From: Leah Orloff <lorloff@ccwater.com>
Sent: Friday, July 25, 2014 4:18 PM
To: BDCP.Comments@noaa.gov
Subject: Contra Costa Water District BDCP comments
Attachments: CCWD Comments on BDCP 7-25-14.pdf

Mr. Wulff: attached are Contra Costa Water District's comments on the Bay-Delta Conservation Plan Draft EIR/EIS. We are also sending you a hard copy of our comments, which includes the exhibits referenced in the comment letter. Leah Orloff

Leah Orloff
Water Resources Manager
Contra costa Water District
925-688-8083
lorloff@ccwater.com

Perkins Coie

Four Embarcadero Center, Suite 2400
San Francisco, CA 94111-4131
PHONE: 415-344-7000
FAX: 415-344-7050
www.perkinscoie.com

Barbara J. Schussman
PHONE: (415) 344-7168
FAX: (415) 344-7368
EMAIL: BSchussman@perkinscoie.com

July 25, 2014

Ryan Wulff
National Marine Fisheries Service
650 Capitol Mall, Suite 5-100
Sacramento, CA 95814

Re: Contra Costa Water District Comments on Bay Delta Conservation Plan and Draft EIR/EIS

Dear Mr. Wulff:

Thank you for the opportunity to provide our comments under the California Environmental Quality Act, the National Environmental Policy Act, and other statutes on the Bay Delta Conservation Plan and associated Draft Environmental Impact Report/Environmental Impact Statement (BDCP Draft EIR/EIS). Contra Costa Water District has a vital interest in the environmental effects of the BDCP, as it serves water from its intakes in the Sacramento-San Joaquin Delta for residential, commercial, and industrial uses to the Cities of Brentwood, Antioch, Martinez and Pittsburg; to the Golden State Water Company in Bay Point and the Diablo Water District in Oakley; and to customers in Clayton, Clyde, Concord, Pacheco, Port Costa, Martinez, Pleasant Hill, and Walnut Creek.

Enclosed are the full comments prepared by the staff of the Contra Costa Water District (CCWD). This letter provides a brief overview of the legal defects found in the BDCP Draft EIR/EIS, the BDCP itself, and the Draft Implementing Agreement for the BDCP. These defects are substantial and require that both the BDCP Draft EIR/EIS and the BDCP be revised and recirculated for public comment and agency response.

The BDCP proponents have elected to style the BDCP as a Habitat Conservation Plan under the federal Endangered Species Act and a Natural Community Conservation Plan under the California Natural Community Conservation Planning Act. But even a brief review of the BDCP Draft EIR/EIS reveals that the proposed project is not about conservation of habitat and natural communities. This project is about moving water from north of the Delta to south of the Delta "to meet the demands of certain south-of-Delta SWP and CVP water contractors." BDCP Draft EIR/EIS Executive Summary p. ES-10. The water conveyance component of the BDCP, labelled "Conservation Measure 1" (CM1), is designed for this water supply purpose, not for a

conservation purpose. The BDCP acknowledges that CM1 provides only minor benefit to species. BDCP, Chap. 5 at p. 5.5.1-42. The effort to portray a massive, multi-billion dollar water conveyance project as a habitat conservation project is the source of many of the defects evident in the BDCP and accompanying BDCP Draft EIR/EIS.

As described below, and in far greater detail in CCWD's full comments, the BDCP Draft EIR/EIS is fatally undermined by an inadequate project description. The document does not disclose how the existing state and federal water supply facilities would operate before the new CM1 water conveyance is constructed, after the conveyance is constructed, or even at the 2060 date the authors have selected as their only impact assessment date. The BDCP project proponents themselves do not yet know how or when key project components would be constructed, where some of the water would come from, what operational parameters would be used, or even how most of the conservation measures would be funded.

The resulting environmental analysis, while voluminous, contains enormous gaps. Because the project description is not yet known, it is impossible to tell the full extent to which the project would affect water quality and water supplies in the San Francisco Bay Delta - the sole source of drinking water for the 500,000 people and major industries who rely on CCWD as their retail or wholesale water service provider. To make matters worse, the BDCP Draft EIR/EIS masks the project's effects by combining impacts of the project with impacts of climate change and other potential future activities. And the BDCP Draft EIR/EIS focuses its analysis on the year 2060, leaving readers in the dark as to how the fragile Delta environment would function over the preceding 46 years.

Having failed to adequately reveal impacts of the project, the BDCP Draft EIR/EIS impermissibly defers mitigation to future studies with no performance standards and no commitment to actual mitigation. Some potentially feasible environmental mitigation measures are not even labeled as mitigation, but rather are treated as "non-environmental" "other commitments" to which the BDCP proponents do not actually commit. And where significant impacts have been omitted, of course no mitigation is identified.

All of these failings, as well as the myriad others described in CCWD's full comments, must be corrected:

- The key aspects of the project that influence the environmental analysis must be described. Necessary elements include:
    - How the BDCP proponents plan to operate their existing water supply facilities before and after CM1 operations begin;
    - What actions are contemplated, and what rules would apply, as part of the "adaptive management" of CM1;

- What water storage, water transfer activities and/or other measures are necessary to achieve the key project objective to increase water supply reliability for south-of-Delta water contractors; and

- Where, when and how—or at least under what rules—the BDCP's 80,000-plus acres of habitat restoration projects would be constructed, so that the resulting impacts on water quality and water supply can be analyzed and minimized.

- Project impacts must be disaggregated from other effects, such as the effects of climate change and the effects of other future projects that might be completed. Moreover, near-term, mid-term, and long-term project effects must be revealed. That certain impacts might be offset at full project implementation in 2060 tells the reader nothing about water quality and water supplies in 2020 or any other year during the decades prior to 2060.

- The water quality, water supply and fisheries impact modeling for the impacts analysis must be corrected as recommended by the report on the independent analysis of the BDCP Draft EIR/EIS modeling performed by MBK Engineers for a consortium of water agencies, which concluded that the modeling of CM1 operations used for the BDCP Draft EIR/EIS analysis was fundamentally flawed and underestimated water quality impacts in the Delta.

- The impact analysis must be expanded to include water quality impacts from increased disinfection byproducts that would result from the BDCP's changes in Delta water quality and from increased aquatic algae whose byproducts can both be toxic and cause noxious tastes and odors.

- The analysis of water quality and water supply impacts must include all - not half - of CCWD's Delta water intakes, and the 160-thousand-acre-foot Los Vaqueros Reservoir.

- Once impacts are revealed, effective mitigation measures must be identified. Where mitigation cannot be precisely defined, objective performance standards must be presented, along with a menu of feasible measures that would be capable of achieving those standards. The project proponents must commit to implementing all feasible mitigation to substantially reduce the project's adverse effects.

- Real alternatives, including an alternative similar to the Portfolio Alternative suggested by the Natural Resources Defense Council and other organizations, must be identified and analyzed. Alternatives must be designed to reduce project impacts, and not be burdened with outdated parameters and assumptions that cause impacts of the alternatives to appear worse than those of the proposed project. The Portfolio Alternative concept describes a feasible project, which may be more realistic than DWR's Preferred Alternative.

- The CEQA lead agency must be the California Department of Fish and Wildlife (CDFW), and not one of the proponents of the alternative conveyance system. The entire analysis has been skewed by the fact that it was prepared by the chief advocate for the conveyance system - and not the agency with responsibility to approve and ensure implementation of the entire Natural Community Conservation Plan.

- CCWD's facilities, operations and permits must be correctly described so that impacts to CCWD's ability to provide quality water are correctly analyzed.

In sum, the BDCP Draft EIR/EIS does not fulfill the most basic requirements of CEQA and NEPA to inform the decision-makers and the public about the environmental consequences of approving the BDCP, and to consider meaningful alternatives and mitigation measures to reduce the effects of the project. The document must undergo substantial revision and be recirculated for public review and agency response.

Finally, the BDCP itself does not meet the requirements of the federal Endangered Species Act and California Natural Community Conservation Planning Act, and its implementation would violate numerous other statutes, policies and contracts that protect water quality and water rights. The BDCP proponents must fundamentally rethink the project to correct these legal defects.

OVERVIEW OF COMMENTS

Project Description

The most basic flaw in the BDCP Draft EIR/EIS, from which most of the Draft's other defects flow, is its project description.

Water Supply Facilities. As explained in detail in Section 1.1 of CCWD's comments, although the BDCP is first and foremost a water supply project, the BDCP Draft EIR/EIS does not adequately describe how water supply facilities would operate under the BDCP.

First, the BDCP Draft EIR/EIS fails to describe how the BDCP proponents' existing water supply facilities would function during the first 11 years of BDCP operations, when CM1 would not yet be complete but numerous other BDCP elements – including habitat restoration projects and Delta "research studies" – would be implemented. Although significant impacts to water quality, water supply and other environmental resources could result, the BDCP Draft EIR/EIS provides no information that would allow the public and the decision-makers to assess the environmental impacts of this 11-year experiment on the Delta.

Second, once CM1 is constructed and north Delta diversions begin, the BDCP Draft EIR/EIS does not describe how existing State Water Project and Central Valley Project facilities outside the Delta – particularly upstream reservoirs – would be managed, or how DWR and Reclamation would share the capacity and yield of the new water supply facilities. The failure to answer these

questions creates flaws in the BDCP Draft EIR/EIS's analyses of water supply, surface water, water quality, and fisheries impacts. These flaws are so severe that the U.S. Department of the Interior, Bureau of Reclamation has stated "the whole of its action" has not been analyzed in the BDCP Draft EIR/EIS, and impacts from changes in the operation of upstream reservoirs must be evaluated before it will accept or implement the BDCP Biological Opinion. (Reclamation, 2013a at p.1)

Third, although the BDCP states that CM1 operations would be subject to adaptive management, the project description does not identify either the pieces of the adaptive management toolkit or the range of acceptable outcomes. Without these, the range of potential impacts of CM1 cannot be adequately analyzed or mitigated.

Fourth, the BDCP Draft EIR/EIS fails to identify the source of water needed to meet proposed operational criteria under Alternative 4, DWR's Preferred Alternative for the purposes of CEQA. The BDCP Draft EIR/EIS assumes that water for additional Delta outflow would come, in part, from a "water transfer," but does not identify the source of such a transfer and, therefore, makes no effort to analyze the environmental impacts of the transfer. It further assumes, in contradiction to existing laws and policies, that water for additional required Delta outflow could come from the State Water Project but not from the Central Valley Project. This unfounded assumption distorts the water supply, water quality, and fisheries analysis such that the impacts of operating the planned conveyance facilities cannot be properly assessed in the BDCP Draft EIR/EIS.

Finally, the BDCP project description has been segmented (or "piecemealed") to avoid addressing water storage, water transfers, or other activities essential to the accomplishment of project objectives. A fundamental objective of the BDCP is to "restore water supplies of the SWP and CVP south-of-Delta." BDCP Draft EIR/EIS p. ES-8. CM1, the water conveyance facility designed to achieve this objective, would cost the proponents of the BDCP at least $16.3 billion. BDCP Executive Summary p. 26. Yet the BDCP Draft EIR/EIS's analysis shows that under the most likely operating scenario, Alternative 4 is anticipated to *reduce* State Water Project and Central Valley Project water exports. The only way the BDCP can ensure improvements in water supply reliability south of the Delta is to include other elements such as water storage and water transfers. Yet the BDCP Draft EIR/EIS steadfastly refuses to address these elements. "An EIR may not define a purpose for a project and then remove from consideration those matters necessary to the assessment whether the purpose can be achieved." *County of Inyo v. City of Los Angeles*, 124 Cal. App. 3d 1, 9 (1981).

Habitat Restoration Projects. The BDCP Draft EIR/EIS purports to analyze at a generalized "program" level all 21 of the BDCP's conservation measures other than CM1 – many of which would cause their own environmental impacts, and some of which will precede completion of CM1. As explained in Section 1.2 of CCWD's comments, however, the BDCP Draft EIR/EIS fails to meet the legal requirements for a program analysis of these BDCP elements. To take the

most striking example, the BDCP's non-CM1 conservation measures include more than 80,000 acres of habitat restoration. It is very well understood that habitat restoration projects within the waters of the Delta or upstream rivers and floodplains can affect the movement of water, the extent of salinity intrusion, and the quality of water in Delta channels. Nevertheless, the BDCP Draft EIR/EIS provides very limited information about the small number of habitat restoration projects that have been identified, and provides no information whatever about the range of impacts that could be caused by the 80% of habitat restoration projects that remain unidentified. If specific information is not available about these projects, then the BDCP must set rules for their location, sequence and design, and the BDCP Draft EIR/EIS must analyze the impacts of habitat restoration projects that operate within those rules.

Impacts Analysis

As described in Section 2 of CCWD's comments, the BDCP Draft EIR/EIS analysis of the BDCP's environmental impacts is doomed by the project description defects enumerated above; by improperly defined baselines and with-project scenarios (Section 2.1), by errors and gaps in methodology for the analysis of water quality impacts (Section 2.2) and water supply impacts (Section 2.3), and by failure to analyze all of the impacts of CM1's construction (Section 2.4).

The comparison of project impacts to baseline conditions is flawed in four ways. First, the BDCP Draft EIR/EIS purports to use conditions as of February 2009, the date the Notice of Preparation for the EIR/EIS was issued, as its baseline date for CEQA analysis. This baseline is plainly outdated; important Delta water infrastructure projects and operations became part of the physical environment before the BDCP Draft EIR/EIS was issued and in some cases before the impact analysis was even started. In addition, the "February 2009" baseline conditions described in the BDCP Draft EIR/EIS do not even include all of the regulatory programs and requirements that were in place as of that date, thus making "existing" conditions appear worse than they are and falsely minimizing the BDCP's impacts.

Second, rather than comparing the BDCP alone to a February 2009 CEQA baseline, the BDCP Draft EIR/EIS conceals the BDCP's impacts by comparing presumed 2060 *cumulative* conditions – including BDCP operations, operations of other possible future projects, the possible effects of global climate change, and other presumed changes in background conditions, all mixed together – to the baseline. This plainly unlawful approach masks, rather than reveals, BDCP impacts and renders the BDCP Draft EIR/EIS's "CEQA" analyses useless.

Third, perhaps recognizing this fatal flaw in the CEQA analysis, the BDCP Draft EIR/EIS also presents a NEPA-based comparison of future no-project conditions to future with-project conditions. Although this analysis at least attempts to compare apples to apples, its fatal flaw is that the only future-year comparison conducted is for the year *2060*. This means not only that the first 46 years of BDCP impacts receive no environmental analysis whatsoever, but that the entire analysis depends on guesses about far-distant environmental conditions. The California

Supreme Court warned of just this problem in *Neighbors for Smart Rail v. Exposition Metro Rail Line Construction Authority*, 57 Cal. 4th 439, 447 (2013). Compounding these errors, the 2060 no-project scenario improperly excludes the implementation of habitat restoration actions that are *required* under the current Biological Opinions that govern the coordinated operations of the Central Valley Project and the State Water Project.

Fourth, the BDCP Draft EIR/EIS masks the impacts on water quality of CM1, on the one hand, and habitat restoration projects CM2 and CM4, on the other hand, by lumping them together for analysis. This makes it difficult to identify and evaluate mitigation measures to address the differing effects of the various conservation measures. Moreover, given that the project proponents have not committed to implement any conservation measure other than CM1, it is incorrect to assume implementation of those measures. The impact of each conservation measure must be revealed, in addition to the impacts of the combination of all of the measures.

The BDCP Draft EIR/EIS's technical analysis of the BDCP's water quality impacts is also plagued by errors and gaps. The BDCP Draft EIR/EIS fails to analyze the potential increase in carcinogens that form during the treatment of raw water to produce drinking water. Increases in bromide, dissolved organic carbon and organic nitrogen near drinking water intakes would increase the formation of disinfection byproducts that cause cancer and other serious health effects. With respect to bromide, for example, the BDCP Draft EIR/EIS:

- Fails to analyze the magnitude of change in bromide concentrations, which is necessary to analyze human health impacts;

- Asserts that large increases in bromide concentrations at two drinking water intakes are less than significant on the illogical basis that the intakes are "infrequently used"; and

- Fails to analyze bromide concentration changes in conjunction with changes in organic carbon concentrations, so that potential changes to disinfection byproduct formation, and impacts to all municipal users reliant on the Delta, are significantly understated.

The BDCP Draft EIR/EIS also fails to analyze the potential for the BDCP to impact water quality in the south Delta through increased concentrations of aquatic algae, whose byproducts can both be toxic to humans and animals and have noxious tastes and odors. Increases in these byproducts require increased physical removal and chemical treatment by water suppliers. The new south Delta marsh habitat and changes in water operations would create ideal conditions for cyanobacteria; nevertheless, the BDCP Draft EIR/EIS neglects these impacts and does not provide mitigation for them.

The BDCP Draft EIR/EIS's failures of analysis on these water quality issues are all the more striking given that the Department of Water Resources, which purports to be the CEQA lead

agency for the BDCP EIR/EIS, has repeatedly demanded that the EIRs for *other* parties' projects in the Delta analyze these very impacts.

Furthermore, the BDCP Draft EIR/EIS does not adequately analyze the temporary construction water quality impacts, and does not analyze at all the potential permanent water quality impacts, of the relocation of agricultural drains that would result from construction of conveyance facilities and habitat restoration, and which could occur at CCWD's drinking water intakes. DWR is well aware that agricultural drainage locations can significantly affect drinking water quality; it has funded two projects to reconfigure drainages near CCWD's intakes for precisely this reason. The project proponents cannot now ignore the effects that another relocation of drainages might cause.

Another significant gap in the BDCP Draft EIR/EIS analysis is its failure to discuss how the proposed project and alternatives would operate in the event of levee failures due to an earthquake. One of the BDCP's stated project objectives is to minimize the potential for public health and safety impacts that would accompany seismically induced levee failures. The BDCP presumably would benefit the exporters by enabling them to pump fresh water from north of the Delta in the event of a levee failure that brings salt water into the Delta. But nowhere does the BDCP Draft EIR/EIS reveal that doing so would make conditions far *worse* for those who rely on the Delta for their drinking water. Studies presented outside of the BDCP Draft EIR/EIS reveal that if fresh water were exported during a levee failure rather than flowing down into the Delta, it would take much longer for fresh water to flush out the Delta. The BDCP Draft EIR/EIS must be revised to explain how the BDCP proponents intend to operate the proposed project, and each project alternative, in the event of predictable earthquake scenarios, so that the public can review and comment on the environmental impacts of those plans.

The BDCP Draft EIR/EIS makes other fundamental errors in water quality analysis. The document fails to analyze impacts at two of CCWD's four drinking water intakes. The BDCP Draft EIR/EIS compounds this error by improperly treating water quality as a long-term average, rather than a daily, issue. But CCWD's and other diverters' ability to take acceptable water from Delta intakes is decided on a daily basis; improvements during periods when water quality is high do not offset degradation of water quality during periods when the quality is low.

With respect to water supply, even though modeling performed for the BDCP Draft EIR/EIS showed that the BDCP would cause significant impacts to CCWD's water supply, the BDCP Draft EIR/EIS does not reveal these results and does not disclose this significant impact. The proposed project would inhibit CCWD's ability to store high-quality water in Los Vaqueros Reservoir for blending with poor-quality source water, and for use in droughts and emergencies, but the BDCP Draft EIR/EIS never grapples with this issue. See Section 2.3.1 of CCWD's comments. Further, the BDCP Draft EIR/EIS assumes operation of the proposed project would reduce Central Valley Project storage in Shasta Lake and San Luis Reservoir to levels that are unlikely to occur in practice, and the document fails to disclose how these shortfalls would be

addressed and what the resulting impacts would be. The BDCP Draft EIR/EIS must be revised to take account of these water supply impacts.

Finally, the BDCP Draft EIR/EIS does not identify or evaluate the impacts of construction activities on access to drinking water supply infrastructure, including infrastructure owned and operated by CCWD. The impacts of constructing CM1 – and, indeed, CM2 through CM22 – must be fully analyzed in a revised BDCP Draft EIR/EIS.

Mitigation

Despite all of the errors that result in understatement of the BDCP's impacts, the BDCP Draft EIR/EIS identifies significant water quality impacts to CCWD facilities from increases in chloride, electrical conductivity (EC) and dissolved organic carbon (DOC). The document fails, however, to identify mitigation for these significant impacts that complies with CEQA and NEPA requirements. Instead, the text of the BDCP Draft EIR/EIS defers identification of mitigation measures to the distant future without explaining why such deferral is necessary and without specifying performance standards, identifying a menu of potential measures that would reduce the impact, or describing how the BDCP proponents would select among the measures. The only measures identified in the BDCP Draft EIR/EIS that might, if expanded and supplemented, form the basis for legally adequate mitigation measures are, paradoxically, carefully labeled not as mitigation, but as "non-environmental" "other commitments" in an Appendix. Moreover, the BDCP proponents do not even commit to these "commitments," incorrectly claiming that they are not required to contribute to the solution of any BDCP-caused significant water quality problems that are also caused "substantially" by climate change.

In addition, where, as described above, the BDCP Draft EIR/EIS entirely fails to analyze a potential environmental impact or incorrectly labels a significant environmental impact as less than significant, the BDCP Draft EIR/EIS also improperly fails to identify legally adequate mitigation.

CCWD Comment 3 describes in detail all of these defects in the BDCP Draft EIR/EIS. As the comment also explains, legally adequate mitigation measures for all of these impacts must be identified and analyzed.

Alternatives

The BDCP proponents' focus on CM1 has unreasonably restricted the range of alternatives analyzed in the BDCP Draft EIR/EIS. Alternatives that would reduce the significant impacts of CM1, including the "Portfolio Alternative" – or, indeed, any alternative that would substitute adjustments to existing water reservoir and system operations to improve water supply reliability in place of all or part of CM1 – are not considered despite the high environmental cost of CM1. Moreover, although the BDCP Draft EIR/EIS acknowledges that CM2 through 22 are likely to

cause significant environmental impacts, the BDCP proponents do not consider any meaningful changes to those BDCP components. Finally, the BDCP Draft EIR/EIS discussion of the alternatives the BDCP proponents are willing to consider is so unclear that neither the public nor the decision-makers will be able to discern, for example, whether a particular alternative would cause a particular impact due to its facility configuration or its operating scenario.

Lead Agency

CEQA defines the "lead agency" as "the public agency which has the principal responsibility for carrying out or approving a project." Pub. Res. Code § 21067. The overriding interest of the BDCP proponents in constructing the CM1 water conveyance facilities led them to select the Department of Water Resources (DWR) as lead agency; DWR has authority over the State Water Project, one of the primary beneficiaries of CM1. However, the BDCP purports to be a Natural Community Conservation Plan (NCCP) under California law; implementation of the NCCP is the proposed project for CEQA purposes. DWR has no responsibility for approving the NCCP; that responsibility belongs to the California Department of Fish and Wildlife. As for carrying out the NCCP, DWR would have significant responsibility for carrying out CM1, but may carry out few of the BDCP's other 21 "conservation measures." For the reasons described in detail in Section 5 of CCWD's comments, the BDCP proponents' selection of DWR rather than CDFW as the "CEQA lead agency" violates CEQA and has skewed the contents of the BDCP Draft EIR/EIS.

Characterization of CCWD Facilities, Operations and Permits

The BDCP Draft EIR/EIS's internally inconsistent, outdated and largely erroneous descriptions of CCWD's existing operations and facilities presage the document's failures to analyze significant environmental impacts affecting those operations and facilities. The BDCP Draft EIR/EIS repeatedly ignores two of CCWD's four Delta water intakes, the Rock Slough Fish Screen, and the Los Vaqueros Reservoir Expansion Project and incorrectly describes CCWD as an exporter of water from the Delta. The result is an "existing conditions" baseline for BDCP analysis that misstates 2013 conditions in the Delta and understates the BDCP's impacts. Section 6 of CCWD's comments explains these defects.

Habitat Conservation Plan/NCCP Comments

In addition to the CEQA and NEPA shortcomings that make its BDCP Draft EIR/EIS unlawful, the BDCP itself does not comply with the letter or spirit of the Endangered Species Act (ESA) and the Natural Community Conservation Planning Act (NCCPA), as described in Section 7 of CCWD's comments. First, although CCWD is unique as the only major municipal water supplier that relies entirely on intakes it operates in the Delta, the planned governance for the BDCP gives CCWD no effective voice in BDCP implementation. Second, the Draft Implementing Agreement for the BDCP violates the NCCPA by providing assurances to the

BDCP proponents that are not commensurate with the BDCP's underfunded and uncertain conservation assurances. Third, the Draft Implementing Agreement violates the NCCPA's requirement that the implementation of mitigation and conservation measures "is roughly proportional in time and extent to the impact on habitat." Finally, Chapter 8 of the BDCP relies on incomplete, unrealistic and speculative funding assumptions, failing to provide an adequate level of assurance that the BDCP would be funded adequately to meet NCCPA and ESA requirements.

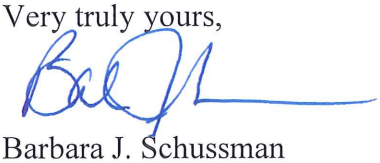
Consistency with Other Laws, Policies and Agreements

Finally, as explained in Section 8 of CCWD's comments, the BDCP must comply with the Delta Protection Act, the Sacramento-San Joaquin Delta Reform Act of 2009, anti-degradation policy, water rights, sections 404 and 401 of the Clean Water Act, and at least three existing contracts with Delta water purveyors. As proposed and analyzed in the BDCP Draft EIR/EIS, implementation of the BDCP would violate all of these statutes, policies and agreements. These are not simply significant impacts that the agencies can override under CEQA or impacts that can be accepted in a record of decision under NEPA; these are violations of substantive law that the BDCP proponents must address and eliminate.

* * * * *

The attached set of full comments explains each of the foregoing issues in detail. In addition, technical documents referenced in CCWD's comments are attached to this comment letter as Exhibits. If you have questions about these comments, please contact Marguerite Patil at CCWD at (925) 688-8018 or mpatil@ccwater.com.

Very truly yours,



Barbara J. Schussman

Attachments

Copies to: Charles Bonham, California Department of Fish and Wildlife
Mark Cowin, California Department of Water Resources
Ren Lohoefener, U. S. Fish and Wildlife Service
David Murillo, U. S. Department of Interior, Bureau of Reclamation
Maria Rea, National Marine Fisheries Service

[blank for printing]

Contra Costa Water District

Comments on the December 13, 2013
Draft Bay Delta Conservation Plan and Accompanying
Draft Environmental Impact Report / Environmental Impact Statement

July 25, 2014

[blank for printing]

Contra Costa Water District
Comments on the December 13, 2013
Draft Bay Delta Conservation Plan and Accompanying Draft EIR/EIS

Sections

1. The BDCP Project Description Omits Critically Important Information.....1
2. The Impacts Analysis Is Deficient. 32
3. Formulation of Mitigation Measures Is Improperly Deferred.....105
4. The Evaluation Of Alternatives Is Inadequate. 121
5. The Department of Water Resources Is the Wrong Lead Agency for the BDCP under CEQA. 129
6. Descriptions of CCWD Facilities, Operations, and Permits Are Inaccurate. 130
7. The Proposed BDCP is Inadequate as a Habitat Conservation Plan and Natural Community Conservation Plan. 136
8. The Proposed BDCP Violates Existing Laws and Policies. 146
9. Exhibits 150
10. Authors.....158

Tables

Table 2-1. Magnitude and percent change of bromide concentration compared to the CEQA baseline and the NEPA baseline in above normal years and wet years at municipal water intakes in the west Delta. 59
Table 2-2. Average change in Delta outflow compared to the No Action Alternative 83

Figures

Figure 1-1. Effect of tidal marsh restoration on Delta salinity depends on location of proposed tidal marsh and connectivity to the channels. 23
Figure 1-2. Potential benefits and impacts of restoration at Prospect Island depend on design elements regarding the connectivity of the interior island to the surrounding channels. 25
Figure 1-3. Prospect Island and Liberty Island during a high outflow event illustrating (a) turbidity and (b) change in turbidity for two different habitat restoration alternatives on Prospect Island. 27

Figure 2-1. Drinking Water Intakes in the Delta. 71
Figure 2-2. Salinity at the City of Stockton's intake and Buckley Cove 72
Figure 2-3. Salinity at CCWD's Rock Slough, Old River, and Middle River intakes 73
Figure 2-4. Percent of water at the City of Stockton's intake and Buckley Cove that originated on the Sacramento River 74
Figure 2-5. Impact to CCWD's delivered water quality 76
Figure 2-6. Impacts to Los Vaqueros Reservoir illustrated from modeling performed as the basis for BDCP Draft EIR/EIS. 92
Figure 2-7. Impacts to Los Vaqueros Reservoir based on refined modeling, taking into account biases identified by DWR and correcting the storage capacity of Los Vaqueros Reservoir. 94
Figure 2-8. Percent of years when San Luis Reservoir drops below the "low point" that creates water supply and water quality impacts for certain Central Valley Project contractors 100
Figure 2-9. BDCP facilities (Alternative 4) with CCWD intakes and pipeline in the south Delta. 102

Detailed Contents

1. The BDCP Project Description Omits Critically Important Information..... 1

1.1. The BDCP Draft EIR/EIS Fails to Adequately Specify How Existing Water Supply Facilities Would Be Operated and Omits Necessary Project Components From The Project Description. 3

1.1.1. The BDCP Draft EIR/EIS does not reveal how the existing water supply facilities would be operated for the first decade of project construction and operation, prior to operation of Conservation Measure 1 (CM1). 4

1.1.2. The BDCP Draft EIR/EIS does not reveal how existing water supply facilities would be managed in conjunction with the proposed new water supply facilities once Conservation Measure 1 (CM1) is operating. 5

1.1.3. The BDCP Draft EIR/EIS does not reveal how the State Water Project and Central Valley Project would share the capacity of the new water supply facilities. 8

1.1.4. The BDCP Draft EIR/EIS does not reveal the parameters and limits of the adaptive management program proposed as part of the BDCP. 9

1.1.5. The BDCP Draft EIR/EIS does not reveal the source of water needed to meet proposed operational criteria in the DWR Preferred Alternative. 11

1.1.6. The BDCP Draft EIR/EIS does not reveal the effects of water projects upon which Conservation Measure 1 (CM1) would rely. 13

1.1.6.1. Need for additional storage to accomplish the project objectives. 16

1.1.6.2. Failure to analyze water storage as part of the proposed project. 17
1.1.6.3. Failure to analyze the cumulative impacts of water storage projects. 19
1.2. The BDCP Draft EIR/EIS Fails To Adequately Describe The Proposed Habitat Restoration Projects. 20
1.2.1. The BDCP Draft EIR/EIS contains only limited information about the proposed habitat restoration program. 21
1.2.2. Assessing Delta water quality and water supply impacts requires an evaluation of the location, timing and design of the habitat restoration actions. 22
1.2.3. More information is needed to adequately evaluate the water quality and water supply effects of the habitat restoration actions. 28
1.2.3.1. Failure to describe near-term actions and resulting impacts. 28
1.2.3.2. Failure to distinguish impacts of habitat restoration from impacts of water conveyance facilities. 28
1.2.3.3. Failure to describe the key variables and the full range of impacts. 29
1.2.4. The promise to conduct future studies does not remedy the inadequate project description. 31
2. The Impacts Analysis Is Deficient. 32
2.1. The Environmental Impacts of the Proposed Project Are Not Adequately Disclosed And Analyzed as Compared to the Environmental Baseline. 32
2.1.1. The CEQA existing conditions baseline scenario improperly excludes important components of the existing environmental setting. 37
2.1.1.1. The Middle River Intake Project and the Los Vaqueros Reservoir Expansion Project. 37
2.1.1.2. The Fall X2 salinity standard. 39
2.1.2. The environmental analysis fails to compare the project's impacts against the CEQA existing conditions baseline and instead uses the anticipated effects of other future projects and events to obscure the project impacts. 42
2.1.2.1. Water quality impacts due to ammonia: Sacramento Regional Wastewater Treatment Plant. 42
2.1.2.2. Water quality impacts due to selenium: Grassland Bypass Project and similar regulatory programs. 43
2.1.2.3. Climate change analysis. 45
2.1.3. The BDCP Draft EIR/EIS fails to disclose the project's short-term and medium-term environmental impacts. 47
2.1.4. By solely relying on an analysis of impacts in the year 2060, the BDCP Draft EIR/EIS provides an assessment that is highly uncertain and unreliable. 49
2.1.5. The conflation of the impacts of Conservation Measure 1 (CM1) and habitat restoration prevents the BDCP Draft EIR/EIS from disclosing and evaluating the full range of potential environmental impacts. 51

2.1.5.1. Failure to disclose impacts of Conservation Measure 1 (CM1). 51
2.1.5.2. Failure to evaluate the full range of habitat restoration impacts. 53
2.1.6. The No Project and No Action Alternatives improperly exclude habitat restoration actions that are required by the existing Biological Opinions governing the operations of the Central Valley Project and State Water Project. 53
2.2. The BDCP Draft EIR/EIS Omits Analysis of Several Significant Water Quality Impacts, and Understates Others. 55
2.2.1. The BDCP Draft EIR/EIS fails to evaluate several potentially significant water quality impacts. 55
2.2.1.1. Failure to analyze the potential increase in carcinogens that form during raw water treatment. 56
2.2.1.1.1 Bromide. 56
2.2.1.1.2 Dissolved Organic Material and Organic Nitrogen. 60
2.2.1.2. Failure to analyze changes in Delta algae and algal byproducts. 61
2.2.1.3. Failure to evaluate the impacts of altered drainage patterns on water quality. 66
2.2.1.4. Failure to analyze the impacts of the project in the event of levee failures. 67
2.2.2. Improper and unsupported analysis in the BDCP Draft EIR/EIS underestimates water quality impacts. 70
2.2.2.1. Inadequate representation of drinking water intakes. 70
2.2.2.2. Degradation of CCWD's delivered water quality. 74
2.2.2.3. Improper reliance on long term averages. 76
2.2.2.4. Fundamentally flawed operational modeling. 77
2.2.2.4.1 Location of SWP and CVP exports. 78
2.2.2.4.2 Total Delta exports and Delta outflow 80
2.2.2.4.3 Net result of corrections to the operations model. 81
2.2.2.5. Unwarranted use of a limited time period for water quality analysis. 81
2.2.2.5.1 Failure to represent the 82-year period. 82
2.2.2.5.2 Level of detail. 83
2.2.2.5.3 Comparison of the accuracy of an 82-year analysis with that of a 16-year analysis. 83
2.2.2.5.4 Feasibility of an 82-year analysis of water quality impacts. 84
2.2.2.6. Underestimation of impacts due to the methodology used to simulate tidal habitat restoration (Conservation Measure 4). 84
2.2.2.7. Mathematically flawed mass balance analysis of water quality impacts. 86
2.2.2.8. Flawed selenium modeling. 87

2.3. The BDCP Draft EIR/EIS Fails To Disclose Significant Water Supply Impacts..... 88
2.3.1. Impacts to water quality, drought and emergency water supplies stored in CCWD's Los Vaqueros Reservoir are not disclosed. 88
2.3.1.1. Significant adverse impacts to Los Vaqueros Reservoir storage from degradation in water quality. 89
2.3.1.1.1 BDCP Draft EIR/EIS modeling results. 91
2.3.1.1.2 Refined analysis by DWR staff. 92
2.3.1.1.3 Refined analysis by CCWD. 93
2.3.1.2. Impacts to CCWD's ability to fill Los Vaqueros Reservoir with water diverted using CCWD's own water right. 95
2.3.1.3. Impacts to CCWD's ability to fill Los Vaqueros Reservoir with Central Valley Project water. 97
2.3.2. Impacts resulting from the BDCP's effect on storage in Central Valley Project reservoirs are not fully evaluated and disclosed. 97
2.3.2.1. Impacts to Shasta Lake. 98
2.3.2.2. Impacts to San Luis Reservoir. 99
2.4. The BDCP Draft EIR/EIS Fails to Disclose Significant Impacts to Existing Water Supply Infrastructure Due to Project Construction. 101
2.4.1. Construction of Conservation Measure 1 could have significant impacts on existing CCWD drinking water facilities. 101
2.4.1.1. Restrictions on access to Contra Costa Water District facilities. 101
2.4.1.2. Land subsidence and levee failures caused by tunnel construction. 103
2.4.1.3. Water quality impacts of construction. 104
2.4.2. Construction of the other Conservation Measures could have significant effects that have not been revealed. 105
3. Formulation of Mitigation Measures Is Improperly Deferred.....105
3.1. The BDCP Draft EIR/EIS Fails to Identify Legally Adequate Mitigation Measures for Identified Significant Water Quality Impacts. 106
3.1.1. The Water Quality chapter of the BDCP Draft EIR/EIS does not identify adequate mitigation for significant chloride, EC and bromide impacts. 108
3.1.1.1. Conflicting statements regarding the availability of mitigation measures to reduce chloride, EC and bromide impacts 108
3.1.1.2. Inadequate mitigation measures listed in BDCP Draft EIR/EIS Chapter 8. 109
3.1.1.2.1 Mitigation Measures WQ-7a, WQ-11a and WQ-5. 109
3.1.1.2.2 Mitigation Measure WQ-7b (Chloride) 111
3.1.2. The Water Quality chapter of the BDCP Draft EIR/EIS does not identify adequate mitigation for significant DOC impacts 112

3.1.3. Defects in the BDCP Draft EIR/EIS mitigation measures are not cured by "other commitments" in Appendix 3B; the "other commitments" need to be revised and incorporated into the BDCP EIS/EIR as mitigation measures. 114
3.1.3.1. BDCP Draft EIR/EIS Appendix 3B.2. 115
3.1.3.2. BDCP Draft EIR/EIS Appendix 3B.2.1. 116
3.1.3.3. BDCP Draft EIR/EIS Appendix 3B.2.1.1 Chloride and EC. 117
3.1.3.4. BDCP Draft EIR/EIS Appendix 3B.2.1.2 Bromide. 119
3.1.3.5. BDCP Draft EIR/EIS Appendix 3B.2.1.3 DOC. 119
3.2. The BDCP Draft EIR/EIS Fails to Identify Mitigation for Unacknowledged Significant Impacts Affecting CCWD Operations. 120
3.3. Mitigation for the BDCP's Impacts Must Be Identified and Evaluated. 121
4. The Evaluation Of Alternatives Is Inadequate. 121
4.1. The BDCP Draft EIR/EIS Improperly Omits Detailed Evaluation of Alternatives that Could Improve Water Supply Reliability while also Reducing Negative Environmental Impacts..... 122
4.2. The Alternatives That Have Been Evaluated Fail to Avoid or Substantially Lessen most of the Significant Effects of the Proposed Project..... 125
4.3. The BDCP Draft EIR/EIS Fails to Evaluate Alternatives to Habitat Restoration Conservation Measures. 126
4.4. The BDCP Draft EIR/EIS Fails to Present an Adequate Comparative Analysis of the Alternatives..... 127
5. The Department of Water Resources Is the Wrong Lead Agency for the BDCP under CEQA. 129
6. Descriptions of CCWD Facilities, Operations, and Permits Are Inaccurate. 130
6.1. It Is Important to Accurately Characterize and Model Existing CCWD Facilities, Operations, and Permits. 130
6.2. CCWD Has Separate Endangered Species Act and California Endangered Species Act Permits Governing its Operations. 134
6.3. CCWD Facilities and Operations Are Not Accurately Reflected in the BDCP Environmental Baseline Scenarios. 135
7. The Proposed BDCP is Inadequate as a Habitat Conservation Plan and Natural Community Conservation Plan. 136
7.1. The BDCP Governance Structure Should Be Revised to Ensure Water Quality Concerns Are Carefully Considered during all Stages of Project Implementation.... 136
7.1.1. The proposed governance structure does not provide effective representation of CCWD's interests. 136

7.1.2. Delta water quality considerations must be taken into account during the adaptive management process. 138
7.2. The Proposed Implementing Agreement for the BDCP Violates The Natural Community Conservation Planning Act. 138
7.2.1. The proposed assurances provided to the BDCP proponents are not commensurate with the proposed conservation and implementing measures. 139
7.2.1.1. Overly expansive proposed assurances. 139
7.2.1.2. Inadequate conservation and funding assurances. 140
7.2.1.3. Lack of accountability for achieving the biological objectives. 142
7.2.2. The proposed mitigation and conservation measures are not roughly proportional in time and extent to the impact on habitat or covered species. 143
7.2.3. The draft Implementing Agreement is inconsistent with CEQA and NEPA. 143
7.3. The Funding Information in the BDCP Is Incomplete, Unrealistic and Speculative. 144
8. The Proposed BDCP Violates Existing Laws and Policies. 146
8.1. The Proposed BDCP Violates the Delta Protection Act (Cal. Wat. Code §§ 12200 – 12205). 146
8.2. The Proposed BDCP Violates the Sacramento-San Joaquin Delta Reform Act of 2009 (Cal. Wat. Code §§ 85000 – 85350). 146
8.3. The Proposed BDCP Violates California Water Rights Laws. 147
8.4. The Proposed BDCP Violates State and Federal Antidegradation Policies (State Water Resources Control Board Resolution 68-16 and 40 C.F.R § 131). 148
8.5. The Proposed BDCP Violates Section 404 of the Clean Water Act (33 U.S.C. § 1344). 149
8.6. The Proposed BDCP Violates Section 401 of the Clean Water Act (33 U.S.C. § 1341). 150
9. Exhibits 150
10. Authors.....158

Contra Costa Water District

Comments on the December 13, 2013

Draft Bay Delta Conservation Plan and Accompanying Draft EIR/EIS

The follow comments were prepared by staff at Contra Costa Water District with technical expertise in environmental planning, Delta water quality, water supply, and aquatic resources. See Section 10 for a list of authors.

1. The BDCP Project Description Omits Critically Important Information.

The BDCP project description omits critical information about the proposed project to inform the basics of an environmental impact assessment. Numerous cases have repeated the fundamental principle under CEQA that a complete and accurate project description is indispensable to an adequate EIR. *See* S. Kostka & M. Zischke, *Practice Under the California Environmental Quality Act* (CEB 2014) at pp. 12-2 to 12-3. As the court explained in the leading case of *County of Inyo v. City of Los Angeles*, 71 Cal. App. 3d 185, 192-193 (1977):

> Only through an accurate view of the project may affected outsiders and public decision-makers balance the proposal's benefit against its environmental cost, consider mitigation measures, assess the advantage of terminating the proposal (i.e., the "no project" alternative) and weigh other alternatives in the balance. An accurate, stable and finite project description is the *sine qua non* of an informative and legally sufficient EIR.

Another court reiterated these long-standing principles in *San Joaquin Raptor Rescue Center v. County of Merced*, 149 Cal. App. 4th 645, 653 (2007), emphasizing that "[a]n EIR must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project." To provide an adequate level of detail, "[t]he entirety of the project must be described, and not some smaller portion of it." *Id*. at 654. A project description that is "curtailed, enigmatic, or unstable," and that inadequately characterizes the action that is proposed for approval, impedes public participation and thwarts the EIR process. *Id*. at 655-56. As yet another court explained in *San Joaquin Raptor/Wildlife Rescue Center v. County of Stanislaus*, 27 Cal. App. 4th 713, 730 (1994), "[a]n accurate project description is necessary for an intelligent evaluation of the potential environmental effects of a proposed activity."

The same principle applies under NEPA. *See Oregon Natural Desert Association v. Bureau of Land Management*, 625 F.3d 1092, 1109 (9th Cir. 2010) ("In order to decide what kind of environmental impact statement need be prepared, it is necessary first to describe accurately the 'federal action' being taken.")

The project description in the BDCP Draft EIR/EIS fails to meet these fundamental standards. There are two major sets of flaws with the project description. First, the description of water supply operations is deficient in a variety of important respects:

- The BDCP Draft EIR/EIS fails to describe how the existing water supply facilities of the Central Valley Project (CVP) and State Water Project (SWP) would be operated before the BDCP water conveyance facilities that make up Conservation Measure 1 (CM1) are constructed. This is a significant omission, as there are various components of the BDCP − which could adversely affect water quality and water supply − that would be put into operation before CM1 is built. This lack of information about near-term water supply operations makes it impossible to assess the project's impacts during the initial years of the BDCP's implementation. *See* Section 1.1.1 below.

- The BDCP Draft EIR/EIS fails to include an operations plan describing how the existing CVP and SWP water supply facilities would be managed in conjunction with the new water conveyance facilities of the BDCP. This prevents a full and accurate assessment of what the future impacts of the BDCP would be. *See* Section 1.1.2 below.

- The BDCP Draft EIR/EIS fails to describe how the CVP and the SWP would share the capacity of the new BDCP water conveyance facilities. This missing piece of the project description prevents a full and accurate assessment of the future impacts of the BDCP and means that potential *reductions* in deliveries to certain water contractors are not accounted for. *See* Section 1.1.3 below.

- The BDCP Draft EIR/EIS does not adequately describe how project water supply operations would be adaptively managed. The BDCP indicates that the operations may be modified due to adaptive management for the protection of fish, but the parameters and limits for these modifications are not defined. As a result, the range of impacts resulting from adaptive management changes, especially with respect to impacts on water quality within the Delta, is not disclosed or analyzed. *See* Section 1.1.4 below.

- The BDCP Draft EIR/EIS fails to define the water transfers that the document assumes would be necessary to satisfy the project objectives. The document therefore fails to analyze the environmental impacts resulting from the needed transfers. In addition, the assumptions for how Delta outflow requirements would be met under the BDCP are unrealistic and contrary to the Congressionally-approved Coordinated Operations Agreement that governs the CVP and SWP. *See* Section 1.1.5 below.

- The BDCP Draft EIR/EIS improperly segments, or "piecemeals," the environmental analysis, by excluding from the environmental analysis water storage projects or other water projects that are necessary for the BDCP to meet its water supply objective. *See* Section 1.1.6 below.

In addition to these deficiencies in the description of the water supply operations, the habitat restoration components of the BDCP are not sufficiently defined to ascertain their potential impacts on water quality and water supply. *See* Section 1.2 below. By way of example, for Conservation Measure 4 (CM4), the BDCP Draft EIR/EIS assumes that 65,000 acres of tidal habitat would be restored by the year 2060, but the description and evaluation of this massive plan is so vague and generalized that the reader is unable to discern:

- How the near-term habitat restoration actions under the BDCP could affect Delta water quality and water supplies in the initial years of project implementation before CM1 is constructed.

- What the adverse impacts of the habitat restoration actions under the BDCP would be over the longer term, as distinguished from the adverse impacts resulting from the operation of CM1.

- What the full range of impacts could be from the habitat restoration actions under the BDCP, depending on the location, sequence, and design of the actions.

Without this important information, there is no way to know what mitigation measures should be adopted to guide the future site-specific habitat restoration actions that make up CM4.

In short, the project description in the BDCP Draft EIR/EIS fails to provide sufficient information to allow for a complete and accurate assessment of the BDCP's environmental impacts. This major flaw in the document frustrates the fundamental goal of the environmental review process, by preventing meaningful public input and informed governmental decision-making. In its current form, the project description simply cannot serve as a basis for a legally adequate EIR/EIS.

1.1. The BDCP Draft EIR/EIS Fails to Adequately Specify How Existing Water Supply Facilities Would Be Operated and Omits Necessary Project Components From The Project Description.

The operations of the CVP and the SWP are a major determinant of water quality in the Delta (CCWD, 2010). This is true under present conditions and would be no less true in the future with the implementation of the BDCP. However, the BDCP Draft EIR/EIS provides incomplete and inaccurate information about CVP and SWP operations under future project conditions. As described in detail below, this approach prevents a meaningful assessment of the potential water supply, water quality, and other environmental impacts that could occur as a result of the project.

1.1.1. The BDCP Draft EIR/EIS does not reveal how the existing water supply facilities would be operated for the first decade of project construction and operation, prior to operation of Conservation Measure 1 (CM1).

The BDCP Draft EIR/EIS does not provide any information regarding how the existing SWP and CVP water supply facilities, which are owned and operated by the project proponents, would be operated prior to the start of operation of the proposed new water supply facilities in Conservation Measure 1 (CM1). This is important because the operation of CM1 is not planned to start until 11 years after approval of the BDCP, whereas other project components that could trigger changes to operations of existing water supply facilities would be implemented much sooner than that. BDCP, Chap. 6, Tables 6-1 & 6-2. The BDCP Draft EIR/EIS explains that the project components are divided into near-term and long-term implementation stages: the near-term stage would last until the new water conveyance facilities are operational, while the long-term stage would consist of the remainder of the 50-year BDCP permit duration. BDCP Draft EIR/EIS, Chap. 3 at p. 3-20. But for the near-term stage, the BDCP Draft EIR/EIS simply states that coverage under the federal Endangered Species Act and California Endangered Species Act for the operation of the existing water supply facilities will be addressed "through separate compliance processes." BDCP Draft EIR/EIS, Chap. 3, at p. 3-17.

This is an insufficient description of the initial years of water supply facility operations under the BDCP. The project components that would be implemented in the near-term stage would necessarily affect how the existing water supply facilities are operated. And, in turn, the effect on existing water supply operations caused by the near-term project components would result in environmental impacts − impacts that are ignored in the BDCP Draft EIR/EIS.

In particular, the near-term project components that include habitat restoration occurring within the waters of the Delta or upstream rivers and floodplains (primarily Conservation Measures 2, 4, 5, 6, 7, and 10) would affect the movement of water, extent of salinity intrusion, and spatial distribution of listed species. For instance, if habitat restoration implemented under the BDCP reduces salinity in the western Delta at a time when operations of existing facilities are being regulated to meet salinity requirements,[1] the project proponents are likely to reduce upstream reservoir releases to conserve storage or would increase diversions within the Delta to increase export of water to users south of the Delta. Such actions could lead to additional take of listed species and other environmental impacts, as compared to existing conditions and as compared to future conditions without the project. For example, if exports are increased, more delta smelt, salmon or other species could be entrained at the export pump plants. As another example, if water is held in storage, it would be released at some other time, and the effects of the release would depend upon its timing. Without information about how the existing facilities would be operated in combination with the proposed habitat restoration conservation measures prior to the operation of CM1, it is not possible to assess these potential impacts or to identify appropriate mitigation.

[1] As discussed in Section 1.2.2, habitat restoration actions could increase or decrease Delta salinity depending on project-specific design details.

Furthermore, the Preferred Alternative for purposes of CEQA (DWR Preferred Alternative) (Alternative 4)[2] includes as-yet undefined research studies for a "decision tree" to be completed in the near-term stage, prior to the initial operation of CM1. BDCP, Chap. 3, Table 3.4.1-5 at p. 3.4-32. These studies would be designed to inform operational criteria of CM1 for Delta outflow in the spring and fall. Although the studies "have not yet been determined" (*id*.), they could involve alteration of the operational criteria of the existing water supply facilities to test hypotheses regarding Delta outflow before CM1 is operational. Since changes in Delta outflow would impact salinity intrusion, these studies need to be defined in the BDCP Draft EIR/EIS, and their potential effects on existing water supply facilities and operations must be evaluated and disclosed.

In sum, the BDCP Draft EIR/EIS must disclose how the existing water supply facilities that are owned and operated by the project proponents would be operated in the near term. To assess this issue, the BDCP Draft EIR/EIS must describe how the BDCP, including the decision tree studies and the conservation measures to be implemented in the initial ten years of the project, would change the operations of the existing water supply facilities and the Delta. Without this critical information, there is no way to conduct a meaningful assessment of the potential water supply, water quality, and other environmental impacts that could result from these near-term change in operation of the existing water supply facilities.

1.1.2. The BDCP Draft EIR/EIS does not reveal how existing water supply facilities would be managed in conjunction with the proposed new water supply facilities once Conservation Measure 1 (CM1) is operating.

The SWP and CVP coordinate operation of their facilities, including operation of reservoirs located upstream of the Delta and operation of the diversion facilities within the Delta that export water to the San Joaquin Valley and southern California. The system is connected by natural waterways such as the Sacramento River and man-made canals such as the Delta-Mendota Canal. Operations in one location can affect operations throughout the system. For example, the amount of water released from the upstream storage reservoirs is inextricably tied to the amount of water pumped out of the Delta at the export facilities.

The BDCP Draft EIR/EIS states that the BDCP would modify operations in the Delta (BDCP Draft EIR/EIS, Chap. 3 at p. 3-31), but fails to describe the resulting changes to operations of water supply facilities outside the Delta, which in turn could result in significant environmental impacts. Delta operations are not independent of the rest of the SWP and CVP facilities. The BDCP Draft EIR/EIS acknowledges that Delta operations are influenced by Delta inflow (*id*. at p. 3-38), which depends on releases from upstream reservoirs; however, the BDCP Draft EIR/EIS does not describe how the addition of the proposed new water diversion facilities in the north Delta under the BDCP would alter management of existing upstream reservoirs.

[2]Although the studies are described as a component of the operations for Alternative 4, the BDCP Draft EIR/EIS states that they "could be implemented with any other project alternative in order to create a hybrid alternative." BDCP Draft EIR/EIS, Chap. 3 at p. 3-202.

U.S. Department of Interior, Bureau of Reclamation (Reclamation) identified this as a key issue in its July 5, 2013 comments on the May 2013 Administrative Draft EIR/EIS, stating that because Reclamation's actions outside the Delta are not addressed, "the whole of Reclamation's action is not analyzed (i.e. Delta vs. whole CVP)" and the scope of the environmental analysis "may not be sufficient." (Reclamation, 2013a at p. 1). On July 16, 2013, Reclamation made a "clarification" to its comments, stating:

> The current BDCP analysis assumes no operational impacts to upstream reservoir operations. Reclamation will continue to evaluate resulting upstream operational changes as necessary within the new operating regime under BDCP. If additional effects, outside of what has already been evaluated are identified, Reclamation will analyze those under a supplemental NEPA process prior to accepting and implementing the BDCP Biological Opinion. Reclamation does not believe this will affect the BDCP schedule.

(Reclamation, 2013a at p. 1)

This approach is legally incorrect. As Reclamation recognized in its initial July 5, 2013 comments on the BDCP Administrative Draft EIR/EIS, the scope of the analysis in the BDCP Draft EIR/EIS is not sufficiently inclusive, as it does not examine changes to water supply facility operations outside of the Delta. Reclamation cannot properly sidestep this defect by deferring the evaluation of upstream operations to some unspecified future date. Reclamation's acknowledgement that it would not accept and implement the BDCP Biological Opinion until these impacts have been analyzed constitutes an admission that the Draft EIR/EIS is deficient in its current form. No project approvals can be granted by any agency until the requisite has been conducted. And that analysis must be circulated for public review and comment.

The failure to give adequate consideration to the changes to existing facilities that would necessarily occur due to implementation of the BDCP creates flaws in the analysis of water supply, water quality, and fisheries impacts. For instance, the BDCP Draft EIR/EIS acknowledges that operating existing upstream reservoirs differently ("reoperating" reservoirs) could create additional yield (BDCP, Chap. 3 at p. 3.4-356). Since there is a finite supply of water in the system, additional yield to the BDCP proponents would necessarily reduce available water to other users or to the ecosystem (including Delta outflow, which affects Delta salinity levels). However, the BDCP Draft EIR/EIS fails to disclose how the reservoirs would be reoperated; it therefore fails to analyze the impacts of this reoperation and how these impacts could be mitigated. As an example, if reoperation increases export levels, outflow at some time must be reduced, thereby increasing salinity levels in the Delta. The BDCP Draft EIR/EIS fails to disclose these potential impacts by failing to describe likely reoperation of reservoirs. The public is left in the dark. This is not a minor omission given the hundreds of thousands of people who rely on the Delta as their sole source of drinking water.

Despite the lack of an operations plan, the consultants who performed the analysis for the BDCP Draft EIR/EIS were tasked with simulating how existing SWP and CVP facilities would operate in coordination with the BDCP. This ad-hoc modeling of system operation in the absence of an operations plan, which was used for the BDCP Draft EIR/EIS analysis, was provided by the California Department of Water Resources (DWR) to CCWD in 2013 (DWR, 2013b), and the results of the modeling indicate that it is unrealistic to assume that there would be no operational changes to existing reservoir operations as a result of the BDCP.

For example, San Luis Reservoir is an off-stream storage reservoir located south of the Delta and jointly operated by the SWP and CVP. As an off-stream reservoir, San Luis Reservoir receives little water from local precipitation and instead is primarily filled by pumping water from the existing SWP and CVP export facilities in the south Delta. The CVP and SWP coordinate operations to move water - either water that was previously stored in reservoirs upstream of the Delta (such as Shasta Lake and Oroville Reservoir) or water that is in excess of the needs of the basin and that has never been stored - through the Delta to fill San Luis Reservoir. Since 2001, Reclamation has been working on the San Luis Low Point Improvement Project, which evaluates solutions to decreased water delivery reliability that occurs when San Luis Reservoir storage drops to a "low point," below 300 thousand acre-feet, causing Reclamation's San Felipe Unit (which draws water from San Luis Reservoir) to experience supply interruptions.

CM1 is intended to provide operational flexibility to "restore" water supply reliability to water contractors south of the Delta, including those that depend on San Luis Reservoir; however, the assumptions used in the BDCP Draft EIR/EIS environmental analysis show that the BDCP would actually exacerbate the low point problem. Historically, from 1969 through 2013, storage in San Luis Reservoir has dropped below 300 thousand acre-feet in approximately 10% of the years (DWR, 2014b). According to the modeling used as the basis for the BDCP Draft EIR/EIS (DWR, 2013b), storage in San Luis Reservoir would drop below 300 thousand acre-feet in 36% of the years under the No Action Alternative and would be exacerbated under the DWR Preferred Alternative as storage in San Luis Reservoir would drop below 300 thousand acre-feet in 44% to 86% of the years, depending on the outcome of the decision tree studies. For Alternative 4, Scenario H3 – which is the branch of the decision tree with the same X2 requirements as the No Action Alternative – storage in San Luis Reservoir would drop below 300 thousand acre-feet in 73% of the years; in other words, the occurrence of the low point problem would double with implementation of the BDCP. As discussed in Section 2.3.2.2, the additional occurrence of the low point condition creates a water supply impact that Reclamation is obligated to address by changing its water supply operations. The BDCP Draft EIR/EIS does not disclose this impact, nor does it disclose the measures that Reclamation would take to reduce the impact--which in turn could have significant impacts to water quality and aquatic resources.

The most likely way to address this issue is to re-operate the existing water supply facilities in coordination with the proposed new water supply facilities to avoid this water supply impact. This can be done; independent analysis and operations modeling performed by MBK Engineers for a consortium of water agencies demonstrated that adjusting the operations of the existing water supply facilities, within all existing and planned regulations

and policies, would cause the implementation of BDCP Alternative 4, Scenario H3[3] actually to *reduce* the occurrence of the San Luis Reservoir low point problem by 1% of the time relative to the No Action Alternative (based on results from MBK Engineers and Steiner, 2014).

