# Local Agencies of the North Delta

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**SENT VIA EMAIL (BDCP.comments@noaa.gov)**

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

**RE: Comments on Draft Bay Delta Conservation Plan and Associated Draft Environmental Impact Report/Environmental Impact Statement**

Dear Mr. Wulff:

These comments are submitted on behalf of the Local Agencies of the North Delta ("LAND"). LAND is a coalition of reclamation and water districts in the northern geographic area of the Delta.[1] As local agencies in the areas most impacted by the significant and unavoidable environmental and other impacts of the BDCP, including the diversion of our primary water supply and conversion of our farmland to other uses, our member agencies have been active stakeholders in the BDCP planning process for over six years. Four LAND member agencies are also cooperating agencies under the National Environmental Policy Act (42 U.S.C., § 4221 ("NEPA")), and have provided early consultation with the federal lead agencies regarding local impacts and mitigation. A separate letter from the LAND NEPA cooperating agencies is attached hereto as Exhibit A.[2]

The comments in this letter pertain to both the BDCP and the BDCP EIR/EIS. To aid review, the comments have been divided between the BDCP and the BDCP EIR/EIS according to chapter. Please consider all comments on the BDCP as also relating to the project description for the BDCP EIR/EIS; thus responses to comments are required

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[1] LAND member agencies cover approximately 118,000 acresacre of the Delta. C; urrent LAND members include Reclamation Districts 3, 150, 307, 317, 349, 407, 501, 551, 554, 556, 563, 744, 755, 813, 999, 1002, 2111, 2067 and the Brannan-Andrus Levee Maintenance District. Some of these agencies provide both water delivery and drainage services, while others provide only drainage services. These districts also assist in the maintenance of the levees that provide flood protection to homes and farms.

[2] Please also provide responses to Exhibit A.

under the California Environmental Quality Act (Pub. Resources Code, §§ 21000 et seq. ("CEQA"); CEQA Guidelines, § 15088) and NEPA (40 C.F.R., 1503.4).

It is noted that many exhaustive comment letters have been submitted by other entities explaining in detail serious concerns about the legal and scientific adequacy of the BDCP and associated environmental documents. Therefore, the comments in this letter do not attempt to catalogue every possible defect in the documents.

Due to the numerous deficiencies in all of the documents, a broad coalition of stakeholders, including LAND, agree that the documents must be substantially revised and recirculated for public review before BDCP could ever lawfully receive the numerous approvals necessary to carry out the project.

***Overview of Concerns***

- The BDCP is a 1920's-style massive engineering project masquerading as a regional Habitat Conservation Plan ("HCP") and Natural Community Conservation Plan ("NCCP"). The BDCP's intent is to grab 15,000 cfs, and up to 7 million acre-feet ("MAF") of high quality Sacramento River water, while still running the environmentally disastrous existing South Delta pumps approximately half the time. The BDCP is also a water grab on the monumental scale of the 1920s. Ultimately, it is a grand scheme to divert attention from the environmental impacts of the current pumping, turn water law upside down by junior contract water rights superseding senior water rights, reducing water quality standards, and at major expense to the taxpayers.

- Rather than helping restore the Delta, the BDCP is a massive water removal project with potential to cause more ecological harm to the Delta than anything else that has occurred since the last large infrastructure was built by the state and federal water projects (State Water Project ("SWP")/Central Valley Project ("CVP")). The tunnels masquerade as a Conservation Measure ("CM") 1, along with 20 other Conservation Measures (CMs 2-21).

- Despite the rafts of paperwork provided in the BDCP and EIR/EIS, in virtually every case where a critical environmental or social issue is identified, the underlying analysis is insufficient to support the conclusions and inadequate to fully identify or weigh the impacts. The only Conservation Measure that *purports* to have sufficient environmental analysis to begin construction after approval by the lead agencies is CM 1. The remaining other 20 CMs are project level for the purposes of take authority under the Endangered Species Act (16 U.S.C., § 1531

("ESA")), but programmatic with respect to NEPA and CEQA review. CM 1, however, also lacks adequate detail necessary for a good faith environmental analysis; CM 1 is clearly programmatic in description and analysis.

- The fundamental ecological premise of the BDCP is fatally flawed. The BDCP presupposes that removing nearly half of high quality freshwater from the Sacramento River system will be a net benefit for listed aquatic species while losing up to 5 percent of the remaining Sacramento River salmonids as they attempt to run approximately 4,400 feet of almost consecutive intake screens in just three river miles (BDCP, p. 9-58). The BDCP also removes eight to nine percent of the sediment that the Delta smelt require (BDCP, p. 9-60), and maximizes pumping in the driest years during the most ecologically sensitive fall conditions (BDCP, p. 3.4-26). All the while, BDCP refuses to build effective fish barriers on the South Delta pumps, which will still operate much of the time (BDCP, p. 3.4-28).

- The other major ecological premise – that creating aquatic habitat in the Delta will compensate for impacts of CM 1, mitigate ongoing state and federal water project impacts, and contribute an additional increment towards recovery – is speculative. The restoration targets in the Restoration Opportunity Areas ("ROAs") are vaguely defined at locations to be determined and analyzed later. The BDCP offers no scientifically-based explanation supporting the relative mix of how restoration habitat types was selected, how their total acreage was calculated, or how the attempted creation of these habitat types will lead to achievement of the Plan's goals and objectives. At the same time, the BDCP repeatedly conflates existing obligations to carry out habitat projects, such as those required under the existing Biological Opinions, with early implementation of the BDCP. These restoration obligations were already triggered by existing destruction of the Delta ecosystem by the state and federal water projects and should not be "credited" to BDCP, a project that causes even more disruption by literally rerouting the Sacramento River.

- The BDCP fails to reduce reliance on the Delta, and will instead create fictional water supplies to justify taking more water than the CVP and SWP have historically exported. This will crush the unique cultural, recreational, natural resource, and agricultural values of the Delta, in direct contradiction to the Sacramento-San Joaquin Delta Reform Act of 2009. (Wat. Code, § 85054.)

- The BDCP's $26 billion dollar cost (without interest) is outrageous, given that the entire cost of the SWP up to 2009 was only $5.2 billion. (See

http://www.water.ca.gov/swp/swptoday.cfm.) There is still no specified plan for the beneficiaries to fund the project, and the general public is expected to foot much of the bill irrespective of the benefits it receives.

## I. DRAFT BAY DELTA CONSERVATION PLAN COMMENTS

The problem is simple: portions of Southern California, the San Joaquin Valley and some Bay area communities have captured all of their local stream flow, used up their groundwater resources, and captured all of the other sources of water such as the massive Tulare Lake, Mono Lake, the Owens River, and the Colorado River. Since they have not managed their urban growth, and at the same time have converted from annual crops (that could be periodically fallowed) to permanent tree crops for international export, they demand even more water from outside their basins.

The CVP and SWP massive Delta intakes have (and continue to) slaughtered fish and literally reverse the flows of rivers. This unabated loss of listed fish has finally forced the federal agencies into requiring permits for the intakes. To avoid the current pumping restrictions associated with the permits, BDCP is proposing to re-engineer how water flows in the Delta, "separating the fish from the water" and thus facilitating the export of more water out of the basin. Of course, removing up to half of the Sacramento River flow is bad for other species, water quality, senior water rights holders, and the local sustainable agricultural community.

Rather than a sustainable solution involving reduced demand, the BDCP simply takes water from sustainable farms with senior water rights and gives it to out of basin contractors with no legal water rights. It takes land away from sustainable farming to give to massive agribusiness on toxic soils, and ultimately it takes taxes and bond money away from reasonable projects and programs that could have beneficial effects on the Delta.

This grab is fully expected: The existing pumping infrastructure is old and needs repair, the waste drain water from the San Joaquin exporters is so contaminated it harms crops and wildlife, and the pumping restrictions have led to reductions in exports. Nevertheless, just because the grab is expected it does not make their solutions rational. The existing Delta export system works, albeit inefficiently since it kills so many fish and recirculates the toxic drainage water from San Joaquin Valley. Several "through Delta" (and western Delta) proposals exist that capitalize on the existing system, while attempting to separate the fish from the pumps. These alternatives could work, and were in fact the recommended outcome of CalFED - but the contractors did not want to install

fish screens on their South Delta intakes, particularly when they could get higher quality water from the Sacramento River vis-à-vis the BDCP.

The Sacramento River basin already uses this water and some argue that it is currently vastly oversubscribed. Water use within the basin can take advantage of recycling the water several times as it flows through the system, but once it is exported out of the basin, it is lost forever. This result is the loss of outflow, upon which the ecology of the Delta and the San Francisco Bay depend on. The BDCP worsens the existing outflow problem and short circuits the Sacramento River, causing untold ecological, agricultural, economic, and social damage.

Improving the Delta's ecology cannot possibly happen by removing even more water from the system. Yet the BDCP proposes to take as much water as possible and hopes that a future "habitat" fix will keep it all working. However, the scientific basis for the habitat is thin at best and is far likelier to improve conditions for the very invasive species that currently harm the Delta. In order to retain their 50-year permit in the face of likely ecological failures, the BDCP simply states that meeting biological goals and objectives is not a requirement of the project. To mitigate for its own, new biological impacts, the BDCP says it will build some habitat, somewhere, to be analyzed at some future point in some future document. That new habitat comes at a cost to the exiting, already imperiled, habitat of the Delta, mainly by trading off one set of listed terrestrial species for aquatic species.

