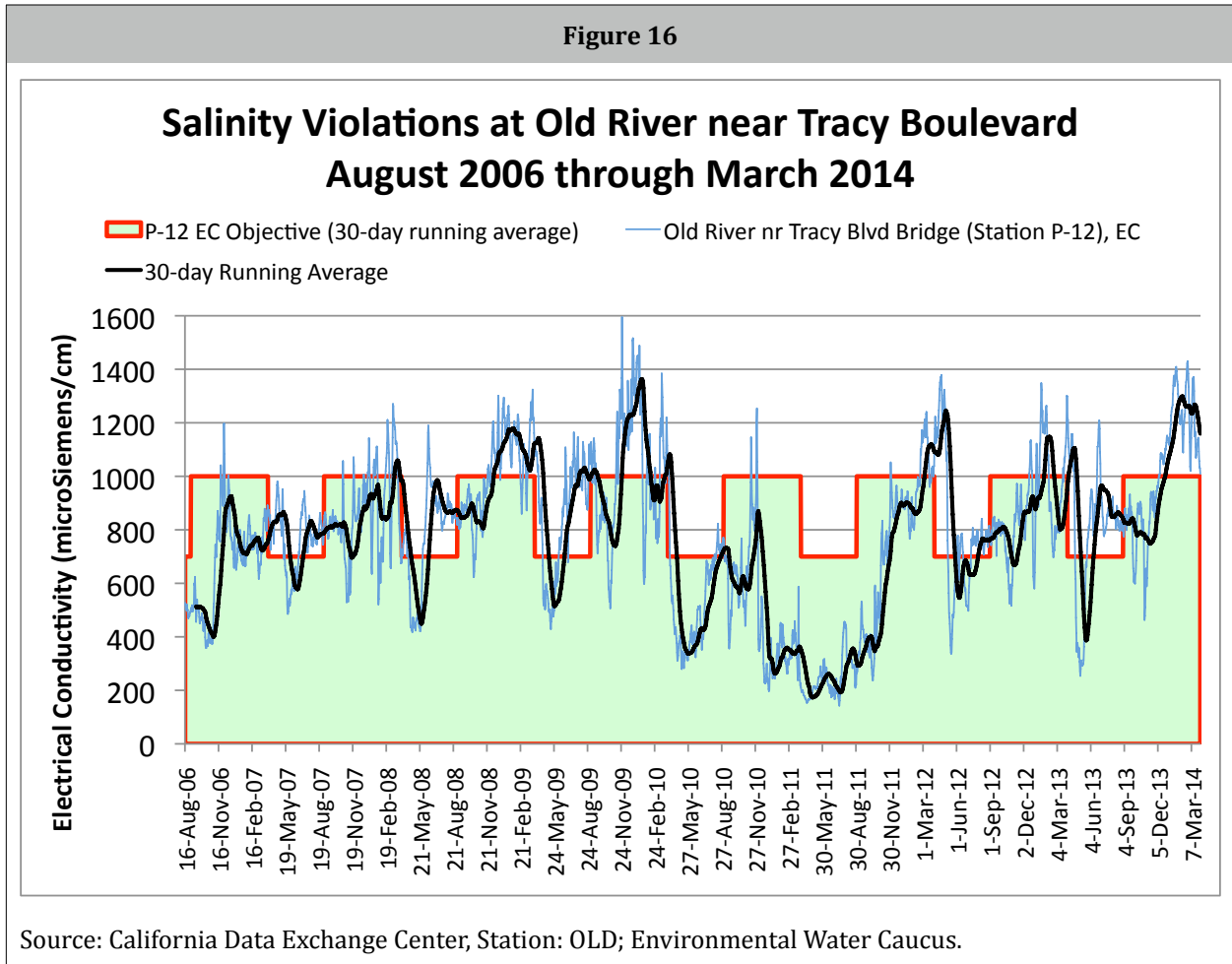


Figure 16 indicates the frequent pattern of salinity violations at this station by the Bureau and DWR since August 2006. The EIR/EIS omits from disclosure the fact that the State Water Resources Control Board issued a Cease and Desist Order (CDO) in 2006 when DWR and the Bureau informed the Board that they anticipated violating salinity objectives in the Delta. In that CDO, the Board gave the Bureau and DWR three years, until June 30, 2009, to come into compliance by choosing from a menu of options that would help them meet the salinity objectives. Instead, the state and federal water agencies delayed action, preferring instead to continue violating the objectives as they attempted to design and construct operable agricultural and fish gate systems (originally proposed in the South Delta Improvements Program) in the interior Delta to facilitate water flows from the

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central Delta to the area of the South Delta pumps.⁴⁰³ In June 2009, DWR and the Bureau petitioned the Board to modify the CDO, and the Board agreed to do so, extending the compliance date to 2016.

The EIR/EIS fails to describe the setting of chronic salinity violations, and fails to analyze how the Bay Delta Conservation Plan would affect enforcement of the modified Cease and Desist Order. Without this information, decision makers and the public are unable to form an informed viewpoint on the water quality effects of the Twin Tunnels project and the Bay Delta Conservation Plan, and DWR's and the Bureau's responsibility for them especially during dry and drought years. Therefore the BDCP EIR/EIS is legally inadequate. It should be revised and recirculated as a Draft EIR/EIS because of having to add new information.

However, the EIR/EIS does provide modeling results that help us visualize the Delta's saline future. BDCP's EIR/EIS provides ample modeling results to indicate that this pattern of sustained, wanton, and profligate Delta salinity violations will continue under BDCP construction and operation. These results are summarized in Figure 17 below. The EIR/EIS employs a 16-year time series (1975-1991) to model electrical conductivity in the Delta under Twin Tunnels (Alternative 4) operations. The modeling method focuses on the number of days salinity objectives are exceeded. Salinity objectives are based on 30-day running average values at each monitoring station. The modeling effort determines the number of individual days that flows in the Delta exceed the nominal salinity objectives at these stations. It also estimates the number of days during which Delta flows are out of compliance with the 30-day running average value salinity objective. The effort presented results averaged over all 16 years and for drought years (of which there were six in the period studied).

Implementation of the BDCP will require CWA Section 401 Certification. BDCP must be accountable to the Clean Water Act. The BDCP EIR/EIS fails to provide an analysis of what requirements exist under Clean Water Act Section 401. BDCP's Delta facilities (i.e., the North Delta Intakes and Twin Tunnels, which will be owned by DWR) must demonstrate they comply with water quality objectives and criteria authorized under the Clean Water Act. Therefore, sound planning dictates that consideration of the CWA's requirements must be made **now**, to prevent violations arising from the implementation phase of the BDCP.

One CWA requirement that will arise during BDCP implementation is CWA Section 401 certification, which is necessary for any "[f]ederal license or permit to conduct any activity ... [that] may result in any discharge into navigable waters."⁴⁰⁴ A key federal license or permit that will trigger the 401 certification process is a CWA Section 404 permit. This will be needed from the Army Corps of Engineers because implementation of the BDCP will result in discharges of dredged or fill material into waters of the United States.⁴⁰⁵ Section 401 requires that the California SWRCB certify that the

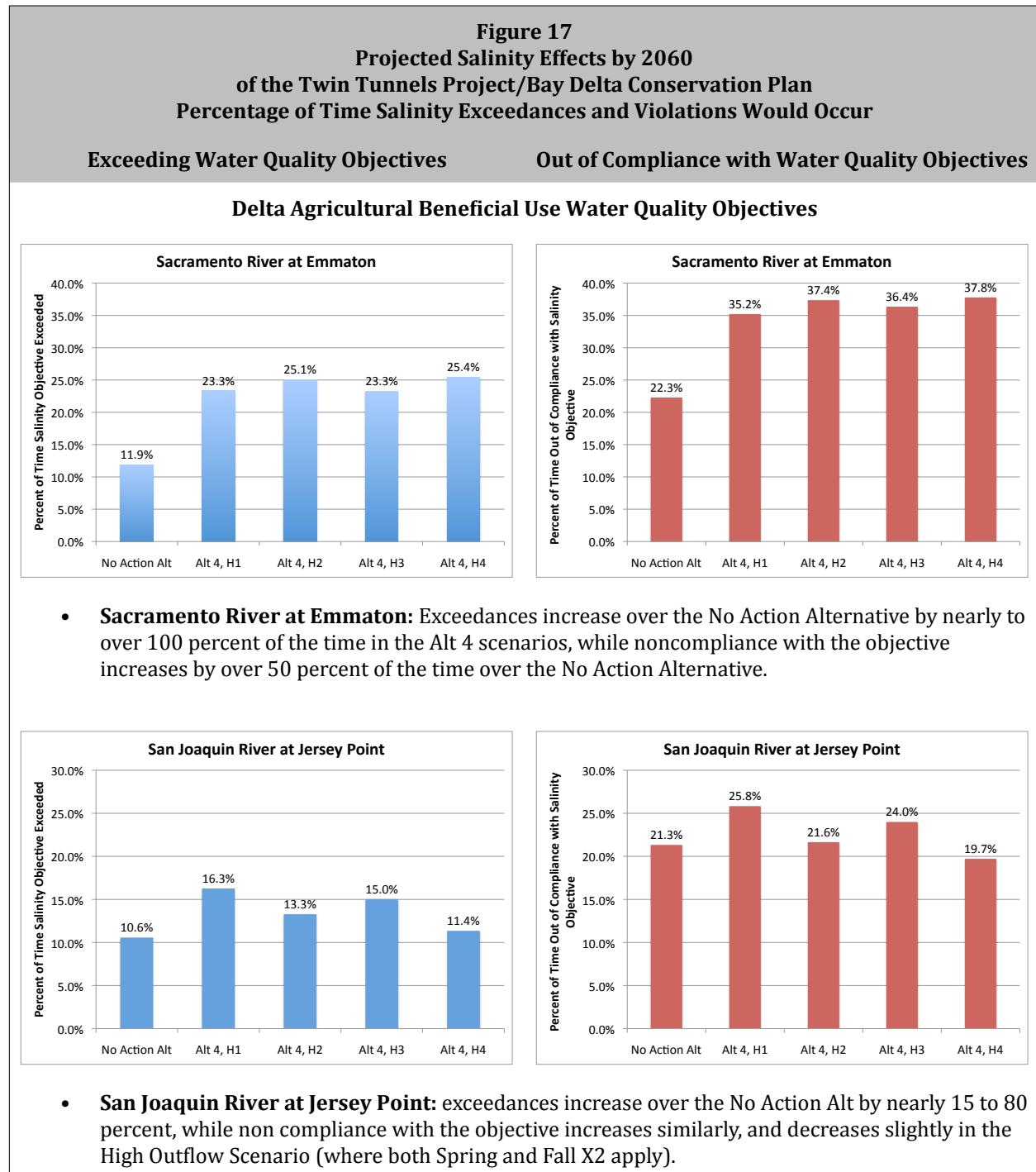
⁴⁰³ Meanwhile, the National Marine Fisheries Service refused to approve interior agricultural operable gates of the South Delta Improvement Program because they would increase predation opportunities against listed fish species.

⁴⁰⁴ 33 U.S.C. § 1341(a)(1).

⁴⁰⁵ "Many of the actions that will be implemented under the BDCP will result in the discharge of dredged or fill materials into waters of the United States and will need to be authorized by USACE." Public Draft Plan § 1.3.7.1 (Nov. 2013), available at: http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Public_Draft_BDCP_Chapter_1_-_Introduction.sflb.ashx.

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Corps' Section 404 permit meets CWA requirements before the necessary Section 404 permit may be legally issued.⁴⁰⁶



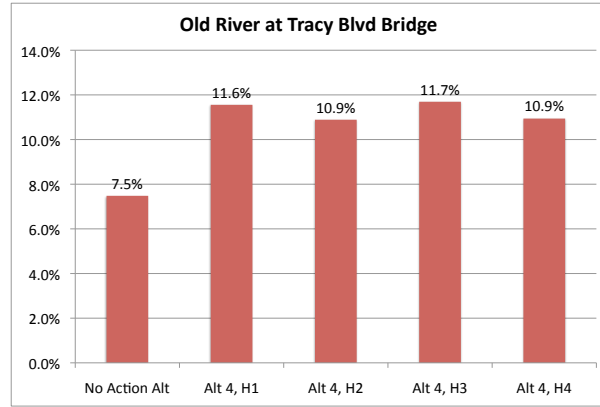
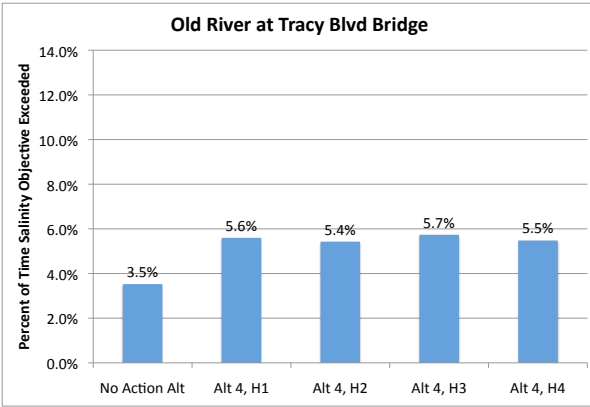
⁴⁰⁶ “No license or permit shall be granted until the certification required by this section has been obtained or has been waived as provided in the preceding sentence. No license or permit shall be granted if certification has been denied by the State, interstate agency, or the Administrator, as the case may be.” 33 U.S.C. § 1341(a) (1).

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**Figure 17
Projected Salinity Effects by 2060
of the Twin Tunnels Project/Bay Delta Conservation Plan
Percentage of Time Salinity Exceedances and Violations Would Occur**

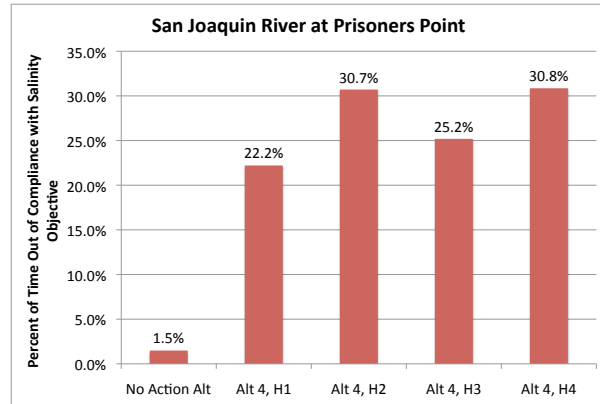
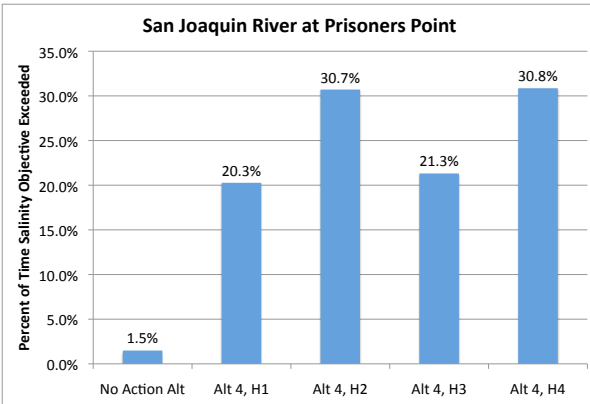
Exceeding Water Quality Objectives

Out of Compliance with Water Quality Objectives



- **Old River at Tracy Blvd Bridge:** Exceedances increase by about two-thirds typically over the No Action Alternative. Noncompliance with the objective would increase by one-third to 40 percent. These percents are lower because as shown above (Table 2) the existing rate of violations is already high.

Delta Fish and Wildlife Water Quality Objective



- **San Joaquin River at Prisoners Point:** The percent of time exceedances would occur increases sharply—1200 to 1900 percent increase in exceedances and a similar similar range for noncompliance. This is a fish and wildlife-related salinity objective, while the other three are agricultural beneficial use salinity objectives.

Source: Bay Delta Conservation Plan EIR/EIS, Appendix 8H, *Electrical Conductivity*, Table EC-4, p. 8H-5.

Note: Percentage of time is based on a 16-year hydrology modeled using DSM2 in Appendix 8H. Being “out of compliance” is the number of days that the 30-day running average at the monitoring site registers violations of the salinity objective. “Exceeding Water Quality Objective” refers to the number of days that the monitoring equipment actually registers salinity exceeding the threshold level the objective.²²⁴

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State and federal agencies have already recognized the importance of this requirement, meeting several times to discuss it in the context of the preparation of the EIR/EIS.⁴⁰⁷ As reflected by U.S. EPA in its comments on these discussions:

[a]lthough there is no statutory requirement that the NEPA document prepared for an HCP under the Endangered Species Act be used as the basis for permits and certifications required under CWA §404 to authorize and implement the project, EPA recognizes the importance of coordination in federal review. Toward this end, EPA and the Corps have met with the project proponent on numerous occasions over the past several years in the interest of using the BDCP EIS/EIR to inform the Corps' 404 regulatory decisions. Despite these efforts, significant unresolved issues remain about the scope of analysis for the proposed project, the level of detail required to trigger the consultation process and federal permitting, and the structure of a comprehensive permitting framework for the proposed project.⁴⁰⁸

Among other concerns that have arisen during this consultation process, EWC contends that the inadequate flow proposals contained in the EIR/EIS alternatives will ensure that implementation of the BDCP violates mandatory compliance with the Clean Water Act. Inclusion and evaluation of flow regimes that fully protect Delta ecosystems and species are necessary to avoid this result.

To obtain 401 certification, the project at issue must meet several CWA requirements,⁴⁰⁹ including the requirement to meet water quality standards under CWA Section 303.⁴¹⁰ If these requirements are met, then either the Regional Water Quality Control Boards (RWQCB) or the SWRCB⁴¹¹ may grant Section 401 certification.

As implementing U.S. EPA regulations assert,⁴¹² Section 401 certification "shall" include "a statement that there is a reasonable assurance that the activity will be conducted in a manner which will not violate applicable water quality standards."⁴¹³ In other words, the state *cannot* grant Section 401 certification to a project if there is no reasonable assurance that it will meet water quality standards. The examination of whether a project violates water quality standards does not include "balancing" factors such as economic considerations—a project either meets water quality

⁴⁰⁷U.S. EPA, "EPA's Comments on BDCP ADEIS," p. 6 (July 03, 2013), available at: www2.epa.gov/sites/production/files/documents/july3-2013-epa-comments-bdcp-adeis.pdf.

⁴⁰⁸ *Ibid.*

⁴⁰⁹ 33 U.S.C. § 1341(a)(1), (d). A state agency may also condition, deny or waive certification under certain circumstances. 33 U.S.C. § 1341(a)(1)-(2).

⁴¹⁰ 33 U.S.C. § 1341(d). According to § 401(d), certification "*shall* set forth any effluent limitations and other limitations ... necessary to assure that any applicant" complies with certain provisions of the CWA. The Supreme Court in *PUD No. 1* held that this includes CWA § 303, since § 301 incorporates it by reference. *PUD No. 1* at 713-715.

⁴¹¹ In California, the Regional Water Quality Control Boards are responsible for granting water quality certification, unless the project occurs in two or more regions, in which case the SWRCB is responsible. See SWRCB, "Instructions for Completing the Clean Water Act Section 401 Water Quality Certification Application" (Jan. 2005), available at: www.swrcb.ca.gov/centralcoast/water_issues/programs/401wqcert/docs/instruct_401_wq_cert_app.pdf.

⁴¹² The Supreme Court held that the EPA's interpretation is consistent with the CWA in *PUD No. 1*.

⁴¹³ 40 CFR § 121.2(a)(3); *PUD No. 1* at 712.

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standards, or it does not.⁴¹⁴ Furthermore, as confirmed by the U.S. Supreme Court in *PUD No. 1 of Jefferson County v. Washington Department of Ecology* (*PUD No. 1*), CWA Section 401 certification considers the impacts of the *entire* activity – not just the impacts of the particular discharge that triggers Section 401.⁴¹⁵ **Therefore, for the BDCP to receive Section 401 certification, the entire BDCP project must be conducted in such a way as to meet all water quality standards. This it does not do, as water quality standards cannot be met given BDCP’s modeling results based on currently-proposed BDCP flow regimes.**

The CWA states that water quality standards “shall consist of the designated uses of the navigable waters involved *and* the water quality criteria for such waters based upon such uses.”⁴¹⁶ In other words, “a project that does not comply with a designated use of the water does not comply with the applicable water quality standards.”⁴¹⁷ This fundamental CWA mandate does not change when the impact on beneficial uses arises from altered flow. The CWA was established specifically to “restore and maintain the chemical, *physical*, and biological integrity of the Nation’s waters”—not solely to regulate “pollutants.”⁴¹⁸ The U.S. Supreme Court addressed this issue directly in *PUD No. 1*, stating that:

Petitioners also assert more generally that the Clean Water Act is only concerned with water ‘quality,’ and does not allow the regulation of water ‘quantity.’ This is an artificial distinction.

In *PUD No. 1*, Supreme Court took up the question of whether Washington state had properly issued a CWA Section 401 certification imposing a minimum stream flow requirement to protect fish populations. The Supreme Court held that conditioning the certification on minimum stream flows was proper, as the condition was needed to enforce a designated use contained in a state water quality standard.⁴¹⁹ In reaching this decision, the court noted that the project as proposed did not comply with the designated use of “[s]almonid [and other fish] migration, rearing, spawning, and harvesting,” and so did not comply with the applicable water quality standards.⁴²⁰ Similar reasoning

⁴¹⁴ 40 CFR § 131.11 (“For waters with multiple use designations, the criteria shall support the most sensitive use”); *see also* 40 CFR § 131.6. As noted by the state Supreme Court, Porter-Cologne “cannot authorize what federal law forbids”; that is, California cannot allow for the “balancing away” of the most sensitive beneficial uses in a reliance on Porter-Cologne rather than the Clean Water Act. *City of Burbank v. State Water Resources Control Bd.*, 35 Cal.4th 613, 626, 108 P.3d 862 (2005).

⁴¹⁵ *PUD No. 1 of Jefferson County v. Washington Department of Ecology*, 511 U.S. 700 (1994). *PUD No. 1* established that so long as there is a discharge, the state can regulate an activity as a whole under § 401. *PUD No. 1* at 711-712.

⁴¹⁶ 33 U.S.C. 1313(c)(2)(A) (emphasis added); *PUD No. 1* at 704. In addition to the uses to be protected and the criteria to protect those uses, water quality standards include an anti-degradation policy to ensure that the standards are “sufficient to maintain existing beneficial uses of navigable waters, preventing their further degradation.” *PUD No. 1* at 705; 33 U.S.C. 1313(d)(4)(B); 40 CFR § 131.6. EPA regulations add that “[e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.” 40 CFR § 131.12.

⁴¹⁷ *PUD No. 1*, 511 U.S. at 715. *See also* 40 CFR § 131.3(b) (U.S. EPA stating that “[w]hen criteria are met, water quality will *generally* protect the designated use,” (emphasis added) indicating that numerical criteria do not always by themselves protect a designated use).

⁴¹⁸ 33 U.S.C. § 1251(a) (emphasis added).

⁴¹⁹ *PUD No. 1*, 511 U.S. at 723.

⁴²⁰ *Id.* at 714.

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must be applied to open water beneficial uses like Delta smelt and longfin smelt, as well as other listed, covered, and non-covered species alike.

The U.S. Supreme Court specifically took note of CWA Sections 101(g) and 510(2), which address state authority over the allocation of water as between users. The Court found that these provisions “do not limit the scope of water pollution controls that may be imposed on users who have obtained, pursuant to state law, a water allocation.”⁴²¹ This conclusion is supported by the “except as expressly provided in this Act” language of Section 510(2), which conditions state water authority; and by the legislative history of Section 101(g), which allows for impacts to individual water rights as a result of state action under the CWA when “prompted by legitimate and necessary water quality considerations.”⁴²² Accordingly, these CWA provisions are not impediments to California’s implementation of its CWA mandate to ensure compliance with water quality standards, *including* within the context of flows.

As noted above, in its August 2010 flow criteria report, the State Water Board found that “[t]he best available science suggests that current flows are insufficient to protect public trust resources,” and that “[r]ecent Delta flows are insufficient to support native Delta fishes for today’s habitats.”⁴²³ However, the flow regimes incorporated by the current BDCP are largely equivalent to those that have been failing to protect Delta ecosystems and species for years. These include: Water Right Decision 1641 (D-1641)⁴²⁴; the 2006 San Francisco Bay/Sacramento-San Joaquin Delta Estuary Water Quality Control Plan; the 2009 NMFS Biological Opinion (BiOp)⁴²⁵; and the 2008 USFWS BiOp.⁴²⁶

The BDCP not only fails to increase flows, it actually on average **reduces** Delta outflow and **increases** exports when compared to both the No Action alternative and existing conditions (see Sections II and VII above). The U.S. EPA expressed serious concerns about the EIR/EIS Administrative Draft’s (ADEIS) proposed decrease in outflow “despite the fact that several key

⁴²¹ *Id.* at 720.

⁴²² *Id.* “See 3 Legislative History of the Clean Water Act of 1977 (Committee Print compiled for the Committee on Environment and Public Works by the Library of Congress), Ser. No. 95–14, p. 532 (1978) (“The requirements[of the Act] may incidentally affect individual water rights. . . . It is not the purpose of this amendment to prohibit those incidental effects. It is the purpose of this amendment to insure that State allocation systems are not subverted and that effects on individual rights, if any, are prompted by legitimate and necessary water quality considerations”).” See also Memorandum from U.S. EPA Water and Waste Management and General Counsel to U.S. EPA Regional Administrators, “State Authority to Allocate Water Quantities – Section 101(g) of the Clean Water Act” (Nov. 7, 1978), available at: http://water.epa.gov/scitech/swguidance/standards/upload/1999_11_03_standards_waterquantities.pdf.

⁴²³ SWRCB, 2010 Flow Report, pp. 2, 5.

⁴²⁴ Public Draft EIR/EIS, § 5B.1.1.2 (Nov. 2013), available at: <http://baydeltaconservationplan.com/Libraries/Dynamic Document Library/Public Draft BDCP EIR-EIS Appendix 5B - Responses to Reduced South of Delta Water Supplies.sflb.ashx>. D-1641 requires the SWP and CVP to meet flow and water quality objectives, including specific outflow requirements, an export/import ratio, spring export reductions, salinity requirements, and, in the absence of other controlling restrictions, a limit to Delta exports of 35 percent total inflow from February through June and 65 percent inflow from July through January. Public Draft EIR/EIS § 5B.1.1.2.

⁴²⁵ Public Draft EIR/EIS § 5.3.3.1 (Nov. 2013), available at: <http://baydeltaconservationplan.com/Libraries/Dynamic Document Library/Public Draft BDCP Chapter 5 - Effects Analysis.sflb.ashx>.

⁴²⁶ *Id.*

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scientific evaluations by the federal and State agencies indicate that more outflow is necessary to protect aquatic resources and fish populations.⁴²⁷

Further, the BDCP notably incorporates “bypass flows” that ostensibly establish the minimum amount of water that must flow downstream of the planned north Delta intake; this “minimum” amount, however, falls well below that needed to meet beneficial uses. Rather than protecting Delta flow, the BDCP reduces Sacramento River flow south of the North Delta intakes by up to 9,000 cfs for parts of the year.⁴²⁸ Chinook salmon, Central Valley steelhead, sturgeon and lamprey all migrate and spawn in this area, with Delta smelt and longfin smelt likely spawning in the lower Sacramento River, as well.⁴²⁹

In sum, because it fails to put needed flows back into failing waterways, the BDCP will violate water quality standards by failing to protect sensitive beneficial uses. These include “rare, threatened or endangered species habitat,” “estuarine habitat,” “spawning, reproduction, and/or early development,” and other sensitive beneficial uses.⁴³⁰ The State Water Board has indicated tentative interest in designating subsistence fishing as a beneficial use statewide, including in the Delta.⁴³¹ It will thus fail as a set of flow regimes that could support Section 401 certification for necessary Section 404 permits.

Without this regulatory context, the EIR/EIS improperly defeats its own purpose under NEPA and CEQA to disclose fully the setting as a baseline for evaluating water quality impacts and recommending mitigation measures for BDCP alternatives.

7. The EIR/EIS fails to include an adequate description of state and federal water quality anti-degradation policies in Chapter 8, *Water Quality*.

National water quality policy since 1972 obligates the states, including California, to improve water quality, whatever its current condition, and since 1987 requires satisfaction of anti-degradation requirements that EPA established in Clean Water Act regulations.⁴³² US EPA established a regulatory framework for anti-degradation policy that requires states to develop anti-degradation policies. The heart of EPA anti-degradation criteria includes existing instream water

⁴²⁷ U.S. EPA, “EPA Comments on Administrative Draft EIR/EIS, III Aquatic Species and Scientific Uncertainty, Federal Agency Release,” p. 4 (July 18, 2013) (emphasis added), available at: <http://www2.epa.gov/sites/production/files/documents/july3-2013-epa-comments-bdcp-adeis.pdf>.