Reoperation of the existing facilities to address the San Luis Reservoir low point problem is likely to increase total Delta exports, as more water would be exported to raise water levels in San Luis Reservoir. (See Section 2.2.2.4.2 of these comments.) By not accounting for reoperation of the existing facilities, the BDCP Draft EIR/EIS understates the yield of the project, and thus similarly understates the negative water quality and aquatic resources impacts that could result from extracting this additional yield from the Delta.

1.1.3. The BDCP Draft EIR/EIS does not reveal how the State Water Project and Central Valley Project would share the capacity of the new water supply facilities.

Reclamation and DWR coordinate operation of the CVP and the SWP pursuant to the Coordinated Operations Agreement (Reclamation and DWR, 1986), signed in 1986 and implemented by Public Law 99-546 as enacted by Congress. The agreement defines the SWP and CVP facilities and their water supplies, sets forth procedures for coordination of operations, identifies formulas for sharing joint responsibility for meeting Delta water quality and flow standards, and identifies how unstored flow would be shared between the CVP and SWP. The agreement does not address the new facilities proposed by the BDCP. In reference to new facilities constructed after the agreement was executed, the agreement states that "[a]ny yield created by the construction of a new facility (not presently existing) by either party shall be attributed to the party constructing the new facility" (Reclamation and DWR, 1986, Article 16 at p. 25).

For the purposes of the Implementation Costs and Funding Chapter, the BDCP assumes that the State would own the new facilities constructed as part of CM1 and that the costs of constructing and operating the new facilities would be "shared by the participating state and federal water contractors." BDCP, Chap. 8 at p. 8-70. However, there is no information in the BDCP or the accompanying Draft EIR/EIS about how the capacity of the proposed conveyance facilities would be shared between the SWP and CVP. Yet the modeling that was done in support of the BDCP Draft EIR/EIS must have incorporated assumptions on how the CVP and SWP would share capacity because the modeling results indicate that Reclamation would be exporting water through the proposed, State-owned conveyance facility.

[3] Although the BDCP indicates that Scenario H4 is most likely to be permitted (BDCP, Chap. 3 at p. 3.4-24), MBK Engineers and Steiner focused analysis on Scenario H3 because the source of water necessary to meet the additional spring outflow requirement in Scenario H4 is not sufficiently defined for analysis (MBK Engineers and Steiner, 2014 at p. 15). Furthermore, since Scenario H3 includes the same X2 requirements as the No Action Alternative, this comparison represents a direct analysis of the BDCP conservation measures without confounding the issue of modified X2 regulatory requirements that will be considered in the decision tree studies (MBK Engineers and Steiner, 2014 at p. 15).

The assumptions regarding timing and priority of CVP and SWP use of the proposed conveyance facilities necessarily affect the quantity and timing of water released from upstream reservoirs and affect the quantity and timing of pumping at the CVP and SWP south Delta export facilities. If the project ultimately is approved with a different sharing arrangement than what was assumed for the analysis, the environmental impacts could be greater than what is analyzed in the BDCP Draft EIR/EIS. For example, if the CVP has greater use of the proposed conveyance facility in the spring than the use that was assumed in the analysis, more springtime water could be released from Shasta Lake for export at the proposed facility, which would impact the amount of water in Shasta Lake available for fishery benefits during the summer (e.g. cold-water releases for temperature management in the Sacramento River). In this same example, if CVP south Delta exports were reduced instead of increasing releases from Shasta Lake, water quality impacts due to stagnation in the south Delta are likely to be greater than analyzed in the BDCP Draft EIR/EIS. Conversely, if the CVP share of the proposed conveyance facility is less than what was assumed in the analysis, deliveries to CVP export contractors may decrease[4] compared to existing or without project conditions. Under the CVP shortage policy, cuts to deliveries to the export contractors can trigger cuts to deliveries to in-Delta and north of Delta contractors. Such cuts would constitute undisclosed effects of the project and would be improper.

1.1.4. The BDCP Draft EIR/EIS does not reveal the parameters and limits of the adaptive management program proposed as part of the BDCP.

Adaptive management is an important tool for a successful conservation plan. But the BDCP Draft EIR/EIS fails to define the pieces of the adaptive management toolkit and thus fails to analyze and disclose the full range of potential impacts of the BDCP.

In an April 2013 BDCP progress assessment memo, the U.S. Fish and Wildlife Service (USFWS) discusses the lack of a defined adaptive management range (USFWS, 2013a at p. 30):

> "Adaptive limits" in the BDCP refers to the most extreme sets of practicable operational parameters that might be required of or authorized to the permittee through the working of adaptive management over the life of the permit. Some discussion of what such parameter-by-parameter limits might be has already occurred, but the [*sic*] neither the concept of adaptive limits nor a draft example of them is included in the current BDCP draft. Without adaptive limits, limits to the commitment of resources that might be required of the permittee(s) remain undefined.

[4] The proposed BDCP includes increased restrictions on the use of the existing south Delta export facilities. Thus, if Reclamation's use of the proposed north Delta conveyance facilities is constrained, total CVP exports would be reduced. At the most extreme case, if the proposed north Delta export facilities cannot be used at all, the additional restrictions on the use of the existing south Delta export facilities proposed by the BDCP would reduce total exports by approximately 1,200 thousand acre-feet per year on average compared to the existing conditions. BDCP, Chap. 9, p. 9-45.

> As is clear in both the HCP Handbook and the Five Point Policy, the permittee(s) in an HCP is protected by the inclusion of adaptive limits that "clearly state the range of possible operating conservation program adjustments due to significant new information, risk or uncertainty. This range defines the limits of what recourse [*sic*] commitments may be required of the permittee(s). This process will enable the applicant to assess the potential economic impacts of adjustments before agreeing to the HCP." 65 Fed. Reg. 35253; see also HCP Planning Handbook at 3-24 – 3-25.
>
> In the BDCP, adaptive limits would provide an important assurance that would protect the permittee(s) from an open-ended obligation to commit resources irrespective of circumstances. They would also provide an important level of transparency to the permittee(s) and the public regarding the commitments represented in the plan.

Upon review of the May 10, 2013 BDCP Administrative Draft EIR/EIS, USFWS restated this concern (USFWS, 2013b at pp. 4-5): "The ADEIS does not address issues raised in Issue Area 6 of our April 2013 progress assessment of the BDCP. In particular, it does not resolve the role of adaptive limits, or limits on the adjustment of water operations and habitat restoration conservation measures, that would be permissible through the action of adaptive management over the term of the permit. The alternatives considered in the ADEIS cover a wide range of Delta flows and other parameters, but absent explicit adaptive limits it is unclear what portion of those ranges would be the responsibility of the permit-holder(s), and unclear how the potential implications of those ranges for achievement of plan biological objectives over the term of the permit should be evaluated."

Unfortunately, these critical comments concerning the February 2013 and May 2013 administrative drafts of the BDCP EIR/EIS do not appear to have been addressed in the December 2013 draft released for public review. While the BDCP acknowledges that the criteria proposed in CM1for operation of the water facilities would be comprehensively reevaluated every 5 years (BDCP, Chap. 3 at p. 3.4-34), the BDCP does not reveal what criteria could be adaptively managed (e.g. Delta outflow, channel flow, gate operations, etc.) or the limits that would be associated with each parameter.

Rather, the BDCP simply acknowledges that the operating criteria may be adjusted to minimize impacts on covered fish species and specifies that any adjustments would be offset to ensure no impact to average annual water supply. BDCP, Chap. 3 at p. 3.4-34. But as the adaptive limits are not defined, the full range (or even approximate range) of potential impacts are not disclosed, analyzed or mitigated. This is especially true for impacts to Delta water quality, since the adaptive management decision making process is not structured even to consider, let alone analyze, balance, and mitigate, such impacts. (See Section 7.1.2 of these comments.)

Yet there are likely to be impacts to Delta water quality. The criteria by which the SWP and CVP operate the water facilities have a profound effect on water quality within the Delta, and modifications to the criteria would affect Delta water quality.[5] For instance, past increases in Delta outflow requirements from February through June as specified in the 1995 Bay-Delta water quality control plan reduced Delta salinity during these months, but had the unintended consequence of increasing Delta salinity later in the year when Delta outflow requirements were less stringent because the CVP and SWP changed their project operations to increase exports in other parts of the year (generally fall and early winter). Thus, while the increase in Delta outflow from February through June was intended to protect the Delta ecosystem, the implementation of this measure had adverse impacts on Delta water users by increasing salinity in the fall. In hindsight, the increase in salinity during the fall has been identified as a possible factor in the decline of the Delta ecosystem. Baxter et al. (2008) noted that "fall salinity has been relatively high during the [Pelagic Organism Decline] POD years, with X2 positioned further [*sic*] upstream, despite moderate to high outflow conditions during the previous winter and spring of most years" (Baxter et al., 2008 at p. 12).

The BDCP Draft EIR/EIS must specify which parameters would be adaptively managed and place limits on the parameters in order to evaluate the full range of potential impacts. At a minimum, the BDCP should specify limits on key operational criteria to prevent degradation of Delta water quality, including a commitment not to seek relaxation of existing Delta water quality objectives.

1.1.5. The BDCP Draft EIR/EIS does not reveal the source of water needed to meet proposed operational criteria in the DWR Preferred Alternative.

The operational scenario for Alternative 4, the DWR Preferred Alternative, includes 4 variations; the particular scenario to be implemented depends upon the outcome of the decision tree described above in Section 1.1.1. This same operational scenario could be applied to any of the alternatives. BDCP Draft EIR/EIS, Chap. 3 at p. 3-202. Two of the four variations, operational scenarios H2 and H4, include a criterion for additional Delta outflow in March, April, and May. However, the impacts associated with conveying and using this source of water for the additional Delta outflow are not analyzed in the BDCP Draft EIR/EIS, and thus the impacts analysis is incomplete and incorrect.

The BDCP (Chap. 3 at p. 3.4-19) indicates that the additional outflow would be met with "an approved water transfer," reductions in Delta exports, and releases from Lake Oroville – which is a SWP reservoir located upstream of the Delta – "with subsequent appropriate accounting adjustments between the SWP and the CVP." However, the analysis performed for the BDCP Draft EIR/EIS did not include a water transfer or any "accounting adjustments" between the SWP and CVP. Instead, only reductions in Delta exports and releases from SWP's Lake Oroville are modeled to meet the additional outflow requirement. BDCP, Chap. 3, Table 3.4.1-1 at pp. 3-18 to 3-20. This raises two problems: first, the

[5] The quality of water diverted at the proposed north Delta intakes would generally not be affected by such an adjustment; thus the BDCP proponents may not be affected, but other Delta users would be impacted.

"approved water transfer" was not included in the analysis and its source and impacts are unknown; and second, the "accounting adjustments" were not included in the analysis and thus the CVP and SWP water supply analysis is incorrect, which, in turn, introduces errors in the impacts analysis for water quality and aquatic resources.

By analyzing only a portion of the water supply operations proposed under the BDCP, the analysis underestimates the total amount of water that would be exported from the Delta under the BDCP. According to the BDCP Draft EIR/EIS, implementation of DWR's Preferred Alternative would reduce the south of Delta water deliveries for municipal and industrial (M&I) water users of the SWP by 7% on average as compared to the level that these water users would receive without the project as predicted in the No Action Alternative. BDCP Draft EIR/EIS, Appendix 5A-C, Table C-13-20-2. During dry and critically dry years, south of Delta water deliveries for M&I and agricultural water users of the SWP would drop 17% below the level that they would receive without the project. *Id.* In other words, according to the BDCP Draft EIR/EIS, SWP contractors would spend billions of dollars (BDCP, Table 8-37) to get less water than these water users would get without the BDCP (BDCP Draft EIR/EIS, Appendix 5A-C, Table C-13-20-2). As analyzed, the DWR Preferred Alternative fails to meet one of the primary project objectives: "Restore and protect the ability of the SWP and CVP to deliver up to full contract amounts, when hydrologic conditions result in the availability of sufficient water, consistent with the requirements of State and federal law and the terms and conditions of water delivery contracts and other existing applicable agreements." BDCP Draft EIR/EIS, Chap. 2 at pp. 2-3.

The undefined and unanalyzed water transfers could prevent these reductions to Delta exports. The BDCP project description indicates that the additional outflow could be met with transfers. If a transfer is approved, the transfer water would be used to meet the additional Delta outflow requirement in lieu of the reduction to Delta exports. Thus, the transfer water allows additional exports beyond the quantity shown and analyzed in the BDCP Draft EIR/EIS for the action alternatives. The undefined and unanalyzed water transfers are critical to the project's viability. Since the BDCP Draft EIR/EIS concedes that a water transfer is needed to meet the project objective, the transfer is an integral and essential project component, and the BDCP Draft EIR/EIS must disclose the details of the transfer and how it would affect the operation of the existing and proposed facilities, so that the resultant environmental impacts can be meaningfully assessed and feasible, effective mitigation measures can be identified.

If the specifics of the water transfers are not known, the transfers should be assessed on a programmatic level to disclose their potential impacts, using reasoned assumptions about the timing, quantity and approximate location of the sources of the transferred water. Without an analysis of water transfers, the project description and environmental analysis in the BDCP Draft EIR/EIS are incomplete.

The second flaw regarding the BDCP Draft EIR/EIS analysis of the additional spring outflow requirements in the DWR Preferred Alternative is the omission of the "subsequent appropriate accounting adjustments between the SWP and the CVP." The obligation for providing flow to satisfy Delta outflow requirements is shared between the SWP and CVP

as described in the Coordinated Operations Agreement (Reclamation and DWR, 1986). However, the BDCP modeling analysis assumes that the SWP's Lake Oroville would be used to meet additional Delta outflow requirements in the spring, and no CVP reservoirs would assist in meeting the flow obligation. BDCP, Chap. 3, Table 3.4.1-1, p. 3.4-19. This assumption results in a model showing CVP water supplies *increasing* an average of 75 thousand acre-feet while SWP water supplies *decrease* almost 100 thousand acre-feet on average. BDCP Draft EIR/EIS, Appendix 5A-C, Table C-13-20-2. These results contradict the sharing of responsibilities specified in the Coordinated Operations Agreement, which Congress directed the federal government to execute and implement through passage of Public Law 99-546.

There are at least two ways that the established sharing arrangements under the Coordinated Operations Agreement could be satisfied. First CVP's upstream reservoirs could release water in an amount on par with the releases from the SWP's Lake Oroville, to meet the additional Delta outflow requirements; however, the environmental impacts of such releases would need to be evaluated. For example, releasing water from Lake Shasta to meet Delta outflow requirements in the spring means that less cold water would be available in the summer to control temperature on the Sacramento River, which would adversely affect the winter-run salmon population. Second, the sharing arrangements could be met by reclassifying water that was exported from the Delta originally as CVP water to SWP water – as is implied by the statement that "subsequent appropriate accounting adjustments between the SWP and the CVP" would be made following any releases from Lake Oroville. However, such adjustments would reduce water supplies to CVP south of the Delta water contractors and thus reduce the likelihood of meeting the project objectives for CVP water supply.

Finally, although not analyzed in the BDCP Draft EIR/EIS, it is worth noting that the additional Delta outflow could also be met by increased storage; in fact, this is one purpose of the North-of-Delta Offstream Storage (NODOS) Project, discussed in Section 1.1.6 below.

In failing to disclose the source of water and the method by which the BDCP would be operated to meet the additional Delta outflow requirements while abiding by the requirements of the Coordinated Operations Agreement, the BDCP Draft EIR/EIS omits an important element of the project description, and thus fails to analyze potentially significant impacts.

1.1.6. The BDCP Draft EIR/EIS does not reveal the effects of water projects upon which Conservation Measure 1 (CM1) would rely.

One of the BDCP's basic project objectives under CEQA, and a key element of its purpose and need under NEPA, is increased water supply reliability south of the Delta. But the DWR Preferred Alternative (Alternative 4), as described in the BDCP Draft EIR/EIS, does not meet this objective. Only if CM1 is operated in conjunction with additional water supply changes and projects such as reoperation of the upstream reservoirs, transfers, new groundwater storage, and/or new surface water storage would the water agencies who are project proponents receive a more reliable water supply. A proposed project that depends

upon activities that are not included in the EIR's analysis runs afoul of CEQA's and NEPA's prohibitions on piecemeal environmental review.

The BDCP Draft EIR/EIS states that part of the BDCP's "fundamental purpose" is to "restore … water supplies of the SWP and CVP south-of-Delta." BDCP Draft EIR/EIS at p. ES-8. The BDCP Draft EIR/EIS further states that the following CEQA project objective has guided the development of the proposed project and alternatives: "considering conveyance options in the north Delta that can reliably deliver water at costs that are not so high as to preclude, *and in amounts that are sufficient to support,* the financing of the investments necessary to fund construction and operation of facilities and/or improvements." *Id.* at p. ES-9 (emphasis added). On the federal side, the BDCP Draft EIR/EIS states that "project need" includes "water supply reliability" and specifies: "The current and projected inability of the SWP and CVP to deliver water to meet the demands of certain south-of-Delta SWP and CVP water contractors—in all water year types and considering ecosystem and species requirements—is a very real concern. More specifically, there is an overall declining ability to meet defined water supply delivery volumes and water quality criteria to support water users' needs for human consumption, manufacturing uses, recreation, and crop irrigation." *Id.* at pp. ES-10, ES-11.

To meet these fundamental project objectives and the BDCP's purpose and need, the state and federal water contractors state that they plan to fund "Conservation Measure 1," the "new north Delta water conveyance facility to bring water from the Sacramento River in the north Delta to the existing water export pumping plants in the South Delta." BDCP Draft EIR/EIS at p. ES-19; BDCP, Executive Summary at p. 26. The cost to the water contractors of CM1 alone is currently estimated at $16.3 billion. BDCP, Executive Summary at p. 26.

Since the project purpose and need refers to "current" inability to deliver water and the objective is to "restore" water supplies, presumably the BDCP could meet its purpose only by increasing water supply reliability compared to existing conditions. As explained in Sections 2.1.1 and 2.1.2 of these comments, the analyses in the BDCP Draft EIR/EIS of future project conditions compared to existing conditions are fatally flawed. But if the CEQA analysis in the BDCP Draft EIR/EIS is taken at face value, the proposed project is likely to *decrease* average water supply to south of Delta export contractors in all years compared to existing conditions, and is certain to decrease average supplies in dry years, when additional supply is most needed.

Alternative 4, the DWR Preferred Alternative, includes four potential regulatory options, operational scenarios H1 through H4. Which scenario to implement would be chosen through a decision tree process. Compared to the existing conditions, the BDCP Draft EIR/EIS states that Alternative 4 would increase total Delta exports by up to 112 thousand acre-feet per year (TAF/year) (or 2%) on average for one of the four possible outcomes of the decision tree process; all other outcomes *decrease* total Delta exports. BDCP Draft EIR/EIS, Chap. 5, Figure 5-17. The largest decrease - 730 TAF/year (or 14%) on average - would occur under Scenario H4, which is considered the most likely to be permitted. BDCP, Chap. 3 at p. 3.4-24. In dry and critical years, when water supply is the most constrained, Alternative 4 would *reduce* total Delta exports under *all* operational scenarios, reducing exports by between 799 TAF/year and 1,169 TAF/year on average (or 19% to

28%) below the existing conditions, depending on the outcome of the decision tree. BDCP Draft EIR/EIS, Chap. 5, Figure 5-19.

The NEPA comparison of 2060 No Action conditions to 2060 conditions with the proposed project yields similar results. In 2060, the average exports under the proposed project Scenario H4 would be less than under the No Action Alternative. BDCP Draft EIR/EIS, Chap. 5, Table 5-8 states that, compared to the No Action Alternative, Alternative 4, Scenario H4, would *reduce* total Delta exports by 27 TAF/year on average, or 1%. In dry and critical years, when water supply is the most constrained, Alternative 4, Scenario H4 would reduce total Delta exports by 277 TAF/year on average, or 8%, relative to the No Action Alternative. BDCP Draft EIR/EIS, Chap. 5, Figure 5-19. In these dry and critical years, only Scenario H1 would actually increase total Delta exports – by 93 TAF/year on average or less than 3%.

CEQA and NEPA must be applied using common sense. *Save the Plastic Bag Coalition v. City of Manhattan Beach*, 52 Cal. 4th 155, 175 (2011) (common sense is an important consideration at all levels of CEQA review); *Gray v. County of Madera*, 167 Cal. App. 4th 1099, 1116-17 (2008) (court will not defer to CEQA findings that "defy common sense"); *Natural Resources Defense Council v. United States Forest Service*, 421 F. 3d 797, 808, 809, 816 (9th Cir. 2005) (common sense showed agency's erroneous assessment of market demand for timber was important in light of project purpose and need, and therefore that NEPA record of decision was arbitrary and capricious); *Ocean Advocates v. United States Army Corps of Engineers*, 402 F. 3d 846, 866-867 (9th Cir. 2005) (because common sense suggested that project proponent's sizable investment in project was intended to facilitate increased tanker visits, agency violated NEPA by failing to analyze and evaluate the proponent's claims to the contrary).

The premise of the BDCP project description, and the BDCP Draft EIR/EIS, is that south of Delta water contractors will spend $16.3 billion on CM1 in order to obtain the likelihood, on average, of a 14% *decrease* in water deliveries compared to existing conditions or a 1% *decrease* in water deliveries compared to the No Action Alternative. Results in dry and critical years would be much worse. This proposition defies common sense unless it is assumed that other water projects that make the BDCP viable would be built. This means that the BDCP is dependent upon projects that are not analyzed, and the BDCP Draft EIR/EIS is therefore piecemealing its environmental analysis.

Water projects that could increase south of Delta water supply reliability and make the BDCP viable include some combination of reoperation of the upstream Central Valley Project and State Water Project reservoirs, additional water transfers, new groundwater storage, and new surface water storage. Reoperation of the upstream reservoirs alone could provide substantial additional supply reliability but such an action also is likely to have significant impacts; see Section 1.1.2 of these comments. See Section 1.1.5 of these comments regarding the use of transfers to help meet the water supply reliability purpose of the BDCP. Sections 1.1.6.1 through 1.1.6.3 below cover additional storage projects, the most likely way that the BDCP can meet the project's water supply objective.

1.1.6.1.Need for additional storage to accomplish the project objectives.

The BDCP proponents have long been aware that additional storage would substantially improve the water supply yield shown in Table 5-9 of the BDCP Draft EIR/EIS. In 2008, representatives from the BDCP Steering Committee examined the role that storage could play in achieving the BDCP's water supply objective and found that increasing south of Delta storage could increase total Delta exports by up to 700 thousand acre-feet per year on average (BDCP, 2008 at p. 10). In 2009, DWR's Overview of the Draft Conservation Strategy for the Bay Delta Conservation Plan acknowledged that (DWR, 2009a at p. 19):

> [e]ven with relatively restrictive rules for diversions, exports were limited by South of Delta storage. One model run indicated that expanding use of existing South of Delta storage, by approximately 1 million acre-feet, combined with a 15,000 cfs canal and dual diversion points, could significantly increase flexibility in meeting water supply and environmental objectives. The same is generally true related to North of Delta storage.

After finding that new storage "could help advance water supply and conservation goals" and that "[s]ome combination of improved operations of existing storage, new surface storage, and expanded groundwater storage is likely to occur in the future and may result in changes to the way the Delta is operated," the same document identified "new water storage facilities" as a "pending issue" that the Steering Committee would consider "in detail and determine whether and how to address them within the BDCP." *Id.* at pp. 50-51. However, no further analysis of new storage was provided to the Steering Committee.

The BDCP Draft EIR/EIS acknowledges that "water storage is a critically important tool for managing California's water resources," and devotes an appendix to the topic, but insists that pending water storage projects play no part in the EIR/EIS's analysis – not as parts of the BDCP itself, not as parts of the 2060 No Action scenario, and not as cumulative projects. BDCP Draft EIR/EIS, Appendix 1B at p. 1B-1. The BDCP Draft EIR/EIS states:

> [T]he 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 also 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 state of planning that would make them "probable future projects" for purpose 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. … In short,

> this appendix is not required by either CEQA or NEPA, but was prepared for informational purposes. *Id.*

This statement protests too much. It attempts to shield CM1 behind the BDCP's habitat conservation objectives and ignores the BDCP's water supply reliability objective, which is the reason for CM1. Common sense dictates that if a fundamental objective of the proposed project is to increase water supply reliability, and if the project without storage is likely to instead reduce water deliveries, and if water contractors will nevertheless spend at least $16.3 billion on the project's water conveyance facility, then something is missing from the BDCP's project description and the EIR/EIS analysis. That something is most likely water storage. Because CM1 would not be proposed absent water storage projects - several of which, as discussed below, have proceeded far beyond the "discussion" stage - the BDCP Draft EIR/EIS must address the water supply and water quality impacts of CM1 taken together with those projects. Storage projects are in fact reasonably foreseeable and should have been included in one or more of the BDCP alternatives.

1.1.6.2.Failure to analyze water storage as part of the proposed project.

"An EIR may not define a purpose for a project and then remove from consideration those matters necessary to the assessment whether the purpose can be achieved." *County of Inyo v. City of Los Angeles*, 124 Cal. App. 3d 1, 9 (1981) (invalidating water export EIR). CM1 is intended specifically to increase water supply reliability for south of Delta water contractors. The likelihood of achieving this purpose cannot be assessed without considering water storage.

Moreover, both CEQA and NEPA prohibit "piecemealing" of project descriptions. *See San Joaquin Raptor/Wildlife Rescue Center v. County of* Stanislaus, 27 Cal. App. 4th 713, 730-734 (1994) (because residential development depended on wastewater treatment plant expansion, EIR's failure to analyze impacts of that expansion invalidated EIR; separate EIR for plant expansion did not excuse or remedy this failure); *County of Inyo v. City of Los Angeles*, 71 Cal. App. 3d 185, 195 (1977) (invalidating water export EIR that characterized groundwater exports as a separate, ongoing project); *County of Inyo v. City of Los Angeles*, 124 Cal. App, 3d at 7-8 (invalidating water export EIR that failed to describe or analyze surface water impacts).

For an EIS prepared under NEPA, "[p]roposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement." 40 C.F.R. § 1502.4(a). A single NEPA document is required where one action will not proceed unless other actions are taken previously or simultaneously. 40 C.F.R. § 1508.25(a). This test is commonly referred to as the "independent utility" test, which asks whether the project as described and the activity being treated as separate would be pursued independently. As described above, CM1, which is intended specifically to increase water supply reliability for south of Delta water contractors, does not meet this test under Alternative 4. The water contractors are not proposing to spend $16.3 billion in return for a reduced, or only slightly increased, water supply. In fact, absent storage, the BDCP shows that the water supply reliability in dry years, under Alternative 4, is less than the currently available supply. However, the bond payments on a

project must be made regardless of the amount delivered in any year. Without storage, the BDCP will substantially increase dry year costs with a likely reduction in dry year supplies; it is not clear at all how this is economically viable absent new storage.

Additional water storage can increase the amount of water that would flow to the south of Delta export contractors under the BDCP while meeting the other BDCP goals. Numerous proposals to construct and operate such storage are pending. The two projects that are most likely to enable the BDCP proponents to actually realize increased water supply reliability are the North-of-Delta Offstream Storage (NODOS) Project and the San Luis Reservoir Low Point Improvement/Expansion Project.

The NODOS was one of five projects included in the 2000 CALFED Record of Decision and has been studied extensively since that date; the Notice of Preparation for its EIR and Notice of Intent for its EIS were issued in 2001 (Reclamation and DWR, 2013). The NODOS calls for construction and operation of a new 1.3 to 1.8 million acre-foot Sites Reservoir, which is projected to increase water supply by 213 or 246 thousand acre-feet per year depending on the alternative selected. *Id.* at p. ES-23. (The BDCP Draft EIR/EIS Appendix 1B, using older information, reports this number as 183 thousand acre-feet per year. BDCP Draft EIR/EIS Appendix 1B, Table 1B-1 at p. 1B-11.) Although the BDCP proponents conducted other modeling in 2010 that included the NODOS and other CALFED surface storage projects (BDCP Draft EIR/EIS, Appendix 1B at p. 1B-12), the BDCP Draft EIR/EIS excludes the NODOS from its modeling. BDCP Draft EIR/EIS, Appendix 3D at p. 3D-91.

The San Luis Reservoir Low Point Improvement project, which includes expansion of San Luis Reservoir, has a similarly long history, dating back to at least 2001 (Reclamation, 2013b at p. 1). The project would increase existing south of Delta storage at the San Luis Reservoir by up to 400 thousand acre-feet per year, depending on the alternative selected, increasing average annual Delta water exports by 43 to 71 thousand acre-feet per year under current operations and regulations. *Id.* at p. 2. The Draft Appraisal Report for the San Luis Reservoir Low Point Improvement Project refers specifically to the BDCP, stating that the BDCP "may or may not fully address delivery reliability issues related to San Luis Reservoir, and additional storage in San Luis Reservoir may be needed to further restore delivery reliability and system flexibility." *Id.* at p. 1. Despite this explicit link between the BDCP and San Luis Reservoir expansion, and despite the BDCP project proponents' earlier modeling of the BDCP along with south of the-Delta storage expansion (BDCP Draft EIR/EIS, Appendix 1B at p. 1B-12), the BDCP Draft EIR/EIS expressly declines to include the reservoir expansion in any of its analyses and does not include it in modeling. BDCP Draft EIR/EIS, Appendix 3D at p. 3D-98.

By excluding both the NODOS and the San Luis Reservoir Expansion from its analysis, the BDCP Draft EIR/EIS fails to consider projects that could make the water contractors' $16.3 billion investment in CM1 worthwhile. This failure of analysis violates CEQA and NEPA. The impacts of these two water storage projects should be included in the With Project scenario for CM1 so that the BDCP modeling will include the "matters necessary to the assessment whether the [BDCP] purpose can be achieved." Because these projects are necessary to achieve the project objectives, their impacts should be disclosed. Further, if the

BDCP project proponents are not committing to implement these projects along with CM1, then the decision-makers and public should be given enough information to understand the resulting environmental trade-off of approving CM1 both with and without these storage projects. Thus, the impact analysis should reveal both the benefits and adverse effects of the BDCP with and without the storage projects.

At a minimum, the BDCP Draft EIR/EIS could have analyzed generic north and south of Delta storage projects at the programmatic level with the goal of improving water supply reliability while reducing environmental impacts. This is the approach that was taken by the BDCP technical teams in the early analysis of storage. The failure to consider either NODOS/San Luis Reservoir Expansion or generic north and south of Delta storage to develop a better project alternative, when the BDCP proponents have been urged to do so for almost eight years, and when their own studies (shown to the BDCP Steering Committee but not included in this Draft EIR/EIS) indicate that storage would allow them to meet the project objective of increased water supply reliability, is a serious flaw in the BDCP Draft EIR/EIS and must be corrected.

1.1.6.3. Failure to analyze the cumulative impacts of water storage projects.

Even if the BDCP Draft EIR/EIS were not required to include key water storage projects in the With Project scenario for CM1, the EIR/EIS is required to analyze them as cumulative projects with respect to water supply and water quality impacts. The BDCP Draft EIR/EIS fails to do this with respect to NODOS and the San Luis Reservoir Expansion. These errors must be corrected in a revised Draft EIR/EIS.

In Appendix 3D, Attachment 3D-A, the BDCP Draft EIR/EIS lists dozens of projects and states whether the EIR/EIS will include them in its Existing Conditions and No Action/No Project scenarios, or treat them as cumulative projects. The attachment states that the NODOS is a cumulative project and that the San Luis Reservoir expansion is not. BDCP Draft EIR/EIS at pp. 3D-83-84, 3D-91, 3D-98-99. The BDCP proponents have applied a standard for listing cumulative projects that is too narrow under CEQA and NEPA. Both of these projects meet the standard of "probable future projects" under CEQA and "reasonable foreseeable future actions" under NEPA. 14 Cal. Code Regs. § 15130; 40 C.F.R. § 1508.7. *See Gray v. County of Madera*, 167 Cal. App. 4th 1099, 1127-1128 (2008) ("any future project where the applicant has devoted significant time and financial resources to prepare for any regulatory review should be considered as probable future projects for the purposes of cumulative impact").

As described above, both the NODOS and the San Luis Reservoir expansion have been under review for more than a decade and significant time and financial resources have been devoted to both projects. The projects constitute probable and reasonably foreseeable future projects and there are no arguments to the contrary. Nor can it be claimed that these projects, combined with the BDCP, could not alter the BDCP Draft EIR/EIS analysis of cumulative impacts to water supply and water quality.

Nevertheless, the BDCP Draft EIR/EIS sections purporting to address cumulative water supply and water quality impacts do not include even the NODOS—which the Draft EIR/EIS states *is* a cumulative project—much less San Luis Reservoir. *See* BDCP Draft EIR/EIS, Chap. 5, Table 5-8 (projects considered for water supply cumulative impacts analysis), and Chap. 8, Table 8-73 (projects considered for water quality cumulative impacts analysis). Cumulative impacts analyses that take these projects into account must be prepared.

1.2. The BDCP Draft EIR/EIS Fails To Adequately Describe The Proposed Habitat Restoration Projects.

The BDCP Draft EIR/EIS purports to evaluate at a program level the "broad environmental effects of the overall BDCP conservation strategy" that is reflected in Conservation Measures (CM) 2 through 22. BDCP Draft EIR/EIS, Chap. 4 at p. 4-2. As the basis for this approach, the BDCP Draft EIR/EIS explains that the overall conservation strategy is subject to "adjustments and modifications" as new information becomes available over time, that the locations for the habitat restoration and preservation actions "have not been specifically identified at this time," and that the design information for the conservation strategies "is currently at a conceptual level." *Id.* Thus, the environmental analysis looks at the effects of "typical construction, operation, and maintenance activities that would be undertaken for implementation of CM2 through 22 at a program-level of analysis, describing what environmental effects may occur in future project phases." *Id.*

But the description of the conservation "program" is so vague and indefinite that the BDCP Draft EIR/EIS presents a wholly incomplete picture of what environmental effects may occur due to the future implementation of the conservation measures. Any habitat restoration actions that occur within the waters of the Delta or upstream rivers and floodplains (which includes habitat restoration actions under Conservation Measures 2, 4, 5, 6, 7, and 10) could affect the movement of water, the amount of tidal exchange, the extent of salinity intrusion, the quality of water in Delta channels, and – through actions to meet water quality objectives – the supply of water to the State Water Project and Central Valley Project. As explained below, the nature, range and extent of the impacts resulting from the habitat restoration actions depend largely on their location, sequence, and design. But there is no description or evaluation of these key variables and how they could affect the timing and magnitude of the impacts. This omission in the description of the conservation program creates a gap in the environmental analysis, which fails to address the near-term impacts resulting from habitat restoration actions that are planned to be implemented before the start of operation of CM1. The BDCP Draft EIR/EIS compounds this error by failing to make any distinction between the longer-term impacts caused by the habitat restoration actions and the impacts caused by CM1. Further, contrary to the stated aim of the BDCP Draft EIR/EIS to describe "what environmental effects may occur in future project phases" (BDCP Draft EIR/EIS, Chap. 4 at p. 4-2), the document fails to disclose the full range of impacts that could occur from the future habitat restoration actions.

These deficiencies, in turn, thwart the basic purposes of using a program-level environmental analysis. As the CEQA Guidelines explain, the advantages of a program-

level review include providing an occasion for a more exhaustive consideration of effects and alternatives than would be practical in an EIR on an individual project; ensuring consideration of cumulative impacts that might be slighted in a case-by-case analysis; and allowing the lead agency to consider broad alternatives and program-wide mitigation measures at an early time when the agency has greater flexibility to deal with basic problems or cumulative impacts. *See* Cal. Code Regs. Title 14 (CEQA Guidelines) § 15168(b)(1), (2), (4). But instead of providing for a comprehensive evaluation of the potential impacts from the habitat restoration actions, the BDCP Draft EIR/EIS hides the impacts and lumps them together with the impacts from CM1. And instead of providing for program-wide mitigation at an early stage in the process to guide the implementation of future site-specific habitat restoration actions − mitigation that could be devised to ensure that the individual actions are located, sequenced and designed in a way that achieves benefits for species while also avoiding or minimizing net degradation of water quality − the analysis and mitigation of impacts are deferred until later project-specific review, precisely when the lead agency no longer has the program-wide flexibility that it has during its initial program-level review.

The commitment to conduct future site-specific environmental review does not cure these problems. It is true that detailed site-specific environmental review of each habitat restoration action will be required as the relevant information for each such action becomes available. But this future review does not obviate the need to evaluate and mitigate ***now*** the adverse impacts that the program-wide approval of habitat restoration could cause. Put another way, the BDCP Draft EIR/EIS needs to address up front the impacts resulting from the program, rather than putting off the analysis to the later consideration of each specific piece of the program that comes up in the future.

The sections below describe (1) the limited information in the BDCP Draft EIR/EIS about the massive habitat restoration program that is included as part of the proposed project; (2) the key variables that must be considered to conduct a meaningful environmental assessment of the impacts of the program; and (3) each of the flaws in the description and analysis of the program in the BDCP Draft EIR/EIS.

1.2.1. The BDCP Draft EIR/EIS contains only limited information about the proposed habitat restoration program.

The BDCP includes plans to restore more than 80,000 acres of habitat – including 65,000 acres of tidal natural communities under Conservation Measure 4 (CM4), 10,000 acres of seasonally inundated floodplain (CM5), 20 miles of channel margin enhancement (CM6), 5,000 acres of riparian restoration (CM7), and 1,700 acres of nontidal marsh (CM10), as well as modifications to the timing, frequency, and duration of inundation of an existing seasonal floodplain (CM2). While each of the measures would affect water quality and water supply, very limited information is provided about the program, how it would be implemented, and what impacts it would have.

For example, the overall plan is that CM4 would provide for the restoration of 65,000 acres of tidal natural communities and transitional uplands, with minimum acreage targets for different "Restoration Opportunity Areas." BDCP, Chap. 3 at p. 3.3-6 (Objective L.1.3);

BDCP Draft EIR/EIS, Chap. 3 at pp. 3-130 to 3-131. But the BDCP states that the biological objectives that establish these numbers will be reexamined through an adaptive management program and may be modified or even eliminated. BDCP, Chap. 3, Table 3.6-1 at p. 3.6-3. Therefore, the overall acreage of habitat restoration to be developed, as well as the acreage in each Restoration Opportunity Area, is far from certain.

In addition, while there is some design information available for some of the restoration actions, most of the acreage has not been identified. A portion of the 14,000 acres of near-term CM4 restoration projects have been planned; for the areas that have been planned, the locations of levee breaches were provided by the Delta Habitat Conservation and Conveyance Program. BDCP Draft EIR/EIS, Appendix 5A, Section D, Attachment 2 at p. 4. However, the remaining 51,000 acres, or nearly 80%, of the tidal marsh habitat anticipated as part of CM4 have not yet been planned and there is no design information available.

As explained in the next section below, in light of these significant uncertainties about the habitat restoration program, it is critically important to explain and assess the key variables that will influence the nature and magnitude of the water quality and water supply impacts that would result from future habitat restoration actions.

1.2.2. Assessing Delta water quality and water supply impacts requires an evaluation of the location, timing and design of the habitat restoration actions.

To assess the potential impacts of habitat restoration on water quality and water supply, it is important to evaluate the following variables: the location of the habitat restoration actions and their connectivity to surrounding Delta channels; the timing of implementation in relation to other habitat restoration projects; and specific design elements that control the movement and mixing of waters in the area. Each of these factors is discussed below, with examples from Delta restoration projects to illustrate the importance of assessing this information.

Location and connectivity. The location of proposed tidal marsh and its connectivity to the existing Delta channels have a large effect on the movement of water and mixing of water quality constituents, such as salt. For instance, analysis of two different groups of restoration sites in Suisun Marsh reveals dramatically different changes to salinity in the Delta (RMA, 2013). As shown in Figure 1-1 (panel (a) – top map), the group of restoration sites located primarily adjacent to Suisun Bay would ***increase salinity*** in the western, central, and southern Delta, generally by 10 to 15 percent (top map). On the other hand, as shown in Figure 1-1 (panel (b) − bottom map), the group of restoration sites located farther north in Suisun Marsh, with no direct connectivity to Suisun Bay, would ***decrease salinity*** in the same region on the same day, generally by 10 to 20 percent.

Delta waters are colored by the percent change in salinity
due to tidal marsh restoration at sites in Suisun Marsh, shaded gray in the maps below

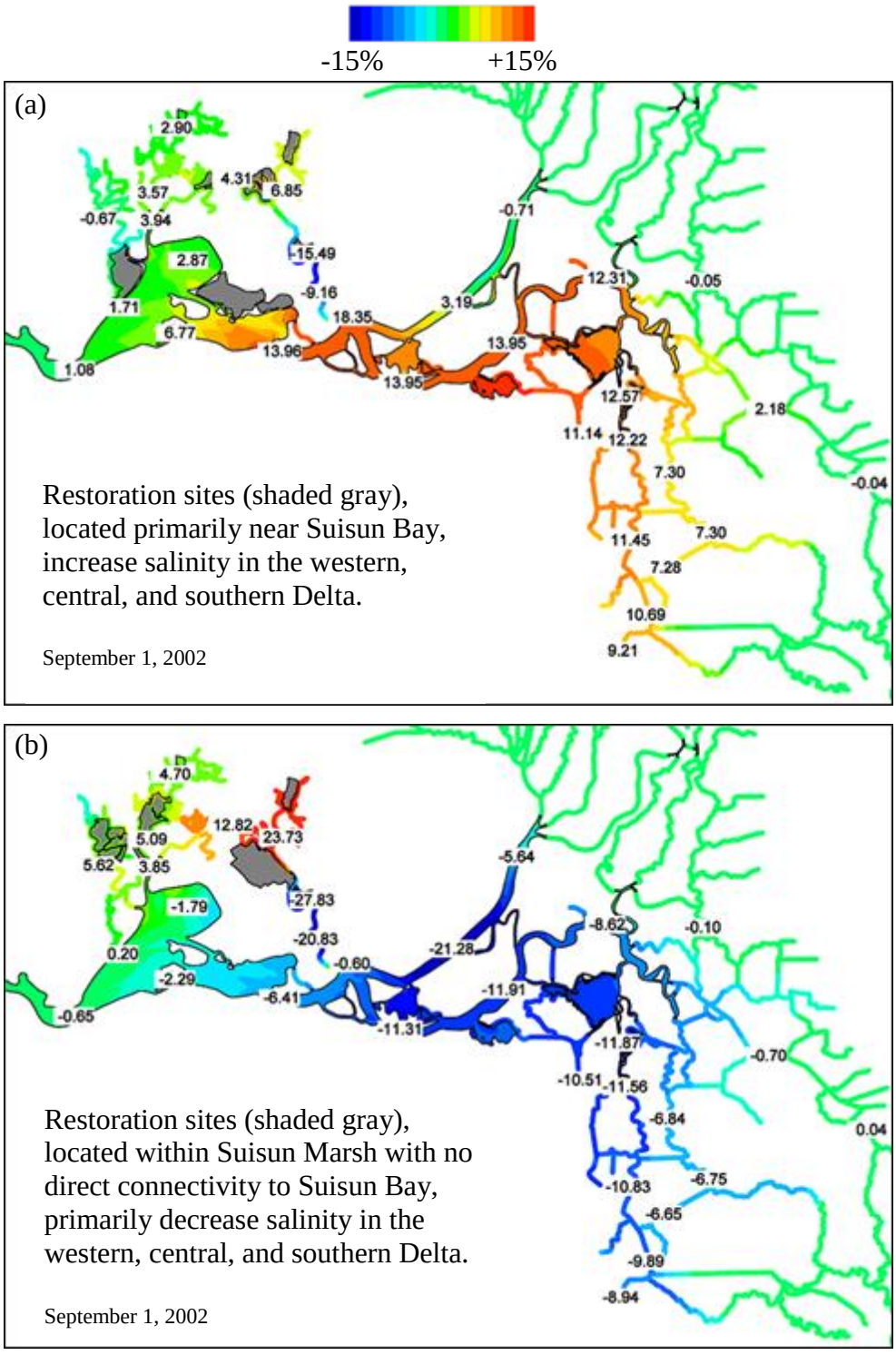


Figure 1-1. Effect of tidal marsh restoration on Delta salinity depends on location of proposed tidal marsh and connectivity to the channels.
Adapted from RMA, 2013, slides 15 and 19.

Timing of implementation in relation to other habitat projects. Independent modeling performed for the Suisun Marsh EIS/EIR (Reclamation et al., 2011) shows that the order of implementation of restoration projects can have a large effect on water quality. The Suisun Marsh EIR modeled two broad swaths of areas containing multiple restoration sites and two smaller subsets where smaller individual sites were examined in isolation. The results show that the combination of individual restoration sites determines the overall water quality impact, depending on which projects are included and the order in which they are implemented. Some of the sites modeled would increase salinity in the western Delta by up to 12% while some would decrease salinity. Thus, if individual restoration projects that increase salinity were to be implemented at the same time, and before projects that decrease salinity were implemented, the increase in salinity would be substantial and municipal water users in the Delta would be significantly affected. However, if habitat restoration projects that decrease salinity were to be implemented before or in conjunction with other restoration projects that increase salinity, salinity effects could be regulated to avoid or minimize water quality degradation.

Design elements. The location and size of breaches in the levees that surround potential restoration sites have a dramatic effect on the flows and water quality within and adjacent to proposed habitat restoration sites. Independent modeling performed for the Prospect Island Tidal Habitat Restoration Project (included in the BDCP near-term habitat restoration actions in the Cache Slough Restoration Opportunity Area) demonstrates the significant differences in water quality that can arise from relatively small differences in habitat design.

During screening level analysis, fifteen alternatives were evaluated to determine the potential to maximize food web productivity within the restoration site. The only difference between the alternatives was the location and size of breaches in the levees that surround Prospect Island and in a levee inside Prospect Island (RMA, 2013). The modeling results are presented in Figure 1-2, which depicts the areas of the restoration site as colored to show the type of algal community that would be likely to grow based on the simulated exposure time. As shown in Figure 1-2, the acreage that would be likely to produce benefits and the acreage that would be likely to produce adverse impacts varies widely between the alternatives that were studied. Although the focus of the analysis was the potential adverse or beneficial impact on covered fish, the production of different algal communities would also impact drinking water quality, as discussed in Section 2.2.1.2 of these comments.

Waters within Prospect Island, a possible restoration site, colored by the potential to produce adverse or beneficial algal communities for different design criteria

Likely to produce cyanobacteria (possible adverse impact to covered fish)
Likely to produce diatoms (possible benefit to covered fish)
Not likely to increase algal production (no impact/benefit)

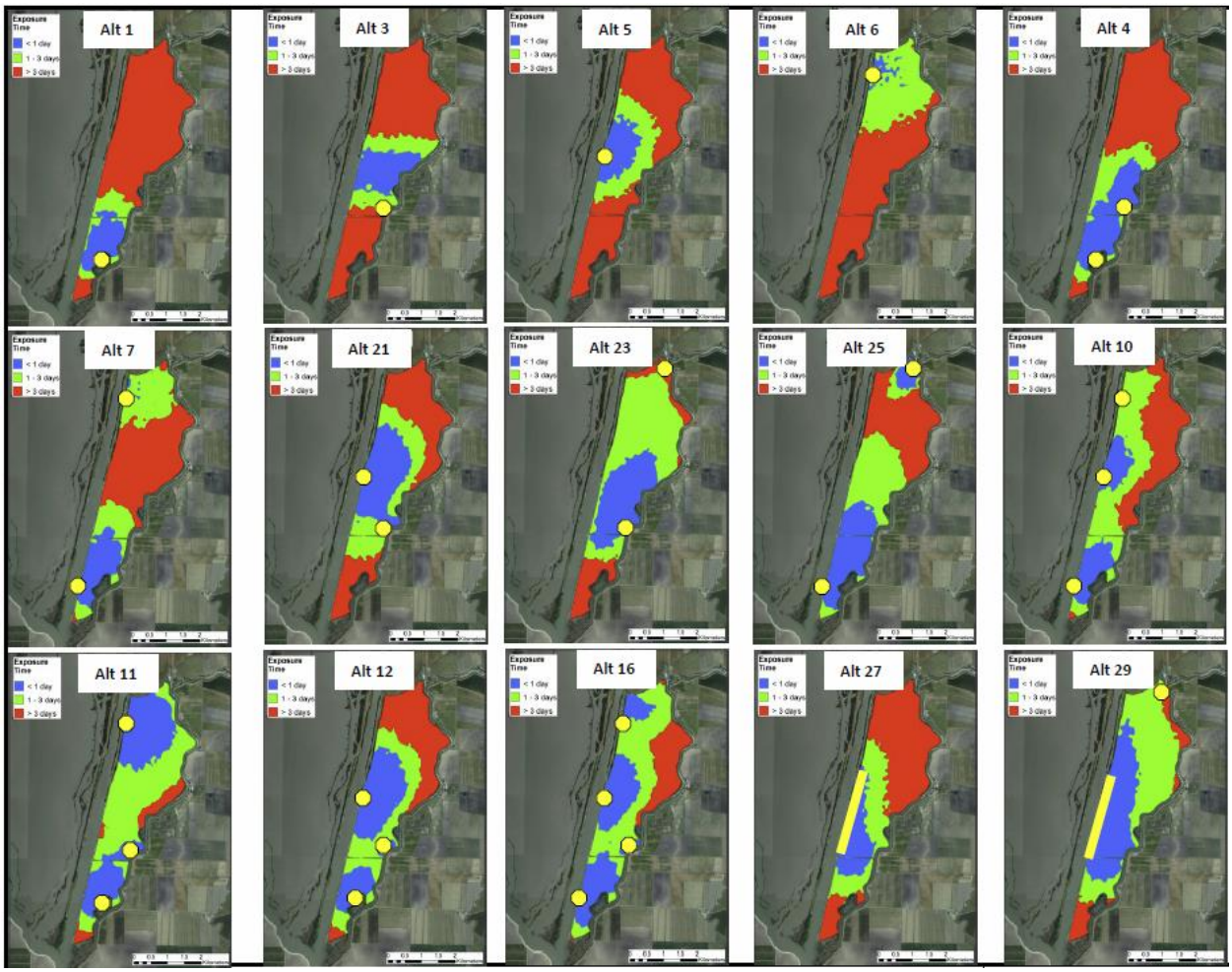


Figure 1-2. Potential benefits and impacts of restoration at Prospect Island depend on design elements regarding the connectivity of the interior island to the surrounding channels.
Adapted from RMA (2013), slides 43 and 50.

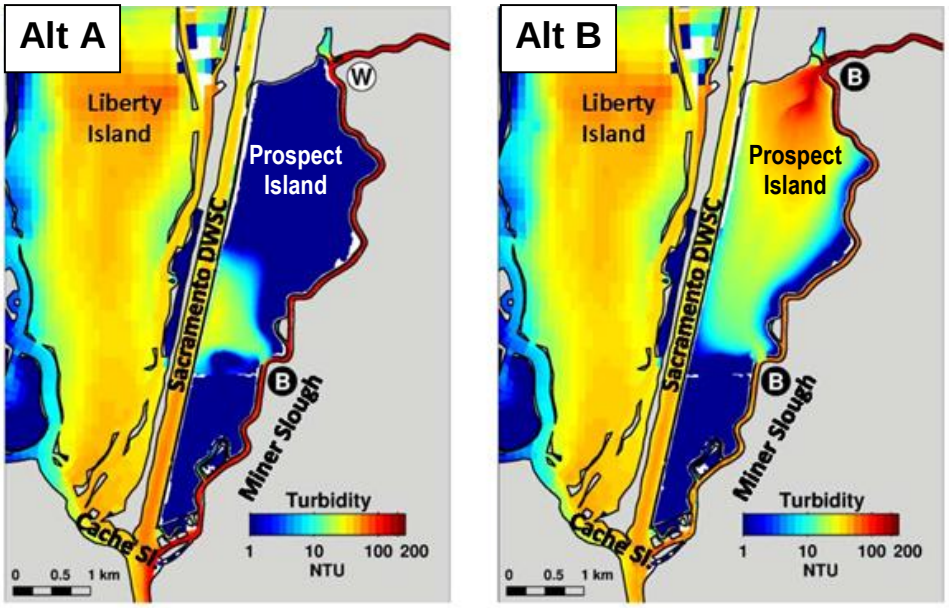
A more recent analysis of the Prospect Island Tidal Habitat Restoration Project evaluated the changes in turbidity that could result from a relatively minor change in the type of levee breach (MacWilliams et al., 2014). One of the alternatives in this analysis (Alternative A) would have a weir at the north of the island, while another alternative (Alternative B) would have a breach in the levee at the same location in the north end of the island. Thus, the difference between the two alternatives is the size of the connection between the restoration site and the adjacent channel. As shown in the first panel of Figure 1-3 below (panel (a)), turbidity under Alternative A would be up to 200 times lower in the north of the island than under Alternative B for the exact same flow conditions. Furthermore, as shown in the second panel of Figure 1-3 below (panel (b)), the change in turbidity due to the restoration action would extend outside of the restoration site. Although both alternatives would reduce turbidity in the region, Alternative B would have a much greater effect, reducing turbidity in the Deep Water Ship Channel by 10 to 25 nephelometric turbidity units (NTU) and reducing turbidity in lower Liberty Island by 5 to 10 NTU.

Additionally, the shape of the restoration site in relation to the dominant wind direction, the ground elevation, channel design, vegetation type, and relation to other restoration projects in the Delta all have a significant influence over the flows and water quality in the region. For example, in Mildred Island (which flooded in 1983, creating tidal habitat), the southeast corner of the habitat experiences the highest productivity due to the lack of flushing by tides and freshwater flows; yet when the dominant wind direction shifts, the area can be flushed, forcing exchange with nearby areas (Sereno et al., 2003). In Franks Tract, growth of submerged water weeds from the spring through early fall effectively channelizes the open water area. In late summer and fall when the weeds fill the full water column, residence time is increased within the vegetation and greatly reduced within the open water areas, with limited mixing between the regions (Sereno and Stacey, 2004). Due to the longer residence time and limited mixing, waters within the vegetation are warmer than the adjacent open water, and as salinity intrudes during the fall, salinity in the open water areas is greater than it would be without the vegetation.

These examples highlight the importance of establishing and assessing parameters for the particular design elements of habitat restoration actions to evaluate and mitigate their potential water quality and water supply impacts.

Waters in the region near Prospect Island, a possible restoration site, colored by turbidity

(a) Predicted turbidity for high Delta outflow condition



(b) Predicted change in turbidity for high Delta outflow condition

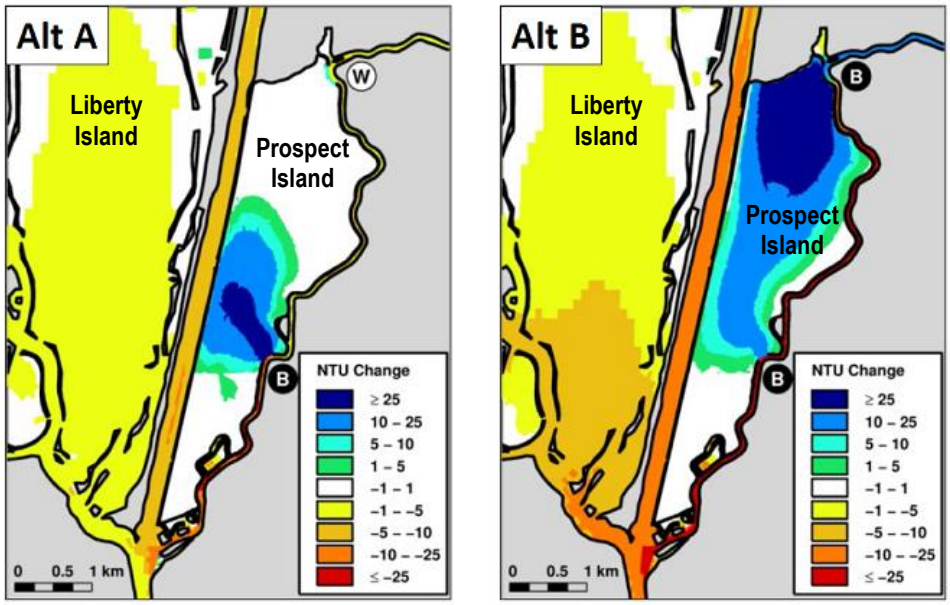


Figure 1-3. Prospect Island and Liberty Island during a high outflow event illustrating (a) turbidity and (b) change in turbidity for two different habitat restoration alternatives on Prospect Island.
Adapted from MacWilliams et al. (2014), slides 12 and 14.

1.2.3. More information is needed to adequately evaluate the water quality and water supply effects of the habitat restoration actions.

1.2.3.1. Failure to describe near-term actions and resulting impacts.

The BDCP Draft EIR/EIS recognizes that habitat restoration actions could have adverse salinity and other water quality impacts within the Delta. For example, the BDCP Draft EIR/EIS acknowledges that the implementation of Conservation Measure 4 (CM4) could affect Delta hydrodynamics, affect the mixing of source waters, and increase the volume of tidal water exchange in the Delta − thereby increasing levels of bromide, chloride, and electrical conductivity. *See, e.g.*, BDCP Draft EIR/EIS, Chap. 8 at pp. 8-416 to 8-422 (bromide); 8-423 to 8-431 (chloride); 8-436 to 8-442 (electrical conductivity).

Yet the evaluation of water quality impacts in the BDCP Draft EIR/EIS does not disclose what the near-term habitat restoration actions under CM4 would consist of prior to the implementation of CM1 and the BDCP Draft EIR/EIS omits an assessment of what the near-term negative impacts of those actions could be. Since some location and design information is available for the near-term habitat restoration actions included within the BDCP, the BDCP Draft EIR/EIS could have analyzed the near-term effects of these actions. But the BDCP Draft EIR/EIS overlooks this near-term analysis; instead, the evaluation of water quality impacts focuses on full implementation of all of the restoration actions, encompassing 65,000 acres of tidal marsh developed under CM4, completed by the year 2060. *See, e.g.*, BDCP Draft EIR/EIS, Chap. 8 at pp. 8-4 to 8-5 (water quality impact analysis assumes implementation of conservation measures and assesses future project conditions in 2060).

It is therefore impossible to know what the salinity impacts from the habitat restoration actions could be during the initial phase of the BDCP's implementation. As explained in the preceding section, these near term impacts can be substantial depending upon the location, design parameters and sequence in which the restoration activities are conducted. It is important to know what these impacts could be, especially since CM1 is not projected to be operational until 11 years after the project is approved, while habitat restoration actions under CM4 are planned to start operation − and would thus start affecting water quality − much earlier than that. BDCP, Chap. 6, Table 6-1 at p. 6-3, & Table 6-2 at p. 6-5. As discussed in Section 2.1 of these comments, which addresses the use of an improper environmental baseline, this failure to disclose and analyze the near-term components and impacts of the BDCP is a violation of CEQA and NEPA. And as discussed in Section 3 of these comments, the failure to provide for any mitigation for near-term impacts is equally improper.