All the while local landowners are forced to sell or have it condemned. Multi-generational farming families will be challenged to continue farming in what is now an ideal agricultural region containing 738,000 acres of prime farmland. Even if a few landowners manage to remain in the Delta, they will be adjacent to major land and water use changes that will completely alter existing conditions for the worse.

## Chapter 3 - Conservation Strategy

*The BDCP Conservation Strategy is Weak*

The BDCP still has not shown that it will result in an appreciable benefit to the species for which it seeks 50-year take coverage with no surprises assurances. Should the fish and wildlife agencies agree to the terms of the BDCP, a great travesty will befall the Delta. There is clear statutory guidance on the terms of a conservation plan under state and federal law that the BDCP has not and likely cannot meet in anything near its present form. Many comments have been submitted regarding the weaknesses of the BDCP as a

conservation plan, with which LAND agrees. A few examples of major flaws in the conservation strategy are described below.

*The Benefits to Covered Species are Uncertain at Best – Too much Take Occurs under the Plan*

The Draft EIR/EIS concludes that there are no certain benefits to several proposed covered species. The NEPA finding is "No Determination" for nine key species. The U.S. Fish and Wildlife Service ("FWS") and National Oceanic and Atmospheric Administration's National Marine Fisheries Service ("NOAA Fisheries") have continued to express concerns regarding the many unresolved issues that stand between the BDCP and an approvable HCP. (See, e.g., Exhibit B, FWS BDCP and EIS Assessment, January 14, 2014.) These ongoing concerns go to the heart of the adequacy of the BDCP as a conservation plan, including the ability of the proposed CMs to minimize and mitigate the incidental take of listed, proposed, and candidate species at the local, range-wide, or ecosystem level.

*BDCP Secretly Relies on Undisclosed Water Transfers to Operate the North Delta Diversions*

The internal planning process for BDCP has been discussing the need to purchase additional water supplies flowing into the Delta since about 2012, according to the documents we have received from federal and state agencies through the Freedom of Information Act (5 U.S.C. § 552 ("FOIA")) and California Public Records Act (Gov. Code, § 6250 et seq. ("PRA")) responses, respectively. This water is called "enhanced environmental flows" among other things. (See generally Exhibit C, FOIA and PRA Documents Relating to Water Purchases for Operation of the BDCP ("Water Transfer Documents").)

In earlier iterations of the BDCP, it was believed that creation of habitat would result in improvements to fish species that would allow for the desired level of water supply/diversions from the new North Delta BDCP intakes. Over the years, however, the Independent Science Board and others have consistently called into question the assumptions made by the BDCP analysis with respect to the claimed relationship between the provision of additional habitat and the relative health of endangered fish. The enhanced environmental flows ("EEF") thus appears in the BDCP as part of the approach to adaptive management for the very reason that the habitat proposed may well not function as planned. (BDCP, p. 3.4-355 to 3.4-357.) The BDCP's increasing reliance on EEF to operate the new diversions in the first place also points to the critical importance of adequate freshwater flows into the Delta ecosystem. The feasibility of creating the

extent and types of habitats proposed by the BDCP in the Delta has also been demonstrated to be uncertain at best.

Documents we have located within thousands of the FOIA/PRA documents – NOT contained in the BDCP or EIR/EIS – indicate that there are specific plans for purchase of approximately 1.3 MAF per year as a means to make up for flows that would be removed from the Sacramento River by the BDCP tunnels. (Exhibit C, Water Transfer Documents, Summary of Assurances Email, dated February 25, 2013 from Lety Belin, Department of Interior.) Under the plan, the water contractors would put forth $1.5 billion of a total expected cost of $3.5 billion for such water purchases. The public would be expected to provide the remaining $2 billion according to the proposal. This amount of water is expected to allow the BDCP proponents to operate under the "Low Outflow Alternative," which provides an additional 900,000 acre feet of exports. (BDCP, Appendix 9A, Table 9A-2.)

There is only one place that this water can come from: the Sacramento Valley. The Department of Water Resources ("DWR") has already identified certain sub-basins as "solution area[s] for Delta outflow issues" and proposes "increases in [conjunctive use] and [groundwater pumping]." (See Exhibit D, Groundwater References, CASGEM Basin Prioritization Process, June 2014 (discussing Colusa Sub-basin); see also DWR's California Water Commission presentation on Drought Management Structure, March 19, 2014 (DWR will "provide[] data collection and analysis to facilitate and support Sacramento Valley groundwater substitution transfers and conjunctive mgmt…").) When water transfers are made from the Sacramento Valley, groundwater substitution will occur so that agriculture may continue. Land fallowing will also have impacts on wildlife habitat, some of which is needed for special status species such as the Giant garter snake.

The purchase of EEF and the resulting increase in groundwater pumping in the Sacramento Valley will directly conflict with the Governor's and others' efforts to more thoughtfully manage groundwater. (See California Water Action Plan (2014), p. 14 (Improve Sustainable Groundwater Management), available at: http://resources.ca.gov/california_water_action_plan/docs/Final_California_Water_Action_Plan.pdf.) More responsible management of groundwater cannot occur if BDCP relies on transfers that will foreseeably result in groundwater overdraft. These problems are not solved by "groundwater storage," which is the current term for "conjunctive use" of ground and surface water. Groundwater storage/conjunctive use is a process for increasing water availability. It envisions increased extraction of groundwater when surface water is in short supply, later replenishing groundwater aquifers with out-of-

growing-season surface water if it is available – a scheme that would be especially problematic during an extended drought.

The BDCP proponents plan to fund the majority of the EEF purchases with public funds. Documents dating back to at least 2012 indicate that the BDCP proponents intended to monitor the water bond to ensure that EEF for the BDCP could be funded. (See Exhibit C, Summary Reports for Financing Items - Use of Habitat Funds for Outflow, estimated date 2012, prepared for BDCP Finance Work Group.) As noted in the document, the bond now slated for the 2014 ballot (written in 2009) would explicitly pay for water purchases for BDCP. (SB7X2, Proposed Water Code, § 79731, subd. (b)(2).)

The BDCP Conservation Strategy is reliant on purchase of upstream water, yet the BDCP and EIR/EIS fail to disclose the water purchases necessary to meet Delta outflow requirements of the project. The BDCP discusses only the potential use of CM 1 for "cross-delta transfers" that would occur in addition to the contractual deliveries under BDCP. (See EIR/EIS, p. 5-108.) The brief mention in passing of the use of transfers for flows (BDCP, p. 3.4-3, 3.4-19, Table 3.2.1-1) does not provide the public of what is actually planned or what the environmental and other effects of those transfers will be.

In addition to failing to disclose plans to purchase major volumes of water from the upstream areas, the BDCP also fails to include EEF water purchases as covered actions under the BDCP. (BDCP, p. 4-25 (discussing only wheeling through the tunnels as a covered action).) Yet the water flows necessary to operate CM 1 do not presently exist in the Sacramento River. The purchase and transfer of this water, and all of the resulting direct and indirect effects must be disclosed to the public. This deficiency requires all of the documents to be revised and recirculated to the public. Moreover, project alternatives must be considered that would maintain upstream water supplies (including groundwater), conserve agricultural resources, and avoid jeopardy to endangered species and other protected wildlife.

*Benefits of Habitat Creation are Overstated*

The BDCP makes unreasonable assumptions regarding the benefits of implementing the restoration activities described in the Plan. The following key points summarize the state of Sacramento-San Joaquin Delta habitat restoration:

- Several hundred million dollars in public funds have already been invested in planning, land acquisition and restoration in the Delta. The results of this major

investment have been poorly documented, poorly monitored, and are ecologically uncertain.

- Despite over 40,000 acres of publically held or managed intertidal and open water habitat in the Delta primary zone and 116,000 acres in Suisun, native fish species declines do not appear to be stabilizing.
- The vast majority of publically held land in the Delta receives little or no invasive weed management, ecological monitoring, or any ecological site management.
- Simply acquiring new land without attempting to manage and understand the functionality of the existing acquisitions is a waste of public funds and a recipe for continued failure.
- The time has come for a rethinking of land management and restoration prioritization in the Delta.

The BDCP is simply recapitulating the failed strategy of tying up more land in habitat without substantial consideration of the impacts of those activities (assuming complete "success" of restoration efforts in the EIR/EIS and Plan) or even demonstrating what specific biological benefits, in which locations would have the intended biological effect. The Delta Stewardship Council's Independent Science Board has the charge to better understand how habitat elements are linked in the Delta, but is unclear at this time if they are continuing the CalFed academic exercises or will provide a substantive push to resolving the structural issues that keep Delta restoration from becoming a success.

BDCP claims anticipated benefits to habitat and species under the Plan, specifying activities involving over 148,000 acres within four ROAs.[3] The BDCP, however, does not provide a substantive biological basis for the habitat, nor proposed locations for the mitigation areas or habitat restoration activities. The EIR/EIS treats the Suisun Marsh incorrectly as being separate from the statutory Delta, while including it in the Plan Area. BDCP's proposed activities must be considered within the context of how much land in the Delta and Suisun Marsh is already dedicated to habitat and to restoration projects that will go forward even if BDCP is not permitted as a part of the baseline; it is inappropriate to claim those projects as part of the Plan, helping to mask the ecological impacts of CM 1.