⁴²⁸ Public Draft Plan § 5.3.1.1, available at: <http://baydeltaconservationplan.com/Libraries/Dynamic Document Library/Public Draft BDCP Chapter 5 - Effects Analysis.sflb.ashx>.

⁴²⁹ *Id.* § 3.4.1.3.5, available at: <http://baydeltaconservationplan.com/Libraries/Dynamic Document Library/Public Draft BDCP Chapter 3 - Part 2 - Conservation Strategy.sflb.ashx>.

⁴³⁰ SWRCB, “Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary,” p. 9 (Dec. 13, 2006), available at: http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/wq_control_plans/2006wqcp/docs/2006_plan_final.pdf.

⁴³¹ Email from Esther Tracy of State Water Resources Control Board, Office of Public Participation, to Andria Ventura, Clean Water Action, “State Water Resources Control Board Beneficial Uses,” May 6, 2014, forwarded to Colin Bailey of Environmental Justice Coalition for Water, thence to Tim Strohshane, Environmental Water Caucus consultant. Tracy’s message primarily concerns subsistence fishing by California Indian Tribes.

⁴³² 33 U.S.C. 1313 (d)(4)(B).

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uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

Lowering of water quality may only be tolerated in instances where it “is necessary to accommodate important economic or social development in the area in which the waters are located...after full satisfaction of the intergovernmental coordination and public participation provisions of the State’s continuing planning processes.” The Bay Delta Conservation Plan will worsen water quality in the Delta, as the EIR/EIS shows (more on this in Section VII of these comments). BDCP’s modeling of operating conditions for the Tunnels assumes that the State Water Board acts to adopt BDCP modeling assumptions. The Board can only proceed with lowering water quality objectives where it provides and sustains a clearly supported and convincing argument about the economic and social development in the area. The EIR/EIS indicates there will be adverse effects on water quality, agriculture, land use, socioeconomics, recreation, public health and environmental justice. The Board will have difficulty supporting such an argument; it is never necessary to destroy a region’s water quality in order to supposedly improve it.

Moreover, the state must still assure water quality adequate to protect existing agricultural uses fully even if it proceeds with relaxing the South Delta salinity objectives. Further, the state shall assure that there shall be achieved the “highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint source control.”⁴³³

Anti-Degradation analysis under federal policy must assure that “existing instream water uses and the level of water quality necessary to protect the existing uses” is “maintained and protected.”⁴³⁴

The State Water Resources Control Board’s own “Statement of Policy with Respect to Maintaining High Quality of Waters in California” states:

Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.”⁴³⁵

By failing to disclose state and federal anti-degradation policies adequately in the regulatory setting section of BDCP’s EIR/EIS, Chapter 8, the EIR/EIS improperly defeats its own purpose under NEPA and CEQA to disclose fully the regulatory setting as a baseline for evaluating water quality impacts of BDCP alternatives and recommending appropriate mitigation measures. The EIR/EIS must be recirculated to ensure BDCP complies with this legal requirement.

8. The BDCP EIR/EIS fails to describe adequately the land use, agricultural, and socio-economic setting in the Delta.

⁴³³ 40 CFR Part 131.12(a)(1) and (2).

⁴³⁴ 40 CFR 131.12(a)(1). This *only* allows consideration of lowering water quality “where it is necessary to accommodate important economic or social development *in the area in which the waters are located.*”

⁴³⁵ State Water Resources Control Board, Resolution No. 68-16 (Oct. 28, 1968), Part 1. Accessible online at http://www.waterboards.ca.gov/centralvalley/water_issues/salinity/laws_regs_policies/rs68-016.pdf.

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There is confusion in BDCP's setting description of lands that would become part of the BDCP. It claims anticipated benefits to habitat and species under the plan, specifying activities involving over 148,000 acres within four Restoration Opportunity Areas (ROAs). The ROAs include Suisun Marsh. The EIR/EIS treats the Marsh as separate from the statutory Delta while including it in the Plan Area.⁴³⁶ BDCP's proposed activities must be considered within the context of how much land in the Delta and Suisun Marsh is already dedicated to habitat and to restoration projects that will go forward even if BDCP is not permitted. ***The EIR/EIS in Chapter 13 fails to describe this ongoing record of habitat restoration activity adequately.*** Taking these activities into consideration, BDCP offers readers and decision makers who would use the EIR/EIS little or nothing in the way of conservation that cannot be accomplished by other means.

It is difficult to recognize the land use setting that Chapter 13 assembles in the actual Delta.

The BDCP EIR/EIS defines a total area of 872,000 acres in seven counties for its study area,⁴³⁷ including parts of Sutter (for Yolo Bypass areas) and Alameda counties that are not part of the statutory Delta or Suisun Marsh. BDCP asserts that the statutory Delta alone has 538,000 acres of "agricultural land uses" but does not define "agricultural land uses."⁴³⁸ Using classifications by the California Department of Conservation's Farmland Mapping and Monitoring Program (FMMP), BDCP identifies 585,000 acres in its total study area used for agricultural purposes.⁴³⁹

This picture contrasts with the Delta Stewardship Council's *Draft Delta Plan Environmental Impact Report*, Section 4, Biological Resources, Table 4-4, which lists the area of natural community types in the Delta and Suisun Marsh. This 2013 report gives a total of 838,250 acres for the whole region (which includes 106,620 acres for Suisun Marsh), of which 480,320 acres are agricultural lands (57 percent) and 81,910 are identified as "developed" (10 percent). The remainder—276,020 acres, 33 percent of the Delta and Suisun Marsh—are already open water and natural community areas.

These numbers are similar to those used in the Delta Protection Commission's 2012 *Economic Sustainability Plan (ESP)*, which identified 738,000 acres in the statutory Delta (*ESP* page 20) and found agricultural acreage in production in 2010 to be 461,380 acres, out of a total of 500,383 acres of available farmland.⁴⁴⁰

The principal land use in the Delta is agriculture. FMMP surveys are updated every two years, so one explanation for these discrepancies is that BDCP and the ESP used surveys from different years. However, it is worth noting that BDCP's estimate of acreage for "agricultural land uses" in the statutory Delta alone is 77,000 acres greater than the estimate in the *ESP* of land actually in agricultural production. This is significant because BDCP's habitat proposals depend to a significant degree on taking agricultural land out of production. After all, the percentage impact of conservation measures on land use appears to be less if the amount of agricultural land available is asserted to be greater.

⁴³⁶ BDCP EIR/EIS, Chapter 13, *Land Use*, Section 13.1.1.1, p. 13-2, lines 2-4 and page 13-3, lines 18-40. See also Figure 13-1.

⁴³⁷ *Ibid.*, Chapter 14, *Agriculture*, Section 14.1.1, page 14-2, lines 4-6.

⁴³⁸ *Ibid.*, Chapter 13, *Land Use*, Section 13.1.1.1, page 13-2, line 2.

⁴³⁹ *Ibid.*, Chapter 14, *Agriculture*, Section 14.1.1, page 14-2, lines 7-8.

⁴⁴⁰ Delta Protection Commission, *Public Draft Economic Sustainability Plan*, October 10, 2011, page 115.

9. The EIR/EIS fails to describe economic conditions of the Delta adequately.

From the perspective of Delta as Place, the fundamental weakness in the socioeconomic analysis arises from a decision not to distinguish, or to distinguish inconsistently, between the statutory Delta (sometimes referred to in the document as the interior Delta) and the five-county Delta region. The rationale for this decision is that “socioeconomic conditions [. . .] would potentially affect not only the statutory Delta, but also a larger area that covers parts of the Delta counties surrounding the statutory Delta.”⁴⁴¹ However, conflating the statutory Delta with the larger Delta region misrepresents the situation in the statutory Delta -- the Delta as Place.

The EIR/EIS notes that the Delta Reform Act of 2009 specifically identified the following unincorporated “Legacy Communities” as exemplifying the Delta’s unique cultural history and contributing to the sense of the Delta as a place: Bethel Island, Clarksburg, Courtland, Freeport, Hood, Isleton, Knightsen, Rio Vista, Ryde, Locke, and Walnut Grove.⁴⁴² “In addition to recognized cities and communities, the Delta also includes numerous small, recreational areas (including campgrounds, marinas, recreational vehicle parks, and vacation homes) that are popular throughout the spring and summer months.”

The EIR/EIS distinguishes between “small towns and dispersed rural residences in the interior of the Delta, and large urban areas on the periphery.” “The population in the interior of the Delta is centered around several rural communities, including Clarksburg, Courtland, Hood, Isleton, and Walnut Grove/Locke/Ryde (Delta Protection Commission 2012).”⁴⁴³

However, for several important socioeconomic indicators (Table 16-4, Housing Units; Table 16-5, Housing Type Trends; and Table 16-6, Housing Vacancy Rates), the EIR/EIS uses data from the California Department of Finance that is available for incorporated communities only; of the eleven communities identified above as exemplifying the Delta as Place, only Isleton and Rio Vista, neither of them in the primary zone, are included in the table. For other important indicators of socioeconomic well-being (including employment trends, income and poverty levels, and revenues and expenditures), Delta as Place communities are subsumed under Delta counties.

As a consequence, the analysis fails to capture data that the EIR/EIS itself identifies as important. For example, the EIR/EIS says that the economy of the interior Delta generally revolves around agriculture and tourism/recreation.⁴⁴⁴ But because the analysis uses data for the Delta counties, the importance of agriculture and tourism are not reflected in Annual Employment and Shares by Industry, which shows Government to have the largest employment share and Agriculture to have the smallest.⁴⁴⁵

Regarding tourism/recreation, the EIR/EIS uses AECOM data for SICs (standard industrial classifications) for its Table 6-11, Employment Conditions for Delta Region Recreation-Related Industries.⁴⁴⁶ The EIR/EIS has not included the SIC code for marinas or boat-building and repair,

⁴⁴¹ BDCP EIR/EIS, Chapter 16, 16.1.1.1, lines 6-9.

⁴⁴² *Ibid.*, page 16-2, lines 21-27.

⁴⁴³ *Ibid.*, page 16-3, lines 2-3; lines 8-10.

⁴⁴⁴ *Ibid.*, page 16-4, line 2.

⁴⁴⁵ *Ibid.*, Table 16-8, page 16-16.

⁴⁴⁶ *Ibid.*, page 16-22.

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although it has included the code for zoos, of which there are none in the interior Delta. According to the comment letter prepared by the Delta Protection Commission, the BDCP undercounts recreation spending in the Delta by \$76 million as compared to recreational spending estimated in the Commission's *ESP* (\$236 million in the EIR/EIS versus \$312 million in the *ESP*).

In the interest of evaluating impacts of BDCP on the Delta as Place, the EIR/EIS should have made a greater effort to address the challenge of separating data regarding the statutory Delta from data for the five counties that include the Delta region. This task was tackled in the *Economic Sustainability Plan for the Sacramento-San Joaquin Delta* (*ESP*), published in January 2012, which was produced by the Delta Protection Commission for the Delta Stewardship Council in response to the Delta Reform legislation. The EIR/EIS appears not to have taken full advantage of this resource for its socioeconomic analysis.

The EIR/EIS alludes to the difficulty of doing justice to the socioeconomic role of Delta agriculture.

Agriculture is one of the more important sectors of the Delta economy. [. . .] the aggregate employment data presented earlier in this section (see Table 16-8) suggest that agriculture is a fairly small employment sector relative to other sectors at the county level, such as government and retail trade. Part of the explanation for this is that the counties include cities such as Sacramento, Stockton, and Antioch. By their nature, cities are concentrations of non-rural economic activity. County-level data summaries that include the cities tend to diminish the important role of agriculture in more rural areas of the counties, such as the statutory Delta. Commercial agriculture and the associated agricultural services, packing, processing, marketing, insuring, and transportation activities are critical components of the Delta region's economic and social character.⁴⁴⁷

But recent agricultural data for the statutory Delta was available to the EIR/EIS. The *Economic Sustainability Plan* shows total Delta farmland acreage in 2008 (500,383 acres), as distinct from farmland acreage in the Delta counties.⁴⁴⁸ It identifies the top 20 Delta crops by acreage in 2009, with the top five being corn, alfalfa, processing tomatoes, wheat, and wine grapes.⁴⁴⁹ It identifies the top 20 Delta crops by value in 2009, with the top five being processing tomatoes, wine grapes, corn alfalfa, and asparagus and calculates a total of \$702 million in revenues from Delta agriculture in 2009. It estimates the total animal output in the Delta at \$93,388,000. It forecasts growth in truck, deciduous, and vineyard crops and decline in grain and pasture crops, with an increase in revenue resulting from the planting of more high-value crop.⁴⁵⁰ The *Economic Sustainability Plan's* estimates of crop revenues and animal output together total over \$795 million.

Using California Department of Food and Agriculture crop reports for the five Delta counties, the EIR/EIS looks at crop yields, prices, and value per acres and finds the top crops to be corn, alfalfa, grain and hay, safflower, and pasture.⁴⁵¹ Tomatoes, asparagus, and grapes—major crops for the statutory Delta and crops for which growth is forecast—are farther down the list. This is significant because it is farmland in the statutory Delta, not farmland in the five-county region generally, that is targeted for conversion to habitat by BDCP. The EIR/EIS thus gives a misleading picture of the likely impact of farmland conversion.

⁴⁴⁷ *Ibid.*, page 16-23, line 4, lines 7-15.

⁴⁴⁸ *Draft Economic Sustainability Plan*, page 115.

⁴⁴⁹ *Ibid.*, Table 8, page 116.

⁴⁵⁰ *Ibid.*, Table 10, page 119, page 121, and page 130.

⁴⁵¹ BDCP EIR/EIS, Chapter 16, Table 16-13, page 16-25.

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Moreover, the EIR/EIS estimates the combined value of crops and livestock “in the Delta” (using the controversial *Delta Risk Management Strategy Phase 1 Report*) as \$697 million—almost \$100 million less than the *Economic Sustainability Plan* estimates.⁴⁵² Since BDCP is including the Yolo Bypass in the Plan Area, the BDCP Applicants ought to be including its agricultural contributions to the Delta economy. We suspect they may not be.

Having relied on data at the level of the five-county region for its background analysis of socioeconomics, the EIR/EIS switches to a focus on the statutory Delta for its evaluation of environmental consequences, including effects on community character and cohesion, population, housing employment and income.⁴⁵³ “This assessment [of environmental consequences] focused on communities in the statutory Delta, where the direct effects of the BDCP would occur and where social and community effects would be greatest. Social and community effects elsewhere in the larger five-county Delta region are anticipated to be minor because they would be spread over a large, heavily populated area and among many communities.”⁴⁵⁴

In other words, the EIR/EIS uses a region-focused analysis to effectively minimize the socioeconomic role of the Delta as Place, and it uses an analysis focused on the statutory Delta to minimize environmental effects of BDCP on the wider region.

10. The EIR/EIS fails to disclose adequately the cultural resource setting of the Delta Plan Area.

We find the EIR/EIS is unclear whether the reconnaissance conducted on cultural resources of the Plan Area (consisting of the legal Delta in the Water Code, Suisun Marsh, and Yolo Bypass) is focused on just the alignments of the BDCP alternatives within the Plan Area, or whether it is really generalized to the Plan Area as a whole. It should be both. Chapter 18 should have a set of location maps that show locations and densities of cultural resources by type: archaeological, historic, potential sites for human remains, and the like. This forms the initial basis for estimating the number and types of impacts to cultural resources.

We also note that the regulatory setting of Chapter 18 has identified Section 106 of the National Historic Preservation Act as an important regulatory framework for the identification, treatment, and protection of historic and archaeological resources that might merit inclusion in the National Register of Historic Places. Section 106 requires Applicants to declare an “area of potential effect” within which potential cultural resources are to be identified for treatment in the Section 106 process. The setting/affected environment section of the BDCP EIR/EIS fails to describe in map form or via narrative the size and vicinity of the area of potential effects of the Bay Delta Conservation Plan as an “undertaking” under Section 106. This is a serious deficiency because it is the basis for determining impacts on resources that may be ripe for inclusion in the NRHP.

Chapter 18 also fails to just summarize the number and type of cultural resources by alternative. A simple table that characterized how many of which type of cultural resource, sorted by BDCP alternative alignment and habitat restoration conservation measure/Conservation Zone/Restoration Opportunity Area, would suffice and assist lay readers and decision makers greatly.

We also support the County of Sacramento’s comments on the incomplete discussion of Chapter 18’s regulatory setting section. The EIR/EIS omits regulatory information regarding special

⁴⁵² *Ibid.*, page 16-24, line 29.

⁴⁵³ *Ibid.*, page 16-38, lines 20-21.

⁴⁵⁴ *Ibid.*, page 16-40, lines 9-13.

planning and neighborhood preservation areas found in the Zoning Code of Sacramento County, and the EIR/EIS should be revised and recirculated to include regulatory information regarding these areas, which are subject to additional protective measures because of their unique historic and cultural resources.⁴⁵⁵

11. The EIR/EIS fails to disclose land subsidence problems associated with normal activities of state and federal aqueducts in relation to groundwater overdraft in the San Joaquin Valley.

Land subsidence along the Delta Mendota Canal (DMC) is well-documented. The intertie between the DMC and the California Aqueduct became necessary because subsidence from groundwater overdraft reduced the capacity of the DMC. Groundwater overdraft continues rampantly along and near the route of the DMC and California Aqueduct. However, BDCP and its DEIS/EIR do not disclose this risk in the “Subsidence” section nor are there any policies or recommendations or plans to regulate the risk of aqueduct failure or reduced capacity from subsidence as a result of ongoing groundwater overdraft (**need to verify this**).

How can it be that the risk section of the BDCP completely omits the risks of San Luis Dam failure and aqueduct subsidence to central and southern California’s Delta water supply reliability? We can only conclude that the focus on earthquake risk to Delta levees is part of the scare tactics to promote the Twin Tunnels. However, it is not supported by existing scientific information.

The Geology Chapter of the EIR/EIS must include the relative risks to reliable water supplies from hazards such as San Luis Dam failure and aqueduct subsidence. We also recommend policies and recommendations to reduce those risks such as mandatory groundwater regulation for areas adjacent to important water conveyance facilities such as the DMC and California Aqueduct.

Overall the seismic risk analysis of the EIR/EIS is woefully inadequate. This is exemplified by its omission of evaluating all risks to Delta water supplies, failure to consider in any alternative a minimum PL 84-99 levee standard and a reduced emphasis on levee protection for many Delta lands. We conclude that BDCP and its EIR/EIS are not intended to evaluate and reduce Delta risks, but instead is intended to promote the Twin Tunnels project. To do so, the Plan relies on unsubstantiated scare tactics about Delta levee failure from earthquakes and flooding from sea level rise. The real risks to south of Delta water supplies are not disclosed. They are inconvenient truths that might distract from the push to build the Twin Tunnels.

Omission of these other risks from the BDCP EIR/EIS means the EIR/EIS fails to fulfill its purpose of providing adequate context for lay public readers and decision makers to understand relative and absolute seismic and other risks California’s CVP and SWP systems beyond Delta levees.

G. The EIR/EIS fails to provide adequate impact analysis and analysis of effects and consequences.

The enormous size of the EIR/EIS is an obstacle to finding impact analyses, let alone discerning whether any given impact analysis provides adequate disclosure of project and plan impacts of the Bay Delta Conservation Plan. In addition to the Executive Summary table of impacts (Table ES-9, which in Chapter ES is itself 62 pages long) there should be at the opening of each environmental

⁴⁵⁵ Comments of Sacramento County on Bay Delta Conservation Plan and Draft EIR/EIS, May 28, 2014, p. 69 to 74.

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issue chapter an executive summary of the chapter that summarizes the impacts of the proposed project by alternative and identifies the key areas of controversy. This is especially important when the issue chapters can be themselves hundreds or, truly, thousands of pages long—as long as any typical project-specific EIS/EIR on a discreet project. BDCP’s water quality chapter exceeds 800 pages. Fish and Aquatic Systems exceeds 3,000 pages; Recreation exceeds 400 pages. Other chapters routinely exceed 100 to 200 pages. Careful review for lay and professional readers alike is burdensome, time-consuming, and ultimately, frustrating and off-putting. The consequence of such a review burden is that BDCP and its documentation confound the purposes of NEPA and CEQA, and in the confounding, violate these two laws.

Lost in this conflict are the impacts that Delta water policy decisions are having on low-income communities of color. Some of the hydraulic effects of enclosure will affect people and communities that rely on subsistence fishing in Delta channels.

- 1) Sacramento River inflow below Freeport (a few miles south of the city of Sacramento) will decrease with operation of the Twin Tunnels. This decreased flow will extend from Freeport through Walnut Grove all the way to Suisun Bay. This means that water flows will slow down and there will be water quality problems, including the potential for increased selenium contamination. To the extent that people fishing the river shores catch sturgeon or other fish species that feed on bottom-dwelling organisms, e.g., invasive clams which biomagnify selenium or mercury and other contaminants, they could experience increased exposures, if and when the Twin Tunnels go into operation.
- 2) Related to this, residence times of water in the west Delta and other parts of the Delta increase under the BDCP by about 25 percent. This means that any contaminants will persist in the water longer and will therefore increase human exposure and public health consequences of the operation of the Twin Tunnels.
- 3) The land use, noise, circulation/transportation, and air quality issues associated with construction of the Twin Tunnels are significant locally in the Delta, due to periodic intensive use of roads and land for a decade. Chapter 28 of the BDCP EIR/EIS documents the location of racial/ethnic minority residents of the area as well as low income/poverty rate populations in the Delta on which there would be imposed a significant impact.
- 4) The water rights of Delta farming enterprises are the economic foundation of the Delta's modern agricultural economy, and farm workers participate in that economy. To the extent that the Twin Tunnels may harm existing Delta water rights, particularly along the lower Sacramento River, there is an environmental justice impact if businesses and their employees, even temporary laborers, are harmed by the loss of water for producing crops in the Delta.
- 5) The loss of agricultural land to conversion to habitat restoration may also be an environmental justice impact for reasons similar to point #4, above. This involves the loss of land for economic production in the Delta. Habitat restoration impacts, both construction and inundation of formerly dry land areas, also could mobilize legacy methyl mercury and selenium in sediments into food webs that could directly affect human health.
- 6) Cumulative upstream reservoir operations will likely work to maximize storage. In terms of cumulative impacts of the BDCP and Twin Tunnels, this prospect links the BDCP and Twin

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Tunnels to the proposal to raise Shasta Dam and expand Shasta Lake, and all the consequence that would follow from that expansion.⁴⁵⁶

The EIR/S must acknowledge and evaluate the effects of expanding storage supplies at Shasta, Sites Reservoir, and Temperance Flat, all of which are on the state and federal governments' drawing boards and are reasonably foreseeable projects and must therefore be analyzed. The Winnemem Wintu Tribe has expressed its concerns about the impact of raising Shasta Dam on the McCloud River and the inundation of its last remaining sacred cultural sites. Construction of Temperance Flat reservoir on the San Joaquin River would likely flood the Western Mono Tribe's communities and lands upstream of Millerton Lake near Fresno.

1. The EIR/EIS fails to disclose environmental justice impacts of enclosing the Delta common pool, reduced salmonid survival rates, and increased risks to environmental justice communities of subsistence fishing when mercury and selenium in fish tissues are projected in BDCP modeling results to increase by 2060.

Subsistence fishing is an important beneficial use of water in the Delta common pool. Subsistence fishers do so informally but frequently. Flows for fish and fish habitat are crucial to the ongoing health and protection of the public trust resources that support this beneficial use. Many are low-income residents of the Delta from a variety of racial and ethnic backgrounds. Many members of these environmental justice communities may speak English only to a limited degree. It is already unfortunate and well known that these communities are poorly served by state-issued health advisories about contaminants, particularly mercury, in the tissue of fish commonly caught in the Delta.⁴⁵⁷

As showed elsewhere in our comments, BDCP modeling results report that salmon smolt survival rates are expected to decrease by 2060 as a result of BDCP Twin Tunnels operations. With regard to EWC's Indian Tribe members, the Bay Delta Conservation Plan's modeling results show the project will decrease long-term survival rates of salmon smolts through the Delta, when habitat conservation plans are supposed to contribute to survival and recovery of listed species. Salmonids are central to the religion and cosmology of the Winnemem Wintu, Hoopa, Karuk, and Yurok Tribes of northern California. Threats to the survival of salmon are threats to the cultural survival of these Indian Tribes. In addition, the omission of long-planned major storage projects like the raising of Shasta Dam to expand that reservoir and the proposed Temperance Flat storage project from the BDCP EIR/EIS obscures the cumulative impact of BDCP from the public and decision makers. Both projects would flood sacred sites and lands that are vital to the Winnemem Wintu's and Western Mono's connections to the Earth and to their religion. These effects are adverse, and must be avoided. But they are ignored by the EIR/EIS's cumulative impacts analysis.

There are adverse effects associated with methylmercury contamination of fish, increases of selenium concentration in fish tissues long-term in sturgeon, and subsistence fishers along the lower Sacramento River will have to find other places to fish. These impacts are indicated by the

⁴⁵⁶ Environmental Water Caucus Response Letter to the U.S. Bureau of Reclamation for the Shasta lake Water Resources Investigation Draft Environmental Impact Statement, September 30, 2013, 48 pages, Accessible online 8 May 2014 at <http://ewccalifornia.org/reports/shastadeiscomments.pdf>.

⁴⁵⁷ Jay A. Davis, Ben K. Greenfield, Gary Ichikawa, and Mark Stephenson, "Mercury in sport fish from the Sacramento-San Joaquin Delta region, California, USA," *Science of the Total Environment* 391(2008) 66-75; and Fraser Shilling, Aubrey White, Lucas Lippert, and Mark Lubell, "Contaminated fish consumption in California's Central Valley Delta," *Environmental Research* (2010), doi:10.1016/j.envres.2010.02.002.

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modeling results presented in BDCP documents on top of the cumulative contamination that already exists, but are not analyzed adequately in the EIR/EIS.

2. The EIR/EIS fails to disclose fully the water supply benefits of North Delta Intake diversions by focusing on wet and above normal year reliability benefits and failing to analyze water transfer benefits of the diversions in drier types of water years.

BDCP's true underlying purpose and need is not only to increase diversions for Delta export from the North Delta Intake diversions in wet and above normal years, but also to increase the supply reliability of cross-Delta water transfers (i.e., from north of Delta to south of Delta locations) in drier and drought years. This is not disclosed in the Purpose and Need Statement of Chapter 2 in the EIR/EIS. The underlying purpose and need of BDCP and its North Delta Intake diversions is more fully disclosed in the modeling results in EIR/EIS Chapter 5, *Water Supply*, and in accompanying analysis of water transfers in that chapter and related appendices.