1.2.3.2. Failure to distinguish impacts of habitat restoration from impacts of water conveyance facilities.

The BDCP Draft EIR/EIS compounds this error by failing to enable the reader to distinguish the adverse salinity impacts of the habitat restoration actions from the adverse salinity impacts of CM1, the water conveyance facilities. Instead, the BDCP Draft EIR/EIS simply lumps the impacts from habitat restoration together with the impacts of CM1. The

document states: "Modeling scenarios included assumptions regarding how certain habitat restoration activities (CM2 and CM4) would affect Delta hydrodynamics. To the extent that restoration actions alter hydrodynamics within the Delta region, which affects mixing of source waters, these effects are included in this assessment of operations-related water quality changes (i.e., CM1)." This statement is repeated throughout the analysis. *See, e.g.*, BDCP Draft EIR/EIS, Chap. 8 at pp. 8-416, 8-423 to 8-424, 8-436, 8-443, 8-448, etc.

The BDCP Draft EIR/EIS states that water quality changes related to project operations "would be partly driven by geographic and hydrodynamic changes resulting from restoration actions (i.e., altered hydrodynamics attributable to new areas of tidal wetlands (CM4), for example)." BDCP Draft EIR/EIS, Chap. 8 at p. 8-4. But there is no attempt to clarify the extent to which CM1 would cause the negative impacts versus the extent to which the habitat restoration actions would cause the impacts. Rather, the BDCP Draft EIR/EIS asserts: "*There is no way to disentangle the hydrodynamic effects of CM4 and other restoration measures from CM1, since the Delta as a whole is modeled with both CM1 and the other conservation measures implemented*." *Id*. (emphasis added). But the hydrodynamic effects can and should be disentangled, as discussed in Section 2.1.5 of these comments.

As a result of this undifferentiated impact assessment, the description and analysis of the habitat restoration "program" is so vague that the reader has no basis to discern what the actual water quality effects of that program could be, either in the short-term or in the many years leading up to 2060, or even in 2060 after the program is fully implemented. This makes it impossible to meaningfully consider program-wide mitigation to guide future site-specific actions. The curtailed description and analysis of the BDCP's habitat restoration program therefore defeats CEQA's public participation and informational goals. See Section 2.1.5 of these comments for further discussion of the problems that arise from the inability to distinguish the impacts of CM1 from those of CM4.

To provide for a meaningful and intelligent evaluation of the habitat restoration program, the BDCP Draft EIR/EIS must isolate the habitat restoration actions and their impacts from the water conveyance facilities.[6] Without this important revision, the BDCP Draft EIR/EIS cannot serve as a valid basis for the future decisions about individual habitat restoration actions.

1.2.3.3.Failure to describe the key variables and the full range of impacts.

As explained above, the location, timing and design of the habitat restoration actions are key variables in assessing the impacts the actions would have on water quality and water supply. But the BDCP Draft EIR/EIS does not explain these key variables or assess how they could influence the impact analysis. Instead, the BDCP Draft EIR/EIS states that the analysis is

[6]This necessary step is consistent with the findings of BDCP Steering Committee representatives at the "BDCP Modeling for Modelers" meetings in 2010, which recommended an independent analysis of CM1 in the absence of the habitat restoration actions and is consistent with the findings of the panel of independent scientists who reviewed the BDCP effects analysis (Parker et al., 2014 at p. 47).

based on "typical" habitat restoration projects. BDCP Draft EIR/EIS, Chap. 4 at p. 4-2. This results in an incomplete picture of the potential impacts.

For the habitat restoration actions, the BDCP Draft EIR/EIS minimizes the potential scope of the impacts by including a mixture of sites that would both increase and decrease salinity. For example, modeled Suisun Marsh restoration includes both salinity-increasing and salinity-decreasing sites, although there is no commitment to this specific configuration. BDCP Draft EIR/EIS, Appendix 5A, Section D, Attachment 2, Figure 2-16 (in comparison to Figure 1-1 above). The generic assumptions used in the BDCP analysis hide the level of impacts that would occur if more sites were chosen that increase salinity − and the public has no way of knowing that the negative impacts could be greater than what is represented. The failure to disclose the full range of impacts also prevents the analysis of program-wide mitigation, which would require future habitat restoration actions to be located, sequenced and designed in an integrated manner to avoid or reduce the degradation of water quality. Instead, these important program-level considerations are improperly deferred to future site-specific actions, when it will no longer be practical to evaluate broad mitigation on a program-wide basis.

With respect to the sequencing of habitat restoration actions, the BDCP Draft EIR/EIS completely avoids this issue by basing the environmental analysis solely on the completion of all of the restoration acreage, totaling tens of thousands of acres, by the year 2060. Thus, the reader has no way to know that the adverse salinity impacts from the BDCP may be even more significant in 2020, 2030, 2040 or 2050 than what is projected in the BDCP Draft EIR/EIS, depending on how the future restoration projects are staged and configured. And again, there is no program-wide consideration of how to locate, sequence and design these future actions so that they constitute an integrated set of actions that is designed to avoid or reduce water quality degradation.

For the design features of the habitat restoration actions, the BDCP Draft EIR/EIS uses generic assumptions about levee breach locations and depths where no design information was available. The document states: "For restoration areas that are not part of currently planned actions, levee breaches were generally located near the deepest part of the restoration area or where there were existing channels in the Base grid." BDCP Draft EIR/EIS, Appendix 5A, Section D, Attachment 2 at p. 4. As noted above, over 80% of the habitat acreage planned under CM4 is "not part of currently planned actions," so the generic levee breach assumptions were applied to most of the acreage. As shown above by the Prospect Island example, the choice of levee breach locations can have significant impacts on water quality. But as with the other aspects of the habitat restoration program, the reader has no way to discern how the key design variables would affect the impact analysis and what the full range of impacts could be, depending on how future individual restoration actions are configured. Furthermore, as discussed in Section 2.2.2.6 of these comments, the generic assumptions used in the analysis tend to underestimate salinity and temperature, thus underestimating water quality impacts. Equally important, there is no consideration of program-wide mitigation that includes designing future site-specific actions to avoid or reduce water quality degradation.

The BDCP Draft EIR/EIS claims to be using a program-level approach, but is in fact using an ill-defined description of the program to avoid analysis and mitigation of program impacts and to defer that analysis and mitigation until after the program is adopted. This is improper.

The program-level analysis should have provided an opportunity for the BDCP project proponents to develop a governing set of policies and principles to guide the location, sequence and design of future site-specific restoration actions to ensure that the overall habitat restoration program would be self-mitigating as it is implemented. For example, individual restoration actions that decrease salinity could be implemented before other actions that would increase salinity, such that the overall net effect would not degrade water quality. The BDCP Draft EIR/EIS misses this key opportunity, negating the purpose of using a program-level analysis. *See, e.g.,* CEQA Guidelines § 15168(b)(4) (program EIR allows lead agency "to consider broad policy alternatives and program wide mitigation at an early time when the agency has greater flexibility to deal with basic problems").

1.2.4. The promise to conduct future studies does not remedy the inadequate project description.

The BDCP Draft EIR/EIS indicates that each "later activity" associated with the Conservation Measures will be evaluated in the future "to determine whether the later activity has been adequately examined in the BDCP EIR/EIS." BDCP Draft EIR/EIS, Appendix 31A at p. 31A-2. This evaluation is meant to ascertain whether the later activity would have effects that were not examined in the program-level analysis. *Id*. But the description and analysis of the habitat restoration program in the BDCP Draft EIR/EIS is so vague that it does not allow for a meaningful evaluation of future site-specific restoration actions. For example, given that there is no analysis of the effects near-term habitat restoration would have on water quality in the Delta, the BDCP Draft EIR/EIS cannot provide coverage for any future restoration actions completed before CM1 is built. The document similarly fails to provide coverage for future individual restoration actions completed after CM1 becomes operational − the water quality impacts attributable to the hydrodynamic changes caused by Conservation Measures 2 through 11 are not identified or disclosed so that they can be ascertained apart from the impacts of CM1, nor are the impacts bracketed to account for the range of variable effects that could occur over time, depending on how the future restoration actions are configured, sequenced and designed in the years leading up to the completion of the planned 65,000 acres.

Future site-specific environmental review will be required for each habitat restoration project as relevant information becomes available. Given the lack of adequate analysis in the BDCP Draft EIR/EIS, a new review will be required for each such project and it would be inappropriate to rely on the current document.

The future environmental review that would take place for the individual habitat restoration projects does not resolve the current flaws in the BDCP Draft EIR/EIS. CEQA requires that public agencies evaluate the potential impacts of their approvals ***before*** the approvals are made. CEQA Guidelines § 15004(a). Here, DWR may not properly approve the Conservation Measures without first conducting a meaningful evaluation of the adverse

impacts that this approval could cause. This has not yet been done. For the reasons discussed above, the discussion and analysis of the planned habitat restoration actions do not meet the fundamental requirements for a project description, and thus for a legally adequate environmental review.

The flaws in the project description also are not cured by the commitment made in an appendix to the BDCP Draft EIR/EIS, where "BDCP proponents commit to assisting in-Delta municipal, industrial, and agricultural water purveyors that would be subject to significant water quality effects from operation of Conservation Measure 1 (CM1) and effects on dissolved organic carbon (DOC) due to implementation of Conservation Measures 2-22 (CM2–22)". BDCP Draft EIR/EIS, Appendix 3B at p. 3B-42. This "non-environmental" commitment does not remediate the failure of the BDCP Draft EIR/EIS to provide an adequate environmental analysis that informs the public and the decision-makers about the proposed project, its adverse impacts, and possible mitigation. Nor does this "commitment" constitute a valid, binding mitigation measure.

2. The Impacts Analysis Is Deficient.

2.1. The Environmental Impacts of the Proposed Project Are Not Adequately Disclosed And Analyzed as Compared to the Environmental Baseline.

The CEQA Guidelines require that "[a]n EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published . . . ." CEQA Guideline § 15125(a). As provided in the Guidelines, this existing environmental setting "will normally constitute the baseline physical conditions by which a Lead Agency determines whether an impact is significant." *Id*. By describing and quantifying the effects of the proposed project against the baseline physical conditions, the EIR serves CEQA's fundamental goal of informing the decision-makers and the public about the project's environmental impacts. *See Neighbors for Smart Rail v. Exposition Metro Line Construction Authority*, 57 Cal. 4th 439, 447 (2013), citing *Communities for a Better Environmental v. South Coast Air Quality Management District*, 48 Cal. 4th 310, 315 (2010).

The BDCP Draft EIR/EIS asserts that the CEQA baseline it uses is consistent with these principles and that the baseline has been developed "to assess the significance of the impacts of the BDCP alternatives in relation to the existing conditions at the time of the NOP." BDCP Draft EIR/EIS, Ch. 4 at p. 4-4. In particular, the BDCP Draft EIR/EIS states that the assumptions for the existing conditions baseline under CEQA "include facilities and ongoing programs that existed as of February 13, 2009 (publication date of the most recent NOP and Notice of Intent [NOI] to prepare this EIS/EIR), that could affect or could be affected by implementation of the BDCP." *Id*. at p. 4-4.

But given that the February 2009 CEQA baseline date is now more than five years old, it is plainly out of date and excludes important Delta water infrastructure projects and operations

that are part of today's physical environment. To provide a full and accurate assessment of how the project would affect the existing environment, the old baseline needs to be updated to present a realistic picture of the conditions prevailing at the time the environmental review is being conducted, rather than relying on an obsolete depiction of the environmental setting. Worse yet, the environmental baseline used in the BDCP Draft EIR/EIS does not even include all of the regulatory programs and requirements that existed as of the February 2009 CEQA Notice of Preparation.

The BDCP Draft EIR/EIS further conceals the project's environmental impacts by failing to compare those impacts against the existing conditions CEQA baseline that it purports to use. Instead, the BDCP Draft EIR/EIS compares ***future cumulative*** conditions in the year 2060 − which include BDCP project operations, as well as other independent, possible future projects and the possible future effects of climate change − to the existing conditions baseline. The resulting analysis makes it impossible to distinguish the project's impacts as compared to the CEQA baseline from the impacts of other projects that might be implemented by 2060, the impacts of climate change that are assumed in 2060, and the impacts of other presumed changes in background conditions that are built into the 2060 "with project" scenario. The project's impacts are thereby obscured and the BDCP Draft EIR/EIS thus thwarts CEQA's core purpose, which is to provide a clear picture of the project's impacts to decision makers and the public.

Perhaps because the BDCP proponents recognize that the CEQA analysis is fatally flawed, the BDCP Draft EIR/EIS frequently refers to the NEPA analysis, which compares projected conditions in 2060 with and without the BDCP. BDCP Draft EIR/EIS, Chap. 4 at p. 4-6. But the 2060 NEPA analysis cannot be used to prop up the defective CEQA analysis. While the NEPA analysis purports to isolate the project's effects by holding other conditions constant, this analysis is limited to the impacts that are estimated to occur 46 years from now. There is no information or analysis, under either CEQA or NEPA, about the impacts that could occur sooner than that.

The BDCP Draft EIR/EIS goes so far as to quote the recent warning from the California Supreme Court that:

> An EIR stating that in 20 or 30 years the project will improve the environment, but neglecting, without justification, to provide any evaluation of the project's impacts in the meantime does not give due consideration to both the short-term and long-term effects of the project . . . and does not serve CEQA's informational purpose well.

BDCP Draft EIS/EIR, Chap. 4 at p. 4-4 & Appendix 3D at p. 3D-2 (quoting *Neighbors for Smart Rail*, 57 Cal. 4th at 455). But in omitting any analysis of potential near-term and mid-term impacts of the project, the BDCP Draft EIR/EIS violates both CEQA and NEPA. *See* 40 C.F.R. § 1508.27(a) (in assessing the significance of an environmental impact under NEPA, "[b]oth short- and long-term effects are relevant").

As explained more fully below, the environmental baseline used in the BDCP Draft EIR/EIS, and the assessment of the impacts of the proposed project as compared against the baseline, are deficient for the following reasons.

- First, the CEQA baseline improperly excludes important components of the existing environmental setting. This makes the baseline environmental conditions look worse than they really are and thereby falsely minimizes the project's impacts as measured against those conditions.

  For example, the baseline scenario does not include the operation of CCWD's Middle River intake, even though the environmental review for the project was completed in 2006 and the intake became operational in 2010. The Middle River intake was designed and constructed to protect against seasonal fluctuations and long-term degradation of Delta drinking water quality − important benefits that would be undermined by operations of the BDCP. By excluding the Middle River intake from the baseline, the BDCP Draft EIR/EIS does not accurately depict the physical conditions that actually exist at the time the environmental analysis for the BDCP is being conducted.

  The BDCP Draft EIR/EIS similarly errs in excluding from the baseline scenario CCWD's expansion of its Los Vaqueros Reservoir, another project that was designed to improve water supply reliability and drinking water quality. The environmental review for the expansion was completed in 2010 and the expanded reservoir became operational in 2012. By excluding these two projects from the environmental baseline, the BDCP Draft EIR/EIS does not correctly describe the existing physical conditions that would be affected by the BDCP when its starts operation. The BDCP Draft EIR/EIS therefore provides a faulty starting point for the CEQA analysis.

  The baseline scenario also does not assume implementation of the Fall X2 requirement imposed by the 2008 Biological Opinion issued by the U.S. Fish & Wildlife Service (USFWS) for the coordinated operations of the Central Valley Project (CVP) and State Water Project (SWP). This important regulatory standard necessitates the release of CVP and SWP water through the Delta in the fall months of wet and above normal water years to ensure that flows are sufficient to moderate salinity. By assuming that the existing Fall X2 standards are not implemented under baseline conditions, the BDCP Draft EIR/EIS makes it appear that the baseline water quality conditions in the Delta are worse than they are allowed to be under existing regulatory requirements.

  The BDCP Draft EIR/EIS then compounds this error by assuming that the Fall X2 requirement ***will*** be implemented if several of the BDCP project scenarios are approved − thus making it appear that this component of the BDCP would improve water quality conditions in the Delta as compared to existing conditions, even though the requirement was adopted independent of the BDCP prior to the 2009 CEQA baseline date. This is improper.

- Second, while the BDCP Draft EIR/EIS says that the CEQA analysis evaluates the impacts of the BDCP project and alternatives as compared to the existing conditions baseline, the document does not actually make this assessment for a number of key

impacts. Instead, the document includes within the impact analyses and findings for the BDCP scenarios the anticipated future cumulative effects from ***other*** independent possible future projects, actions and conditions that are not part of the BDCP. This obscures the project-specific environmental impacts that are attributable to the approval and implementation of the BDCP.

For example, the BDCP Draft EIR/EIS incorporates into the BDCP scenarios two other possible future projects that would improve water quality in the Delta: the construction of upgrades to the Sacramento Regional Wastewater Treatment Plant and future actions to implement the Grassland Bypass Project. By folding these other projects into the BDCP scenarios, the benefits of these future projects mask the adverse impacts of the BDCP. Put another way, the BDCP takes the credit for the environmental benefits that are expected to occur from these other, independent projects, which are not proposed for approval as part of the BDCP. To provide an accurate accounting of the adverse effects of the BDCP in comparison to the CEQA baseline, the benefits that might occur from these different projects, which may or may not be fully implemented, should not be folded into the BDCP impact analysis.

The environmental analysis also folds into the BDCP scenarios other changes that might occur independently from the approval and implementation of the BDCP. The most extreme example is climate change. The BDCP Draft EIR/EIS includes in the modeling for all of the BDCP scenarios dramatic changes in sea level and precipitation assumed to result from climate change by the year 2060. The BDCP Draft EIR/EIS admits that this approach, which involves predicting future conditions nearly 50 years after the environmental analysis is conducted, makes it impossible to distinguish the impacts from the BDCP scenarios as measured against existing conditions from the separate impacts resulting from climate change. BDCP Draft EIR/EIS, Chap. 5 at p. 5-49. The reader is left with no way to discern the project-specific impacts of the BDCP in relation to the CEQA baseline.

- Third, in purporting to assess the impacts of the BDCP project and alternatives in relation to the 2060 NEPA baseline, the BDCP Draft EIS/EIR fails to disclose the potential near-term and medium-term impacts of the project. The document therefore fails to disclose what the BDCP's impacts would be in the several decades that follow project approval.

  For example, the operation of the tidal marsh restoration components of the BDCP would commence within five years after project approval, while operation of the proposed diversion and conveyance facilities would not commence until 11 years after project approval. BDCP, Chap. 6, Tables 6-1 (CM1) and 6-2 (CM4). But the BDCP Draft EIR/EIS contains no analysis of the near-term water quality impacts that marsh restoration could cause due to hydrodynamic changes − including substantial increases in Delta salinity and mercury, as well as toxic algae − before the diversion and conveyance facilities are operational. Similarly, the BDCP Draft EIR/EIS contains no analysis of the impacts of the BDCP project and alternatives in the near- and mid-term years when climate-related changes would be less intense than the conditions assumed

for 2060. Project impacts could be quite different under nearer-term Delta conditions, but there is no way for the reader to assess these issues.

- Fourth, in purporting to assess the impacts of the BDCP project and alternatives in relation to the 2060 NEPA baseline, the assessment of climate change in the BDCP Draft EIS/EIR is highly uncertain and unreliable. As the California Supreme Court recently warned, "[h]owever sophisticated and well-designed a model is, its product carries the inherent uncertainty of every long-term prediction, uncertainty that tends to increase with the period of projection." *Neighbors for Smart Rail*, 57 Cal. 4th at 455. Here, the BDCP Draft EIR/EIS admits that sea level rise and climate change might occur differently than what is modeled for its analyses. BDCP Draft EIR/EIS, Chap. 5 at p. 5-49. Including nearer-term analyses would reduce the uncertainties inherent in very long-term predictions.

- Fifth, the analysis improperly conflates the effects of the new water conveyance facilities, CM1, with the effects of the habitat restoration actions, for example, under CM4. This approach of simply lumping the impacts together, without any way to differentiate the effects, obscures the adverse water quality and water supply impacts of both CM1 and CM4 as compared to the CEQA and NEPA baselines. Because the BDCP does not actually commit to fully implementing the habitat restoration actions, this analysis is improper.

- Sixth, both the future No Project Alternative under CEQA and the 2060 NEPA baseline, as reflected in the No Action Alternative, improperly exclude the implementation of habitat restoration actions that are required under the currently effective Biological Opinions issued by the USFWS and the National Marine Fisheries Service that govern the coordinated operations of the CVP and the SWP. These habitat restoration actions are more than reasonably foreseeable if the BDCP does not go forward, since in the absence of project approval, these actions are ***required*** to occur. By excluding the habitat restoration actions from the future No Action and No Project scenarios, and by including them in the BDCP project and alternatives, the BDCP Draft EIR/EIS improperly skews the environmental analysis and obscures the impacts of approving and implementing the proposed project.

Each of these flaws is detailed separately below. The end result of all of these flaws is that the analysis in the BDCP Draft EIR/EIS is confusing and obfuscatory and fails to disclose to the public, the governmental agencies, and the decision-makers the true nature and extent of the environmental impacts of going forward with the proposed project. The BDCP Draft EIR/EIS should be revised to correct these numerous flaws and to provide a clear and complete analysis of the project's impacts.

2.1.1. The CEQA existing conditions baseline scenario improperly excludes important components of the existing environmental setting.

There are two problems with how the BDCP Draft EIR/EIS defines the CEQA baseline for purposes of the environmental analysis. First, the February 2009 baseline is outdated and fails to account for current physical conditions, including two important drinking water projects: CCWD's Middle River intake, which was approved (as part of the Alternative Intake Project) in 2006 and constructed and put into operation in 2010; and CCWD's expansion of its Los Vaqueros Reservoir, which was approved, constructed and put into operation in the more than five years that have passed since the CEQA notice of preparation was published for the BDCP Draft EIR/EIS. This omission results in the use of an environmental setting that is obsolete as a measuring stick for assessing the significance of the BDCP's water quality impacts. The baseline therefore fails to fulfill CEQA's fundamental purpose, which is to provide a clear and accurate picture of the project's environmental impacts to the public and the decision-makers.

Second, the baseline scenario does not even include important regulatory requirements that were approved and adopted and took effect before the February 2009 CEQA baseline date. In particular, the baseline scenario excludes implementation of the Fall X2 salinity requirement, which was adopted by the USFWS in 2008 and imposed on the coordinated operations of the CVP and SWP to limit salinity and protect the endangered delta smelt. This omission further masks the impacts of implementing the BDCP in relation to the existing environmental setting.

Both of these critical omissions are described further below.

2.1.1.1. The Middle River Intake Project and the Los Vaqueros Reservoir Expansion Project.

The BDCP Draft EIR/EIS uses an outdated CEQA baseline date of February 13, 2009. BDCP Draft EIR/EIS, Ch. 4 at p. 4-4. Thus, the depiction of the existing environmental conditions, the critical yardstick against which the magnitude of the project's impacts are measured, is more than five years and five months old and counting. Many changes have occurred during the prolonged period during which the BDCP project proponents have been attempting to decide what project to propose for approval. For example, CCWD had approved an important project that helps to protect Delta drinking water quality before the CEQA baseline date used in the BDCP Draft EIR/EIS, and then, in the more than half-decade that has followed that date, CCWD approved another important project that helps to protect Delta drinking water quality and constructed and commenced operation of both projects. The exclusion of these projects thwarts the fundamental purpose of CEQA's baseline requirement, which is to describe and quantify the project's effects against existing physical conditions, so as to inform the decision-makers and public about the significance of the project's environmental impacts. *See Neighbors for Smart Rail v. Exposition Metro Line Construction Authority*, 57 Cal. 4th 439, 447 (2013), citing *Communities for a Better Environmental v. South Coast Air Quality Management District*, 48 Cal. 4th 310, 315 (2010).

The first CCWD project that is improperly excluded from the existing conditions baseline is the Middle River Intake Project (formerly known as the Alternative Intake Project). BDCP Draft EIR/EIS, Appendix 3D at p. 3D-66 (noting that while this project was completed in 2010, it is not included in the existing conditions baseline). The environmental review for the Middle River intake was completed more than seven and a half years ago, in November 2006, and the project started operation four years ago, in the summer of 2010. The ongoing operation of this long-planned drinking water project is thus a well-established existing condition that is part of today's physical environment. And the project is an important part of the existing environmental setting, as it benefits Delta fish populations. But the environmental analysis in the BDCP Draft EIR/EIS excludes the project from the baseline, since it did not start operating until after the five-plus-year-old CEQA baseline date – even though the changes to the environment were known prior to the start of environmental review for the BDCP. By excluding the Middle River intake from the baseline, the BDCP Draft EIR/EIS fails to depict the existing physical conditions and thus fails to disclose the actual changes to those existing conditions that would result from implementation of the BDCP.

While the CEQA Guidelines provide that the environmental setting as of the notice of preparation will normally constitute the baseline, there is nothing in CEQA or the Guidelines that contemplates a period exceeding five years from the notice of preparation to the publication of the draft (let alone final) EIR. There also is nothing in CEQA or the Guidelines that sanctions the use of an old, outdated baseline that fails to depict the actual physical conditions that exist at the time the environmental analysis is conducted.

This is not a situation where turmoil and rapid change during the CEQA review make a description of the "existing" conditions a moving target over a period of a year or two following the notice of preparation. *See Citizens for Open Government v. City of Lodi*, 205 Cal. App. 4th 296, 301-03 (2012) (involving rapidly changing conditions related to blight and urban decay between publication of the NOP in November 2006 and close of public comment period on the draft EIR in December 2007). To the contrary, planning and environmental review for the Middle River intake was completed in 2006, design was completed in 2007, and construction began in 2008 − all ***before*** the notice of preparation was published for the BDCP Draft EIR/EIS in February 2009. The notion that the Middle River intake is not part of the existing conditions baseline is a fiction.

The BDCP Draft EIR/EIS commits a similar error by excluding from the baseline conditions the expanded Los Vaqueros Reservoir. This project, which has increased storage in CCWD's Los Vaqueros Reservoir from 100 thousand acre-feet to 160 thousand acre-feet, was designed to improve water supply reliability and provides an important source of drinking water during droughts and emergencies, as well as providing water quality benefits. Like the Middle River Intake Project, the Los Vaqueros Reservoir Expansion Project has been a known project since long before the environmental review of the BDCP commenced. The CALFED Record of Decision in 2000 included the expansion of Los Vaqueros Reservoir as one of the key water storage projects identified for further study. Extensive studies of the expansion began in 2001, including a project concept report in 2002, a planning report in 2004, an initial alternatives report in 2005, and an initial economic evaluation in 2006. The draft EIR/EIS for the expansion project was published in February

2009 (the same time as the publication of the NOP for the BDCP Draft EIR/EIS) and the environmental review was completed over four years ago, in 2010. CCWD approved the expansion in March 2010 and Reclamation granted its final approval in February 2011. Construction of the expansion began in April 2011 and was completed in March 2012, and the expanded reservoir is currently operational.

But as with the Middle River intake, the BDCP Draft EIR/EIS excludes this existing, completed, operational project from the CEQA existing conditions baseline scenario. BDCP Draft EIR/EIS, Appendix 3D at pp. 3D-65 to 3D-66. And as with the Middle River intake, the BDCP Draft EIR/EIS can exclude the Los Vaqueros Reservoir expansion from the existing conditions baseline only by relying on the falsehood that the expansion is merely "proposed" and has not yet been approved or constructed.[7]

The decision to exclude these projects from the CEQA baseline is unfounded. Even aside from the fact that the February 2009 NOP date is almost five and a half years out of date, the actual modeling conducted for the BDCP environmental analysis was still under development in 2011, after the Middle River intake was operational and after the expansion of Los Vaqueros Reservoir was fully evaluated and approved.

As the California Supreme Court has instructed, a basic premise underlying CEQA's baseline requirement is that "[t]he public and decision makers are entitled to the most accurate information on project impacts practically possible." *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority*, 57 Cal. 4th. 439, 455 (2013). To provide the most accurate information on the potential environmental impacts of the BDCP to the public and the decision-makers, it is practical and possible for the BDCP Draft EIR/EIS to define the existing conditions baseline to include important, long-planned water projects that already have been approved, constructed, and put into operation. Conversely, the exclusion of these existing, operational projects through the use of a 65 month-old artificially constrained "existing" conditions baseline thwarts rather than advances CEQA's basic purposes.

2.1.1.2.The Fall X2 salinity standard.

The BDCP Draft EIR/EIS further errs by failing to include within the existing environmental baseline an important regulatory standard that was adopted and took effect in 2008, before the February 2009 CEQA baseline date.

The BDCP Draft EIR/EIS states that it includes as part of the existing conditions baseline under CEQA the requirements that are specified in the 2008 and 2009 Biological Opinions issued by the USFWS and National Marine Fisheries Service, respectively, to protect listed fish species from the effects of the coordinated operations of the CVP and SWP. BDCP Draft EIR/EIS, Ch. 4 at pp. 4-4 to 4-5; Appendix 3D at p. 3D-2. However, the BDCP Draft EIS/EIR goes on to explain that the existing conditions baseline does not include all aspects

[7]The BDCP Draft EIR/EIS states that the "proposed" Los Vaqueros Reservoir expansion would increase reservoir capacity to 275,000 acre-feet. BDCP Draft EIR/EIS, App. 3D at p. 3D-66. In fact, an expansion to 160,000 acre-feet has been approved, constructed and put into operation.

of the Biological Opinions. In particular, the baseline does not include implementation of the "Fall X2" salinity standard as set forth in the Reasonable and Prudent Alternative (RPA) Component 3 (Action 4) of the 2008 USFWS Biological Opinion. *Id*. at p. 4-5 and p. 3D-2 (for a description of the Fall X2 standard, see 2008 USFWS Biological Opinion at pp. 282-83, 369-76). The Fall X2 salinity standard, which applies in wet and above normal water years, is designed to improve the quality and quantity of habitat for the endangered delta smelt by increasing Delta outflow during the fall months. The Fall X2 standard concerns the location in the Bay-Delta at which the salinity in the water is less than two parts per thousand and is expressed in terms of the distance in kilometers east of the Golden Gate Bridge. The standard is of critical importance for the environmental analysis of the BDCP, since, as the 2008 USFWS Biological Opinion explains, the operations of the CVP and SWP "control the position of X2 and therefore are a primary driver of delta smelt habitat suitability," and conversely the location of X2 directly affects how much water can be exported by the CVP and SWP from the Delta. 2008 USFWS Biological Opinion at p. 234; *see also San Luis & Delta-Mendota Water Authority v. Jewell*, 747 F.3d 581, 616-17 (9th Cir. 2014).

The BDCP Draft EIR/EIS states that a recent court decision is one of the two grounds for not including the environmentally protective Fall X2 salinity standard in the existing conditions baseline scenario. The BDCP Draft EIR states that this decision by the U.S. District Court for the Eastern District of California determined that "the USFWS failed to fully explain the specific rationale used to determine the locations for Fall X2 included in the RPA and remanded to the USFWS." Draft BDCP Draft EIR/EIS, Appendix 3D at p. 3D-2; see *San Luis & Delta-Mendota Water Authority v. Salazar*, 760 F. Supp. 2d 855 (E.D. Cal. 2010). The district court, however, did not issue its decision until December 2010, nearly two years after the CEQA baseline date of February 2009, and even though the district court remanded the Biological Opinion to the USFWS for revision, the court did not vacate the Fall X2 standard in the Biological Opinion, which therefore remained effective as a regulatory requirement. In any event, the United States Court of Appeals for the Ninth Circuit has reversed the district court's ruling that the rationale for imposing the Fall X2 standard is legally inadequate. *See San Luis & Delta-Mendota Water Authority v. Jewell*, 747 F.3d at 616-17 (9th Cir. 2014). In its decision, the Ninth Circuit held that the 2008 USFWS Biological Opinion, including the Fall X2 standard, complies with the requirements of the Endangered Species Act and the Administrative Procedure Act. *Id*. at 616-24.

In particular, the Ninth Circuit affirmed the finding by the USFWS that the Fall X2 standard is necessary to address the substantial loss of delta smelt habitat that has been caused, and that continues to be caused, by the operations of the CVP and SWP. The Ninth Circuit further found that the USFWS adequately explained its rationale for establishing the specific location for X2 and that the methodology used by the USFWS represented the best scientific data that was available. More broadly, the Ninth Circuit reversed the district court's ruling directing a remand to the USFWS for completion of a revised Biological Opinion. Thus, the primary basis used in the BDCP Draft EIR/EIS for not including the implementation of the Fall X2 salinity standard as part of the existing conditions baseline is legally incorrect.

The other basis used in the BDCP Draft EIR/EIS for not including the Fall X2 salinity standard as part of the existing conditions baseline under CEQA is the summary assertion

that DWR determined in the spring of 2011[8] that implementation of the standard "was not certain to occur within a reasonable near-term time frame" due to "reasonably foreseeable near-term hydrological conditions." BDCP Draft EIR/EIS, Chap. 4 at p. 4-5; Appendix 3D at p. 3D-2. It is not clear to the reader what the specific factual basis is for this determination, which DWR apparently made more than two years after the CEQA baseline date of February 2009. Moreover, 2011 was in fact a wet water year and thus exhibited precisely the kind of "near-term hydrological conditions" to trigger the implementation of the Fall X2 salinity standard. The only reason the standard was not implemented during the fall of 2011 was a district court injunction issued in August 2011, which subsequently was vacated by the Ninth Circuit. *See In re Consolidated Delta Smelt Cases*, 812 F. Supp. 2d 1133 (E.D. Cal. 2011) (enjoining implementation of the Fall X2 standard in 2011), judgment vacated by *San Luis & Delta-Mendota Water Authority v. Salazar*, 2012 WL 6929161 (9th Cir. Aug. 23, 2012); *see also San Luis & Delta-Mendota Water Authority v. Jewell*, 747 F.3d at 645 n.49. Thus, neither of the bases used by the BDCP Draft EIS/EIR to exclude the Fall X2 salinity standard from the existing conditions baseline withstands scrutiny.

Further, the Fall X2 standard is of critical importance for the water quality analysis of the BDCP. As that analysis explains, for all of the alternatives, there are two primary factors that can substantially affect water quality within the Delta. One of these factors is that while sea water intrusion resulting from sea level rise or decreased Delta outflow can increase the concentration of salts (bromide, chloride) and levels of electrical conductivity, increased Delta outflow resulting from the implementation of the Fall X2 standard "will decrease levels of these constituents." BDCP Draft EIR/EIS, Chap. 8 at p. 8-408.

The BDCP Draft EIR/EIS improperly skews the environmental analysis by excluding implementation of the Fall X2 standard from the existing conditions baseline scenario and then including implementation of that standard within a number of the BDCP alternatives. BDCP Draft EIR/EIS, Chap. 3 at p. 3-33 ("The Fall X2 rule applies to the No Action Alternative and some of the BDCP action alternatives."); Chap. 3, § 3.6.4.2 (pp. 3-181 to 3-209, describing the operational components of the different alternatives); & Chap. 8 at p. 8-175 (Table 8-62) (showing inclusion or exclusion of the Fall X2 standard in the various water quality assessment scenarios). This varying treatment of the Fall X2 standard in the BDCP Draft EIR/EIS has the effect of understating the salinity impacts of a number of the BDCP scenarios in comparison to the actual, existing regulatory baseline, since implementation of the standard causes a decrease in salinity.

In sum, the BDCP Draft EIR/EIS inappropriately excludes from the existing conditions baseline scenario the implementation of an environmentally protective regulatory standard that was adopted by the USFWS prior to the February 2009 baseline date, that currently remains in effect, and that has been determined by the Ninth Circuit to comply with the Endangered Species Act and to be adequately justified based on the scientific evidence. This exclusion obscures the true salinity impacts of a number of the BDCP scenarios as measured against the environmental baseline, thereby thwarting CEQA's fundamental goal

[8] It is noteworthy that the BDCP Draft EIR/EIS relies on events occurring after 2009 as the basis for *excluding* matters from the baseline scenario, yet artificially constrains the baseline scenario when it comes to *including* actual projects that not yet been constructed by that date, but have since been completed and are operating.

of informing the public and decision-makers about the impacts of the proposed project. The water quality analysis should be revised, with the implementation of the Fall X2 standard included in the CEQA existing conditions baseline scenario.

2.1.2. The environmental analysis fails to compare the project's impacts against the CEQA existing conditions baseline and instead uses the anticipated effects of other future projects and events to obscure the project impacts.

The California Supreme Court recently explained that comparing the impacts of the proposed project against the existing conditions baseline "serves CEQA's goals in important ways." *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority*, 57 Cal. 4th 439, 455 (2013). The BDCP Draft EIR/EIS purports to use an existing conditions baseline, asserting that this approach serves CEQA's informational purposes and that the environmental analysis accordingly assesses the impacts of the BDCP project and alternatives in comparison to the environmental conditions that existed as of February 13, 2009, the date the CEQA notice of preparation was published. BDCP Draft EIR/EIS, Chap. 4 at p. 4-4; Appendix 3D at pp. 3D-1 to 3D-2. But for a number of key environmental impacts, the BDCP Draft EIR/EIS fails to perform the environmental analysis it says it is conducting. Instead of comparing the project's impacts to existing conditions, the BDCP Draft EIR/EIS compares ***future cumulative*** conditions to the February 2009 baseline. These future cumulative conditions include the effects of the BDCP, as well as the anticipated effects from various independent projects, actions and conditions that are not part of the BDCP. As a result, it is not possible to distinguish the impacts caused by the BDCP in relation to the CEQA baseline from the impacts that would be caused by other projects and expected future changes in conditions. The BDCP Draft EIR/EIS therefore presents a confusing and inconsistent analysis that obscures the environmental impacts attributable to the approval and implementation of the BDCP.

Three examples are presented below: (1) water quality impacts due to ammonia; (2) water quality impacts due to selenium; and (3) the evaluation of climate change.

2.1.2.1. Water quality impacts due to ammonia: Sacramento Regional Wastewater Treatment Plant.

The BDCP Draft EIR/EIS states that, while most study locations in the Delta have low ammonia concentrations under existing conditions, the Sacramento River at Hood is an exception as a result of wastewater effluent discharges into the Sacramento River at Freeport. BDCP Draft EIR/EIS, Chap. 8 at pp. 8-38, 8-143 & Figures 8-9a, 8-52. The BDCP Draft EIR/EIS recognizes that the BDCP has the potential to cause increases in ammonia concentrations by decreasing flows in the Sacramento River, which would reduce the amount of water available to dilute the discharge from the wastewater treatment plant. E.g., BDCP Draft EIR/EIS, Chap. 8 at pp. 8-227 (Alternative 1); 8-303 (assessment of ammonia impacts of Alternative 2 is similar to the assessment under Alternative 1); 8-358 (assessment of ammonia impacts of Alternative 3 is similar to the assessment under Alternative 1); 8-409 (Alternative 4); 8-492 (assessment of ammonia impacts of Alternative

5 is similar to the assessment under Alternative 1); 8-543 (assessment of ammonia impacts of Alternative 6 is similar to the assessment under Alternative 1); 8-599 (assessment of ammonia impacts of Alternative 7 is similar to the assessment under Alternative 1); 8-650 (assessment of ammonia impacts of Alternative 8 is similar to the assessment under Alternative 1); 8-702 (assessment of ammonia impacts of Alternative 9 is similar to the assessment under Alternative 1).

But in purporting to evaluate the water quality impacts of the BDCP, the BDCP Draft EIR/EIS reaches the opposite conclusion − that ammonia concentrations under "with project" conditions would be less than under existing conditions. This conclusion is based on the assumption that the Sacramento Regional Wastewater Treatment Plant will be upgraded in the future to lower its ammonia discharge into the Sacramento River. BDCP Draft EIR/EIS, Chap 8 at pp. 8-229 (Alternative 1); 8-305 (Alternative 2); 8-359 (Alternative 3); 8-411 (Alternative 4); 8-493 (Alternative 5); 8-544 (Alternative 6); 8-600 (Alternative 7); 8-652 (Alternative 8); 8-703 (Alternative 9). Thus, the modeling for the BDCP includes the water quality benefits from the future upgrade by Sacramento Regional County Sanitation District of its wastewater treatment plant in the action alternative scenarios − which cancels out the adverse impacts from implementing the BDCP. In other words, the BDCP Draft EIR/EIR uses another possible future project to obscure the effects that the BDCP itself would have on ammonia levels. This is an improper analysis.

The BDCP recognizes the potential for ammonia to create adverse effects on the Delta ecosystem, including "potential toxicity to fish and other organisms, shifts in algal community structure (e.g., dominant species), and inhibition of nitrate uptake by diatoms." BDCP Draft EIR/EIS, Chap. 8 at p. 8-35. The BDCP would make ammonia concentrations in the Sacramento River worse than they otherwise would be without the project. In accordance with its stated use of an existing conditions baseline under CEQA, the BDCP Draft EIR/EIS needs to evaluate how flows in the Sacramento River resulting from the BDCP could affect existing ammonia levels and the resulting water quality problems. But the BDCP Draft EIR/EIS sidesteps this evaluation, and instead relies on an assumed set of future conditions that includes a separate project, thus obscuring the BDCP's adverse water quality impacts.

Where, as here, the lead agency purports to follow the practice of using existing conditions to define the CEQA baseline, the project's impacts must be compared against the existing environmental setting. ***Future*** conditions are appropriately considered as part of the assessment of cumulative impacts and the no project alternative. *See Neighbors for Smart Rail*, 57 Cal. 4th at 454 & n.6. By including the anticipated future upgrade of the Sacramento Regional Wastewater Treatment Plant as part of the impacts of the BDCP as measured against the existing conditions baseline, the BDCP Draft EIR/EIS conceals the true nature and magnitude of those impacts, thereby violating CEQA.

2.1.2.2. Water quality impacts due to selenium: Grassland Bypass Project and similar regulatory programs.

The same flaw that infects the analysis of ammonia impacts applies with equal force to the evaluation of the project's effects on selenium concentrations. Instead of assessing the

effects of implementing the BDCP in relation to existing selenium conditions, the BDCP Draft EIR/EIS relies on a set of possible future conditions, which might result from other possible independent projects and actions that are not part of the BDCP, to mask the effects of the BDCP.

The BDCP Draft EIR/EIS notes that while nonpoint agricultural sources in the San Joaquin Valley have caused water quality problems due to selenium, those nonpoint sources "will be controlled" by regulatory programs such as the Grassland Bypass Project "that are expected to result in decreasing discharges of selenium from the San Joaquin River to the Delta." BDCP Draft EIR/EIS, Chap. 8 at pp. 8-284 to 8-285 (Alternative 1); 8-345 (Alternative 2); 8-400 (Alternative 3); 8-475 (Alternative 4); 8-534 (Alternative 5); 8-585 (Alternative 6); 8-641 (Alternative 7); 8-692 (Alternative 8); 8-745 (Alternative 9). Based on this expectation that selenium discharges from nonpoint agricultural sources would decrease in the future, the BDCP Draft EIR/EIS concludes: "Consequently, any modified reservoir operations and subsequent changes in river flows under [the BDCP scenarios], relative to Existing Conditions, are expected to cause negligible changes in selenium concentrations in water." *Id*. And based on this conclusion, the BDCP Draft EIR/EIS asserts that the selenium concentrations that would occur under the BDCP scenarios would not, in comparison to the existing conditions baseline, adversely affect beneficial uses, degrade water quality, or impact the health of aquatic organisms. *Id*.

Here, as with the analysis of ammonia impacts, the BDCP Draft EIR/EIS improperly relies on expected future programs and actions that are not part of the BDCP in order to mask the potential water quality impacts that are attributable to implementing the BDCP. It is well-documented that selenium is a constituent of concern in the Bay-Delta and in the lower San Joaquin River (see e.g. Linville et al., 2002; Presser and Luoma, 2013 at pp. 2-4). Selenium is highly bioaccumulative under certain ecological conditions and can cause serious reproductive problems in fish and wildlife. The BDCP would increase the bioaccumulation of selenium by increasing the residence time in the south Delta, as discussed in Section 2.2.2.8 of these comments. By assuming that the Grassland Bypass Project is fully implemented, the BDCP Draft EIR/EIS underestimates the concentration of selenium in the water column and thus underestimates the impacts of the project alternatives. The analysis of selenium impacts needs to be revised to evaluate the effect that implementing the BDCP would have on existing selenium conditions. The CEQA impact analyses and findings should not rely on other possible future projects to offset the selenium impacts that would be caused by the BDCP.

Additionally, there is significant uncertainty regarding the implementation and effectiveness of the Grassland Bypass Project. The scientific information raises significant questions as to whether the existing regulatory requirements for selenium are adequately protective of the environment, as the current standards lack criteria specific to water-dependent wildlife, do not account systematically for differences in the physical and chemical characteristics of affected water bodies and use a measure (water column concentration) that is not a consistent indicator of exposure and environmental risk because it fails to account for variables such as food web characteristics (e.g. USEPA, 2011 at pp. 30-35). While the Grassland Bypass Project has achieved important water quality benefits to date, full compliance with the applicable water quality standards has taken much longer than

originally planned, even with a substantial compliance extension from the prior October 2010 deadline until the year 2019. Achieving the goals of the Grassland Bypass Project "may require as-yet unproven treatment technologies or substantial reduction in irrigation" (*Id*. at pp. 34-35 and USEPA, 2012, Appendix I at pp. 4-5). In other words, the effectiveness of future actions to implement the Grassland Bypass Project is uncertain.

In assessing the impacts of the BDCP in relation to the existing conditions baseline under CEQA, the BDCP Draft EIR/EIS may not rely on the assumed selenium reductions that may (or may not) be achieved by future actions under the Grassland Bypass Project. The BDCP Draft EIR/EIS needs to reveal the impacts against the CEQA baseline that would be caused by the BDCP itself. The CEQA analysis is flawed and needs to be revised.

2.1.2.3.Climate change analysis.

The use of assumed future climate conditions in the BDCP Draft EIR/EIS also obscures the effects of implementing the BDCP in relation to the existing conditions baseline.

The impact analyses in the BDCP Draft EIR/EIS for water quality, fish and aquatic resources, and other environmental resources are based on modeled future water supply conditions under each BDCP alternative for the "late long-term" scenario. BDCP Draft EIR/EIS, Chap. 5 at pp. 5-46 to 5-49. The late long-term scenario represents estimated water conditions in the year 2060, including sea level rise and the other effects of climate change assumed to exist in that year. The modeling for the late long-term project action alternatives scenarios in 2060 is then compared to water conditions under the 2009 CEQA baseline scenario, which do not include future climate change effects.

The result of this evaluation is that the environmental impacts as measured against the baseline are caused by both climate change, including sea level rise, and implementation of the alternative that is being studied. BDCP Draft EIR/EIS, Chap. 5 at p. 5-49. But as the BDCP Draft EIR/EIS acknowledges, under this approach:

> It is not possible to specifically define the exact extent of the changes due to implementation of the alternative . . . . Thus, the precise contributions of sea level rise and climate change to the total differences between Existing Conditions and LLT [late long-term] conditions under each alternative cannot be isolated.

Id. at p. 5-49; *see also id*., Chap. 8 at pp. 8-5 (explaining that the water quality impact analysis under CEQA is based on a comparison of 2009 baseline and the BDCP alternatives at 2060; as a result, the differences in water quality modeling between the baseline and the alternatives "are due primarily to both the impacts of [the] proposed alternative as well as future climate change conditions"); & 8-175, Table 8-63 (CEQA comparison to 2009 baseline shows effects not only of BDCP project and alternatives "but also the effects of future surface water demands and climate change/sea level rise").

In other words, the BDCP Draft EIS/EIR admittedly fails to disclose the project-specific impacts of implementing the BDCP alternatives as compared to the CEQA baseline. Instead, the environmental analysis lumps the project's impacts into an undifferentiated

grouping of effects that are attributable, to a varying and undefined degree, to causes other than the BDCP. And the BDCP Draft EIR/EIS uses this larger grouping of effects to hide, and dismiss the importance of, the project-specific impacts attributable to the BDCP.

For example, the BDCP Draft EIR/EIS states: "In general, the incremental differences in SWP/CVP water supply conditions under the No Action Alternative due to sea level rise and climate change are similar or greater than the differences in SWP/CVP water supply conditions under the alternatives due to changes in proposed operational scenarios." BDCP Draft EIR/EIS, Chap. 5 at p. 5-48. Based on this premise, the document states that under CEQA:

> [T]he absence of sea level rise and climate change in Existing Conditions results in model-generated impact conclusions that include the impacts of sea level rise and climate change with the effects of the action alternatives. As a consequence, the CEQA conclusions in many instances either overstate the effects of the action alternatives or suggest significant effects that are largely attributable to sea level rise and climate change, and not to the action alternatives.

Id. at p. 5-49. This approach, according to the BDCP Draft EIR/EIS, "has the effect of highlighting the substantial nature of the consequences of sea level rise and climate change on California's water system." *Id.* But under this approach, the reader does not really know what the impacts of the ***BDCP*** would be in relation to the CEQA baseline. And without knowing what the project's impacts are in comparison to the CEQA baseline, it is impossible to identify what the feasible mitigation should be to address those impacts or to determine whether the mitigation would reduce the impacts to a less-than-significant level. In fact, the BDCP proponents assert they are not obligated to contribute at all to mitigation for any significant effects that are caused "substantially" by climate change. BDCP Draft EIR/EIS, Appendix 3B at p. 3B-43. By amalgamating the impacts as is done in the BDCP Draft EIR/EIR, the proponents are attempting to avoid mitigating for significant effects of the BDCP. See also Section 3.1 of these comments.

In accordance with the California Supreme Court's decision in *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority*, 57 Cal. 4th 439 (2013), the BDCP Draft EIR/EIS should use a baseline approach that compares the project's impacts to either the existing conditions or the conditions projected to occur on the date that operation of the project will commence − without including other future changes to the physical environment. And under either approach, as explained more fully below, the impact analysis should be repeated at each time increment when a component of the BDCP is added, so that the project's near-term and mid-term environmental effects are fully revealed at each stage of project operation.

2.1.3. The BDCP Draft EIR/EIS fails to disclose the project's short-term and medium-term environmental impacts.

The CEQA analysis in the BDCP Draft EIR/EIS "frequently point[s] the reader" to the environmental baseline and resulting analysis prepared for NEPA purposes − which compares the future No Action scenario as of the year 2060 to the BDCP action alternatives as of the year 2060. BDCP Draft EIR/EIS, Chap. 4 at p. 4-6. According to the BDCP Draft EIR/EIS, the NEPA analysis helps to provide an "apples to apples" comparison, since the No Action scenario and the BDCP action alternatives all include the future effects of climate change and sea level rise. *Id*. The BDCP Draft EIR/EIS states: "Thus, although the CEQA analysis relies on Existing Conditions as a baseline, the CEQA analysis often points to the NEPA analysis as a way of helping readers to better understand the actual impacts of alternatives vis-à-vis Existing Conditions." *Id*.

But the BDCP Draft EIR/EIS cannot prop up its fatally flawed CEQA analysis by "pointing" to the NEPA analysis. As shown above, the CEQA analysis is flawed precisely because it is not an apples to apples comparison, in that the future effects of climate change and sea level rise that are included in the BDCP action alternatives serve to mask the impacts that are attributable to the implementation of the BDCP. The NEPA analysis does not cure this deficiency, since the analysis is so far out in the future that it fails to disclose the project's short- and medium-term impacts.

The CEQA Guidelines specify that the direct and indirect environmental effects of a proposed project "shall be clearly identified and described, giving due consideration to both the short-term and long-term effects." CEQA Guidelines § 15126.2. As the California Supreme Court has explained, this is one of the reasons that using an existing conditions baseline serves to advance CEQA's fundamental goal of informed decision-making and public participation, since the "decision makers and members of the public are entitled under CEQA to know the short- and medium-term environmental costs" of a project, which include the impacts "the project will create during its initial years of operation." *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority*, 57 Cal. 4th 439, 455 (2013). Put another way, making an informed decision about a project's long-term benefits as compared with its near-term environmental hardships "requires some knowledge about the severity and duration of the near-term hardships." *Id*.

The BDCP Draft EIR/EIS pays lip service to these principles, quoting the Supreme Court's warning that: "An EIR stating that in 20 or 30 years the project will improve the environment, but neglecting, without justification, to provide any evaluation of the project's impacts in the meantime does not 'giv[e] due consideration to both the short-term and long-term effects' of the project . . . and does not serve CEQA's informational purpose well." BDCP Draft EIS/EIR, Chap. 4 at p. 4-4 & Appendix 3D at p. 3D-2 (quoting *Neighbors for Smart Rail*, 57 Cal. 4th at 455). But the BDCP Draft EIR/EIS fails to heed this warning.

By modeling the environmental effects of the different alternatives (action vs. no action) in the year 2060 − and by not presenting an analysis of the effects that would occur in prior years − the BDCP Draft EIR/EIS skips an entire generation of impacts following project approval and initial implementation.

As the BDCP proponents point out, operation of the proposed diversion and conveyance facilities (CM1) is projected to begin 11 years after project approval, while the operation of many other project components is projected to begin much earlier than that. BDCP, Chap. 6, Tables 6-1 and 6-2 at pp. 6-3 to 6-6. For example, the tidal restoration activities under CM4 are scheduled to begin operation within five years after project approval. *Id.*, Table 6-2 at p. 6-5.

But it is not at all clear what the project's water quality and other environmental consequences would be in the many years that precede 2060 − such as in 2020, 2030, 2040, or 2050. For instance, the BDCP Draft EIR/EIS acknowledges that the tidal habitat restoration activities under CM4 could affect Delta hydrodynamics, affect the mixing of source waters, and increase the volume of tidal water exchange in the Delta − thereby increasing levels of bromide, chloride, and electrical conductivity in Delta waters. E.g., BDCP Draft EIR/EIS, Chap. 8 at pp. 8-416 to 8-422 (bromide); 8-423 to 8-431 (chloride); and 8-436 to 8-442 (electrical conductivity).[9]

Since the operation of the habitat restoration activities would begin before the diversion and conveyance facilities are operational, the adverse water quality impacts from the restoration activities may occur before, and for a decade-long period independently from, the adverse water quality impacts of the new facilities. But confining the environmental analysis to the year 2060, especially with respect to the water quality impacts from the BDCP caused by hydrodynamic changes, makes it impossible for the reader to assess the impacts that the BDCP would cause "during its initial years of operation." *Neighbors for Smart Rail*, 57 Cal. 4th at 455.

By failing to present a near- or mid-term environmental analysis, the BDCP Draft EIR/EIS also does not disclose what the impacts of the project would be under pre-2060 climate conditions. It is quite possible that the project's impacts would be very different before 2060 than what is presented in the BDCP Draft EIR/EIS. Indeed, the technical staff that conducted the climate change modeling seem to have recognized this fact, since an appendix to the BDCP Draft EIR/EIS indicates that the impacts of the BDCP were modeled at three timelines: 2015, 2025, and 2060, with future climate change scenarios and sea level estimates incorporated into the latter two time periods. BDCP Draft EIR/EIS, Appendix 5A at pp. 5A-A63 to 5A-A64 and 5A-D5. Given that at least some of the project's near-term and mid-term impacts apparently have been modeled, it is not clear why the BDCP Draft EIR/EIS does not include the corresponding impact analyses and findings.

In any case, under well-established law, *Neighbors for Smart Rail*, the BDCP Draft EIR/EIS must include an assessment of the project's short-term impacts, which includes the impacts "the project will create during its initial years of operation." *See* 57 Cal. 4th at 455; *see also* CEQA Guidelines § 15126.2(a) (the project's direct and indirect significant impacts "shall

[9]In addition, habitat restoration actions under CM4 could increase water residence times and the accumulation of sediments, thereby causing significant impacts from mercury. BDCP Draft EIR/EIS, Chap. 8 at pp. 8-446 to 8-447. Habitat restoration also could lead to new substantial sources of dissolved organic carbon. *Id*. at pp. 8-456 to 8-458. Further, habitat restoration could create a significant impact by exposing water to pesticide residues. *Id*. at pp. 8-467 to 8-468. Moreover, as discussed in Section 2.2.1.2 of this comment letter, tidal habitat restoration activities also could cause adverse water quality impacts resulting from toxic algae.

be clearly identified and described, giving due consideration to both the short-term and long-term effects"). The public and the decision-makers also are entitled to know what the project's "medium-term" environmental impacts would be. *See* 57 Cal. 4th at 455. For this complex and multi-faceted project, the BDCP Draft EIR/EIS should provide the public and the decision-makers with sufficient information to assess the project's medium-term impacts at each stage when a component of the project is added.

In light of the failure to provide this type of impact assessment, the BDCP Draft EIR/EIS utterly fails to inform the decision-makers and the public about the project's potential effects over the short- and medium-term. As a result, the evaluation "does not serve CEQA's informational purpose well." *Neighbors for Smart Rail*, 57 Cal. 4th at 455.

In addition to violating CEQA's core informational goals, pushing the environmental impact analysis out to the year 2060, without an evaluation of the intervening years, also fails to comply with NEPA. The regulations adopted by the Council on Environmental Quality to implement NEPA make clear that, in assessing the significance of an environmental impact, "[b]oth short- and long-term effects are relevant." 40 C.F.R. § 1508.27(a). This same instruction is included in the policies and procedures adopted by the National Marine Fisheries Service to implement NEPA. NOAA Administrative Order Series 216-6, *Environmental Review Procedures for Implementing the National Environmental Policy Act*) (May 20, 1999), ¶ 4.01x (meaning of "significant" is a function of the short-term, long-term, and cumulative impacts on the environment) & ¶ 6.01b (in assessing whether an impact is significant, "[b]oth short- and long-term effects are relevant").

Here, the BDCP Draft EIR/EIS does not adequately disclose and analyze the adverse water quality and other environmental consequences that could occur for almost half a century before 2060, following the initial commencement of project implementation. The environmental analysis thus fails to provide the requisite evaluation of the project's short-term and medium-term impacts, contravening both CEQA and NEPA.

2.1.4. By solely relying on an analysis of impacts in the year 2060, the BDCP Draft EIR/EIS provides an assessment that is highly uncertain and unreliable.

The use of a far future 2060 baseline under NEPA creates another problem: the assumptions used for the evaluation of climate change render the environmental impact analyses that depend on those assumptions (including water quality, fish and aquatic resources, etc.) highly uncertain and unreliable.

The California Supreme Court has warned against the dangers of using a baseline that is far out into the future, stating that "[h]owever sophisticated and well-designed a model is, its product carries the inherent uncertainty of every long-term prediction, uncertainty that tends to increase with the period of projection." *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority*, 57 Cal. 4th 439, 455 (2013). The Court instructed: "The public and decision makers are entitled to the most accurate information on project impacts practically possible, and the choice of a baseline must reflect that goal." *Id.* The Court therefore cautioned that a baseline grounded in a hypothetical far distant future threatens to

create unwarranted barriers to public understanding and informed governmental decision-making. *Id*. at 455-56.