The ROAs have been described in the broadest geographic sense, but they essentially cover the majority of the plan area, instead of the most biologically suitable or technically likely areas for restoration. BDCP is aware of the likely specific locations,

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[3] EIR/EIS, Chapter 13, Land Use, Section 13.1.1.1, p. 13-2, lines 2-4 and page 13-3, lines 18-40. See also Figure 13-1.

which were used in the hydrodynamic modeling, but were not disclosed in this document. (See Exhibit E, BECT Surface Water PowerPoint Handout, pp. 17-20.)[4] As such, it is difficult to identify the full nature and extent of potential significant impacts from, or biological effects associated with, the mitigation or restoration activities. It appears, however, that the intent of the BDCP is to defer at least the restoration analysis to future environmental documents since they are only described programmatically. However, it is critical that the reasonably foreseeable direct and cumulative impacts of the restoration projects are identified and analyzed in the BDCP and the EIR/EIS. This was not done.

The original justification for the BDCP restoration acreage targets is attributed to CalFed and surprisingly Governor Schwartzeneggar's Delta Vision process, a purely political process. (BDCP, Chapter 3, p. 3.A-33.) Following these "analyses," the BDCP attributes its own further analysis for Tidal Marsh restoration in an unsatisfactory attempt to provide an-after-the-fact justification to support its target acreages and locations.

There is no substantive difference between the habitat acreages between the BDCP alternatives (except for Alternative 5, where the smaller 3,000 cfs conveyance capacity apparently requires less habitat "mitigation"); the conclusion of 65,000 acres of tidal habitat is based on politics and not science. There is no relevant biological basis for the acreages and therefore no means by which to differentiate alternatives and the ecological effects. No greater illustration of this hand-waving can be found than in BDCP Table 3.A-5 by which various "weighing factors" for habitat evaluation criteria have been assigned exactly the same weight of "1" for high, moderate, and low values for Criteria 3, 4, 5, 11, 14 and 15. Assigning the same weight does not discriminate for high, moderate, and low values and is a sham analysis. Furthermore, some values are inexplicably given a weight of 5. The only explanation for structuring the weight in this manner is to pretend to have 1/3 of the criteria have an effect on the outcomes when they do not and ensure that 1/3 of the criteria with values of 5 determine the outcome.

Finally, a third review process is described – a "collaborative process" with fish and wildlife agencies – involving "(s)ubstantial further analysis and negotiation" to ascertain the biological effects. (BDCP, Appendix 3.A-36.) Unfortunately, this analysis is not provided, nor is it described how this collaboration supported the prior conclusions described in Table 3.A-5 and 3.A-6. The conclusions are only provided if they support

[4] Though Exhibit E states that it is not for distribution, it was later released as a public document under the California Public Records Act, and therefore is no longer a confidential draft. These are the same restoration assumptions made for purposes of the BDCP effects analysis.

the prior determination, and the analysis is not provided at all. We will never know what negotiation was required to identify the basis for these acres. This entire section of the Appendix reads as a cursory and annotated history instead of a credible scientific analysis in support of an EIR/EIS for a multi-billion dollar HCP that results in extensive take of listed species and adverse modification of critical habitat of the very species that the Plan supposedly conserves. This effort is a parody of the best available science standard.

BDCP places its reliance on the untested and unproven assumption that habitat restoration can substitute for water flow. The Science Panel criticized the effects analysis, which is the foundation for the EIR/EIS impact determinations as to fish species, for not sufficiently acknowledging or articulating the "reality" that there are critical uncertainties associated with presumed beneficial effects of tidal wetland restoration." (Delta Science Program Independent Review Panel Report: BDCP Effects Analysis Review, Phase 3, at p. 5.) Thus, the Science Panel found, "Much of the conservation measures center around restoration activities and management actions to improve current conditions. Our impression, therefore, is that the foundation of the BDCP is weak in many respects . . . ." (*Ibid*.)

The following sections for Channel Margin and Riparian Habitat are even more abbreviated (one paragraph each), fail to provide any analysis whatsoever, and use a new standard of analysis "deemed" to be sufficiently effective. (BDCP, Chapter 3, p. 3.A-37.) There is no scientific foundation for the acreages, locations or types of restoration identified in these sections. The entire section of Appendix 3.A.7.3.1.5 is described as providing the rationale for these target acres, yet none is provided other than unsubstantiated assertions by an unidentified party. Moreover, these target acres are also described as providing mitigation for CM 1, but the amount and ratio are undisclosed. This fails to meet even a programmatic analysis standard, let alone a project-level analysis. This entirely lacking analysis was critical to both the project impacts and project mitigation, as well as to the justification for the entire HCP.

*BDCP Includes Adverse Modification to Critical Habitat on a Massive Scale*

The ESA was enacted to assist in the recovery of animal or plant species at risk for extinction. By designating a habitat, which is vital to the health of the species, called "critical habitat," an important first step in the conservation of a species is taken. Once an animal has been listed and its critical habitat has been designated, the area is considered a protected place, vital to the animal's rehabilitation and prosperity. Any further encroachments or developments on the protected habitat are governed by the ESA and its implementing regulations, which are administered by NOAA and FWS. The

BDCP would adversely modify designated critical habitat for several listed fish species in the Delta; yet, the BDCP fails to disclose the full extent of this modification.

"The goal of the ESA is not just to ensure survival but to ensure that the species recover to the point it can be delisted." (*Alaska v. Lubchenko* (2013) 723 F.3d 1043at p. 1054, citing *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service* (2004) 378 F.3d 1059, 1070 (*Gifford Pinchot*).) Each federal agency "shall . . . insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of [critical] habitat of such species. . . ." (16 U.S.C., § 1536(a)(2).) "[T]he purpose of establishing 'critical habitat' is for the government to carve out territory that is not only necessary to the species' survival but also essential for the species' recovery." (*Gifford* Pinchot, *supra*, 378 F.3d at p. 1070.) Also, "existing or potential conservation measures outside of the critical habitat cannot properly be a substitute for the maintenance of critical habitat that is required by Section 7 [of the ESA, 16 U.S.C § 1536]." (*Id*. at p. 1076.)

Critical habitat was defined as irreplaceable in *Gifford-Pinchot, supra*, 378 F.3d at p. 1076. New, replacement habitats cannot be an equal substitute for designated critical habitats that have been federally designated because of their specific features and value to the species. Critical habitat is so defined because it has been exhaustively studied and determined to be the best habitat available to the species that is critical for survival and recovery. It is an aggregate of both physical and biological features, known as primary constituent elements ("PCEs"), defined in 50 C.F.R. § 424.12(b), that determine the critical habitat. It is not simply an arbitrary determination of a suitable area for the species to survive. Despite the mitigation and conservation provisions in the BDCP, the new habitats that are being planned for the fish species are not federally designated "critical habitats." They are optimistically projected to be, at best, suitable for basic survival, but will not meet the standard described in *Gifford Pinchot, supra*, 378 F.3d at 1070, specifically, that the new habitat be suitable for both survival and recovery.

No credible scientific basis is provided for the conclusion that the new habitats will ever be suitable for that purpose. The BDCP cannot assume that the new restoration areas will become critical habitat because the new habitat may not have the same conservation value to the species, despite being a suitable place for survival. The BDCP also fails to provide any certainty regarding the timing of attempts to replace habitat, further jeopardizing listed species by leaving them with less habitat at times in the 50-year Plan period.

The failure to thoroughly analyze the threatened adverse modification of critical habitats renders the BDCP inadequate. *Butte Environmental Council v. United States Army Corps of Engineers* (2010) 620 F.3d 936 (*Butte*) discussed the applicable standard for measuring what constitutes "adverse modification." In *Butte*, the agency had calculated the total area of critical habitat for four endangered species that was slated for destruction in a development project. This amount was held against the nationwide total for critical habitat for the listed species, and given a numerical percentage value of the whole. When looked at on a nationwide scale, the relatively small percentages of critical habitat destroyed were considered acceptable, and held not to be adverse modification. (*Id*. at p. 948.) In this way, the court created a quantitative standard of review, and the total amount of critical habitat that will be destroyed should be a calculable amount for the court's consideration.

Such a precise examination has not occurred with the BDCP EIR/EIS. The water quality effects are not measured in a realistic way and presume facts that are not likely to occur. The analyses fail to adequately consider the combined effects that the long-term construction and implementation will have on water quality in designated critical habitat, including temperature, salinity, depth, and flow. By leaving out this pertinent and critical information, the BDCP fails to disclose material, indeed necessary information pursuant to the permit requirements. In addition, the known data regarding the devastation of the listed salmon populations that would occur puts the BDCP squarely under purview of 50 C.F.R. §13.21(b)(4), as it will certainly threaten the continued existence of several wildlife and plant populations.

Several federally listed fish species have critical habitats in the Delta. Implementation of the BDCP would lead to the destruction and adverse modification of their critical habitats in numerous ways at several different stages of life. Chapter 5, Appendix 5.I of the BDCP's Revised Administrative Draft (March 2013) contains the Critical Habitat information for the listed fish species. It acknowledges that the critical habitats of the fish affected by the plan will be altered and adversely modified. Some effects have been anticipated, but many more remain an unknown consequence. The BDCP also lists the known PCEs for the salmon species, and acknowledges the effects that the project will have on those elements. In addition, increased water temperatures result in decreased dissolved oxygen ("DO") and an increase in the rate of production of algae and aquatic weeds. (DWR, Contaminant Accumulation in Fish, Sediments, and the Aquatic Food Chain, Study Plan W2, Phase 2 Report: Oroville Facilities Relicensing,

FERC Project No. 2100 (February 2006).)[5] Increases in water temperature and reductions in DO degrade fisheries' habitat quality and suitability in areas of the Delta that are designated as critical habitat for endangered species. Unfortunately, the current public review draft of the BDCP does not contain any clearly presented data on the amount of critical habitat loss that would occur.