All nine/twelve BDCP alternatives will have little to no effect on federal Central Valley Project reservoirs relative to the No Action Alternative condition, according to BDCP EIR/EIS modeling results.⁴⁵⁸

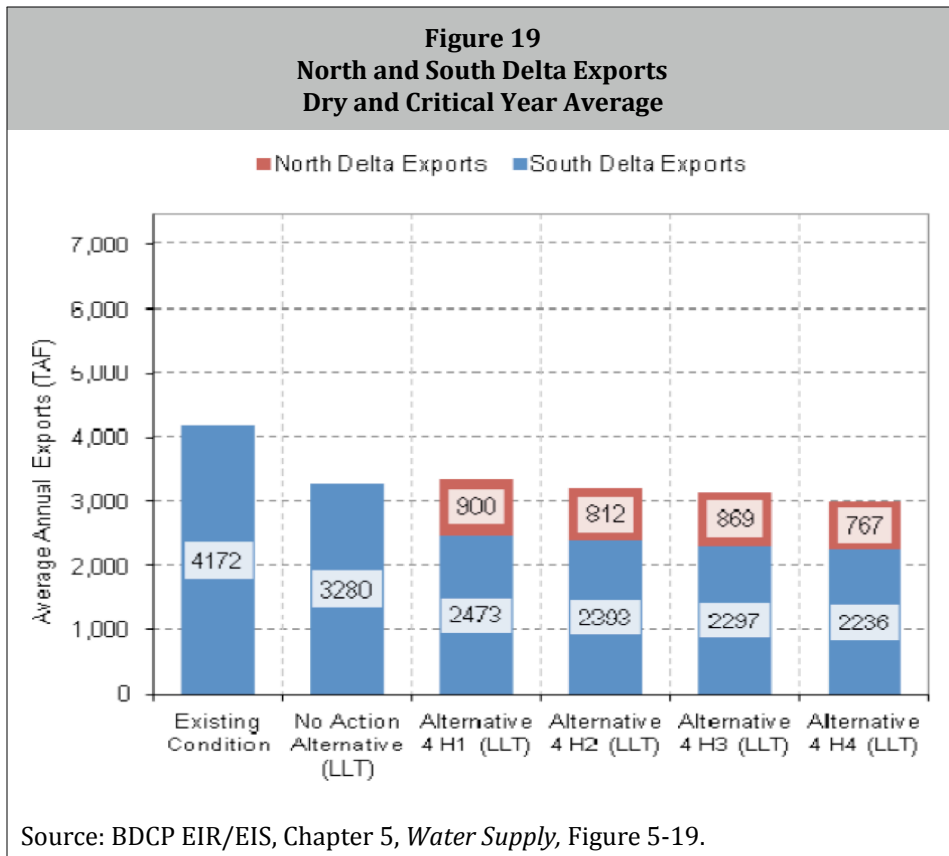
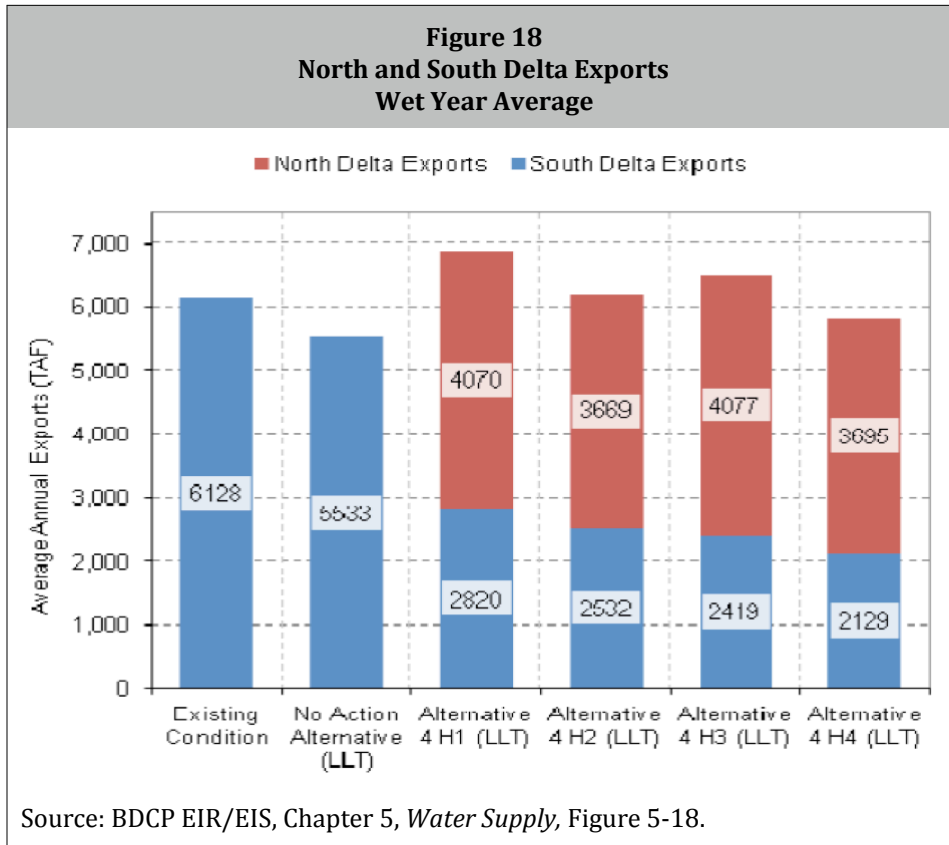
The operational modeling criteria for BDCP, however, have noteworthy effects on Oroville reservoir storage, the State Water Project's largest reservoir located on the Feather River. Figures 5-9 and 5-10 show real differences in exceedance probabilities for the BDCP alternatives relative to the No Action Alternative (essentially a with/without BDCP comparison in 2060). With few changes occurring in the federal reservoirs, it appears that most if not all operational changes of the North Delta Diversions are "paid for" with flow releases from Oroville. In Figure 5-9, Alternative 4 H2 and H4 scenarios reveal that in about 60 percent of all years, spring X2 flows will be supplied ("paid for") from Lake Oroville, as reflected in their "end of May" storage levels falling below those of the No Action Alternative. By the end of September (Figure 5-10), Oroville storage levels are nearly all above the No Action Alternative (with limited exceptions for Alternative 4/H4 [i.e., the operational scenario paying extra Delta outflow for *both* Delta smelt and longfin smelt]). Alternative 4 for scenarios H2 and H4 would lower Oroville storage relative to the No Action Alternative levels in the range of years between 20% and 80% exceedance probability—the middle 60 percent of all water years. At the drier end of the spectrum, however, most alternatives differ little from conditions under the No Action Alternative at Oroville at the end of September.

Figures 18 and 19 below illustrate the manner in which BDCP anticipates employing the North Delta intakes (shown in red) primarily in wet years, when they will divert the majority of Delta exports. During dry and critical years, on the other hand, North Delta diversions would decrease dramatically, relative to South Delta export diversions.⁴⁵⁹

⁴⁵⁸ See Figures 5-6, 5-7, 5-8, 5-11, and 5-12 for modeling results showing effects of BDCP alternatives on storage levels on Trinity, Shasta, and Folsom reservoirs.

⁴⁵⁹ The need to protect "bypass flows" in the lower Sacramento are the ostensible reason, according to BDCP operational modeling assumptions/criteria, though the North Delta Intakes' prospective but as yet unapproved junior diversion rights on the lower Sacramento may be another.

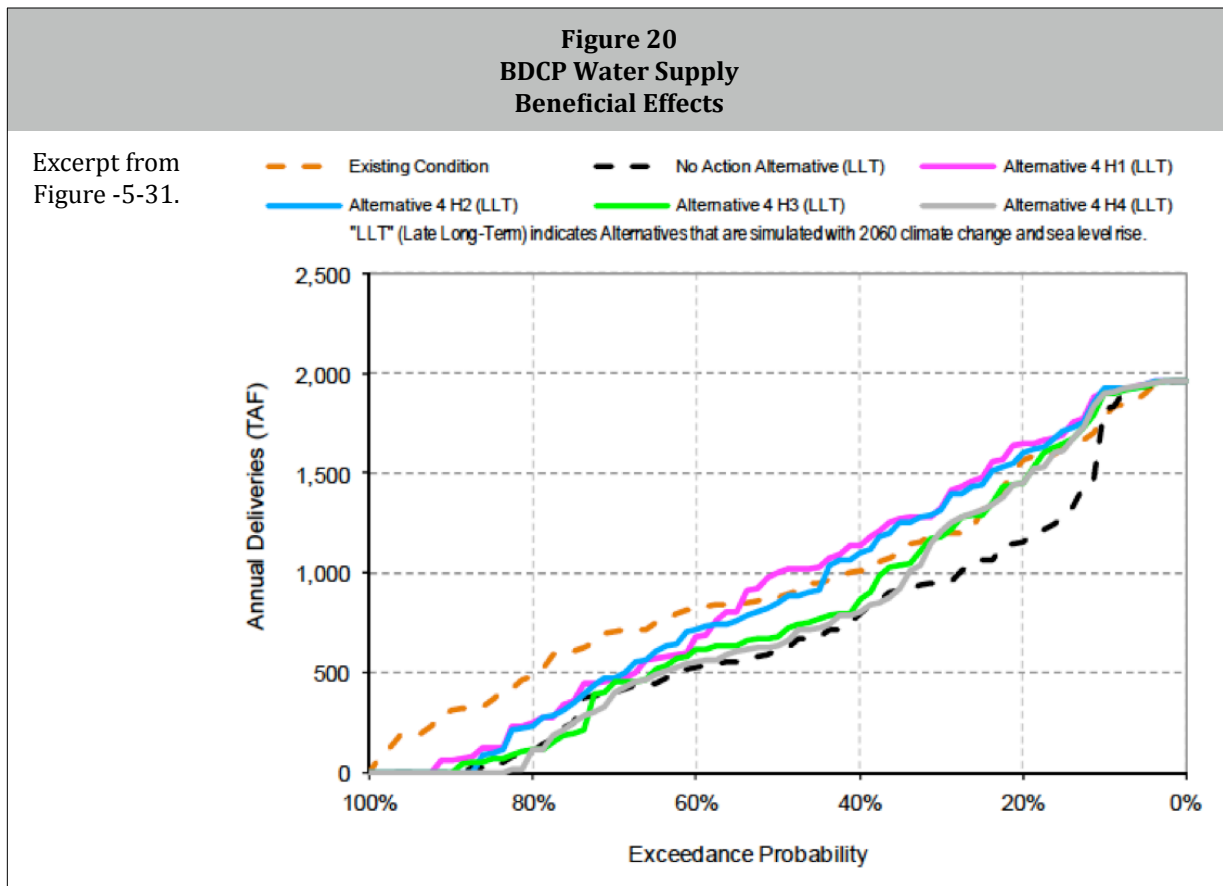
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This makes some sense when we recall that the North Delta Diversions are to be owned and operated by the California Department of Water Resources as part of the State Water Project, which will have lower priority water rights at the North Delta Diversions.⁴⁶⁰

Below we excerpt in Figure 20 three figures showing modeling results for water supply effects of Alternative 4, the proposed action alternative. According to the excerpt from Figure 5-31 of the EIR/EIS, Alternative 4's scenarios all "out-deliver" the No Action Alternative for South of Delta agricultural water service contractors, except for having to deliver increased outflows in the driest 15 percent of years. With Westlands Water District being the largest CVP agricultural south-of-Delta contractor, this chart surely keeps Westlands interested in the North Delta Intakes and Tunnels project.

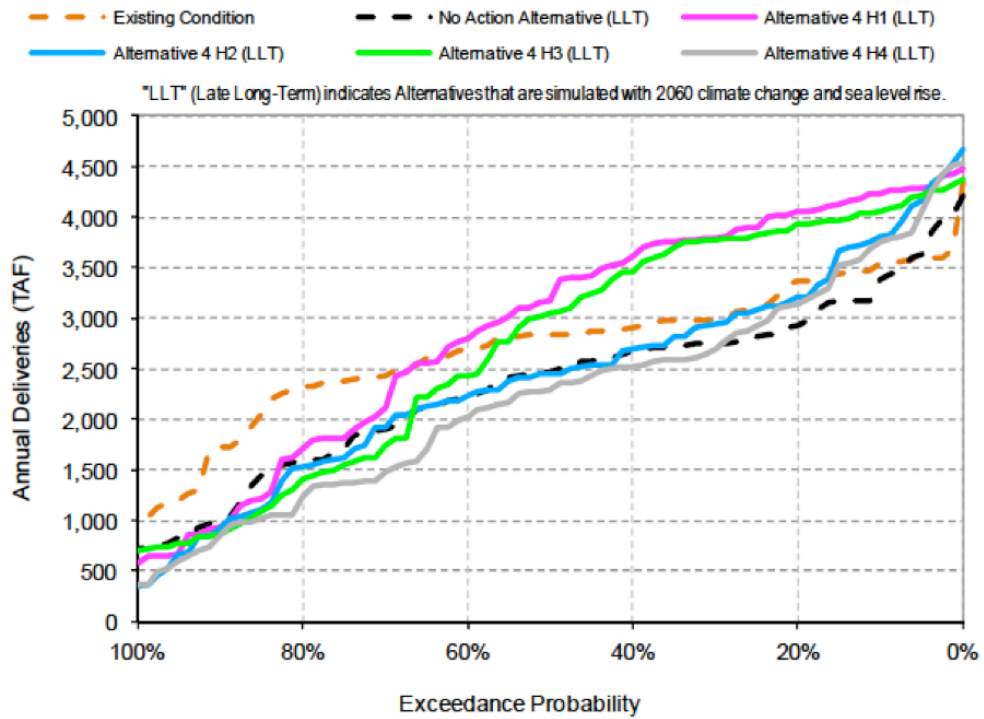


⁴⁶⁰ BDCP, Chapter 7, *Implementation Structure*, Section 7.1.2.1.1, p. 7-10, lines 2-6.

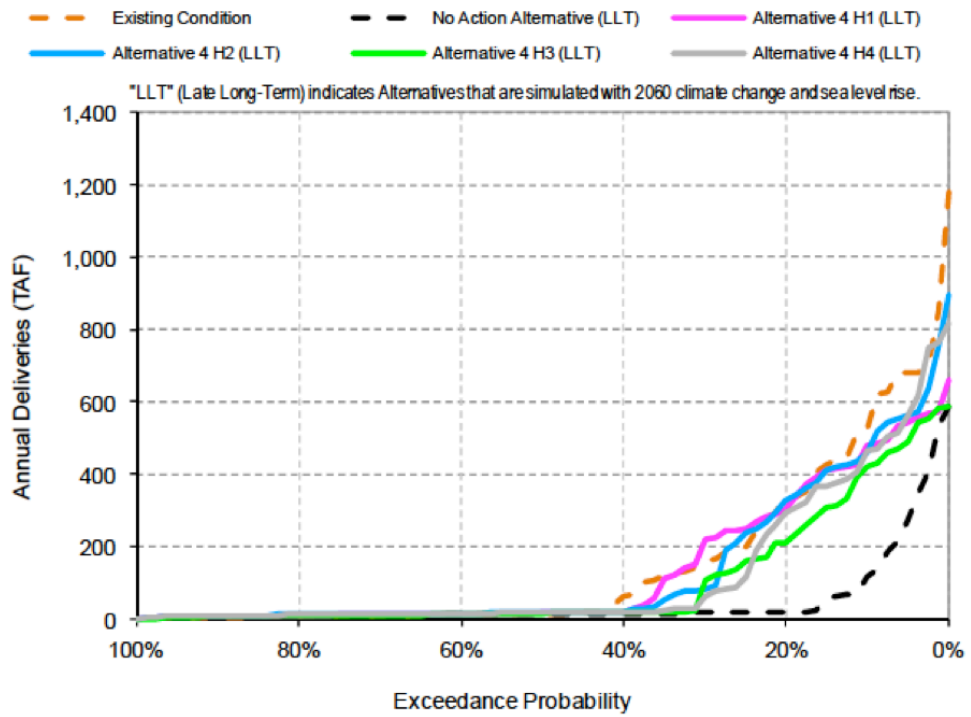
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Figure 20
BDCP Water Supply
Beneficial Effects

Excerpt from
 Figure 5-34.



Excerpt from
 Figure 5-36.



Source: BDCP EIR/EIS, Chapter 5, *Water Supply*.

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The excerpt from Figure 5-34 depicts a similar analysis for annual south of Delta SWP deliveries (including Table A contract amounts as well as potential “surplus waters” via Articles 21 and 56 of SWP contracts). This chart shows that for Alternative 4’s scenarios South of Delta deliveries perform no worse (and some better) than the No Action Alternative. Only the Alternative 4/H4 scenario benefiting both longfin smelt and Delta smelt with extra spring and fall Delta outflows provides deliveries lower than the No Action Alternative in almost 70 percent of years (including all of the driest). The other alternatives are lower than the No Action Alternative in only about 20 to 35 percent of the driest years.

The excerpt from Figure 5-36 illustrates SWP Article 21 surplus water deliveries for all BDCP Alternatives. We show the frame for each of the four Alternative 4 scenarios. It is important to note that SWP Article 21 deliveries to South of Delta contractors nearly approximates “existing conditions, and greatly exceeds the No Action Alternative. ***It is an underlying purpose of BDCP to use conveyance changes to “restore” surplus Article 21 water deliveries to South of Delta SWP contractors relative to their reduced No Action Alternative prospect.*** The No Action Alternative envisions near zero Article 21 deliveries except in about the wettest 15 to 20 percent of years in the future. The Twin Tunnels project (Alternative 4) would about double the frequency of Article 21 deliveries to State Water Project south-of-Delta water contractors.

Table ES-9 of the EIR/EIS in Impact WS-2 coyly designates water supply changes in SWP and CVP deliveries as “no determination,” when clearly they are beneficial. This is one manner in which BDCP’s underlying purpose and need statement obscures its likely benefits. The water supply benefits in wet and above normal years extend to additional Article 21 supplies for SWP contractors, and a generally more consistent increased supply of imported Delta water for CVP contractors (primarily Westlands Water District) most of the time with a Tunnels project in place.

The Twin Tunnels’ benefit to water transfers is also obscured from the BDCP purpose and need statement. We read in Chapter 7, *Implementation Structure*, of the Bay Delta Conservation Plan that “Reclamation will likely enter into an agreement with DWR to “wheel” CVP water through a new conveyance facility.”⁴⁶¹ Why is it that the CVP would want to “wheel” water from the North Delta Intakes when it may do so already at Banks Pumping Plant?

In drier years, BDCP expects there will be extra capacity in North Delta Intakes and Tunnels.⁴⁶² In drier years, full CVP contract amounts and SWP Table A amounts will not be available to contractors. While these “contractual” supplies may not be available, the contractors may still have what BDCP refers to as “supplemental demand” for water.

Many of the numerous, similar BDCP alternatives will have intakes sized to carry 15,000 cfs, not just 9,000 cfs as with Alternative 4’s intake design. Water transfers⁴⁶³ are often “wheeled” at times when one project’s pumping capacity is insufficient while the other may have extra capacity to divert and lift water out of the Delta for the other. An expanded Clifton Court Forebay will also be able to store extra waters awaiting pumping capacity prior to export to complete such transfers. Indeed, currently, the “Four Pumps Agreement” between the California Department of Water Resources and the California Department of Fish and Wildlife idles four Banks Pumping Plant units so that the

⁴⁶¹ *Ibid.*, lines 11-12. “Wheeling” water occurs when one water project’s water—say deliveries to be made by the Central Valley Project—is actually pumped from the Delta by the State’s facilities near Tracy (currently). Under BDCP, “wheeling” could occur further north, at the North Delta Intakes, where water quality is better.

⁴⁶² *Ibid.*, Chapter 5, *Water Supply*, p. 5-29, lines 1-2; Appendix 5D, p. 5D-1, lines 28-31; pp. 5D-2, lines 18-23; and p. 5D-3, lines 29-33.

⁴⁶³ Water transfers are defined by BDCP EIR/EIS in Appendix 1E, *Water Transfers in California: Types, Recent History and General Regulatory Setting*, p. 1E-1, lines 13-18.

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State Water Project complies with both fishery mitigations for DFW and navigability limits under US Army Corps of Engineers Public Notice 5820A (from October 1981). Will these pumps be rendered usable in proportion to water arriving at Banks Pumping Plant directly from the North Delta Intakes via the Twin Tunnels?⁴⁶⁴

The EIR/EIS fails to provide a quantitative analysis in Chapter 5 of water transfer behavior even though CalSIM II is perfectly capable of modeling it. But the EIR/EIS does provide a “spreadsheet model” analysis in Appendix 5D that brackets two potential water market volumes in periods of “supplemental demand,” one of up to 600,000 acre-feet, and the other of up to 1 million acre-feet, each for single-year time spans.⁴⁶⁵

Chapter 5 claims that “any transfers conveyed through BDCP facilities will need to satisfy all of the applicable requirements in force at the time of the transfer’s approval” and states that

Alternative 4 provides a separate cross-Delta facility *with additional capacity to move transfer water from areas upstream of the Delta to export service areas and provides a longer transfer window than allowed under current regulatory constraints*. In addition, the facility provides conveyance that would not be restricted by Delta reverse flow concerns or south Delta water level concerns. *As a result of avoiding those restrictions, transfer water could be moved at any time of the year that capacity exists in the combined cross-Delta channels, the new cross-Delta facility and the export pumps, depending on operational regulatory constraints including BDCP permit terms discussed in Alternative 1A.*⁴⁶⁶

The decision to omit quantitative analysis of water transfers in Chapter 5 is not for lack of data or modeling methodologies. EIR/EIS Appendix 5D provides ample data cataloguing historic water transfers back into the 1990s. Appendix 5D specifically notes that “supplemental demand” for water transfers is triggered typically when SWP allocations go below 50 percent, and CVP allocations below 40 percent.⁴⁶⁷ Such insights are the very stuff of modeling assumptions. BDCP’s Chapter 5 Effects Analysis proudly catalogues and totals up its use of models assembled to create these 40,000

⁴⁶⁴ *Agreement Between the Department of Water Resources and the Department of Fish and Game To Offset Fish Losses In Relation To the Harvey O. Banks Pumping Plant*, p. 4, Recital E. which states that USACE Public Notice 5820A “limits exports to the amount of water that can be diverted by the existing [seven] pumps, except during winter months when additional amounts can be diverted during high San Joaquin River flow periods.” Executed December 30, 1986. Accessible online 7 June 2014 at <http://www.water.ca.gov/environmentalservices/fourpumps.cfm>. See also California Department of Water Resources, *California State Water Project Atlas*, 1999, p. 80, where it states, “During [Banks] construction (1963-1969) seven pumps were installed. In 1986, four more were added to divert and pump more water during the wet months to fill offstream storage reservoirs and groundwater basins south of the Delta to improve water supply reliability.” The four newer pumps, according to the *Atlas*, have a combined capacity to pump 4,368 cfs, and at full throttle could export nearly 780,000 acre-feet during the summer irrigating season (July 1 through September 30) for water transfers potentially independent of USACE constraints. The source of water to the pumps via the Twin Tunnels would be the Sacramento River and not the San Joaquin.

⁴⁶⁵ See also BDCP EIR/EIS, Appendix 5C, *Historical Background of Cross-Delta Water Transfers and Potential Source Regions*.

⁴⁶⁶ *Ibid.*, Chapter 5, *Water Supply*, p. 5-108, lines 32-39. Emphasis added.

⁴⁶⁷ “Comparing the years when cross-Delta transfer activity picks up with allocations, and considering Delta export constraints on transfers, SWP demand for cross-Delta transfers increases noticeably at allocations below 50 percent and DVP demand for cross-Delta transfers increases below 40 percent.” *Ibid.*, EIR/EIS, Appendix 5D, *Water Transfer Analysis Methodology and Results*, p. 5D-3, lines 29-33.

pages of spew on BDCP—68 different models in all.⁴⁶⁸ But ***the lack of a modeling effort on water transfers is disingenuous, and ultimately renders the water supply impact analysis deficient and incomplete, and betrays an underlying desire among the BDCP Applicants to make cross-Delta water transfers an unspoken purpose and need for BDCP Delta facilities.***

Chapter 5, *Water Supply*, of the EIR/EIS fails to disclose that the Twin Tunnels project could increase deliveries of “surplus” water relative to the No Action Alternative, not merely “restore” such deliveries; and fails to disclose that the Twin Tunnels project would increase “wheeling” activity to support water transfers during most if not all drier years, which presently occur at least 60 percent of the time. Drier years are likely to increase under conditions of climate change. ***These omissions of impact analysis render the EIR/EIS fatally deficient and misleading. If the project continues, the Draft EIR/EIS must be revised and recirculated.***

3. The EIR/EIS fails to disclose groundwater impacts to the Sacramento Valley that would result from expanded cross-Delta water transfer activity involving groundwater substitution.

Chapter 7 is lengthy and would benefit from a summary of impacts and anticipated mitigation measures. Such a meaningful summary would be helpful when BDCP states:

There could be minor decreases in water supply availability to CVP water users in the Sacramento Valley service area due to the implementation of the alternatives. These minor changes have been estimated at approximately 50,000 acre-feet per year, which is approximately 2% of the current annual average groundwater production quantity in the Sacramento Valley.⁴⁶⁹

However one slices it, 50,000 acre-feet is still a great deal of water. At current levels of water use for rice production in the Sacramento Valley, This section of the EIR/EIS does not disclose why this 50,000 acre-feet would be the general impact on the valley’s groundwater. This much surface water would irrigate 10,000 to 15,000 acres for much of the year. Depending on the crop grown this much groundwater substitution would affect 300 to 400 farmers, depending on average farm size of those affected (e.g., at 40 to 50 acre production units). Withdrawing it from particular locations (such as in the Sacramento Valley’s rice districts between Yuba City and Chico) could cause significant local effects on groundwater elevations in the regions. Many smaller and larger towns and cities in this area are dependent on groundwater supplies for municipal and domestic use, as well as irrigation. We believe for this reason that the impacts to groundwater of the Bay Delta Conservation Plan are significant and the EIR/EIS is deficient in excluding the Sacramento Valley from its impact analysis.

Expansion of the water transfers market as an underlying purpose and need for the Twin Tunnels Project and its associated Delta facilities in BDCP would expand the number and frequency of groundwater substitution transfers in a large number of years. Since 1996, the State Water Project allocation has been at 50 percent of less of Table A contract amounts for contractors. Over that same period, the federal Central Valley Project has seen just two years where agricultural allocations of contract maximums have been 40 percent or less. (These two thresholds were identified by BDCP as triggers for “supplemental demand” to be met by cross-Delta water transfers by the state and federal projects.) BDCP also identifies three types of transfers: crop fallowing, crop shifting, and groundwater substitution transfers. Most transfers in recent years have involved groundwater substitution transfers. Despite this inchoate feature of the Bay Delta Conservation Plan (that is, disclosed in Chapter 5 appendices but not elsewhere in the BDCP documents) Chapter 7 attempts to justify omission of groundwater impact discussions of the Sacramento Valley in the following way:

⁴⁶⁸ BDCP, Chapter 5, *Effects Analysis*, Table 5.2-5, pp. 5.2-17 through 5.2-21.

⁴⁶⁹ BDCP EIR/EIS, Chapter 7, *Groundwater*, p. 7-32, lines 30-33.

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The Sacramento Valley Groundwater Basin is “full” in most areas, except during drought and in a few locales where drawdown has been observed over the years. In most areas groundwater levels recover to pre-irrigation season levels each spring. A 2% increase in groundwater use in the Sacramento Valley to make up for any shortfalls in surface water supply is not anticipated to substantially impact the groundwater resources as long as the additional pumping is not concentrated in a particular area of the valley. Therefore the Sacramento Valley Groundwater Basin is not included in the groundwater analysis presented in this chapter.⁴⁷⁰

BDCP’s claim that the Sacramento Valley is “full” is inaccurate. According to DWR’s Northern District Branch Chief Dan McManus,

The above statement characterizing the Sacramento Valley Groundwater Basin as being “full” in most areas is not accurate. Our work on the CWP 2013 Update indicates that groundwater storage in the Sacramento Valley groundwater basin was reduced by approximately 700 – 1,700 TAF, between 2005 and 2010. In many areas of the Sacramento Valley groundwater levels are at all-time lows and preliminary information from our Spring 2014 groundwater level measurements indicate that groundwater level declines are continuing.⁴⁷¹

BDCP would directly obtain surface water sold by “willing sellers” as part of water transfers occurring when there is conveyance capacity in the Twin Tunnels Delta facilities. That capacity would reasonably be expected to occur in below normal, dry, and critically dry water years. These water year types can reasonably be expected to occur about 60 percent of the time in the future. It is likely that a significant fraction of these water year types will result in SWP allocations at or below 50 percent, and CVP agricultural allocations at or below 40 percent of contractual amounts. BDCP also indicates that in the first years of a series of dry years, water transfers could be arranged in aggregate amounts up to between 600,000 and 1,000,000 acre-feet. (Second and third years of drought sequences, probably less.) It is also reasonable to expect that a significant portion of those water transfers that could be arranged would include groundwater substitution by willing sellers in order to bring crops in and avoid local and regional economic dislocations from water transfer activity. BDCP has, but has not disclosed, what percentage of water transfers involved groundwater substitution in the Sacramento Valley in recent experience.

Groundwater substitution risks reducing surface river flow in the Sacramento Valley. Additional pumping to fulfill surface supplies foregone to transfers would have a direct and significant impact on instream Sacramento River and other tributary flows. Depletion factors vary with hydrology and geology of specific areas in the Valley. DWR places this passage beneath a subheading that reads: “Potential Increase in Water Supply”:

Reoperation of the existing groundwater storage system could significantly increase annual water deliveries throughout California. Conservative estimates of potential conjunctive management indicate that average annual water deliveries could be increased by 0.5 MAF (DWR 2009). More aggressive estimates indicate a potential increase in annual water deliveries by 2 MAF. However, more aggressive estimates of potential increases in water deliveries depend upon predictable and reliable exports of surface water from the Delta to provide a source of groundwater recharge.⁴⁷²

⁴⁷⁰*Ibid.*, p. 7-32, lines 33-40.

⁴⁷¹ Email of Don McManus, Branch Chief in DWR’s Northern Region Office, to BDCP.comments@noaa.gov, March 25, 2014. Accessible online 8 June 2014 at http://www.friendsoftheriver.org/site/DocServer/Cmt_698.pdf?docID=8475.

⁴⁷² BDCP., Chapter 1, *Introduction*, Appendix 1B, *Water Storage*, p. 1B-6, lines 19-24.