Indeed, the BDCP Draft EIR/EIS concedes that the approach it used to predict the project's environmental impacts in 2060 reflects "a large degree of speculation." BDCP Draft EIR/EIS, Chap. 5 at p. 5-49. In particular, the BDCP Draft EIR/EIS explains:

> If sea level rise and climate change do not occur or occur differently than modeled for these analyses, water supply conditions under the alternatives will be different from the results presented in this section [Chapter 5, Water Supply]. Time will tell whether current predictions of conditions in 2060, though based on the best science currently available, will prove to be too optimistic or too pessimistic.

Id. Instead of relying exclusively on a 2060 no action baseline under NEPA, the BDCP Draft EIR/EIS could have attempted to reduce this significant uncertainty by evaluating the impacts of the BDCP "during its initial years of operation." *Neighbors for Smart Rail*, 57 Cal. 4th at 455 (2013).

The BDCP Draft EIR/EIS also could have attempted to bracket the acknowledged uncertainty by conducting a sensitivity analysis that evaluated how different climate change inputs and assumptions would affect the modeled water quality and other impacts of the BDCP scenarios. Indeed, the modeling appendix to the BDCP Draft EIR/EIS seems to recognize the benefits of such an approach, noting that a climate change technical subgroup review led to the following determination: "The issues of multi-decadal variability of any one GCM [global climate model] projection and the superiority of multi-model projections over any one single projection were emphasized by the group members." BDCP Draft EIR/EIS, Appendix 5A at p. 5A-A62. As a result, the technical subgroup recommended that the climate change analysis "[s]elect a range of scenarios to reflect the uncertainty with GCM projections and emission scenarios" and "[s]elect scenarios that reduce the 'noise' inherent with any particular GCM projection due to multi-decadal variability." *Id.* In accordance with these recommendations, the modeling appendix lays out a range of five graphic projections to account for different possibilities in terms of future changes in temperature and precipitation: (1) drier, less warming; (2) drier, more warming; (3) wetter, more warming; (4) wetter, less warming; and (5) a projection that lies in the middle of the previous four. *Id.* at p. 5A-A65.

But the environmental impact analysis in the BDCP Draft EIR/EIS does not address or evaluate this variability. For example, the depictions of the estimated changes in Delta outflow, reservoir storage, Delta exports, and water deliveries resulting from the implementation of the BDCP scenarios − which serve as the basis for evaluating the project's water quality and other environmental impacts − give no hint of the variable climate change conditions that could exist in 2060. BDCP Draft EIR/EIS, Chap. 5, Figures 5-3 to 5-5 (Delta outflow); Figures 5-6 to 5-16 (reservoir storage); Figures 5-17 to 5-29 (Delta exports); Figures 5-30 to 5-36 (water deliveries). Instead, the BDCP Draft EIR/EIS states merely that if the effects of climate change in 2060 happen to be different than the

assumptions used to predict the future changes in water conditions resulting from the BDCP, then the project's environmental impacts will be different than what is presented in the EIR/EIS. In short, the BDCP Draft EIR/EIS acknowledges that the assumptions it uses for 2060 are highly uncertain, but it abandons the task of reducing that uncertainty.

The BDCP Draft EIR/EIS makes the dubious claim that its use of a NEPA baseline that is more than 45 years out in the future helps to provide the public with a better understanding of the project's impacts. In fact, the approach used in the BDCP Draft EIR/EIS serves only to add further confusion and uncertainty to the environmental analysis.

2.1.5. The conflation of the impacts of Conservation Measure 1 (CM1) and habitat restoration prevents the BDCP Draft EIR/EIS from disclosing and evaluating the full range of potential environmental impacts.

The BDCP Draft EIR/EIS is intended to provide project-level assessment of Conservation Measure 1 (CM1), the proposed new water conveyance facilities, including project-specific mitigation. It also is intended to provide a programmatic assessment of CM 2 through 22.

However, the environmental analysis in the BDCP Draft EIR/EIS does not distinguish the effects of CM1 from the effects of CM2 (modification of the Fremont Weir and Yolo Bypass) and CM4 (restoration of tidal wetlands). The water quality impacts analysis for CM1 is based upon modeling that includes CM2 and CM4 in addition to CM1. This is problematic for two principal reasons. First, in some cases, there are beneficial effects from habitat restoration projects that mask the adverse impacts of CM1, which are supposed to be detailed and mitigated at a project level. Second, the range of habitat restoration effects on water supply and water quality is not disclosed, evaluated or mitigated.

2.1.5.1. Failure to disclose impacts of Conservation Measure 1 (CM1).

Regarding the impacts of CM1, the BDCP Draft EIR/EIS states: "[m]odeling scenarios included assumptions regarding how certain habitat restoration activities (CM2 and CM4) would affect Delta hydrodynamics. To the extent that restoration actions alter hydrodynamics within the Delta region, which affects mixing of source waters, these effects are included in this assessment of operations-related water quality changes (i.e., CM1)." The BDCP Draft EIR/EIS repeats this statement throughout the water quality analysis. E.g., BDCP Draft EIR/EIS, Chap. 8 at pp. 8-416, 8-423 to 8-424, 8-436, 8-443, 8-448, etc. The rationale for this approach is as follows: "Operations-related water quality changes (i.e., CM1 under the BDCP Alternatives) would be partly driven by geographic and hydrodynamic changes resulting from restoration actions (i.e., altered hydrodynamics attributable to new areas of tidal wetlands (CM4), for example). There is *no way to disentangle* the hydrodynamic effects of CM4 and other restoration measures from CM1, *since the Delta as a whole is modeled with both CM1 and the other conservation measures implemented*." *Id.* at p. 8-4 (emphasis added). But the effects can be disentangled, and should be disentangled, simply by modeling CM1 distinct from CM2 and CM4.

Combining the analysis of CM1 with the analysis of CM2 and CM4 prevents identification of the distinct impacts associated with the operation of CM1. Since the project proponents are responsible for all mitigation for CM1 (BDCP, Chap. 8 at p. 8-73), the full impacts of CM1 must be identified and feasible mitigation included in the BDCP Draft EIR/EIS. To the extent that habitat restoration actions under CM2 or CM4 alter hydrodynamics and affect water quality in a way that offsets the operational impacts of CM1, those portions of the habitat restoration should be properly classified as mitigation measures for CM1, and the funding must be provided by the project proponents of CM1 to ensure that the mitigation is constructed and operational before the impacts due to operation of CM1 occur. Further, the BDCP project proponents have not committed to fully implement the habitat restoration actions. Accordingly, the BDCP Draft EIR/EIS cannot assume those actions will offset the impacts of CM1. The BDCP Draft EIR/EIS must disclose the impacts of CM1 separate from the impacts of habitat restoration, and then also provide the combined effects of all of the BDCP project components.

Two examples of cases where the approach of combining the analysis for CM1 with CM4 hides the full impacts of CM1 are provided below; other cases may become apparent when the analysis is redone properly.

First, most of the BDCP alternatives, including the DWR Preferred Alternative (Alternative 4), would reduce Delta outflow and would include relaxation of a western Delta salinity objective, thereby ***increasing*** salinity in the western Delta. Yet the configuration of tidal habitat assumed[10] for CM4 would ***reduce*** salinity in the western Delta at Emmaton and in the Sacramento River at Rio Vista. BDCP Draft EIR/EIS, Appendix 5A, Section D, Attachment 2, Figures 6-6 and 6-7 at pp. 147-148 and 190. Conflating the effects of CM1 and CM4 makes it impossible to determine the extent to which the assumed configuration of CM4 results in improved water quality that offsets the impacts of CM1. The analysis must be disentangled to reveal the impacts of CM1 alone, and mitigation measures for CM1's water quality and water supply impacts must be provided.

Second, CM4 mitigates for increased reverse flows in Georgiana Slough caused by CM1, which have an adverse impact on downstream-migrating Chinook salmon smolts. In a January 2014 presentation to a Delta Science Program Independent Review Panel Review of the BDCP Effects Analysis, BDCP Draft EIR/EIS authors reported that "[t]idal attenuation in the Sacramento River due to restoration reduces the frequency of reverse flows [in Georgiana Slough] under BDCP." (Zippen et al., 2014 at p. 62) In reviewing this analysis, the independent review panel recommended:

> The DSM2 simulations should be re-run for the ELT [Early Long-Term] and LLT [Late Long-Term] simulations with bathymetry that does not include the Restoration Opportunity Areas but driven with ELT or LLT river flow and tidal stage boundary conditions

[10] Since over 80% of the habitat restoration projects necessary to meet the 65,000 acre objective for CM4 have yet to be identified, the analysis in BDCP Draft EIR/EIS incorporated a set of generic assumptions about location, size, connectivity to existing Delta channels, etc. These assumptions drive the impact analysis (See Section 1.2.2 of these comments).

> and operations. These simulations would clearly show how north Delta diversion operations change circulation patterns near Georgiana Slough and the Delta Cross Channel.

(Parker et al., 2014 at p. 47)

Here again, the analysis must be disentangled to reveal the impacts of CM1 alone. To the extent that tidal restoration in CM4 offsets the impacts of CM1, those tidal restoration projects must be classified as mitigation, a binding commitment to implement the mitigation must be made, and funding must be provided by the CM1 proponents.

2.1.5.2.Failure to evaluate the full range of habitat restoration impacts.

The individual habitat restoration projects included in the BDCP could have either beneficial or adverse impacts on Delta water quality and water supply, depending on their location and configuration. Thus, the net effect of a suite of habitat restoration projects could have widely varying effects depending upon these factors for each of the individual projects. See Section 1.2.2 of these comments for an expanded discussion of this issue.

Since the specific projects that would make up the bulk of the habitat restoration effort are unknown, a proper analysis would have shown the range of potential impacts, from the most beneficial to the most adverse. This was not done. Instead, the analysis estimates program-level impacts from the habitat restoration actions based on generic assumptions, without assessing the key variables that will determine the range and magnitude of impacts that actually occur − and worse yet, this generalized impact estimate is then lumped together with the distinct impacts of CM1.

So in addition to obscuring the project-level impacts of CM1, the approach used in the BDCP Draft EIR/EIS also obscures the program-level impacts of CM4.

2.1.6. The No Project and No Action Alternatives improperly exclude habitat restoration actions that are required by the existing Biological Opinions governing the operations of the Central Valley Project and State Water Project.

Under CEQA, the No Project Alternative must encompass "what would be reasonably expected to occur in the foreseeable future if the project were not approved . . . ." CEQA Guidelines §§ 15126.6(e)(2), (e)(3)(C). The discussion of the No Project Alternative "provides the decision makers and the public with specific information about the environment if the project is not approved." *Planning and Conservation League v. Castaic Lake Water Agency*, 180 Cal. App. 4th 210, 246-47 (2009), quoting *Planning and Conservation League v. Department of Water Resources*, 83 Cal. App. 4th 892, 917-18 (2000). Where the proposed project involves the revision of an ongoing plan or operation, the discussion of the No Project Alternative consists of the continuation of the existing plan or operation. CEQA Guidelines§ 15126.6(e)(3)(A). "Thus, the projected impacts of the proposed plan or alternative plans would be compared to the impacts that would occur under the existing plan." *Id.* Where the proposed project is a development project on an

identifiable piece of property, the No Project Alternative similarly "is the circumstance under which the project does not proceed." *Id.* § 15126.6(e)(3)(B). If disapproval of the proposed project would result in "predictable actions by others," then "this 'no project' consequence should be discussed." *Id.* Accordingly,

> where failure to proceed with the project will not result in preservation of existing environmental conditions, the analysis should identify the practical result of the project's non-approval and not create and analyze a set of artificial assumptions that would be required to preserve the existing physical environment. *Id.*

The analysis of the No Action Alternative under NEPA is similar to the evaluation of the No Project Alternative under CEQA. As the Council on Environmental Quality has explained, where the proposed project involves updating an ongoing management plan or program, the No Action Alternative should be viewed as "no change from current management direction." Council on Environmental Quality, *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*, 46 Fed. Reg. 18026 (1981), Question #3; see also 40 C.F.R. § 1502.14(d) (mandating analysis of no action alternative). The Council on Environmental Quality has further explained that "[w]here a choice of 'no action' by the agency would result in predictable actions by others, this consequence of the 'no action' alternative should be included in the analysis." *Id.* The purpose of these rules is to make sure that the analysis of the No Action Alternative "provides a benchmark, enabling decision makers to compare the magnitude of environmental effects of the action alternatives." *Id.*

Here, the BDCP Draft EIR/EIS violates these straightforward principles by not including within the No Project and No Action Alternatives specific, identifiable habitat restoration actions that are required to take place if the BDCP is not approved. For example, the 2008 USFWS Biological Opinion for the coordinated operations of the Central Valley Project and State Water Project mandates that the Department of Water Resources "shall implement a program to create or restore a minimum of 8,000 acres of intertidal and associated subtidal habitat in the Delta and Suisun Marsh" (USFWS, 2008 at pp. 283-84 and p. 379). The Biological Opinion further mandates that these habitat restoration actions "shall begin within 12 months of the signature of this biological opinion and be completed by [the Department of Water Resources] within 10 years" (*Id*). The 2009 Biological Opinion issued by National Marine Fisheries Service for the coordinated operations of the CVP/SWP further requires the restoration of significant acreage of seasonal floodplain rearing habitat, with an "initial performance measure" of 17,000-20,000 acres (NMFS, 2009 at pp. 608-09).

These habitat restoration actions are required under existing regulations in the event that the BDCP is not approved. But the BDCP Draft EIR/EIS does not include these required habitat restoration actions as part of the No Project and No Action Alternatives, on the ground that the restoration actions are planned to be implemented as part of the BDCP. BDCP Draft EIR/EIS, Appendix 3D, Table 3D-6 at pp. 3D-22 to 3D-23. But under CEQA and NEPA, the No Project and No Action Alternatives do not exclude future actions that are required to occur, merely because those actions are also planned to occur as part of the

proposed project. Rather, the No Project and No Action Alternatives are supposed to depict what would happen if the proposed project is not approved. *See* CEQA Guidelines § 15126.6(e)(2) (No Project Alternative under CEQA must describe "what would be reasonably expected to occur in the foreseeable future if the project were not approved"); Council on Environmental Quality, *Forty Questions*, Question #3 (No Action Alternative under NEPA reflects "no change from current management direction" and includes "predictable actions" that would occur if the proposed project is not approved). Here, even if the BDCP is not approved, the habitat restoration actions specified by the existing Biological Opinions are required to be implemented. These actions are not merely "reasonably expected to occur" − they are mandated by existing, binding regulations that govern the operations of the CVP and SWP.

By excluding these habitat restoration actions from the No Project and No Action Alternatives, the BDCP Draft EIR/EIS fails to fulfill the key function served by comparing these alternatives to the effects of the proposed project − which is to "provide[] the decision makers and the public with specific information about the environment if the project is not approved." *Planning and Conservation League v. Castaic Lake Water Agency*, 180 Cal. App. 4th at 247; *see also* Council on Environmental Quality, *Forty Questions*, Question #3 (no action alternative "provides a benchmark, enabling decision makers to compare the magnitude of environmental effects of the action alternatives"). By providing a faulty comparison with the future No Project and No Action Alternatives, the BDCP Draft EIR/EIS fails to disclose the true nature and magnitude of the environmental impacts of approving and implementing the BDCP.

As discussed above, habitat restoration actions could cause certain adverse water quality impacts by altering Delta hydrodynamics. But such actions also would be expected to cause certain beneficial environmental impacts. The BDCP Draft EIR/EIS improperly takes credit for these beneficial impacts, by including them as part of the BDCP project and alternatives while at the same time excluding them from the No Project and No Action Alternatives. This makes it impossible for the public and decision-makers to discern what effects are attributable to the BDCP versus what effects would occur regardless of whether the BDCP goes forward.

2.2. The BDCP Draft EIR/EIS Omits Analysis of Several Significant Water Quality Impacts, and Understates Others.

2.2.1. The BDCP Draft EIR/EIS fails to evaluate several potentially significant water quality impacts.

The BDCP Draft EIR/EIS fails to analyze potentially significant water quality impacts. Specifically, the BDCP Draft EIR/EIS fails to analyze how the proposed project could increase the formation of human carcinogens such as bromate and nitrosamines in drinking water, increase the presence and persistence of noxious algal species in surface waters in the Delta, change the drainage patterns from land to surface waters in the Delta, and increase the potential for public health and safety impacts resulting from a major earthquake that causes

breaching of Delta levees. Each of these impacts is potentially significant but not considered in the BDCP Draft EIR/EIS, rendering the analysis inadequate to determine the project's full range of environmental impacts.

Failure to evaluate potentially significant impacts is a clear violation of CEQA. Courts do not defer to the lead agency's judgment where an EIR entirely fails to analyze a potentially significant impact; the substantial evidence standard of review applies only to project impacts that have been analyzed, not to those that have been omitted. *Bakersfield Citizens for Local Control v. City of Bakersfield*, 124 Cal. App. 4th 1184, 1207-1208 (2004). Omission of these potential impacts must be rectified in a revised draft EIR/EIS.

2.2.1.1. Failure to analyze the potential increase in carcinogens that form during raw water treatment.

The BDCP Draft EIR/EIS identifies "constituents of concern" for municipal water suppliers, and acknowledges that they are precursors to "known or suspected human carcinogens." BDCP Draft EIR/EIS, Chap. 8 at pp. 8-25 to 8-26. However, the analysis presented in the BDCP Draft EIR/EIS falls short of determining the public health impacts of elevated levels of certain key constituents of concern. Specifically, the BDCP Draft EIR/EIS is deficient in analyzing the effects of bromide, organic carbon, dissolved organic material, and organic nitrogen in formation of carcinogenic disinfection byproducts.

2.2.1.1.1 Bromide.

Bromide is of concern in water as a precursor to the formation of disinfection byproducts such as bromate, bromoform and other brominated trihalomethanes (THMs), and haloacetic acids (HAAs), all of which are potentially harmful in municipal water supplies (CALFED, 2007 at p. ES-1). Research has shown that these disinfection byproducts cause cancer, kidney failure, thyroid disorders, and negative developmental and reproductive effects in laboratory animals (USEPA, 2013a). Bromate and other disinfection byproducts form at water treatment plants when ozone oxidizes waters containing bromide, a natural component of seawater, in the disinfection process. Disinfection byproduct (THM and HAA) formation increases when the source water contains both dissolved organic carbon and salts such as chloride and bromide (CALFED, 2007 at p. ES-1).

The BDCP Draft EIR/EIS impact analysis regarding the effects of bromide is flawed in the following ways, each of which is expanded upon below:

- Production of carcinogens: Bromide concentration is directly related to the production of carcinogens (USEPA, 1998). However, rather than analyzing the magnitude of change in bromide concentration to determine potential impacts, the BDCP Draft EIR/EIS uses other analyses that are not relevant in assessing human health impacts.
- Significance at drinking water intakes: Despite disclosing large increases in bromide concentration at two drinking water intakes, the BDCP Draft EIR/EIS determines the impacts to be less than significant on the insupportable basis that the use of the intakes already is hampered by poor water quality.

- Interaction with other constituents of concern: Bromide concentration change was not considered in conjunction with change in organic carbon so the potential changes to disinfection byproduct formation and impacts to all municipal users reliant on the Delta are significantly underestimated.

Production of carcinogens**.** The formation of carcinogenic disinfection byproducts during water treatment is directly related to the concentration of bromide in the source water. Thus the change in the bromide concentration indicates the potential change in carcinogenic compounds and the resulting beneficial or adverse impacts on human health. Rather than evaluating the change in bromide concentration, the BDCP Draft EIR/EIS relies on analyses that obscure human health impacts.

First, the BDCP Draft EIR/EIS analyzed the number of days that bromide concentration at municipal water intakes was greater than a threshold (100 micrograms per liter (µg/L)), above which production of carcinogenic compounds are likely to occur. BDCP Draft EIR/EIS, Chap. 8 at p. 8-147. This analysis obscures impacts because it does not assess the quantity of carcinogenic compounds produced. For instance, if the bromide concentration on a given day is expected to be 105 µg/L without a project and 130 µg/L with a project, the project would cause an increase of 25 µg/L of bromide, which would increase carcinogen production during the water treatment process. However, if the analysis only looks at the number of days that the micrograms per liter threshold is exceeded, no impact would be identified, thus obscuring human health impacts.

Second, the BDCP Draft EIR/EIS analyzed the percent by which bromide concentration would change at municipal water intakes. This analysis obscures impacts because it is the magnitude of the bromide concentration, not the percentage by which it changes, that dictates human health impacts. The BDCP Draft EIR/EIS found that there would be significant bromide impacts at Barker Slough/North Bay Aqueduct based on the change in number of days bromide concentration exceeded 100 µg/L and the percent change in bromide concentration. BDCP Draft EIR/EIS, Chap. 8 at p. 8-42. The analyses found no other locations to be significantly impacted by bromide. This conclusion is incorrect and significant bromide impacts should have been found at other drinking water intakes in the Delta. By using percent change in bromide concentration rather than the magnitude of change in bromide concentration, the BDCP Draft EIR/EIS neglects to assess the potentially significant increase in disinfection byproducts and associated health risks.

For example, the long-term average bromide concentration under the DWR Preferred Alternative (Alternative 4), Scenario H1, would increase 24 µg/L as compared to the No Action Alternative (from 367 µg/L to 391 µg/L, or 7%) at CCWD's Rock Slough intake. BDCP Draft EIR/EIS, Appendix 8E, Table 11. For the same alternative, the long-term average increase at Barker Slough would be 8 µg/L (from 66 µg/L to 74 µg/L, or 12%). BDCP Draft EIR/EIS Appendix 8E, Table 11. Assuming all other variables remain unchanged, the bromide concentration at the Rock Slough intake could cause bromate formation (USEPA, 1998) to increase by 0.3 µg/L under the Preferred Alternative to 6.6 µg/L; this corresponds to an increase in cancer risk from 1.27 to 1.33 people per 10,000 people for populations served from the Rock Slough intake (USEPA, 2013b). The bromide

concentration at Barker Slough could cause bromate formation to increase under the DWR Preferred Alternative by 0.15 µg/L to 2.0 µg/L; this corresponds to an increase in cancer risk from 0.36 to 0.39 people per 10,000 people for populations served from Barker Slough (USEPA, 2013b). Although the percentage change in bromide is greater at Barker Slough than at the Rock Slough intake, the magnitude of bromide concentration increase − and the disinfection byproduct formation and associated cancer risk − is greater at the Rock Slough intake than at Barker Slough. This impact at CCWD's Rock Slough intake is significant and must be disclosed, evaluated and mitigated.

By focusing the impact analysis on metrics other than the magnitude of change in bromide concentration, the BDCP Draft EIR/EIS fails to consider the risk to human health associated with carcinogenic disinfection byproducts. The BDCP Draft EIR/EIS provides no chemical, biological or other basis for using percent change and the number of days bromide concentration exceeded 100 µg/L as the criteria for significance. This approach obscures human health impacts and should be corrected.

Significance at drinking water intakes. Although the BDCP Draft EIR/EIS recognizes that the action alternatives would increase bromide concentrations at drinking water intakes in the western Delta, the BDCP Draft EIR/EIS asserts that these effects are less than significant because water quality at the two western Delta intakes already is impaired so as to restrict their use for drinking water purposes, so that further degrading the water quality at the intakes is not considered to be a significant environmental impact. As shown in Table 2-1 below, the modeling conducted for the BDCP Draft EIR/EIS indicates substantial increases in long-term average bromide concentrations due to the project at both the City of Antioch intake and the Mallard Slough intake[11].

[11] The Mallard Slough intake is owned and operated by Contra Costa Water District.

Table 2-1. Magnitude and percent change of bromide concentration compared to the CEQA baseline and the NEPA baseline in above normal years and wet years at municipal water intakes in the west Delta.
Source: Based on values in Table 24 in Appendix 8E.

	City of Antioch Intake				Mallard Slough Intake			
	CEQA		NEPA		CEQA		NEPA	
	Feb - Apr		Feb - Apr		Feb - Mar		Feb - Mar	
	Magnitude Change µg/L	Percent Change	Magnitude Change µg/L	Percent Change	Magnitude Change µg/L	Percent Change	Magnitude Change µg/L	Percent Change
Alt 1	41	47%	44	53%	21	30%	16	21%
Alt 2	37	43%	40	48%	21	30%	16	22%
Alt 3	15	17%	18	22%	12	18%	8	10%
Alt 4 H1	24	27%	27	32%	16	23%	11	15%
Alt 4 H2	24	28%	27	33%	16	23%	12	16%
Alt 4 H3	24	27%	27	33%	16	23%	11	15%
Alt 4 H4	23	26%	26	31%	16	23%	11	15%
Alt 5	5	5%	8	10%	10	14%	5	7%
Alt 6	38	44%	41	50%	20	29%	15	20%
Alt 7	26	30%	29	35%	16	23%	11	15%
Alt 8	24	28%	27	33%	16	22%	11	15%
Alt 9	22	25%	25	30%	6	9%	1	2%

The significant increase in bromide at these intakes is dismissed by asserting that these intakes are "infrequently used due to water quality constraints" and that "opportunities" to use the intakes would remain. BDCP Draft EIR/EIS at pp. 8-418 to 8-419.[12] This approach defies logic. The fact that water quality problems already restrict use of the intakes makes a further restriction on that use all the worse.

Contrary to the analysis and findings in the BDCP Draft EIR/EIS, the law does not support the approach of finding that an environmental impact is insignificant based on the claim that the existing problem already is significant. *Cf. Los Angeles Unified School District v. City of Los Angeles*, 58 Cal. App. 4th. 1019, 1025 (1997) (rejecting insignificance finding for cumulative impact, where finding was based on the premise that existing noise levels

[12] Contrary to this assertion in the BDCP Draft EIR/EIS, during wetter years, water at the Mallard Slough intake frequently is usable for drinking water purposes. For example, water at the intake was of sufficiently high quality in 2011 to be usable for drinking water diversions for 198 days (*i.e.*, it was usable for drinking water more days than it was not usable). Even in drier years, there are periods in the winter and spring months when water at the intake is usable for drinking water. For the decade preceding the CEQA baseline date of February 2009, the annual average of usable water days was 83.2 days; for the 5-year period preceding the CEQA baseline date, the annual average similarly was 82.4 days.

already exceeded the applicable significance thresholds), citing *Kings County Farm Bureau v. City of Hanford*, 221 Cal. App. 3d 692, 718 (1990).

The intakes in the western Delta are − and will continue to be − used for drinking water purposes and implementation of the BDCP would adversely affect these existing and future beneficial uses by substantially increasing bromide levels. The BDCP Draft EIR/EIS cannot properly rely on the severity of the existing water quality constraints to find that making the constraints worse is insignificant. Nor can it support this finding by claiming that, although the project would substantially increase the amount of bromide and chloride in the water and exacerbate the existing water quality constraints, some unspecified, diminished opportunity to use the intakes for drinking water purposes may remain.

Interaction with other constituents of concern. The BDCP Draft EIR/EIS fails to evaluate changes in bromide in conjunction with changes in organic carbon. Scientific studies have shown that increased organic carbon increases formation of THMs and HAAs during disinfection when bromide concentrations are above 100 µg/L (Zhang et al., 2011 at p. 186). The BDCP Draft EIR/EIS determined that impacts associated with dissolved organic carbon are significant and unavoidable and that bromide concentrations are often above the 100 µg/L threshold. BDCP Draft EIR/EIS, Chap. 8 at p. 8-457. By neglecting to consider the increases in bromide in conjunction with the increased organic carbon, the BDCP Draft EIR/EIS fails to analyze the resulting formation of carcinogenic compounds and human health risks.

The BDCP Draft EIR/EIS must re-evaluate and disclose the impacts to human health due to increased bromide concentrations, including the compounding influence of increased organic carbon. Adequate mitigation must be provided for all significant adverse impacts, as discussed in Section 3 of these comments.

2.2.1.1.2 Dissolved Organic Material and Organic Nitrogen.

Dissolved organic material and organic nitrogen can create impacts. The BDCP Draft EIR/EIS recognizes that nitrosamines have long been suspected carcinogens, but their more recent discovery as a disinfection byproduct has spurred increased attention in recent years. BDCP Draft EIR/EIS, Chap. 8 at p. 8-26. However, the BDCP Draft EIR/EIS fails to analyze and disclose the potential change in Delta water quality that could lead to changes in nitrosamine formation and associated health or environmental problems.

Chloramination of water containing dissolved organic material and organic nitrogen, such as occurs during water and wastewater treatment, can lead to the production of nitrosamines such as N-Nitrosodimethylamine (Mitch et al., 2003). Nitrosamines are highly carcinogenic (USEPA, 2013c). Nitrosamines are not easily removed during treatment, as they do not readily biodegrade, adsorb, or volatilize. BDCP Draft EIR/EIS, Chap. 8 at p. 8-57.

The alternatives considered in the BDCP Draft EIR/EIS have the potential to change the concentration of dissolved organic material and organic nitrogen compounds in the Delta via changes in export operations associated with CM1 and changes in tidal habitat associated with CM4. To restore tidal habitat, CM4 would flood islands that are currently used as

farmland. The transition from farmland to flooded habitat could result in increased loading of dissolved organic material to the Delta waterways. Peat soils, such as those found throughout most of the Delta, are high in organic carbon and nitrogen compounds (Kegel, 1979; Ingebritsen and Ikehara, 1999 at pp. 83-94). When those soils are flooded and allowed to exchange with the waters in the channels, increased concentrations of organic compounds (carbon, nitrogen and phosphorous) would be expected for a period of time on the order of years (Reddy, 2005). The increase in loading of organic compounds to waters currently diverted and treated for municipal use could increase the formation of potent carcinogenic nitrosamines such as N-Nitrosodimethylamine (Kalbitz and Geyer, 2002; Lee et al., 2007).

DWR has failed to apply its own standards of analysis in the BDCP Draft EIR/EIS. The BDCP Draft EIR/EIS is flawed because it failed to recognize or analyze the potential impacts of increased concentrations of nitrosamines and other disinfection byproducts that are harmful to human health. It is reasonable to expect that the BDCP Draft EIR/EIS should evaluate the potential impacts of nitrosamines because DWR has requested that other projects in the Delta examine the very same impacts. For instance, on June 25, 2010, DWR requested an evaluation of the potential impacts the Delta Wetlands Project could have on nutrient loading that affect drinking water quality and associated treatment costs: "An increase in ammonia (NH_3) from Delta Wetlands has the potential to increase nitrosamine disinfection byproduct formation at State Water Project water treatment plants…Delta Wetlands should evaluate whether project nutrient loads are likely to be significantly higher than current loads discharged under the island's farming operations. Given the concerns about current nutrient concentrations in the Delta and State Water Project and Central Valley Project, if it is determined that the project will cause increased nutrient loading, then mitigation should be developed." (Semitropic Water Storage District, 2011 at p. 3-87.)

The BDCP Draft EIR/EIS must be revised to include an evaluation of the impacts of increased dissolved organic material and organic nitrogen concentrations in Delta waterways that can lead to increases in nitrosamines and increased treatment requirements at water supply and treatment facilities. Adequate mitigation must be provided for all significant adverse impacts, as discussed in Section 3 of these comments.

2.2.1.2.Failure to analyze changes in Delta algae and algal byproducts.

Algae and algal byproducts can create impacts. Aquatic algae produce chemical compounds that can be toxic to humans and animals, and that have noxious tastes and odors. These compounds are difficult to remove in conventional water treatment processes and cause impacts to drinking water. Furthermore, algal blooms and aquatic plant growth, such as *Egeria densa*, also require physical removal at water supply and treatment facilities. An increase in growth is likely to cause impacts to water suppliers due to additional removal and treatment requirements.

Toxins are produced by some species of blue green algae (cyanobacteria) and are released into the surrounding water when algal cells die. A potent liver toxin, microcystin, is present in the Delta; ingestion of water or algal cells containing microcystin has produced adverse effects in fish, dogs, cats, livestock, and humans (Office of Environmental Health Hazard

Assessment, 2009 at p. 1). The U. S. Environmental Protection Agency has listed freshwater cyanobacteria and their toxins, including microcystin, on the Drinking Water Contaminant Candidate List 3 (Federal Register, 2009). New Zealand, Germany, and the World Health Organization have established microcystin guidelines of 1.0 µg/L, while Canada has established a 1.5 µg/L guideline (Trojan Technologies, 2010). Measureable levels of microcystin in the Delta have been linked to algal blooms of *Microcystis aeruginosa* (State Water Project Contractors Authority and DWR, 2012 at p. ES-10). The frequency and magnitude of *Microcystis* blooms in the Delta is likely to increase in the future given climate change (Lehman et al., 2013 at p. 142) and is likely to increase significantly due to changes associated with the BDCP alternatives, as discussed below.

In addition to algae that produce toxins, many other species of aquatic algae produce noxious tastes and odors. The primary causes of reported taste and odor problems in drinking water are the chemical compounds geosmin and 2-methylisoborneol (MIB) (Korth et al., 1992), which are produced by multiple species of cyanobacteria. The odor thresholds for geosmin and MIB are very low; humans can typically detect them in drinking water at 30 and 10 nanograms per liter (parts per trillion), respectively (Persson, 1980; Korth et al., 1992). The frequency and magnitude of cyanobacteria blooms in the Delta also would increase significantly due to changes associated with the BDCP alternatives, as discussed below.

Conventional water treatment plants are not capable of removing many of these toxic and noxious algal byproducts and could require costly upgrades to handle increases in these compounds. CCWD's two water treatment plants (Bollman and Randall-Bold) have ozone treatment systems that are capable of removing current levels of algal byproducts at the proper ozone dosage and pH level. However, the expected increase in algal byproducts caused by the BDCP would require a corresponding increase in ozone dosage; the amount of such an increase is limited by the requirement not to increase bromate formation to levels that exceed the bromate maximum contaminant level, established to prevent the potential carcinogenic effects of excess bromate in drinking water, as discussed in Section 2.2.1.1 above.

CCWD provides treated water to its customers from the Bollman water treatment plant in Concord and Randall-Bold water treatment plant in Oakley. Both water treatment plants use flocculation, sedimentation, filtration, ozonation, and chloramination to produce high quality drinking water. CCWD relies on ozone application to reduce tastes and odors but the effectiveness of the treatment is limited by pH and regulated disinfection byproduct limits. Increased cyanobacteria in Delta waters would necessitate more frequent changes of filtration materials and increase chemical usage (ozone and sulfuric acid) to control pH, disinfection byproducts (see Section 2.2.1.1), and noxious tastes and odors.

The BDCP alternatives are likely to increase noxious algal species and byproducts in the Delta. The BDCP Draft EIR/EIS discloses that the phytoplankton (microalgae) growth rate would increase in most of the restoration opportunity areas leading to an increase in phytoplankton biomass in the Delta. BDCP, Chap. 5 at pp. 5.3-36 to 5.3-37. BDCP-caused changes to the environment have the potential to favor noxious species that would increase taste and odor problems and microcystin in Delta waters. The BDCP Draft EIR/EIS cannot

ignore this potentially significant effect. The BDCP Draft EIR/EIS impact analysis ignores the following factors, each of which is expanded upon below:

- Proposed habitat in the south Delta, in the vicinity of CCWD's municipal water intakes, is similar to habitat that has been shown to increase taste and odor compounds;

- Projected changes in water quality would favor cyanobacteria, thereby increasing the likelihood of more frequent, larger blooms; and

- Projected increases in residence time would allow cyanobacteria blooms to thrive and last longer.

Each of these factors individually could contribute to increased cyanobacteria blooms; taken together, the impacts are likely to be significant.

Proposed habitat in the south Delta, in the vicinity of CCWD's municipal water intakes, is similar to habitat that has been shown to increase taste and odor compounds. All of the BDCP action alternatives, except Alternative 5, include creation of 65,000 acres of tidal habitat, including nearly 11,000 acres in the south Delta that would be permanently under water. BDCP Draft EIR/EIS, Appendix 5A, Section D, Attachment 2, Table 2-3. This proposed habitat in the south Delta is similar in size and location to the area created by the flooding of Jones Tract in 2004; the Jones Tract levee breach flooded approximately 12,000 acres of farmland (DWR, 2009b at p. iii) just to the northwest of the BDCP's proposed south Delta habitat restoration opportunity area. The flooding of farmland to create tidal habitat proposed by the BDCP could result in changes in water quality in the Delta similar to those observed during and after the flooding of Jones Tract, which resulted in both an acute short-term impact and a long-term negative impact on drinking water quality. Shortly after the Jones Tract levee breached in June 2004, sampling at Clifton Court Forebay detected high levels of MIB. Investigations traced the MIB source back to a species of cyanobacteria, *P. perornata*, contained in the waters draining off Jones Tract. Pumping water through the Delta transported *P. perornata* from Clifton Court Forebay to facilities in southern California where these specific cyanobacteria had not been detected in prior years. They have since colonized local reservoirs and continue to cause taste and odor problems (DWR, 2009b at p. 4-2).

Projected changes in water quality would favor cyanobacteria, thereby increasing the likelihood of more frequent, larger blooms. Cyanobacteria thrive in relatively warm, calm, clear, nutrient-rich waters (Paerl, 1996; Chorus et al., 2000). The BDCP Draft EIR/EIS indicates that the BDCP would cause several potentially deleterious changes that would create the type of environment in which cyanobacteria thrive, as follows:

- Nutrients[13] would increase: the BDCP Draft EIR/EIS reports that ammonium concentrations entering the Delta on the Sacramento River would increase

[13] Although the BDCP Draft EIR/EIS did not evaluate potential increases in nutrients from the flooding of agricultural tracts, concentrations of ammonia, total Kjeldahl nitrogen, and total phosphorous were found to be

from July through September during peak algal growth season and phosphorous concentrations would increase by a small amount. BDCP Draft EIR/EIS, Chap. 8 at p. 8-410 and p. 8-469.

- Tidal mixing would decrease in the south Delta creating calmer waters. BDCP Draft EIR/EIS, Appendix 5A-D2 at p. 138.
- Residence times would increase. BDCP, Chap. 5 at p. 5.3-36.
- Water clarity would increase. BDCP Draft EIR/EIS, Chap. 11 at p. 11-1299, BDCP, Chap. 5 at p. 5.3-25.

The references above are for impacts of Alternative 4, the DWR Preferred Alternative; similar impacts are disclosed for other alternatives as well.

Furthermore, scientific research on flooded islands in the south Delta found that water temperature in Mildred Island, a shallow embayment, varied strongly from the northern section (which had relatively low residence time) to the southern section (which had relatively high residence time). Warmer water was present in the southern section due to the longer residence time in this region (Monsen et al., 2002). The nearly 11,000 acres of land in the south Delta that the BDCP proposes to convert to similar habitat would be likely to increase the local water temperature, creating favorable conditions for cyanobacteria growth.[14]

The BDCP recognizes that "[g]reater water residence time under the BDCP from changes in water operations and restoration may promote the toxic blue-green alga *Microcystis* and result in direct toxic effects on delta smelt and indirect effects on delta smelt through reductions in food availability." BDCP, Chap. 5 at p. 5.5.1-32. Despite this recognition, there is no analysis of the impacts of *Microcystis* in the BDCP Draft EIR/EIS for aquatic resources (Chapter 11) or drinking water quality (Chapter 8).

Projected increases in residence time would allow cyanobacteria blooms to thrive and last longer. Scientific research has linked decreased tidal mixing coupled with increased water clarity to increased Microcystis blooms in the Delta and the spread of microcystin toxin in the food web (Lehman et al., 2008; Lehman et al., 2013). Residence time in the south Delta would increase in response to reductions in south Delta exports and creation of south Delta tidal marsh. As algal blooms associated with cyanobacteria increase in the south Delta, State Water Project and Central Valley Project operators would likely preferentially use the BDCP's north Delta intakes[15] to avoid the water quality problems in the south Delta,

---

elevated in the flooded water of Jones Tract (DWR, 2009b) and could be an indicator of the effects of similar flooded habitat proposed by the BDCP.

[14] Although the analysis done for the BDCP did not find temperature impacts in the Delta, this is because the analysis was done on habitat areas represented as deep lakes rather than as the shallow, tidal areas that are in fact planned. BDCP, Chap. 5 at p. 5.3-20. See Section 2.2.2.6 of these comments for a discussion of the reason for and consequences of this error.

[15] Alternative 9 does not include intakes in the north Delta, and thus this feedback mechanism is not present in Alternative 9.

increasing the reductions in south Delta exports beyond those analyzed in the BDCP Draft EIR/EIS. The shift in export location as described in the BDCP Draft EIR/EIS is likely to impact the water quality for those who rely on water from the central and south Delta, and this feedback mechanism is likely to exacerbate the impacts.

DWR has failed to apply its own standards of analysis in the BDCP Draft EIR/EIS. The BDCP Draft EIR/EIS is flawed because it failed to recognize or analyze the potential impacts of increased concentrations of algae and algal byproducts. It is reasonable to expect that the BDCP Draft EIR/EIS should evaluate the potential impacts of algal byproducts, not only because this is an impact that affects public health and safety but also because DWR has itself acknowledged the importance of this issue and specifically requested that other projects in the Delta examine the very same impacts.

For instance, on June 25, 2010, DWR requested an evaluation of the potential impacts that the Delta Wetlands Project could have on taste and odor-causing algae and algal byproducts that affect drinking water quality and associated treatment costs: "[Delta Wetlands] should also evaluate the potential effects associated with the changes in timing of nutrient loading and the potential for project discharges to increase the levels of taste and odor compounds present in drinking water supplies... the project could exacerbate taste and odor concerns in the SWP [State Water Project]; however, these issues were not evaluated and disclosed in the POU [Place of Use] EIR or in previous environmental documents for the project. An evaluation should be conducted, the results disclosed, and mitigation measures for negative impacts to the SWP included in the Final POU EIR." (Semitropic Water Storage District, 2011 at p. 3-88). DWR was concerned that Delta Wetlands' flooding of farmland to create water storage reservoirs could increase algae blooms, and cause impacts similar to those that occurred when Jones Tract flooded in 2004. BDCP tidal habitat projects would have the same types of effects.

DWR raised similar concerns when commenting on Sacramento Regional County Sanitation District's National Pollutant Discharge Elimination System Permit renewal for the Sacramento Regional Wastewater Treatment Plant. DWR stated that "[p]rimary drinking water constituents of concern associated with the Sacramento Regional County Sanitation District's discharge include, but are not limited to, organic carbon, nutrients, pathogens, taste and odor causing compounds and nitrosamines and their precursors. … From a drinking water perspective, increased nutrient loading can lead to eutrophication of source waters, which in turn can lead to increased levels of organic carbon, objectionable taste and odor producing compounds (i.e. Geosmin and MIB), and toxic microcystins. … When nutrient enriched waters enter the State Water Project, the eutrophication effect can be amplified as hydraulic residence time increases" (DWR, 2010 at pp. 1, 3, and 4).

The BDCP Draft EIR/EIS must be revised to include an evaluation of the potential changes in algal concentrations in the Delta, the impacts of algal byproducts that are toxic to humans and wildlife, algal taste and odor-causing compounds, and increased removal and treatment requirements at water supply and treatment facilities. Mitigation must be identified for all significant adverse impacts, as discussed in Section 3 of these comments.

2.2.1.3. Failure to evaluate the impacts of altered drainage patterns on water quality.

Alteration of drainage within the Delta can create impacts. The large-scale alterations to the Delta landscape proposed by the BDCP include "improvements to local drainage systems affected by the alternatives." BDCP Draft EIR/EIS, Chap. 3 at p. 3-31. The BDCP Draft EIR/EIS recognizes agricultural drainage as one of the primary factors affecting water quality including concentrations of boron, bromide, chloride and dissolved organic carbon. BDCP Draft EIR/EIS, Chap. 8 at pp. 8-13, 8-40, 8-42, 8-43, and 8-76. It follows, therefore, that any alteration of existing Delta drainage systems (such as the relocation of discharge points) has the potential to adversely impact levels of these water quality constituents.

However, the adverse water quality effects resulting from altered drainage patterns are considered in the BDCP Draft EIR/EIS only for project construction. As the BDCP Draft EIR/EIS explains, the relevant significance criterion that applies to the alteration of drainage patterns, "which occurs through construction of the various components of the project," is whether existing drainage patterns would be altered "in a manner which would result in substantial erosion or siltation on- or off-site." BDCP Draft EIR/EIS, Chap. 8 at pp. 8-176 to 8-177. But there is no discussion or evaluation of the potential permanent changes to agricultural drainage in the Delta. As a result, there is no discussion or evaluation of the potential changes in water quality constituents such as salinity, selenium, or organic carbon resulting from these permanent alterations.

Changes in the location, timing, volume, velocity, chemical constituents, or other characteristics of drainage in the Delta have the potential to significantly and adversely impact Delta water quality, particularly in the vicinity of the drainage. This potential for drainage to impact water quality is acknowledged elsewhere in the BDCP Draft EIR/EIS. Landowners who wish to participate in CM 21 (which provides funding for actions to reduce fish entrainment by non-project diversions) are required to demonstrate that "subsurface drain water and/or surface return flow discharged into a Delta waterway does not have an unreasonable impact on Delta water quality." BDCP Draft EIR/EIS, Chap. 3 at p. 3-166. The BDCP's other actions should be held to the same standard imposed on CM21.

DWR has failed to apply its own standards of analysis in the BDCP Draft EIR/EIS. The BDCP Draft EIR/EIS is flawed because it failed to recognize or analyze the impacts of altering drainage patterns in the Delta. It is reasonable to expect that the BDCP Draft EIR/EIS should evaluate the potential impacts of changed drainage patterns because the BDCP proponents have clearly recognized the potential for agricultural drainage to impact water quality in the past. For instance, all lead agencies for the BDCP – DWR, Reclamation, USFWS, and the National Marine Fisheries Service – were among the lead agencies for the 2000 Record of Decision for the Programmatic EIS/EIR for the CALFED Bay-Delta Program, which specifically included an action to reduce agricultural drainage in the Delta in order to minimize salinity and other constituents of concern at drinking water intakes (CALFED, 2000 at p. 50). DWR funded two CALFED water quality improvement projects involving local drainage systems: the relocation of an agricultural drain on Veale Tract and the redesign and construction of Byron Tract drainage, in order to improve water quality at CCWD's Rock Slough and Old River intakes. DWR Contract No. 460002846

provided CALFED funding of $2,009,950, and DWR Contract No. 4600003591 provided CALFED funding of $2,855,000 for these projects, and work was completed in 2006.

Furthermore, in 2007, DWR prepared a report entitled "Sources of Salinity in the South Sacramento-San Joaquin Delta" detailing the contributions of discharges from agricultural drains to high salinity issues in the south Delta, in particular, those that regularly develop between San Joaquin River at Vernalis and Old River at Tracy Bridge or Grant Line Canal at Tracy Bridge. DWR has recognized agricultural drainage as the principal cause of high salinity in this region since the 1960's (DWR, 2007 at p. 1).

The BDCP Draft EIR/EIS must be revised to include an evaluation of the potential changes in water quality due to alteration of local drainage systems and disclose the impacts. Mitigation or avoidance measures must be identified for all significant adverse impacts, as discussed in Section 3 of these comments.

2.2.1.4. Failure to analyze the impacts of the project in the event of levee failures.

The BDCP Draft EIR/EIS states that an objective of the project is 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 the breaching of Delta levees and the inundation of brackish water into areas in which the SWP and CVP pumping plants operate in the south Delta." BDCP Draft EIR/EIS, Chap. 2 at p. 2-3. Furthermore, the BDCP Draft EIR/EIS explains that the Delta and vicinity "is within a highly seismic area, with a generally high potential for major future earthquake events along nearby and/or regional faults, and with the probability for such events increasing over time." *Id.*, Appendix 3E at p. 3E-15. The BDCP Draft EIR/EIS accordingly concludes that "the potential for significant damage to, or failure of, these structures during a major local seismic event is generally moderate to high." *Id.* But the environmental analysis does not include the impacts to water quality that would result from the operation of the BDCP water conveyance facilities under these likely future conditions. This failure to address a reasonably foreseeable impact of future project operations is improper and needs to be remedied in a revised analysis.

The text of Appendix 3E of the BDCP Draft EIR/EIS suggests that the authors of the document had intended to discuss this important issue, stating that "[t]hroughout this Appendix, readers are directed to sections of the EIR/S to find analyses of how the risks and impacts described in this appendix would impact the BDCP alternatives." BDCP Draft EIR/EIS, Appendix 3E at p. 3E-1. However, the readers of Appendix 3E are never directed to any sections in the EIR/EIS for further descriptions or analyses of how the BDCP water conveyance facilities would be operated, in accordance with the stated project objective, to provide water supplies in the event of seismic event causing levee failure. That is because the issue is not addressed in the BDCP Draft EIR/EIS and the resulting environmental impacts are nowhere disclosed.

Appendix 3E provides a detailed risk assessment, including the seismic characteristics of the region, the probability of a seismic event large enough to cause levee failures, the likelihood

of multiple levee failures resulting in seawater intrusion, and the damage to water supplies associated with such an event. Appendix 5B provides a detailed analysis of the effects of supply disruption on the project proponents caused by a seismic event with multiple levee failures and resultant seawater intrusion in the south Delta, and general descriptions of possible responses to the loss of water supply that could be implemented in the absence of the BDCP. However, the BDCP Draft EIR/EIS does not include any information regarding how the BDCP would operate to remedy these supply losses and therefore it fails to disclose the reasonably foreseeable impacts on Delta water quality and supplies resulting from those operations.

The BDCP Draft EIR/EIS is therefore flawed and it needs to be revised to 1) describe how the BDCP water conveyance facilities would operate to meet the stated project objective, and 2) analyze the resulting environmental impacts of these operations. Without this information, the public has no opportunity to understand how the BDCP would meet the objective and what the range of impacts could be.

Given the "moderate to high" probability of a major seismic event leading to significant levee failure, the BDCP Draft EIR/EIS should describe how each alternative would operate under one or more likely seismic scenarios and analyze the impacts of such operations. This analysis can and should be done; in fact, the BDCP consultants have conducted such an analysis. On July 29, 2010, the BDCP Steering Committee was provided the results of detailed scenarios of exactly this type of seismic event (RMA, 2010); those results included an analysis of the salinity in the Delta following the failure of levees on the 13 most susceptible islands during severe drought conditions. An analysis of the impacts of levee failure conditions that are likely to occur and that the BDCP is intended to remedy should be included in the BDCP Draft EIR/EIS.

In overlooking this issue, the BDCP Draft EIR/EIS misses an important and reasonably foreseeable environmental impact that the project could cause. The BDCP Draft EIR/EIS goes to great lengths to explain the risk of a seismic event and its consequences to water supply. The BDCP Draft EIR/EIS makes a convincing argument that multiple levee failures will occur, it plans for them as an objective for the project to remedy, and it states the likely impacts on water supplies if that objective is not met. But the analysis needs to follow through with a description of how each alternative would respond to the anticipated seismic conditions and resulting levee failure − as promised in Appendix 3E and as incorporated into the project objectives − and what the impacts of that response would be.

BDCP alternatives that include intakes in the north Delta (Alternatives 1 through 8) would have adverse environmental consequences in the event of a levee failure when operating to meet the stated objective. Under the No Action Alternative, exports would be stopped because water quality would reach a level unacceptable for any beneficial uses of the exported water. BDCP Draft EIR/EIS, Appendix 5B. The water not exported would in turn go to outflow, which − according to the results presented by the BDCP consultants to the BDCP Steering Committee in 2010 − would freshen the Delta channels in a few months (RMA, 2010). In sharp contrast, under the BDCP alternatives that include one or more north Delta intakes, exports would not stop, but would rather be shifted from the existing south Delta intakes to the proposed north Delta intakes. BDCP Draft EIR/EIS, Chap. 29 at

p. 29-20. Using the proposed north Delta water intakes to export water out of the Sacramento River, before the fresh water flows reach the central Delta, might ensure that the exporters could maintain their water supplies, but this would lengthen the amount of time required for the entire Delta to recover from the seawater intrusion, depriving other Delta water users of their water supplies for longer than necessary, and extending the severe impacts to fisheries (for example, delta smelt habitat area would be greatly diminished for a longer period of time). In order to remedy this deficiency in the environmental analysis, the following is required:

- A description of at least two likely seismic scenarios that result in levee failures and disruption of water supplies for which the BDCP is intended to remedy in meeting the project objective noted above.[16] One of the scenarios could be from the material that was already provided to the BDCP Steering Committee on July 29, 2010 by the BDCP consultants (RMA, 2010) and at the direction of the BDCP proponents. A second scenario should show an extended period of water supply disruption in the No Action Alternative because Appendix 3E claims the disruption of supplies could last several years, and this is presumably the worst case scenario that the BDCP seeks to remedy. The revised analysis must evaluate such a seismic scenario to capture the full range of potential impacts of the alternatives.

- A description of how each alternative would be operated in response to the seismic scenarios, including whether south Delta and/or north Delta exports would be shut off after a catastrophic seismic event and, if so, when they would resume exporting and under what criteria. The description should also include how upstream reservoirs would be operated during this time and whether they would hold water back for later export, release water to repel salinity intrusion, or follow some combination of these strategies.

- An analysis of the impacts of those responses under the BDCP alternatives. This analysis must include the salinity levels at all drinking water intakes within the Delta and at all locations where existing salinity objectives are specified in the Bay-Delta Water Quality Control Plan; how salinity would change under the BDCP alternatives; the length of time required for salinity to return to levels predicted prior to the seismic event; the impacts to habitat area and survival for various species under the No Action Alternative and each project alternative; and the secondary impacts. (For example, elimination of exports through the south Delta would cause stagnation, resulting in algal blooms that would be exacerbated and extended by exporting water in the north Delta instead of halting all exports.)

- A set of proposed mitigation measures for significant impacts. For example, a limitation on exports would reduce the length of time the reduction in habitat and Delta water quality impacts would occur.

[16] Note that it is unnecessary to examine levee failures during wet periods because such failures would either result in no loss of water supply or a very short disruption of water supply.

The BDCP Draft EIR/EIS must be revised to include a seismic analysis, identification of significant impacts, and proposed mitigation.

2.2.2. Improper and unsupported analysis in the BDCP Draft EIR/EIS underestimates water quality impacts.

The BDCP Draft EIR/EIS fails to disclose the full extent of water quality impacts in the Delta that would affect municipal water suppliers, and the methodology used to evaluate water quality impacts is fundamentally flawed. These issues lead directly to a significant underestimation of water quality impacts for municipal water users in the Delta.

2.2.2.1. Inadequate representation of drinking water intakes[17].

On May 19, 2009, CCWD submitted comments on the revised BDCP Notice of Preparation requesting that "the BDCP Draft EIR/EIS analyze the changes caused by the project on a *daily* basis for chloride, bromide, and organic carbon concentrations *at all existing and planned drinking water intakes in the Delta*" (CCWD, 2009b, Attachment A at p. 15). But the BDCP Draft EIR/EIS fails to analyze water quality at all of the existing and planned drinking water intakes in the Delta, and it fails to disclose water quality impacts on a daily basis.

The BDCP Draft EIR/EIS inappropriately assumes that water quality at one location is representative of other locations, stating "[f]or municipal intakes located in the Delta interior, assessment locations at Contra Costa Pumping Plant No. 1 and Rock Slough are taken as representative of Contra Costa's intakes at Rock Slough, Old River and Victoria Canal, and the assessment location at Buckley Cove is taken as representative of the City of Stockton's intake on the San Joaquin River." BDCP Draft EIR/EIS, Chap. 8 at pp. 8-149 and 8-162. This assumption is unreasonable. The actual intakes and their "representative" locations are up to 17 river miles apart (Figure 2-1). Hydrodynamic and water quality conditions vary widely within the Delta; indeed, it is the difference in salinity at different locations in the Delta interior that drove CCWD's construction of its Old River intake and Middle River intake on Victoria Canal (collectively "Old and Middle River intakes"). Even intakes that are relatively close together such as CCWD's Old and Middle River intakes have very different water quality because of the complexity of the hydrodynamics in the Delta (CCWD and Reclamation, 2006, Exhibit ES-2 at p. ES-5).

[17] While this section focuses on drinking water intakes, agricultural intakes in the Delta are also poorly represented in the BDCP Draft EIR/EIS analysis. For instance, DWR has agreements with North Delta Water Agency and East Contra Costa Irrigation District, which provide that DWR will maintain water quality at specified salinity levels at specified locations within the Delta, and further provide for the release of SWP water from storage, cessation of SWP diversions to storage, or cessation of SWP Delta exports should operation of the SWP degrade water quality near those locations. However, the BDCP Draft EIR/EIS fails to evaluate water quality at the specified locations and fails to disclose whether the BDCP would impact DWR's ability to maintain the required salinity levels.

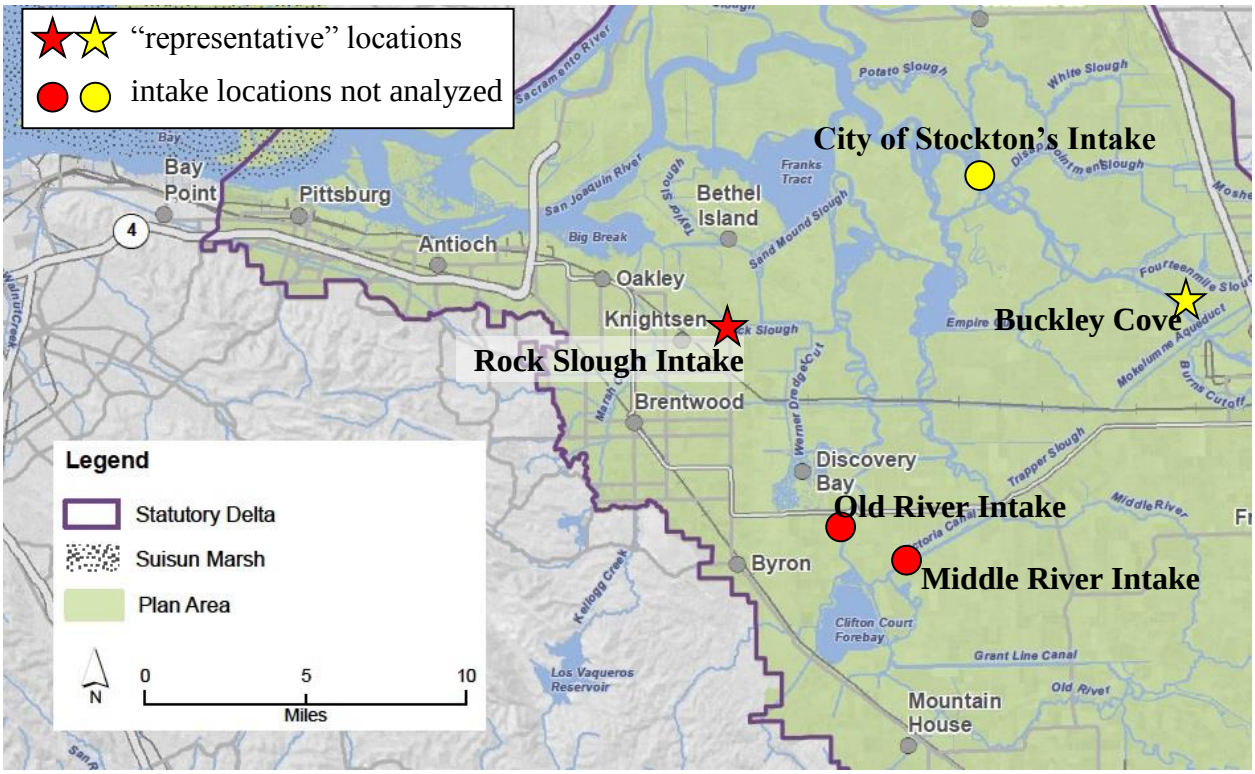


Figure 2-1. Drinking Water Intakes in the Delta.
Map adapted from BDCP Draft EIR/EIS, Chap. 1, Figure 1-9, by adding locations of drinking water intakes and the locations taken as "representative" for the purposes of the BDCP Draft EIR/EIS. The City of Stockton's intake is far from the Buckley Cove "representative" site, where there is no drinking water intake, and CCWD's Old and Middle River intakes are far from the "representative" CCWD intake site.