Degradation of this habitat will be an adverse modification of critical habitat for several endangered species (delta smelt, steelhead, sturgeon, spring-run Chinook salmon, etc). Degradation of this habitat also violates the beneficial uses of water as designated by the Central Valley Basin Plan, including: cold water fisheries, warm water fisheries, contact recreation, non-contact recreation, agriculture irrigation, drinking water and others.

Habitat quality and the project's adverse effects to the salmonids' critical habitats and PCEs are discussed at length in Appendix 5.I of the BDCP Administrative Draft (March 2013), including sections outlining changes in water quality, quantity, coverage and connectivity, and forage quality, which in total discuss all known alterations to PCEs. It also discusses the high occurrence of unknown effects to these PCEs that are not adequately addressed. In addition to these known effects, according to the report being submitted by the Sacramento County Regional Sanitation District with its comments on the BDCP, temperature modeling for the Sacramento River was incorrect.

The EIR/EIS acknowledges that construction and operation of the tunnels will affect the water quality in all aspects such as flow, temperature, salinity, turbidity, volume, presence of contaminants such as construction waste and spills, increased levels of heavy metals and agricultural run-off. Yet the current public review draft of the BDCP does not disclose how these impacts will adversely modify existing critical habitat. Such an analysis is required and would show that the BDCP as proposed is impermissible under the ESA because it adversely modifies critical habitat.

*Measures to Reduce Take of Fish at the South Delta Pumps Must be Part of Any Conservation Strategy*

The South Delta Pumps have massive impacts on the hydraulics, water quality and water availability in the Delta. The hydrodynamic impacts of the pumps include flow

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[5] Available at: http://www.water.ca.gov/orovillerelicensing/docs/wg_study_reports_and_docs/EWG/W2%20Phase%202%2001-31-06%20final.pdf.

reversals on the San Joaquin and the Sacramento Rivers, as well as several sloughs. These flow reversals add to the energy costs of fish living and migrating through the area, and is particularly concerning when the food chain has already been disrupted by invasive phyto and zooplankton, and the nutrients have also been exported by the pumps. The flow reversals are also associated with reduced circulation and create areas of low dissolved oxygen and promote toxic algae, both of which are potentially harmful or fatal to fish. Ultimately, fish are drawn to the pumps themselves, which brings them in contact with predatory fish, mainly introduced bass and other centrachids, or finally into the pump salvage facilities. These facilities lack positive barrier fish screens and instead rely on baffles to attempt to redirect fish.

Reducing take at these locations currently requires an avoidance strategy (i.e., do not pump when fish are near), but that has reduced pumping rates and volumes. However, simply reducing pumping does not change the huge impacts on circulation that the overall operations of these facilities have and that the overall habitat in the area near the pumps is of relatively low ecological quality. Through Delta as proposed in the EIR/EIS (Alternative 9) attempts to resolve some of these issues using the same essential system as the current baseline, but also provides fish screens on Georgiana Slough and the Delta Cross Channel before moving the water through these separate corridors to the existing southern pumps. The use of operable gates then controls the circulation in a more effective manner for fish, and the degraded habitat is improved.

Alternative 9 is much better than current conditions in that it more effectively manages the fish and the water. However, it has two very negative elements. First, it removes the full 15,000 cfs without any analysis as to what the *optimum* environmental flow is. The second problem is the localized flow reversals on Sutter and Steamboat Sloughs. The water quality effects of those reversals appear problematic, although the modeling provided is not useful to discern the implications of those new intake locations. A potentially negative impact could be the increased number of structure and gates, which could promote predation in those locations.

The BDCP should consider using some variation of Alternative 9, even if the preferred alternative is selected, simply because the existing flow routes will still be used from 100% to approximately 50% of the time, after a 10 year (or more) construction period. To this end, improvements at the existing pumps to reduce entrainment should be included in all of the alternatives, which is supported by the analysis by DWR in the

Delta Risk Management Strategy ("DRMS"), Phase 2 (2011), p. 15-17,[6] finding that "the existing fish protection screens at the [SWP Tracy Pumping Plant] are inadequate and can be improved."; ." (See also, Exhibit G, Some Ideas for Improving SWP Yield.) Although a low-flow fish screen concept has been under consideration for some time, none of the alternatives presented specifically incorporate this measure. According to Former Manager of the Contra Costa Water District's testimony to the Legislature:

> A demonstration fish screen of about 2,000 cfs could provide immediate fisheries benefits, especially during the critical spring period when exports are reduced to about that level.

(See Exhibit H, Gregory Gartrell Testimony, March 8, 2011, p. 3.) CCWD, Metropolitan Water District of Southern California and other SWP contractors have conducted a draft feasibility study, which has not yet been released, indicating that at a cost of approximately $200 million dollars, such an improvement could prevent take of a significant number of fish and larvae in the South Delta. This cost is in line with that estimated in 2011 by DWR in the DRMS 2 study. (DRMS 2, p. 5-15.) Through Delta should be fully analyzed and optimized to have the lowest possible project impacts, and then viewed in the light of the status quo, given that the historic flow path and associated take of fish will not change even under the alternatives that include new north Delta intakes.

**Comments on Specific CMs**

***CM 1 – North Delta Diversions***

The North Delta Diversion and its tunnels are not a conservation measure, and will neither improve water quality in the Delta nor protect species. It should instead have been a covered action under Section 7. CM 1 is uncertain to contribute to recovery because the decision tree is too vague and essentially allows for any combination of activities to optimize water withdrawal for the Sacramento River. CM 1 will take a significant number of salmonids attempting to run the gauntlet of nearly one mile of fish screens and entrainment of smelt from CM 1, which may also be greater than disclosed if smelt relocate to Sacramento River as a result of project operations in combination with climate change

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[6] Available at: http://www.water.ca.gov/floodmgmt/dsmo/sab/drmsp/docs/DRMS_Phase2_Report_Section15.pdf.

***CM 2 – Yolo Bypass***

The BDCP EIR/EIS impermissibly conflates existing legal requirements for mitigating take from its existing facilities and their operation with the proposed project. The Yolo Bypass habitat modification(s) is/are already required by Existing Biological Opinions, and should not be used to provide credit for a new impact to the BDCP Sacramento River intakes. The BDCP does not propose to cease operations at the existing southern Delta Intakes, but just reoperate them. Therefore, those impacts remain and must be mitigated through the existing requirements.

This portion of the project was already required under the 2009 Biological and Conference Opinion for the Central Valley Project and State Water Project, Action I.6.1 and was analyzed in the 2012 Yolo Bypass Salmonid Habitat Restoration and Fish Passage Implementation Plan. Therefore, it is part of the mitigation for the existing South Delta pumping impacts and not a new benefit as described in the Effects Analysis. The baseline is defective, and the project is pre-decisional. The EIR/EIS analysis is defective in terms of its impacts details, impacts analysis and conclusions.

The water supply for both the new diversions and for the Yolo Bypass CM is not adequately described. The new ecological implications for the upper watershed for the new operations of the reservoirs, which are also not disclosed or analyzed, are ignored for both CM 1 and CM 2. It is not simply a change in the point of diversion from the south to the north; there is a wholly new point of diversion with new water resource and ecological implications in addition to the existing points of diversion. The project proposes to divert water down the Yolo Bypass and convert existing habitat values to other habitat values as a means to mitigate for the increased take on the Sacramento River proposed for this project, as well as the existing take in the South Delta. There is insufficient analysis to address the following issues: the identification of the impacts of the proposed project, which action(s) is/are mitigation for the existing project, or the proposed project, what the mitigation ratios and their biological basis are, and how the conversion of terrestrial to aquatic resources will be fully mitigated and where. These are not solely programmatic issues as CM 2 must be described at a project level of detail in the BDCP in order for take under the Plan to be authorized.

The water bypasses away from the Sacramento River and down the Yolo Bypass proposed for CM 2 are not for flood purposes since they are controlled by new operable gates and lower elevation weir structures and must be counted against SWP/CVP diversion volumes. This is water that would otherwise go down the Sacramento River and be available for wildlife and Senior water rights holders. Increased diversions through Yolo Bypass reduce water availability for fish and other beneficial uses in the

mainstem of the Sacramento River. The BDCP proponents must apply to the State Water Resources Control Board ("SWRCB") for a license to divert water through the Yolo Bypass. Moreover, the water supply required to meet the habitat and other goals of CM 2 must be subtracted from the contract allocations of the project proponents. Without CM 2, this water would continue to flow down the Sacramento River and would be available to downstream water users.

***CM 21 - Non-project Diversions***

LAND has expended significant time and resources to attempt to improve the BDCP's approach to non-project diversions in the Delta. (See Exhibit I, LAND Letter to Christopher Earl, April 19, 2012.) Despite some progress, CM 21 still fails to provide a substantive technical analysis and ignores the agencies' own conclusions that small agricultural intakes in the Delta typically do not have a significant ecological impact. Moreover, CM 21 fails to address the potential widespread need for aquatic take coverage to be provided to existing intakes in the Plan area should BDCP cause changes in the existing conditions.