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This statement in BDCP's EIR/EIS is vague about what comprises the "existing groundwater storage system" but we suspect it refers to a combination of the Sacramento Valley and the San Joaquin Valley. One valley has groundwater naturally recharging from streams that still flow to the sea (the Sacramento Valley), while the other imports allegedly surplus supplies from the Sacramento Valley to spread water for percolation into "conjunctive use" facilities like the Kern Water Bank, Semitropic Water Storage District, and potentially others.

We conclude that the Twin Tunnels project of BDCP's Conservation Measure 1 is intended to facilitate the potential increase in water supplies to Kern Water Bank and Semitropic as well as expanding California's cross-Delta water transfers market. The overall strategy of using the Sacramento Valley to continue boosting conjunctive use of groundwater basins and increasing Delta exports is outlined in DWR's Bulletin 160-98, *California Water Plan Update*:

This section reviews *the potential for groundwater development and conjunctive use as elements of statewide water management*, concentrating on the potential for augmenting supplies of the major State or federal water projects....

Sacramento Valley. ...[T]he Sacramento River Basin constitutes most of the potential for additional water development to meet statewide demands. Just as surface storage reservoirs are being evaluated to develop a portion of the basin's surplus runoff (about 9 maf), managed conjunctive use programs are being evaluated to the same end.

...

...In concept, Sacramento Valley conjunctive use programs would operate by encouraging existing surface water diverters to make greater use of groundwater resources during drought periods. The undiverted surface water would become available for other users, and groundwater extractions would be replaced during subsequent wetter periods through natural recharge, direct artificial recharge, or in-lieu recharge (supply of additional surface water to permit a reduction of normal groundwater pumping).

The [Drought Water Bank] provides an example of conjunctive use in the Sacramento Valley. In 1991, 1992, and 1994, the DWB executed contracts to compensate Sacramento Valley agricultural water districts for reducing their diversions of surface water. *Most of the reduced surface water diversions were made up by increased groundwater extractions from existing wells.* The 1994 program in this area was the largest, amounting to approximately 100 taf. The DWB program included a groundwater monitoring component to evaluate the effects of increased extractions on neighboring non-participating groundwater users. Such monitoring programs would be an important component of future conjunctive use programs.⁴⁷³

The question that results from this chain of effects is, ***what would be the near-term and long-term impacts of groundwater substitution transfers? BDCP has failed to identify, disclose, and analyze the potential impacts of cross-Delta groundwater substitution water transfers on the Sacramento Valley and its groundwater resources. This is a serious deficiency of the BDCP EIR/EIS.***

4. The EIR/EIS fails to analyze whether Delta lands employing sub-irrigation techniques would be affected, or adversely affected, by construction and operation of the proposed Twin Tunnels Facilities of Conservation Measure 1.

As noted above, the BDCP EIR/EIS included no description of subirrigation practices by Delta farmers on Delta lands. These lands do occur in the vicinity of all types of alignments (see maps

⁴⁷³ California Department of Water Resources, *Bulletin 160-98: California Water Plan Update*, p. 6-22. "taf" refers to "thousands of acre-feet" and "maf" refers to "millions of acre-feet." Emphasis added.

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from water quality control plans, above) of BDCP alternatives. No analysis of the effects of Twin Tunnels facilities described in Conservation Measure 1 of BDCP has been performed or disclosed in the EIR/EIS.

This is a serious deficiency of the EIR/EIS. Failure to analyze and recognize this water management practice in the Delta could lead to adverse effects like locally-specific rising water tables and salinization of soil horizons that could damage crops or force premature retirement of land from agricultural production.

- 5. The EIR/EIS fails to adequately disclose and analyze the potential impacts of methylmercury disturbance, bioaccumulation, and its entry into the Delta's benthic food web and connect them to public health and environmental justice impacts.**

Please refer to our analysis of methylmercury, Section III above.

- 6. The EIR/EIS fails to adequately disclose and analyze the potential impacts of changes in Delta water quality and interior flow regime on selenium partition, sediment disturbance, bioaccumulation, and selenium's entry into the Delta's benthic food web.**

Please refer to our analysis of selenium issues concerning the mechanisms by which selenium becomes bioavailable and bioaccumulates in the benthic pathway of the Delta's aquatic food web, Section III, above.

- 7. The EIR/EIS fails to integrate for impact analysis purposes water quality impacts from habitat restoration actions and Twin Tunnels construction and operation with impacts on predators, food webs, and invasive bivalves.**

Please refer to our discussion of predators, food webs, and invasive nonnative clams in the Delta Section III, above.

- 8. The EIR/EIS fails to disclose that the BDCP will violate water quality standards established for flow, preventing necessary Clean Water Act 401 certification.**

As described above in Sections VI and VII, implementation of the BDCP will require a CWA Section 404 permit from the Army Corps of Engineers, which it cannot receive unless the state issues a CWA Section 401 certification, which in turn cannot be legally issued unless the BDCP project as a whole (i.e., rather than the individual discharge mandating the 404 permit) meets water quality standards, including by meeting beneficial uses designed to protect Delta species and ecosystems. As written, the BDCP modeling results show it will fail this test, since designated uses cannot be met under the proposed flow scenarios. ***Accordingly, to be implemented, the BDCP must include alternatives' flow regimes that will ensure that beneficial uses protecting Delta ecosystems and species are met.***

To obtain CWA Section 401 certification for the necessary Section 404 permit, implementation of the BDCP must not violate applicable water quality standards under the Clean Water Act.

The fishery agencies would abuse their discretion under Section 10 of the federal Endangered Species Act and the California Natural Communities Conservation Planning Act to issue incidental take permits for BDCP when it demonstrably fails to comply with federal water quality control law.

The EIR/EIS fails to analyze this impact of the Bay Delta Conservation Plan and is therefore inadequate under the National Environmental Policy Act and the California Environmental Quality Act.

9. The EIR/EIS fails to disclose that if BDCP is integrated into the Bay-Delta Water Quality Control Plan, the resultant flow regime modeled under the current BDCP will fail to protect the most sensitive beneficial uses, as required by the Clean Water Act.

In addition to the BDCP not meeting requirements for Section 401 certification, the EIR/EIS's Chapter 8, *Water Quality*, contains a "regulatory setting" discussion that omits description of actual water quality objectives adopted by the State Water Resources Control Board in the Bay-Delta Water Quality Control Plan. This is important because BDCP modeling criteria presume some of these water quality objectives as Twin Tunnels operational criteria, and employ other newly designed and operationalized criteria to model the performance of the North Delta intakes and related facilities. In short, ***to model the effects of BDCP, the EIR/EIS presumes—but fails to disclose the presumption—that the State Water Board will adopt and implement BDCP's modeling criteria as legal water quality objectives for the Bay-Delta Estuary, fails to describe the degree to which Delta water quality regulation would be altered by such an action, and fails to analyze whether these amendments could be legally accomplished under the federal Clean Water Act and Porter-Cologne Water Quality Control Act.***

Some of the key modeling criteria for BDCP options that fit this description are Old and Middle River/San Joaquin River inflow-export ratio; North Delta Bypass flows; Head of Old River gate operations; new spring outflow criteria for March through May; new fall outflow criteria for September through November; and a thoroughly revised calculation for determining export to inflow ratio. For the Delta facilities contained in Conservation Measure 1 of BDCP to legally operate in the Delta, the State Water Board would have to amend the Bay-Delta Plan.

The State Water Board is in the process of updating the Bay-Delta Water Quality Control Plan, last updated eight years ago. As noted above, the CWA requires the state to adopt water quality standards that "shall consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses."⁴⁷⁴ In setting criteria to protect the beneficial uses, U.S. EPA regulations require states to "protect the designated use."⁴⁷⁵ ***Actions that "reasonably protect"⁴⁷⁶ rather than "protect" the beneficial use are insufficient. If multiple beneficial uses are at stake, adopted flow criteria must protect the most sensitive beneficial***

⁴⁷⁴ 33 U.S.C. 1313(c)(2)(A); *PUD No. 1* at 704.

⁴⁷⁵ 40 CFR § 131.11 (emphasis added); *see also* 40 CFR § 131.6.

⁴⁷⁶ SWRCB, "Comments on the Second Administrative Draft Environmental Impact Report/Environmental Impact Statement for the Bay Delta Conservation Plan," p. 1 (July 05, 2013), available at: baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/State_Water_Resources_Control_Board_Comments_on_BDCP_EIR-EIS_7-5-2013.sflb.ashx Emphasis added.

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use (i.e., they cannot “balance” away uses) and must be based on science.⁴⁷⁷ As the state Supreme Court found, Porter-Cologne balancing provisions⁴⁷⁸ “cannot authorize what federal law forbids.”⁴⁷⁹ The more protective federal CWA water quality standard requirements take precedence over weaker Porter-Cologne language; ecosystem and species needs cannot be balanced away.

As described earlier, the BDCP is based on levels of instream flow that are widely considered to be inadequate for Delta fish and habitat. For example, the Department of Interior stated that it “remains concerned that the San Joaquin Basin salmonid populations continue to decline and believes that flow increases are needed to improve salmonid survival and habitat.”⁴⁸⁰ A comparison of flow regimes established under the BDCP, current flows, the State Water Board’s August 2010 flow criteria report, and other flow data demonstrates that flow regimes proposed under the BDCP are at best similar to existing, deeply inadequate flows—and often less than that, particularly in the Sacramento River below the North Delta intakes.

10. The EIR/EIS fails to comply with federal and state anti-degradation policy to protect beneficial uses in the Delta from unjustified degradation of salinity conditions, and failure to provide an anti-degradation analysis at all.

The EIR/EIS fails to provide an analysis of the Bay Delta Conservation Plan’s compliance (or likely noncompliance) with state and federal anti-degradation policies.

The BDCP and its EIR/EIS acknowledges (factoring in climate change effects) that residence time of water in the Delta will increase under Tunnels operations, Delta outflow will decrease, mercury and selenium in fish tissues will increase, raising public health concerns as a consequence of BDCP and Twin Tunnels project implementation, as we describe elsewhere in Section VII. Salinity levels will increase throughout the Delta, creating water quality problems for boaters, agricultural irrigators, sport fishing anglers, and subsistence fishers. ***In this light, under state and federal Clean Water Act anti-degradation policy the fishery agencies would abuse their discretion by signing the Implementing Agreement and issuing incidental take permits for activities that would decrease water quality throughout the Delta.***

US EPA Region 1, consistent with *PUD No. 1 of Jefferson County v. Washington Department of Ecology*, 511 U.S. 700 (1994), has found that a state’s anti-degradation program “must obviously address

⁴⁷⁷ EPA regulations state that “criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. For waters with multiple use designations, the criteria shall support the most sensitive use.” See 40 CFR § 131.11; see also 40 CFR § 131.6.

⁴⁷⁸ Calif. Water Code § 13000.

⁴⁷⁹ *City of Burbank v. State Water Resources Control Bd.*, 35 Cal.4th 613, 626, 108 P.3d 862 (2005) (citing the Supremacy Clause).

⁴⁸⁰ U.S. FWS, “Comments on the Revised Notice of Preparation and Notice of Additional Scoping Meeting for the State Water Resources Control Board Review of the Southern Delta Salinity and San Joaquin River Flow Objectives in the 2006 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary,” p. 1 (May 23, 2011). Accessible online 9 June 2014 at http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/bay_delta_plan/water_quality_control_planning/cmmnts052311/amy_aufdemberge.pdf. See above for other statements of scientists and agencies on Delta flow.

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water withdrawals” as well as discharges.⁴⁸¹ [1] California’s anti-degradation policy (Resolution 68-16, Oct. 1968) contemplates the policy’s application to water rights permits, reading in part:

WHEREAS the California Legislature has declared that it is the policy of the State that *the granting of permits and licenses for unappropriated water* and the disposal of wastes into the waters of the State *shall be so regulated as to achieve highest water quality consistent with maximum benefit to the people of the State....*⁴⁸²

Anti-Degradation analysis of water withdrawals has particular importance in California given a recent decision of the Third Appellate Court. In the *Asociacion de Gente Unida* decision, the Court found that “[t]he anti-degradation policy measures the baseline water quality as that existing in 1968 and defines high quality waters as the *best quality achieved since that date.*”⁴⁸³ It further finds that any actions to lower water quality below that level trigger the anti-degradation policy, unless those levels are consistent with state-adopted water quality objectives.⁴⁸⁴ By this definition, the proposed actions trigger preparation of an adequate anti-degradation analysis, which must include findings to support the above requirements if lowering of water quality is to be legally allowed. Water quality lowering almost invariably accompanies water diversions, in the form of changes in flow-related parameters such as dissolved oxygen, temperature, sediment, bacteria, and other pollutants.

As summarized by US EPA, all three water quality law components—designated uses, criteria to protect the designated uses, and the state’s anti-degradation requirements—are “relevant and vital tools to protect and restore healthy hydrology.”⁴⁸⁵ BDCP and the Twin Tunnels’ EIR/EIS must consider hydrology impacts in its anti-degradation analysis, and perform the assessments necessary to justify any concomitant degradation consistent with state and federal anti-degradation policies. Their absence in this EIR/EIS means this document must be revised to include anti-degradation analysis. The EIR/EIS should then be recirculated, should the project continue.

11. The EIR/EIS fails to analyze adequately impacts of the habitat conservation elements of BDCP on Delta Plan Area land use, agriculture, and the Delta economy.

In 2012, the Delta Protection Commission’s *ESP* found several economic impacts from those BDCP proposals. (): The potential impact of policy changes on Delta salinity is highly uncertain at this time. Water supply in the Delta is a direct consequence of water quality. The better the quality, the more reliable are in-Delta water supplies. Potential changes to Delta salinity depend on decisions on water quality objectives and the resulting effect of isolated conveyance from BDCP. A preliminary estimate of losses due to increased salinity of Delta waters is between \$20 million and

⁴⁸¹ Letter from John DeVillars, US EPA Region 1, to Timothy Keeney, Rhode Island Department of Environmental Management (June 25, 1996), p. 3 (available upon request).

⁴⁸² State Water Board Resolution No. 68-16, *op. cit.*, note 73 above.

⁴⁸³ *Asociacion de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Board* (Cal. App. 3d, Nov. 6, 2012), No. C066410, p. 22. Emphasis added.

⁴⁸⁴ *Ibid.*, pp. 21-22.

⁴⁸⁵ Letter from James Giattina, US EPA Region 4 to Lance LeFleur, Alabama Department of Environmental Management, “Alabama Water Agencies Working Group: EPA Region 4 Stakeholder Comments,” p. 9 (Nov. 19, 2012) (available upon request).

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\$80 million per year. The loss of farmland to construct the conveyance facility is estimated to generate an additional \$10 to \$15 million in crop losses per year.

The agricultural impacts of most of the BDCP conservation measures are difficult to quantify due to the lack of precision in site specification and other details, a direct result of the restoration conservation measures being pitched at only a “program” or conceptual level in the Bay Delta Conservation Plan. Broad ranges of still more potential annual crop losses have been estimated from the land requirements and descriptions of easement costs in the draft BDCP.

- Tidal habitat restoration losses range from \$18 to \$77 million annually with losses at the lower end of the range occurring when restoration is targeted to Suisun Marsh.
- Natural Communities Protection losses are estimated to range from \$5 to \$25 million annually.
- San Joaquin River Floodplain crop losses are estimated at \$5 to \$20 million annually and could be reduced significantly by implementing an alternative proposal to expand an exiting bypass at Paradise Cut.
- Yolo Bypass Fishery Enhancements could generate crop losses between \$7 and \$10 million annually.⁴⁸⁶

In addition to reduced opportunities for agricultural production and the potential for increased salinity due to habitat restoration, the *ESP* identified the following negative effects on land use (*ESP* page 39):

- Increased mosquito/vector problems from marsh restoration increases the risk of disease and creates a nuisance that makes the Delta less desirable for living, recreation, and tourism.
- Some marsh restoration could increase seepage and risk for levees on nearby islands.

The BDCP EIR/EIS itself identifies four Significant and Unavoidable Adverse Impacts to agriculture in the Delta as a result of constructing and operating the proposed water conveyance facility and implementing the proposed conservation measures.⁴⁸⁷ The EIR/EIS Executive Summary indicates that all or most impacts on agriculture from the BDCP alternatives are adverse. The mitigation proposed is a “stewardship program.” This appears to be wholly inadequate to the damage BDCP will cause to the Delta’s agricultural economy.

The EIR/EIS also acknowledges that salinity will increase in Delta waters, discussed above in Section VII of these comments, which is an adverse water quality impact and injury to Delta water rights which depend on adequate water quality. Along with the land conversion planned with the other 21 “conservation measures” the EWC regards BDCP as an attack on Delta agriculture. The lack of levee investments, the potential to disrupt drainage patterns of the islands by introducing a tunnel, dewatering of lands around Delta facilities—they all amount to death to Delta agriculture by a thousand cuts.

The EWC is also concerned that BDCP, through its Implementation Office, will consolidate control over various DWR and DFW and other conservation/restoration projects under its umbrella. Would DWR turn the conservation easement on Staten Island over to BDCP? Would DFW turn the Yolo Bypass Wildlife Area over to BDCP? Is it the Resource Agency’s intention that everything related to habitat will become part of BDCP?

The EIR/EIS also notes that “Implementation of CM2-CM21 would take place on land governed by policies designed to avoid or mitigate environmental effects, as identified in the Delta Protection

⁴⁸⁶ *ESP* pages 112-113.

⁴⁸⁷ BDCP EIR/EIS, Chapter 31, *Growth Inducement*, Table 31-1, page 31-10.

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Commission Land Use and Resources Management Plan and in the Delta Stewardship Council draft Delta Plan.” Among Delta Plan policies associated with land use, the EIR/EIS mentions DP P2 (Respect Local Land Use When Siting Water or Flood Facilities or Restoring Habitats). “Policy DP P2 requires that parties responsible for proposed action avoid or reduce incompatibilities with existing or planned uses **when feasible**”⁴⁸⁸ “However, avoidance of all incompatibilities is likely to be considered infeasible; thus activities associated with CM2-CM21 would be compatible with Policy DP P2.”⁴⁸⁹

We find there is poor definition of the BDCP Natural Reserve System. There already is a Delta Conservancy. There are other local conservancies in the region. We are very concerned too that having the Implementation Office run a reserve system will likely give it a low priority relative to Delta water operations, real-time fish protection operations, and the inevitable adaptive management dustbin where, we fear, challenging problems will be sent to die. We are concerned that BDCP uses bureaucratic commitment to “consensus” and other governance ploys to strangle the Delta region, and push its ecosystems and listed fish species over the edge.

We find this statement Orwellian. It claims for DWR and BDCP Applicants an implicitly authorized discretion over what is “feasible” for purposes of determining land use compatibility. BDCP arrogates to itself the power to determine under Delta Plan policy DP P2 that land uses of BDCP that may be incompatible would be conveniently found compatible. The EWC and its member groups demand that BDCP define how the Applicants define “feasible” in this land use context, and by what authority it would make such a determination.

BDCP’s habitat proposals are redundant. Compared with several types of existing habitat identified in the Delta Plan EIR’s Table 4.4, BDCP’s habitat proposals seem redundant at best and therefore difficult to justify in view of the costs to existing land uses associated with their implementation.

BDCP says that CM4 would *restore* 65,000 acres of freshwater and brackish tidal habitat.⁴⁹⁰ Table 4.4 of the Delta Plan EIR identified over **83,000 acres of existing tidal and nontidal brackish and freshwater marsh**: 8,330 acres of tidal brackish marsh; 6,980 acres of tidal freshwater marsh; 50,180 acres of managed nontidal brackish marsh; 3,260 acres of unmanaged nontidal freshwater marsh; and 14,300 acres of managed nontidal freshwater marsh.

BDCP says that CM7 would restore 5,000 acres of riparian forest and scrub. Table 4.4 identified over **16,000 acres of existing** riparian forest (8,980 acres) and riparian scrub (7,180 acres).⁴⁹¹

BDCP says that CM8 would restore 2,000 acres of grassland and protect 8,000 additional acres.⁴⁹² Table 4.4 identified **69,200 acres of existing** grassland.

BDCP says that CM9 would restore vernal pool complexes and alkali seasonal wetlands within a larger matrix of grasslands; no acreage is specified.⁴⁹³ Table 4.4 identified **15,610 acres of existing** grasslands with vernal pools (10,080 acres) and alkali seasonal wetlands (5,530 acres).

⁴⁸⁸ *Ibid.*, lines 24-26. Emphasis added.

⁴⁸⁹ *Ibid.*, Chapter 13, page 13-64, lines 10-16 and lines 30-31.

⁴⁹⁰ BDCP, Chapter 3, *Conservation Strategy*, Section 3.4.4.

⁴⁹¹ *Ibid.*, Section 3.4.7.

⁴⁹² *Ibid.*, Section 3.4.8.

⁴⁹³ *Ibid.*, Section 3.4.9.

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BDCP's CM3 proposes to acquire 69,275 acres to establish a habitat reserve system to protect existing natural communities and covered species habitat.⁴⁹⁴ Major portions of the Delta are already owned or managed by public agencies or conservancies for the benefit of natural communities. Identifying and quantifying areas set aside for these purposes is complicated by the fact that land changes hands, collaborative efforts are continually being undertaken, and projects are initiated in response to changing conditions. Following is a discussion of some of the projects currently underway and land set aside primarily for habitat purposes, along with estimates of acreage. This list is by no means comprehensive. Where a project lists ranges of acreage, the most conservative numbers are listed here.

In the area identified by BDCP as Suisun Marsh ROA, the California Department of Fish and Wildlife (CDFW) oversees a long-term joint state-federal plan to restore ecological health and improve water management on non-tidal and tidal wetlands and grassland. The primary management zone alone is 89,000 acres, and a 30-year-plan now in place covers **52,000 acres** of wetland and upland habitats.

In the area identified by BDCP as Cache Slough ROA, a Fish Restoration Program Agreement (FRPA) is already in place to satisfy requirements of the Biological Opinions for SWP and CVP operations. FRPA is a joint effort between DWR and CDFW to implement habitat restoration in partial mitigation for the State Water Project's (SWP) impacts on sensitive fish species in the Delta. FRPA is also intended to address the habitat restoration requirements of the 2009 CDFW Longfin Smelt Incidental Take Permit (ITP) for SWP Delta operations (an incidental take permit separate and distinct from those sought by BDCP Applicants).

A variety of activities are associated with FRPA, including restoration and enhancement work on over **14,000 acres** in Yolo and Solano Counties.⁴⁹⁵ It includes land formerly owned by the Trust for Public Land (Liberty Island) and The Nature Conservancy (McCormack-Williamson Tract). It incorporates several earlier efforts, including Prospect Island Tidal Habitat Restoration Project and the Cache Slough Complex project. DWR awarded a grant for the Cache Slough Complex project to support a conservation vision jointly devised by the Solano Resource Conservation District, Dixon Resource Conservation District, Reclamation District 2068, and the local landowners. The project has two main components: non-native invasive species removal and habitat enhancement and restoration.

The Department of Fish and Wildlife's Yolo Bypass Wildlife Area encompasses **17,770 acres**. BDCP CM2, Yolo Bypass Fisheries Enhancement (3.4.2), proposes to modify operations of the Yolo Bypass to benefit covered fish species. (No proposed acreage is specified.)

Already underway in the Yolo Bypass is the Knaggs Ranch Agricultural Floodplain Study, a collaborative effort of landowners, UC Davis, and CalTrout that has already shown some success providing salmon habitat on seasonally flooded agricultural land. The long-term goal is to expand the project to 2,500 acres.

Substantial amounts of agricultural acreage are managed for habitat. For example, Staten Island, over **9,100 acres**, is owned by The Nature Conservancy, which is required under a conservation easement owned by DWR to protect wildlife-friendly agriculture on the island. Staten Island is managed in particular for the protection of sandhill cranes. Additional sandhill crane

⁴⁹⁴ *Ibid.*, Section 3.4.3.

⁴⁹⁵ "FRPA and Other Habitat Restoration Projects for BiOps and ITP Compliance in the Delta and Suisun Marsh." Map edited by DWR, May 2013.

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habitat is provided by the **147-acre** Woodbridge Ecological Reserve (also known as the Isenberg Crane Reserve) in San Joaquin County. The California Department of Fish and Wildlife (CDFW) manages this reserve consisting of low freshwater marsh, grassland, and flooded pasture. BDCP says that CM10⁴⁹⁶ would restore 1,200 acres of nontidal freshwater wetlands and create 500 acres of managed wetlands for greater sandhill cranes.

The Delta Wetlands Project, a public-private partnership between Kern County's Semitropic Water Storage District and Delta Wetlands, a private landowner, owns four islands in the Central Delta that it manages for water supply and habitat restoration: Bacon Island (5,625 acres), Webb Tract (5,490 acres), Bouldin Island (6,006 acres) and Holland Tract (about 3,500 acres). Total: **20,621 acres**.

Portions of the 46,000 acre Cosumnes River Preserve (parts of which are in BDCP's Cosumnes/Mokelumne ROA) and the USFWS's Stone Lakes National Wildlife Refuge (the latter with about 11,500 acres currently owned or managed) lie within the statutory Delta.

The Dutch Slough Tidal Marsh Restoration Project in eastern Contra Costa County is a joint state-local-nonprofit project to restore **1,200 acres** of tidal marshland, riparian, and upland habitats. Sherman Island, 9,937 acres almost entirely owned by DWR, includes the **3,115 acre** Lower Sherman Island Wildlife Area in Sacramento County, managed by DFW; Decker Island Wildlife Area in Solano County, managed by DFW, is **33 acres**. Miner Slough Wildlife Area, also in Solano County and managed by DFW is **37 acres**.

All five Delta counties have their own habitat conservation plans that include Delta lands. In addition, local land conservancies have several hundred acres of land within habitat easements. And although exact information about owners and acreage is not available, the USDA's Natural Resources Conservation Service provides technical assistance on habitat projects to private landowners in the Delta.

Clearly, there is no lack of land currently owned and already managed for habitat in the Delta by a variety of project sponsors. These activities represent an evolution of land uses that is already underway in the Delta in response to concerns about the adequacy of habitat. Intensive farming of the Delta islands goes back over 100 years. Island configuration and new land converted to farms have essentially not changed since the early 1900s, while habitat acreage has increased significantly over time.

Precipitous species decline began in the 1960s, concurrently with increased project exports. If habitat were the solution to species declines, then we would not be seeing the collapse of Delta fisheries that has occurred since the state and federal export facilities began operating, reducing freshwater flows. Habitat restoration efforts have in some cases made matters worse by inadvertently creating habitat for undesirable species, predators, and noxious weeds.

Existing habitat could be managed far more efficiently as a more interconnected system to improve fishery benefits. There are amounts of land already in habitats of various types that are benefiting covered fish already. For fish species, however, whether covered by BDCP or not, Delta inflows are a crucial component of Delta habitat values. BDCP cannot meet its primary goal of export reliability without removing water that fish need. Adding more wetland and other natural community habitat by taking agricultural land out of production will not compensate for this loss of flows.

The disconnect between BDCP's advertised habitat goals, its water supply reliability purposes, and its deletion of flows to benefit fish is on full display in BDCP's designs for the South Delta ROA.

⁴⁹⁶ BDCP, Chapter 3, Conservation Strategy, Section 3.4.10.

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The Problem Statement for CM5 acknowledges that “[c]hannel straightening and levee construction have disconnected river channels from their historical floodplain over much of the Plan Area, resulting in the reduction, degradation, and fragmentation of seasonally inundated floodplain and its associated natural communities.”⁴⁹⁷ This has resulted in a decline in the abundance of species including Sacramento splittail, Chinook salmon, and slough thistle.⁴⁹⁸ A few lines later, this assertion is moderated: “This loss of foraging and rearing habitat **may** have contributed to reduction in the abundance and distribution of all anadromous salmonids in the Plan Area.”⁴⁹⁹ Nevertheless, we see here the crux of BDCP’s case for habitat restoration: Loss of habitat, rather than dramatic changes in quality and timing of flows of water due to increased water exports, is the pre-eminent cause of species declines.

Despite this Problem Statement’s focus on seasonally inundated floodplains in the north and east portions of the Plan Area, BDCP says that “the most promising opportunities for large-scale floodplain restoration are in the south Delta.”⁵⁰⁰

Selection of the south Delta for the creation of new floodplain habitat only makes sense if the Delta is viewed entirely from the perspective of topography, without respect to existing land use, which is agriculture.

The South Delta ROA is not subsided land; BDCP identifies it as “intertidal” (2 to 5.5 feet in elevation), “sea level rise accommodation” (5.5 to 8.5 feet in elevation), and two levels of “transitional habitat” (8.5 to 15 feet in elevation) (BDCP Figure EA.2.1.1: South Delta Physical Setting, page EA.2-2). Thus, built into the identification of this as a Restoration Opportunity Area is the assumption that subsided areas adjacent to it will become tidal as a consequence of sea level rise. The terminology used to describe this ROA represents an implicit policy decision NOT to commit to maintaining existing land uses in the area.