In fact, the differences in the quality of water at the "representative" sites in comparison to the actual intake locations were readily available to the BDCP consultants because the modeling that was used as the basis for the BDCP Draft EIR/EIS analysis includes results for water quality constituents at both the "representative" sites and at the actual intake locations. This modeling was provided by the DWR to CCWD in 2013 (DWR, 2013b). Plots of salinity variation in time at each location illustrate that the "representative" sites are, in fact, not representative of the actual intake sites. For instance, in the No Action Alternative, the salinity at Buckley Cove is dramatically different than the salinity at the City of Stockton's intake (Figure 2-2). Similarly, in the No Action Alternative, salinity at the Rock Slough intake would at times be up to 800 microsiemens per centimeter greater than salinity at the Middle River intake; while at other times, salinity at the Middle River intake would be up to 200 microsiemens per centimeter greater than at the Rock Slough intake (Figure 2-3); neither the seasonal pattern nor the annual maximum and minimum values of salinity coincide temporally at these sites. Given the differences in salinity under the No Action Alternative between the "representative" sites and the actual intake locations,

it is not appropriate to use the "representative" sites to assess impacts at drinking water intakes when modeling results for the actual intake sites are readily available.

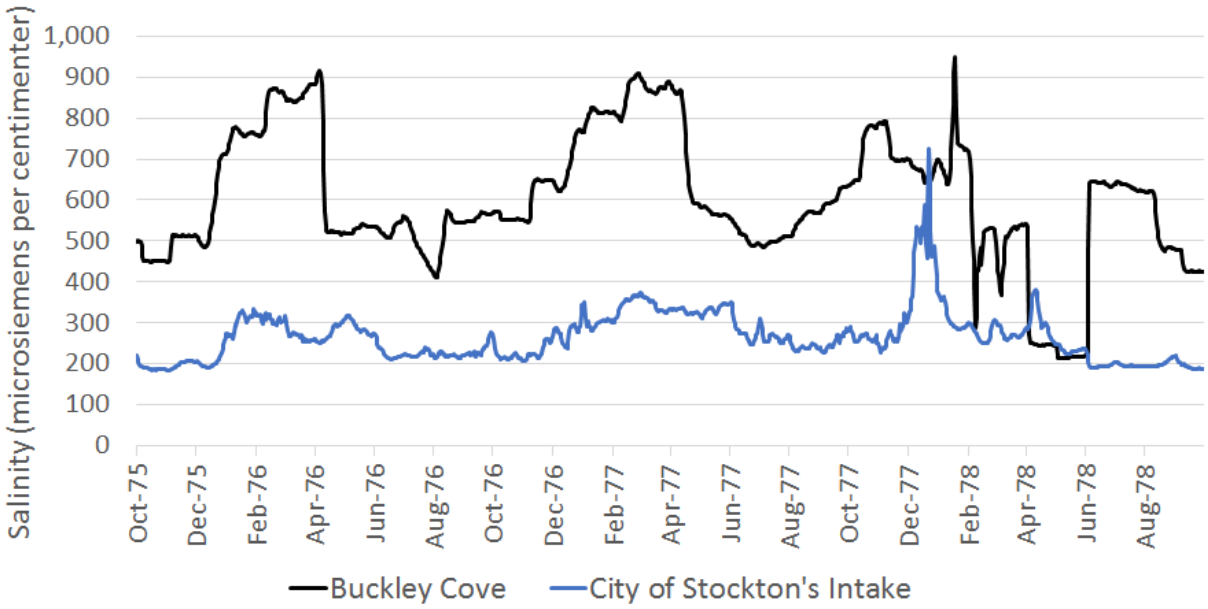


Figure 2-2. Salinity at the City of Stockton's intake and Buckley Cove
Results from modeling of the No Action Alternative, performed for BDCP Draft EIR/EIS and provided to CCWD by DWR (DWR, 2013b), illustrate that salinity at the City of Stockton's intake differs significantly from salinity at the Buckley Cove. The quality of water at the Buckley Cove is not representative of the City of Stockton's intake.

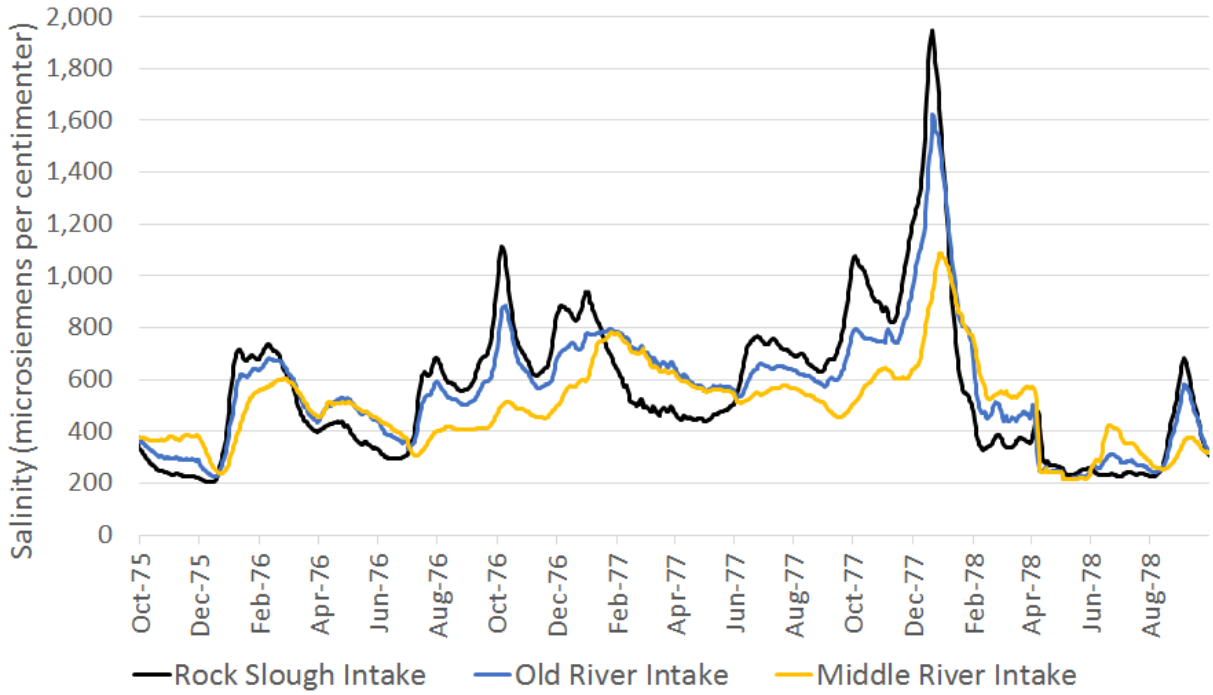


Figure 2-3. Salinity at CCWD's Rock Slough, Old River, and Middle River intakes
Results from modeling of the No Action Alternative, performed for BDCP Draft EIR/EIS and provided to CCWD by DWR (DWR, 2013b), illustrate that salinity at the Rock Slough intake differs significantly from salinity at the Old River intake and Middle River intake. The quality of water at the Rock Slough intake is not representative of the other two intakes.

The differences in the quality of water at different locations in the Delta interior is partially due to the difference in the source of the water. For instance, some locations within the Delta interior are dominated by water that originated on the Sacramento River, while other locations are dominated by water from the San Joaquin River and still other locations are dominated by water from the Bay; the magnitude of local agricultural drainage also varies from place to place. The mixture varies spatially and temporally as river flows and tidal dynamics change throughout the seasons and between years. The modeling that was used as the basis for the BDCP Draft EIR/EIS analysis (DWR, 2013b) calculates the fraction of water that originates from the upstream rivers and the downstream bay at both the "representative" sites and at the actual intake locations. Plots of the percentage of water at each location that entered the Delta from the Sacramento River water illustrate that the "representative" sites are, in fact, not representative of the actual intake sites because the makeup of the water at each location is dramatically different. For instance, Figure 2-4 shows that the location of the City of Stockton's intake often receives greater than 70% of its water from the Sacramento River, while Buckley Cove seldom receives any water from the Sacramento River.

Since all of the BDCP alternatives propose either to divert Sacramento River water before it enters the central Delta (Alternatives 1 through 8) or to construct numerous barriers that would alter the mixing of river and bay waters (Alternative 9), the BDCP would impact the mixture of water at all locations within the interior Delta. Because of the complicated nature of the movement and mixing of waters within the Delta, the impact would vary by location. For this reason, it is not appropriate for the BDCP Draft EIR/EIS to use "representative" sites when information at actual intakes sites is readily available.

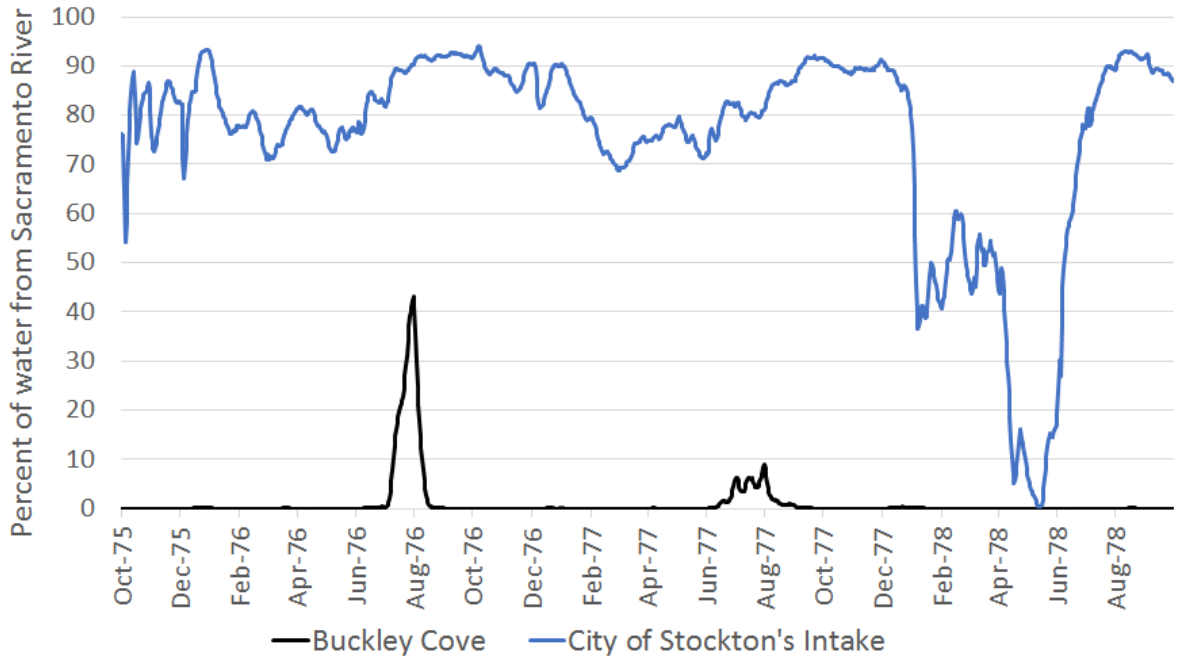


Figure 2-4. Percent of water at the City of Stockton's intake and Buckley Cove that originated on the Sacramento River
Results from modeling of the No Action Alternative, performed for BDCP Draft EIR/EIS and provided to CCWD by DWR, illustrate that the percent of water that originated on the Sacramento River varies dramatically between the City of Stockton's intake and the "representative" site at Buckley Cove.

2.2.2.2. Degradation of CCWD's delivered water quality.

CCWD's long-term water quality goal is to deliver water with chloride concentrations of 65 milligrams per liter or less to its customers. This goal has been approved by the CCWD Board of Directors (CCWD, 1988) and is the basis of significant investments by CCWD customers. While the BDCP Draft EIR/EIS recognizes this goal (BDCP Draft EIR/EIS, Chap. 8 at p. 8-44), it fails to evaluate the impact on CCWD's ability to achieve this goal.

CCWD diverts water from four intakes in the Delta – Mallard Slough intake, Rock Slough intake, Old River intake and Middle River intake – for treatment and/or delivery to CCWD's customers. Additionally, CCWD diverts water from two of its intakes – Old River intake and Middle River intake – to storage in the Los Vaqueros Reservoir, an off-stream reservoir that is owned and operated by CCWD and was built to improve water quality and provide drought and emergency storage for CCWD's customers. When Delta water quality is high (i.e. salinity is low), CCWD diverts Delta water directly for delivery to its customers and fills Los Vaqueros Reservoir with high quality Delta water for later use. When Delta water quality degrades (typically late summer and fall), CCWD releases some high quality water from storage to blend with water pumped directly from the Delta; blending the two water sources allows CCWD to meet its water quality goals. The reservoir is then re-filled when high quality water is available in the Delta again, typically during winter and spring. In this way, Los Vaqueros Reservoir allows CCWD to ameliorate the typical seasonal changes in Delta water quality and continually provide high quality water to its customers. CCWD integrates operation of all its facilities based on water quality in the Delta; as a result, information about the BDCP's effects on water quality at all of CCWD's intakes is necessary to evaluate the project's impacts on CCWD water supply and water quality.

Modeling that was used as the basis for the BDCP Draft EIR/EIS analysis includes simulation of CCWD's operations as described above. In addition to reporting the quality of water at each of CCWD's intakes, the modeling reports the chloride concentration within Los Vaqueros Reservoir and the chloride concentration delivered to CCWD's customers on a monthly basis. As mentioned above, this modeling was provided by DWR to CCWD (DWR, 2013b). Although the BDCP Draft EIR/EIS did not disclose these impacts, CCWD extracted the relevant information from the files provided by DWR to determine the impacts.

As illustrated in Figure 2-5, the percent of the time that CCWD could meet its water quality goal of 65 mg/L chloride concentration would be reduced in every alternative in comparison to the NEPA baseline.[18] For instance, CCWD would be able to meet its water quality delivery goal 86% of the time under the No Action Alternative, but under Alternative 4 the delivery goal would be met only between 55% and 65% of the time, depending on the operational scenario (H1 through H4).

[18] The modeling for the CEQA baseline was not provided to CCWD by DWR; therefore, the NEPA baseline is used for reference.

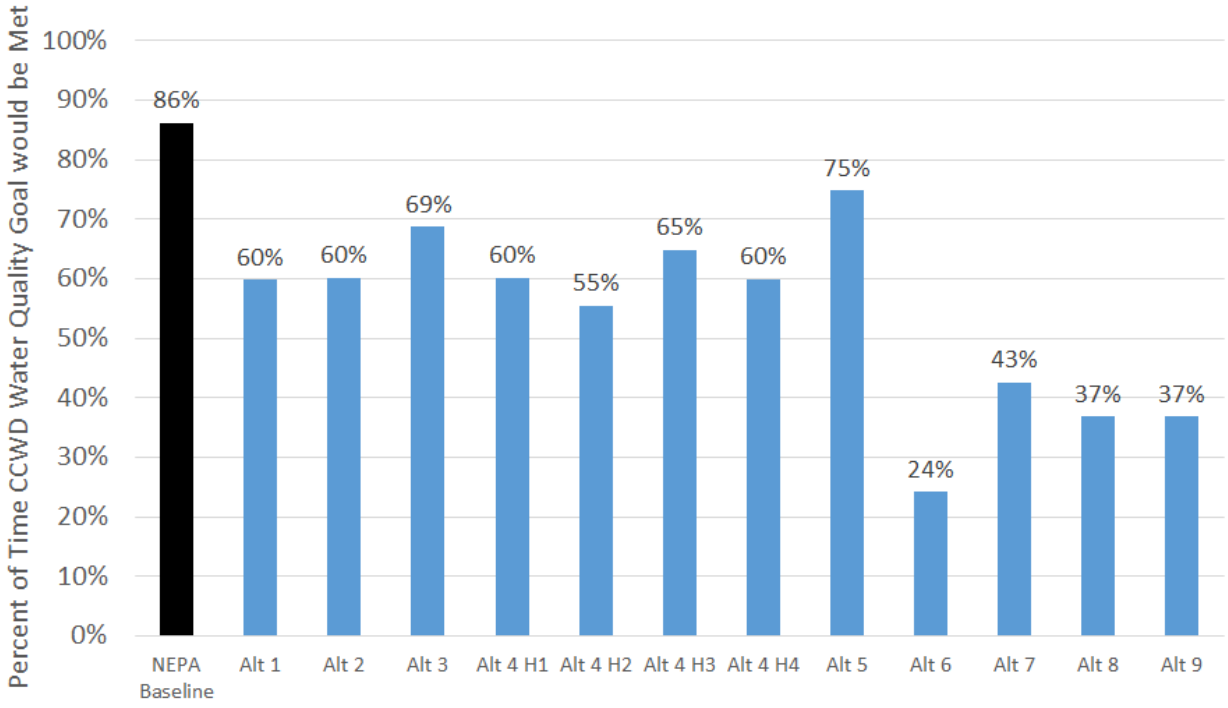


Figure 2-5. Impact to CCWD's delivered water quality
Data source: Results from modeling performed for BDCP Draft EIR/EIS and provided to CCWD by DWR.

2.2.2.3. Improper reliance on long term averages.

The BDCP Draft EIR/EIS uses long-term average salinity to evaluate the potential impacts of bromide and chloride. E.g. BDCP Draft EIR/EIS, Chap. 8 at p. 8-417 for Alternative 4. However, the long term average obscures and diminishes the magnitude of the project's impacts on CCWD's water quality and supply.

As discussed above, CCWD's operations are driven by salinity at its intakes. When salinity at its intakes is low, CCWD is able to fill Los Vaqueros Reservoir and meet demands at the desired water quality by directly diverting from the Delta. When salinity is high, CCWD releases low salinity water from the Los Vaqueros Reservoir to blend with higher salinity Delta diversions to deliver high quality water. The saltier the water, the more water that must be released from Los Vaqueros Reservoir.

However, a reduction in salinity during low salinity conditions would not offset the effect caused by an increase in salinity in high salinity conditions. The use of long-term averages obscures this key fact and thus understates the negative salinity impacts that would result from the BDCP. For instance, reducing chlorides by 20 mg/L from 40 to 20 mg/L in March (when restrictions on CCWD's operations for fish protection prohibit filling Los Vaqueros Reservoir) would not compensate for increasing chlorides by 20 mg/L from 100 to 120 mg/L in August. This is because CCWD operations would not be affected by the decrease

in salinity in March when the water is already very fresh and customer demand is being met by direct delivery of high-quality water from the Delta. However, operations would be negatively impacted by the increase in salinity in August when the water diverted at CCWD's intakes must be blended with fresher water released from Los Vaqueros Reservoir, and the increased salinity in the Delta would mean greater reservoir releases for blending with the saltier water at the intakes.

The BDCP Draft EIR/EIS fails to consider these impacts: it simply averages salinity changes over the long-term, as if the 20 mg/L increase in salinity during high-salinity conditions would be offset by the 20 mg/L decrease in salinity during low-salinity conditions. But in fact the salinity decrease does not cancel out the negative effect resulting from the salinity increase, so the approach in the BDCP Draft EIR/EIS fails to reveal, and does not evaluate, the true magnitude of the negative effects on CCWD water quality and water supply. The lack of the requested information regarding daily changes in water quality in the BDCP Draft EIR/EIS prevents an adequate analysis of impacts.

DWR previously recognized that the number of days per year that usable water at a drinking water intake is available is a key standard for measuring the negative impacts caused by the operations of the SWP on the quality and quantity of CCWD's drinking water supplies. In 1967, DWR and CCWD executed an agreement regarding expected adverse impacts of the State Water Resources Development System, which includes the SWP, on CCWD (CCWD and DWR, 1967). CCWD uses the Mallard Slough intake for direct diversions to customers for municipal and domestic use. The agreement stipulates that water at that intake was usable for drinking water purposes for an average of 142 days per water year before construction and operation of the SWP, and provides for compensation to CCWD based on the measured reduction in the average number of days with usable water at the Mallard Slough intake due to operation of the SWP.

The BDCP Draft EIR/EIS must evaluate daily changes in water quality at all four of CCWD's intakes, recognize the full extent of the project's significant impacts to CCWD's ability to meet its delivery goals, and identify and commit to measures to fully mitigate those impacts.

2.2.2.4. Fundamentally flawed operational modeling.

Independent review of the computer modeling of California water operations that was used in the BDCP Draft EIR/EIS reveals that it is badly flawed. The reviewers concluded that the operational modeling, which serves as the basis for the analysis of impacts and benefits in the BDCP Draft EIR/EIS, "provides very limited useful information to understand the effects of the BDCP" (MBK Engineers and Steiner, 2014 at p. 1). This modeling, and the impacts analysis based upon it, must be redone to reveal the true nature and extent of the BDCP's environmental impacts.

Operations of the SWP and the CVP with and without the BDCP were analyzed for the BDCP Draft EIR/EIS using the CalSim II computer model, a standard tool for analysis of

California water projects[19]. The CalSim II model is the foundational model for analysis of the BDCP; results from CalSim II are used for the analysis of effects on the ecosystem, natural communities, and covered species (Chapter 5 of the BDCP) and the impacts evaluation in the BDCP Draft EIR/EIS. To better understand the potential impacts of the BDCP, a consortium of stakeholders including CCWD commissioned MBK Engineers and Daniel B. Steiner, independent consultants, to review the CalSim II modeling studies provided by DWR (MBK Engineers and Steiner, 2014).

The independent review found that "[t]he BDCP Model contains erroneous assumptions, errors, and outdated tools, which result in impractical or unrealistic Central Valley Project (CVP) and State Water Project (SWP) operations. The unrealistic operations, in turn, do not accurately depict the effects of the BDCP" (MBK Engineers and Steiner, 2014 at p. 1). To more accurately determine the potential impacts of the BDCP, MBK Engineers and Daniel Steiner revised the BDCP Model, coordinating with water project operators and modelers at Reclamation and DWR. They also provided a list of additional errors that were identified but have not yet been addressed (MBK Engineers and Steiner, 2014 at p. 7). The results of this work indicate that the BDCP Draft EIR/EIS operational modeling produces inaccurate and unreliable results and must be redone.

The modeling that incorporates the revisions made by MBK Engineers and Daniel Steiner indicates that the action alternatives may have greater water quality impacts in the Delta than disclosed in the BDCP Draft EIR/EIS, for two reasons. First, the analysis done for the BDCP Draft EIR/EIS underestimates the portion of Delta exports that would be diverted at the new northern intakes, and overestimates the portion that would be diverted at the existing southern intakes (MBK Engineers and Steiner, 2014 at p. 27 and Technical Appendix pp. 66-72). Correcting this error results in greater stagnation and more poor-quality San Joaquin water and local agricultural drainage in the south Delta, with impacts at Delta drinking water intakes. Second, total Delta exports were underestimated in the analysis done for the BDCP Draft EIR/EIS (MBK Engineers and Steiner, 2014 at p. 27 and Technical Appendix pp. 51-55)[20]. Correcting this error results in greater seawater intrusion into the Delta, with potential additional impacts at Delta drinking water intakes.

2.2.2.4.1 Location of SWP and CVP exports.

Under the DWR Preferred Alternative, Alternative 4, the BDCP would construct and operate three additional water intakes in the north Delta that would be capable of diverting a combined 9,000 cubic feet per second (cfs) from the Sacramento River near Hood. The additional intakes would allow the SWP and CVP to choose the diversion location (north Delta or south Delta, or both north and south Delta) based on permit requirements and Delta conditions. Use of the north Delta intakes would reduce the amount of Sacramento River

[19] Although CalSim II is a standard tool that has been used for analysis of numerous water projects, modifications to the model for the purposes of the BDCP were extensive and should be reviewed before accepted at face value. BDCP Steering Committee members, including CCWD, requested that the model undergo an independent review as early as 2009. (see e.g. CCWD, 2009a; California Farm Bureau Federation, 2010)

[20] This is in part due to re-operation of the SWP and CVP upstream reservoirs, which was improperly excluded from the BDCP analysis. See Section 1.1.2 of these comments for a discussion of this issue.

water that would enter the central, southern, and western Delta. The Sacramento River enters the Delta from the north, and the San Joaquin River enters the Delta from the south; these two rivers generally account for about 90% of the water within the Delta. The Sacramento River tends to have the greater flow and better water quality than the San Joaquin River. Exporting Sacramento River water at the north Delta intakes reduces the amount of high-quality water that reaches the central, southern, and western Delta and increases the amount of poor-quality San Joaquin River water. Furthermore, when south Delta diversions are reduced to a very low level (less than about 3,000 cfs), waters in the southern Delta tend to stagnate, and the local, poor-quality, agricultural drainage builds up in them.

The BDCP acknowledges these water quality issues and the need to maintain pumping in the south Delta to maintain Delta water quality by stating that "BDCP operations criteria include a preference for south Delta pumping in July through September to provide limited flushing for improving general water quality conditions and reduced residence times." BDCP, Chap. 3 at p. 3.4-15. Similarly, the BDCP Draft EIR/EIS states that

> The objectives of the operations for Delta water quality and residence criteria, summarized below, are to (1) maintain a minimum level of pumping from the south Delta during summer to provide limited flushing to reduce residence times and improve water quality; (2) provide salinity improvements for municipal, industrial, and agricultural water users; and (3) allow operational flexibility during other periods to operate either north or south diversions based on real-time assessments of benefits to fish and water quality.
>
> - **July–September.** Preferentially operate SWP and CVP south Delta export facilities up to 3,000 cfs of diversions before diverting from north Delta intakes.
>
> - **October–June.** Preferentially operate north Delta intakes.

BDCP Draft EIR/EIS, Chap. 3 at p. 3-188. The quote above is in the description of Scenario A operations, and is referenced for Scenario B (*id.* at p. 3-192), Scenario C (*id.* at p. 3-193), Scenario E (*id.* at p. 3-196), and Scenario H (*id.* at p. 3-209) and restated for Scenario F (*id.* at p. 3-199). These criteria imply that the south Delta intakes would export up to 3,000 cfs in July through September before the north Delta intakes are operated.

However, the BDCP Draft EIR/EIS contradicts itself by stating that for Scenarios A, B, C, E, F, and H, "[t]he existing south Delta diversion would only operate on its own when the north Delta diversion is nonoperational during infrequent periods for maintenance or repair." (*Id*. at p. 3-16.) Similarly, despite the acknowledgement of water quality concerns quoted above, the BDCP neglects water quality, stating that real-time operations would "be managed to distribute pumping activities amongst the three north Delta and two south Delta intake facilities *to maximize both survival of covered fish species in the Delta and water supply*." BDCP, Chap. 3 at p. 3.4-28 (emphasis added).

The CalSim II model that is the basis for the BDCP Draft EIR/EIS operations analysis further confuses the issue of preferential use between the north Delta intakes and south Delta intakes in two ways: (1) the model always prioritizes diversions from the north Delta intakes (i.e. there is no priority built into the model for the south Delta location in July through September as discussed above), and (2) an error in the model restricts north Delta exports beyond what is described in the BDCP project description (MBK Engineers and Steiner, 2014, Technical Appendix at pp. 27-30). MBK Engineers revised the modeling to impose the July through September preference for the south Delta intakes quoted above and corrected the error that unnecessarily restricted north Delta exports to provide a more accurate depiction of the operations.

The net result of the corrections to the logic errors for choosing to divert from the north or the south is that more northern diversions, and less southern diversions, would be made than shown in the BDCP Draft EIR/EIS. The corrected CalSim II model indicates that on average the amount of water diverted through the existing south Delta facilities would be about 460 thousand acre-feet per year less than what is projected in the BDCP Draft EIR/EIS for the DWR Preferred Alternative, leading to more poor-quality San Joaquin River water and local agricultural drainage at CCWD's intakes as well as greater stagnation and its attendant water quality impacts in the south Delta.

2.2.2.4.2 Total Delta exports and Delta outflow

In addition, MBK Engineers and Steiner determined that

> [o]perating rules used in the BDCP Model, specifically regarding Alternative 4, result in impractical or unrealistic CVP and SWP operations. Reservoir balancing rules cause significant drawdown of upstream reservoirs during spring and summer months while targeting dead pool level in San Luis from September through December resulting in artificially low Delta exports and water shortages. CVP allocation rules are set to artificially reduce south of Delta allocations during wetter years resulting in underestimates of diversions at the NDD [north Delta diversions] and the SDD [south Delta diversions]. Operating rules for the Delta Cross Channel Gate do not reflect how the gates may be operated in "With Project" conditions.
>
> Operational logic is coded into the CalSim II model to simulate how DWR and Reclamation would operate the system under circumstances for which there are no regulatory or other definitive rules. This attempt to specify (i.e., code) the logic sequence and relative weighting so that a computer can simulate "expert judgment" of the human operators is a critical element to the CalSim II model. In the BDCP version of the CalSim II model, some of the operational criteria for water supply allocations and existing facilities such as the Delta Cross Channel and San Luis Reservoir are inconsistent with real-world conditions.

> The BDCP Model, as modified by the Reviewers [MBK Engineers and Daniel Steiner], corrected some of the inconsistencies between the operational criteria in the BDCP Model and real-world conditions, and confirmed these changes with CVP and SWP operators. By correcting the operational criteria, the modified BDCP model (Independent Model) output is more accurate and consistent with real-world operational objectives and constraints.

The corrected CalSim II model indicates that Delta outflow would decrease by about 200 thousand acre-feet per year on average compared to the amount indicated in the BDCP Draft EIR/EIS for the DWR Preferred Alternative, potentially leading to greater seawater intrusion and higher salinity in the Delta. Water quality, particularly salinity, is a key concern for CCWD and poor water quality in the Delta limits CCWD's water supply and the quality of the water delivered to customers, as discussed in Sections 2.2 and 2.3 of these comments.

2.2.2.4.3 Net result of corrections to the operations model.

In summary, as noted in other sections of these comments, the BDCP Draft EIR/EIS modeling indicates that the DWR Preferred Alternative could:

- increase salinity in the Delta (Section 3.1),
- increase concentrations of taste- and odor-causing algae in the south Delta (Section 2.2.1.2),
- increase bromide and organic compounds in the Delta which could in turn increase cancer-causing disinfection byproducts in water served from the Delta (Section 2.2.1.1), and
- limit CCWD's water supplies (Section 2.3).

The corrected CalSim II modeling done by MBK Engineers and Daniel Steiner indicates that these problems could be worse than disclosed in the BDCP Draft EIR/EIS. Thus the BDCP Draft EIR/EIS environmental analysis does not present a complete and accurate picture of the potential impacts of the BDCP. The operations modeling in the BDCP Draft EIR/EIS should be redone, as should the impacts analyses that are based on the results of the flawed operations modeling.

2.2.2.5. Unwarranted use of a limited time period for water quality analysis.

The BDCP Draft EIR/EIS analysis of project operations, described above, is based on modeling studies that span 82 years of the hydrologic record. However, the analysis of water quality impacts is based on modeling of a much shorter period of 16 years. This shortened analysis period is not adequate for an assessment of the project's water quality impacts.

The BDCP Draft EIR/EIS states that a full 82-year evaluation of water quality impacts is unnecessary because (1) the distribution of hydrological conditions in the 16-year period that was used for the water quality impacts analysis is similar to the full 82-year period, (2) the water quality modeling done with the Delta Simulation Model 2 (DSM2) is sufficiently detailed that a longer period will not provide more details, and (3) an 82-year analysis would not be more accurate than the 16-year analysis. BDCP Draft EIR/EIS, Appendix 5A, Section D.12 at pp. 5A-D207 - 5A-D208. None of these arguments passes muster. Eighty two years are required for an adequate evaluation of water quality for the same reasons that 82 years are used to simulate operations and determine water supplies.

2.2.2.5.1 Failure to represent the 82-year period.

The argument that the 16-year period has hydrological conditions similar to the 82-year period is refuted by the table on page 5A-D212 of the BDCP Draft EIR/EIS, Appendix 5A, Section D.12, which indicates that the 16-year period includes a greater fraction of critically dry years: 31% of the years in the in the 16-year period are critically dry, compared to 15% of the years in the 82-year period. During critically dry years, the State Water Project and Central Valley Project are operated to meet salinity requirements for many months out of the year. By definition, when Delta salinity is at its maximum allowed value, the SWP and CVP are restricted from creating impacts. Because there are a disproportionate number of critically dry years in the 16-year period, the salinity impacts that would occur are underestimated.

Furthermore, results of the 82-year operations modeling illustrate that the limited 16-year period used for the water quality modeling is not representative of the full 82-year period. The operations model results include calculated values for Delta outflow, which is a reliable indicator of the extent of seawater intrusion into the Delta. Decreases in Delta outflow indicate likely increases in Delta salinity; the BDCP-caused decreases in Delta outflow are greater on average in the 82-year period, so the salinity impacts would be expected to be greater as well.

Table 2-2 below shows changes that the BDCP causes in average Delta outflow for the 16-year and 82-year periods; the 16-year results are calculated from BDCP modeling that the Department of Water Resources provided to CCWD (DWR, 2013b) and the 82-year results are from the BDCP Draft EIR/EIS, Chapter 5, Table 5-9.

Both the 16-year and 82-year periods show reductions in average outflow caused by the BDCP, but the average changes in the 82-year period are significantly larger. Thus, the shorter period is not simply an unbiased sample of the longer period, and outflow results from the more statistically robust longer period indicate that the project would cause greater increases in salinity than those found in the 16-year analysis. In fact, the BDCP Draft EIR/EIS acknowledges that "DWR staff found that there is at times greater increases in chlorides in the 82-year simulation period than there are in the 16-year period when looking at the average monthly results." BDCP Draft EIR/EIS, Appendix 5A, Section D.12 at p. 5A-D207. The use of the16-year analysis is inadequate.

Table 2-2. Average change in Delta outflow compared to the No Action Alternative
The full 82-year period shows a greater reduction in Delta outflow from Alternative 4 compared to the No Action Alternative than the limited 16-year period.

	Average change in Delta outflow compared to the No Action Alternative [thousand acre-feet per year]	
	82-year period	16-year period
Alt 4 H1	-864	-453
Alt 4 H2	-345	-136
Alt 4 H3	-515	-178
Alt 4 H4	-5	94

2.2.2.5.2 Level of detail.

While the DSM2 water quality model provides detailed information, it only provides this detailed information for the period of time that is modeled. Further, detailed results for a limited time period that is not representative of the full range of conditions under which the BDCP would operate do not provide adequate disclosure of the full range of impacts resulting from the BDCP. As discussed above, reliance on the 16-year modeling period results in a significant underestimation of the project's adverse salinity impacts, regardless of how detailed the 16-year modeling is.

The full statistical analysis provided by the 82-year period is necessary for water quality impacts to be evaluated properly. That is true in general, and is necessary in particular for CCWD to understand the impacts of the BDCP on CCWD's water quality and water supply. As noted in the BDCP Draft EIR/EIS, an 82-year analysis is required to adequately evaluate operations of CCWD and its Los Vaqueros Reservoir. BDCP Draft EIR/EIS, Appendix 5A, Section D.12at p. 5A-D208. This period of analysis similarly is needed to provide a complete and accurate picture of potential water quality impacts.

2.2.2.5.3 Comparison of the accuracy of an 82-year analysis with that of a 16-year analysis.

An 82-year period is used to analyze project operations, but the BDCP Draft EIR/EIS argues that nothing is gained when the same type of analysis is used for DSM2 water quality analysis. With regard to operations analysis, the document states that, "CalSim II looks at system performance over larger time scales and thus 82 years of data enhances the evaluation process." BDCP Draft EIR/EIS, Appendix 5A, Section D.12 at p. 5A-D209.

However, for water quality impacts analysis, the BDCP Draft EIR/EIS argues that 82-year simulations are not more accurate than 16-year simulations because the hydrologic data (e.g. precipitation) is less reliable for approximately the first 30 years of the 82-year simulation. BDCP Draft EIR/EIS, Appendix 5A, Section D.12. This fact is not in dispute. However, the purpose of the modeling is not to recreate historical conditions, but rather to evaluate how the project would impact the environment over a wide range of hydrological

conditions. The full 82-year hydrology is deemed necessary for the determination of water supply, Delta outflow, and effects on fisheries; the same level of accuracy is needed for water quality determinations so that an adequate evaluation of impacts can be made, including an adequate statistical assessment of impacts to CCWD's operations, as well as any necessary mitigation.

2.2.2.5.4 Feasibility of an 82-year analysis of water quality impacts.

The BDCP Draft EIR/EIS acknowledges that it only takes one day to simulate the full 82-year period in DSM2 and that this amount of time is not a hindrance to completing the analysis. "The concern is that the additional years would not add value to the analysis in all cases, so that the time added to run and process the results, even if not overly burdensome, would not be justified." BDCP Draft EIR/EIS, Appendix 5A, Section D.12 at p. 5A-D216. Given the inadequacy of the results of the 16-year analysis, including the underestimation of water quality impacts, the additional time required for the 82-year simulations is justified by the need for a full analysis of BDCP impacts.

To provide a correct and adequate disclosure of the impacts of the action alternatives, water quality for the full 82 years must be modeled and the results presented and analyzed on a daily basis so that the full impacts to CCWD and its water quality and water supply can be analyzed.

2.2.2.6. Underestimation of impacts due to the methodology used to simulate tidal habitat restoration (Conservation Measure 4).

The Delta Simulation Model 2 (DSM2) is the standard tool for analyzing Delta water quality effects, particularly salinity effects, of changes in water operations. Its use is appropriate for analysis of the water quality impacts of CM1, although the analysis in the BDCP Draft EIR/EIS did not use model runs of sufficient length as discussed in Section 2.2.2.5 above. However, use of DSM2 for analysis of the water quality impacts of tidal habitat restoration is problematic[21].

Habitat restoration may include the flooding of 65,000 acres of currently dry land. Once flooded, the water depth in the habitat would vary by location; some areas would become dry at low tide and others would remain flooded at all times. The movement and mixing of waters in this type of environment is best described by sophisticated, multi-dimensional models. Since the proposed conditions are hypothetical, a model cannot be calibrated to historical data and instead must rely on its ability to accurately resolve the multi-dimensional physical processes. However, there is a trade-off between the accuracy of the models and the time it takes to process simulations. Evaluation of the BDCP requires analysis of hydrodynamics and water quality in the Delta resulting from the proposed physical and operational changes over 82 years, as discussed in Section 2.2.2.5 above.

[21] Although DSM2 is a standard tool that has been used for analysis of numerous water projects, modifications to the model for the purposes of the BDCP were extensive and should be reviewed before accepted at face value. BDCP Steering Committee members, including CCWD, requested that the model undergo an independent review as early as 2009. (e.g. CCWD, 2009a; California Farm Bureau Federation, 2010)

DSM2 is a relatively fast model and is capable of performing such long simulation runs; however, DSM2 is not able to simulate multi-dimensional features such as tidal marshes. Therefore, to incorporate the habitat restoration, DSM2 was recalibrated using limited results from the more accurate but more time-intensive two-dimensional RMA Bay-Delta Model, which can simulate the two-dimensional processes. Due to the fundamental limitations of the DSM2 model, the modifications made to represent tidal habitat were inappropriate and resulted in an underestimation of impacts.

The BDCP Draft EIR/EIS acknowledges the underestimation of salinity impacts associated with habitat restoration, stating that "implementation of tidal habitat restoration under CM4 would increase the tidal exchange volume in the Delta, and thus may contribute to increased chloride concentrations in the Bay source water as a result of increased salinity intrusion. Consequently, while uncertain, *the magnitude of chloride increases may be greater than indicated herein and would affect the western Delta assessment locations the most which are influenced to the greatest extent by the Bay source water*." BDCP Draft EIR/EIS, Chap. 8 at p. 8-424 (emphasis added). However, this vague acknowledgment is not sufficient to disclose the magnitude of the increases resulting from the project. The analysis therefore does not disclose the true extent of the impact, which makes it impossible to assess what mitigation is necessary.

Additionally, DSM2 cannot simulate wetting and drying of intertidal habitat due to limitations of the model. BDCP Draft EIR/EIS, Appendix 5A-D4 at p. 6. In an attempt to work around this fundamental limitation, the elevation of restored tidal marsh was represented as lower than the lowest water level that can occur in the region; the modeling performed for the BDCP assumed the elevation to be -10.1 feet. As the BDCP Draft EIR/EIS recognizes: "The downside of this assumption is that the volume of the water in the reservoir could potentially be higher than what in reality should be. This could potentially cause increased dilution of the salinity in the [Restoration Opportunity Areas] ROAs." BDCP Draft EIR/EIS, Appendix 5A, Section D, Attachment 4 at p. 6. This acknowledgement confirms that the salinity impacts of the habitat restoration projects are underestimated due to simplified modeling assumptions, specifically in the case noted by over-dilution of salinity (and other constituents) in the model compared to what would be expected in reality.

The inaccurate representation of water depth also affects the ability of DSM2 to accurately determine temperature impacts. The thermal mass of the deeper water bodies that were assumed, as well as the penetration of solar energy through a smaller portion of the assumed water column, prevents the disclosure of increases in water temperature during hot weather that would in fact be seen in the shallow tidal areas that are planned for the BDCP (Fischer et al., 1979 at pp. 162-166). Sixty five thousand acres of hot, shallow marshland would provide ideal breeding grounds for algae in the Delta; see Section 2.2.1.2 of these comments for discussion of the attendant water quality impacts.

Improved modeling will be required to determine the full range of impacts that could result from the BDCP, so that the public and decision-makers are fairly apprised of the project's negative environmental consequences and appropriate mitigation is provided.

2.2.2.7. Mathematically flawed mass balance analysis of water quality impacts.

A mass balance method applied to water quality modeling results was used for analysis of many water quality constituents. BDCP Draft EIR/EIS, Chap. 8 at pp. 8-141 to 8-172. Such an approach is based upon conservation of mass, a fundamental principle of physics that states that mass is neither created nor destroyed. There are, however, a couple of problems with the analysis as presented. First, it is mathematically incorrect: the approach used does not in fact conserve mass. Second, it bases calculations on long-term average monthly concentrations of constituents in the waters that flow into the Delta, ignoring the inter-annual variability that is the hallmark of Delta water quality. For chloride and bromide, constituents of particular concern for Delta drinking water, methods that do not suffer from these deficiencies are available and should be used.

First, the mass balance approach is fundamentally flawed in that it does not conserve mass as its name suggests. Sources of water flowing into the Delta that are accounted for in the water quality modeling are river flows from the north, east, and south; seawater from the west; and net flows off the land within the Delta itself. At a given location in the Delta, the sum of the contributions from each of these sources should equal 100% of the water; if it does not, mass is not conserved. It is this fact, together with data on the concentrations of pollutants in the source waters, that allows calculation of the pollutant concentrations at that location. However, because of faulty methodology or errors in implementation, incorrect sums of source water contributions are presented in the BDCP Draft EIR/EIS. For example, in the calculations of selenium concentration at various locations in the Delta, the percentages of inflow from all sources often do not sum to 100%. See, for example, Table M-2 in the BDCP Draft EIR/EIS, Appendix 8M1 at p. 8M-17. Because of this error the values for selenium concentrations are underestimated.

Second, the mass balance method used for the analysis in the BDCP Draft EIR/EIS relies on long-term monthly average concentrations of water quality constituents in the source waters, based on monitoring data where it is available and on estimations where it is not. The use of long-term monthly average values removes inter-annual variability in the source waters, which is especially important in the western Delta and the San Joaquin River, and hence masks the marked inter-annual variability in interior Delta water quality. This approach is particularly problematic – and should not be used – for salinity, including chloride and bromide, which is subject to strong inter-annual variation in the western Delta.

For bromide and chloride, constituents of particular importance for Delta drinking water, the results of the water quality modeling can be used directly to analyze impacts, without layering on the cumbersome and inaccurate calculations required by the mass balance approach. These constituents have strong statistical relationships to electrical conductivity, which is an output of the model. The "alternative modeling approach" discussed in the BDCP Draft EIR/EIS, Chap. 8 at pp. 8-134 to 8-135, is based on this fact, but it should be modified to account for site-specific conditions. One way to do this would be to use the following formula:

$$Cl = f_{BAY} * (0.285 * EC - 50) + (1 - f_{BAY}) * (0.15 * EC - 12)$$

where

Cl = chloride concentration

f_{BAY} = the fraction of water originating at the western boundary

EC = electrical conductivity

The results generated from the mass balance approach used in the BDCP Draft EIR/EIS do not provide a realistic assessment of the project's impacts. Where a better approach is available, as it is for chloride and bromide, it should be employed. Where a mass balance approach must be used, the errors and deficiencies in the BDCP Draft EIR/EIS analyses should be corrected.

2.2.2.8.Flawed selenium modeling.

The BDCP Draft EIR/EIS recognizes that "[s]elenium is a constituent of concern in the Delta, the lower San Joaquin River, and San Francisco Bay for potential effects on water quality, aquatic and terrestrial resources, and (indirectly) human health. Because of the known effects of selenium bioaccumulation from aquatic organisms to higher trophic levels in the foodchain, the wildlife habitat and rare, threatened, or endangered species beneficial uses are the most sensitive receptors to selenium exposure." BDCP Draft EIR/EIS, Chap. 8 at p. 8-91. Due to the bioaccumulative properties of selenium, the BDCP Draft EIR/EIS purports to analyze selenium "in detail". BDCP Draft EIR/EIS, Chap. 8 at p. 8-129. However, there is a fundamental flaw in the selenium models presented in the BDCP Draft EIR/EIS, Appendix 8M1, which fails to incorporate the residence time into the analysis and thus underestimates the impacts of the BDCP.

Selenium models include a parameter (Kd) that describes the ratio of the amount of selenium that is in particulate form to the amount that is dissolved in the water column. The BDCP Draft EIR/EIS states that

> [Kd] can vary widely among hydrologic environments and potentially among seasons (Presser and Luoma 2010). In addition, other factors such as speciation, residence time, and particle type affect Kd. *Residence time of selenium is usually the most influential factor on the conditions in the receiving water environment.* Short water residence times (e.g., streams and rivers) limit partitioning of selenium into particulate material. Conversely, *longer residence times (e.g., sloughs, lakes, estuaries) allow greater uptake by plants, algae, and microorganisms*.

BDCP Draft EIR/EIS, Appendix 8M at p. 8M-3 (emphasis added).

Analysis of the DWR Preferred Alternative indicates that residence time in the south Delta would increase by as much as 34-36 days under Scenario H4. BDCP, Appendix 5.C, Attachment 4 at p. 5C.4-91. Since residence time is the most influential factor on the value of Kd, the selenium models should have varied Kd in response to changes in residence time. However, the BDCP Draft EIR/EIS used the same value of Kd for the baseline as well as the action alternatives. By not taking into account the changes in residence time, the BDCP Draft EIR/EIS underestimates the amount of selenium that is bioavailable in the action alternatives, and thus underestimates the impacts of selenium on aquatic and terrestrial resources.

2.3. The BDCP Draft EIR/EIS Fails To Disclose Significant Water Supply Impacts.

The BDCP Draft EIR/EIS does not adequately disclose, evaluate or mitigate the significant impacts resulting from the proposed project on the water supplies of the Contra Costa Water District (CCWD). These are environmental impacts that require analysis and mitigation under CEQA and NEPA. CCWD serves as the sole source of drinking water for 500,000 people and the BDCP would have a profound negative effect on CCWD's ability to meet its adopted goals for delivering high-quality drinking water to its customers during droughts, emergencies and conditions when water in the Delta contains higher levels of salinity. All the adverse effects caused by the BDCP on the physical environment − including effects on the physical water supply facilities and operations that CCWD uses to serve its many customers − need to be addressed in the BDCP EIR/EIS.

As detailed below, the analysis of water supply effects in the BDCP Draft EIR/EIS is deficient and incomplete, and must be redone.

2.3.1. Impacts to water quality, drought and emergency water supplies stored in CCWD's Los Vaqueros Reservoir are not disclosed.

The first flaw in the water supply analysis is that the BDCP Draft EIR/EIS fails to disclose impacts to CCWD's Los Vaqueros Reservoir. As discussed in Section 2.2.2.2 of these comments, this water supply impact affects CCWD's ability to deliver high-quality drinking water to its customers.

The Los Vaqueros Reservoir is an off-stream reservoir that is owned and operated by CCWD; its purposes are to improve water quality and provide emergency and drought storage. CCWD fills Los Vaqueros Reservoir by pumping water from the Delta when Delta water quality is high (i.e., when salinity is low) and stores the high-quality water in Los Vaqueros Reservoir for later use. When Delta water quality degrades (typically late summer and fall), CCWD releases some high-quality water from storage to blend with water pumped directly from the Delta; blending the two water sources allows CCWD to meet its water quality goals.[22] The reservoir is then re-filled when high-quality water is available in the

[22]CCWD's long-term water quality goal is to deliver water with chloride concentrations of 65 milligrams per liter (mg/L) or less to its customers. This goal has been approved by the CCWD Board of Directors (CCWD, 1988) and

Delta again, typically during winter and spring. In this way, Los Vaqueros Reservoir allows CCWD to ameliorate the typical seasonal changes in Delta water quality and continually provide high-quality water to its customers. Additionally, the water stored in Los Vaqueros Reservoir serves as an emergency and drought water supply should CCWD's Delta water supply be limited or unavailable.

The Los Vaqueros Reservoir is operated in a manner consistent with the Biological Opinions for the reservoir, which require fish protection measures, including an annual 75-day to 90-day "no-fill" period and a concurrent 30-day "no-diversion" period. During the no-fill period, CCWD does not fill the reservoir, which limits CCWD's diversions from the Delta to the amount necessary to meet its customer demand. During the no-diversion period, CCWD ceases all diversions from the Delta; customer demand during the no-diversion period is met through releases from the reservoir.

Filling Los Vaqueros Reservoir with high-quality Delta water is necessary for CCWD to provide these water quality and emergency storage benefits and fish protections. CCWD fills Los Vaqueros Reservoir by diverting water from the Delta at its screened Old and Middle River intakes, under its own water right permit and under its CVP contract.[23]

The BDCP would adversely affect CCWD's water supplies stored in its Los Vaqueros Reservoir by: (1) reducing the availability of high quality water at CCWD's intakes; (2) reducing the amount of time when CCWD can fill Los Vaqueros Reservoir under its own water right; and (3) reducing the amount of the time when CCWD can fill Los Vaqueros Reservoir with CVP water. Each of these impacts is discussed below.

2.3.1.1. Significant adverse impacts to Los Vaqueros Reservoir storage from degradation in water quality.

The BDCP Draft EIR/EIS identifies a number of significant water quality impacts resulting from the proposed project, including increased chloride concentrations. E.g., BDCP Draft EIR/EIS, Chap. 8 at pp. 8-423 to 8-429. However, the document does not disclose or evaluate the full nature of this significant impact in that there is no consideration of how the changes in water quality would affect CCWD's water supplies by (1) reducing CCWD's ability to fill Los Vaqueros Reservoir with high-quality Delta water and (2) increasing demand on Los Vaqueros Reservoir to compensate for the reduction in Delta water quality caused by the BDCP.

The BDCP reduces CCWD's ability to fill Los Vaqueros Reservoir with high-quality water. To achieve CCWD's long-term water quality goal of delivering water with no more than 65 mg/L of chloride to its customers, Los Vaqueros Reservoir is generally filled with water

---

is the basis of significant investments by CCWD customers, including the construction of Los Vaqueros Reservoir and the Old River intake and Middle River intake.

[23] CCWD obtains its CVP water supply under Water Service Contract I75r-3401A-LTR1 with Reclamation. Pursuant to that contract, Reclamation relies on seventeen water rights permits to supply CVP water to CCWD: Permits 12721, 11967, 12722, 12723, 12725, 12726, 11315, 11316, 16597, 11968, 11969, 11971, 11973, 12364, 13776, 16600, and 15735, issued pursuant to Applications 5626, 5628, 9363, 9364, 9366, 9367, 13370, 13371, 14858, 15374, 15375, 16767, 17374, 17376, 18115, 19304 and 22316.

with less than 50 mg/L of chloride. This target ensures that salinity in Los Vaqueros Reservoir remains low enough to provide adequate dilution of seasonal peaks in Delta salinity. Reducing the amount of time when the chloride concentration is below 50 mg/L at CCWD's Delta intakes reduces the amount of time Los Vaqueros Reservoir can be filled, which is an adverse impact on CCWD's water supply.

The water quality impacts of the BDCP increases demand on Los Vaqueros Reservoir. When water in the Delta near CCWD's intakes is salty, CCWD releases high-quality (low-salinity) water from Los Vaqueros Reservoir to blend with the relatively high-salinity water diverted directly from Delta channels – chloride concentrations near CCWD's intakes can be as high as 275 mg/L, depending on season, annual hydrology, and discharges to and exports from the Delta. Blending with high-quality stored water allows CCWD to deliver high-quality water to its customers throughout the year.

The amount of water from Los Vaqueros Reservoir necessary for blending depends on both the quality of water in the reservoir and on the quality of water in the Delta near CCWD's intakes.[24] The BDCP would degrade water quality both in the reservoir and at CCWD's intakes. The quality of the water stored in Los Vaqueros Reservoir depends on the water quality in the Delta near CCWD's intakes at times when CCWD can fill Los Vaqueros Reservoir. By increasing chloride concentration at times when CCWD is filling the reservoir in accord with the filling goal described above (e.g. increasing chloride concentration within the Delta from 35 mg/L to 45 mg/L), the BDCP would increase the chloride concentration within Los Vaqueros Reservoir, thus reducing the blending power of the water in the reservoir and necessitating greater releases of blending water from storage to dilute the salinity of water that is delivered to CCWD's customers. Furthermore, by increasing the amount of time that intake chloride concentrations exceed CCWD's water quality delivery goal, and by increasing the amount by which intake chloride concentrations exceed the delivery goal, the BDCP further increases the demand on Los Vaqueros Reservoir for blending water releases.

With the significant impacts to chloride concentration identified in the BDCP Draft EIR/EIS (Impact WQ-7), storage in CCWD's Los Vaqueros Reservoir would be reduced due to inability to fill with high-quality water and increased demand for stored water, as discussed above. As more releases from the reservoir are required to meet water quality goals, less water is available for emergency supplies. As documented in the permits for the Los Vaqueros Reservoir, during wet, above-normal and below-normal years, 70 thousand acre-feet of water is designated as emergency storage; during dry and critical years, 44 thousand acre-feet is designated as emergency storage (e.g. NMFS, 1993; USFWS, 1993). When the

[24]For instance, to meet customer demands for 400 acre-feet of water at the chloride goal of 65 mg/L, if the chloride concentration is 35 mg/L and 100 mg/L in Los Vaqueros Reservoir and at CCWD's Delta intakes, respectively, CCWD would need to release 215 acre-feet from Los Vaqueros Reservoir and divert 185 acre-feet from CCWD's Delta intakes. In this example, if the salinity within the reservoir is increased by 10 mg/L chloride, CCWD must release an additional 39 acre-feet from the reservoir (an increase of 18%) in order to continue to meet the 65 mg/L chloride delivery goal. Similarly, if the salinity within the Delta is increased by 20 mg/L chloride, the demand on the reservoir is increased by 20% in order to continue to meet the 65 mg/L chloride delivery goal. If salinity both in Los Vaqueros Reservoir and within the Delta is increased as described above, the net effect is an increase in demand on Los Vaqueros Reservoir of 36%.

reservoir reaches emergency storage, CCWD modifies its operations to retain as much water for an emergency as possible. The lower reservoir storage levels and poorer water quality resulting from the BDCP would reduce the amount of water available for blending and drought relief before emergency storage levels are met, and could result in CCWD having to reduce emergency storage levels in order to meet system demands with acceptable quality water. This could significantly limit CCWD's resiliency during a prolonged drought or a catastrophic event.

2.3.1.1.1 BDCP Draft EIR/EIS modeling results.

Although the BDCP Draft EIR/EIS does not disclose the impacts to Los Vaqueros Reservoir, the modeling that was used as the basis for the BDCP Draft EIR/EIS analysis includes simulation of CCWD's operations, and reports the amount of water stored in Los Vaqueros Reservoir on a monthly basis. The modeling was provided by DWR to CCWD in 2013 (DWR, 2013b), and CCWD extracted the relevant information to determine the impacts to Los Vaqueros Reservoir, as depicted in the figure presented below.

As shown in Figure 2-6, the DWR Preferred Alternative, Alternative 4, would result in significant reductions in storage in Los Vaqueros Reservoir compared to the existing conditions and the No Action Alternative. Without the BDCP, Los Vaqueros Reservoir would be at maximum storage capacity 30% of the time under existing conditions and 20% of the time under the No Action Alternative; with the DWR Preferred Alternative, Los Vaqueros Reservoir would be at maximum storage[25] only 4% of the time. Furthermore, without the BDCP, Los Vaqueros Reservoir would remain above the emergency storage level designated for below normal years (70 thousand acre-feet) 70% of the time under existing conditions and 60% of the time under the No Action Alternative; however, the DWR Preferred Alternative would reduce storage such that the reservoir would be above this level only 29% to 34% of the time, depending on the outcome of the BDCP "decision tree" process. The BDCP modeling clearly shows that while other future conditions that may occur without the BDCP, such as climate change and sea level rise, do have an impact on the storage in CCWD's Los Vaqueros Reservoir,[26] the BDCP would have a much more significant impact.[27]

[25]Note that the modeling used in the BDCP Draft EIR/EIS did not include the expanded Los Vaqueros Reservoir, which has been completed and currently is in operation, but instead assumed maximum capacity of the original Los Vaqueros Reservoir of 104 thousand acre-feet.

[26] As evidenced by comparison of the existing conditions and No Action Alternative in Figure 2-6.

[27] As evidenced by comparison of the No Action Alternative and Alternative 4 in Figure 2-6.