The description of CM 21 fails to identify and support the supposed purpose of the measure. It also fails to identify that by its own metrics, the BDCP diversions (both existing in the South Delta and proposed in the North Delta), are vastly greater stressors than the individual or aggregate impacts of the non-Project diversions according to its own citations. CVP/SWP Project diversions remove an annual average of approximately 5.6 MAF of water along with the associated "diversion of plankton and other nutritional resources" entirely from the watershed. In contrast, the non-Project diversions divert a much smaller volume of water that is kept within the watershed and recycle nutrients from agricultural non-Project return flows.

Insufficient take coverage is available to landowners within the Delta should it be needed for species in the Plan area due to successful reintroduction and/or expansion of covered species' range in the Delta. At a minimum, a HCP and NCCP should cover all small in-Delta diversions, and then provide assistance with screening of any diversions that are likely to result in significant take in the Plan period. A baseline of zero take can reasonably be assumed. This would be generally consistent with research conducted on the level of take associated with existing in-Delta agricultural diversions. That research

has concluded that intakes of 250 cfs or less are not a major concern with respect to take of open water fish.[7]

*Suggested Options for Take Coverage of Fish for Neighboring Landowners:*

1. Incidental take coverage for all existing and active irrigation diversions in the Plan area through a tool such as a Certificate of Inclusion. Coverage would only apply to existing and ongoing activities, not new diversion or modified diversion points. Status of irrigation diversions could be confirmed through Statements of Diversion and Use on file at the SWRCB.

2. Incidental take for certain lands in Plan area. Highest priority given to lands within a certain proximity of restoration areas likely to result in increased populations in wider areas.

The availability of take authority designed to cover the increased incidence of species in the Plan area due to Plan activities is appropriate and necessary for Plan success. CM 21 could serve as the platform for this extension of take coverage. LAND will continue to attempt coordination with the relevant state and federal agencies to adequately address the issue of the potential for increased take at existing agricultural diversions under the Plan. Without providing at least the opportunity for such take coverage if it becomes necessary, the BDCP threatens to further burden existing farming operations in the Delta that are not themselves proposing any changes in agricultural activities or practices, will bear the brunt of Project impacts, and are receiving no benefits under the BDCP.

***CM 22 - Avoidance and Minimization Measures***

The project identifies that that actual intake operations will be based on "real time monitoring of fish movement." This is at best speculative, since the EIR/EIS analysis

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[7] See Ecosystem Restoration Program, Ecosystem Strategy for Stage 2 Implementation Sacramento San Joaquin Delta Ecological Management Zone July 21, 2010 report ("ERP Report"). The ERP Report states that "small agricultural Delta agricultural diversions are likely to have a minor effect on pelagic (open water) fish, such as the [D]elta smelt." (ERP Report, p. 50, citing Nobriga, M., Z. Matica, and Z. Hymanson. 2004. Evaluating Entrainment Vulnerability to Agricultural Irrigation Diversions: A Comparison Among Open-Water Fishes. American Fisheries Society Symposium 39:281-295, available at: http://www.fws.gov/stockton/afrp/SWRCB/12.%20Nobriga%20et%20al.%202004.pdf.)

does not provide data supporting the type of monitoring, its accuracy for specific species, the implications to take from the statistical error inherent in this kind of monitoring, or anything of technical substance. This is simply an illusory commitment.

**Chapter 4 - Covered Activities and Associated Federal Actions**

This chapter fails to disclose all of the activities that must be covered under the BDCP. For instance, the provision of power for construction is not included as a covered activity. (BDCP, Table 4-3.) The provision of power to the project creates environmental impacts including take of listed species outside of the plan area, and therefore outside of take coverage, that are simply not analyzed in the EIR/EIS.

**Chapter 5 - Effects Analysis**

The BDCP fails to describe the water transfers that will be required to operate the new diversions and the bypass. (BDCP, Section 5.1.2.7.) In addition to causing environmental impacts under CEQA and NEPA, these water transfers will impact critical and other habitat in the Sacramento Valley. The Effects Analysis should have analyzed the impact on migratory bird and other special status species in the Sacramento Valley that would be adversely affected by the transfer scheme currently being discussed by BDCP proponents behind closed doors. (See Exhibit C, Water Transfer Documents.)

***Appendix 5.C***

*Flow Reversal*

Appendix 5.C discloses that reverse flows are expected on the Sacramento River as a result of operation of the new intakes. This information, however, is not carried forward into the EIR/EIS, which focusses vaguely on the slough south of the intakes. Reverse flows present many detrimental impacts for fish and for water users in the Delta. The degree and extent of these reverse flows need to be more clearly articulated and the potential environmental impacts of these flows need to be detailed, as does the estimated degree and extent of reduction of reverse flows at the South Delta Pumps.

*Sediment*

Turbidity is a measure of the amount of suspended solids. Suspended solids may be sediment, algae, suspended sediment, or other solids. Natural turbidity is greatest in the winter due to runoff from storms, but can be at high levels in areas with high algal growth. Turbidity can be aan important variable in determining Delta smelt habitat use.

Sediment plays a complex role in aquatic ecosystems. Too much sediment in high elevation streams can cause significant water quality problems and lead to fish declines. In lower elevation Delta systems, sediment provides visual cover for some fish, such as Delta smelt, which protects them from predators. Sediment is also the building block for streambanks through over bank deposits. Sediment is critical for the maintenance of floodplains and the associated riparian habitat by creating the new locations for plants to grow and for creating and maintaining topographic complexity.

Reductions in stream sediment loads on the massive scale caused by dams and water projects can lead to improved visual clarity, which is considered positive, but not for Delta smelt survival. It can also lead to scouring, where previously accumulated sediment is stripped and mobilized from existing floodplains. Invasive aquatic (and some terrestrial) weeds can also lead to the additional removal of sediment, exacerbating this problem.

The BDCP has identified the massive reduction of sediment by CM 1 in exactly the worst place biologically for the Delta smelt, and the same reduction in sediment is likely to constrain the natural maintenance of floodplains, and fail to meet the restoration sediment needs. The BDCP also fails to accurately and adequately identify that BDCP-associated restoration activities can lead to even greater sediment losses. (http://snugharbor.net/images-2013/deltastuff/DISB_Burau_ISB_brief_2013_02_14.pdf). For example, CM2 Yolo Bypass actions can also lead to reductions in sediment from re-grading the floodplain.

Yet, Table 5.A.2.0-1 (Summary of Hypothesized Climate Change Adaptation Benefits of the BDCP,), inexplicably claims that "Enhanced Ecosystem Services" provided by the project will restore "sediment processes that enhance the functioning of aquatic habitats." (BDCP, Appendix 5.A.2, Climate Change Approach and Implications for Aquatic Species, p. 5.A.2.0-3.) The analysis fails to clearly identify how these processes are restored, in which locations, and at what scale. The analysis also fails to assess the difference between process and actual sediment deposition in terms of the baseline or under future conditions without the project. The claimed benefit of a restored sediment process is speculative and unsupported. In fact, the BDCP removes beneficial sediment and worsens conditions from the current baseline. Technically, the BDCP seems to infer that some fluvial process is being modified that enhances sediment process in some manner that could enhance aquatic habitat function. If such an effect exists at all, the analysis should describe the specific mechanisms and then identify the locations and quantify the amount of this benefit.

***Appendix 5E - Habitat Restoration***

The Habitat Restoration analysis fails to meet any standard, much less the best available science standard. It uses selected elements of established science and then ignores the preponderance of data and analyses that rebut the foundations of the proposed project, its analysis, and conclusions. Restoring habitat is technically challenging, uncertain, and in the manner that the BDCP proposes it, speculative at best. Yet contrary to this, the BDCP assumes the certainty of its outcomes. Even more problematic, all of this unfounded certainty is in the context of the grossly inadequate description of monitoring and adaptive management necessary for effective restoration. And the absence of a project level analysis demonstrates that the habitat restoration is simply a marketing effort for CM 1.

*Setback Levee Challenges are Not Addressed*

Much of the Delta has developed inverse topography naturally from overbank deposits created and maintained over thousands of years of flooding, with the back basins developing peat expanses where flood water was trapped and the vegetation accumulated and could not decompose. These naturally elevated levee features were eventually supplemented with created levees in most of the Delta, with the exceptions of the "cuts," which were excavated and artificially leveed.

The concept of setback levees is supposed to allow the free flow of a river over a wider floodplain, thus allowing a river to migrate or meander more naturally than if it were confined. This concept only functions if the surrounding topography is level or elevated, creating a floodplain with elevations (called terraces) that flood less frequently further from the main stem of the river. Obviously, in the historic and modern Delta there is a large basin behind the natural levee at a lower elevation from the high ground and with no terraces. In the tidal reaches of the Delta, an artificially created setback is also in daily contact with changing water elevation. Thus, the stated purpose of a setback levee is negated in the Delta.

To create a setback levee, an unnatural feature in the historic Delta, under these conditions thus requires a much more massive levee than the existing levee, becoming much larger the further it is set back for the same top of levee elevation (no improvement in overtopping flood resistance). The common idea of setback levees for channel migration comes from riverine (fluvial) systems that allow the expression of the river's energy by moving laterally. This is the case only in moderately steep to low gradient systems. In tidal systems, such as the Delta from the City of Sacramento downstream,

these are a twice daily tidal incursions and excursions that provide the dominant energy for the system, and functions very differently from fluvial systems.