Significantly, the habitat project on four south Delta corridors that is described in Chapter 3 as “Conservation Measure 5 Seasonally Inundated Floodplain Restoration” is described in Appendix 5E Habitat Restoration (Attachment 5E.A) as “BDCP South Delta Habitat and Flood Corridor Planning.” This difference in description represents an accommodation to the South Delta Habitat Working Group, which insisted that flood management objectives be integrated into habitat objectives.⁵⁰¹

EWC does not expect that flood management will be a guiding principle in implementation of CM5. BDCP is straightforward about the primary goal of CM5: “Restored floodplains may maintain

⁴⁹⁷ Bay Delta Conservation Plan, Chapter 3, *Conservation Strategy*, Section 3.4.5.2, page 3.4-146, lines 28-30.

⁴⁹⁸ *Ibid.*, lines 32-33.

⁴⁹⁹ *Ibid.*, p. 3.4-147, lines 10-12. Emphasis added. The Problem Statement continues with discussion of changes to habitat for splittail in floodplains in the Yolo and Sutter Bypasses and along the Cosumnes River (lines 38-39), as well as loss of splittail habitat and floodplain connectivity downstream from Sacramento as a result of USACE projects to decrease flooding in the lower Sacramento River (lines 1-5). Emphasis added.

⁵⁰⁰ *Ibid.*, 3.4.5, page 3.4-145, lines 16-17. Any floodplain restoration in the Sacramento or Cosumnes-Mokelumne basins would involve channel margin enhancement (CM6) and would be **in addition to** the 10,000 acres planned for the South Delta (3.4.5, page 3.4-150, lines 12-15).

⁵⁰¹ *Ibid.*, Chapter 5, *Effects Analysis*, Attachment 5E.A, page EA.1-2, lines 13-14.

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existing agricultural uses that are compatible with the primary goal of restoring habitat for covered fish and wildlife species.”⁵⁰²

In terms of siting and design, flood conveyance and risk reduction benefits are just one of five considerations. A restoration site must have the “potential to meet or contribute to the applicable biological goals and objectives”; must be adjacent to a channel important “for use by covered species, especially by rearing/migrating juvenile salmonids”; and must have the “potential to provide ecologically relevant flood inundation [to benefit native species] given the anticipated range of flow regimes and sea level conditions influenced by climate change and potential management changes.”⁵⁰³

This last point encompasses several major uncertainties: the range of BDCP flow regimes, the effects of climate change, and management of the San Joaquin River Restoration Program. In particular, flows in the South Delta will be heavily influenced by how flows in the San Joaquin River are managed for restoration.

Despite the uncertainties, the conservation strategy for CM5 combines hypothesis with resolute optimism: “We think this will work and we’re going to try it, and if it doesn’t work, we’ll try something else.” The “something else” may also be dramatically disruptive.

Contingency measures to be implemented if floodplain restoration is unsuccessful may include, but are not limited to, removal of breached levees or recontouring floodplain topography.⁵⁰⁴

This is the essence of adaptive management. It is offensive because it seeks to justify a situation where the proposal is to disrupt existing well-functioning land uses to create new habitat. The habitat restoration conservation measures would strive to “break” the Delta (through conversion of economically and socially productive agriculture) in order to “save” it through habitat restoration that the EWC has shown elsewhere in these comments to be fraught with BDCP optimistic intentions that are not backed by credible readings of the supporting science cited. In the South Delta, the factors most damaging to both habitat and agriculture are poor water quality and inadequate flows of water as a result of the operation of the state and federal water projects, both on the San Joaquin River and in the Delta itself. Nor does CM5 propose to adaptively manage that situation.

Details about the Adaptive Management and Monitoring that is proposed (3.4.5.4) confirm what for the south Delta would be essentially an experiment on a grand scale.

“Compliance monitoring for this conservation measure will consist of documenting in a GIS database the extent of floodplain *successfully restored*. . . .”⁵⁰⁵

This assumes, rather than demonstrates, that restoration actions will be successful. If they are not, more extensive “recontouring” may be called for; rinse, repeat.

⁵⁰² *Ibid.*, page 3.4-149, lines 16-18.

⁵⁰³ *Ibid.*, Section 3.4.5.3.2, page 3.4-148, lines 20-26

⁵⁰⁴ *Ibid.*, p. 3.4-151, lines 20-22. See also 3.4.5.3.3 on the relationship of CM5 to other conservation measures, pages 3.4-149 to 3.4-150.

⁵⁰⁵ *Ibid.*, page 3.4-151, lines 5-6. Emphasis added.

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“Effectiveness monitoring will consist of *verifying* that restoration sites are performing the *expected* ecological functions as prescribed by *success* criteria in the site-specific restoration plans.”⁵⁰⁶ If they are not, “These monitoring elements may be modified, as necessary”⁵⁰⁷

If the criteria don’t provide the results desired, the criteria can be changed.

“...[O]ne key uncertainty is associated with seasonally inundated floodplain restoration: How is predation affecting covered fishes in the restored floodplain? The distribution and abundance of covered fish species and predators at restoration sites will be evaluated to resolve this uncertainty.”⁵⁰⁸

At least those doing the monitoring will not have to be uncertain about the ineffectiveness of the conservation measure.

BDCP attempts to reassure readers that we can count on “the Implementation Office [to] address scientific and management uncertainties and ensure that...biological goals and objectives are met” through “effectiveness monitoring, research and adaptive management....”⁵⁰⁹ Alas, this too is not reassuring. Description of the Implementation Office at Section 7.1.1.3 makes it clear that “the implementation Office staff will work closely with the Authorized Entity Group on a range of matters, particularly with respect to actions that affect water operations, and will be responsive to the Authorized Entity Group....”⁵¹⁰ “The Authorized Entity Group will consist of the Director of DWR, the Regional Director for Reclamation, and a representative of the participating state contractors and a representative of the participating federal contractors.”⁵¹¹ ***The long experience of people in the Delta suggests that under these circumstances, it is unlikely that implementation of any conservation measure will be allowed to take precedence over water operations.***

It is likely that under CM5, the South Delta will be reconfigured for floodplains, with attendant adverse impacts on land use, mainly through conversion of agricultural land., Then it can be operated exclusively instead for exports.

Note regarding water for wetlands: BDCP proposes 65,000 acres of Tidal Wetland Restoration.⁵¹² However, Table 5.4-3 of the Effects Analysis shows a net *reduction* in “Managed Wetland” acreage over the whole planning area. This is due to the loss of 13,278 acres of managed wetlands in Suisun Marsh, which will become “Tidal Natural Communities.” Table 5.4-3 shows a net increase in “Tidal Freshwater Emergent Wetland” of 23,991 acres (a 487% increase over the current acreage for that natural community type). The EIR/EIS is vague regarding where the water for these wetlands—6-7 acre feet for each acre—will come from.

This uncertainty about how and where habitat will be engineered or re-engineered and how much water it will need is particularly troubling given the additional uncertainty about how much water

⁵⁰⁶ *Ibid.*, lines 12-13.

⁵⁰⁷ *Ibid.*, lines 16-17. Emphasis added.

⁵⁰⁸ *Ibid.*, page 3.4-151, lines 33-35.

⁵⁰⁹ *Ibid.*, Section 3.4.5.5, page 3.4-152, lines 6-8.

⁵¹⁰ Bay Delta Conservation Plan, Chapter 7, *Implementation Structure*, page 7-7, lines 8-11.

⁵¹¹ *Ibid.*, 7.1.3, page 7-10, lines 38-40.

⁵¹² BDCP EIR/EIS, page 3-22.

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will actually be available if the system is also being managed for export reliability. BDCP will disrupt existing land uses in the Delta for habitat restoration that is in fact highly speculative.

12. The EIR/EIS fails to analyze socioeconomic impacts of BDCP adequately, especially for environmental justice communities.

Having relied on data at the level of the five-county region for its background analysis of socioeconomics, the EIR/EIS switches to a focus on the statutory Delta for its evaluation of environmental consequences, including effects on community character and cohesion, population, housing employment and income.⁵¹³ “This assessment [of environmental consequences] focused on communities in the statutory Delta, where the direct effects of the BDCP would occur and where social and community effects would be greatest. Social and community effects elsewhere in the larger five-county Delta region are anticipated to be minor because they would be spread over a large, heavily populated area and among many communities.”⁵¹⁴

In other words, the EIR/EIS uses a region-focused analysis to effectively minimize the socioeconomic role of the Delta as Place, and it uses an analysis focused on the statutory Delta to minimize environmental effects of BDCP on the wider region.

(Another example of selecting an analytical focus that favors BDCP occurs with Commercial Fishing Effects: “Commercial salmon fishing effects are not addressed for individual alternatives in this chapter because, while speculative, these effects are anticipated to be positive overall and would be spread among coastal regions where commercial lands occur.” “As discussed in the *Statewide Economic Impact Analysis*, the overall impacts of the implementation of the BDCP are expected to be positive for both the populations and commercial landings of fall-run chinook salmon.” While alluding to uncertainties, the EIR/EIS says “The overall effects, however, are anticipated to be positive.”⁵¹⁵ Not mentioned are runs of salmon other than fall-run Chinook or the effect on coastal regions if speculations about positive effects turn out to be wrong.)

The Delta as Place is threatened by the whole range of BDCP conservation measures, from CM1 through CMs associated with habitat restoration. “[Construction] activities, along with the long-term placement of the conveyance facilities, could . . . alter the character of [Delta communities] by reducing the extent of undeveloped land in proximity to communities and by changing the viability or desirability of leading economic and social pursuits, including agricultural activities and water-based recreation.” “Implementation of habitat restoration could have some similar effects during the construction period by introducing conditions that would alter and potentially detract from the rural characteristics of Delta communities.”⁵¹⁶

Of particular interest in any consideration of Delta as Place is the NEPA analysis of Changes in Community Character as a Result of Constructing the Proposed Water Conveyance Facilities (Alternative 4).

NEPA effects for Alternative 4 include expansion of population and employment throughout the five-county Delta region as a result of construction but decline of agricultural contributions to the character and culture of the Delta. Agriculture-dependent businesses or those catering to

⁵¹³ *Ibid.*, Chapter 16, page 16-38, lines 20-21.

⁵¹⁴ *Ibid.*, page 16-40, lines 9-13.

⁵¹⁵ *Ibid.*, page 16-47, lines 26-28, lines 33-35, and lines 38-39.

⁵¹⁶ *Ibid.*, page 16-41, lines 21-25 and page 16-61, lines 28-30.

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agricultural workers are expected to close. A shift from agriculture toward construction is expected to result in more men and fewer women in the labor force (98 percent men for construction versus 84 percent men for agriculture). More agricultural workers than construction workers in the five-county area report Hispanic origin, (87 percent agricultural versus 54 percent construction), so a shift toward fewer Hispanic workers in the labor force seems likely.⁵¹⁷

For legacy communities in the Delta, “particularly for those communities in proximity to water conveyance structures, including Clarksburg, Hood, and Walnut Grove”,

Effects associated with construction activities could . . . result in changes to community cohesion if they were to restrict mobility, reduce opportunities for maintaining face-to-face relationships, or disrupt the functions of community organizations or community gathering places (such as schools, libraries, places of worship, and recreational facilities).⁵¹⁸

The “total population and employment base of the study area would expand during water facility construction,” but any benefits from investment in the “study area” are speculative (and would in any case be likely to be temporary for the 8-year construction period). “[Property] values may decline in areas that become less desirable in which to live, work, shop, or participate in recreational activities.”⁵¹⁹

Underlying the discussion of Environmental Setting/Affected Environment in Chapter 15, Recreation, is the assumption that fishing is best classified as a leisure pursuit. Categorizing fishing as a recreational activity obscures its importance as a means of acquiring food for low income residents, and especially for some cultures, including Southeast Asian cultures such as Hmong and Cambodian, which are well-represented in the Delta region.

Table 15-1, “Boat Owners’ Participation in Water- and Land Based Recreation Activities in the Delta” (page 15-3) shows that 67% of small-boat owners report fishing as one of their “recreation” activities – the largest percentage for any small-boating activity. Chapter 15 notes that “Shoreline anglers may gain access to Delta waterways at numerous locations along Delta roads,” (page 15-5, lines 12-13); “Bank fishing is a year-round activity, with peak seasons varying by fish species” (page 15-5, lines 15-16). Angling (fishing with a hook and line) sounds like a leisure activity, but with the exception of fly fishers, fishermen typically eat what they catch.

Given the acknowledged importance of fishing in the Delta, it is clear that any BDCP activities that make it more difficult for people to fish interfere with their ability to feed themselves.

This will disproportionately impact low-income communities, and in the Delta itself, there is an overlap between low-income and non-White communities. According to the *Economic Sustainability Plan*,

The residents of the Legacy Communities are primarily White, although other racial groups and ethnicities are also well-represented. Eastern Walnut Grove and Locke are quite diverse, with Asians making up 38 percent of the population and Hispanics making up 40 percent of the population. Courtland also has a notable Hispanic population, with about 66 percent of the population reporting that ethnicity.

Across the Legacy Communities, the Census Bureau reports wide disparities in household income, with average household incomes ranging from less than \$30,000 to over \$90,000 per year. The highest average

⁵¹⁷ *Ibid.*, page 16-163, lines 36-40, lines 40-41, and page 16-164, lines 8-15.

⁵¹⁸ *Ibid.*, page 16-164, lines 24-29.

⁵¹⁹ *Ibid.*, page 16-164, lines 38-39 and lines 45-46.

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income is found around Ryde (including western Walnut Grove), where the Census Bureau reports an average household income of \$92,200 (well above the average of \$79,200 in the Legal Delta). However, directly across the Sacramento River in eastern Walnut Grove and Locke, the Census Bureau finds that average household income is significantly lower, at about \$28,500.⁵²⁰

To the extent that “Recreation Sites” are sites where people fish, impacts from BDCP construction or operation on Recreation must be viewed as having potential environmental justice impacts that have not been fully analyzed.

The Delta as Place is in many ways an aesthetic construct. Chapter 17, Aesthetics and Visual Resources, provides a useful indicator of the predisposition of EIR/EIS consultants to view BDCP as a solution to problems that are by no means universally acknowledged. Description of the No Action Alternative incorporates the various disaster scenarios used to justify BDCP. It illustrates the bias that is fundamental to this whole analysis.

Land subsidence, sea level rise, catastrophic levee failure, or a combination thereof should they occur, would result in flooding and inundation that could significantly damage existing facilities and infrastructure, uproot and damage vegetation to an unknown extent, permanently flood Delta islands, and drastically alter the visual landscape. Should such events occur, as anticipated, natural processes and vegetative succession would restore the visual environment to a certain degree over time. However, permanent scarring or visual remnants of damaged infrastructure could remain on the landscape.⁵²¹

“Catastrophic,” as is usual in discussions of the Delta, is undefined, and the assumption that these events are inevitable goes unexamined.

The discussion continues with descriptions of scenic views damaged by permanently flooded islands, and so on. It is significant that BDCP does not propose to correct land subsidence or reinforce levees against levee failure. Therefore, all these adverse aesthetic impacts could happen anyway.

EIR/EIS Chapter 28, Environmental Justice, provides a discussion of subsistence fishing among various cultures and low-income populations. The focus is on health risks associated with mercury contamination of fish. However, recreation impacts, including impacts on fishing, are not analyzed in Chapter 28 relative to Alternative 4. Therefore, the issue of access to fishing for environmental justice communities is not fully addressed.

13. The EIR/EIS fails to disclose potential cultural resource impacts from both BDCP alternative alignments and BDCP habitat restoration measures that would disturb ground surfaces.

We note that the recent case of *Madera Oversight Coalition* clarifies proper treatment in EIRs of archaeological and historic resources under CEQA rules.⁵²² We found no mention of it in BDCP’s EIR/EIS in Chapter 18.

In our comments on Chapter 18, *Cultural Resources*, of the BDCP EIR/EIS above, we noted that the setting should include a series of maps that show locations of cultural resources identified using the techniques described early in the chapter for the entire Plan Area.

⁵²⁰ *Draft Economic Sustainability Plan*, page 234.

⁵²¹ BDCP EIR/EIS, Chapter 17, p. 17-46, lines 9-15. Emphasis added.

⁵²² *Madera Oversight Coalition, Inc. v. County of Madera* (2011) 199 Cal.App.4th 48.

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Such a series of map then must be cross-correlated not only with BDCP alternative alignments but with potential areas where habitat restoration conservation measures will be implemented—that is, areas where construction activities related to creating habitat sites could intersect and overlap with cultural resources in the Plan Area. This needs to be conducted even at a “program level” given that the “program” for habitat restoration identifies not only conservation “zones” but also “restoration opportunity areas” throughout the Plan Area. The absence of this is critical, because it provides the basis for lay readers and decision-makers alike to see at a glance the potential for impacts to cultural resources stemming from habitat restoration actions. This is critical information

A subset of these maps must also be generated to reflect the cultural resources that may qualify under Section 106 for inclusion in the National Register of Historic Places. Currently, Chapter 18 fails to disclose even these basic types of impact analysis, making it difficult for readers to quickly understand BDCP’s cultural resource effects.

BDCP attempts to turn setting/affected environment deficiencies owing to a lack of direct on-site survey information of cultural resources into “mitigation measures,” but this reflects a conceptual confusion: mitigation measures are not allowed to be “studies” and “surveys.” They must be actions that actively reduce the effects of a proposed project or undertaking on, in this instance, cultural resources. Time and again, the EIR/EIS in Chapter 18, in Alternative 1A and Alternative 4 at least, implies in discussions of mitigation of the adverse effects of the project on cultural resources that prior to construction, the necessary surveys and studies of cultural resources will be completed.⁵²³ Given the limited seasonal construction schedule of BDCP, we fail to see how this can be accomplished without BDCP’s construction schedule slipping, especially if the studies have not been completed as part of a recirculated Draft EIR/EIS for the BDCP. By slipping these surveys and studies into “mitigations” BDCP implies that ***the public should “trust us” to conduct their historic and archaeological due diligence after the incidental take permits, 404 permits and other construction permits are issued for the project. This is illegal and unacceptable.*** Thorough study of cultural resources must be completed ***prior to authorization of the undertaking***, according to CEQA, NEPA, and the National Historic Preservation Act, Section 106. Only recovery of human remains may be allowed and conducted once the project is under construction.

It is only in Table ES-9 of the Executive Summary that one can quickly ascertain that seven of eight impacts identified for the BDCP alternatives are adverse/significant and unavoidable not just for the proposed action alternative (Alternative 4), ***but for all BDCP alternatives. These impacts cannot be reduced to less than significant levels. These effects would be irretrievable, irreversible losses of cultural resources to California’s pre-history and history of the Delta Plan Area region. Such losses would be compounded to veritable looting of the Delta’s heritage as an evolving place when we recall that DWR has been unsuccessful at obtaining access to Delta lands along the BDCP alternative alignments and that it has failed to disclose the locational proximity of known cultural resources to conservation zones and restoration opportunity areas. At a minimum, this Draft EIR/EIS must be withdrawn as inadequate, new information obtained and analyzed, and the Draft EIR/EIS recirculated for public review and comment.***

14. The EIR/EIS reports a large and unacceptable number and variety of significant unavoidable impacts and adverse effects that would result from the Bay Delta Conservation Plan, including some affecting environmental justice communities.

BDCP EIR/EIS’s Executive Summary reports in excess of 55 of adverse effects resulting from BDCP implementation. The range of adverse effects is highly varied, ranging from adverse local and

⁵²³ *Ibid.*, Chapter 18, *Cultural Resources*, p. 18-128, lines 14-41 and 1-11, and p. 18-129, lines 1-11.

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regional groundwater effects to adverse effects on water quality, public health, agriculture, land use, recreational, economic, cultural resource, air quality, fish and aquatic ecosystem.

This list does not include the adverse cumulative public health effects identified in Chapter 25 of the EIR/EIS. ***The array of adverse effects identified is a strong indicator that Bay Delta Conservation Plan remains poorly planned after eight years.*** This list includes increased adverse effects of bromide concentrations, particularly at the North Bay Aqueduct Intake, increased mercury concentrations (an adverse cumulative condition that could be disturbed by BDCP construction and operation activities, which could increase mercury bioaccumulation), and potentially increased selenium contamination from reduced Delta outflow, increased residence times of water, and changes in upstream management of selenium sources in the western San Joaquin Valley. None of these cumulative public health effects were included in the Executive Summary of the EIR/EIS, making it more difficult for even the English-speaking public and decision makers to learn of these potential impacts.

15. The EIR/EIS improperly weights seismic risks to the state water system in the setting and affected environment discussions. This bias emphasizing seismic risks in the Delta prevents lay readers and decision makers from arriving at informed judgments and decisions about such risks.

We find the BDCP to be completely inadequate when it comes to reducing risks. Because of the lack of Delta levee improvements in Alternative 4, the Proposed Project does not meet the requirements or intent of Water Code Section 85305(a) to “reduce risks to people, property and state interests in the Delta”... “by promoting”... “strategic levee investments.” Economist Rodney T. Smith, after conducting an extensive and meticulous analysis of BDCP’s economics and financing in the summer of 2013, concluded:

*As I think about California’s future, I am surprised that the risk and consequences of levee failure in the Delta hasn’t received more attention.*⁵²⁴

For example, despite a recommendation from the Delta Protection Commission and a policy from CALFED, BDCP does not include a policy, recommendation or proposal for Delta levees to meet the PL 84-99 levee standard, nor does it provide the measures to address seismic risks to levees..

The description of risks includes neither seismic and ground subsidence threats to the California Aqueduct and Delta-Mendota Canal. For instance, the January 2009 Newsletter of the International Water Resources Association⁵²⁵ stated the following regarding B.F. Sisk Dam (San Luis Dam):

“The dam and reservoir are located in an area of high potential for severe earthquake forces from identified active faults, primarily the Ortigalita Fault that crosses the reservoir. It is also near two major seismic faults: 45 kilometers (28 miles) from the San Andreas Rift Fault, and 36 kilometers (23 miles) from the Calaveras-Hayward Fault. Reclamation has identified several conditions that require action to reduce risks. Studies and deformation analysis conducted indicated that during a major earthquake, crest settlement greater than freeboard, or cracking associated with embankment deformation, could occur and lead to dam failure.

⁵²⁴ Rodney T. Smith, “Hydrowonk’s Take on the BDCP,” *Hydrowonk Blog* 9 October 2013. Emphasis in original. Accessible online 11 April 2014 at <http://hydrowonk.com/blog/2013/10/09/hydrowonks-take-on-the-bdcp/>. Emphasis added.

⁵²⁵ “IRWA Update” Newsletter of the International Water Resources Association, January 2009, Volume 22, Issue 1, page 15. <http://www.iwra.org/doc/iwraupdatejanuary2009.pdf>

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Failure of the dam could inundate hundreds of square kilometers including the town of Santa Nella and numerous farms and houses along the San Joaquin River, including some areas of Stockton.”

Geologic Fault Maps by the California Geologic Survey⁵²⁶ clearly show greater fault risks to San Luis Reservoir/Dam and the California Aqueduct than are the fault risks in the Delta.

Catastrophic failure of San Luis Dam would inundate the California Aqueduct, Clifton Court Forebay, the Delta Mendota Canal and other water conveyance facilities. The San Joaquin County Dam Emergency Plan⁵²⁷ inundation timeline for San Luis Dam failure estimates that it will reach Clifton Court Forebay in 50 hours and Brannan and Staten Islands in 100 hours. It describes the area affected as “San Joaquin River Areas, West Stockton and Delta Islands” with an estimated 165,000 people threatened.

A map of the entire San Luis Dam inundation area⁵²⁸ shows an inundation zone extending throughout most of the southern and central Delta.

The threat to reliable water supplies from earthquakes causing massive levee failure is greatly overstated and not supported by the BDCP and Draft EIS/EIR. Just as the alleged benefits of habitat restoration have been inflated in the BDCP documents, so has the risk of levee failure from seismic activity been inflated without justification. The case for seismic levee failure does not pass the red-face test and is not supported by the best available information on Delta levees.

The Draft EIS/EIR analysis relies on the discredited Delta Risk Management Study Phase 1 report and utterly fails to mention or reference the most current information on Delta levees, which is the Delta Protection Commission’s Delta Final Economic Sustainability Report⁵²⁹.

The DEIS/EIR’s faulty reliance on the DRMS Phase 1 report is further undermined by the EIS/EIR’s claim that it could take up to 3 years to flush salt out of the Delta following massive levee failure, yet failing to reference...

“DWR’s own findings regarding the time that it would take to flush out the Delta as reported by Dr John McGeorge to a meeting of the BDCP Steering Committee on July 28, 2010, and subsequent studies conducted for the DWR by Dr McGeorge and Dr Martin McCann. These studies suggest that even in a 20 flooded islands scenario, a worse than worst case scenario with an exceedingly low probability of occurrence, the Delta would likely flush out within several months, and at worst within six months. The failure of this draft EIR /EIS to reference these studies is an egregious omission which must cast doubt on” the legal adequacy of the entire document.⁵³⁰

We agree that the “Earthquake Bogey” as described by Robert Pyke in his May 26 comments on

⁵²⁶ http://www.conservation.ca.gov/cgs/cgs_history/Pages/2010_faultmap.aspx

⁵²⁷ Page 21 http://www.sigov.org/oes/getplan/Dam_Emergency_PLAN.pdf

⁵²⁸ <http://www.cityofripon.org/DisasterManagement/Figures/Ripon%20Inundation%20Fig%208A%20A%20size.pdf>

⁵²⁹ <http://www.delta.ca.gov/Economic%20Sustainability%20Plan.htm>

⁵³⁰ Comments of Dr. Robert Pyke on BDCP Draft EIS/EIR, May 26, 2014, page 39-49; accessed at <http://www.centralvalleybusinesstimes.com/links/Pyke%20on%20BDCP%20PDEIR-EIS%20-%20Final.pdf>

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BDCP's DEIS/R is not supported by fact or analysis in the Draft EIS/EIR

The CEQA purpose contains three project objectives and then five "additional project objectives" including this one:

"To make physical improvements to the conveyance system that will minimize the potential for public health and safety impacts resulting from a major earthquake that causes breaching of Delta levees and the inundation of brackish water into the areas in which the SWP and CVP pumping plants operate in the southern Delta.

However, there is a disconnect between the CEQA purpose in Section ES.2.1 and Earthquake risk listed as one of state CEQA objectives, but earthquake risk is not listed as part of the NEPA Purpose and Need in Section ES.2.2.

Section ES-9.2 Land-based Resources and Impact Mechanisms

Table ES-9 on page 61 et seq. does not identify earthquake impacts of any alternatives on water supply, water quality. Are earthquakes then not a problem? If earthquake risk to levees is a key CEQA project objective, then why is it not listed in the summary of impacts table?

References in ES.10 do not include Delta Protection Commission's Delta Sustainability Plan that is necessary for analysis of Delta levee vulnerability to earthquake failure. The DEIS/R does not include the best available information and in this case, it appears that information contradicting the need for new conveyance is not included so as to unfairly exaggerate the "Earthquake Bogey".

The Executive Summary relies improperly on Delta Risk Management Study Phase 1 as stated above.

Chapter 2- While seismic risk and catastrophic levee failure are listed as conflicts between species protection and a reliable water supply, earthquakes are not mentioned in Section 2.5.2 (water supply reliability) and 2.5.3 (Delta Hydrology and Water Quality). There is inadequate justification to support the Earthquake Bogey.

The Delta Independent Science Board also pointed out the lack of adequate justification for the Earthquake Bogey in its May 15, 2014 comments (page 9).⁵³¹

"Second, although levees receive considerable attention in both documents (as befits their importance to what goes on in the Delta), the coverage is disconnected and incomplete. In particular, neither the consequences of levee failures on the effectiveness of BDCP actions nor the financial implications of demands for levee maintenance receives adequate attention. The assumption that most levee breaches will be repaired seems unrealistic."

Page A-6 from DISB review:

"Effects of and on levees. Although the DEIR/DEIS cites the threat of levee failures as a justification for new pipelines or canals, the reviewed documents offer no detailed analysis of how levee failures could affect the various alternatives, or of how the alternatives may affect the economics of levee maintenance. We found no part of the DEIR/DEIS, or of the Draft BDCP, that relates Delta levees to the BDCP in more than a piecemeal fashion. We discuss these concerns in our review of Chapter 9 (Appendix B).

⁵³¹ http://deltacouncil.ca.gov/sites/default/files/documents/files/Item_9_Attachment_3.pdf

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It can be argued that CEQA guidelines do not identify levees as resources; that BDCP is not a flood-control project; and that levee failure is too speculative for analysis. However, few Delta facilities are more important to its current functions than are its levees, and levee failure has happened too often (and the threat of future failures is invoked too much) to be excluded from thorough analysis in the DEIR/DEIS.”