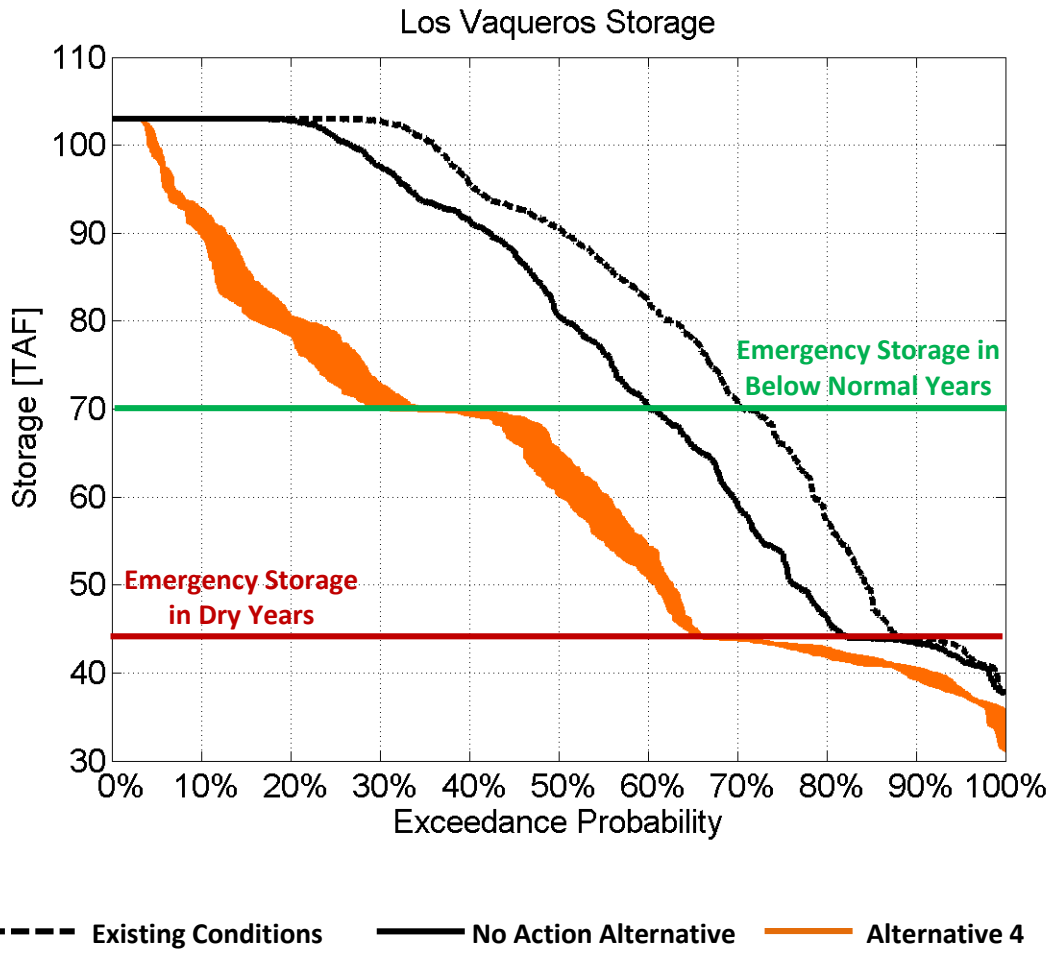


Figure 2-6. Impacts to Los Vaqueros Reservoir illustrated from modeling performed as the basis for BDCP Draft EIR/EIS.
Note: The width of the orange line for Alternative 4 illustrates the potential range of values for the four possible outcomes of the decision tree, including operational scenarios H1 through H4. Data source: modeling performed by BDCP consultants for the BDCP Draft EIR/EIS and provided by DWR to CCWD in 2013 (DWR, 2013b), which did not include the expanded Los Vaqueros Reservoir but instead assumed maximum capacity of 104 TAF and did not include the Middle River intake in existing condition scenario, but did include it in the No Action Alternative and Alternative 4.

2.3.1.1.2 Refined analysis by DWR staff.

Staff from DWR have stated that the methodology and tools used in preparation of the BDCP Draft EIR/EIS tend to overestimate the impacts to CCWD's Los Vaqueros Reservoir. In a meeting with CCWD staff on February 15, 2013, staff from DWR presented slides showing their analysis of the modeling that was used as the basis for the BDCP Draft EIR/EIS (similar to what is discussed above) and also showing a more refined analysis that they had completed. DWR staff stated that while the methodology and tools used in preparation of the BDCP Draft EIR/EIS overestimate impacts, the refined analysis still revealed "noticeable" impacts to Los Vaqueros Reservoir. This statement was in reference

to a plot that shows that storage in Los Vaqueros Reservoir at the end of September would often be reduced 10 thousand acre-feet to 20 thousand acre-feet (out of a possible 104 thousand acre-feet[28]) beyond the corresponding storage in the No Action Alternative (DWR, 2013a at slide 28). This reduction in storage would be significant.

DWR has not presented its refined analysis in the public draft of the BDCP environmental documents. Furthermore, calculating storage at the end of September does not show the full extent of impacts to Los Vaqueros Reservoir because minimum storage levels do not typically occur in September, so September storage does not capture the full extent of changes in seasonal salinity. Future analysis should look at storage in all months as multi-year droughts have substantial effects and emergencies can happen at any time, not just September.

2.3.1.1.3 Refined analysis by CCWD.

Because neither the modeling performed for the BDCP Draft EIR/EIS nor the subsequent refined modeling performed by DWR staff examined the potential effects on the Los Vaqueros Reservoir for all of the relevant time periods, nor did DWR examine the effects on the existing 160 thousand acre-foot reservoir, CCWD conducted independent modeling to examine the potential effects on its facilities. Following DWR staff's suggestions, CCWD used the Delta Simulation Model II (DSM2) to determine chloride concentration at its intakes, taking into account whether the salinity was from ocean or agricultural salt to determine the amount of chloride in the water. CCWD input this refined water quality data into a model that simulates the operation of CCWD's raw water facilities, including its Delta intakes and Los Vaqueros Reservoir at the reservoir's expanded 160 thousand acre-feet capacity. CCWD's analysis found that the BDCP Alternative 4 would have significant impacts to storage in Los Vaqueros Reservoir, with the most severe impacts occurring during droughts when CCWD water supply is most vulnerable. Figure 2-7 shows the impacts that BDCP Alternative 4 would have on storage in Los Vaqueros Reservoir during a six-year drought that is based on the historical drought from 1929 through 1934. Without the BDCP (in the No Action Alternative), reservoir storage would never reach the level designated for emergency storage in dry years (44 TAF). However, under BDCP Alternative 4, the reservoir would be at or below the emergency storage level approximately 50% of the time during drought conditions.

[28]Note that, like the modeling used in the BDCP Draft EIR/EIS, supplemental DWR modeling did not include the expanded Los Vaqueros Reservoir, which had been completed and was already in operation at the time DWR performed its refined modeling. Instead DWR assumed the maximum capacity of the original Los Vaqueros Reservoir of 104 thousand acre-feet.

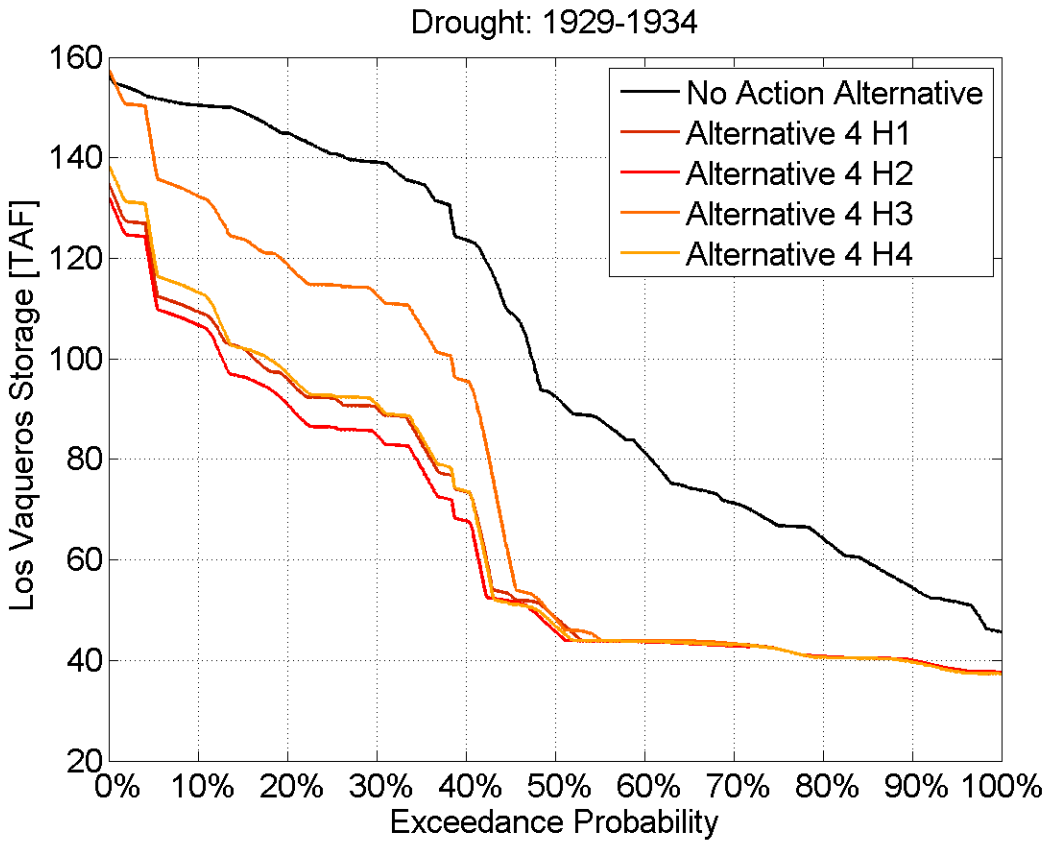


Figure 2-7. Impacts to Los Vaqueros Reservoir based on refined modeling, taking into account biases identified by DWR and correcting the storage capacity of Los Vaqueros Reservoir.
The volume of water in storage in Los Vaqueros Reservoir is greatly reduced by BDCP Alternative 4 for all possible outcomes of the decision tree (i.e. operational scenarios H1 through H4) during a potential six-year drought. Data source: modeling performed by CCWD following the suggestions of staff at DWR.

Figure 2-6 and Figure 2-7 illustrate how the DWR Preferred Alternative, Alternative 4, would impact storage in Los Vaqueros Reservoir; similar impacts would be likely to occur under all BDCP alternatives that have significant impacts on chloride concentration at CCWD's intakes, which includes all of the action alternatives. BDCP Draft EIR/EIS, Executive Summary, Table ES-9 at p. ES-64.

Any decrease in water stored in Los Vaqueros Reservoir could limit the benefits of Los Vaqueros Reservoir to CCWD customers and other water users in the Bay Area. In addition to being a water quality reservoir, Los Vaqueros Reservoir was designed and built to provide emergency storage to CCWD and other regional water users during droughts or catastrophes. These negative impacts on the water supplies of CCWD must be fully disclosed and evaluated.

2.3.1.2. Impacts to CCWD's ability to fill Los Vaqueros Reservoir with water diverted using CCWD's own water right.

CCWD's water right permit to fill Los Vaqueros Reservoir from its intakes in the Delta (State Water Resources Control Board, Water Right Permit Number 20749) is conditioned by the following term:

> No diversion is authorized that would adversely affect the operation of the Central Valley Project or State Water Project under permits and licenses for the Projects in effect on the date of this Order. An adverse effect shall be deemed to result from Permittee's diversion at any time the U.S. Bureau of Reclamation and the Department of Water Resources have declared the Delta to be in balanced water conditions under the Coordinated Operation Agreement or at any other time that such diversion would directly or indirectly require the Central Valley Project or the State Water Project to release water from storage or to reduce their diversion or rediversion of water from the Delta to provide or assure flow in the Delta required to meet any applicable provision of state or federal law.

(SWRCB, 2010, Term 23, pp. 5-6)

Surplus Water. The Delta is in "balanced water conditions" when releases from CVP and SWP upstream reservoirs plus natural flow equal the water supply needed to meet Sacramento Valley in-basin uses (including water quality and flow objectives) plus CVP and SWP exports. Surplus (or "excess") conditions in the Delta exist when releases from upstream reservoirs plus unregulated flow exceed Sacramento Valley in-basin uses plus exports (Reclamation and DWR, 1986, at p. 4). At the time of the Notice of Preparation for the BDCP Draft EIR/EIS, implementation of the above term had historically relied upon determination of Delta conditions; when the Delta was in surplus conditions CCWD was free to divert water to Los Vaqueros Reservoir under its own water right permit. Thus, in its May 19, 2009 comments on the BDCP Notice of Preparation, CCWD requested that the environmental document analyze and disclose the effects of the BDCP on the timing of surplus water, when CCWD would be able to use its water right (CCWD, 2009b, Attachment A at p. 15). However, the BDCP Draft EIR/EIS fails to analyze the changes in the timing and availability of surplus water in the Delta caused by the project.

The BDCP would be likely to reduce the amount of time that surplus water would be available because Conservation Measure 1 (CM1) would allow the BDCP to capture surplus water that the SWP and CVP would otherwise not be able to capture due to existing regulations on exports in the south Delta. For example, export of Delta water into the SWP's Clifton Court Forebay is currently limited to the historical maximum daily average and 3-day average diversion rates of 6,993 cubic feet per second (cfs) and 6,680 cfs, respectively, from mid-March through mid-December; from mid-December through mid-March, the SWP can increase diversions by one-third of the San Joaquin River flow at Vernalis, provided that flows at Vernalis exceed 1,000 cfs (DWR, 2014a). The BDCP

proposes to increase the maximum diversion rate for export of Delta water from SWP facilities[29] to 10,300 cfs. Based on historical flows in the San Joaquin River at Vernalis[30], the BDCP would increase the maximum diversion rate for export of Delta water from SWP facilities 95% of the time, with an average increase in allowed diversion rate of 3,163 cfs.

Whenever the amount of available surplus water is less than the combined increase in exports from the SWP and CVP, the BDCP would cause the Delta to transition from surplus to balanced conditions. Any reduction to the amount of time when surplus water is available would impact CCWD's ability to fill Los Vaqueros Reservoir using its own water right. Such an impact would mean that the water right permit changes needed to allow diversions at the new north Delta intakes could not be granted under Section 1701.1(d) of the California Water Code, which requires water right change petitions to "demonstrate a reasonable likelihood that the proposed change will not injure any other legal user of water."

Old and Middle River Regulations. Furthermore, in recent years, DWR has invoked the water right permit term quoted above to curtail CCWD's use of its own water right permit to fill Los Vaqueros Reservoir during times when exports for the CVP and SWP are limited by regulation of Old and Middle River flows as specified in the current Biological Opinions for joint operation of the CVP and SWP (USFWS, 2008 and NMFS, 2009, collectively, "the current Biological Opinions"). The current Biological Opinions specify limits on the net flow in Old and Middle Rivers that must be met by the CVP and SWP to reduce take of listed species at the south Delta export facilities. Net flow in Old and Middle Rivers is primarily influenced by flow in the San Joaquin River at Vernalis and the total exports at Banks and Jones pumping plants in the south Delta (collectively, "south Delta exports"). Old and Middle River flow regulations are typically met by adjusting south Delta exports. However, since CCWD's Old and Middle River intakes are in the vicinity, DWR takes the position that diversions at CCWD's intakes could affect flow in Old and Middle Rivers. Therefore, when south Delta exports are limited by Old and Middle River flow regulations, the DWR staff have claimed that CCWD cannot use its own water right to fill Los Vaqueros Reservoir.

The BDCP is likely to increase the percentage of time that the south Delta exports would be limited by Old and Middle River flow regulations. This impact may be counterintuitive as the BDCP would reduce south Delta exports, but the BDCP Draft EIR/EIS shows that south Delta exports would not be substantially reduced in dry years. Alternatives 1, 3, and 5 would not substantially reduce south Delta exports on average from December through June in dry years, and Alternatives 2 and 4 would not substantially reduce south Delta exports on average from April through June in dry years. BDCP Draft EIR/EIS, Chap. 5, Figure 5-29.

Additionally, the BDCP would include more restrictive limits on Old and Middle River flows for some alternatives to reduce the allowable south of Delta exports. BDCP Draft EIR/EIS, Chap. 3 at p. 3-32. In fact, Alternatives 2 and 4 – which include operational scenarios B and H, respectively – would include regulations for year-round limits on Old

[29] This includes exports from any proposed new north Delta intakes plus diversions from the south Delta into Clifton Court Forebay.

[30] Historical flows in the San Joaquin River at Vernalis from October 1, 1955 through December 31, 2013.

and Middle River flow; these alternatives would add limits in July through November, which do not currently exist in the current Biological Opinions. Additionally, Alternatives 2, 4, 7, and 8 – which would include operational scenarios B, H, E, and F, respectively – would include limits on Old and Middle River flow that are more limiting than the regulations in the current Biological Opinions.

Any increase in the percent of time when Old and Middle River flow would limit south Delta export pumping could further reduce CCWD's ability to fill Los Vaqueros Reservoir using water diverted pursuant to its own water right.

The BDCP Draft EIR/EIS fails to determine the impact from the project on CCWD's ability to use its water right to fill Los Vaqueros Reservoir and the consequent impact on storage. This impact is in addition to the impact described above in Section 2.3.1.1 (illustrated in Figure 2-6 and Figure 2-7). These adverse impacts from the BDCP on CCWD's water supplies, and on CCWD's use of its physical facilities, must be disclosed, evaluated, and mitigated.

2.3.1.3. Impacts to CCWD's ability to fill Los Vaqueros Reservoir with Central Valley Project water.

At times when CCWD cannot use its own water right to fill Los Vaqueros Reservoir, such as described above, CCWD may be able to fill Los Vaqueros Reservoir pursuant to Reclamation's water rights for the CVP. However, when exports of the SWP and CVP are regulated by Old and Middle River flow criteria, CVP operators have often requested that CCWD reduce or stop filling of Los Vaqueros Reservoir with CVP water. By reducing CCWD's filling of Los Vaqueros Reservoir (which occurs at a maximum of 200 cfs), Reclamation is able to export the water to south of Delta contractors. This shift in deliveries from CCWD to other CVP contractors provides no benefits to fish; diversions are reduced at CCWD's Old and Middle River intakes, which are fully screened for fish protection, and diversions are increased at the Jones Pumping Plant, which does not have positive barrier fish screens.

By increasing the percent of time that south Delta exports are constrained by Old and Middle River flow regulations as described above in Section 2.3.1.2, the BDCP would impact CCWD's ability to fill Los Vaqueros Reservoir with water from the CVP and consequently would reduce Los Vaqueros Reservoir storage. This impact is in addition to the impacts described above in Section 2.3.1.1. This negative impact on CCWD's water supplies and its facilities must be disclosed, evaluated, and mitigated. Further, since CVP south of Delta contractors are proponents of the BDCP, it would not be proper for these contractors to increase their own water supply by reducing the water supplies of other water providers such as CCWD.

2.3.2. Impacts resulting from the BDCP's effect on storage in Central Valley Project reservoirs are not fully evaluated and disclosed.

Since the BDCP Draft EIR/EIS fails to provide an operations plan describing how existing water supply facilities would be managed in conjunction with the proposed new water

supply facilities of the BDCP, as discussed in Section 1.1.2 of these comments, the BDCP Draft EIR/EIS does not assess the impacts to CCWD water supply resulting from changes in operation of CVP storage facilities. Recognizing this defect, Reclamation indicated that it will continue to evaluate the effects of upstream operational changes caused by the BDCP, and Reclamation will analyze these impacts in a supplemental NEPA document (Reclamation, 2013a).

Without an operations plan, the BDCP's impacts on storage in CVP reservoirs and any consequent impacts on CCWD's water supply cannot be known. Nonetheless, the BDCP Draft EIR/EIS makes findings regarding water supply impacts to CVP reservoirs. The resulting analysis is flawed and incomplete; it hides project effects on storage in Shasta Lake and fails to analyze the impacts that changes in storage in San Luis Reservoir would have on other water users, including CCWD.

2.3.2.1.Impacts to Shasta Lake.

Shasta Lake, which can hold 4,552,000 acre-feet of water, is the largest CVP reservoir. The operations analysis conducted for the BDCP unreasonably assumes that Shasta Lake would be allowed to reach unprecedented low levels of storage in both the No Action Alternative and all of the project alternatives, even though the BDCP Draft EIR/EIS acknowledges that actual operations would be substantially different from the operations that were assumed for the purpose of assessing project impacts.

Historically, from 1954 through 2013, storage in Shasta Lake has dropped below 1,000,000 acre-feet in only one year: 1977, when the minimum storage level was 578,000 acre-feet (DWR, 2014c). During the 6-year drought from 1987 through 1992 and the 3-year drought from 2007 through 2009, storage in Shasta Lake never dropped below 1,280,000 acre-feet (DWR, 2014c). During the current 3-year drought from 2012 to 2014, storage has not dropped below 1,650,000 acre-feet (DWR, 2014c), and Reclamation forecasts that Shasta Lake will stay above 1,000,000 acre-feet through 2014 (Reclamation, 2014).

Faced with this historical record, the modeling performed for the BDCP Draft EIR/EIS nevertheless assumes an operational scenario that, in the No Action Alternative, would allow storage to drop below 1,000,000 acre-feet in 19% of the years, and drop below 578,000 acre-feet (the historical minimum) in 11% of the years. There is no evidentiary basis to support the premise that CVP reservoirs would be operated to such an extreme condition under future No Action conditions; such extreme levels have never happened before and existing regulations and policies prevent Reclamation from dropping storage in Shasta Lake to such low levels as frequently as shown in the BDCP Draft EIR/EIS (e.g. NMFS 2009 at pp. 590-603). Indeed, the BDCP Draft EIR/EIS acknowledges that the analysis is incorrect, stating that, during very dry years, the model results "should not necessarily be understood to reflect literally what would occur in the future. In actual future operations, as has always been the case in the past, the project operators would work in real time to satisfy legal and contractual obligations given then current conditions and hydrologic constraints." BDCP Draft EIR/EIS, Chap. 5 at p. 5-46.

But because of faulty operational modeling assumptions, the impact analysis for these years shows that the water level in Shasta Lake would drop to the elevation of the lowest water outlet under the No Action Alternative, and thus there could be no water supply impacts from the BDCP in these years − since it is not possible for the Shasta Lake storage to drop any lower. Yet it is precisely during such dry years when impacts to storage in Shasta Lake would cause impacts to the water supplies of CVP contractors. The "anomalies" (BDCP Draft EIR/EIS, Chap 5 at p. 5-46) in the analysis of the No Action Alternative prevent the water supply assessment from revealing any impacts to storage in Shasta Lake in these very dry years, thereby underestimating impacts to water supplies of CVP contractors.

2.3.2.2.Impacts to San Luis Reservoir.

Since 2001, Reclamation has been working on the San Luis Low Point Improvement Project, which is an investigation of solutions to problems that occur when San Luis Reservoir storage drops below a "low point" of 300 thousand acre-feet:

> As the San Luis Reservoir is drawn down during the summer and into the late fall (when water supplies are needed most), a thick layer of algae (as much as 35 feet thick) grows on the surface. As the water level lowers, this algae gets captured by SFD [San Felipe Division] intakes. The algae degrades water quality and makes water more difficult to treat. As a result, San Felipe Division deliveries can be interrupted when the reservoir falls below 300,000 acre-feet. These delivery interruptions are critical because the San Luis Reservoir is the only CVP water source that SFD [San Felipe Division] contractors can access. Potential effects of these issues include:
>
> - Interruption of water deliveries to domestic, industrial, and agricultural users
> - Interruption of water deliveries used to replenish groundwater supplies
> - Blockage of agricultural irrigation systems
> - Reduced ability to treat water effectively
> - Increased water treatment costs
> - Taste and odor problems

(Reclamation and SCVWD, circa 2008)

The BDCP Draft EIR/EIS acknowledges that "[w]ith the existing facility configuration, the operation of the San Luis Reservoir could impact the water quality and reliability of water deliveries to the San Felipe Division if San Luis Reservoir is drawn down too low. Reclamation has an obligation to address this condition and may solicit cooperation from DWR … If the CVP is not able to maintain sufficient storage in San Luis Reservoir, there could be potential impacts on resources in Santa Clara and San Benito Counties." BDCP Draft EIR/EIS, Chap. 5 at p. 5-24. Despite the recognition of this issue, the BDCP Draft

EIR/EIS does not evaluate the potential impacts of the BDCP alternatives on San Luis Reservoir storage.

As described in Section 1.1.2, CCWD determined the percentage of time that the water level in San Luis Reservoir would drop below the "low point" by extracting relevant information from modeling that served as the basis for the BDCP Draft EIR/EIS analysis and that was provided to CCWD by DWR (DWR, 2013b). For all alternatives except for Alternatives 1 and 3, the BDCP would exacerbate the San Luis Reservoir low point problem (Figure 2-8). Under the DWR Preferred Project, Alternative 4, storage in San Luis Reservoir would drop below 300 thousand acre-feet in 44% to 86% of the years, depending on the outcome of the decision tree studies, as compared to 36% of the years under the No Action Alternative.

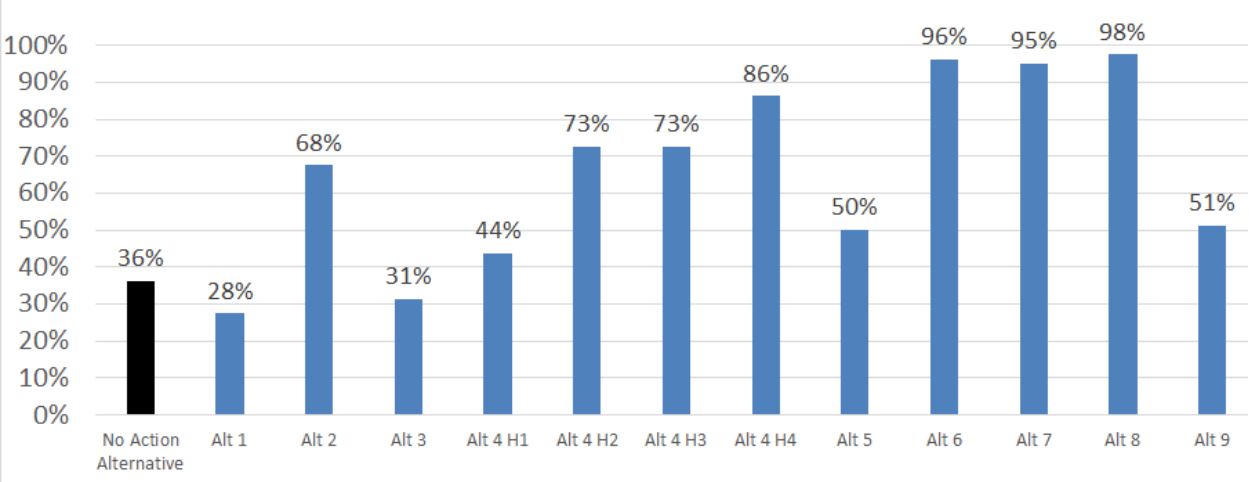


Figure 2-8. Percent of years when San Luis Reservoir drops below the "low point" that creates water supply and water quality impacts for certain Central Valley Project contractors
The BDCP would increase the percent of years that would experience impacts related to low storage levels in the San Luis Reservoir for alternatives 2, 4, 5, 6, 7, 8, and 9.

Since Reclamation states that it "has an obligation to address this condition," and as modeling that was used as the basis for the BDCP Draft EIR/EIS indicates that the condition would get worse under the BDCP, the BDCP Draft EIR/EIS should determine the impacts of exacerbating this condition (see the bulleted list of effects above) and determine what actions might be taken by Reclamation to address it.

Additionally, the BDCP Draft EIR/EIS must evaluate the impact that the increased occurrence of low point problems in San Luis Reservoir would have on CCWD's ability to fill Los Vaqueros Reservoir with CVP water. As discussed in Section 2.3.1.3 above, Reclamation operators have often requested that CCWD reduce or stop filling Los Vaqueros Reservoir with CVP water when exports are constrained. Since the BDCP would create impacts to storage in San Luis Reservoir that Reclamation is obligated to address, the BDCP would create a conflict between filling San Luis Reservoir and filling Los Vaqueros

Reservoir. This conflict, which affects CCWD's water supplies and the use of its facilities, needs to be disclosed, evaluated and mitigated in the BDCP Draft EIR/EIS. Further, since the San Felipe Division contractors are proponents of the BDCP, it would not be proper for those contractors to avoid the impacts that their own project would have on their water supply operations by redirecting those impacts to other water providers such as CCWD.

If, in fact, the San Luis Reservoir low point problem would not be exacerbated by the BDCP because CVP and SWP operations of existing facilities would be modified in conjunction with the new water conveyance facility, then this system reoperation is properly part of the BDCP and must be disclosed and analyzed, as discussed in Section 1.1.2 above.

2.4. The BDCP Draft EIR/EIS Fails to Disclose Significant Impacts to Existing Water Supply Infrastructure Due to Project Construction.

2.4.1. Construction of Conservation Measure 1 could have significant impacts on existing CCWD drinking water facilities.

The BDCP Draft EIR/EIS does not identify existing CCWD drinking water facilities that would be affected during construction of the project, although the BDCP Draft EIR/EIS Map Books show that construction of CM1 is likely to impact CCWD's existing facilities in the plan area. The nature and extent of the impact would vary depending on the alternative; the focus of the comments here is on impacts of the alignments for Alternatives 1A, 2A, 3, 4, 5, 6A, 7, and 8, which include the alignment for the DWR Preferred Alternative (Alternative 4). Other alternatives that use the eastern alignment or the western alignment could have some of the same impacts as well as some additional impacts.

2.4.1.1. Restrictions on access to Contra Costa Water District facilities.

Construction of CM1 in Alternative 1A, 2A, 3, 4, 5, 6A, 7, and 8 would be likely to restrict access to CCWD's existing facilities. The tunnels would cross under the CCWD Middle River Pipeline in Victoria Island and under the Western Area Power Administration power line that was constructed for the Middle River intake. Figure 2-9 below shows CCWD's facilities superimposed on the BDCP facilities. BDCP Draft EIR/EIS, Chap. 3 Mapbook Figure M3-4 (Sheet 11 of 15), and Chap. 13, Mapbook Figure M13-4 (Sheet 6 of 8).

Construction work could interfere with CCWD's routine maintenance access to facilities along the tunnel alignment. Construction at Highway 4 may affect daily access to the Middle River intake and facilities there. Similarly, construction could impair emergency ingress and egress to the intake on the Victoria Island levee road.

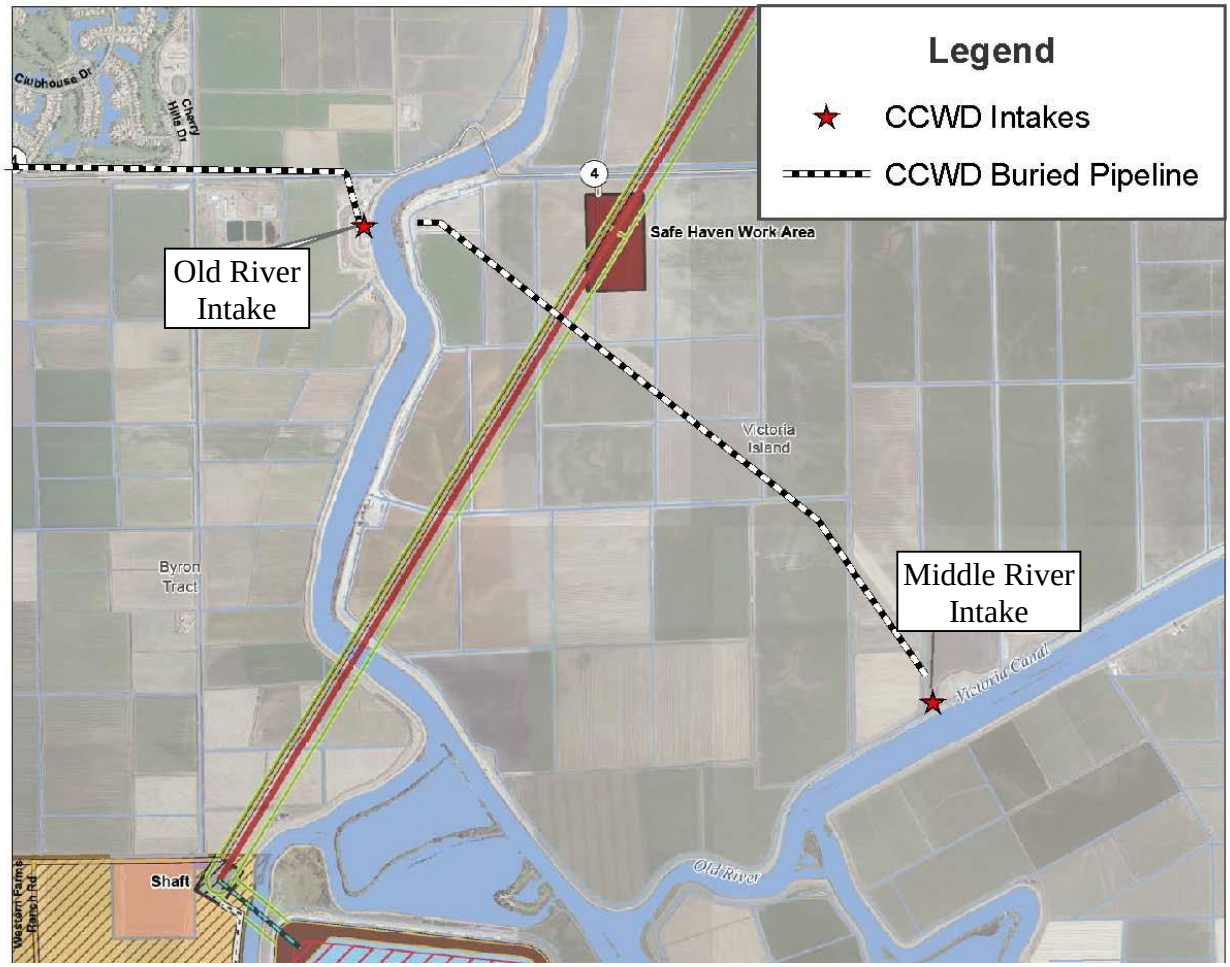


Figure 2-9. BDCP facilities (Alternative 4) with CCWD intakes and pipeline in the south Delta.
Adapted from Map M3-4 Sheet 11 of 15 in the BDCP Draft EIR/EIS.

The BDCP Draft EIR/EIS fails to identify these impacts. The BDCP Draft EIR/EIS states that "Construction activities for the action alternatives were reviewed to assess the potential for effects on water service providers and infrastructure." BDCP Draft EIR/EIS, Chap. 20 at p. 20-32. With respect to underground pipelines carrying "petroleum products, oxygen, chlorine, toxic or flammable gases" or high-voltage electric lines, the BDCP Draft EIR/EIS prescribes procedures for avoiding impacts during construction of the BDCP. *Id.* at p. 20-53. However, with respect to water service providers, the only impacts considered relate to the project's impact on water demand. There is no identification or evaluation of the impacts of construction activities on drinking water supply infrastructure.

The BDCP Draft EIR/EIS must identify these impacts, assess their significance, and include appropriate avoidance and mitigation measures, as discussed in Section 3 of these comments.

2.4.1.2.Land subsidence and levee failures caused by tunnel construction.

The BDCP Draft EIR/EIS acknowledges that the action alternatives could result in substantial land subsidence but erroneously identifies the resulting impact as insignificant and fails to provide adequate mitigation.

The BDCP Draft EIR/EIS states that "[l]ocalized settlement could occur during construction of BDCP water conveyance facilities. In particular, settlement above tunnels could occur in response to removal of earth materials at the tunnel face, convergence of voids created around the tunnel excavation, and stress redistribution around the excavated tunnel." BDCP Draft EIR/EIS, Appendix 3B at p. 3B-7. The BDCP Draft EIR/EIS further states that, in addition to the potential damage to project pipelines and tunnels, "[d]amage to other conveyance facilities, such as intakes, pumping plants, transition structures, and control structures, caused by subsidence/settlement under the facilities and consequent damage to or failure of the facility could also occur. Facility damage or failure could cause a rapid release of water to the surrounding area, resulting in flooding, thereby endangering people in the vicinity." BDCP Draft EIR/EIS, Chap. 10 at p. 10-93. The BDCP Draft EIR/EIS recognizes that "this potential effect could be substantial because the facilities could be located on soils that are subject to subsidence." *Id*. at p. 10-94.

Land subsidence resulting from the construction of the BDCP conveyance facilities could have a substantial, direct effect on CCWD's water supply, as a result of subsidence under or adjacent to CCWD facilities and subsidence underneath levees throughout the Delta, which could negatively impact Delta water quality. The alignment of the tunnels for Alternatives 1A, 2A, 3, 4, 5, 6A, 7, and 8 would cross under the CCWD Middle River Pipeline in Victoria Island. BDCP Draft EIR/EIS, Chap. 3, Mapbook Figures M3-1 (Sheet 11 of 13) and M3-4 (Sheet 11 of 15). Land subsidence under or adjacent to this pipeline could interrupt the use of the intake and thereby interrupt and limit CCWD's water supply. At Highway 4 on Victoria Island, the tunnels would cross under the branch 69 kilovolt power line that supplies power to Pump Station #1. The tunnels also would cross under the Western Area Power Administration high voltage power lines further north on Victoria Island. BDCP Draft EIR/EIS, Chap. 3, Mapbook Figure M3-4 (Sheet 11 of 15). Disruption of that power supply would disrupt CCWD's water diversion capabilities and impact CCWD's water supply. Further, the tunnels for Alternatives 1A, 2A, 3, 4, 5, 6A, 7, and 8 would cross under levees more than 16 times, with many of those crossings located in areas with "Medium to Medium High" levee liquefaction damage potential. BDCP Draft EIR/EIS, Figure 9-6. Land subsidence due to project construction could cause levee failure and flooding of one or more Delta islands, which could impact Delta water quality, thereby limiting CCWD's water supply.

During the construction of CCWD's Middle River Pipeline, sand boils were observed in tailwater ditches adjacent to the foot of the levee on Victoria Island along Old River, south of Highway 4. These sand boils are common throughout the Delta and illustrate the potential fragility of soils and levees near CCWD facilities and elsewhere. Island flooding could result from sand boils or from levee subsidence caused by the tunnel construction. Island flooding would disrupt access to CCWD facilities at best, and at worst would render CCWD facilities unusable for a period of time. Island flooding could also increase seawater

intrusion throughout the Delta. Such intrusion would degrade the quality of the water available to CCWD for diversion or could interrupt CCWD's diversions. (See Sections 2.2.2.2 and 2.3 of these comments for details on Delta water quality and CCWD supply.) After levee repair, pumping the water that has accumulated on a flooded island into the adjacent Delta channels would continue the addition of salt to Delta channels, prolonging the water quality degradation for constituents like chloride and bromide. Draining accumulated water would also add significant total organic carbon to Delta waters and taste and odor-causing algal byproducts. (See Sections 2.2.1.1 and 2.2.1.2 of these comments for details.) The water quality impacts caused by island flooding could extend for months if flooding covered a large area, as evidenced by the flooding on Jones Tract in 2004 (DWR, 2009b).

Levee subsidence resulting from tunneling below a levee is not hypothetical. During tunneling carried out for the San Francisco Public Utilities Commission as part of its Water Supply Improvement Projects, levee subsidence occurred directly above the tunnel (Westlands Water District, 2013 at slide 31). Similar subsidence above tunnel boring has been reported in Europe (DESY, 2011).

Despite the recognition within the BDCP Draft EIR/EIS that land subsidence due to project construction could be substantial and despite the evidence supporting this conclusion, the BDCP Draft EIR/EIS finds that the impact is insignificant and no mitigation is needed. Legally adequate mitigation must be identified, as discussed in Section 3 below.

In sum, the finding in the BDCP Draft EIR/EIS that the impacts from land subsidence due to project construction are insignificant is erroneous; the impacts should be identified as significant and appropriate, enforceable mitigation should be adopted.

2.4.1.3.Water quality impacts of construction.

Both discharge of saline groundwater into Delta waterways during dewatering operations and relocation of agricultural drains during construction may impact water quality by increasing salinity near Delta drinking water intakes. These impacts were not evaluated in the BDCP Draft EIR/EIS, and mitigation for these and other water quality impacts was not provided.

The BDCP Draft EIR/EIS lists the potential water quality impacts of BDCP construction; salinity is not among them. BDCP Draft EIR/EIS, Chap. 8 at pp. 8-486 to 8-487. However, agricultural tailwater is highly saline, and alteration of existing drainage patterns has the potential to cause impacts at drinking water intakes; see Section 2.2.1.3 for elaboration of this issue. Delta groundwater is also highly saline, and discharge of groundwater during construction dewatering activities also has the potential to cause impacts at drinking water intakes.

The BDCP Draft EIR/EIS does not analyze or provide mitigation for these water quality impacts. The "environmental commitments" provided in the BDCP Draft EIR/EIS are routine – developing a Storm Water Pollution Prevention Plan and exercising Best Management Practices – and do not address salinity impacts. BDCP Draft EIR/EIS, Chap. 8

at p. 8-487, and Appendix 3B. Salinity impacts must be analyzed and mitigation measures for salinity impacts and for the other water quality impacts of construction must be provided.

2.4.2. Construction of the other Conservation Measures could have significant effects that have not been revealed.

Conservation Measures 2 through 22 are insufficiently defined to determine possible construction impacts. See Section 1.2 of these comments regarding the lack of adequate project descriptions and need for further CEQA and NEPA analysis on these measures.

3. Formulation of Mitigation Measures Is Improperly Deferred.

The BDCP Draft EIR/EIS acknowledges that Alternative 4 (the DWR Preferred Alternative) and all other action alternatives would cause significant water quality impacts near CCWD intakes in the Plan Area. The BDCP Draft EIR/EIS does not, however, identify mitigation for these impacts that meets CEQA's or NEPA's basic requirements. In addition, as discussed in Section 2 above, the BDCP Draft EIR/EIS fails to acknowledge, and therefore to identify mitigation for, other significant or potentially significant impacts affecting CCWD.

The BDCP Draft EIR/EIS acknowledges three significant impacts to water quality near CCWD intakes. These significant impacts arise from BDCP-caused increases in chloride, electrical conductivity (EC) and dissolved organic carbon (DOC). Impact WQ-7 is "determined to be significant due to increased chloride concentrations and degradation at western Delta locations and its potential effects on municipal and industrial water supply and fish and wildlife beneficial uses." BDCP Draft EIR/EIS, Chap. 8 at p. 8-429. Impact WQ-11 states that EC increases are significant in the Plan Area due to "increase in the frequency with which Bay-Delta WQCP [Water Quality Control Plan] EC objectives are exceeded for the entire period modeled." BDCP Draft EIR/EIS, Chap. 8 at p. 8-440. Impact WQ-18 states that the BDCP's DOC impact is significant because "habitat restoration elements of CM4–CM7 and 10 could contribute to long-term water quality degradation with respect to DOC and, thus, adversely affect MUN [Municipal and Domestic Supply] beneficial uses." BDCP Draft EIR/EIS, Chap. 8 at p. 8-457. Yet, as discussed in Section 3.1 below, the BDCP Draft EIR/EIS does not identify legally adequate mitigation for these acknowledged impacts.

In addition, as discussed in Section 2.2.1.1.1 of these comments, although the BDCP Draft EIR/EIS does not identify the BDCP's increases in bromide levels at Mallard Slough as a significant impact (see Impact WQ-5), it must do so. CCWD's "opportunistic" use of the Mallard Slough intake does not mean that the BDCP's increase in pollutants there, and CCWD's resulting loss of opportunities to use water from that location, is not a significant impact that requires mitigation. Section 3.1 below addresses chloride, EC, DOC and bromide together because the BDCP Draft EIR/EIS purports to identify mitigation for all of

these impacts together − even though the BDCP Draft EIR/EIS does not acknowledge that the significant bromide impact applies to CCWD facilities.

Finally, Section 2 above identifies a number of potentially significant impacts that the BDCP Draft EIR/EIS does not analyze. These include water quality impacts from increased concentrations of constituents in Delta waterways that form harmful byproducts in drinking water treatment processes, algae and algal byproducts, altered drainage patterns, and the potential for levee failure; water supply impacts; and BDCP construction-phase impacts to CCWD facilities or other facilities upon which CCWD relies. All of these impacts obligate the BDCP proponents to identify legally adequate mitigation measures. Section 3.2 below requests mitigation for other significant impacts affecting CCWD that the BDCP Draft EIR/EIS has missed.

3.1. The BDCP Draft EIR/EIS Fails to Identify Legally Adequate Mitigation Measures for Identified Significant Water Quality Impacts.

CEQA requires EIRs to describe feasible measures that can minimize each significant adverse impact of the proposed project. Cal. Pub. Res. Code §§ 21002.1(a), 21100(b)(3). Such mitigation measures include:

(a) Avoiding the impact altogether by not taking a certain action or part of an action.

(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

(c) Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

(e) Compensating for the impact by replacing or providing substitute resources or environments. CEQA Guidelines § 15370.

"Where several measures are available to mitigate an impact, each should be discussed and the basis for selecting a particular measure should be identified. Formulation of mitigation measures should not be deferred until some future time. However, measures may specify performance standards which would mitigate the significant effect of the project and which may be accomplished in more than one specified way." CEQA Guidelines § 15126.4(a)(1)(B). Mitigation measures "must be fully enforceable through permit conditions, agreements, or other legally-binding instruments." CEQA Guidelines § 15126.4(a)(2).

NEPA requires that an EIS discuss means to mitigate all adverse environmental impacts of the alternatives, regardless of whether they are deemed significant. 40 C.F.R. § 1502.16(h). The NEPA definition of "mitigation" is functionally identical to CEQA's definition; it calls for avoiding, minimizing, rectifying, reducing, or compensating for environmental effects. *See* 40 C.F.R. § 1508.20. Measures calling merely for consultation, further studies, preparation of plans, and monitoring do not meet NEPA's requirements. R. Bass, A. Herson & K. Bogdan, *The NEPA Book* (2001) at p. 118. "The common fault shared by these types of 'paper mitigation' measures is that they do not solve the environmental problems disclosed in the NEPA document. … The best test to judge the adequacy of a recommended mitigation measure is to ask: Is this measure a specific, tangible action that will reduce a physical environmental effect?" *Id.*

As described below, the BDCP Draft EIR/EIS's purported mitigation for impacts to water quality at CCWD intakes fails all of these tests. The BDCP Draft EIR/EIS:

- Draws internally inconsistent conclusions on the fundamental question as to whether the BDCP's significant water quality impacts can be mitigated to a less-than-significant level;

- Defers identification of mitigation measures to the distant future without explaining why such deferral is necessary, and fails to specify performance standards, identify a menu of potential measures that would reduce the impact, describe how the BDCP proponents would select among the measures, or identify which BDCP proponents would be responsible for implementing the measures that are ultimately selected;

- Makes no attempt to mitigate water quality impacts that will begin before the "commencement of operations of CM1."

- Makes no attempt to mitigate water quality impacts that would begin with the "commencement of operations of CM1," choosing not to begin even studying mitigation options until after CM1 has begun operating and causing significant water quality impacts;

- Disavows the BDCP proponents' obligation under CEQA and NEPA to provide compensatory mitigation, relegating such mitigation to a separate set of "non-environmental" "other commitments" - commitments to which the BDCP proponents do not actually commit;

- Asserts that the BDCP proponents are not obligated to contribute at all to mitigation for any significant effects that are caused "substantially" by climate change, yet fails to disclose the extent to which impacts are caused by the project as opposed to climate change; and

- Lists "mitigation measures" that are mere studies leading to "development" of "actions" and are not legally binding commitments to actual mitigation.

For each of these reasons, the BDCP Draft EIR/EIS does not meet fundamental CEQA and NEPA requirements for identification and analysis of mitigation measures to address significant water quality impacts.

3.1.1. The Water Quality chapter of the BDCP Draft EIR/EIS does not identify adequate mitigation for significant chloride, EC and bromide impacts.

3.1.1.1. Conflicting statements regarding the availability of mitigation measures to reduce chloride, EC and bromide impacts

The first defect in the BDCP Draft EIR/EIS's discussion of mitigation for chloride, EC and bromide is fundamental and affects all of the mitigation discussion that follows. The BDCP Draft EIR/EIS's statements on the basic question of whether mitigation is available to reduce these impacts to less-than-significant is internally inconsistent and incomprehensible. In the space of one paragraph, the BDCP Draft EIR/EIS states both that mitigation sufficient to mitigate the impact to less-than-significant is flatly "not available" and, on the other hand, that the impact is considered significant and unavoidable only because the effectiveness of mitigation is "uncertain":

> While mitigation measures to reduce these water quality effects in affected water bodies to less than significant levels *are not available*, implementation of Mitigation Measure WQ-7 is recommended to attempt to reduce the effect that increased chloride concentrations may have on Delta beneficial uses. However, because the effectiveness of this mitigation measure to result in feasible measures for reducing water quality effect is *uncertain*, this impact is considered to remain significant and unavoidable. BDCP Draft EIR/EIS, Chap. 8 at p. 8-429 (emphasis added). *See id. at* pp. 8-440 (same statement re EC mitigation), 8-421 (same statement re bromide mitigation).

Both of these statements cannot be true. The BDCP proponents have either concluded that no measures are available to mitigate the chloride, EC and bromide impacts to less-than-significant or mitigation is available, but they have not yet drawn conclusions about effectiveness. The BDCP Draft EIR/EIS must be revised to make a clear statement on this fundamental point.

As discussed further below, CCWD submits that a performance standard can be identified and the BDCP proponents must commit to meeting that standard through a menu of feasible compensatory mitigation measures designed to substantially reduce the effects of the BDCP's chloride, EC and bromide increases, at least as to municipal and domestic water supply sources.

3.1.1.2. Inadequate mitigation measures listed in BDCP Draft EIR/EIS Chapter 8.

The BDCP Draft EIS/EIR identifies a total of four mitigation measures, WQ-7a, WQ-7b, WQ-11a and WQ-5, for significant chloride, EC and bromide impacts that would affect municipal and domestic water sources in the Plan Area.[31] For the reasons described below, these measures are inadequate. For the reasons described in Section 3.1.3 below, the "Other Commitments" listed in BDCP Draft EIR/EIS, Appendix 3B.2.1, need to be revised and incorporated into the BDCP EIS/EIR as mitigation measures in order to cure these defects.

3.1.1.2.1 Mitigation Measures WQ-7a, WQ-11a and WQ-5.

Measure WQ-7a, "Conduct Additional Evaluation and Modeling of Increased Chloride Levels Following Initial Operations of CM1," provides:

> Following commencement of initial operations of CM1, the BDCP proponents will conduct additional evaluations described herein, and develop additional modeling (as necessary), to define the extent to which modified operations could reduce or eliminate the additional exceedances of the 250 mg/L Bay-Delta WQCP objective[32] for chloride currently modeled to occur under Alternative 4. The additional evaluations should also consider specifically the change in Delta hydrodynamic conditions associated with tidal habitat restoration under CM4 (in particular the potential for increased chloride concentrations that could result from increased tidal exchange) once the specific restoration locations are identified and designed. If sufficient operational flexibility to offset chloride increases is not feasible under Alternative 4 operations, achieving chloride reduction pursuant to this mitigation measure would not be feasible under this alternative. BDCP Draft EIR/EIS, Chap. 8 at pp. 8-430.

Measure WQ-11a, which applies to EC, contains virtually identical provisions (BDCP Draft EIR/EIS, Chap. 8 at p. 8-441), as does Measure WQ-5 for bromide (*id*. at p. 8-422). All three measures are defective in several respects.

First, the measures contradict the BDCP Draft EIR/EIS's statements, noted above, that "mitigation measures to reduce these water quality effects in affected water bodies to less-than-significant levels *are not available*." BDCP Draft EIR/EIS, Chap. 8 at pp. 8-429 (emphasis added), 8-440, 8-421. Measures WQ-7a, WQ-11a and WQ-5 tacitly reject this

[31] Measure WQ-11b purports to address only EC impacts to Suisun Marsh and is not discussed here.

[32] As discussed in detail below, Mitigation Measure WQ-7a is fundamentally flawed and needs to be rewritten. When it is rewritten, the reference to reducing or eliminating only the "additional exceedances of the 250 mg/L Bay-Delta WQCP objective for chloride" must be replaced. As the BDCP Draft EIR/EIS states, the BDCP will also significantly increase exceedances of the 150 mg/L Bay-Delta WQCP objective for municipal and industrial beneficial uses and substantially reduce assimilative capacity, and the BDCP will cause long-term water quality degradation. BDCP Draft EIR/EIS, Chap. 8 at pp. 8-426 - 8-427. All of these impacts must be mitigated.

conclusion and state that with additional analysis, the BDCP proponents may learn that BDCP-caused exceedances of water quality objectives and goals for chloride, EC and bromide could be reduced or even *eliminated* through modified operations, even taking into account the anticipated effects of habitat restoration under CM4. BDCP Draft EIR/EIS, Chap. 8 at pp. 8-430, 8-441, 8-422. This discrepancy must be resolved in a revised EIR/EIS.

The second difficulty with these mitigation measures is their deferral of "additional evaluations" until after "commencement of initial operations of CM1." This deferral is unlawful for several reasons. The first is that the BDCP Draft EIR/EIS states that tidal marsh restoration projects comprising BDCP element CM4 will be constructed *before* CM1 operations begin. (This is so even though the BDCP Draft EIR/EIS analyzes CM4 only at a general "program" level.) The BDCP Draft EIR/EIS acknowledges that CM4 could cause increased chloride concentrations. BDCP Draft EIR/EIS, Chap. 8 at p. 8-430. The fact that the BDCP's chloride impacts are planned to begin well before the BDCP proponents plan to even begin thinking about chloride mitigation is a CEQA and NEPA violation.

In addition, mitigation cannot be deferred to "future study" without a legally defensible explanation of why the study cannot be conducted for the EIR. S. Kostka & M. Zischke, *Practice Under the California Environmental Quality Act* (CEB 2014) at pp. 14-14 to 14-18; *San Joaquin Raptor Rescue Center v. County of Merced*, 149 Cal. App. 4th 645, 669-71 (2007). Nothing in the BDCP Draft EIR/EIS water quality analysis explains why the project proponents cannot now "define the extent to which modified operations could reduce or eliminate the additional exceedances of the 250 mg/L Bay-Delta WQCP objective for chloride currently modeled to occur under Alternative 4." The BDCP proponents identified significant chloride impacts through modeling; they can use modeling to evaluate how modifications to planned operations could or could not reduce those impacts. The same is true of EC and bromide. It is not enough to identify an impact; the BDCP Draft EIR/EIS must take the next step to identify feasible mitigation to reduce, avoid or compensate for the impact.

Third, the mitigation measures are legally inadequate because they do not identify a performance standard that must be achieved and the types of action that will be incorporated in the mitigation plan after those studies are completed. A "mitigation measure calling for a mitigation plan to be devised on the basis of future studies is legally inadequate if it does not identify the type of actions that may be incorporated in the plan after those studies are completed." Kostka & Zischke at pp. 14-14 to 14-18 (citing *Preserve Wild Santee v. City of Santee*, 210 Cal. App. 4th 260, 280 (2012); *Communities for a Better Environment v. City of Richmond*, 184 Cal. App. 4th 70, 95 (2010); *Gray v. County of Madera*, 167 Cal. App. 4th 1099, 1119 (2008); and other cases). Further, the BDCP Draft EIR/EIS must demonstrate that the actions would be capable of substantially reducing the impact. *See Communities for a Better Environment*, 184 Cal. App. 4th at 95.

Fourth, none of the BDCP Draft EIR/EIS's chloride, EC, or bromide mitigation measures addresses the significant impacts that the EIR/EIS states will begin when BDCP operations – CM4 or CM1 − begin. Mitigation must address impacts as soon as they are anticipated to occur. *POET, LLC v. California Air Resources Board*, 218 Cal. App. 4th 681, 740 (2013)

("mitigation itself cannot be deferred past the start of the project activity that causes the adverse environmental impact"). Here, the BDCP Draft EIR/EIS states that the project proponents' intent is to allow significant impacts to occur, *then* study whether they might modify their operations to reduce such impacts (Measures WQ-7a, WQ-11a and WQ-5), and *then*, in the case of chloride only, "consult with" water purveyors such as CCWD "to identify any feasible operational means to either avoid, minimize, or offset for reduced seasonal availability of water that meets applicable water quality objectives…." (Measure WQ-7b, discussed below). This is impermissible under CEQA and NEPA. The consultation needs to occur now, and the mitigation should be in place *before* commencement of operations of the conveyance facilities, marsh restoration or any other activities that might contribute to the impacts.

Fifth, Measures WQ-7a, WQ-11a and WQ-5 commit the BDCP proponents to nothing more than "evaluation" and "modeling." They do not commit the BDCP proponents to *implement* any feasible mitigation that their additional studies might identify. Studies alone are not mitigation; CEQA requires legally binding commitments to implement feasible mitigation. Cal. Pub. Res. Code § 21081.6(b); CEQA Guidelines § 15126.4(a)(2).

Sixth, Measures WQ-7a, WQ-11a, and WQ-5 do not identify which BDCP proponents might be responsible for implementing any deferred mitigation that might ultimately be adopted. Given that the term "BDCP Proponents … should be understood to mean different entities in different contexts" (BDCP Draft EIR/EIS, Executive Summary at p. ES-48), the BDCP Draft EIR/EIS should identify which would be responsible for mitigation measures and not defer that identification until a Mitigation Monitoring and Reporting Program is approved.

Finally, these mitigation measures exemplify the "paper mitigation" that both CEQA and NEPA forbid. The answer to "Is this measure a specific tangible action that will reduce a physical environmental effect?" is "No."

3.1.1.2.2 Mitigation Measure WQ-7b (Chloride).

Mitigation Measure WQ-7b, "Consult with Delta Water Purveyors to Identify Means to Avoid, Minimize or Offset for Reduced Seasonal Availability of Water That Meets Applicable Water Quality Objectives," provides:

> To determine the feasibility of reducing the effects of CM1/CM4 operations on increased chloride concentrations as shown in modeling estimates to occur to municipal and industrial locations, the BDCP proponents will consult with the purveyors to identify any feasible operational means to either avoid, minimize, or offset for reduced seasonal availability of water that meets applicable water quality objectives and that results in levels of degradation that do not substantially increase the risk of adversely affecting the municipal and industrial beneficial use. Any such action will be developed following, and in conjunction with, the completion of the evaluation and development of any potentially feasible actions

> described in Mitigation Measure WQ-7a. BDCP Draft EIR/EIS, Chap. 8 at p. 8-430.

The BDCP Draft EIR/EIS contains no equivalent measures for EC or bromide.

Mitigation Measure WQ-7b suffers from most of the same defects as Measure WQ-7a. First, the formulation and implementation of the mitigation is impermissibly deferred. The time for the BDCP proponents to consult with water purveyors "to identify any feasible operational means to either avoid, minimize, or offset for reduced seasonal availability" of acceptable water is now, not after the BDCP is approved and operating.

Second, as noted above regarding Mitigation Measure WQ-7a, the BDCP Draft EIR/EIS does not even attempt in Mitigation Measure WQ-7b to address early water quality impacts that would begin when levees are breached and new marshland is created under CM4 – even before the CM1 pipeline opens. This is unlawful.