Thus, in the Delta, the meanders that are common along the Sacramento and San Joaquin river mainstems and the many natural sloughs were created and maintained by only very massive and very rare historic events, and not routine channel migration forming events that dominate the upper reaches of these rivers.

The consequences of creating setback levees in the Delta are manyfold and not analyzed in the BDCP or the EIR/EIS. Since there are no readily available, geotechnically suitable soils found in much of the Delta, and the soil cannot come from the Prime farmland already under cultivation and used to sustain season migrations of waterfowl and other birds, the material has to be imported from significant distances. The areas that these soils are taken from suffer both the indirect and direct environmental consequences of their mining or borrow area construction. The transportation using heavy diesel trucks, or vastly worse from an air quality perspective, marine barges, also has direct and indirect impacts not described in the EIR/EIS.

Using a simple illustration of an existing levee on the Sacramento River with a 3:1 water side slope and a 2:1 protected side slope, compared to a setback levee of exactly the same standards (not the proposed more massive cross-sections), and setting it back to a very conservative new 5' lower elevation, instead of the more typical -10'or greater base elevation), and keeping the top elevation the same to meet the same overtopping conditions, it would require a minimum of 56% more material for a given length. In reality, the proposal for setback levees have been for even more massive structures. These massive costs could instead be used to provide species benefits with no impacts to other species by modifying or removing dams, removing fish passage barriers, invasives control, maintaining minimum biologically based instream flows and protecting needed outflow.

For the establishment of setback levees to be a reasonable practice, it must have clearly demonstrable benefits. Yet these have not been offered because it has not been studied in the Delta. Setback levees with purported benefits for fish directly harms local riparian species during project construction, agriculturally reliant migratory birds from loss of land base and terrestrial and vernal species from the borrow areas, and have opportunity costs from not completing projects that are demonstrably beneficial.

An additional issue is how the impacts of restoration will be mitigated under applicable requirements. BDCP includes the conversion of large acreages of lands that currently provide habitat values to other uses such as aquatic habitat. Yet mitigation is

not even mentioned for the impacts of creating the habitat described in Appendix 5E, with the exception of how setback levees may need some additional mitigation. (BDCP, Appendix 5.E-5.) The BDCP must describe how land conversions to different habitat types will be mitigated and take those costs into account in Chapter 8.

**Chapter 6 - Plan Implementation**

Chapter 6 does not provide an adequate roadmap for successful implementation of the BDCP. For instance:

- While the distant potential for multi-island failures is used to justify the need for CM 1, inadequate funding to address potential island failures is provided, should they occur. (BDCP, Chapter 6, pp. 6-32 to 6-36.)

- The disparate treatment of "BDCP" and "non-BDCP" levee failures is arbitrary and fails to account for the very real effects that the changes proposed by BDCP will have on Delta levees. While BDCP actions will have negative effects on levees in the Delta, Chapter 6 provides no commitments to replace or repair levee damage or fund increased maintenance needs brought about by BDCP. (BDCP, pp. 6-34 to 6-35.)

- There is no commitment to obtain habitat lands through willing seller transactions, or even a preference for willing sellers, in contravention to typical HCP practices developed to promote successful HCPs (BDCP, p. 6-7.)

- There is no enforceable mechanism for ensuring rough proportionality and proper sequencing of habitat destruction and habitat replacement should public funding not be available to carry out CMs 2-21 (BDCP, pp. 6-10 to 6-11, 6-51.).

- While strong regulatory assurances are provided to the permittees, the surrounding communities and the environment receive little assurance that the Plan will result in the promised benefits (BDCP, pp. 6-28 to 6-30), particularly since the Implementing Agreement does not require the permittees to actually meet the Biological Goals and Objectives to maintain take authority (Implementing Agreement, section 10.1).

- Additional burdens beyond existing law are placed on the federal fish and wildlife agencies in order to suspend the permit. Along with a lengthy dispute resolution process during which time the damage to species will be allowed to continue, a permit suspension must be signed by the Secretary of the Interior or the Secretary of Commerce. (BDCP, p. 6-51.)

As a result of these and other deficiencies, significant restructuring of the BDCP implementation approach will be necessary for the Plan to meet minimum ESA standards.

**Chapter 7 - Implementation Structure**

LAND participated in the Governance Workgroup created by the incoming Brown Administration to the extent possible. LAND reviewed various drafts of Chapter 7 and provided written comments thereon, which are part of the public record. The time investment in attempting to provide local input on how the Plan governance should be structured was wholly unsatisfactory, as the concerns raised were never addressed in writing or otherwise. As with much of the so-called public process around the BDCP, the Governance Workgroup provided little more than a black hole in which to put ideas and concerns that were never addressed.

Overarching continuing concerns with the proposed draft Governance structure include:

- Too narrow a scope for the Stakeholder Council given the significant and ongoing impacts in the Plan area on local communities and the environment;
- Excessive reliance on adaptive management as a form of permanently deferred mitigation;
- Nearly complete control of the water export contractors over operation of the new facilities and the adaptive management process to the detriment of local communities and fish and wildlife;
- An inadequate and cursory approach to damage and compensation process for completely foreseeable impacts on landowners and districts in the Plan area.

The recently released Implementing Agreement does nothing to alleviate LAND's concerns with the BDCP Governance approach, and simply reinforces the water export contractors' stranglehold on decisions that will profoundly affect the Delta over the next five decades. Moreover, the recently formed implementation offices at DWR, which will largely be staffed by the water exporters and their contractors, cement our conclusion that local communities will not receive adequate protections or a fair process if the Plan is implemented as proposed.

*Conceptual Proposal for Alternative Dispute Resolution for BDCP Impacts*

The BDCP fails to provide a pathway toward effective dispute resolution that will be necessary for the Plan to be successfully implemented. (BDCP, pp. 7-19 to 7-22.) A project, such as the BDCP, with massive direct and indirect effects on the distribution of MAF of water, 165,000 acres over 5 counties, needs a simple, fair and robust mechanism for resolving disputes. The costs, time, and uncertainty of bringing litigation through the Tort Claims Act (Gov. Code, § 815 et seq.) over the majority of the potential project impacts to local landowners, special districts, towns and counties is simply not warranted for any party. Typical small claims of road and fence damage, damage to irrigation and drainage facilities, localized groundwater impacts from dewatering or restoration, weed management issues, and loss of access to property can be handled in an expeditious and fair manner by a simple form of dispute resolution, a **claims board**.

There are several kinds of alternative dispute resolution ("ADR"), but most require some form of in-place memorandum of understating ("MOU"). Given the vast number of potential parties, and the scale of this project, a more simplified form of ADR would allow any party to bring forward a claim for review. This is the process that is used for large environmental impairments such as chemical spills. In those cases, a special master or single legal team is used to review claims. The BDCP however will take place over an extended 10-year construction period and a 50-year permit, vastly exceeding the time scale of those processes and requiring institutional capacity and funding to meet expected and unforeseen impacts.

The composition of the claims board would be designed to provide sufficient technical and legal capability to determine the direct or indirect links to the impacts. To ensure that the best foundation of technical expertise is available, the claims board could be created with a licensed engineering expert from the DWR and licensed engineering expert from Delta (Sacramento, Stockton area, selected by N/S/C Delta Water Agencies), and overseen by a retired judge, selected by the California Supreme Court. The determination would be made by simple majority vote.

The basis of a claim would be the provision of written documentation to the claims board, followed by a brief hearing if requested or, if the initial claim is rejected, supporting information from any source would be acceptable. The following process is an illustration of some technical sideboards that would allow a fair and robust process, without it becoming a massive legal exercise. A basic claims form would be created by the claims board with a submission page limit of 150. Incomplete applications would be identified and replied to no later than 30 days of receipt and the board would have a 60-day response limit which, if not responded to would result in the claimant being

automatically approved for the full amount of the request. Rejection of a claim, provided by registered mail, does not prejudice the claimant from seeking other recourse.

Remedies for the claim could be supported by full reimbursement for the replacement cost, or a lesser sum, determined again by simple vote. Acceptance of the claim would hold the claimant to release the project from further claims for the same impact(s). The claimant could reject the reimbursement and pursue other means of settlement.

The funding would have to include adequate compensation for the expected types and extents of impacts with a contingency. For instance, a fund of $10M set aside before initiation of the project in a trust fund managed by the claims board. After the 50-year period, any remaining funds would be distributed pro-rata to the project applicants on the basis of their initial funding percentages.

**Chapter 8 - Implementation Costs and Funding Sources**

The BDCP does not include adequate funding assurances as required by the state and federal endangered species acts. (See 16 U.S.C. § 1539(a)(2)(B); see also HCP Handbook, p. 16.) Similarly, the NCCP Act requires that the plan must "ensure adequate funding to carry out the conservation actions identified in the plan." (Fish & G. Code, § 2820, subds. (a)(10), (b)(8).)

A recent case applied funding requirements under the ESA. (*Ctr. for Biological Diversity v. United States BLM* (9th Cir. 2012) 698 F.3d 1101 (*Ruby Pipeline*).) In *Ruby Pipeline*, an applicant for take authority relied on a commitment outside the permit terms and conditions to carry out necessary conservation measures to benefit or promote the recovery of the listed fish species that the pipeline project would likely adversely affect. (*Id.* at pp. 1109-1110.) The court found that the Biological Opinion "unreasonably relied on the Conservation Action Plan measures as 'cumulative effects' and took them into account in the jeopardy determination, when reliance on them would have been proper only if they were included as part of the project and so subject to the ESA's consultation and enforcement provisions." (*Id.* at pp. 1143-1144.)