On page B-18, the DISB further recommends a “comprehensive levee chapter” because the Draft EIS/EIR as it currently stands inadequately portrays the levee hazards and the existing information is scattered throughout the document.⁵³²

The DISB points out on page B-27:

“The depiction of hazard in Figure 9-6 contrasts with that by the DRMS study. For instance, Figure 9-6 of Chapter 9 shows all Sherman Island levees as having high potential for damage from liquefaction, while DRMS Figure 6-37c assigns a majority of Sherman Island's levees to the lowest of three categories of vulnerability to earthquakes (URS Corporation and Jack R. Benjamin & Associates Inc., 2008).”

The EWC agrees with Pyke where he points out that the description of Delta levees in Section 3.5.1 is grossly inaccurate in portraying Delta levees as fragile. He points out that the EIS/EIR should have used Chapter 5 and Appendices C, D and E of the Economic Sustainability Plan for a more correct description of the Delta levee system, but did not.

The BDCP EIS/EIR did not analyze an alternative to bring all Delta levees to the PL 84-99 standard as stated in the Economic Sustainability Plan and the EWC’s Responsible Exports Plan, yet Pyke states:

“In fact, improvement of the entire Delta levee system to meet the Delta-specific PL 84-99 standard is now within reach.”

Furthermore, we agree with Pyke where he points out that the DPC’s Delta Economic Sustainability Plan is the most authoritative accurate and peer-reviewed work to date on the status of Delta levees and what it would take to improve them to the PL 84-99 level, yet the BDCP and its Draft EIS/EIR do not even mention it!

EWC agrees with Pyke (page 39) where he points out the inadequacies of the DRMS Phase 1 assessment and the poor peer reviews.

The EWC agrees with Pyke (page 40) where he states: “The failure of this draft EIR /EIS to reference these studies is an egregious omission which must cast doubt on the validity of the entire document.”

The EWC incorporates by reference Appendix B of the May 26 comments on the BDCP Draft EIS/EIR, including, but not limited to Mr. Pyke’s analysis of the following:

- Erroneous information in EIS/EIR about the status of existing Delta levees
- Inadequate emphasis on emergency preparedness to limit interruption of Delta exports due to seismic and flooding events
- Inadequate description of levees in No Action Alternative, including an inflated levee failure

⁵³² The DISB review comments on B-25/26 are critical of the EIS/EIR not having a “comprehensive assessment of levee-related impacts” and states that “ Chapter 9 provides little information, however, about the basis for its liquefaction analysis.”

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rate

- Lack of seismic risk benefit analysis for the alternatives
- Overstatement of liquefaction risks in Chapter 9 and elsewhere
- Complete failure to mention seismic risks in Chapter 8, Water Quality
- Failure to address risk of levee failure from ground settlement due to tunneling activities
- Unsupported conclusions that levees cannot be protected from sea level rise

H. The EIR/EIS improperly excludes many programs and well-known storage projects from its list of projects considered for cumulative impact analysis of the Bay Delta Conservation Plan.

BDCP wishes to consider the North Delta Intakes and Twin Tunnels facilities as a “stand-alone project” for purposes of CEQA and NEPA “just as future storage projects would be.”⁵³³ ***The trouble is, neither type are stand-alone projects.*** Legally, the Twin Tunnels would be owned by the California Department of Water Resources.⁵³⁴ The facilities in Conservation Measure 1 would become part of the State Water Project, which is itself legally titled the State Water Resources Development System⁵³⁵, a water storage and conveyance system designed to integrate water supplies from northern California with “supplemental demand” (to which we alluded earlier in our discussion of water transfers above) south of the Delta through use of Delta export pumps at Banks pumping plant and the California Aqueduct system (which includes the State-owned storage space at San Luis Reservoir near Los Banos).

While the State Water Project could theoretically operate by itself, the State of California and the US Bureau of Reclamation (via the US Department of the Interior) have agreed that the SWP and the Central Valley Project, with its own numerous reservoirs, canals and Delta export pumping capacity, shall and do engage in coordinated operations of the two projects together. Both Congress and the California Legislature authorized the projects to coordinate their operations.⁵³⁶

Functionally, reservoir storage and water conveyance facilities need each other. Without conveyance facilities, water stored in reservoirs, once released, may not be delivered efficiently or directly to its intended customers. Without storage reservoirs, conveyance facilities may not have enough water to transport to make the investment in conveyance pay off if there are no, or insufficient storage facilities to control surplus flows for diversion, storage, and delivery. Scheduling of deliveries can only be efficiently conducted when both storage and conveyance are directly and efficiently managed. Storage and conveyance are the yin and yang of coordinated water resource development systems.

⁵³³ BDCP EIR/EIS, Chapter 1, Appendix 1B, *Water Storage*, p. 1B-1, lines 16-18.

⁵³⁴ BDCP, Chapter 7, *Implementation Structure*, p. 7-10, lines 3-6. “The State of California owns, and DWR manages and operates, the existing SWP Delta facilities, including the Clifton Court Forebay and the Banks Pumping Plant. Pursuant to the BDCP, DWR seeks state and federal regulatory authorizations to continue to operate such facilities. The State of California, through DWR, will construct, own, and operate any new diversion and conveyance facilities described in this plan.”

⁵³⁵ California Water Code Sections 12930 through 12944, enacted 1959.

⁵³⁶ *Agreement Between the United States of America and the State of California for Coordinated Operations of the Central Valley Project and the State Water Project*, executed November 24, 1986. Accessible online 12 May 2014 at <https://archive.org/details/agreementbetween00wash>. Coordinated operations were legislated by Congress in PL 99-546, accessible online 12 May 2014 at http://www.usbr.gov/mp/cvp/docs/pl_99-546.pdf. Coordinated operations may be viewed online <http://www.usbr.gov/mp/cvo/vungvari/coanew.pdf>.

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Despite this reality, BDCP's EIR/EIS argues in Appendix 1B that "while storage is a critically important tool for managing California's water resources, it is not a topic that must be addressed in the EIR/EIS for the BDCP."⁵³⁷

This is because the BDCP, as a proposed habitat conservation plan and natural community conservation plan, does not, and need not, propose storage as a project component. Although the physical facilities contemplated by the BDCP, once up and running, would be part of an overall statewide water system of which new storage could someday be a part, the BDCP is a stand-alone project for purposes of CEQA and NEPA, just as future storage projects would be. *Similarly, although new storage projects are the subject of ongoing discussions, and may well someday be formally proposed and subjected to environmental review, such projects have not reached the stage of planning that would make the "probable future projects for purposes of CEQA or "reasonably foreseeable future actions" for purposes of NEPA.* Any such potential future projects therefore need not be addressed as part of the cumulative impacts analyses in the BDCP EIR/EIS. Nor would additional storage qualify as a viable stand-alone alternative for implementation of the BDCP because it is not capable of meeting the established purpose and need for the BDCP []. In short, this appendix is not required by either CEQA or NEPA, but was prepared for informational purposes.⁵³⁸

We certainly appreciate that BDCP prepared Appendix 1B. Essentially this statement argues that BDCP is a "stand-alone project" because it is a habitat conservation plan, not simply a conveyance project. It also argues that storage need not be considered in this EIR/EIS because of this stand-alone character of BDCP and because other storage projects, even if they might someday interact in a cumulative fashion with the Delta facilities described in BDCP's Conservation Measure 1 (what we have called here the North Delta Intakes and Twin Tunnels project), they too should be treated as "stand-alone projects." Storage projects would be inappropriate, the argument goes, for consideration as a BDCP alternative because it fails to meet the purpose and need in the Delta, and they should be excluded from cumulative impact analysis for BDCP as "stand-alone projects."

BDCP offers extraordinarily weak justification for excluding planned or conceptual storage projects from consideration in BDCP's EIR/EIS, particularly from cumulative impacts analysis. Two founders of Jones and Stokes Associates (the company long since absorbed into the major BDCP consultant/contractor ICF International) Albert Herson and Ronald Bass have written about NEPA compliance that:

According to EPA, considering past, present, and reasonably foreseeable future actions provides a needed context for assessing cumulative impacts. The cumulative analysis should adequately consider whether the environment has been degraded and to what extent ongoing activities in the area are causing impacts. It should also consider trends for activities and impacts in the area. Federal agencies should identify activities occurring outside of their jurisdiction that are affecting the same resources as their own actions are affecting and should consult with other agencies potentially affecting the resources in question. In addition, the federal agency should consider private activities.

The analysis should include the use of trends information and interagency analyses on a regional basis to determine the combined effects of past-present, and future actions. NEPA documents should only consider those past, present, and future actions that incrementally contribute to the cumulative effects on resources affected by the proposed action....

To successfully assess cumulative impacts, NEPA documents should consider:

- The proximity of the projects to each other either geographically or temporally.

⁵³⁷ BDCP EIR/EIS, Chapter 1, Appendix 1B, *Water Storage*, p. 1B-1, lines 7-9.

⁵³⁸ *Ibid.*, lines 10-32. Emphasis added.

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- The probability of actions affecting the same environmental system, especially systems that are susceptible to development pressures.
- The likelihood that the project will lead to a wide range of effects or to a number of associated projects.
- Whether the effects of other projects are similar to those of the project under review
- The likelihood that the project will occur.⁵³⁹

Planned reservoir projects like Sites, Shasta’s expansion, and Temperance Flat meet at least four of these five criteria on their faces. The problem with cumulative projects’ impacts is that while their individual impacts may be less significant if conceived as a “stand-alone project,” their significance may lie in their incremental contribution to impacts from other related, coordinated, and/or similar projects.⁵⁴⁰ Similar reasoning applies under the California Environmental Quality Act.⁵⁴¹

Below we list projects, programs, and other actions that have been omitted from cumulative impact consideration in the BDCP EIR/EIS. No explanations specific to each individual project, program or other action was offered in the Appendix in which the list appears.

Projects, Programs and Other Actions Omitted from Bay Delta Conservation Plan Draft EIR/EIS Cumulative Impact Analysis Consideration		
Project, Program, or Other Action	Page Number	Type of Action
Delta Risk Management Strategy	3D-41	Levee Plan
Cache Slough Area Restoration	3D-49	Restoration Plan
Delta Islands and Levees Feasibility Study	3D-88	Levee Plan
Shasta Lake Water Resources Investigation	3D-90	USBR Storage Project - expansion
Sacramento Valley Water Management Plan (Phase 8)	3D-91	Water supply allocation agreement subsequent to D-1641 in 2000
Upper San Joaquin River Basin Storage	3D-92	USBR Storage Project - Temperance Flat Reservoir

⁵³⁹ Ronald E. Bass, Albert I. Herson, and Kenneth M. Bogdan, *The NEPA Book: A Step-by-Step Guide on How to Comply with the National Environmental Policy Act*, 2nd edition, Point Arena, CA: Solano Avenue Press, 2001, pp. 108-109.

⁵⁴⁰ “According to EPA guidance, the combined, incremental effects of human activities, referred to as “cumulative impacts” under NEPA, pose a serious threat to the environment. While they may be insignificant by themselves, cumulative impacts accumulate over time, from one or more sources, and can result in the degradation of important resources.” *Ibid.*, p. 105.

⁵⁴¹ “Cumulative impact analysis assesses cumulative damage as a whole greater than the sum of its parts.” Michael H. Remy, Tina A. Thomas, James G. Moose, and Whitman F. Manley, *Guide to CEQA: California Environmental Quality Act*, 11th edition, Point Arena, CA: Solano Avenue Press, 2007, p. 466.

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Projects, Programs and Other Actions Omitted from Bay Delta Conservation Plan Draft EIR/EIS Cumulative Impact Analysis Consideration		
Project, Program, or Other Action	Page Number	Type of Action
San Luis Low Point Improvement	3D-98	USBR Storage Project - to address water quality and dead pool issues for San Felipe Unit contractors of CVP, including Santa Clara Valley Water District
California Water Plan - 2013 update	3D-39	state water plan
DWR's FloodSAFE California Program	3D-42	Flood control plan
South Delta Temporary Barriers Project	3D-47	Recurrent installation of temporary channel barriers to improve flow for fish and water levels for agricultural irrigators
CalFED Levee System Integrity Program	3D-56	Levee Plan
Upper Yuba River Studies Program	3D-56	Storage plan
Element2: Release Site Predation Study	3D-57	Predator study
EBMUD Camanche Permit Extension	3D-69	Storage project water rights
Bay Area Regional Desalination Project	3D-70	Desalination supply project in which many Bay Area water agencies participate, including CVP/SWP contractors like Santa Clara Valley Water District
El Dorado Water and Power Agency Supplemental Water Rights project	3D-71	storage and power generation project
Folsom Lake Temperature Control Device	3D-71	Storage project for cold water pool management on American River
South Sacramento Habitat Conservation Plan	3D-77	Restoration Plan
Alameda Watershed Habitat Conservation Plan	3D-80	Restoration Plan
San Joaquin County General Plan Update	3D-82	County General Plan
Delta Wetlands Project	3D-83	Storage project in Plan Area
Lower San Joaquin Feasibility Study	3D-87	Flood Control Study
Delta Mendota Canal Recirculation Study	3D-90	Water operations and water quality study
Water Year 2010 San Joaquin River Restoration Interim flows	3D-93	Restoration Plan and San Joaquin River water rights adjustments by SWRCB
Two-Gates Project	3D-95	In-Delta water flow management project

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Projects, Programs and Other Actions Omitted from Bay Delta Conservation Plan Draft EIR/EIS Cumulative Impact Analysis Consideration		
Project, Program, or Other Action	Page Number	Type of Action
Lower American River Temperature Reduction	3D-105	Storage study for cold water pool management on American River
Delta Smelt Permanent Refuge	3D-106	Restoration Plan for Delta Smelt refugia
Yolo County Habitat Conservation Plan/Natural Communities Conservation Plan	3D-109	Restoration Plan

Source: BDCP EIR/EIS, Chapter 3, *Description of Alternatives*, Appendix 3D, Attachment 3D-A, pages 3D-27 to 3D-110.

We find it implausibly remarkable that BDCP’s justification of itself as a “stand-alone project” extends not only to storage projects but also to other restoration plans and recent levee studies. In concept, without the storage plans and projects that are foreseeable (having been studied at least since the days of the CalFED Record of Decision⁵⁴²) **numerous habitat conservation plans are omitted from cumulative impact consideration, including plans that extend into county-jurisdiction portions of the Delta’s BDCP Plan Area. From this list of omissions it is natural for a reader to wonder whether many of BDCP’s proposed restoration sites in various Restoration Opportunity Areas are redundant or conflictual with existing habitat conservation plans in the region. We have indicated elsewhere that they are.**

Levee studies and plans are omitted from cumulative impact analysis despite BDCP’s professed concerns for seismic risks to levees and water quality resulting from allegedly feared levee breaks. **It is both unexplained by BDCP and inexplicable to the reader why omission from the EIR/EIS cumulative impacts analysis of levee studies, including the 2008 Delta Risk Management Strategy, occurred. This makes it difficult for readers of BDCP to take the Plan’s (and its EIR/EIS’s) expressed fears of levee failures seriously since BDCP Applicants propose no relevant mitigating remedies.**

The issue of omitting storage projects like Shasta Dam’s raising, Temperance Flat, and Sites Reservoirs are important because their omission flies in the face of BDCP’s underlying purpose and need for the Twin Tunnels project to increase not only Table A and CVP contract amounts of water supply deliveries, but also to increase supplies potentially available via water transfers in dry and drought years (i.e., years of low SWP and CVP contract allocations). BDCP makes clear that the “Delta facilities” will increase the state and federal projects capacity to arrange and implement cross-Delta water transfers. Yet, inexplicably, the increased storage that has been planned for at least 14 years is omitted from both the Water Supply analysis of Chapter 5 and here the cumulative impacts analysis.

BDCP’s cumulative impact analysis is deficient because it omits many storage, restoration, and levee remediation and improvement studies and plans, and because it fails to explain why so

⁵⁴² CalFED Record of Decision, 2000, pp. 42-46. Shasta and upper San Joaquin River storage projects are included at this time as well as Sites Reservoir. Accessible online 12 May 2014 at <http://calwater.ca.gov/content/Documents/ROD.pdf>. These projects are also spotlighted in recent DWR editions of the California Water Plan.

many key individual projects are omitted from the cumulative impacts analysis, despite being reasonably foreseeable. They are present in already-existing plans developed, approved and implemented in many instances. The BDCP Draft EIR/EIS is therefore deficient in fully disclosing reasonably expected cumulative projects and their cumulative impacts in relation to BDCP. The Draft EIR/EIS should be revised to correct this fatal flaw and then, as a Draft EIR/EIS, recirculated for public comment.

I. The EIR/EIS fails to properly consider the effects of climate change.

The EIR/EIS modeling results suffer the same limitations as those we identified for the Bay Delta Conservation Plan itself, Section III above.

J. The EIR/EIS fails to properly mitigate impacts of the BDCP and its Twin Tunnels project.

Ecological “assurances” are mitigation measures that are ironclad. Our comments here have identified many reasons why the Bay Delta Conservation Plan and its EIR/EIS fail to provide sufficient mitigations to make the Plan and its Twin Tunnels project worthy of statutory findings justifying issuance of incidental take permits.

- 1. The EIR/EIS fails to mitigate significant adverse effects resulting from methylmercury disturbance, bioavailability, and bioaccumulation in Delta foodwebs resulting from construction and operational activities of BDCP.**

Please refer to our discussion of methylmercury management, Section III.

- 2. The EIR/EIS fails to mitigate and manage nonnative invasive clams who are likely to capitalize on habitat restoration activities, increasing salinity conditions, and low Delta outflows resulting from BDCP implementation.**

Please refer to our discussions of these issues, Section III.

- 3. The EIR/EIS fails to mitigate potential selenium contamination resulting from BDCP construction and operational activities, as well as continued delivery of Delta exports to western San Joaquin Valley irrigated lands containing high levels of selenium.**

Please refer to our discussions of these issues, Section III.

- 4. The EIR/EIS fails to mitigate seismic and sea level rise risks to the facilities of Conservation Measure 1, particularly the Twin Tunnels project by adding Delta levee investments to the BDCP conservation strategy investments.**

Please refer to our discussions of these issues, Section VII.

- 5. The EIR/EIS fails to mitigate the Bay Delta Conservation Plan's clear objective of increasing reliance on the Delta, contrary to the Delta Reform Act.**

Please refer to our discussions of these issues, Section VI.

K. The EIR/EIS fails to employ and consider the best available science.

- 1. The EIR/EIS fails to employ the best available science in its use of CalSIM II operations modeling.**

Please refer to our discussions of these issues, Section III

- 2. The EIR/EIS fails to include among the best available science sources the 2010 Delta Flow Criteria report by the State Water Resources Control Board for what fish need, and ignores State Water Board determinations on the significance of flow versus habitat in listed species recovery.**

Please refer to our discussions of these issues, Sections III and VI.

- 3. The EIR/EIS fails to employ best available science when evaluating the effects of North Delta Intake fish screens on Delta smelt and salmonid smolts.**

Please refer to our discussions of these issues, Section III.

Attachment 1 - Social Vulnerability and Environmental Inequality in the California Delta-Suisun Region

by the Environmental Justice Coalition for Water

A recent national level reassessment of the relationship between race, hazardous waste, and a number of economic, political, and land use factors have only reaffirmed what environmentally overburdened communities and environmental justice advocates have been claiming for years. That is, when controlling for other factors, those factors “uniquely associated with race, such as racial targeting, housing discrimination, or other race-related factors are associated with the location of the nation’s hazardous waste facilities” (Mohai and Saha 2007). This “continuing significance of race” in the distribution of environmental benefits and burdens has been argued by communities throughout California (<http://www.invisible5.org/>) and documented in academic literature on “environmental inequality” in the San Francisco Bay Area, Silicon Valley, San Joaquin Valley, and Southern California (Cole and Foster 2001; Morello-Frosch et al. 2002; Pastor et al. 2005; Pellow and Park 2002; Pulido 1996, 2000; Harrison 2008, 2006; and London et al. 2008).

The California data are particularly alarming since California is arguably ahead of many states in the U.S. in developing environmental justice-related legislation, policy and programs. The legislative component of California’s approach to environmental justice consists of over 20 laws that have been passed since 1999 that direct state agency practice (London et al. 2008). The first of these measures came in 1999, defining environmental justice in the state as:

[T]he fair treatment of people of all races, cultures and income with respect to development, adoption and implementation of environmental laws, regulations and policies. Fair treatment means that no population, due to policy or economic disempowerment, is forced to bear a disproportionate share of the negative human health or environmental impacts of pollution or environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal program and policies (CLCD 1999).

While this definition has been incorporated into the workings of numerous state agencies addressing pesticides, air quality, and environmental and public health, it is unclear the extent to which agencies charged with protecting water quality *and* public health have developed environmental justice-related policies, programs, and research agendas. This has been particularly so in the case of the Sacramento-San Joaquin Delta and Suisun area of the state (the “Delta-Suisun” region). This area of California is argued to be the “hub” of the state’s water supply, while facing considerable threats to its economic, cultural, and environmental qualities in the face of global warming-induced impacts to its water supply and quality (Lund et al. 2007).

Scientific studies, law suits and court decisions, and restrictive legislative mandates have sought to change the way water is managed in California, particularly the manner in which water is pumped in and

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through the Delta-Suisun region south to San Joaquin Valley and to Southern California due to its associated impact on the region's ecosystem.

The current status of environmental justice in the Delta is reminiscent of its treatment in CALFED about which a Little Hoover Report on CALFED concluded that the process was an utter failure when it came to Environmental Justice (Little Hoover Commission, 2006). Perhaps this can be expected, as water policy in California has been controlled by what some claim to be the "Water Industry"—private and public water supply agencies and corporations, who have historically made their decisions about water distribution at the cost of environmental quality and the concerns for equity in decision making and the distribution of benefits and burdens (Gottlieb 1988; EJCW 2005).

We take a different approach in these comments. While informative and important, the traditional approach to Delta policy and research tends to focus on water supply and export policy in relationship to global warming, fish declines, levee failures, flood risk, and economic cost and benefits to businesses from such policy decisions (DWR & DFG 2008; Lund et al. 2007; Lund et al. 2008). These studies, in general, do not attend to how low income communities and communities of color, and other socially vulnerable groups, are experiencing environmental inequality in the region. To contribute a first look at how environmental justice communities are faring in Delta water politics we begin by introducing the concepts of social vulnerability and environmental inequality which help to explicate the specific elements of environmental justice on which we focus this analysis. Once clarified, they will allow the reader to better understand how we constructed our research and why. We turn to these two concepts now.

KEY CONCEPTS: SOCIAL VULNERABILITY AND ENVIRONMENTAL INEQUALITY

In disaster and environmental health research, "vulnerability" is often used to describe places and social groups that are more susceptible to experience some type of loss or adverse impact from some environmental threat because of their social location (Cutter 2003). Some have commented that there are three main premises to vulnerability research (Cutter et al. 2003; Houston et al. 2007):

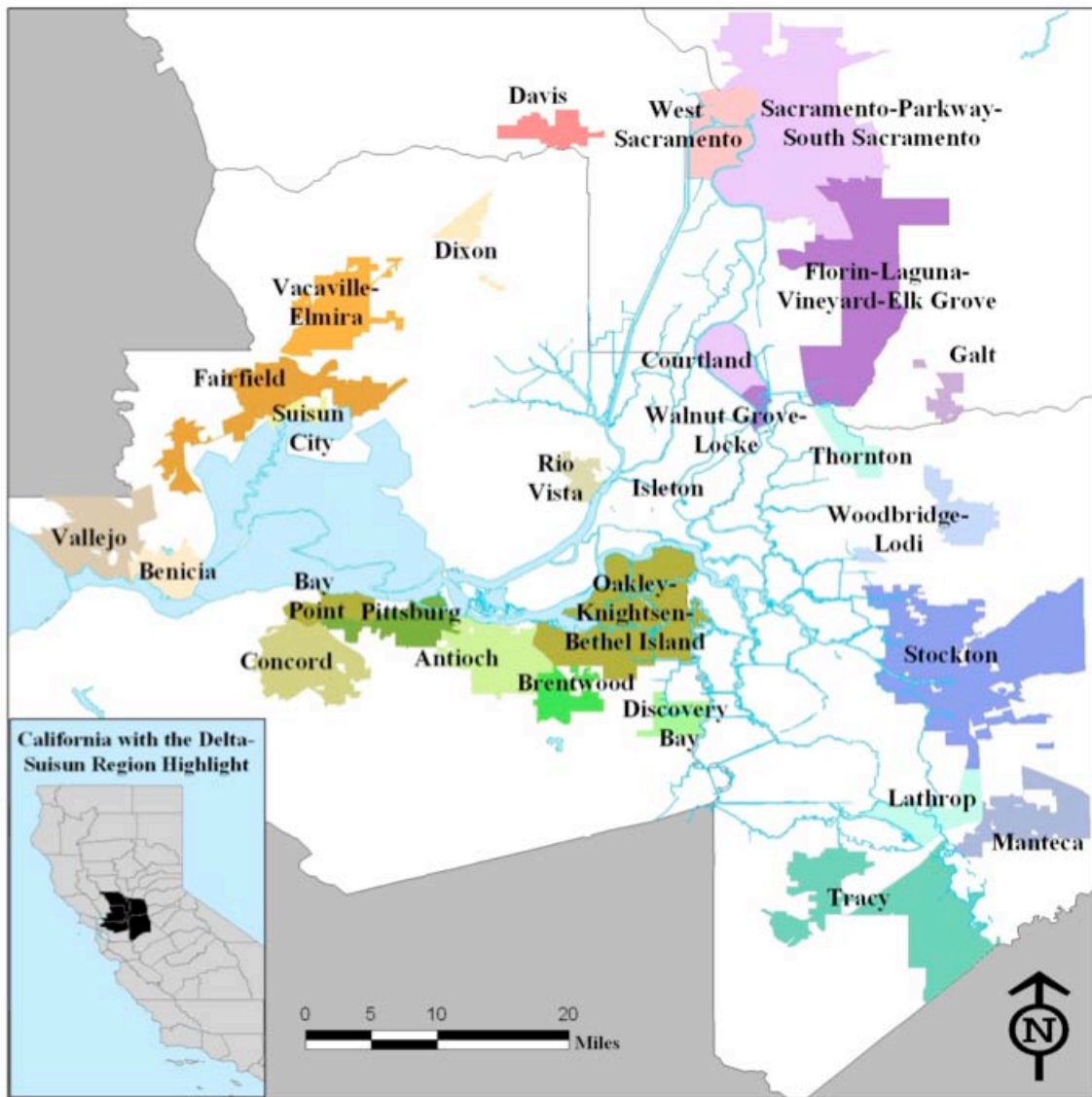
1. An *exposure* model that seeks to identify conditions that make certain social groups or places vulnerable to environmental threats. An example of this angle of research would be to ask, "Of the people who live near a facility that releases toxic air emissions or near a freeway, what social groups are more at risk to develop asthma or some form of cancer?" (Pastor et al. 2005).
2. A *resistance* model that assesses how potentially impact people and places can withstand an environmental threat. For example, this focus asks, "What characteristics of a community, such as the socioeconomic status and/or the age of their buildings and their standard of upkeep, will allow them to be resistant to a flood?" (Fielding and Burningham 2005)
3. A *resilience* model, which attempts to show how likely people are to recover from some environmental threat. For instance, what type of financial reserves and emergency response measures are in place for an impacted community to recover from a hurricane?" (Houston et al. 2007).

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As documented in the introduction, environmental justice advocacy and research have shown that low income communities, people of color, and immigrants are often the disproportionate recipients of environmental burdens and those same communities fail to benefit equitably from environmental policies and programs. Some have called this, “environmental inequality,” which seeks to not only show which people and places are vulnerable to an environmental threat, but to identify those communities that already bear a heavier burden. It also “addresses more structural questions that focus on social inequality (the unequal distribution of power and resources in society) *and* environmental burdens...[E]nvironmental inequalities include any form of environmental hazard that burdens a particular social group” (Pellow 2000:582).

In these comments, we are concerned with identifying the socially vulnerable groups (low income, people of color, and immigrants) more likely to be exposed to poor water quality in the Delta-Suisun region. We focus on socially vulnerable groups with high concentrations of contaminants in the fish they eat, the water and land they live near, and in the water they drink, as well as how they cope with these relatively high concentrations of contaminants. While this study establishes social vulnerability without resolving the question of environmental inequality, glimpses of environmental conditions are evident in the words of study participants.

Figure 1
Reference Map of 28 Water Service Areas in the Delta and Suisun Marsh



Reference Map of Water Service Areas in the Delta and Suisun Marsh. Source: Environmental Coalition for Water.