Finally, nothing in Mitigation Measure WQ-7b requires the BDCP proponents to do anything to actually mitigate water quality impacts to the operations of water purveyors. The measure requires only tardy consultation with water purveyors to "identify any feasible operational means" to mitigate impacts and potentially to "develop" "any such actions." Consultation is not mitigation. To meet legal requirements, the BDCP Draft EIR/EIS must identify mitigation measures that include concrete performance standards and actual commitments to action.

3.1.2. The Water Quality chapter of the BDCP Draft EIR/EIS does not identify adequate mitigation for significant DOC impacts.

The BDCP Draft EIR/EIS identifies a significant impact to water purveyors from increases in DOC (dissolved organic carbon) resulting from implementation of CM4 through CM7 and CM10, which "include land disturbing restoration activities known to be sources of DOC." BDCP Draft EIR/EIS, Chap. 8 at p. 8-456. The BDCP Draft EIR/EIS explains:

> Depending on localized hydrodynamics, such restoration activities could contribute substantial amounts of DOC to municipal raw water if established near municipal intakes. Substantially increased DOC concentrations in municipal source water may create a need for existing drinking water treatment plants to upgrade treatment systems in order to achieve EPA Stage 1 Disinfectants and Disinfection Byproduct Rule action thresholds. *While treatment technologies sufficient to achieve the necessary DOC removals exist, implementation of such technologies would likely require substantial investment in new or modified infrastructure.*
>
> …

> The impact is considered to be significant and mitigation is required. It is uncertain whether implementation of Mitigation Measure WQ-18 would reduce identified impact to a less-than-significant level. Hence, this impact remains significant and unavoidable. BDCP Draft EIR/EIS, Chap. 8 at p. 8-457 (emphasis added).

Mitigation Measure WQ-18, "Design Wetland and Riparian Habitat Features to Minimize Effects on Municipal Intakes," may represent a reasonable attempt to avoid some of the BDCP's significant impact to municipal water sources. But, as the BDCP Draft EIR/EIS states, the measure is incomplete; the effort to avoid significant DOC impacts by adjusting restoration plans themselves may not be successful because of the BDCP proponents' overriding BDCP objectives. Measure WQ-18 provides:

> The BDCP proponents will design wetland and riparian habitat features taking into consideration effects on Delta hydrodynamics and impacts on municipal intakes. Locate restoration features such that impacts on municipal intakes are minimized and habitat benefits are maximized. Incorporate design features to control the load and/or timing of DOC exports from habitat restoration features. This could include design elements to control seepage from non-tidal wetlands (e.g., incorporation of slurry walls into levees), and features to increase retention time and decrease tidal exchange in tidal wetlands and riparian and channel margin habitat designs. For restoration features directly connected to open channel waters, design wetlands with only channel margin exchanges to decrease DOC loading. Stagger construction of wetlands and channel margin/riparian sites both spatially and temporally so as to allow aging of the restoration features and associated decreased creation of localized "hot spots" and net Delta loading.
>
> The BDCP proponents will also establish measures to help guide the design and creation of the target wetland habitats. At a minimum, the measures should limit potential increases in longer-term average DOC concentrations, and thus guide efforts to site, design, and maintain wetland and riparian habitat features, consistent with the biological goals and objectives of the BDCP. For example, restoration activities could be designed and located with the goal of preventing, consistent with the biological goals and objectives of the BDCP, net long-term average DOC concentration increases of greater than 0.5 mg/L at any municipal intake location within the Delta.
>
> *However, it must be noted that some of these measures 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,*

> *these measures would run directly counter to the goals and objectives of the BDCP. This mitigation measure should not be implemented in such a way that it reduces the benefits to the Delta ecosystem provided by restoration areas.* As mentioned above, the BDCP proponents have incorporated into the BDCP, as set forth in EIR/EIS Appendix 3B *Environmental Commitments*, a separate, non-environmental commitment to address the potential increased water treatment costs that could result from DOC concentration effects on municipal and industrial water purveyor operations. BDCP Draft EIR/EIS, Chap. 8 at p. 8-458 (emphasis in original and added).

As discussed further below, nothing in CEQA or NEPA permits project proponents to identify mitigation that the BDCP Draft EIR/EIS admits would not or may not reduce impacts to less than significant, and then stop short of identifying additional compensatory mitigation that would further reduce the impact . *See* CEQA Guidelines § 15370; 40 C.F.R. § 1508.20. The BDCP Draft EIR/EIS's mitigation for DOC shares this fundamental flaw with the mitigation for chloride, EC and bromide. It is one step to identify operational objectives to reduce DOC impacts to drinking water. The BDCP Draft EIR/EIS needs to now take the next step required by CEQA and NEPA: identify performance standards that would be achieved, provide a menu of options for achieving those standards, and include a *binding commitment* to actually mitigate the impact.

3.1.3. Defects in the BDCP Draft EIR/EIS mitigation measures are not cured by "other commitments" in Appendix 3B; the "other commitments" need to be revised and incorporated into the BDCP EIS/EIR as mitigation measures.

Chapter 8 of the BDCP Draft EIR/EIS refers the reader to a separate "non-environmental commitment" in BDCP Draft EIR/EIS Appendix 3B that, the BDCP Draft EIR/EIS asserts, "supplements" Mitigation Measures WQ-7, WQ-11, WQ-5 and WQ-18. As currently drafted, this "commitment" is defective for two reasons. First, the measures listed in the appendix must be treated as mitigation measures for the project's identified significant impacts, not as "non-environmental commitments," and second, the measures listed in the "non-environmental commitments" must be revised in order to pass muster as mitigation measures.

The BDCP Draft EIR/EIS states:

> In addition to and to supplement Mitigation Measure WQ-7, the BDCP proponents have incorporated into the BDCP, as set forth in EIR/EIS Appendix 3B, *Environmental Commitments*, a separate, *non-environmental* commitment to address the potential increased water treatment costs that could result from chloride concentration effects on municipal, industrial and agricultural water purveyor operations. Potential options for making use of the financial

> commitment include funding or providing other assistance towards acquiring alternative water supplies or towards modifying existing operations when chloride concentrations at a particular location reduce opportunities to operate existing water supply diversion facilities. Please refer to Appendix 3B, *Environmental Commitments,* for the full list of potential actions that could be taken pursuant to this commitment in order to reduce the water quality treatment costs associated with water quality effects relating to chloride, electrical conductivity, and bromide. BDCP Draft EIR/EIS, Chap. 8 at p. 8-429 (emphasis in original and added). *See id. at* pp. 8-440 to 8-441 (EC), 8-421 to 8-422 (bromide), 8-458 (DOC, quoted above).

If the BDCP proponents find it infeasible to adjust their own project operations to reduce water quality impacts at water purveyor intakes to a less-than-significant level, then the measures needed to offset BDCP-caused impacts *are* environmental mitigation measures, not "non-environmental commitments." The fact that water purveyors and their customers would suffer disproportionately from the water quality impacts of the BDCP does not render those significant environmental impacts "non-environmental" or somehow negate the BDCP proponents' obligation to mitigate those impacts. Compensating for a significant environmental impact "by providing substitute resources or environments" falls squarely within CEQA's and NEPA's definition of "mitigation." CEQA Guidelines § 15370; 40 C.F.R. § 1508.20. Such measures must be identified and analyzed in the BDCP Draft EIR/EIS, and subjected to public comment; they cannot be downgraded to a "non-environmental commitment" and then left for another day.

3.1.3.1.BDCP Draft EIR/EIS Appendix 3B.2.

The "Other Commitments" discussion in BDCP Draft EIR/EIS Appendix 3B.2 both illustrates and exacerbates the BDCP Draft EIR/EIS's incorrect approach to water quality mitigation. The discussion begins:

> The following commitments *are identified separately from environmental commitments for the purpose of addressing some of the economic or other non-environmental consequences of implementing BDCP*. As with environmental commitments, these other commitments are incorporated into the project and would be implemented in the same or similar manner as proposed mitigation measures. These additional commitments are actions that the BDCP proponents commit to implementing *in some manner* to reduce or partially reduce potential *economic or other effects related to the environmental impacts disclosed in this EIR/EIS* and caused by implementation of the project, even if the underlying environmental impact is not fully reduced or remains unchanged. BDCP Draft EIR/EIS Appendix 3B at p. 3B-42 (emphasis added).

As discussed above, this statement misapprehends the nature and role of mitigation under CEQA and NEPA. The fact that an entity cannot avoid, and instead must compensate for, an undeniable significant environmental impact does not take such compensation out of the category of environmental mitigation and into the realm of compensation for mere "economic" effects. If the BDCP proponents were right, no environmental mitigation measures could ever be imposed on project proponents to address the impacts of their projects other than changes in project operations; all other mitigation measures require direct expenditures of money. Familiar examples include the acquisition and enhancement of compensatory wetlands or species habitat, the purchase and planting of replacement trees, and the purchase of emissions credits to offset project air emissions. Kostka & Zischke at p. 14-9. Moreover, the requirement that compensatory mitigation be provided for impacts to water supply was firmly applied in *Gray v. County of Madera, supra*, in which an EIR found that a quarry project could reduce water in neighboring wells. The EIR included mitigation measures to a) rehabilitate or deepen the private wells; b) provide a connection to the project's water system; or c) provide bottled water or other potable water in large tanks; and was amended to add the option of building a "water system constructed under federal, state, and county guidelines." 167 Cal. App. 4th at 1115-1116. The court held that the first three measures were inadequate because they would not "allow the landowners to use water in a manner substantially similar to how the landowners are currently using water" and that the fourth mitigation option – the construction of a new water system – was inadequate because its feasibility and impacts had not been analyzed. *Id.* at 1119-1120. That compensatory mitigation – *i.e.*, mitigation "replacing or providing substitute resources or environments" -- was *required* was not questioned; the EIR and project approvals failed for lack of analysis of the specific means by which compensatory mitigation might be provided. Here, as in *Gray*, compensatory mitigation must be specifically identified and analyzed as compensatory mitigation under CEQA and NEPA; it cannot be shunted aside into "Other Commitments."

3.1.3.2.BDCP Draft EIR/EIS Appendix 3B.2.1.

The measures listed in Appendix 3B.2.1 to address the BDCP's significant impacts to municipal and domestic water sources must be treated as environmental mitigation measures, not as "non-environmental commitments." The appendix measures must, however, be substantially revised and improved before they are incorporated into the BDCP Draft EIR/EIS mitigation measures, as described below.

Appendix 3B.2.1 begins with two paragraphs describing the commitments the BDCP proponents propose to undertake. BDCP Draft EIR/EIS, Appendix 3B at pp. 3B-42 to 3B-43. These two paragraphs could form the basis for an adequate mitigation measure with two exceptions that must be corrected. The first defect is that the formulation and implementation of the mitigation measures are unduly deferred. Section 3B.2.1 states: "It is anticipated that such solutions would be devised by the affected purveyors in consultation with BDCP proponents after thorough investigation and the completion of environmental review." BDCP Draft EIR/EIS, Appendix 3B at p. 3B-42. As discussed above, however, the time for environmental review of the BDCP, including identification of the mitigation measures BDCP implementation would necessitate, is now. And the time to implement those measures is *before* impacts occur.

The second defect in section 3B.2.1 is that the BDCP proponents do not accept their responsibility to mitigate the BDCP's contribution to significant cumulative impacts. The BDCP Draft EIR/EIS acknowledges that the BDCP is anticipated to cause significant water quality impacts with respect to chloride, EC, bromide and DOC regardless of whether climate change and other projects also contribute to those impacts. But even if the BDCP is only a contributor to significant water quality impacts *along with* climate change (which is itself the quintessential significant cumulative impact) and one or more other projects, the BDCP Draft EIR/EIS must identify and analyze mitigation for the BDCP's contribution to the significant cumulative impact. CEQA Guidelines § 15130(b)(3). Appendix 3B.2.1 disclaims this obligation, stating:

> Assistance shall not extend to investments needed solely *or substantially* to address adverse water quality effects due to any of the following: sea level rise and/or changed precipitation patterns attributable to climate change; the regulatory actions of other agencies or programs within or upstream of the Delta that may affect water quality; or effects not otherwise associated with operations of CM1. BDCP Draft EIR/EIS, Appendix 3B at p. 3B-43. (emphasis added)

CEQA and NEPA do not permit project proponents to avoid their obligation to mitigate their contributions to significant environmental impacts by pointing out that others will also "substantially" contribute to the need for such investments. Because the BDCP's contributions to significant chloride, EC, bromide and DOC impacts would be cumulatively considerable, as the BDCP Draft EIR/EIS concludes they would, the BDCP proponents must identity and analyze mitigation measures for the BDCP's contributions to the cumulative impact- regardless of whether other projects or projected conditions also would "substantially" contribute to the cumulative impact.

3.1.3.3.BDCP Draft EIR/EIS Appendix 3B.2.1.1 Chloride and EC.

Appendix 3B.2.1.1 identifies five measures "affected purveyors could consider" to address adverse effects of increased chloride concentrations and EC. Three of these measures may be intended to apply to CCWD. It is the responsibility of the BDCP proponents, and not primarily that of the affected purveyors, to "consider" these measures and to adopt them as binding commitments to reduce, avoid or compensate for the significant impacts of the BDCP. Nevertheless, CCWD offers the following comments, which demonstrate that compensatory mitigation must be identified and analyzed. The first two measures in Appendix 3B.2.1.1 read as follows:

> **Provide Funding Assistance to Acquire Alternative in-Basin Water Supplies, Storage, Conjunctive Uses, or Develop Water Transfers (municipal uses).** Additional water supply improvement projects or agreements could be developed to facilitate improved blending water quality to reduce chloride. This concept could be applied to potential Los Vaqueros Reservoir

> effects based on investigations recommend[ed] in Mitigation Measure WQ-7….
>
> **Develop Water Supply Connections to SWP Facilities or BDCP Intertie (municipal uses).** Water supply supplement/replacement actions or agreements could be developed [to] provide an alternative water supply during poor Delta water quality periods. EIR/EIS Appendix 3B, p. 3B-43.

These two measures must be evaluated as components of the menu of mitigation options to compensate for chloride impacts at CCWD intakes. As discussed in Section 2.3.1.1 of these comments, salinity increases in the Delta would reduce the period during which CCWD can fill Los Vaqueros Reservoir with high-quality water, increase the need to release water from Los Vaqueros Reservoir for blending, reduce the quantity of emergency and drought water supplies stored in Los Vaqueros Reservoir, and reduce the amount of time when Los Vaqueros Reservoir can be used for its fundamental purpose of enabling CCWD to deliver low-salinity water to its customers. Providing replacement quantities of high-quality water, along with additional measures, must be considered to determine whether such an approach would be feasible and effective.

The measures quoted above require more specific formulation and analysis in the BDCP Draft EIR/EIS. First, the BDCP Draft EIR/EIS must include a commitment to meet a performance standard: *Replacement water sources will be secured and provided to CCWD at sufficient quality and quantity to be used to blend with water from CCWD's intakes such that impacts to water quality at CCWD's intakes are fully mitigated and any impact to the quality of water delivered to CCWD's customers and the quantity of water stored at Los Vaqueros Reservoir is avoided.* CCWD staff is available to meet with the project proponents to develop a menu of potentially feasible measures to accomplish this performance standard.

In addition to specifying a performance standard and a list of measures that would be implemented to achieve that standard, the BDCP Draft EIR/EIS must study the environmental effects of the mitigation measures.

The third measure in Appendix 3B.2.1.1 reads as follows:

> **Develop demand management and/or conservation/recycling projects to extend available water supplies (municipal uses).** Facilitation and development of additional demand management, water conservation, and wastewater recycling projects would help reduce use of Delta diversion facilities when water quality is poor allowing for more efficient use of other existing water supplies. BDCP Draft EIR/EIS, Appendix 3B at p. 3B-43.

CCWD currently implements a water demand management program. Such programs would not be sufficient to mitigate the significant water quality impacts of the BDCP on the Los Vaqueros Reservoir, which is needed for blending and emergency and drought supply

purposes. And such a measure seems disingenuous considering the BDCP proponents have rejected alternatives to CM1 that would implement demand management programs in their own jurisdictions in order to reduce their demand for Delta exports.

3.1.3.4.BDCP Draft EIR/EIS Appendix 3B.2.1.2 Bromide.

As discussed above, the BDCP Draft EIR/EIS improperly fails to acknowledge the BDCP's significant impact on bromide levels at CCWD's intake at Mallard Slough. For that reason, the measures identified in Appendix 3B.2.1.2 focus on other locations, but the concepts must be applied, described in greater detail, and analyzed for the impact at Mallard Slough. The bromide measure that is conceptually applicable to CCWD's intake at Mallard Slough is:

> **Provide Funding Assistance to Acquire Alternative in-Basin Water Supplies, Groundwater Banking, or Conjunctive Uses.** Additional water supply improvement projects or agreements could be developed to facilitate reduced use of the North Bay Aqueduct (NBA) and improved water supply blending quality, to reduce potential DBP formation potential.

As discussed in Section 3.1.3.3 above, providing replacement quantities of high-quality water, along with additional measures, must be evaluated to determine whether it is a feasible and effective method to substantially reduce this significant effect. However, the measure quoted above requires more specific formulation; it must be described in detail and analyzed in the BDCP Draft EIR/EIS as an enforceable mitigation measure.

3.1.3.5.BDCP Draft EIR/EIS Appendix 3B.2.1.3 DOC.

Appendix 3B.2.1.3 identified two "concepts" that "could be considered" to address adverse effects of increased DOC concentrations. These concepts must be converted into specific mitigation measures that are described and analyzed in the BDCP Draft EIR/EIS proper and not treated as "non-environmental commitments." The concepts are:

> **Provide funding to implement treatment for DOC and/or DBPs in water treatment facilities.** This could include pre-treatment of DOC or modification of disinfection facilities to minimize DBP formation, or post-disinfection treatment for DBPs or modifications to distribution systems to limit DBP formation.
>
> **Develop DOC source control projects.** Agricultural and/or other waste control projects could be developed to reduce effects of watershed runoff on DOC levels. DOC reduction would reduce DBP formation potential.

In addition to converting these concepts into mitigation, the BDCP proponents must analyze the same mitigation measures as for chloride, EC and bromide.

3.2. The BDCP Draft EIR/EIS Fails to Identify Mitigation for Unacknowledged Significant Impacts Affecting CCWD Operations.

As described in Section 2 of these comments, the BDCP is likely to cause significant water quality impacts from increased concentrations of bromide, organic carbon, dissolved organic matter, and nitrogen leading to harmful byproducts of drinking water disinfection; increased concentrations of algae and algal byproducts; altered drainage patterns and the potential for levee failure. Additionally, the BDCP would have significant impacts on CCWD's water supply. Finally, construction-phase impacts to CCWD facilities or other facilities upon which CCWD relies would impact both water supply and water quality. The BDCP Draft EIR/EIS does not acknowledge any of these impacts and identifies no mitigation for them. These omissions must be rectified in a revised BDCP EIR/EIS.

Specifically with respect to construction impacts to access to CCWD facilities, as discussed in Section2.4.1.1, one feasible mitigation measure would be to enter into an agreement among CCWD, Reclamation, and the Western Area Power Administration to ensure that CCWD facilities are protected, that access to the facilities would not be interrupted during construction, that construction schedules would be coordinated with local agencies and stakeholders, and that CCWD is fully indemnified against any damage, including any flooding of Victoria Island, due to accidents or otherwise, that could result from project tunneling operations or other construction activities.

Construction of the tunnels for CM1 could also cause land subsidence and levee failures. These effects have not been adequately analyzed, as discussed in 2.4.1.2, and legally adequate mitigation has not been identified. The BDCP Draft EIR/EIS improperly bases its conclusion that no mitigation is needed on the fact that future geotechnical studies would be performed as part of the project. BDCP Draft EIR/EIS, Chap. 10 at p.10-94. The BDCP Draft EIR/EIS does not specify where the future studies would be conducted. BDCP Draft EIR/EIS, Appendix 3B at p. 3B-6 (stating that the locations of borings and other test locations will be determined later). If the future geotechnical studies indicate that "settlement is likely in certain areas" (which are not specified), pre-excavation grouting would be conducted and undefined "[f]urther protection methods and associated monitoring programs would be evaluated during design and implemented during construction ***if required***." BDCP Draft EIR/EIS, Appendix 3B at p. 3B-7 (emphasis added). The goal of the undefined monitoring program − which may or may not be required − would be to ensure that settlement is "controlled within acceptable limits," which similarly are not specified. BDCP Draft EIR/EIS, Appendix 3B at p. 3B-7.

The vaguely defined, possible future "protection" measures, to be generated from studies that have not yet been conducted, are insufficient to ensure that the substantial impacts from land subsidence would be rendered insignificant and do not require any mitigation. Instead, site-specific geotechnical investigations should be firmly required at each point where the project crosses a levee or an existing conveyance facility to assess the magnitude and extent of potential ground settlement. Specific protocols and protection measures should be established as concrete, enforceable requirements to address potential settlement; specific monitoring provisions should be identified and mandated; and the "acceptable limits" of subsidence should be clearly defined, with input from affected stakeholders. Project

construction should not increase the risk of levee failure and defined measures should be provided in the BDCP EIR/EIS to ensure that risk is minimized or avoided.

Still more significant impacts may be revealed when the BDCP is adequately described and analyzed. If that occurs, mitigation measures meeting the standards described above must be identified and analyzed to address those impacts as well.

3.3. Mitigation for the BDCP's Impacts Must Be Identified and Evaluated.

As described above, the BDCP Draft EIR/EIS does not describe legally adequate mitigation for the project's acknowledged significant water quality impacts at CCWD intakes. Nor does the document identify mitigation for the environmental impacts that the BDCP Draft EIR/EIS has missed or declined to acknowledge. As the preceding comments also indicate, however, performance standards and a menu of options to substantially reduce these impacts must be identified and evaluated. CCWD is willing to meet with the BDCP proponents to discuss formulation of carefully defined mitigation measures for the BDCP's significant impacts to Delta water quality and supply, as well as for the project's construction-related impacts.

4. The Evaluation Of Alternatives Is Inadequate.

A fundamental policy of CEQA is that a public agency may not approve a project as proposed if there is a feasible alternative that would substantially lessen the project's significant environmental impacts. Cal. Pub. Res. Code § 21002. Thus, as the CEQA Guidelines explain, an EIR must evaluate alternatives that are capable of avoiding or reducing the project's significant impacts, even if the alternatives would impede to some degree the attainment of the project objectives. CEQA Guidelines § 15126.6(b). Further, the evaluation of alternatives must "include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project." *Id.* § 15126.6(d).

NEPA similarly emphasizes the importance of the alternatives analysis, which is "the heart" of the EIS. 40 C.F.R. § 1502.14. The analysis must "[r]igorously explore and objectively evaluate all reasonable alternatives," including "reasonable alternatives not within the jurisdiction of the lead agency," to present a comparative analysis "sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public." *Id.* Additionally, "[w]hen the proposed action is an integral part of a coordinated plan to deal with a broad problem, the range of alternatives that must be evaluated is broadened." *Natural Resources Defense Council v. Morton*, 458 F.2d 827, 835 (D.C. Cir. 1972).

The analysis of alternatives in the BDCP Draft EIR/EIS does not comply with these fundamental principles. First, the BDCP Draft EIR/EIS improperly excludes from detailed consideration several alternatives that could substantially improve the reliability of water

supplies for communities that rely on exports from the Delta while at the same time reducing the proposed project's significant environmental impacts. One prominent example is the "Portfolio" alternative, the consideration of which has been urged by a broad range of water districts, municipalities, environmental organizations, business groups, and elected officials. All reasonable alternatives must be given full and fair consideration so that the public and the state and federal decision-makers can meaningfully compare the options that are available.

Second, the BDCP Draft EIR/EIS fails to include alternatives that involve a meaningful variation of the broad array of project components that make up Conservation Measures 2 through 22 (CM2 through 22). The document acknowledges that the implementation of these numerous conservation measures could cause significant environmental impacts, but the only project component that truly changes under the BDCP alternatives analysis is CM1. This constrained approach, which refuses to consider important variations in all but one of the project elements, defeats the goal of presenting a rigorous and thorough evaluation of the options.

Third, the BDCP Draft EIR/EIS uses a confusing approach that fails to present a clear comparison of the different alternatives that are evaluated. While the analysis presents 15 alternative physical configurations for the proposed water conveyance facilities, a comparative evaluation of the impacts from the configurations is obscured through the inconsistent application of different operational scenarios. This makes it impossible for even a sophisticated reader to isolate the potential impacts based on either the particular physical configuration or the particular operational scenario at issue. Instead of sharply defining the issues to provide a clear basis for a reasoned choice among the options (*see* 40 C.F.R. § 1502.14), the analysis is blurred and ill-defined.

The alternatives analysis in the BDCP Draft EIR/EIS fails to comply with CEQA and NEPA. The analysis needs to be redone.

4.1. The BDCP Draft EIR/EIS Improperly Omits Detailed Evaluation of Alternatives that Could Improve Water Supply Reliability while also Reducing Negative Environmental Impacts.

The Portfolio alternative would involve a 3,000 cfs north Delta intake and a single tunnel sized for 3,000 cfs gravity flow, with increased water storage south of the Delta, enhanced water recycling and conservation, and improvements to Delta levees (The Bay Institute et al., 2013). Consideration of this alternative has been urged by a diverse group of stakeholders including water agencies (Alameda County Water District et al., 2013), municipalities, business organizations, environmental groups, independent bodies, state agencies, and federal, state and local elected officials (NRDC, 2013b). The alternative could substantially improve the reliability of water supplies for those who depend on Delta exports, while at the same time significantly reducing the BDCP's environmental impacts and its enormous financial costs. But instead of giving the alternative a hard look, the BDCP Draft EIR/EIS dismisses it as beyond the scope of the proposed project. See BDCP Draft EIR/EIS, Appendix 3A at p. 3A-81.

The refusal to evaluate the Portfolio alternative, or a similar type of option, violates CEQA and NEPA. In responding to the Portfolio alternative, the State has made clear that "[t]he BDCP is governed by the legislatively-mandated co-equal goals to restore the ecosystem of the Delta and determine what water can be exported in a way that's environmentally sustainable and reliable in the face of an extreme event or disaster made more likely by climate change" (California Natural Resources Agency, 2013 at p. 1). Given that the Portfolio alternative represents a potentially feasible way of achieving, at least in large part, both of these co-equal goals, it should be studied in the BDCP Draft EIR/EIS.

In dismissing the Portfolio alternative, the BDCP Draft EIR/EIS states that while the alternative has "much merit," its scope is "greater than can be achieved through a Delta-focused HCP/NCCP." BDCP Draft EIR/EIS, Appendix 3A at p. 3A-81. This claim relies on circular reasoning to evade the obligation to study alternatives under CEQA and NEPA. In essence, this claim posits that the scope of the alternatives analysis for a proposal to build massive new water conveyance facilities, which would cause numerous significant impacts, is limited to the options that provide for the construction and operation of those same facilities. In other words, a legitimate proposal that would substantially lessen the project's impacts (NRDC 2013a) by achieving the project objectives in another manner is beyond the scope of the project, on the grounds that the project is designed to provide for the environmental permitting and approval of the operation of the project-- and nothing else. This position defies logic and is not a sound basis for excluding an evaluation of the Portfolio alternative.

The BDCP Draft EIR/EIS similarly makes the spurious claim that DWR has no control over local water recycling and conservation. BDCP Draft EIR/EIS, Appendix 3A at p. 3A-81. DWR's own webpage touts its water use efficiency programs, claiming that the agency "[p]rovides expertise to local agencies and individuals regarding agricultural and urban water and energy conservation, reclamation and reuse of water, land and water use, and drainage management," "[c]arries out data analysis, demonstration projects, and research to achieve energy and water use efficiency," and "[p]rovides loans and grants to make more efficient use of water and energy resources" (DWR, 2014d).

The BDCP proponents have a profound influence over local water use. For example, the various water conservation initiatives listed on Metropolitan Water District's webpage include an On-Site Retrofit Pilot Program, which provides incentives for conversion of potable water irrigation or industrial systems to use recycled water for public or private property owners; an Innovative Conservation Program, which researches new water saving devices, technologies, and strategies; a Water Savings Incentive Program, which is a collaborative effort with its 26 public member agencies and large-volume water customers to improve water use efficiency; a Landscape Irrigation Survey Program, which is designed to improve irrigation efficiency for commercial, industrial, institutional and common area landscapes with at least one acre of irrigated land; a Community Partnering Program, which sponsors water conservation and water-use efficiency programs and measures for community-based organizations including nonprofit groups, professional associations, educational institutions and public agencies; and the Southern California World Water Forum, which awards grants for the research and development of water-use efficiency technology, policy research and communication strategies that can be cost-effectively

implemented in Southern California (Metropolitan Water District of Southern California, 2014a; Metropolitan Water District of Southern California, 2014b).

The claim that water conservation is beyond the control of the BDCP project proponents is a red herring. And even if DWR and the BDCP proponents lacked influence or control over local water conservation efforts, that would not be an excuse for failing to evaluate the Portfolio alternative. *See* 40 C.F.R. § 1502.14(c) (alternatives analysis must include "reasonable alternatives not within the jurisdiction of the lead agency"); CEQA Guidelines § 15126.6(f)(1) (no single factor, such as regulatory limitations or jurisdictional boundaries, establishes a fixed limit on the scope of the alternatives analysis, which must be sufficient to foster meaningful public participation and informed decision-making).

As with water conservation, the BDCP Draft EIR/EIS claims that increased south of Delta storage is beyond the scope of the proposed project. BDCP Draft EIR/EIS, Appendix 3A at p. 3A-81. DWR "agrees" that such new storage should be part of a water supply program for California, but the BDCP Draft EIR/EIS asserts that this "cannot transform the BDCP from an incidental take permit focused on the Delta into a water plan for all users of Delta water." *Id*. The narrow focus on incidental take coverage ignores the fact that Conservation Measure 1 would constitute a massive water conveyance system that would provide supplies to users of Delta water. The new water conveyance and supply system would have numerous significant environmental impacts; the BDCP Draft EIR/EIS accordingly must evaluate alternatives to the construction and operation of the proposed system that would reduce these impacts, including the option of building smaller conveyance facilities in connection with increased storage. The BDCP Draft EIR/EIS cannot dismiss such an alternative merely because DWR does not want to evaluate storage options at this time, or as part of this approach. This approach improperly constrains the evaluation of alternatives, in addition to improperly segmenting the environmental analysis, as discussed in Section 1.1.6 of these comments. The end result is that the BDCP Draft EIR/EIS fails to provide a clear picture to the public and the decision-makers of the relevant trade-offs of the Portfolio alternative or similar approach, as compared to the proposed project.

The BDCP Draft EIR/EIS repeats its mantra in stating that reinforcing Delta levees is "also outside the scope of the BDCP." BDCP Draft EIR/EIS, Appendix 3A at p. 3A-81. But according to one of the stated project objectives, the BDCP seeks to "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." *Id.*, Chap. 2 at p. 2-3. This objective matches one of the key components of the Portfolio alternative, which is to "[i]mprove Delta levees to reduce vulnerability of Delta water supplies to earthquakes, sea level rise, and climate change impacts." *Id*., Appendix 3A at p. 3A-81. Again, the BDCP Draft EIR/EIS has artificially constrained the scope of the alternatives analysis to exclude the Portfolio alternative.

The project proponents have direct control over their agencies' investments in alternatives capable of achieving the BDCP's objectives, and could have defined an alternative that included reduced reliance on the Delta. Even though there may be uncertainty over the details of such an option, considerable uncertainty similarly surrounds many components of the BDCP, such as the ill-defined habitat restoration actions − in particular, how much

acreage actually would be restored; how the restoration actions would be configured, sequenced, and designed; how effective the restoration actions would be; and how the restoration actions would be sufficiently funded.

It is specious to dismiss the Portfolio alternative as beyond the purview of the project. One of the purposes of the alternatives analysis is to provide decision-makers and the public with the information necessary to evaluate the trade-offs inherent in large capital improvement projects. In this case, the evaluation is curtailed and incomplete. Alternatives that include reducing reliance on the Delta and instead meeting the project objectives through smaller conveyance facilities and increased storage should be developed and fully evaluated. Given the large number of significant unavoidable impacts caused by the proposed project, it is irresponsible from a public policy perspective, and contrary to the requirements of CEQA and NEPA, to refuse even to consider alternatives that reduce reliance on the Delta and lessen the impacts to this vital resource.

Another alternative that should be explored is a thorough examination of how "reoperation" of existing reservoirs upstream of the Delta could realize additional yields that could be used to enhance water supply reliability while reducing the negative environmental impacts resulting from the BDCP as it is currently proposed. The BDCP recognizes that the reoperation of upstream reservoirs could create additional yield (BDCP, Chap. 3 at p. 3.4-356), but there is no analysis of how this reoperation could impact water quality (Section 2.2.1 of these comments) and there is equally no discussion of alternative approaches for changing operations of upstream reservoirs, in combination with a smaller conveyance facility than what is included in DWR's Preferred Alternative (Alternative 4), to achieve water supply benefits while also reducing water quality impacts. As with the Portfolio approach, the BDCP Draft EIR/EIS needs to include such an alternative to provide sufficient information to the public and the decision-makers.

4.2. The Alternatives That Have Been Evaluated Fail to Avoid or Substantially Lessen most of the Significant Effects of the Proposed Project.

CEQA requires lead agencies to evaluate a reasonable range of alternatives that avoid or substantially lessen significant effects of the proposed project. Alternative 4, the DWR Preferred Alternative, results in 52 significant unavoidable impacts. BDCP Draft EIR/EIS, Table ES-9. Of these, for only nine impacts do any of the studied alternatives avoid or substantially lessen the significant effects and five of the nine are related to the fact that Alternative 9 does not include construction of new conveyance facilities. In critical resource areas like water quality, none of the alternatives evaluated substantially lessen the six significant unavoidable impacts of Alternative 4. The alternatives therefore do not function as CEQA intended—they do not avoid or substantially lessen the project's significant effects. In most cases, the impact conclusions are the same for all of the alternatives. This makes it difficult to discern the relative merits and detriments of the alternatives, and does not aid in the decision-making process.

The analysis needs to be revised to include alternatives that 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." CEQA Guidelines § 15126.6(b). A fair analysis of the Portfolio alternative, for example, or of another alternative that reduces reliance on the Delta for water supplies in the export areas, may reveal an option that would substantially lessen project impacts while still providing ecosystem improvements and enhancing water supply reliability.

4.3. The BDCP Draft EIR/EIS Fails to Evaluate Alternatives to Habitat Restoration Conservation Measures.

The BDCP Draft EIR/EIS also violates CEQA and NEPA by failing to examine alternative approaches for habitat restoration. For all of the alternatives, it is assumed that the wide range of habitat restoration actions (CM2 through CM11) that are proposed as part of the BDCP would be implemented; the only variations are in the quantity of specific habitat types to be restored under some of the alternatives. BDCP Draft EIR/EIS, Chap. 3 at pp. 3-39 ("[t]arget acreages would vary for some alternatives"); 3-121 (reduced acreage of restoration of tidal natural communities under Alternative 5); 3-137 (increased acreage of restoration of seasonally inundated floodplain habitat under Alternative 7). But there are no alternatives modifying the manner in which the habitat restoration actions would be implemented; nor is there an explanation of why such alternatives are not possible. This is a significant omission, given that the BDCP Draft EIR/EIS recognizes that habitat restoration actions would cause a number of significant unavoidable impacts. *See, e.g.*, Impacts GW-6; WQ-14, WQ-18, WQ-22; AG-3, AG-4.

For example, an alternative could have been explored that would implement tidal natural communities habitat restoration actions under CM4 in a way that would avoid or minimize the significant salinity impacts these actions could cause. This could be accomplished by establishing parameters for the timing, sequence and design of individual habitat restoration actions under CM4 to control the overall salinity effects.

Instead of evaluating such an option to reduce significant, identified environmental impacts, the BDCP Draft EIR/EIS defers this type of alternatives analysis to a later date, based on the claim that the current analysis of the habitat conservation measures is only programmatic. However, the fact that CM2 through 11 are examined at a program level does not obviate the requirement to examine alternatives. To the contrary, a program-level analysis is supposed to provide an opportunity for a more thorough consideration of program-wide alternatives at an earlier stage than might be the case in a project-level review. *See* CEQA Guidelines § 15168(b)(1), (4).

Moreover, this is not merely a small component of the BDCP. The ten Conservation Measures at issue (CM2 through CM11) are nearly half of the components of the BDCP (CM1 through CM22) and reflect a major part of the strategy for the proposed project. The BDCP Draft EIR/EIS should not have limited the alternatives to different configurations and operational scenarios of only one project component − CM1; alternatives should have been

presented that address the entirety of the BDCP and the full range of the project's significant impacts, including impacts caused by habitat restoration.

Alternatives could have been evaluated to vary how the habitat restoration actions are implemented (including the location, design and type of habitat restored) or to examine other types of recovery measures, including modifying the balance between restoration and the efforts to address other stressors. Without even a consideration of alternative approaches to habitat restoration, the BDCP Draft EIR/EIS fails to provide sufficient information to foster meaningful public participation and informed decision-making.

4.4. The BDCP Draft EIR/EIS Fails to Present an Adequate Comparative Analysis of the Alternatives.

The BDCP Draft EIR/EIS evaluates 15 different conveyance facility configurations. But it is nearly impossible to compare the relative impacts of the configurations, since the configurations are assigned different operating scenarios. The reader cannot tell whether it is the change in conveyance facility configuration or the change in operating scenario that is causing the difference in impacts. BDCP Draft EIR/EIS, Chap. 3 at pp. 3-14 to 3-16. For example:

- The facility configurations represented by Alternatives 1A, 1B and 1C are assigned Operating Scenario A.
- The facility configurations represented by Alternatives 2A, 2B, and 2C are assigned Operating Scenario B.
- The facility configuration represented by Alternative 4 (the proposed project) is assigned Operating Scenario H.
- The facility configuration represented by Alternative 5 is assigned Operating Scenario C.
- The facility configurations represented by Alternatives 6A, 6B, and 6C are assigned Operating Scenario D.
- The facility configuration represented by Alternative 7 is assigned Operating Scenario E.
- The facility configuration represented by Alternative 8 is assigned Operating Scenario F.

To make a straightforward comparison with the DWR Preferred Alternative (Alternative 4), one would need to apply Operational Scenario H to the other alternatives. That would reveal how a change to the physical configuration of the project would or would not reduce impacts. But none of the other alternatives is paired with this operational scenario and instead different operational scenarios are used. Similarly, to reveal how an operational

change to the project would or would not reduce impacts, each of the operational changes should have been applied to Alternative 4. That approach would have isolated the effects of the operational changes. Instead, different operational changes were applied to different physical configurations of CM1. This unsystematic, mix-and-match approach obfuscates the comparison and makes it very hard to tell what particular mechanism (conveyance facility or operational scenario) is causing the impacts that are identified.

The BDCP Draft EIR/EIS claims it is using a "bookend" approach to create a continuum of impacts, under which the impacts of any combination of conveyance facility configuration and operational scenario would fall within the bookends. The document states: "Although the EIR/EIS only applies this scenario [H] to Alternative 4 (the CEQA Preferred Alternative), Scenario H could be implemented with any other project alternative in order to create a hybrid alternative within the bookends created by the entire range of alternatives addressed in the EIR/EIS." BDCP Draft EIR/EIS, Chap. 3 at p. 3-202. But this approach does not reveal *how* the impacts of the alternatives would change if a different operating scenario were applied to them. It is not a ***comparative*** approach that identifies the relative trade-offs of the alternatives as against the proposed project. This is insufficient. *See* CEQA Guidelines § 15126.6(d) (EIR must "include sufficient information ***about each alternative*** to allow meaningful evaluation, analysis, and ***comparison*** with the proposed project") (emphasis added); 40 C.F.R. § 1502.14 (EIS "should present the environmental impacts of the proposal and the alternatives in ***comparative form***, thus sharply defining the issues and providing a ***clear basis for choice among options*** by the decisionmaker and the public") (emphasis added).

It is inadequate simply to say that the impacts of the alternatives all fall within the "bookends." Especially for a project of this magnitude, which would affect millions of Californians for generations, more information is needed about the relative impacts of the different alternatives to provide a basis for meaningful choice and informed decision-making. It is critical to understand *how* the alternative physical configurations would affect the impact analysis, and how the alternative operational scenarios would affect the impact analysis. Only then could a decision-maker make an informed choice among the options.

Equally important, the unique application of Operational Scenario H to DWR's Preferred Alternative (Alternative 4) results in a biased analysis, since this operational scenario has been improved and refined to address potential impacts to fisheries. DWR has therefore put its thumb on the scale in purporting to present a fair measurement of the impacts of the alternatives in comparison with the BDCP as proposed. While the BDCP Draft EIR/EIS indicates that Operational Scenario H ***could be implemented*** in combination with the other alternatives, this type of assessment is not presented, so there is no way of actually making the relevant comparison.

In sum, the evaluation of alternatives in the BDCP Draft EIR/EIS is flawed in a variety of key respects and substantial revisions are required to present an analysis that complies with CEQA and NEPA.

5. The Department of Water Resources Is the Wrong Lead Agency for the BDCP under CEQA.

CEQA defines "lead agency" as "the public agency which has the principal responsibility for carrying out or approving a project." Cal. Pub. Res. Code § 21067. Where several agencies have a role in approving, implementing or realizing a project, CEQA "plainly requires the public agency with principal responsibility to assume the role as lead agency." *Planning & Conservation League v. Department of Water Resources*, 83 Cal. App. 4th 892, 906 (2000).

The selection of the proper lead agency is not merely an academic exercise. Rather, the lead agency plays a "crucial role" in the EIR process, as it "must ***independently*** participate, review, analyze and discuss the alternatives in good faith." *Planning & Conservation League v. Department of Water Resources*, 83 Cal. App. 4th at 903-04 (court's emphasis). Thus, "the lead agency plays a pivotal role in defining the scope of environmental review, lending its expertise in areas within its particular domain, and in ultimately recommending the most environmentally sound alternative." *Id*. at 904. "So significant is the role of the lead agency that CEQA proscribes delegation." *Id*. at 907.

The proposed BDCP is intended to serve as a Natural Community Conservation Plan (NCCP) pursuant to the Natural Community Conservation Planning Act (NCCPA). BDCP Draft EIR, Exec. Summary at p. ES-1 and p. ES-13 ("the BDCP is a joint HCP/NCCP intended to address ESA and NCCPA compliance"). But under the NCCPA, the authority for approving a NCCP rests with the California Department of Fish & Wildlife (CDFW), not DWR. *See* Cal. Fish & Game Code § 2820(a) (CDFW approves an NCCP for implementation after making specified findings based on substantial evidence in that agency's administrative record); *see also id*. § 2821 (concurrent with its approval of an NCCP, CDFW must establish a list of species authorized for take and make findings regarding the coverage of species and the mitigation of impacts under the NCCP). In contrast to the approval authority of the CDFW over an NCCP, DWR, the agency that has assumed the role of CEQA lead agency for the BDCP Draft EIR/EIS, does not have the power to approve an NCCP. DWR's role in this project instead is focused on the operation of the SWP and the water conveyance facilities that are only one of the BDCP's 22 Conservation Measures, CM 1. As explained in the section of the BDCP Draft EIR/EIS addressing agency roles and responsibilities, "DWR has the responsibility to operate and maintain the [State Water Project] and would be involved in all aspects of CM1 related to the SWP, as well as any discretionary actions related to coordination with Reclamation or its contractors." BDCP Draft EIR/EIS, Chap. 1 at p. 1-15; Draft Implementing Agreement (dated May 28, 2014) at p. 1 (DWR is responsible for operating and maintaining SWP facilities). As for the 21 other Conservation Measures (CM 2 through 22) that make up the proposed NCCP, the BDCP Draft EIR/EIS indicates that DWR − rather than exercising adoption or approval authority − will submit the proposal to the California Department of Fish & Wildlife for its approval under the provisions of the California Fish & Game Code that govern NCCPs. BDCP Draft EIR/EIS, Chap. 1 at pp. 1-12, 1-15.

Thus, this is not a situation where an association or consortium of local governmental bodies, who are directly responsible for exercising their land use authorities to implement the provisions of an NCCP, assumes lead agency status under CEQA for the plan's preparation. Here, DWR's jurisdiction and authority is limited to the approval and implementation of CM1 and the operations of the SWP.

DWR is simply not the proper lead agency for the BDCP Draft EIR/EIS. It does not have "principal responsibility" for 95 percent of the Conservation Measures that make up the NCCP that is being proposed. Instead, the proper lead agency is the CDFW. It is not only the agency with principal responsibility for approving the NCCP, it also is in the best position to conduct a fair and independent evaluation of the detriments and benefits posed by all of the proposed conservation measures, given its statutory mission and its unique and extensive expertise in matters of ecological conservation. See *Planning & Conservation League v. Department of Water Resources*, 83 Cal. App. 4th at 903-04.

This fundamental error is far from harmless. It taints virtually every aspect of the BDCP Draft EIR/EIS, including the lack of adequate detail in the project description, the imbalanced evaluation of alternatives, the use of an improper environmental baseline, the erroneous identification and assessment of significant water quality and water supply impacts, and the plainly insufficient mitigation for those impacts. The selection of the wrong lead agency renders the BDCP Draft EIR/EIS fatally flawed and legally indefensible.

6. Descriptions of CCWD Facilities, Operations, and Permits Are Inaccurate.

Throughout the BDCP Draft EIR/EIS, CCWD's facilities, operations, and permits are inaccurately, incompletely, and inconsistently described. The BDCP Draft EIR/EIS must be corrected to accurately and consistently characterize CCWD's facilities, operations, and permits. It also must clarify that CCWD is not a Delta exporter and that CCWD's operations are not part of the proposed BDCP. Additionally, the BDCP Draft EIR/EIS inappropriately omits certain existing CCWD facilities and mis-characterizes CCWD operations in the environmental baseline, as discussed briefly here and described in more detail in Section 2.1.1 of these comments.

6.1. It Is Important to Accurately Characterize and Model Existing CCWD Facilities, Operations, and Permits.

Descriptions of CCWD's facilities and operations vary throughout the BDCP Draft EIR/EIS. Some of the descriptions are incomplete or not up to date, and some contain inaccurate information. To avoid confusion, these descriptions should be corrected. The following description provides accurate, up-to-date information and should be the basis for all descriptions of CCWD in the BDCP Draft EIR/EIS.

> Contra Costa Water District (CCWD) diverts water from the Delta under its CVP contract and under its own water rights. Under its CVP contract, CCWD can

divert water at Rock Slough for direct use in its service area (as well as storage in Contra Loma Reservoir) and divert water at its intake on Old River near State Route 4 (CCWD's Old River intake) and its intake on Victoria Canal near Middle River (CCWD's Middle River intake) for either direct use or for storage in Los Vaqueros Reservoir. Under its own State Water Board permit and license, CCWD can divert water for direct use at Mallard Slough. Under its own State Water Board permit, CCWD can divert water at its Old River and Middle River intakes to storage in Los Vaqueros Reservoir for municipal, industrial, domestic, irrigation, recreation, incidental fish and wildlife preservation and/or enhancement, and water quality purposes.

CCWD's water system includes intake facilities at Mallard Slough, Rock Slough, Old River, and Victoria Canal near Middle River (Middle River intake); the Contra Costa Canal and shortcut pipeline; Contra Loma Reservoir; the Martinez Terminal Reservoir; and the Los Vaqueros Reservoir. The Rock Slough intake facilities, the Contra Costa Canal, the Shortcut Pipeline, the Contra Loma Reservoir, and the Martinez Terminal Reservoir are owned by Reclamation, and operated and maintained by CCWD under contract with Reclamation. Mallard Slough intake, Old River intake, Middle River intake, and Los Vaqueros Reservoir are owned and operated by CCWD and are not part of the CVP.

All CCWD intakes are equipped with state of the art fish screens. The Contra Costa Canal Fish Screen was completed and formally dedicated in September 2011. The Contra Costa Canal Fish Screen (also known as the Rock Slough Fish Screen) was constructed and is owned by Reclamation and is operated by CCWD.

The Los Vaqueros Reservoir is a 160 thousand acre-foot off-stream reservoir solely owned and operated by CCWD. The Los Vaqueros Reservoir provides water quality and drought and emergency water supply reliability benefits to CCWD, as well as opportunities for regional water supply reliability partnerships. Originally built at 100 thousand acre-feet, the reservoir was expanded to its current capacity in 2012. Reclamation and CCWD are currently conducting a feasibility study for the possible further expansion of Los Vaqueros Reservoir for the benefit of regional partners.

CCWD's operations are governed by Biological Opinions issued to Reclamation under Section 7 consultations separate from the Biological Opinions for the Operations Criteria and Plan (OCAP) of the CVP and SWP (hereafter, "CCWD-specific BOs") (NMFS, 1993; USFWS, 1993; USFWS, 2000; USFWS, 2005). CCWD's operations are included in the project description and modeling for the long-term CVP/SWP operations Biological Assessment, which resulted in the current Biological Opinions on CVP/SWP operations (USFWS 2008; NMFS 2009). CCWD also has California Endangered Species Act take authorization for all its operations under an Incidental Take Permit issued in 2009 by the California Department of Fish and Game (California Department of Fish and Game, 2009).

As a CVP contractor, CCWD's operations described above would be included in the BDCP ESA Section 7 Biological Assessment as part of the existing operations. CCWD is not an ESA Section 10 permit applicant under the BDCP.

CCWD is a CVP contractor and an in-Delta diverter. CCWD is not an exporter of water from the Delta, is not in the CVP or SWP export service area, and does not receive water from the export facilities. CCWD's territory lies within the legal boundary of the Delta or is immediately adjacent thereto and conveniently served with water therefrom.

The description of CCWD's diversion facilities in section 5.1.2.6 of the BDCP Draft EIR/EIS is consistent with the description above. However, CCWD's facilities are inconsistently and incorrectly described in many other places in the BDCP Draft EIR/EIS. CCWD requests that all such flawed descriptions be corrected. Failing to accurately describe CCWD facilities and operations can lead to misinterpretation or misrepresentation of the results of the impact analysis. For example, the text in the BDCP Draft EIR/EIS on page 25-137, lines 39-43 appears to limit the discussion of mitigating for DOC impacts at CCWD Delta intakes to Rock Slough; however, impacts at all CCWD Delta intakes should be mitigated.

An additional example of the importance of accurately describing CCWD's facilities and operations results from the mischaracterization of CCWD as being within the CVP export service area. (e.g. BDCP Draft EIR/EIS, Executive Summary, Figure ES-1; BDCP Draft EIR/EIS, Chap. 1, Figures 1-3 and 1-4; BDCP Draft EIR/EIS, Chap. 3 at p. 3-116; BDCP Draft EIR/EIS, Chap. 5 at p. 5-25 and Figure 5-2; and BDCP, Chap. 35 at p. 35-9) As a CVP contractor, CCWD is in the CVP service area, but CCWD is not in the export service area. CCWD is an in-Delta diverter. CCWD is not in the area served by the CVP or SWP export facilities, and CCWD does not receive water from the export facilities. Chapter 8 of the BDCP Draft EIR/EIS assesses water quality impacts by region; impacts to CCWD's water quality cannot have been accurately assessed if CCWD was assumed to be in the export service area. If the analysis did correctly assess CCWD as not being within the export service area, then the text should be modified to reflect this fact and avoid confusion. If, on the other hand, the impact assessment incorrectly assumed that CCWD is within the export service area, then the assessment needs to be redone.

Similarly, Figure 6-4 of the BDCP Draft EIR/EIS incorrectly labels CCWD's Mallard Slough, Rock Slough, and Old River intakes as "Export Facilities" rather than Delta diversion locations (and CCWD's Middle River intake is missing entirely from the figure). Also, in the glossary of the BDCP Draft EIR/EIS, Contra Costa Canal is incorrectly included in the list of facilities through which water is exported from the Delta. CCWD's diversions to the Contra Costa Canal from the Delta are not Delta exports. CCWD's Delta diversions should not be included in any calculations of total Delta exports presented in the BDCP Draft EIR/EIS (for instance, in the water supply analysis in Chapter 5). If the export calculations correctly excluded CCWD diversions, then the text should be modified to reflect that and to avoid confusion; if not, then the calculations need to be redone.

The following list provides other examples of the flawed descriptions of CCWD facilities and operations in the BDCP Draft EIR/EIS, and provides guidance on correcting the errors.

- "Contra Costa Diversion Facilities" are not owned and maintained by the CVP as indicated on page 3-181, lines 5-8. Only CCWD's diversion facility at Rock Slough is owned by the CVP, but it is operated and maintained by CCWD. CCWD's other diversion facilities (Old River, Middle River and Mallard Slough) are all owned, operated, and maintained by CCWD and are not part of the CVP.

- On page 8-12, lines 16-18, the BDCP Draft EIR/EIS states, "CVP's Contra Costa Canal conveys Delta water from Rock Slough. CCWD's Los Vaqueros Pipeline diverts water from Old River to the west to meet potable demands of Bay Area users served by CCWD." This description is incomplete and inaccurate. CCWD diverts Delta water from the Rock Slough, Old River, Middle River, and Mallard Slough intakes, and operates and maintains CVP's Contra Costa Canal to convey this Delta water, arriving from all its intakes and from Los Vaqueros Reservoir, to its service area. CCWD also diverts water into the Los Vaqueros Pipeline, which connects to the Contra Costa Canal, using its Old and Middle River intakes. Finally, CCWD diverts water to storage in Los Vaqueros Reservoir from both its Old and Middle River intakes.

- CCWD's Alternative Intake Project, which built the Middle River intake on Victoria Canal, was completed in 2010 and provides improved water quality and operational flexibility for CCWD. The Alternative Intake Project (now referred to as the Middle River intake) is described incorrectly in numerous places throughout the BDCP Draft EIR/EIS:

    - In multiple places, the BDCP Draft EIR/EIS lists a CCWD Alternative Intake and 55 thousand acre-feet/year increased demand as a "new urban intake" to be added to Existing Conditions to simulate the No-Action Alternative. This is incorrect. The Alternative Intake Project did not respond to or cause increased CCWD service area demand and did not increase CCWD's Delta diversions.

    - Descriptions of the Alternative Intake Project as including a "potable water intake" should be corrected to read "drinking water intake," since water diverted from the Delta is not potable until it is treated.

    - In multiple places in the BDCP Draft EIR/EIS, CCWD, Reclamation, and DWR are all listed as primary agencies for the Middle River intake (previously known as the Alternative Intake Project). Reclamation and CCWD jointly prepared the EIR/EIS for the Alternative Intake Project, but CCWD permitted, constructed and solely owns and operates the Middle River intake.

- The Los Vaqueros Reservoir Expansion Project is subject to wildly varying statements regarding its timeline and status. In 2010 CCWD and Reclamation completed the Final EIS/EIR for the Los Vaqueros Reservoir Expansion Project,

which included alternatives for expanding the reservoir to 275 thousand acre-feet and to 160 thousand acre-feet. CCWD completed construction to expand CCWD's Los Vaqueros Reservoir to 160 thousand acre-feet in 2012. Specific corrections to the BDCP Draft EIR/EIS that are required include:

- The description of the Los Vaqueros Reservoir Expansion in Table 11-14 on page11-3016 incorrectly states that CCWD diverts water from "near Rock Slough" to fill Los Vaqueros Reservoir. CCWD diverts water to storage in Los Vaqueros Reservoir from its Old River intake or Middle River intake, not from its Rock Slough intake.

- Reclamation and the Department of Water Resources are listed in the BDCP Draft EIR/EIS with CCWD as primary agencies for the Los Vaqueros Reservoir Expansion Project. Reclamation was the NEPA lead agency on the Los Vaqueros Reservoir Expansion Project EIS/EIR, and CCWD was the CEQA lead agency. However, the expansion project was built by CCWD alone, and CCWD solely owns and operates Los Vaqueros Reservoir.

- In the BDCP Draft EIR/EIS, CVP facilities operated by CCWD are incorrectly grouped with CVP and SWP export facilities. Unspecified "portions of the CCWD Diversions Facilities" are erroneously listed in Section 3.6.1.9 on page 3-116 with SWP and CVP south Delta export facilities. CCWD is a CVP contractor and diverts water to serve its customers from its Delta intakes under its CVP contract and its own water rights. The Rock Slough intake, Rock Slough Fish Screen, Contra Costa Canal, Martinez Reservoir and Contra Loma Reservoir are owned by the CVP, but these facilities are not part of CVP south Delta export facilities. CCWD operates and maintains these facilities. The CVP does not operate these or any other of CCWD's facilities, and modifications to CCWD operations are not part of the BDCP (as correctly noted on page 3-116 of the BDCP Draft EIR/EIS). A description of CCWD diversions of CVP water and CCWD use of the Rock Slough Pumping Plants and Contra Costa Canal is incorrectly included on page 21-5 of Section 21.1.1.4, which is titled "CVP Delta-Mendota Canal Facilities." CCWD does not receive water from the Jones Pumping Plant or the Delta-Mendota Canal facilities. The Contra Costa Canal, Rock Slough Pumping Plants, and Rock Slough Fish Screen are independent of CVP's Delta-Mendota Canal facilities and should be described in their own separate section. CCWD should not be shown to receive water from the CVP and SWP export facilities in either the existing condition baseline or under any of the BDCP project alternative scenarios presented in the BDCP Draft EIR/EIS.

6.2. CCWD Has Separate Endangered Species Act and California Endangered Species Act Permits Governing its Operations.

CCWD is not an Endangered Species Act Section 10 permit applicant under the BDCP. CCWD diverts water under its CVP contract and its own water rights from intakes at Rock

Slough, Mallard Slough, Old River, and Victoria Canal near Middle River. CCWD owns, operates, and maintains all of these facilities except for the Rock Slough intake, which is owned by Reclamation but operated and maintained by CCWD. As the BDCP Draft EIR/EIS accurately states in Chapter 5 on page 5-27, CCWD operations are governed by a separate set of existing biological opinions and an incidental take permit, including the March 18, 1993 National Marine Fisheries Service biological opinion on the Los Vaqueros Project (NMFS, 1993); the September 9, 1993 U.S. Fish and Wildlife Service (USFWS) biological opinion on the Los Vaqueros Project, (USFWS, 1993); the April 27, 2000 USFWS biological opinion on CCWD construction of a Multipurpose Pipeline and Future Water Supply Implementation Program (USFWS, 2000); the March 11, 2005 USFWS biological opinion on the Renewal of CCWD's Central Valley Project Water Service Contract (USFWS, 2005); and the 2009 California Department of Fish and Game Incidental Take Permit (ITP) for the Maintenance and Operation of the Los Vaqueros Project and Alternative Intake Project (California Department of Fish and Game, 2009). The BDCP Draft EIR/EIS states on page 3-181 that maintenance of "Contra Costa Diversion Facilities" will be covered in the BDCP ESA Section 7 consultation, but maintenance of CCWD's facilities is covered under the biological opinions listed above and should not be included in the BDCP ESA Section 7 consultation. If, as a result of the BDCP ESA Section 7 consultation, any of the criteria for reinitiation of consultation set forth in CCWD-specific biological opinions are triggered, Reclamation and CCWD will reinitiate consultation under ESA Section 7.