Here, the BDCP does not meet minimum ESA or CESA funding assurances to ensure that the necessary conservation actions are carried out. Chapter 8 makes clear that it is relying on the public, through a combination of state and federal funds and two successive state water bonds to pay $7.824 billion (before interest in today's dollars) toward the cost of implementing the BDCP. Chapter 8 describes how state bond measures would provide $3.759 billion in funds to carry out the project. Taxpayers,

through other state and federal funding allocations, would also pay the remaining $4 billion needed for the estimated $25 billion dollar project, including portions of the mitigation for the tunnels and environmental impacts of the pumping. With the water exporters proposing only to pay for the cost of the water export Tunnels and less than one-eighth of the other costs ($903 million), the public is expected to pay the rest. (BDCP, Table 8-37.)

The BDCP, however, cannot provide any assurances that the voters of California will vote for significant bond funding of the BDCP or that the state and federal governments will provide public funds needed to carry it out. Indeed, there is significant opposition to water bond funding for BDCP. (See Exhibit J, LAND Letter re Water Bond BDCP Neutrality, July 11, 2014.) LAND recommends development of a less costly BDCP alternative that apportions project costs to project beneficiaries and provides the necessary assurances that adequate funding will be available to carry out the Plan.

## II. DRAFT EIR/EIS COMMENTS

These comments focus on the state's proposed project, Alternative 4, unless otherwise noted.

### *General Comments*

The EIR/EIS is confusing and hard to follow. The relationship of the BDCP to the EIR/EIS is difficult to follow, and in most areas is unexplained or inferential. The Plan itself is incomplete, leaving critical management and financing elements to some future process, by which it makes it impossible to review the environmental document without that information. The document is far too long for ease of review, yet shockingly weak on substantive analysis. The document is not accessible to ordinary citizens in terms of its opaque and excessively long format, yet it is also missing key analytical elements for experts. For example, the air/groundwater/surface water/and water quality modeling information that ostensibly supported the conclusions of the EIR/EIS were only available after repeated requests, and then only in redacted or "fixed" PDF format that made it impossible to identify and verify the assumptions or replicate the analysis. (See further discussion of this issue under Chapters 7 and 22.)

The BDCP proponents have spent millions of dollars on analysis without identifying that they still need "through Delta" for the decade when the project is built, and for 50% of the time when it is running. Yet, this alternative, which protects much of the Delta by reinforcing levees, is incredibly identified as having *more negative impacts* than the tunnels that remove half of the Sacramento freshwater from the Delta.

**Executive Summary**

In addition to not disclosing the ultimate power provider (which we understand is not known at this time) the subsequent approvals necessary for the eventual construction of the new power transmission lines are not listed in the Executive Summary of the EIR. (See EIR/EIS, p. ES-6, Table ES-1 (listing Lead, Cooperating, Responsible and Trustee agencies).)

We also note the "no determination (ND)" findings under NEPA as to whether the BDCP, even after "mitigation," would have adverse impacts on spawning, incubation habitat, and migration conditions for winter-run Chinook salmon (EIR/EIS, p. ES-73)), spring-run Chinook salmon (p. ES-75);), and migration conditions for fall-run Chinook salmon (p. ES-77), steelhead (p. ES-79), green Sturgeon (p. ES-81), and white Sturgeon (p. ES-83). The inability to make a "beneficial" effect determination under NEPA indicates that the BDCP does not meet minimum standards for a conservation plan. To our knowledge, this issue has not yet been resolved.

**Chapter 1 - Introduction**

*The Plan Area is Incorrect and Must be Expanded*

The Plan area should include the San Francisco Bay since it will impact both downstream flow and water quality. The recently-fabricated excuse that the BDCP will not significantly change outflow into the Bay is misplaced. The Sacramento River is the main source of freshwater for the system, and removing that freshwater will have profound effects on the ecology of the Bay. The EIR/EIS appears to have conflated the maximum historic operations of the South Delta as the baseline, but those operations have equally massive ecological effects leading to the current Biological Opinions, that also appear to have been conflated into the BDCP.

Those operations have been curtailed through a legal process, with the result that the remaining non-exported water provides additional outflow to the Bay under current conditions. Changing those outflow conditions must be analyzed. The Plan area should also include the area where the new 230kV transmission line will be built to serve power to the project. (EIR/EIS, p. 1-11.)

*The United Sates Army Corps of Engineers Should be the Federal Lead Agency*

The Bureau of Reclamation ("BOR") is identified as the federal lead agency. However, as the BDCP planning process has proceeded, BOR has become less involved.

For instance, BOR will not be a signatory to the BDCP Implementing Agreement because it cannot receive take authority under Section 10 of the ESA, and it will not operate CM 1. Nearly half of the CMs propose substantial modification of the State Plan of Flood Control and the U.S. Army Corps of Engineers ("USACE") Project Levee system. The USACE built these facilities and turned them over to the state for maintenance in 1953, but still maintain jurisdiction and permitting. In addition, BDCP proposes significant impacts to navigation in the Plan Area, over which USACE also has jurisdiction. Finally, USACE has primary authority of not just the encroachment on the project levees (Section 10/14, 408 permission processes), but also on the impacts to waters and wetlands (Clean Water Act 404 permit). The USACE is in fact the primary project permit authority with lead agency status for the FWS and NOAA Fisheries Biological Opinions, and the 401 certification process; whereas the BOR simply manages some of the project water management control structures.

Therefore, the LAND agencies formally request that the USACE be the lead agency instead of BOR, or at a minimum be a co-lead agency with BOR. (See 40 C.F.R., § 1501.5, subd. (d) ("Any state or local agency or private person substantially affected by the absence of lead agency designation, may make a written request to the potential lead agencies that a lead agency be designated").)

**Chapter 2 - Project Objectives and Purpose and Need**

The EIR/EIS' suggestion that environmental conflicts will be resolved by the project is erroneous. (EIR/EIS, p. 2-5.) Conflicts will not be resolved by the project, which forces massive land and water use changes within the Delta with no local benefits and 48 significant and unavoidable impacts. The notion that conveyance improvements are needed to respond to a "crisis" is also not an objective statement. This is a subjective belief of the project proponents, and should be characterized as such. The active role that the water exports took in creating and maintaining that claimed "crisis" must be fully disclosed for the EIR/EIS to have any credibility as a document, which defines the environmental conditions and the impacts to those conditions from the proposed project.

Despite the uncertainty of any improvement to Delta ecosystems that would result from BDCP, a recurring topic in discussions has been the level of water supply assurances that will be provided to contractors, and the level of assurances, if any, that biological goals and objectives of the draft BDCP will be achieved. While the Implementation Agreement clarifies that meeting biological goals and objectives is not enforceable on the project proponents, the EIR/EIS' statement of project objectives and project purpose rely upon the legally erroneous direction to "restore and protect" the SWP and CVP's nonexistent ability to deliver "up to full contract amounts." (EIR/EIS,

p. 2-4.) The attached document prepared by Kern County Water Agency in January 2014, seeks "a level of water supply reliability of approximately 75% for both the SWP and CVP water service contractors and the SWP post-construction." (See Exhibit K, Critical Issues document, edited by J. Maher, January 27, 2014.) The objective of obtaining such reliability (EIR/EIS, p. 2-6) is patently unreasonable given the variable precipitation patterns in California.

**Chapter 3 – Description of Alternatives**

As explained above, this review focuses on Alternative 4, as that is DWR's CEQA-preferred project alternative. From a NEPA perspective, however, the no action alternative is preferred simply because all of the narrowly proscribed alternatives fail on face value to meet LEDPA.

*Initial Screening Process Flawed*

The initial alternatives screening process was flawed and resulted in the selection of a project alternative that is no longer under consideration. (BDCP, Appendix 3A, pp. 3.A-5 to 3.A-7 (describing the Conservation Strategy Short List process).) Specifically, the four-dot process supposedly selected an isolated conveyance alternative based on four considerations. Yet the currently proposed BDCP Alternative 4 also continues to rely on though Delta conveyance. Thus, the four-dot analysis described in Appendix 3A is not directly relevant to the selection of Alternative 4 as the DWR proposed project under CEQA.

*No Attempt to Remediate Fish Kills in the South Delta*

Discussion of South Delta Improvements Projects, which focused on improving ecological conditions in the South Delta, and specifically for listed fish, should have been carried over to other alternatives. The NOAA Biological Opinion requires the Reclamation Tracy Fish Collection Facility to achieve "whole facility overall survival [of] 75%" for Chinook, steelhead and green sturgeon no later than December 31, 2012. The project design is supposed to avoid, minimize and then mitigate take of listed species. These are several readily implementable alternatives with features that avoid and minimize take, yet the proposed project seemingly avoids take for one species part of the time with the North Delta Intakes, yet trades off that avoidance with new direct take of other species.

*Inadequate Range of Alternatives*

Most of the habitat restoration components included in the alternatives were identical. The BDCP did not include any variations in restoration design (e.g., sediment contributing or capturing), size, location, and implementation sequence . This is impermissibly limiting to the analysis of alternatives and is therefore pre-decisional on the part of the project and the lead agencies. The missing ecological justifications for the need for particular factors that may or may not help listed species was never developed and was apparently part of the reason why there is so little variation between the approaches described in the EIR/EIS alternatives. (See comments on BDCP, Appendix 3.A above.)