SOCIAL VULNERABILITY AND ENVIRONMENTAL INEQUALITY

IN THE DELTA-SUISUN REGION

There are four broad themes that emerge from research on social vulnerability and environmental inequality in the Delta-Suisun region. The first subsection below describes the toxins that have been accumulating in the region, their impact on fish, and how people who fish for subsistence in the region

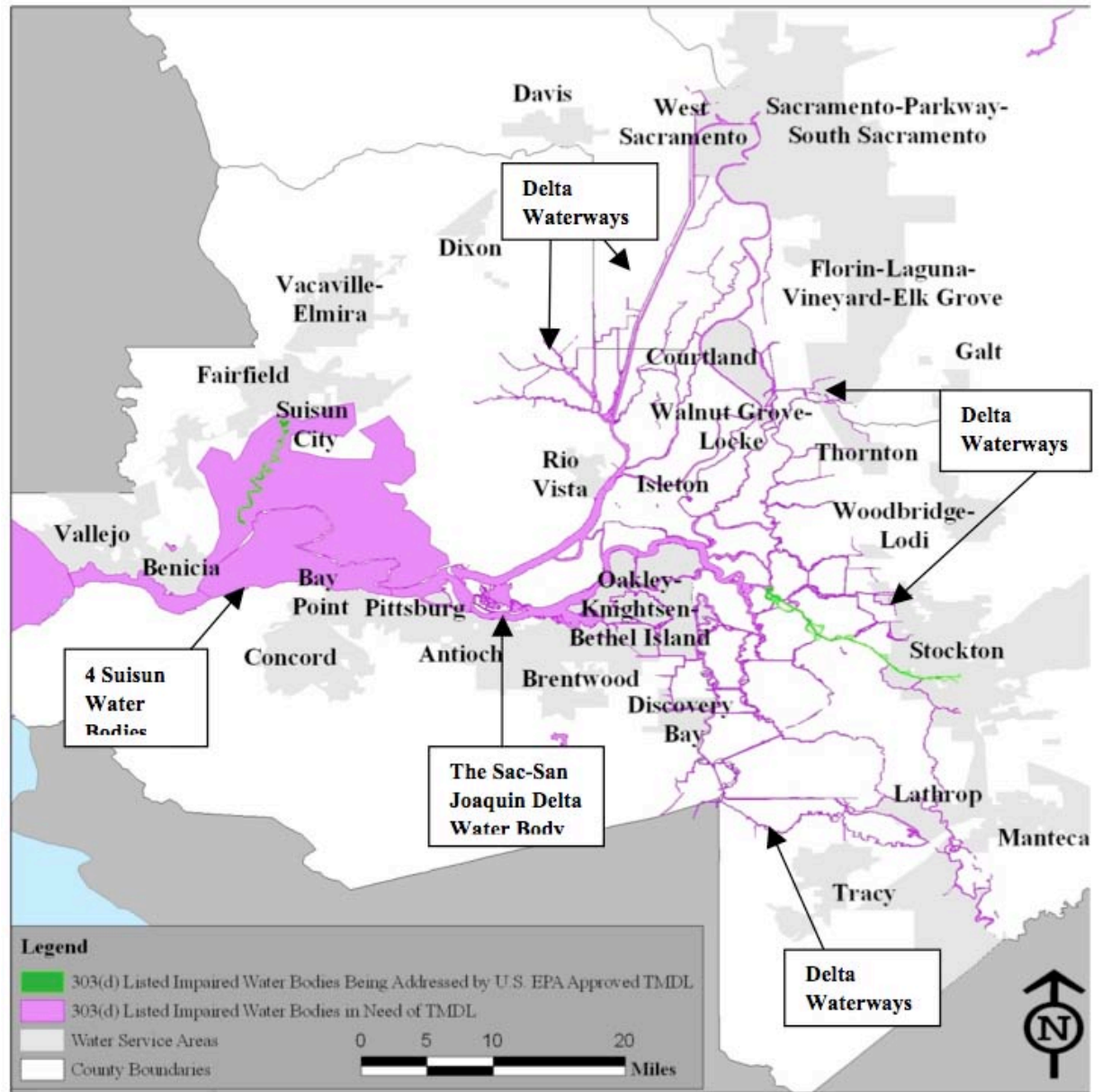
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are forced to negotiate these legacies of toxins. The following two sections look at the relationship between social vulnerability and environmental inequality in the local environment and public drinking water systems of water service areas in the Delta-Suisun region. Both sections document the continuing significance of race as a predictor of poor water quality among socially vulnerable groups, as expressed by water contaminant concentration measures we use in our analyses. We then close with an overview of our findings and a discussion of the potential policy implications from our research. First, however, we turn to how socially vulnerable groups are negotiating a legacy of toxins in the Delta-Suisun region.

Negotiating a Legacy of Toxins: Living and Fishing in Impaired Water Bodies

There is an extensive body of literature on the problem of legacy toxins in the Delta-Suisun region. It documents how this decades of gold and mercury mining, agricultural production and the use of harmful pesticides, global trade and shipping patterns, and industrial and urban wastewater is impacting the region's ecosystem (Davis et al. 2003; Davis et al. 2008; Lydy and Austin 2004; O'Neill 2006; Silver et al. 2007; Shilling 2003). Further research suggests there is a potential compounding effect that water diversions from the region have had on the estuary's ability to counteract these legacy toxins, as well as the increasingly high levels of salinity found in the area's surface water (Lund et al. 2007). Few studies have sought to understand what this legacy of toxins means for socially vulnerable communities in the region (Shilling 2003; Silver et al. 2007). We seek to shed some light on the impacts accruing in socially vulnerable delta communities. In this section, we describe the known contaminants that have been accumulating in the region, their potential impact on fish and human health, regulatory responses to this contamination, and how socially vulnerable groups we met in our sample are forced to negotiate these legacies of toxins while they fish for pleasure and subsistence.

Figure 2
Impaired Water Bodies and Water Service Areas in the Delta and Suisun Marsh



Sources: Maps created by lead author with data from the U.S. Census (2000), SWRCB (2008a), and SWRCB (2008b).

Figure 2 shows the impaired water bodies in the Delta-Suisun region, the water service areas near these bodies, and the two water bodies that are being addressed by a U.S. EPA approved TMDLs. The Suisun impaired water bodies include the Suisun Bay, Suisun Marsh, Suisun Slough (highlighted in Figure 2), and the Carquinez Strait. The primary water service areas near the Suisun water bodies are Benicia, Fairfield, Suisun City, Bay Point, and Pittsburg. The Sacramento-San Joaquin Delta impaired water body is primarily located next to Antioch and the Oakley-Knightsen-Bethel Island areas. The Delta waterways run north-to-

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south from West Sacramento and Sacramento areas to Tracy and Manteca. They also run west-to-east from portions of Antioch to Woodbridge-Lodi and Stockton.

Table 1: Pollutants found in 303(d) Listed Impaired Water Bodies in the Delta-Suisun Region and Issued Fish Contaminant Goals and Advisory Tissue Levels

Pollutant	Potential Source	Water Bodies Hosting Pollutant	TMDL Status as of 2006	OEHHA Fish Contaminant Goals (FCG) and Advisory Tissue Levels (ATL) in Place for Sport Fish?¹
Chlordane	Unspecified Nonpoint Source	Suisun Bay, Carquinez Strait; Sacramento-San Joaquin Delta	TMDLs Required	Yes
DDT	Agriculture	Suisun Bay, Carquinez Strait; Sacramento-San Joaquin Delta; all Delta Waterways	TMDLs Required	Yes
Dieldrin	Unspecified Nonpoint Source	Carquinez Strait; Suisun Bay; Sacramento-San Joaquin Delta	TMDL Required	Yes
Mercury	Atmospheric Deposition; Industrial Wastewater; Municipal Wastewater; Unspecified Nonpoint Source; Resource Extraction	Suisun Bay; Carquinez Strait; Sacramento-San Joaquin Delta; all Delta Waterways	TMDLs Required	Yes, for Methylmercury
Polychlorinated Biphenyls ("PCBs")	Unspecified Point Source	Carquinez Strait; Suisun Bay; Sacramento-San Joaquin Delta; Delta Waterways (Stockton Ship Channel and northern portion, moving towards West Sacramento)	TMDLs Required	Yes
Selenium	Agriculture; Industrial Wastewater; Exotic Species; Natural Sources	Carquinez Strait; Suisun Bay; Sacramento-San Joaquin Delta	TMDL Required	Yes

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Source: Water Board (SWRCB 2008a) and OEHHA (2007; 2008). 1 = See OEHHA (2008) for the FCGs and ATLS put in place by OEHHA.

There are a total of 21 pollutants found in these impaired water bodies. Table 1 shows 6 pollutants found in these impaired waters and their potential sources (as identified by U.S. EPA and the Water Board). The table also shows the water bodies where these pollutants are found, their TMDL status, and whether or not they have been assigned fish contaminant goals (FCGs) and advisory tissue levels (ATLs) for fish contamination in the Delta-Suisun region. FCGs were developed by the Office of Environmental Health Hazard Assessment (OEHHA) to estimate the “contaminant levels in fish that pose no significant health risk to individuals consuming sport fish at a standard consumption rate of eight ounces per week [32 grams per day], prior to cooking, over a lifetime” (OEHHA 2008:iii). This goal takes into account cancer and non-cancer risks of each contaminant. The ATLs are set to provide advice on what levels of fish consumption, based on cancer and non-cancer risks of a given contaminant, would provide a benefit to the consumer over a lifetime. Rather than documenting each goal and advisory level in Table 1, we show whether there has been an FCG and/or ATL set for each pollutant found in the impaired water bodies. We encourage the reader to see OEHHA (2008, pages 42 and 61) for more on the specifics of each advisory level put in place by the agency.

It is noteworthy here, however, that there are 15 other contaminants listed in section 303(d) of the Federal Clean Water Act and in the Water Board’s TMDL program that have not been assessed by OEHHA for their potential impact on fish or the food chain in the Delta-Suisun region. This list includes high concentrations of several pesticides, organic compounds, metals, nutrients, and contaminants that contribute to high levels of salinity, and unspecified pathogens and toxic substances. The sources of these contaminants range from unspecified nonpoint sources and unknown sources, to agriculture, urban runoff and storm sewers, atmospheric deposition, contaminated sediments, water flow regulation and modification, and non-boating recreational and tourism activities. Two of these pollutants have a U.S. EPA approved TMDLs in place as of 2006. These water bodies are highlighted in green in Figure 2. The first is the pesticide, diazinon, which comes from agriculture and urban runoff and storm sewers. It is being addressed in Suisun Slough, which runs into Suisun City. The second TMDL in place is for high levels of nutrients (organic enrichment and low dissolved oxygen). It is highlighted in green in the Stockton Ship Channel, which extends from Stockton into the center of the Delta waterways. Both of these impaired water bodies have been assigned a TMDL due to a combination of political and scientific pressure because of their adverse effects on ecological and human health (Harnly et al. 2005; Schmieder et al. 2008). The massive amounts of contaminants in the Delta-Suisun region have received an uneven treatment from regulatory agencies, as evident in the relative lack of TMDLs designed and implemented in the region and the sparse amount of fish contaminant goals and advisory tissue levels that have been set for pollutants in the impaired water bodies.

Studies are just starting to understand what this legacy of toxins and regulatory ineptitude means for socially vulnerable communities in the region (Shilling 2003; Silver et al. 2007). Silver et al (2007:417) have shown that “fish contamination may have disproportionate impacts on low-income, non-white groups in the Delta.” Their study highlighted that this is cause for concern as such groups could be more likely to be disproportionately exposed to the neurodevelopmental problems associated with the highly toxic methylmercury found in the impaired water bodies shown in Figure 2 and Table 1. Silver et al. came

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to this conclusion by collecting demographic information and fish consumption patterns at a welfare health clinic in Stockton, California to assess the ethnic differences among low-income women in the Stockton area in their fish consumption rates and their awareness of fish advisories. The typical advisories under scrutiny in the study were similar to the “EAT DELTA FISH SAFELY” sign shown on the front cover to this report. Ultimately, Silver et al. found that African Americans and Asians (Vietnamese and Cambodians) and others not aware of fish advisories in the region are potentially at the highest risk for eating contaminated fish from the Delta. In other research along these lines, Shilling (2003) mapped the zip codes of the Delta-Suisun region that had the highest frequencies of anglers in river locations with high mercury concentrations (those that exceeded the U.S. EPA-recommended 0.3 parts per million) in fish tissue.

Table 2: Selected Demographics of Zip Code Areas with the Highest Frequencies of Anglers in River Locations with High Mercury Concentrations (>0.3 ppm) in Fish Tissue.

Selected Demographic	
People of Color	37.93%
Black or African American	11.76%
Native American	0.95%
Asian/Pacific Islander	15.04%
Some Other Race	10.18%
Hispanic or Latino	21.38%
Linguistically Isolated Households	7.07%
Foreign Born Immigrated to U.S. 1980-2000	73.40%
Below Poverty Level	14.92%
Median Household Income	\$42,500

Source: Shilling (2003) and U.S. Census (2000)

Note: Percentages are of the total population for each zip code except for linguistic isolation, foreign born immigrants, and those below poverty level. Linguistic ally isolated households is a percent of households, foreign born immigrated to U.S. 1980-2000 is a percent of foreign born individuals, and below poverty level is of those whose 1999 poverty status has been determined by the Census, which most, but not every time, is equal to the total population in the zip code areas.

Table 2 summarizes the demographics of the zip code areas Shilling found to be the origins of the anglers fishing in high risk areas. The zip codes selected here come from Antioch, Oakley and Pittsburg in the southwest portion of the Delta-Suisun region; and Vacaville in the northwest; Sacramento and Elk Grove in the northeast; and Lodi and Stockton in the southeast. It is not possible to analyze the demographics of the zip codes that are not at risk for high concentrations of mercury contamination to determine if there is disproportionate risk born on these anglers at this time. This is particularly the case since we do not have data on the actual anglers and estimates on how much contaminated fish they are consuming, which contrasts to the Silver et al study. But, it is noteworthy that by deriving the zip codes of origin from

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the at risk anglers, Shilling is able to begin painting a picture of the demographics of at risk areas: about 38% are people of color (mostly Black or African American and Asian/Pacific Islander), 21.38% Hispanic or Latino, 7.07% linguistically isolated, 14.92% recent immigrants, about 15% whose 1999 income was below the poverty level, and a median household income of \$42,500. These statistics help us understand who might be disproportionately at risk of eating contaminated fish and what areas are associated with high concentrations of mercury and its breakdown products, such as the neurotoxin, methylmercury. But, we have gained little in understanding some of the perspectives of socially vulnerable communities in how they negotiate such potential disproportionate risks.

Social science research into fishing behavior has shown that there are racial, gender, and class meanings behind recreational fishing (Togh and Brown 1997). This was the case in our interviews and focus groups where individuals from a variety of backgrounds attributed their fishing activities to recreation and relaxation. Some describe their fishing spots as “my place of solace out there in that water,” where they “sit there...relax and take time away from everybody” (Personal Interview, 2008). Others described their fishing activities in terms of subsistence: ‘If you have less money to buy food, you fish more. If you have less work and money, then you will go to the dollar store for food which has food that is worse for you’ (Focus Group, 2008). Whether for recreation or subsistence, the people we met in our sample commented on how local polluting sources are responsible for the declining water quality. As an individual who immigrated to the Delta-Suisun during the 1990s told us, “Water affects us when the factories send waste into the river and ocean. This affects fish and all of us because it contaminates the water. There is a drain next to where I fish with liquid that comes I don’t know where. I don’t know what factories are around there” (Focus Group, 2008).

Some describe this change as an impact on their cultural practices, and wonder what will come of future decisions to export water from the region. As one Native American representative, and long-time resident from San Joaquin County, shared with us:

[I]t makes my family and I feel sad that our elders and our youth will no longer be able to enjoy the clean water that our ancestors did. My brothers no longer fish to eat as they have seen the deformities and sickness come from the water. Now they fish for the sport of it...[Whatever] Sacramento's decision[s] are on the State's water management will impact our people in many ways. It will impact fishing areas if the water is diverted to other areas, it will dry up our sloughs, gathering areas, and much more. (Personal Communication, 2008)

This individual elaborated on what it means to negotiate the heavily engineered environment, with all its supposed unintended consequences of environmental degradation that has come to characterize the Delta-Suisun region and other industrializing areas. This heavily engineered setting does not resonate with how this individual makes sense of the world. Instead, it is another example of the ‘other’ world that this person is forced to inhabit:

[I]t’s not an easy thing to live in two different worlds...I leave [home]. I go to work. I’m in their world. I live by their rules. I act like them, ok, to a certain extent. I go out the door, I come home, I’m in my own *world*, you know? I do what *native* people do. I *act* like a Native. I *feel* like a Native. I *eat* like a Native,

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you know? And, it's not easy juggling my life like that, but that's how I have to live because...most people...cannot relate (Personal Interview, 2008)

The statements above resonate throughout our focus groups and interviews: Socially vulnerable groups—racial and ethnic minorities, low income individuals, and immigrants—are being impacted by the water quality of the Delta-Suisun region in a way that forces them to compartmentalize their lives.

How effective have the fish advisories been in addressing the issue of fish contamination in the region? Silver et al. (2007:418) claim that in the Delta-Suisun, it will likely take decades to address the sources of the legacy toxins that permeate the impaired water bodies, so “outreach and education are the only viable methods of immediate exposure reduction,” and this must be done in a manner that is sensitive to the different cultures and linguistic capabilities of at risk populations. We interviewed individuals who told us that the fish advisories currently in place are not enough because people who have to choose between starving or eating contaminated fish will eat the contaminated fish (recall the paraphrased quote above: ‘If you have less money to buy food, you fish more’). Summing up this point of view, one individual shared with us the following critique of solely relying on outreach, education, and advisories:

[R]ight now, the only policy option is to tell people to eat different fish or less of the contaminated fish. So, it's totally on the consumer, and it's their personal responsibility to not accumulate toxins. And that's pretty much where it stands. And that's not acceptable. (Personal Interview, 2008)

Instead, advocates working in the region argue that the contamination needs to be cleaned up at the source *while* new exposure reduction strategies are developed and funded. It is not enough to educate people who have no other alternatives or options. Those alternatives and options must be developed to provide these communities with the resources they need to survive both physically and culturally.

What can be done? A publication prepared for the California Department of Public Health and the Central Valley Regional Water Quality Control Board by researchers at UC Davis and staff at the Southeast Asian Assistance Center has proposed some “community-based strategies to reduce mercury exposure in Delta fishing communities” (Shilling et al. 2008). While the strategies identified do not address the socio-economic pressures creating the need for subsistence fishing, the researchers did identify five strategies that resonate with the community perspectives conveyed in this study. The five strategies are:

1. *Monitoring fish and fish consumption*: community organizations lead the design and implementation of fish tissue and fish consumption monitoring, aided by academic and agency scientists.
2. *Assessing mercury exposure*: community organizations, in partnership with agency and academic health professionals calculate or measure actual mercury exposure and community organizations lead communication of findings to communities and individuals.
3. *Effective education and outreach*: community organizations lead the design and implementation of education and outreach programs to communities and individuals eating large amounts of locally-caught fish, aided by academic and agency scientists.

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4. *Consumption advisories*: community organizations, in partnership with agency and academic health professionals and scientists, design fish-consumption guidelines that are accessible to the diverse cultures and communities in the Delta region.

5. *Decision-making & implementation model*: to improve the effectiveness of strategic decision-making and implementation, a new model should be developed that moves away from state agencies being funders, recipients of funding, and the primary decision-makers in matters of fish contamination and implementing exposure reduction measures. Rather, the new model should feature organizations from impact communities at the center of decision-making and implementation, partnering with state institutions in support roles (Shilling et al. 2008:5-7).

These recommendations generally depart from what has been a regulatory approach that includes a Water Board that has admitted to not being as efficient in enforcement of water quality standards as it should (Cal/EPA 2008) and a focus on outreach and education as the primary vehicles for exposure reduction because they put the impacted community in a leadership role in making decisions about exposure reduction. If the community perspectives we outlined here resonate with other impacted communities in the region, then perhaps a sixth key strategy for reducing exposure to contaminated fish should be to fully address the source of the contaminants in the Delta-Suisun. We believe the next section provides a step in that direction. It also explores the relationship between socially vulnerable groups and water quality in the region.

Exploring the Murky Waters: Demographics and Water Contaminant Concentration

“The taste of water has changed. I try to use filters. Years ago it felt good to drink water from the spigot or the hose, but not now.”

—Focus Group, 2008

This section begins our deeper look at the relationship between social vulnerability and environmental inequality in the local environment and public drinking water systems of water service areas in the Delta-Suisun region. We narrow our focus to using two water contaminant concentration indices to assess the average exposure levels of socially vulnerable groups to poor water quality from 1998-2003. To do so, we draw on data from the Environmental Working Group’s national tap water quality study, and data from the Department of Toxic Substance Control’s EnviroStor database on water-contaminated hazardous sites to see why, as one of our low income, minority project participants put it, “the taste of water has changed” in the region. We start by providing a map in Figure 4 that shows a visual relationship between the proportion of people of color in each water service area and the presence and frequency of water quality violations. We have retained the layer on the map from the previous section of the impaired water bodies, so that one can also see the visual relationship between the number of water quality violations and the impaired waters.

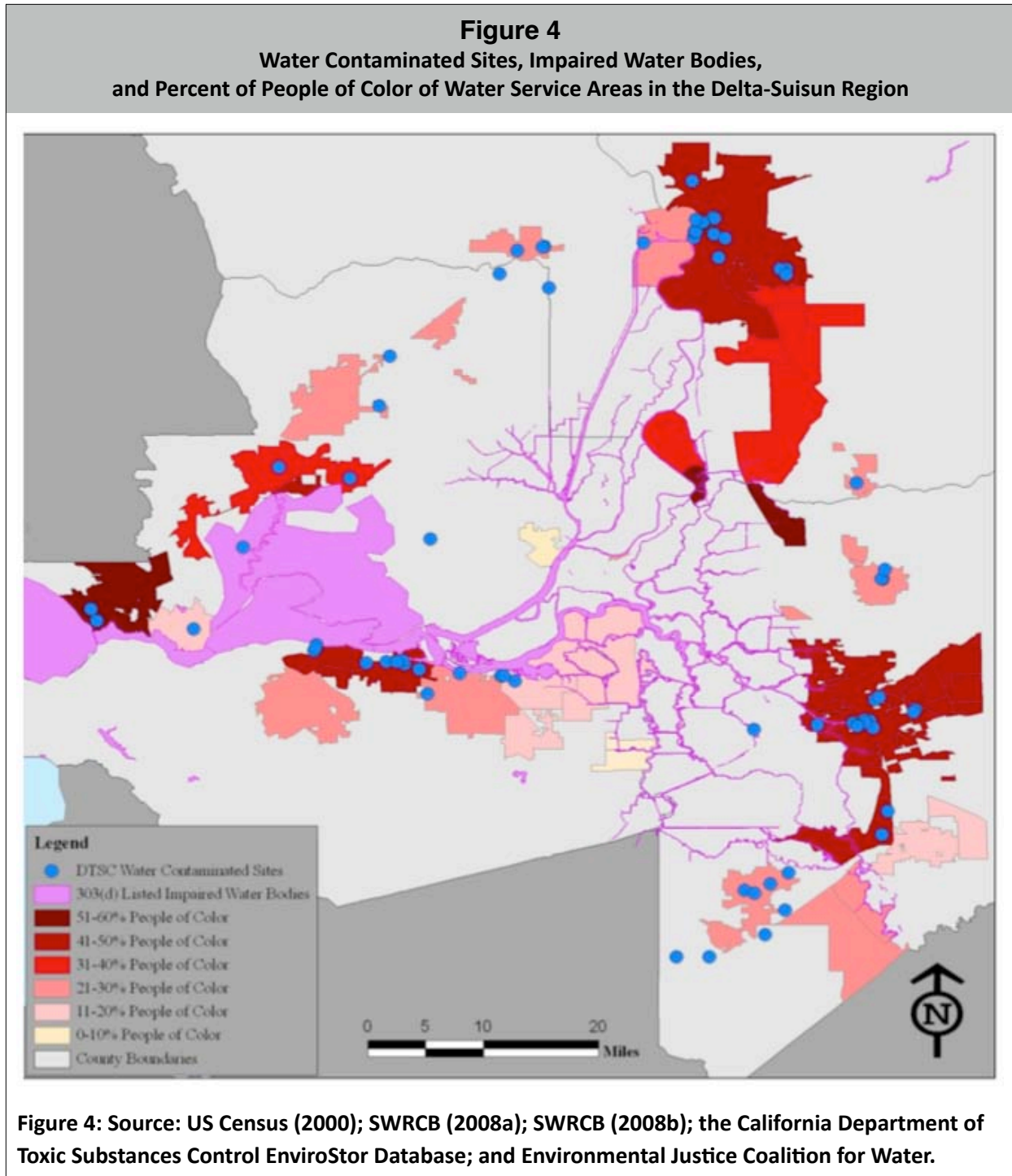


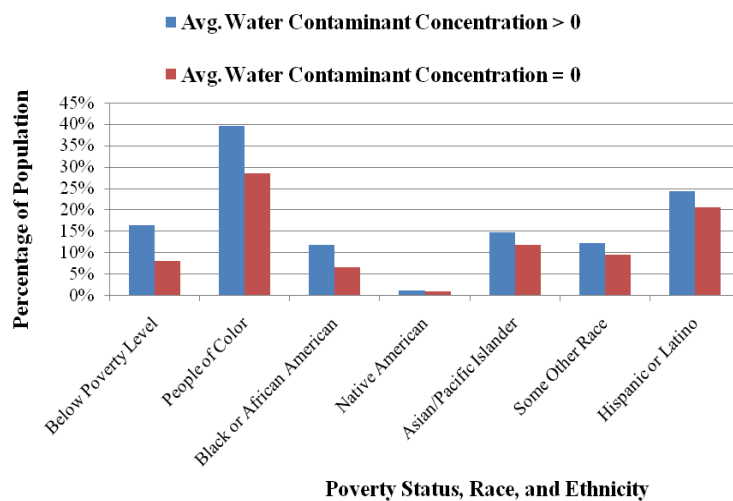
Figure 4 also shows a visual relationship between race in each water service area and the number of water quality violations: places like Rio Vista, Discovery Bay (both 0-10% people of color), Brentwood, Oakley-Knightsen-Bethel Island, and Manteca (both with 11-20% people of color) have little to no presence of water quality violations. Meanwhile, places that are predominantly people of color (Stockton, Pittsburg, Bay Point, Vallejo, and the Sacramento—Parkway-South Sacramento water service areas) have relatively high numbers of water quality violations.

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To further investigate the visual relationships emerging from the data, we examined the level of contamination at each site. Doing so allows for a reflection on the severity of the water quality problem and therefore the likelihood that the water quality problem would negatively impact those being exposed to the water.

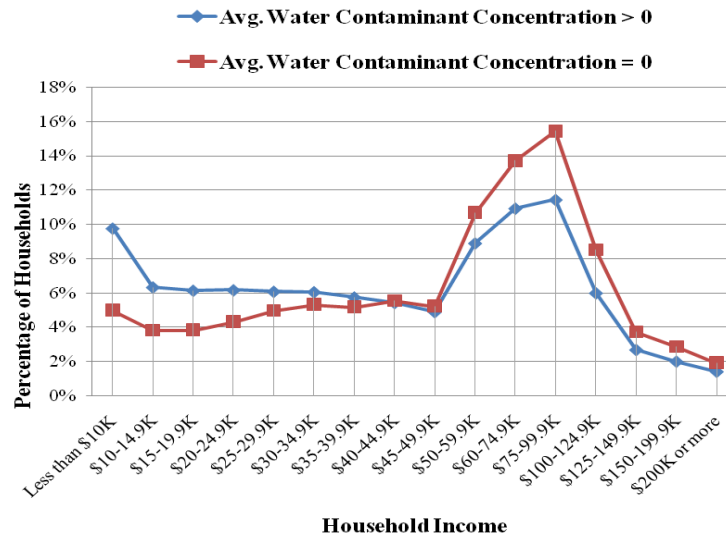
The level of contamination was determined by construction of a new variable we call the “average water contaminant concentration” (WCC). Briefly, the WCC was calculated by taking the sum of potential contaminants of concern from the water-contaminated sites for each water service area, dividing that by the sum of water contaminated sites, then dividing that number by 6 to get the average water contamination concentration from 1998-2003 for each water service area. A high score on the WCC means higher levels of contamination, which suggests worse water quality is present in a water service area’s surface, ground, and, potentially, drinking water.