6.3. CCWD Facilities and Operations Are Not Accurately Reflected in the BDCP Environmental Baseline Scenarios.

The BDCP Draft EIR/EIS fails to include important components of CCWD's existing facilities and operations in the environmental baseline under CEQA. Section 2.1 of these comments discusses the invalid baseline used in the BDCP Draft EIR/EIS in additional detail. The construction of the Middle River intake, the expansion of Los Vaqueros Reservoir to 160 thousand acre-feet, and the completion of the Rock Slough Fish Screen all occurred by 2012. These facilities have improved CCWD's operational flexibility and are now integral to CCWD operations. Excluding these facilities and the associated operations enabled by them from the environmental baseline conditions results in an invalid impacts analysis, because the BDCP Draft EIR/EIS is using a base case scenario that no longer exists. CCWD's current, existing operations are simulated in a module that was developed by CCWD and has been integrated into the version of the CalSim II water operations model that was used by the BDCP team of modelers. Including these facilities in the environmental baseline conditions is a simple matter of specifying the correct numbers for storage in Los Vaqueros Reservoir and pumping capacity at the Middle River intake in the already extant CalSim II model code. Adjusting these two numbers to reflect the correct existing conditions for CCWD operations could have been done at any point between the many iterations of model runs that the BDCP modeling team produced. Incorporating CCWD's existing facilities in the CEQA baseline is needed to allow a more accurate assessment of BDCP project impacts on CCWD's water quality and water supply operations. The failure to do so is inexplicable and results in a flawed baseline and thus a flawed impact analysis. These known uncorrected errors in the models must be corrected,

and the environmental analysis must be redone. When it is redone, CCWD's facilities must be accurately included in the models as they currently exist.

7. The Proposed BDCP is Inadequate as a Habitat Conservation Plan and Natural Community Conservation Plan.

7.1. The BDCP Governance Structure Should Be Revised to Ensure Water Quality Concerns Are Carefully Considered during all Stages of Project Implementation.

7.1.1. The proposed governance structure does not provide effective representation of CCWD's interests.

As the only major municipal water supplier that relies solely on intakes it operates in the Delta, CCWD is situated differently from every other water district in California. Given CCWD's unique position and its distinct interests, it must have an effective voice in the implementation of the BDCP, so that it can serve as a watchdog for the protection of Delta water quality. Unfortunately, the BDCP governance structure as proposed deprives CCWD and its 500,000 customers of this voice.

The key entities involved in implementing the BDCP are the Authorized Entity Group, the Permit Oversight Group, the Adaptive Management Team, and the Stakeholder Council. None of these groups provides CCWD -- or any other entity with interests focused on Delta water quality -- with an effective voice in the important decisions that would implement the BDCP.

The Authorized Entity Group would consist of the Director of DWR, the Regional Director of Reclamation, and representatives of the participating state and federal contractors. BDCP Chap. 7, pp.7-10 to 7-11. DWR and Reclamation officials cannot adequately represent the interests of an individual water district such as CCWD. DWR and Reclamation are focused on increasing water supplies, not on water quality. The participating state and federal contractors' interests diverge widely from those of CCWD. The BDCP project proponents will be focused on maximizing yield from the project conveyance facilities, not on minimizing adverse effects to drinking water quality for other water providers in the Delta. The Authorized Entity Group would not provide CCWD with an effective voice in the process of implementing the BDCP, and there is no indication that the group will act to protect Delta water quality in the face of competing concerns.

The Permit Oversight Group would consist entirely of representatives of state and federal fish and wildlife agencies, who are charged with safeguarding the interests of the species protected by the laws they implement. BDCP Chap. 7, p. 7-13. This is an important perspective, but it does not reflect the distinct water quality and water supply issues facing CCWD and its ratepayers. To the contrary, there would be times when adaptive management goals to benefit fish are in direct conflict with goals to protect drinking water

quality. For example, increased organic carbon may help fish but cause substantial adverse effects to drinking water. While interests focused on drinking water quality may not always prevail over interests focused on fish protection, protectors of Delta drinking water quality need to be at the table during the discussions on how to implement the BDCP in order to articulate the competing concerns at issue.

The Adaptive Management Team would be chaired by the Science Manager, a staff member within the Implementation Office, and would include essentially all the members of the Authorized Entity Group and the Permit Oversight Group, plus several other designated agency scientists. BDCP Chap. 7, p. 7-16. As noted above, none of the members of the Authorized Entity Group or the Permit Oversight Group have interests that align with CCWD's. The agency scientists on the Adaptive Management Team, to the extent they are deemed to have a policy perspective, are each affiliated with organizations with interests that differ from CCWD's.[33]

The final body specified in the Implementation Structure is the Stakeholder Council. BDCP Chap. 7 at p. 7-19. Since the Stakeholder Council is defined as consisting of entities with an interest in the BDCP, CCWD would be eligible for membership. The BDCP specifies categories of parties who may serve on the Stakeholder Council, at least two of which might include CCWD – CVP water contractors and local government agencies in the Delta. However, the Stakeholder Council would not adequately represent CCWD's interests for two reasons. First, although Stakeholder Council meetings would be open to the public, the Stakeholder Council itself would not be open to all interested parties; members would be "invited" by the Program Manager or "selected" from the eligible categories by the Secretary of the California Resources Agency. There is no guarantee that CCWD would be included, especially in light of the breadth of the list of eligible stakeholders.

Moreover, even if CCWD were a participant in the Stakeholder Council, that body would have no authority to influence the real-time decisions of the Authorized Entity Group or the Program Manager that could result in substantial adverse effects to drinking water quality in the Delta. The Stakeholder Council may "provide input" to those parties, and if the Stakeholder Council or one of its members (but not a mere member of the public) were to object to a proposed or past implementation action, the Stakeholder Council is directed to raise the matter with the decision-making entity. However, that entity would have no obligation to follow the recommendation of the Stakeholder Council, and the objection raised by the Stakeholder Council "does not create a new right or claim" to overturn the decision. Worse yet, the nonbinding "dispute resolution" process prescribed for the Stakeholder Council could take 150 days and meanwhile would not delay the implementation of the action at issue. Under this process, any dispute over a decision to implement an aspect of the BDCP would be likely to become moot before the "dispute resolution" process is completed.

[33] Section 7.1.6 specifies that these scientists are "nonvoting" members, although it is unclear what this means given that the Adaptive Management Team is expected to operate by consensus and the definition of consensus does not distinguish between voting and nonvoting members.

7.1.2. Delta water quality considerations must be taken into account during the adaptive management process.

The adaptive management process is a critical element of the BDCP. A "systematic process to continually improve management policies and practices" it can provide the scientific, policy, and practical basis for wide-ranging changes in the plan itself. BDCP Chap. 3, pp. 3.6-8 and 3.6-9. Adaptive management may encompass changes in conservation measures, including water operations and non-water related measures, changes in biological objectives, and changes in the "problem statement and model refinement." BDCP Chap. 7, Table 7-1, p. 7-3.

Altering these parameters, which may occur years from now, may have profound effects on the biological, operational, and other impacts of the BDCP. Impacts that have been evaluated in the BDCP Draft EIR/EIS and found to be temporary may prove to be lasting; impacts deemed insignificant may produce dramatic, unexpected effects. Since the parameters and limits for adaptive management are undefined, the BDCP Draft EIR/EIS fails to evaluate the full range of impacts associated with the action alternatives, as discussed in Section 1.1.4 of these comments. This failing is particularly problematic for CCWD, as it is uniquely vulnerable to changes in Delta water quality − an issue that may be given little attention as adaptive management focuses on other concerns such as yield for the BDCP proponents and fish protection.

Moreover, the governance structure of the BDCP provides no assurance that CCWD would have any opportunity to voice its concerns about adaptive management decisions, or even to know when such decisions may harm its interests until the harm has already occurred. As noted above, under the governance structure currently proposed, CCWD would not be a member of the Adaptive Management Team; the only possible venue for CCWD involvement would be through the Stakeholder Council. During the decision making process, the Adaptive Management Team "may" invite parties including the Stakeholder Council to provide input, but would have no obligation to do so. BDCP Draft EIR/EIS at pp. 7-15 to 7-17. Nor would the Adaptive Management Team be required to make its deliberations public or provide any advance notice or information to the Stakeholder Council; its only mandate would be to communicate to the regulatory agencies and the public, from time to time, data on the plan, adaptive management actions taken, and potential modifications. BDCP Chap. 3 at pp. 3.6-18 to 3.6-19. The Stakeholder Council would be authorized to present proposals for adaptive management actions or decisions to the Adaptive Management Team, but the Adaptive Management Team would have no obligation to respond. BDCP Chap. 3 at pp. 3.6-21 and 3.6-22. Given that CCWD would have no real-time information on the adaptive management process, the right to present proposals, through the Stakeholder Council or otherwise, would be likely to prove illusory.

7.2. The Proposed Implementing Agreement for the BDCP Violates The Natural Community Conservation Planning Act.

The draft Implementing Agreement for the BDCP, issued on May 30, 2014, does not comply with the Natural Community Conservation Planning Act (NCCPA), Cal. Fish &

Game Code §§ 2800-2835. First, the assurances provided in the draft Implementing Agreement by the CDFW to the BDCP proponents are not commensurate with the conservation assurances and implementing measures in the BDCP. To the contrary, the assurances proposed to be provided to the BDCP proponents are firm and expansive, while the conservation assurances proposed in the BDCP are inadequately funded and their effective implementation is highly uncertain. Second, the draft Implementing Agreement does not satisfy the requirement in the NCCPA that the implementation of mitigation and conservation measures "is roughly proportional in time and extent to the impact on habitat." Cal. Fish & Game Code § 2820(b)(9). Third, the draft Implementing Agreement is inconsistent with CEQA and NEPA. Each of these defects is described in greater detail below.

7.2.1. The proposed assurances provided to the BDCP proponents are not commensurate with the proposed conservation and implementing measures.

Under the NCCPA, the CDFW may provide to the NCCP participants assurances that are commensurate with the long-term conservation assurances and associated implementation measures established by the Plan. In determining the level of assurances to provide, CDFW must consider, among other factors, the adequacy of the analysis of the impact of take on covered species, the use of the best available science to make assessments about the impacts of take and the reliability of mitigation strategies, the appropriateness of the size and duration of the plan with respect to the quality and amount of data, and the sufficiency of mechanisms for long-term funding of all components of the plan and contingencies. Cal. Fish & Game Code § 2820(f).

7.2.1.1. Overly expansive proposed assurances.

As proposed, the BDCP proponents would be given broad assurances that, assuming the BDCP is implemented according to the terms of the draft Implementing Agreement, no "additional land, water, or financial compensation" or "additional restrictions on the use of land, water or other natural resources" would be required if unforeseen circumstances occur. Draft Implementing Agreement, § 14.0. Further, the draft Implementing Agreement proposes that while adjustments may be made to the conservation measures in the BDCP through the adaptive management process, this process may not alter the financial commitments of the BDCP proponents or require the commitment of additional resources. Draft Implementing Agreement, §§ 10.3.7.1 and 10.3.7.3.3.

Similarly, if funding is deemed inadequate, either because costs were underestimated or because the State and federal public funding does not materialize as anticipated, the draft Implementing Agreement provides that the BDCP proponents would not be required to provide land, water, or monetary resources beyond their commitments in the BDCP (draft Implementing Agreement, § 13.2) either directly or through another agency (draft Implementing Agreement, § 13.1.1 and § 20.1.2).

Further, the BDCP proponents seek assurances under the draft Implementing Agreement that their permits would not be suspended or revoked in the event of a shortfall in State or federal funding, under the assumption that the rough proportionality requirement of the NCCPA will be met when the BDCP proponents fulfill their obligations related to CM1 and associated mitigation. As discussed in Section 7.2.2 below, rough proportionality is not attained under the BDCP because the impacts of CM1 specifically, and the BDCP generally, are not fully defined, analyzed or mitigated in the BDCP Draft EIR/EIS.

The BDCP proponents also appear to try to evade any responsibility for financial or resource costs associated with new regulations such as State Water Resources Control Board flow criteria or Environmental Protection Agency water quality regulations —the Implementation Office is first charged with working with regulatory agencies to eliminate any inconsistency with the BDCP, and then if necessary to work with the fish and wildlife agencies to modify the BDCP, subject to the assurance of no additional water or funding. BDCP Chap. 6 at pp. 6-46 and 6-47. These other agencies (the State Water Board and the USEPA) are not parties to the draft Implementing Agreement. The draft Implementing Agreement applies only to the signatory agencies and their respective jurisdictions, and the assurances can only relate to the project described in the BDCP and analyzed in the BDCP Draft EIR/EIS, not future regulations by other agencies.

7.2.1.2.Inadequate conservation and funding assurances.

The high level of uncertainty surrounding the BDCP − including how the conservation measures would be funded, the schedule for their implementation, and their effectiveness in mitigating the impacts of the covered activities and contributing to recovery of the covered species − cannot support a 50-year permit with assurances that no additional funding or resources, including water, would be required of the permittees over the full permit period.

The total cost of the BDCP is estimated at $24.75 billion. BDCP, Chap. 8, Table 8-37. Of this amount, more than $16 billion is for construction and operation of new conveyance facilities (CM1), which the State and federal water contractors that are permittees under the BDCP have committed to fund. Of the remaining $8.73 billion, the contractors have committed to $903 million, or about 10 percent. The remaining amount is anticipated to come from future state water bonds, and future state and federal appropriations either for new projects or from re-directed funds for existing programs, grant programs, and interest income. None of these sources are guaranteed; no federal or state agency has committed to any portion of the nearly $8 billion needed over the 50-year implementation period. CM1 is an infrastructure project primarily for the benefit of the permittees that may slightly reduce some impacts on covered species ("some minor benefit related to reduced entrainment"; see paragraph below), but would also cause significant adverse impacts. It has the greatest expense of all the proposed "conservation measures," but does not provide commensurate benefits to covered species. The commitment to fund CM1 is no different than a developer participating in an HCP/NCCP committing to fund a housing development; it cannot be considered in determining whether adequate funding has been provided for purposes of issuing a permit and providing assurances under the NCCPA.

Further, the proposed schedule of implementation of the BDCP conservation measures is unsupported by evidence. Given the scale of the undertaking, the multiple steps and logistical complexities involved, the need for studies, scientific review, and financial and human resources, it is unlikely that most of the conservation measures would be initiated in the near term as indicated in Chapter 6 of the BDCP, let alone yield any tangible benefit to covered species during that period. Past experience indicates that large restoration projects in the Delta take more time than allowed for in the BDCP. For example, the Meins Landing property was purchased for restoration in 2005; yet eight years later, the restoration design is still in development. BDCP Appendix 5, Attachment 5E.B. Without a level of confidence in the implementation schedule, CDFW cannot make the requisite finding regarding the implementation schedule to support the permit assurances that would be provided by the draft Implementing Agreement.

The cornerstone of the BDCP's mitigation and recovery efforts is the restoration of 65,000 acres of tidal marsh. Yet there is significant uncertainty regarding the efficacy of tidal marsh restoration. Two of numerous examples are included here, one related to delta smelt and the other to spring-run Chinook salmon. With regard to delta smelt:

> the BDCP's main beneficial effect for delta smelt is potentially greater food production from restoration actions, with some minor benefit related to reduced entrainment….While there is potential for large benefits for delta smelt, particularly if the SRWTP upgrades help restore the viability of a diatom based food web, ***these benefits cannot be validated and this effects analysis has appreciable uncertainty in this particular regard***. Therefore, it is concluded that the BDCP will have a beneficial effect on the species, with low certainty in relation to the magnitude of the benefits occurring from food production and the ability of the delta smelt population to access it. BDCP, Chap. 5 at p. 5.5.1-42 (emphasis added).

Similarly for salmon, the BDCP states: "The change in subtidal habitat is concluded to be moderate for both foragers and migrants [juveniles], again with moderate certainty. There is some uncertainty related to how much restored habitats may be reduced in value because of colonization by IAV [invasive aquatic vegetation] and associated nonnative fish species that may prey on juvenile Chinook salmon or compete for food. CM13 Invasive Aquatic Vegetation Control aims to control IAV in the ROAs, which may limit predation, but there is uncertainty related to the ability to do so effectively." BDCP, Chap. 5 at p. 5.5.4-7.

Even for CM1, which was purportedly analyzed at a detailed project level for purposes of CEQA and NEPA, the permittees admit to significant uncertainty with regard to impacts and parameters of operation of the new conveyance facilities. See BDCP Table 3.4.1-5 for a list of key uncertainties and the proposed research to shed light on these uncertainties. The permittees have not provided conservation assurances; rather, they are promoting a large-scale research program with speculative funding, which is an insufficient basis for a 50-year permit that locks in funding, water and other resource contributions before implementation begins.

The low level of certainty regarding the conservation measures does not meet the standard for granting long-term assurances under either the NCCPA or federal ESA. As noted by the Delta Science Program Independent Review Panel (Panel) in its March 2014 review of the BDCP Draft EIR/EIS, "many of the critical justifications behind the supposed benefits of the conservation measures are highly uncertain." (Parker et al., 2014 at p. 6) The Panel further noted: "Uncertainty plus uncertainty is more uncertainty. Uncertainty never averages or cancels out uncertainty." (Parker et al., 2014 at p. 32)

7.2.1.3.Lack of accountability for achieving the biological objectives.

The draft Implementing Agreement defines biological objectives as specific, measurable outcomes that are expected to be achieved through implementation of the Conservation Strategy. Under the NCCPA, the BDCP must include a monitoring program "to assess the adequacy of the mitigation and conservation strategies or activities and to provide information to direct the adaptive management program." Cal. Fish & Game Code §2805(g). The BDCP does not comply with this requirement; it has delegated development of specific metrics and protocols for effectiveness monitoring to the Adaptive Management Team, thus deferring guidance from the regulatory agencies on this significant element of the BDCP until after the permits are approved and in place. The permittees also seek assurances that the permits would not be revoked for failure to meet biological objectives, under the circular reasoning that the permittees satisfy their obligations to achieve the biological goals and objectives by implementing the BDCP, including adaptive management (draft Implementing Agreement §10.1). But without specifying either how the BDCP would be adaptively managed or the biological objectives that will be met, the conservation requirements are illusory at best. Adaptive management would be subject to limitations under the draft Implementing Agreement based on the assurances that no additional funding, water or other resources would be required beyond that currently specified in the BDCP — a contribution level set prior to any of the research and monitoring that would help define the appropriate mitigation and conservation measures, and before the State Water Resources Control Board issues its outflow criteria. If more outflow is deemed necessary, the permittees propose to either shift resources from less effective conservation measures or use the Supplemental Adaptive Management Fund to purchase water from willing sellers. This is insufficient. There must be a more robust description of how the effectiveness of conservation measures would be evaluated so that the adaptive management program does not simply evaluate the cost effectiveness of various conservation measures in a manner that ultimately favors the water projects at the expense of species and water quality.

In summary, the draft Implementing Agreement proposes to shift all the risks and uncertainties of funding, implementation, and performance of the BDCP to other agencies and the public at large without committing to meet any specific biological objectives. As a result, the wildlife agencies will not be able to make the necessary findings to support a 50-year permit.

7.2.2. The proposed mitigation and conservation measures are not roughly proportional in time and extent to the impact on habitat or covered species.

Rough proportionality is defined in the draft Implementing Agreement as "implementation of BDCP Conservation Measures that is roughly proportional in time and extent to the impact on habitat or Covered Species authorized under the BDCP and as required by Fish and Game Code §2820(b)(9)." Draft Implementing Agreement, § 3.51. The draft Implementing Agreement further states that if the conservation measures are implemented in accordance with the schedule and procedure detailed in Chapter 6, Section 6.1.2 of the BDCP, it will be assumed that rough proportionality is maintained (draft Implementing Agreement, § 11.1.1). It is not enough to simply assume such a key requirement will be met; there must be a factual demonstration of rough proportionality.

Here, the uncertainties surrounding the extent and timing of benefits that can be expected from implementation of these measures makes a determination of rough proportionality based simply on initiating activity untenable.

Mitigation for fish impacts from the BDCP requires restoration of tidal habitat. As described above, there is significant scientific uncertainty as to the effectiveness of the restoration for recovering impacted fish. Even if it proved ultimately successful in significantly advancing fish species recovery, the restoration is spread over the 50-year project period, and the benefits would accrue sometime after the construction, so the benefits are removed in time from the impacts. This is not a basis for assuming rough proportionality is met.

It is also not clear why 8,000 acres of tidal restoration (included in CM4) and 17,000 to 20,000 acres of seasonal floodplain habitat (included in CM2 and CM5), which are required under existing permits, would count toward maintaining rough proportionality for CM1 when this restoration is required for *past* impacts of the CVP and SWP and impacts during the interim period before CM1 is operational. Finally, as explained in Section 2 of these comments, not all the impacts of implementing the BDCP have been identified or analyzed. Rough proportionality determinations must include all the impacts of all the Conservation Measures, which could occur within a couple of years of project approval, as well as the long-term effects. Relying on a 50-year restoration effort with uncertain funding and results does not meet the intent of maintaining rough proportionality.

7.2.3. The draft Implementing Agreement is inconsistent with CEQA and NEPA.

The draft Implementing Agreement references the BDCP Draft EIR/EIS and future CEQA and NEPA processes in §§ 20.2 and 20.1, respectively. The description of the current process is incomplete in both cases because it does not acknowledge that only CM1 was reviewed at a project level of detail and that all the other covered actions were reviewed at a programmatic level and will require additional environmental analysis before projects can be approved and implemented. Mitigation for any new impacts identified in the project-

level analysis would have to be funded and may not be subject to the cost cap that the permittees seek. Where additional CEQA or NEPA compliance is required, instead of committing to a full and honest analysis, the draft Implementing Agreement would commit USFWS, NMFS and CDFW to "not recommend or request the imposition of any additional or more stringent minimization or mitigation measures related to the protection or conservation of Covered Species or their habitat unless required by applicable law. Except in those instances, [the wildlife agencies] will notify the lead NEPA [or CEQA] agency that the Conservation Measures in the BDCP fully address any impact to or incidental take of any Covered Species or habitat resulting from Covered Activities or Associated Federal Actions." Draft Implementing Agreement, §§ 20.1.9, 20.2.1.2.

Additionally, the draft Implementing Agreement does not mention the potential need for CEQA or NEPA compliance for changes that are recommended through the Decision Tree, Adaptive Management or Real Time Monitoring processes but were not adequately analyzed in the BDCP Draft EIR/EIS. Although the BDCP Draft EIR/EIS does include some project-level analysis related to these processes, the draft Implementing Agreement must acknowledge that additional CEQA/NEPA work may be needed and it must integrate a commitment to provide mitigation for all impacts revealed during the CEQA and NEPA processes.

7.3. The Funding Information in the BDCP Is Incomplete, Unrealistic and Speculative.

The funding information provided in Chapter 8 of the BDCP is incomplete, unrealistic and speculative. The resulting uncertainty does not provide an adequate level of assurance that the plan would be funded to meet the requirements of either the NCCPA or the federal ESA, and makes it impossible for water contractors that are not permittees to assess the potential financial obligations that might result from implementation of the BDCP.

The BDCP states that: "… this chapter is not a financing plan to support the issuance of bonds or to provide a basis for the establishment of new funding mechanisms; nor does it establish the final allocation of cost or repayment responsibility; rather, financing plans will be prepared separately by various funding agencies and through future discussions between state and federal agencies." BDCP, Chap. 8 at p. 8-2. And again, it reads: "It is important to note that this chapter is not a financing plan for the state or federal water contractors or any other party. Separate financing plans, funding agreements, legislative authority, and other documents will be needed to enable the use of certain funding sources." BDCP, Chap. 8 at p. 8-64. By its own admission, the BDCP does not actually contain a plan for funding implementation, but instead asks that it be taken on faith that legislation will be passed, agreements will be reached, and bonds will be approved by voters, at the right time and for the right amount of money to implement the plan. The BDCP also admits that many of its costs are programmatic, which makes sense because many of the conservation measures have only been defined at a programmatic level. BDCP, Chap. 8 at p. 8-1. It is very likely that the estimates will increase as the measures are further defined. Yet the BDCP proponents seek to cap their financial contributions to BDCP implementation shifting all the

financial risk to the state and federal governments and the public. See Section 7.2.1 of these comments for discussion of the assurances in the draft Implementing Agreement.

Even for CM1, which is evaluated in the BDCP Draft EIR/EIS at a project level of detail and for which implementation is scheduled to begin immediately upon project approval, the BDCP does not elaborate on how the participating state and federal water contractors will pay the substantial costs needed for its construction and operation. The BDCP is silent on the distribution of costs between urban and agricultural contractors and between the CVP and SWP; potential costs to "non-participating" CVP contractors from perceived system-wide benefits (e.g., Level 2 refuge supplies); and the details of back-stops or guarantees for the funding in case of default of one or more the permittees. The document says "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 present value of the economic benefits of the BDCP are sufficiently higher than the present value of the costs that are assumed to be assigned to the contractors." BDCP, Chap. 8 at pp. 8-82 to 8-83. Unfortunately, the BDCP's willingness-to-pay analysis is flawed because it assumes a significant increase in deliveries (approximately 1.3 MAF), which is not borne out by the BDCP's own modeling. Despite the repeated commitment that the project proponents will fund CM1, there is nothing concrete in the record that assures these full costs will be paid, much less the costs of the remaining conservation measures.

The BDCP permittees assume that the state and federal governments will provide over $7 billion toward implementation of the BDCP (almost 90% of the costs of CM2 through 21), although they do not specify how that obligation will be split. State funding is assumed to come primarily from new bond measures. Bond funding is speculative, both in terms of whether bond measures will pass and how much bond funding would be made available for the BDCP. On the federal side, other than a small federal appropriation specifically for the BDCP, which the proponents assume will triple and be successfully appropriated every year for 50 years, the BDCP relies on past federal appropriations for similar projects and programs, and assumes the funding will continue to be appropriated and the programs will be re-purposed or expanded to support implementation of the BDCP. The BDCP offers no basis for assuming that these other programs will be adjusted to accommodate the BDCP, or that funding will continue. Federal appropriations are exceedingly uncertain, and discretionary programs are often cut or deferred. Creating new funding programs through legislation earmarking the BDCP is also extremely speculative.

The BDCP has not accurately characterized the difficulty of obtaining this level of state and federal funding, but simply assumes it will materialize. Neither does the BDCP adequately evaluate likely scenarios if there is a funding shortfall − merely one paragraph is devoted to this important topic. The BDCP proponents' solution is to have the Implementation Office work to reduce costs or adjust the scope of the BDCP, but in no instance will they provide additional land, water or monetary resources beyond their commitments. The funding element of the BDCP needs to be redone to provide more detailed analysis including a specific breakdown of who will pay what, identification of more credible funding sources, and a legitimate plan for addressing funding shortfalls before the Implementing Agreement can be approved by the wildlife agencies and permits can be issued.

8. The Proposed BDCP Violates Existing Laws and Policies.

8.1. The Proposed BDCP Violates the Delta Protection Act (Cal. Wat. Code §§ 12200 – 12205).

The Delta Protection Act (Act) was enacted in 1959 and determined by the Legislature to be "necessary for the protection, conservation, development, control and use of the waters in the Delta…" Cal. Wat. Code § 12200. The Act declares that one of the functions to be served by development of the State's water system, in coordination with the Federal Central Valley Project, "…shall be the provision of *salinity control and an adequate water supply* for the users of water in the Sacramento-San Joaquin Delta." Cal. Wat. Code §12202 (emphasis added). In other words, the State Water Project, in coordination with the Central Valley Project, is required to maintain Delta water quality and supply. The proposed BDCP and accompanying Draft EIR/EIS ignore this basic purpose of the Act.

As stated in the earlier sections of these comments, the BDCP Draft EIR/EIS acknowledges significant water quality impacts from the project, including adverse salinity effects, near CCWD intakes in the Plan Area, but it fails to provide an accurate assessment of these impacts (Section 2.2) or to provide legally adequate mitigation (Section 3). In light of the project's significant impacts to water quality and water supply (Section 2.3), the BDCP project proponents should, consistent with the Act, commit "to provide a substitute water supply to the users in [the] Delta in lieu of that which would be provided as a result of salinity control" with "…no added financial burden placed upon said Delta water users solely by virtue of such substitution." Cal. Wat. Code § 12202.

8.2. The Proposed BDCP Violates the Sacramento-San Joaquin Delta Reform Act of 2009 (Cal. Wat. Code §§ 85000 – 85350).

In enacting the Sacramento-San Joaquin Delta Reform Act of 2009 (Delta Reform Act), the Legislature declared its intent "to provide for the sustainable management of the Sacramento-San Joaquin Delta ecosystem…*to protect and enhance the quality of water supply from the Delta*…" Cal. Wat. Code § 85001(c) (emphasis added). For this reason, the BDCP, in order to be incorporated into the Delta Plan and to receive State funding, is specifically required to provide "a comprehensive review and analysis" of, among other things, "[t]he potential effects of each Delta conveyance alternative on Delta water quality." Cal. Wat. Code § 85320(b)(2)(G). As pointed out in the earlier sections of these comments, the BDCP and the BDCP Draft EIR/EIS fail to disclose the full range of the project's impacts on Delta water quality and thus fail to provide this statutorily required "comprehensive review and analysis." Further, the Delta Plan, in which the BDCP is intended for inclusion (Cal. Wat. Code § 85320), is required to include measures for "[i]mproving water quality to protect human health and the environment" and strategies to "[i]mprove water quality to meet *drinking water*, agriculture, and ecosystem *long-term goals*." Cal. Wat. Code § 85302(d)(3) and § 85302(e)(5) (emphasis added). The BDCP, as an element of the Delta Plan, fails to comply with either of these statutory requirements. As

explained in the previous sections of these comments, while the BDCP Draft EIR/EIS acknowledges significant impacts to water quality, it also obscures and fails to properly mitigate for these impacts.

The BDCP and its accompanying Draft EIR/EIS therefore fail to meet the requirements of the Delta Reform Act and the Delta Plan by: disregarding the legislative intent to protect and enhance the quality of water supply; failing to provide the required comprehensive review and analysis of its impacts to water quality; and failing to improve water quality to meet public health and long-term drinking water goals. The BDCP project proponents cannot absolve themselves from compliance with the substantive requirements of the Delta Reform Act through a Statement of Overriding Considerations under CEQA; these requirements exist separate and independent from, and are by no means negated by, CEQA's provisions allowing agencies to weigh a project's asserted benefits against its significant environmental impacts.

8.3. The Proposed BDCP Violates California Water Rights Laws.

In addition to its other stated purposes, the Delta Reform Act reaffirms the existing California water right law, stating that it "does not diminish, impair, or otherwise affect in any manner whatsoever…" any "water rights protections" and that it "does not affect…any water right." Cal. Wat. Code § 85031(a) and § 85032(i). But the BDCP Draft EIR/EIS determined that the proposed project and the alternatives would create significant impacts to Delta water quality, including impacts regarding salinity (including bromide, chloride, and electrical conductivity), mercury, organic carbon, pesticides, and selenium; many of these impacts will injure existing water rights. The BDCP Draft EIR/EIS does not include adequate mitigation and thus these impacts are determined to be "significant and unavoidable." But the BDCP project proponents cannot avoid compliance with the requirements of California's water rights law through a Statement of Overriding Considerations − these requirements are separate and independent from, and are not nullified by, CEQA's provisions allowing agencies to weigh a project's asserted benefits against its significant environmental impacts.

Furthermore, the BDCP Draft EIR/EIS both fails to evaluate and improperly underestimates significant impacts to water quality and water supply, as discussed in Sections 2.2 and 2.3 of these comments. Impacts to water quality are a recognizable injury to water rights as first declared by the California Supreme Court in *Phoenix Water Co. v. Fletcher*, 23 Cal. 481 (1863). The water quality impacts of the BDCP would reduce CCWD's ability to divert under its existing water right License 10514 and Permits 19856 and 20749 by: increasing the likelihood and number of potential exceedances of Delta water quality objectives, thus substantially degrading water quality at CCWD's intakes; degrading Delta water quality from its current condition when water quality objectives otherwise would have been met, so that water that could have been diverted by CCWD is no longer suitable for diversion; and reducing the periods of time during which CCWD may divert under Permit 20749.

Ultimately, the BDCP Draft EIR/EIS does not adequately disclose the requisite information to make a reliable determination regarding the scope of the impacts to water rights held by

CCWD or any other legal user of water, and any potential associated environmental impacts. The BDCP Draft EIR/EIS fails to clearly describe or discuss operational changes and parameters, including increases in water transfers that may produce significant water quality and water supply impacts (as discussed in Section 1.1 of these comments) and thus create injury to water rights held by CCWD and others. Additionally, the project description contains inconsistencies regarding operational criteria, including water quality objectives. For example, the BDCP states that "[a]s part of the BDCP criteria, the location of where the D-1641 Emmaton salinity control requirement is proposed to be complied with is changed to Threemile Slough juncture." BDCP, Chap. 3 at p. 3.4-15. However, the BDCP Draft EIR/EIS (Chap. 3 at p. 3-33) states that "[f]or the purposes of modeling, this assumption [i.e., the move of compliance from Emmaton to Threemile Slough] has been incorporated into the No Action Alternative, as well as each action alternative." There is no justification to assume a change in water quality objectives in the No Action Alternative; doing so only obscures the impact of this change in the project alternatives.

The BDCP Draft EIR/EIS fails to adequately provide the State Water Resources Control Board (SWRCB), or any reviewer, with the scientific basis for anticipated changes to water quality or flow objectives (SWRCB, 2013).

8.4. The Proposed BDCP Violates State and Federal Antidegradation Policies (State Water Resources Control Board Resolution 68-16 and 40 C.F.R § 131).

As the SWRCB declared over four decades ago, "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 [the] highest water quality consistent with maximum benefit to the people of the State…." SWRCB, Resolution No. 68-16, *Statement of Policy with respect to Maintaining High Quality of Waters in California* (Oct. 28, 1968); *see also* Cal. Wat. Code § 174 (establishing SWRCB's authority over the State's water resources). This is the context in which the SWRCB also resolved that "[w]henever the existing quality of water is better than the quality established in policies [now water quality objectives]…, such existing high quality will be maintained…." SWRCB Res. 68-16 at ¶1. As the SWRCB's then-Executive Officer explicitly recognized in 2004, "The requirement in SWRCB Resolution No. 68-16 to maintain the existing high quality of water … is itself a water quality objective" (SWRCB, 2004 at p.7 n.6).

Moreover, the federal antidegradation regulations provide, "[w]here the quality of the waters exceed levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the State finds … that allowing lower water quality is necessary to accommodate important economic or social development *in the area in which the waters are located*." 40 C.F.R. § 131.12(a)(2) (emphasis added). The BDCP does not provide any economic or social development benefits in the area in which the waters are located, and therefore, the State cannot not allow any degradation in water quality. Any degradation in water quality in the Delta also is not appropriate as the federal regulations provide that "[w]here high quality waters constitute an outstanding National resource, such as . . . waters of exceptional recreational or ecological

significance, that water quality shall be maintained and protected." 40 C.F.R. § 131.12(a)(3). Even assuming the State could allow for the degradation of Delta water quality, the federal regulations provide that "[i]n allowing such degradation or lower water quality, the State shall assure water quality adequate to protect existing uses fully." 40 C.F.R. § 131.12(a)(2).

Any degradation of the quality of water available to CCWD, as described in detail in Section 2.2 of these comments, from that historically available would violate antidegradation requirements and is precluded under both state and federal law. As described in the previous sections of these comments, the BDCP Draft EIR/EIS fails to fully disclose and obscures Delta water quality impacts, and thus significantly understates the actual water quality degradation that would occur in violation of state and federal law.

8.5. The Proposed BDCP Violates Section 404 of the Clean Water Act (33 U.S.C. § 1344).

Pursuant to Section 404 of the Clean Water Act, a fill permit may be issued by the U.S. Army Corps of Engineers only where the permit applicants demonstrate that the proposed project is the "least environmentally damaging practicable alternative." This requirement, which is codified in the regulations adopted by the Environmental Protection Agency to implement Section 404, encompasses the general prohibition that "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." 40 C.F.R. § 230.10(a). As applied to the habitat restoration elements of the BDCP, this permitting requirement will have to be met on a project by project basis; the programmatic water quality impact analysis of the restoration elements included in the BDCP Draft EIR/EIS, in addition to its flaws under CEQA and NEPA (discussed in Section 1.2 of these comments), will not be adequate for this purpose. Additionally, as discussed in these comments under Section 4, the lack of an alternatives analysis for the restoration elements is inconsistent with the requirement to issue a Section 404 permit only if there is no practicable alternative available with less environmentally damaging impacts.

The USEPA regulations implementing Section 404 also establish the prohibition that "no discharge of dredged or fill material shall be permitted which will cause or contribute to significant degradation of the waters of the United States." 40 C.F.R § 230.10(c). The regulations specify that effects that contribute to such significant degradation include significant adverse effects on human health or welfare, including effects on municipal water supplies. 40 C.F.R. § 230.10(c)(1).

Further, before issuing a Section 404 permit, the Corps must conduct a robust public interest review. 33 C.F.R. § 320.4(a). The regulations governing this review specify that the decision whether to issue a permit must consider issues such as water supply and water quality. *Id*. *See also Sierra Club v. Van Antwerp*, 709 F. Supp. 2d 1254, 1270 (S.D. Fla. 2009) (Section 404 permit evaluation must consider impacts on municipal water supplies).

Thus, the future permitting process for the BDCP under Section 404 must thoroughly consider impacts not only to wetlands and aquatic wildlife, but also to water quality and municipal water supplies.

8.6. The Proposed BDCP Violates Section 401 of the Clean Water Act (33 U.S.C. § 1341).

Section 401 of the Clean Water Act requires the State to find that a discharge to waters or wetlands will comply with all applicable water quality standards and requirements, including all State water quality standards. This means that either the State Water Resources Control Board (SWRCB) or the appropriate Regional Water Quality Control Boards (RWQCB) must find that there is a reasonable assurance that the certified activity will not violate water quality standards.

Federal regulations (40 C.F.R. § 131) specify that the water quality standards include the designated beneficial uses of the receiving waters, the water quality criteria for those waters, and the anti-degradation policy. The California Porter-Cologne Water Quality Act (Cal. Wat. Code §§ 13000-14958) requires the adoption of Water Quality Control Plans that identify legally binding beneficial uses of water, water quality objectives that will ensure reasonable protection of the designated beneficial uses, specified discharge prohibitions, and a plan for achieving water quality objectives.

Permitting of the BDCP, including wetland habitat restoration, will require water quality consistency determinations by the SWRCB or appropriate RWQCB, which in turn will require specific analyses of effects on water quality including the protection of all beneficial uses, such as uses of the Delta for drinking water. The vague program-level analyses of the habitat restoration measures in the BDCP Draft EIR/EIS are not sufficient to support the issuance of Section 401 water quality certifications.

9. Exhibits

Alameda County Water District, City of San Diego, Contra Costa Water District, East Bay Municipal Utility District, San Diego County Water Authority, San Francisco Public Utilities Commission, and Otay Water District, 2013. Letter to U.S. Department of Interior and California Natural Resources Agency regarding A Portfolio-Based BDCP Conceptual Alternative. January 16, 2013.

Baxter, R., R. Breuer, L. Brown, M. Chotkowski, F. Feyrer, M. Gingras, B. Herbold, A. Mueller-Solger, M. Nobriga, T. Sommer and K. Souza. (2008) *Pelagic Organism Decline Progress Report: 2007 Synthesis of Results*. (Available at: http://www.science.calwater.ca.gov/pdf/workshops/POD/IEP_POD_2007_synthesis_report_031408.pdf)

BDCP, 2008. BDCP Interactive CalLite Screening Evaluations II. Meeting Summary. December 1-2, 2008.

CALFED, 2000. *CALFED Bay-Delta Programmatic Record of Decision*. August 28, 2000.

CALFED, 2007. *CALFED Water Quality Program Stage 1 Final Assessment*. October 2007.

California Department of Fish and Game, 2009. California Endangered Species Act Incidental Take Permit No. 2081-2009-013-03. Contra Costa Water District Maintenance and Operation of the Los Vaqueros Project and Alternative Intake Project. November 9, 2009.

California Farm Bureau Federation, 2010. *Comments on Bay Delta Conservation Plan; January 29, 2010 Decisions Regarding Near- and Long-term Operations.* Letter to Under Secretary Karen Scarborough, Natural Resources Agency. January 28, 2010.

California Natural Resources Agency, 2013. *Portfolio Approach to Statewide Management and the Bay Delta Conservation Plan* in a Letter to San Diego County Water Authority. September 11, 2013.

CCWD, 1988. *Resolution No. 88-45, A Resolution of the Board of Directors of Contra Costa Water District Affirming the Contra Costa Water District's Goals and Objectives for the Los Vaqueros Reservoir Project.* August 1988.

CCWD, 2009a. *BDCP Operational Parameters and Effects Analysis, Follow-up to September 10, 2009, Steering Committee Meeting.* Letter to BDCP Steering Committee. September 16, 2009.

CCWD, 2009b. *Comments on the Revised Notice of Preparation (February 13, 2009) of the Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Bay Delta Conservation Plan (BDCP)*. May 14, 2009.

CCWD, 2010. *Historical Fresh Water and Salinity Conditions in the Western Sacramento-San Joaquin Delta and Suisun Bay: A summary of historical reviews, reports, analyses and measurements.* Water Resources Department. Technical Memorandum WR10-001. February 2010.

CCWD and DWR, 1967. Agreement. April 21, 1967.

CCWD and Reclamation, 2006. *Draft Environmental Impact Report/Environmental Impact Statement for the Contra Cost Water District Alternative Intake Project*, State Clearinghouse # 2005012101, Contra Costa Water District and U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region, May 2006.

Chorus, I., I.R. Falconer, H.J. Salas, J. Bartram, 2000. "Health risks caused by freshwater cyanobacteria in recreational waters." *Journal of Toxicology and Environmental Health Part B: Critical Reviews*, 3(4):323-347, doi: 10.1080/109374000436364.

DESY, 2011. "Tunnel Construction for the European XFEL. News about the subsidence above the tunnel of 2 July 2011." Accessed July 11, 2014. http://www.desy.de/news/subsidence/index_eng.html

DWR, 2007. *Sources of Salinity in the South Sacramento-San Joaquin Delta.* Memo Report to Dean F. Messer, Chief, Environmental Assessment Branch, from Barry L. Montoya, Staff Environmental Scientist, Department of Water Resources. May 30, 2007.

DWR, 2009a. *An Overview of the Draft Conservation Strategy for the Bay Delta Conservation Plan.* Department of Water Resources. January 12, 2009.

DWR, 2009b. *Jones Tract Flood Water Quality Investigations.* Municipal Water Quality Investigations Program, Division of Environmental Services, Department of Water Resources. July 2009.

DWR, 2010. *Comments on the Sacramento Regional County Sanitation District's tentative National Pollutant Discharge Elimination System Permit Renewal for the Sacramento Regional Wastewater Treatment Plant.* Letter to Kathy Harder, Central Valley Regional Water Quality Control Board from Gerald E. Johns, Department of Water Resources. October 1, 2010.

DWR, 2013a. *CCWD Water Quality Analysis.* Presented to CCWD, February 15, 2013.

DWR, 2013b. Modeling files from CalSim II, DSM2, and SRWQM developed as the basis for the BDCP Draft EIR/EIS for the Existing Conditions with Fall X2, No Action Alternative with Fall X2, and Alternatives 1 through 9. Provided by Department of Water Resources to CCWD on an external hard drive on March 28, 2013.

DWR, 2014a. "Clifton Court Forebay Diversions/8500." Accessed June 19, 2014. Available at http://baydeltaoffice.water.ca.gov/sdb/sdip/features/ccf_diversions.cfm.

DWR, 2014b. Monthly reservoir storage at San Luis Reservoir. California Data Exchange Center, Department of Water Resources. Accessed June 11, 2014. http://cdec.water.ca.gov/cgi-progs/selectQuery?station_id=SNL

DWR, 2014c. Monthly reservoir storage at Shasta Dam. California Data Exchange Center, Department of Water Resources. Accessed June 11, 2014. http://cdec.water.ca.gov/cgi-progs/selectQuery?station_id=SHA

DWR, 2014d. "Water Use Efficiency." Accessed June 24, 2014. http://www.water.ca.gov/wateruseefficiency/

Federal Register, 2009. *Drinking Water Contaminant Candidate List 3-Final*. Volume 74, Number 194. October 8, 2009.

Fischer, H. B., E.J. List, R. C. Y. Koh, J. Imberger, and N.H. Brooks, N. H, 1979. *Mixing in inland and coastal waters*. Academic Press, San Diego.

Ingebritsen, S.E. and M.E. Ikehara, 1999. "Sacramento-San Joaquin Delta: The sinking heart of the state." In *Land Subsidence in the United States. U.S. Geological Survey Circular 1182:83-94.*

Kalbitz, K. and S. Geyer, 2002. "Different effects of peat degradation on dissolved organic carbon and nitrogen." *Organic Geochemistry*, 33:319-326.

Kegel, F.R., 1979. "Farming Organic Soils of the Delta." *California Agriculture* 33:11. November-December 1979. doi:10.3733/ca.v033n11p6.

Korth, W., J. Ellis, K. Bowmer, 1992. "The Stability of Geosmin and MIB and their deuterated analogues in Surface Waters and Organic Solvents," *Water Science and Technology*, 25, no. 2, 115-122.

Lee, W., P. Westerhoff, J.P. Croue, 2007. "Dissolved Organic Nitrogen as a precursor for chloroform, Dichloroacetonitrile, N-Nitrosodimethylamine, and Trichloronitromethane." *Environmental Science and Technology* 41, no. 15, 5485-5490. doi: 10.1021/es070411g.

Lehman, P. W., G. Boyer, M. Satchwell, S. Waller, 2008. "The influence of environmental conditions on the seasonal variation of Microcystis cell density and microcystins concentration in San Francisco Estuary." *Hydrobiologia*, 600(1):187-204. doi: 10.1007/s10750-007-9231-x.

Lehman, P.W., K. Marr, G.L. Boyer, S. Acuna, S.J. The, 2013. "Long-term trends and causal factors associated with *Microcystis* abundance and toxicity in San Francisco Estuary and implications for climate change impacts." *Hydrobiologia*, 718(1):141-158. doi: 10.1007/s10750-013-1612-8.

Linville, R. G., Luoma, S. N., Cutter, L., Cutter, G. A., 2002. "Increased selenium threat as a result of invasion of the exotic bivalve *Potamocorbula amurensis* into the San Francisco Bay-Delta." *Aquatic Toxicology*, 57(1), 51-64. doi: 10.1016/S0166-445X(01)00265-X.

MacWilliams, M., A. Bever, N. Hume, E. Loboschefsky, S. Siegel, 2014. "Evaluation of the Effects of Prospect Island Restoration on Sediment Transport and Turbidity." Presented at the annual meeting of the California Water Environmental Modeling Forum, Sacramento, California. February 26, 2014.

MBK Engineers and D.B. Steiner, 2014. Report on Review of Bay Delta Conservation Program Modeling.

Metropolitan Water District of Southern California, 2014a. Conservation Program Website "BeWaterWise.com". Accessed July 16, 2014. http://www.bewaterwise.com/

Metropolitan Water District of Southern California, 2014b. Southern California Water World Forum. Accessed July 16, 2014. http://www.mwdh2o.com/mwdh2o/pages/education/world_water_01.html

Mitch, W., A.C. Gercke, D.L. Sedlak, 2003. "A N-Nitrosodimethylamine (NDMA) precursor analysis for chlorination of water and wastewater." *Water Research*, (37):3733-3741. doi: 10.1016/S0043-1354(03)00289-6

Monsen, N. E., J.E. Cloern, L. V. Lucas, and S. G. Monismith, S. G., 2002. "A comment on the use of flushing time, residence time, and age as transport time scales." *Limnology and Oceanography*. 47(5), 1545-1553.

NMFS, 1993. National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) Biological Opinion on Winter-run Chinook Salmon for the Los Vaqueros Project. March 18, 1993.

NMFS, 2009. Biological and Conference Opinion on the Long Term Central Valley Project (CVP) and State Water Project (SWP) Operations Criteria and Plan (OCAP) Operations. No. 2008/09022. National Marine Fisheries Service, Southwest Region. June 4, 2009.

NRDC, 2013a. "Benefits of a Diversified Portfolio Approach to the Bay-Delta and Water Supply."

NRDC, 2013b. "Growing Support for Analysis of Bay-Delta Conceptual Alternative." Natural Resources Defense Council Staff Blog by Doug Obegi. Accessed June, 24, 2014. http://switchboard.nrdc.org/blogs/dobegi/growing_support_for_analysis_o.html

Office of Environmental Health Hazard Assessment, 2009. *Microcystis: Toxic Blue-Green Algae.* February 2009.

Paerl, H.W., 1996. "A comparison of cyanobacterial bloom dynamics in freshwater, estuarine and marine environments." *Phycologia*, 35(6S):25-35. doi: 10.2216/i0031-8884-35-6S-25.1.

Parker, A., C. Simenstad, T.L. George, N. Monsen, T. Parker, G. Ruggerone, J. Skalski, 2014. "Delta Science Program Independent Review Panel Report. BDCP Effects Analysis Review, Phase 3." March 2014.

Persson, P. E., 1980. "Sensory properties and analysis of two muddy odour compounds, geosmin and 2-methylisoborneol, in water and fish." *Water Research*, 14(8), 1113-1118.

Presser, T. S. and S.N. Luoma, 2013. "Ecosystem-scale Selenium Model for the San Francisco Bay-Delta Regional Ecosystem Restoration Implementation Plan." *San Francisco Estuary and Watershed Science*. 11(1).

Reclamation, 2013a. "Reclamation's List of Key BDCP Adm. Draft EIR/EIS Issues. July 5, 2013. Clarification Added: July 16, 2013" in *Federal Agency Comments Received on the Bay Delta Conservation Plan (BDCP) Second Administrative Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS)*. July 18, 2013.

Reclamation, 2013b. *San Luis Reservoir Expansion Draft Appraisal Report*. U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region – Planning Division. December 2013.

Reclamation, 2014. U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region. Central Valley Operation. Water Operations Analysis. "50% Forecast." May 23, 2014. Accessed June 11, 2014. http://www.usbr.gov/mp/cvo/data/May50.pdf

Reclamation and DWR, 1986. "Agreement between the United States of America and the Department of Water Resources of the State of California for Coordinated Operation of the Central Valley Project and the State Water Project." November 24, 1986

Reclamation and DWR, 2013. *North-of-the-Delta Offstream Storage Investigation 2013 Progress Report*. December 2013.

Reclamation and SCVWD, circa 2008. *San Luis Low Point Improvement Project*. U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region and Santa Clara Valley Water District.

Reclamation, USFWS, and CDFG, 2011. *Final Environmental Impact Statement/ Environmental Impact Report for the Suisun Marsh Habitat Management, Preservation, and Restoration Plan.* State Clearinghouse 2003112039. November 2011.

Reddy, K.R., 2005. *Review of Delta Wetlands Water Quality: Release and Generation of Dissolved Organic Carbon from Flooded Peatlands (Final Report)*. March 2005.

RMA, 2010. "Potential Impacts of Large-Scale Delta Levee Failure on BDCP Restoration and Intake Investments. RMA Model Analysis." Presented to BDCP Steering Committee on July 29, 2010. Available at http://baydeltaconservationplan.com/Library/ArchivedDocuments/SteeringCommittee/SteeringCommitteeAgendasAndHandouts.aspx

RMA, 2013. "Recent Projects Modeling Local and Regional Impacts of Tidal Marsh Restoration." Presented to the Delta Independent Science Board on January 17, 2013.

Semitropic Water Storage District, 2011. *Delta Wetlands Project Place of Use Final Environmental Impact Report*. August 2011.

Sereno, D.M. and M.T. Stacey, 2004. "Hydrodynamics in Franks Tract – Observations and Modeling Influence of Submerged Aquatic Vegetation (SAV)." Presented at the CALFED Bay-Delta Science Conference. October 2004.

Sereno, D., M.T. Stacey, S. Baek, J.R. Burau, J.I. Cuetara, C.A. Ruhl, R.L. Dinehart, and J.E. George, 2003. "Using Hydrodynamics to Examine Differences in Flooded Island Environments. Lessons Learned, Questions Raised." Presented at CALFED Ecosystem Restoration Program Seminar. April 2003.

State Water Project Contractors Authority and DWR, 2012. *California State Water Project SWP Watershed Sanitary Survey. 2011 Update.* June 2012

SWRCB, 1968. "Statement of policy with respect to maintaining high quality of waters in California." *State Water Resources Control Board Resolution No. 68-16.*

SWRCB, 2004. "In the Matter of the Approval of the Water Quality Response Plan Under SWRCB Decision 1641." *State Water Resources Control Board Order WRO 2004-0043-EXEC.*

SWRCB, 2010. Permit for Diversion and Use of Water. Amended Permit 20749. Application 20245 of Contra Costa Water District. July 8, 2010.

SWRCB, 2013. *Comments on the Second Administrative Draft Environmental Impact Report/Environmental Impact Statement for the Bay Delta Conservation Plan.* Letter to Mr. Russell Stein, California Department of Water Resources. July 5, 2013.

The Bay Institute, NRDC, Planning and Conservation League, Environmental Entrepreneurs, Defenders of Wildlife, Contra Costa Council, 2013c. "New Plan Offers an Effective, Affordable Package of California Water Supply and Bay-Delta Fisheries Solutions." Press Release. January 16, 2013.

Trojan Technologies, 2010. *Trojan UV Factsheet: Taste and Odor – Environmental Contaminant Treatment*, London, Ontario, Canada.

USEPA, 1998. *Empirically Based Models for Predicting Chlorination and Ozonation By-Products: Trihalomethanes, Haloacetic Acids, Chloral Hydrate, and Bromate.* EPA 815-R-98-005. August 1998.

USEPA, 2011. "Water Quality Challenges in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary." *Unabridged Advance Notice of Proposed Rulemaking.* February 2011.

USEPA, 2012. "Water Quality Challenges in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary." *EPA's Action Plan.* August, 2012.

USEPA, 2013a. "Basic information about disinfection byproducts in drinking water: Total Trihalomethanes, Haloacetic Acids, Bromate, and Chlorite." Website last updated December 31, 2013. http://water.epa.gov/drink/contaminants/basicinformation/disinfectionbyproducts.cfm

USEPA, 2013b. "Bromate (CASRN 15541-45-4)." *United States Environmental Protection Agency. (2013b) Integrated Risk Information System*. January 24, 2013. Available at http://www.epa.gov/iris/subst/1002.htm

USEPA, 2013c. "N-Nitrosodimethylamine (CASRN 62-75-9)". *United States Environmental Protection Agency. Integrated Risk Information System*. January 24, 2013. Available at http://www.epa.gov/iris/subst/0045.htm

USFWS, 1993. *Formal Endangered Species Consultation on Effects of the Proposed Los Vaqueros Reservoir Project on San Joaquin kit fox and Bald eagle, Contra Costa County, California*. U.S. Department of the Interior, Fish and Wildlife Service, Sacramento, California. File No 1-1-92-F-48, 1993.

USFWS, 2000. *Formal ESA Consultation for CCWD's Construction of a Multipurpose Pipeline and Future Water Supply Implementation Program, No. 1-1-99-F-93*. U.S. Fish and Wildlife Service. April 27, 2000.

USFWS, 2005. *Reinitiation and Amendment of Formal Consultation and Conference on CCWD's Future Water Supply Implementation Program (Service file no. 1-1-99-F-0093) for the Renewal of the Central Valley Project Long Term Water Service Contract, Contra Costa County, California*. U.S. Fish and Wildlife Service. March 11, 2005.

USFWS, 2008. *Formal ESA Consultation for the Proposed Coordinated Operations of the CVP and SWP, No. 81420-2008-F-1481-5*, U.S. Fish and Wildlife Service, December 15, 2008.

USFWS, 2013a. *U.S. Fish and Wildlife Service Staff BDCP Progress Assessment*. April 3, 2013.

USFWS, 2013b. "U.S. Fish and Wildlife Service Staff BDCP ADEIS Review" in *Federal Agency Comments Received on the Bay Delta Conservation Plan (BDCP) Second Administrative Draft Environmental Impact Report/Environmental Impact Statement (EIR/EIS)*. July 18, 2013.

Westlands Water District, 2013. "Bay Delta Conservation Plan & Delta Habitat Conservation & Conveyance Program." Presentation at Board Workshop. November 20, 2013.

Zhang, J., J. Yu, W. An, J. Liu, Y. Wang, Y. Chen, J. Tai, M. Yang, 2011. "Characterization of Disinfection Byproduct Formation Potential in 13 Source Water in China." *Journal of Environmental Sciences*, 23(2):183-188. doi: 10.1016/S1001-0742(10)60440-8

Zippin, D., E. Berryman, C. Chilmakuri, M. Greenwood, R. Wilder, J. Pierre. "Bay Delta Conservation Plan Effects Analysis Review – Phase 3." Presented to the Delta Science Program Independent Science Review Panel. January 28, 2014.

10. Authors

Name	Education	Years of Experience
Peter Colby	JD, Berkeley Law, University of California at Berkeley, 1981 BA, Economics, University of Virginia at Charlottesville, 1978	6
Fran Garland	Master's Program, Landscape Architecture/Environmental Planning, University of California at Berkeley, 1990 BA, Human Biology, Stanford University, 1980	32
Greg Gartrell	PhD, Environmental Engineering Science, California Institute of Technology, 1979 MS, Environmental Engineering Science, California Institute of Technology, 1974 BS, California Institute of Technology, 1973	37
Yuan Liu	PhD, Civil and Environmental Engineering, Stanford University, 2013 MS, Water Resources and Hydrology, Tsinghua University, China, 2008 BS, Hydraulic Engineering, Tsinghua University, China, 2006	1
Maureen Martin	PhD, Environmental Engineering, University of California at Berkeley, 2006 BS, Environmental Science, Boston University, 2000	8
Leah Orloff	PhD, Civil and Environmental Engineering, University of California at Berkeley, 2001 BS, Civil Engineering, San Francisco State University, 1992	17
Deanna Sereno	Doctoral Program, Civil and Environmental Engineering, University of California at Berkeley MS, Water Resources, University of Kansas, 1995 BS, Civil Engineering, University of Kansas, 1992	14
Lucinda Shih	PhD, Civil and Environmental Engineering, Stanford University, 2003 MS, Civil and Environmental Engineering, Stanford University, 1996 BSE, Civil Engineering and Operations Research, Princeton University, 1995	10

Attachments in Progress