Figure 5: Demographics of Water Service Areas that have an Average Water Contaminant Concentration Level Greater Than Zero versus those Equal to Zero in the Delta-Suisun Region



(a) Poverty Status, Race, and Ethnicity and Average Water Contaminant Concentration

Figure 5: Demographics of Water Service Areas that have an Average Water Contaminant Concentration Level Greater Than Zero versus those Equal to Zero in the Delta-Suisun Region



(b) Percentage of Households and Average Water Contamination Concentration

Source: US Census, 2000.

As seen in Figure 5a, water service areas with an average water contaminant concentration greater than zero differ notably from those whose score equals zero. More specifically, water services areas with a higher proportion of socially vulnerable groups—those below the poverty level, people of color, and Hispanic or Latino— tend to score higher on the WCC. Figure 5b also identifies a relationship between household income and the WCC Score. The median household income of water service areas with an average water contaminant concentration greater than zero is \$42,500, while that of the water service areas with a zero WCC score is \$55,000.

In isolation, the social vulnerability measures we use thus far suggest that a number of factors are associated with high scores on the WCC. We conducted a regression analysis to explore predictors of poor water quality as measured by the WCC. In Table 3, we report the coefficient signs and their significance levels for each independent variable we use to predict the WCC.⁵⁴³ As seen in the table, when controlling for the number of water contaminated sites, poverty, percent Hispanic or Latino, linguistic isolation, and percent of foreign born who immigrated to the U.S. between 1980 to 2000, race (as expressed in the percent people of color) is a statistically significant and positive predictor of the

⁵⁴³ The format we use in Table 3 is modified from Pastor et al. (2007), in which they attempted to provide regression statistics in an accessible manner for the lay reader. Appendix A reports the statistics from this ordinary least squared regression analysis for the technical reader.

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WCC. In simpler terms, the higher the proportion of people of color in a water service area the higher the score on the WCC.

Model Variables	Coef. Sign	Sig. Level	Coef. Sign	Sig. Level	Coef. Sign	Sig. Level	Coef. Sign	Sig. Level
Number of Water Contaminated Sites	+	*	+		+		+	
% Below Poverty Level	—		—		—		—	
% People of Color			+	*	+	*	+	*
% Hispanic or Latino			—		—		—	
% Linguistically isolated households					—		—	
% Foreign Born Immigrated to U.S. 1980-2000							+	
	N=28		N=28		N=28		N=28	

*Notes: * Significant at the $p < .05$ level*

These findings suggest the continuing significance of race in determining environmental inequality. Yet, they are based on a small sample size of only 28 water service areas. Usually this type of statistical analysis is reserved for sample sizes greater than 100 or even 200. To guard against accepting a statistically significant finding when it is actually insignificant, we chose to only report significant levels for our coefficients at the .05 level or higher.

Assessing Vulnerability to Drinking Water Contamination

For this portion of the analysis, we constructed what we call an average drinking water contaminant concentration index (DWCCI). It is similar to the index used in the previous section, except the average DWCCI integrates four characteristics of public drinking water systems found in water service areas (the type of contaminants found and the different violations issued to each system), as well as the number of water-contaminated sites that are known to contaminate drinking water supplies in each water service area. It also averaged over six years and standardized by population of each area, then multiplied by 1000. We then took the natural log of the index, which helped us evenly distribute the index across water service areas (more about this methodology is in Appendix A). This provided us with the opportunity breakdown the index into four rankings classifications, based on standard deviations away from the mean of the transformed average DWCCI. “Low” denotes areas more than one standard deviation below the mean, while “mid-low” signifies that an area was between -1 and zero standard deviations below the mean. “Mid-high” stands for water service areas zero to one standard deviation above the mean, while “high” means that an area was greater than one standard deviation above the mean.

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Table 4 describes the demographics of water service areas which fall into each estimated ranking in the average DWCCI. As the table shows, most demographic characteristics of each estimated ranking follow four patterns. First, as is the case for people of color, Native American, Asian/Pacific Islander, linguistically isolated households, and poverty level, we see that percentages of these socially vulnerable groups decrease as we move from low to mid-low rankings or low to mid-high rankings, then they increase across the board at the high ranking level. This pattern breaks, however, for other races and Hispanic or Latino, which steadily increase from low to high ranking levels. This relationship between other race and Hispanic or Latino can be explained by their correlation with each other: the “some other race” category includes people who identify as having some sort of Hispanic origin.

Table 4: Selected Demographics (2000) of Water Service Areas by Their Estimated Rank in the Drinking Water Contaminant Concentration Index (1998-2003)

Selected Demographic	Estimated Ranking in the Drinking Water Contaminant Concentration Index			
	Low	Mid-Low	Mid-High	High
People of Color	41.67%	36.21%	25.41%	37.00%
Black or African American	14.41%	9.34%	4.66%	0.48%
Native American	1.14%	0.88%	0.77%	1.49%
Asian/Pacific Islander	15.34%	14.09%	6.30%	13.89%
Some Other Race	10.77%	11.90%	13.69%	21.14%
Hispanic or Latino	21.90%	23.79%	27.51%	39.55%
Linguistically Isolated Households	7.48%	7.04%	5.09%	11.86%
Foreign Born Immigrated to U.S. 1980-2000	73.36%	70.61%	63.65%	59.45%
Below Poverty Level	17.23%	13.95%	7.08%	12.14%
Median Household Income	\$42,500	\$47,500	\$60,000	\$37,500

Source: U.S. Census (2000)

Note: Percentages are of the total population for each zip code except for linguistic isolation, foreign born immigrants, and those below poverty level. Linguistically isolated households is a percent of households, foreign born immigrated to U.S. 1980-2000 is a percent of foreign born individuals, and below poverty level is of those whose 1999 poverty status has been determined by the Census, which most, but not every time, is equal to the total population in the zip code areas.

Another small pattern that arises is how the percent foreign born who immigrated to the U.S. between 1980 and 2000 decrease steadily, moving from low to high ranking levels in the average DWCCI. Finally, there is the pattern in which the median household income decreases as we move from low to mid-high ranking, then drops off drastically as we move from mid-high to high rankings. It is difficult to discern from Table 4 if there is any correlation between socially vulnerable groups and the drinking water

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contaminant concentration index. Thus, we need to explore this question through another multiple regression analysis, the results of which are displayed in Table 5.

Table 5: Coefficients Signs and Significant Levels from the Regression of the Average Drinking Water Contaminant Concentration Index (1998-2003) on Selected Demographics (2000) of 28 Water Service Areas in the Delta-Suisun Region

Model Variables	Coeff. Sign	Sig. Level	Coeff. Sign	Sig. Level
% Below Poverty Level	—	*	—	*
% Black or African American	—	**	—	**
% Native American	+		+	
% Asian/Pacific Islander	+	*	+	
% Hispanic or Latino	+	**	+	
% Linguistically Isolated Households			+	*
	N=28		N=28	

Note: Standard errors in parentheses, * Significant at the $p < .05$ level;
** Significant at the $p < .01$ level

Table 5 shows that, once again, race matters. On average and when controlling for percent below poverty level, percent Black or African American, and percent Native American; an increase in the Asian/Pacific Islander and in the Hispanic or Latino population is statistically significantly associated with an increase in the DWCC in water service areas in the Delta-Suisun region. Curiously, on average and when controlling for other demographics in the analysis, the less poverty and the fewer Black or African American residents result in worse water quality conditions as measured by the DWCC.

Finally, linguistic isolation, on average and when holding all other variable constant in the table, becomes a statistically significant predictor of poor drinking water quality for water service areas in the Delta-Suisun region. Interestingly, linguistic isolation is a more powerful predictor of DWCC than Hispanic or Latino population levels and Asian/Pacific Islander population levels as these variables lose their significance once linguistic isolation is added to the model. This finding, paired with the finding about percent below poverty and percent Black or African American suggests households that are linguistically isolated (and most likely speak Spanish or some Asian American or Pacific Islander language) may be those most disproportionately at risk to poor drinking water quality in the Delta-Suisun region.⁵⁴⁴ Like the regression results in the previous section, this statistical test used a small sample size of only 28 water service areas. Again, we were conservative and chose to only report significant levels for our coefficients at the .05 level or higher.

DISCUSSION

⁵⁴⁴ Once the recent immigrant variable was added to the model, the significance of each variable decreased to not be statistically significant.

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The community of Bay Point, California, located on the northeastern edge of Contra Costa County has high percentage of people of color (47.67%), Hispanic or Latinos (39.33%), linguistic isolation (11.79%), poverty (17.23%), and recently-arrived foreign born individuals (78.81%). People from these demographics have been organizing to force a private water company, who has exceeded permissible levels of water treatment chemicals, such as total trihalomethanes, in the water it serves to the community. The community applied and was one of 48 communities in the nation to receive a Community Action for Renewed Environment (CARE) grant from the U.S. EPA in partnership with the University of San Francisco, the Centers for Disease Control and Prevention, and the Contra Costa Health Services' Healthy Neighborhoods Project. The grant has helped them organize and force community hearings to have the private water provider purchase higher quality water treated by the Contra Costa County Water District to provide them with the same drinking water quality enjoyed by the rest of the county's public and privately owned drinking water suppliers. This report has shown that socially vulnerable groups like those in Bay Point are present all throughout the Delta-Suisun region and fighting various forms of environmental inequality: some are forced to fish for subsistence in the impaired water bodies of the region, others are living in communities that have high levels of water contamination in the groundwater and surface water, and others are exposed to high concentrations of contaminants in their drinking water.

Climate science literature suggests that sea level rise will be a result from global warming and that will hit vulnerable groups the hardest. The Delta-Suisun region is an area particularly at risk to such a hazard, as well as at risk to a considerable seismic event that could force flooding throughout the region.

Researchers with the Environmental Justice and Climate Change Initiative and Redefining Progress observe that "[c]limate change is not only an issue of the environment; it is also an issue of justice and human rights, one that dangerously intersects with race and class...An effective policy to address the challenges of global warming cannot be crafted until race and equity are part of the discussion from the outset and an integral part of the solution" (Hoerner and Robinson 2008:1). Research suggests that the global warming could have harmful consequences for drinking water quality, particularly for those already exposed to poor quality water such as Latinos and other vulnerable groups (Levin et al. 2002; Metzger et al. 1995). Recent research on the Delta-Suisun region is vulnerable to a seismic event and global-warming-induced sea level rise that could result in flooding throughout the region, starting in the west and hitting communities like Bay Point first, then cascading to hit other socially vulnerable areas with disastrous consequences for public health and surface and drinking water quality (DWR & DFG 2008; Lund et al. 2007; Lund et al. 2008). In this section, we share some of the perspectives on climate justice in the Delta-Suisun from those we encountered in our research in relation to what they view as equitable flood protection.

Attachment 1, APPENDIX A: TECHNICAL REMARKS

Data Collection and Transformation

Census Data

Environmental justice studies have identified a number of demographic variables that are strong predictors of environmental inequality. We used data from the 2000 U.S. Census Summary File 3, which gives estimates for small groups and areas on a wide variety of topic areas. The goal of this data is to identify large differences among areas or large changes over time. The socio-demographic variables selected allowed us to look at social class, race, ethnicity, linguistic isolation (i.e., households with no household member older than 14 that can speak English “very well”), and immigration status. We downloaded this data electronically from the Census for various geographically-defined areas in the Delta. We also obtained a list of what Census geographies (block groups) reside in the legally-defined Delta and Suisun Marsh to build a sample of “water service areas” used in this analysis (see Figure 1).

Characterizing Water Service Areas

Figure 1 shows the water service areas we constructed for this analysis. We drew on the following to construct a total of 28 water service areas. We started with the systems as they were listed by the EWG database. Water service providers that were specified with fixed populated places in each county were assigned to their corresponding Census populated places by name. For example, the water system for the City of Pittsburg as assigned to the census place, Pittsburg City. We followed this procedure for every system, except for those in jails, correctional facilities, and military operations because much of the Census data we use are not generalizable to these types of exclusive institutions. After each system was initially assigned to a place, we verified that each system actually exists in each place by consulting maps and descriptions of municipal water service providers in the five counties of the Delta; internet searches for systems associated with mobile home parks, businesses, and recreational areas in the Google search engine and in address matching searches for these areas with U.S. Census geographically-coded data in the Census’ “American FactFinder” and the list of census geographies that are associated with the legally-defined Delta and Suisun Marsh. We then consulted U.S. EPA’s Safe Drinking Water Information System/Federal Version (SDWIS/FED), Census maps of the five counties in the Delta; and geographic information systems software (ArcGIS version 9.2) to select our final set of public water systems (N=144) to assign to water service areas in this analysis.

We were conservative in carrying out this method. We only kept water systems in the analysis if they were located in three of the four following sources: the EWG study, the U.S. EPA SDWIS/FED database, the Google search engine, and county water service provider maps and descriptions. This method provided us the best estimate of what the public drinking water systems and socio-demographics of each service area with the available data. We found that there is considerable discrepancy between these four sources that should be rectified in the future to better facilitate analyses like the one carried out in this report.

Using a Snowball Sampling Method to Explore Community Perspectives

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These participants were identified using a “snowball” sampling technique. This is typically used in exploratory social science research in which one starts out with initial contacts and interviewees and builds out to understand a specific group of interest (Lofland et al. 2006). We started with the few contacts EJCW had in the Delta region and eventually spread out to key individuals who had extensive knowledge about the local conditions in environmentally burdened and poor and minority communities. Since this is a non-probability sampling method, we cannot generalize our findings from the sample to the general public of the five counties of the Delta-Suisun Region. But, we do claim that what they shared with us about the water quality and human health concerns are *suggestive* of how socially vulnerable groups cope with such issues.

Selecting Water-Contaminated Sites

The California Environmental Protection Agency’s (Cal/EPA) Department of Toxic Substance Control (DTSC) recently created the “EnviroStor” database. It is publicly available⁵⁴⁵ and contains data on *known and suspected* contamination and histories for sites located throughout California. We used a number of selection criteria to select sites for this analysis. First, we selected those sites whose longitude and latitude were in the water service areas we constructed for this analysis that are in the legally-defined Delta and Suisun Marsh (discussed below). We then selected sites that were suspected to contribute to some form of water contamination (e.g., an aquifer used for drinking water, ground water not used for drinking water, and surface water). We then obtained our final number of water-contaminated sites (N=82) after an analysis of each site history revealed that some form of water contamination occurred and was being addressed during or before 1998-2003 to ensure that we kept a common time frame for analysis with the drinking water quality data with the EWG drinking water study. Finally, we coded the EnviroStor data on the 82 sites to identify the “potential contaminants of concern”⁵⁴⁶ for each site for subsequent analysis of water contamination concentration in the water service areas. We also use contamination data from this database in our analysis of the Drinking Water Contamination Concentration Index, as well as an analysis of what demographics are most strongly associated with the concentration of water-contaminated sites in the Delta-Suisun region.

Data Analysis

Water Contaminant Concentration

We presented simplified versions of the regression results in the text to make the text more accessible to the lay reader. The equation used to derive the average water contaminant concentration is shown below:

$$\text{Average Water Contaminant Concentration} = (\text{Sum of Potential Contaminants of Concern from Water Contaminated Sites} / \text{Sum of Water Contaminated Sites}) / 6$$

⁵⁴⁵ The DTSC EnviroStor database is found at www.envirostor.dtsc.ca.gov.

⁵⁴⁶ DTSC defines these contaminants as potential contaminants that “include hazardous substances that may be present at the site” and cause for concern to human and environmental health (DTSC 2008).

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Table A1: Regression of the Average Water Contaminant Concentration of Water Contaminated Sites on Selected Demographics of 28 Water Service Areas in the Delta and Suisun Marsh

Independent Variables	Class Model	Race & Ethnicity Model	Communication Model	Immigration Model
Number of Water Contaminated Sites	0.121* (0.047)	0.082 (0.045)	0.074 (0.049)	0.078 (0.051)
% 1999 income level below the poverty line	- 0.042 (0.030)	- 0.043 (0.032)	- 0.036 (0.036)	- 0.037 (0.037)
% People of Color		0.038* (0.015)	0.040* (0.016)	0.040* (0.016)
% Latino		- 0.033 (0.017)	- 0.026 (0.023)	- 0.024 (0.025)
% Linguistically isolated households			- 0.041 (0.086)	- 0.052 (0.096)
% Foreign born individuals who immigrated to the United States in 1980 or later				0.004 (0.013)
Constant	0.965* (0.386)	0.779 (0.478)	0.720 (0.502)	0.506 (0.866)
R-Squared	0.215	0.402	0.408	0.411
Adjusted R-Squared	0.152	0.298	0.273	0.242
F-Statistic	3.4253* N=28	3.8638* N=28	3.0305* N=28	2.4372 N=28

*Notes: Standard errors in parentheses; * Significant at the $p < .05$ level*

In Table 3, we report the coefficient signs and their significance levels for each independent variable we use to predict the average water contaminant concentration.⁵⁴⁷ As seen in the table, when controlling for the number of water contaminated sites, percent of people the population below poverty, percent Hispanic or Latino, percent households linguistically isolated, and percent of foreign born who immigrated to the U.S. between 1980 to 2000, race (as expressed in the percent people of color) is a statistically significant and positive predictor of the average water contaminant concentration levels experienced by water service areas in the sample. That is, an increase in the percent of people of color in a water service area, on average and when controlling for all other variables in the table, is associated with an increase in the level of water contaminant concentration in water service areas in the Delta-

⁵⁴⁷ The format we use in Table 3 is modified from Pastor et al. (2007), in which they attempted to provide regression statistics in an accessible manner for the lay reader. Appendix A reports the statistics from this ordinary least squared regression analysis for the technical reader.

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Suisun region. Also, while not statistically significant, the on average, increases in the number of water contaminated sites and the percent foreign born who have immigrated to the U.S. between 1980 and 2000 are also associated with increases in a water service area’s water contaminant concentration.

Drinking Water Contaminant Concentration

To look at which social groups are associated with poor drinking water quality, we constructed a similar water contaminant concentration index to what we used in the previous section. It differs in that it sums the following characteristics of public drinking water systems in the water service areas of the Delta-Suisun region: the average amount of total contaminants; the average amount of health-limit-exceeding contaminants; the average health-based EPA violations; and the average EPA monitoring, reporting, and other non-health-based EPA violations. It also adds to this sum the number of water-contaminated sites that have been identified to pollute drinking water supplies in each water service area. These summed elements are divided by six to construct an average measure from 1998 to 2003. Finally, this average figure is divided by the population of water service areas then multiplied by 1000 to derive a standardized drinking water contaminant concentration index to compare across water service areas in the region. We then take the natural log value of this index to make it more evenly distributed and ready to conduct another multivariate regression analysis similar to the section on water-contaminated sites.

$$DWCCI = ((\text{Average Total Contaminants in Public Water Systems} + \text{Average Health-Limit-Exceeding Contaminants in Public Water Systems} + \text{Average Health-Based EPA Violations in Public Water Systems} + \text{Average EPA Monitoring, Reporting, and Other Non-Health-Based EPA Violations in Public Water Systems} + \text{DTSC_DW}/6) / \text{Population of Water Service Areas}) * 1000$$

Table A2: Coefficients from the Regression of the Average Drinking Water Contaminant Concentration Index (DWCCI) (1998-2003) on Selected Demographics (2000) of 28 Water Service Areas in the Delta-Suisun Region		
Independent Variables	Class, Race, Ethnicity Model	Communication Model
% Below Poverty Level	-0.095* (0.034)	-0.099* (0.036)
% Black or African American	-0.147** (0.041)	-0.145** (0.042)
% Native American	0.433 (0.434)	0.382 (0.453)
% Asian/Pacific Islander	0.091* (0.038)	0.085 (0.041)
% Hispanic or Latino	0.066** (0.018)	0.054 (0.029)
% Linguistically Isolated Households		0.052 (0.103)

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Table A2: Coefficients from the Regression of the Average Drinking Water Contaminant Concentration Index (DWCCI) (1998-2003) on Selected Demographics (2000) of 28 Water Service Areas in the Delta-Suisun Region		
Constant	-2.091**	-1.979**
	0.641	0.689
R-Squared	0.653	0.657
Adjusted R-Squared	0.574	0.559
F-Statistic	8.2806***	6.7111***
	N=28	N=28
<i>Note:</i> Standard errors in parentheses		
* Significant at the $p < .05$ level; ** Significant at the $p < .01$ level; *** Significant at the $p < .001$ level		

The table shows that, once again, race matters again: on average and when controlling for percent below poverty level, percent Black or African American, and percent Native American; a percent increase in Asian/Pacific Islander and in percent Hispanic or Latino is statistically significantly associated with a percent increase in the average drinking water contaminant concentration levels of water service areas in the Delta-Suisun region. Curiously, on average and when controlling for other demographics in the analysis, a percent *decrease* in percent below poverty level and in percent Black or African American are associated with percent increases in average drinking water contaminant concentration levels. This suggests that as we add the linguistic isolation measure to the analysis, we see that linguistic isolation, on average and when holding all other variable constant in the table, becomes a statistically significant predictor of poor drinking water quality for water service areas in the Delta-Suisun region. In addition, the significance level for percent Hispanic or Latino and percent Asian/Pacific Islander go away. This finding, paired with the finding about percent below poverty and percent Black or African American suggests households that are linguistically isolated (and most likely speak Spanish or some Asian American or Pacific Islander language) may be those most disproportionately at risk to poor drinking water quality in the Delta-Suisun region.⁵⁴⁸ Like the regression results in the previous section, this statistical test used a small sample size of only 28 water service areas. Again, we were conservative and chose to only report significant levels for our coefficients at the .05 level or higher.

⁵⁴⁸ Once the recent immigrant variable was added to the model, the significance of each variable decreased to not be statistically significant.

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Attachment 2 - Estimating Costs of BDCP Alternatives

BDCP's economic analysis has not presented such an analysis, but it provides the building blocks for it in Table 9.A-2, Appendix 9.A of the plan. This table shows at the bottom that the "existing" high and low-outflow scenarios are assumed to yield total average annual water deliveries of 3.446 million acre-feet and 3.889 million acre-feet, respectively. The differences between these levels are due to divergent Decision Tree results. Note too that the range of average annual water deliveries of the proposed scenarios and the other alternatives to take are between 3.399 and 5.591 million acre-feet. These represent levels of "preserved water supplies" resulting from the Twin Tunnels, and are thus the difference between these "existing" high and low outflow scenario exports without the Twin Tunnels and the exports expected under the high and low outflow BDCP proposed actions, which include the Twin Tunnels. That difference may be used to calculate the annualized cost of water for purposes of comparison.

Using data and financial assumptions employed in BDCP's analysis of bond financing, Table 6 shows compares a number of incremental cost scenarios for water with and without the proposed Twin Tunnels and for both outcomes of the Decision Tree. This table illustrates the strong effect that baseline water export assumptions have on the perception of BDCP new water costs. First, it presents two "without Tunnels" scenarios, the "Existing Conditions" and "No Action Alternative" from the BDCP Environmental Impact Report/Statement (EIR/S). No capital costs of BDCP are associated with these two alternatives.

Where costs are indicated in Table A2-1, they represent the incremental cost of Twin Tunnels water averaged across all water contractors, regardless of sector (i.e., urban and agricultural water contractors).

BDCP's High Outflow scenario (in Table A2-1) "preserves" a Delta exports level of about 1.26 million acre-feet annually over the "Existing" no-BDCP high-outflow exports scenario (comparing columns B and C) at a per acre-foot annualized cost of \$723. The BDCP Low Outflow scenario represents a 1.70 million acre-foot annual average increase over its "Existing" no-BDCP exports scenario at a per acre annualized-foot cost of \$536. The difference between these two incremental costs is \$187 per acre-foot. This figure represents the cost difference to the Twin Tunnels' Applicants of "winning" or "losing" the Decision Tree processes. Put another way, there is a \$187 per acre-foot incentive (i.e., a cost savings of \$187 per acre-foot) for the Applicants to have the incidental take permits implement the Low Outflow Scenario. [compare with Rodney T Smith's Hydro Wonk numbers.]

Table A2-1 also shows that several moderate and low-export Twin Tunnels project scenarios become infeasible if lower and very plausible estimates of "preserved" export levels are used. If the existing modeled water cost of the biological opinions is subtracted from average south-of-Delta exports the last 15 years or so, the future without Twin Tunnels' exports could average about 4.66 million acre-feet. This "preserves" about 45,000 acre-feet worth of exports. ***At that reduced level of "supply preservation" the incremental cost of Twin Tunnels water skyrockets from \$723 to over \$20,200 per acre-foot.*** Other scenarios fail to preserve exports and become infeasible as a result (that is, they have negative incremental costs). In Table A2-1, the low outflow (that is, high average exports of 5.591 million acre-feet per year) without-Twin-Tunnels scenario would have an annualized cost per acre-foot of about \$979. This is nearly twice the per unit cost of water from the Twin Tunnels project using BDCP assumptions for future exports.

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**Table A2-1
Sensitivity of Twin Tunnels Costs
to Alternative Increments of “Preserved” Delta Export Levels**

Scenario	BDCP Proposed Action Costs (\$Millions)	Annualized Capital Cost of Twin Tunnels (\$ Millions) (A)	Average Annual BDCP Proposed Action South of Delta Exports (MAF) (B)	Average Annual BDCP “Existing Scenario” South of Delta Exports (MAF) (C)	Annualized Cost per Acre-foot of Delta Exports Under BDCP Assumptions (\$/AF) (D = A/(B-C))	Average Annual South of Delta Exports Status Quo (MAF) (E)	Annualized Cost of Delta Exports Preserved Under Status Quo (\$/AF) [F = A/(B-E)]
1. Existing Conditions	\$0	\$0	5.100	NA	NA	NA	NA
2. No Action Alternative	\$0	\$0	4.400	NA	NA	NA	NA
3. High Outflow BDCP Twin Tunnels	\$13,472	\$910	4.705	3.446	\$723	4.660	\$20,232
4. Low Outflow BDCP Twin Tunnels	\$13,487	\$911	5.591	3.889	\$536	4.660	\$979
5. Alternative 4 - Tunnel & Through-Delta	\$13,472	\$910	4.400	3.889	\$1,782	4.660	(\$3,502)
6. Alternative 8 - Tunnel & Through-Delta	\$13,472	\$910	3.100	3.889	(\$1,154)	4.660	(\$584)

Source: Draft Bay Delta Conservation Plan, November 2013; Dayflow. State Water Resources Control Board, *Comments on the Second Administrative Draft Environmental Impact Report/Environmental Impact Statement for the Bay Delta Conservation Plan*, July 5, 2013, Attachment 2. Annualizing assumptions: Bond term = 40 years; interest rate = 6.133 percent per annum. “AF” = acre-feet; “MAF” = million acre-feet. Negative cost figures mean project would be infeasible. Cost figures include capital costs, but annualized capital cost includes interest in annual payment. Both Twin Tunnels scenarios include “through Delta” operation of South Delta pumps.

Suppose the Twin Tunnels project was built, but the Applicants also won their “bet” that regulators would protect the Bay-Delta Estuary to recover listed fish species and protect them as public trust resources: If it was constructed but forced to operate with regulations fully protecting the estuary over Delta exports the State Water Board projected in its Alternative 8 scenario that full protection for the Bay-Delta estuary would result in average annual exports of just 3.1 million acre-feet.⁵⁴⁹ The negative incremental cost of water signals the project would quickly become a bad investment in

⁵⁴⁹ See footnote 200, above; and BDCP EIR/EIS, Executive Summary, Table ES-11.

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that future scenario. Under this circumstance, Table X indicates that the Twin Tunnels would become a stranded asset.

At these incremental cost levels for Twin Tunnels' new water, there will be strong economic incentive for regulators, water contractors, and the owners of the state and federal projects to have the scientific research in the Decision Tree processes come down on the side of low outflow and high exports in order for the Twin Tunnels reduce risk and uncertainty.

The need to make an expensive investment in the Twin Tunnels could create a compelling incentive on the part of water contractors and regulators (both the fishery agencies and the State Water Resources Control Board) alike to avoid protecting the Bay-Delta Estuary. Protecting the Estuary would be contrary to the exposed financial position of water contractors and bondholders. Regulators would be exposed to intense political pressure to support policies that protect these financial commitments, likely at the Bay-Delta Estuary's expense. ***Such a situation would place water and species protection policies for the Delta Estuary secondary to the financial obligations of Twin Tunnels' Applicants.***

In sum, the "business case" for the Twin Tunnels project (CM1) erodes rapidly when other plausible scenarios for future Delta export levels are applied to project incremental cost calculations, such as when continuation of annual export levels under the current biological opinions are used as the baseline to evaluate the project's cost and feasibility. The analysis in Table A2-1 shows that there is tremendous uncertainty about the incremental cost of the Twin Tunnels project given risks associated with the future of Delta export levels. The pressure to undertake such a risky investment—and make it pay off—will be intense.

The following Environmental Water Caucus affiliated organizations support the comments and recommendations shown in the attached letter.

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