The range of alternatives is incomplete and insufficient to adequately analyze the project. For illustration, Alternative 9 (Through Delta) is a potentially significant improvement on current conditions, but that is not what the analysis shows. Regardless of the selected alternative, the Delta would be the still primary route for water for a minimum of 10 years during construction of the (CEQA and the pre-decisional NEPA) preferred alternative. It would also remain the primary flow route for up to half the time under the preferred alternative. Yet the benefits of implementing this alternative or portions of this alternative are not discussed. Since it would still be a primary flow route, it should be optimized for better hydrodynamics and reduction of fish loss. The implications of this failure to analyze the obvious future impacts of the project, and how to mitigate for them both during construction and during operations, by using elements of the provided EIR/EIS alternatives, demonstrates how the analysis and its conclusions fail to meet the Least Environmentally Damaging Practicable Alternative ("LEDPA").

The BDCP should consider individually all alternatives without CM 1. For example, there is no analysis of which combination of CM 2, 13 and 16 would result in the lowest environmental impacts and greatest environmental and water supply benefits. There is also no analysis of what the environmental result of timing for CM 1 after successful completion of CM 2, 13 and 16 would be. This stepwise process was effectively the outcome of CalFED, but was not considered under the BDCP.

A further example of the need to redo the environmental analysis without CM 1 is found in Chapter 8 (Water Quality analysis), which states, "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." There is no way to determine what the LEDPA analysis of a properly developed project would look like given the failure to model the water quality impacts independently. (EIR/EIS, p. 8-4)

*Selection of Alterative 4 Is Pre-decisional*

DWR is already moving forward to implement Alternative 4. In May 2014, DWR announced plans to establish two new offices within the Department to finish planning for and to implement the BDCP.

One office is the DWR BDCP Office, which will implement other aspects of the BDCP, including the other actions, which arguably could have conservation benefits. The chief Deputy Director, Laura King Moon, formerly an employee of the State Water Contractors, will at least initially head this office. According to the memo, this organization will become the BDCP Implementation Office described in Chapter 7 of the BDCP, which also refers repeatedly to the missing and incomplete Implementation Agreement.

The other office is for the construction of the tunnels called for in Alternative 4, called the Delta Conveyance Facility Design and Construction Enterprise. According to DWR:

> The organizational structure and staffing of the DCE is envisioned to be somewhat unique in comparison to a typical DWR organization. It will be managed by a Program Manager under contract to DWR, and will be staffed by highly qualified individuals from within DWR, participating regional and local public water agencies, and private consulting firms. As part of DWR, it will have the capacity to issue contracts for consulting services as well as construction, using DWR's authority . . .

In other words, the BDCP water agencies are essentially moving in with DWR to advance the construction of the tunnels.

DWR was supposed to consider all alternatives prior to selection of a project. From a federal perspective, equal consideration of all alternatives is required under NEPA. DWR and the BDCP water agencies are beginning to implement a project prior to even considering public comment and prior to selection and final design of alternatives. This action exacerbates the harm resulting from the previous decision to narrow consideration of alternatives by which better water reliability and ecosystem restoration could be achieved. The single-minded focus on massive new North Delta Diversions to the exclusion of other options has been a constant since the first planning agreement.

The new office arrangement prioritizes the completion of tunnels over the other aspects of the BDCP sought to be funded by the greater public, some of which might

provide environmental benefits. In a turnabout from CalFED the state and the BDCP water agencies plan to build the tunnel first, and delay efforts to address ecosystem challenges to a later date. If those ecosystem benefits do not occur, the BDCP proponents will simply buy replacement water, largely at taxpayer expense. Additionally, the BDCP Design and Construction Enterprise would not be organized pursuant to the Governance Structure partially described in Chapter 7 of the BDCP. With no standards, this office can run roughshod over local communities with even less representation for the affected public than described in Chapter 7.

It is egregious for DWR to implement a project that has not yet even been approved, has virtually no local support, at best uneven support among a few scattered environmental groups, and a barrage of unanswered questions from the permitting agencies. The scientific community has also repeatedly questioned the core assumptions of BDCP, and the BDCP is by no means the only (or even just best) way to improve water conditions in the Delta.

The state of California is so closely aligned with this pre-decision that they have a contingency plan based solely on the intakes and tunnels as described in the Plan: "Emergency Tunnel Plan" DHCCP Conveyance Options Normal vs. Emergency Design-Construction Process Costs for Jerry Meral (sic) (authors and date undisclosed, but apparently written by McKinsey), which has two scenarios "as defined by Jerry Meral": 1. "Nothing has been built, and we have to build the 2 tunnels immediately (under emergency conditions)" and 2. The 3,000 cfs facility has been built earlier, and we have to add 6,000 cfs of capacity (6,000 cfs under emergency conditions).

That contingency plan was developed by the team, the Delta Habitat Conservation and Conveyance Plan ("DHCCP"), which has developed detailed project specific plans and conceptual engineering reports ("CERs") for only one alternative, the proposed project. (See Exhibit L, DHCCP Conveyance Options: Normal vs. Emergency Design-Construction Process Costs for Jerry Meral, PowerPoint Presentation, estimated date January 30, 2013 (see attached cover email).)

The BOR's alternative selection and the analysis process has also been pre-decisional in several regards. BOR representatives at the majority of the cooperating agency meetings expressed support for 9,000-15,000 cfs diversions from the north Delta as a fait accompli with the remainder of the Planning process and the subsequent EIR/EIS as simply to gin up enough material to support the conclusions. BOR representatives routinely take an adversarial perspective on other outcomes and alternatives that meet the stated project purpose. A few illustrations of this include the pre-conditioning of participation on the BDCP Steering Committee on agreeing specifically for the need for

new conveyance, the routine description of the project as Alternative 4, and the fact that virtually all BOR work completely focused on operations of Alternative 4.

In one memorable Steering Committee meeting, described in the BDCP documents September 9, 2013 Steering Committee Evaluation of Alternative Fish Pathways, the analysis identified "No specific recommendations" evaluation based on hydrodynamics and general effects on fish, and further clearly defined that the best layout for the pre-determined North Delta Intake alternative was Intake configuration #2 and #4. The LEDPA was an intake above the American River to avoid harming that population of salmonids, coupled with intakes south of Walnut Grove. This approach minimized flow reversals and allowed native fish to largely bypass the intakes by using Sutter and Steamboat Sloughs. Yet, the LEDPA alternative was dismissed by BOR and no further conversation was allowed in the public meeting. Following that meeting, the technical team subgroup meetings were by invitation only.

***Appendix 3A***

Appendix 3A exaggerates the importance and functionality of the working groups that were open to the public once the Steering Committee process was halted. "Following release of a preliminary administrative draft BDCP document in November 2010, a number of Working Groups were designated to continue the technical work that had been going on under the Steering Committee. These included working groups addressing Governance, the Yolo Bypass, Delta Water Quality, Cache Slough, South Delta Habitat, Conveyance, Financing, Compatibility with Delta Agriculture, Biological Goals and Objectives (for fish), and the Adaptive Range of Water Operations Criteria. The products of these working groups helped to refine the conservation strategy." (BDCP, Appendix 3.A, p. 3.A-1.) In fact, these groups met rarely if ever, and had little substantive input into the actual development of the BDCP.

According to the BDCP website only three workgroups are still active: Governance, Yolo Bypass Fishery Enhancement and Finance. Yet, the Governance work group appears to have met only three times, the last of which was in January 2012. (http://baydeltaconservationplan.com/PlanningProcess/BDCP/WorkingGroups/WorkingGroup-GovernanceStructure.aspx.) The Yolo Bypass workgroup is the only group still meeting, and actually pre-dated BDCP and was not a product of BDCP efforts. (http://baydeltaconservationplan.com/PlanningProcess/BDCP/WorkingGroups/WorkingGroup-YoloBypass.aspx.) The Finance work group appears to have met a total of five times. (http://baydeltaconservationplan.com/PlanningProcess/BDCP/WorkingGroups/WorkingGroup-Financing.aspx.) There is no indication that the comments of stakeholders were

incorporated into the BDCP. In short, the promise of the work groups made by appointees of the Brown administration were never carried out. (Please see comments on Chapter 26 and 34.)

***Appendix 3B - Environmental Commitments***

*Environmental Commitments Should be Mitigation Measures*

The commitments in this section constitute impermissibly deferred mitigation. The EIR/EIS offers "Environmental Commitments" as a means by which to avoid clearly identifying project impacts as well as defer implementation of mitigation to some other process. These environmental commitments should be changed to be mitigation measures with the requisite monitoring and enforcement. (See *Lotus v. Department of Transportation* (2014) 223 Cal.App.4th 645, 658 (failure to cast commitments as mitigation measures "precludes both identification of potential environmental consequences arising from the project and also thoughtful analysis of the sufficiency of measures to mitigate those consequences" ).)

*Environmental Commitments or Mitigation Measures Should Include Flood Response*

A flood emergency management support program and evacuation plan should be developed for the BDCP since the project exacerbates flood risk on several levels. The construction phase of the project interferes with critical project levees and the reclamation districts' ability to monitor and flood fight on those levees. The levee roads used for flood fighting will be occupied by the massive fleet of BDCP trucks and other vehicles during the construction phase which will also directly interfere with flood fighting efforts. The contracting deadlines will create a negative incentive for the project to support or at least not interfere with these flood fighting efforts. The project should require that all construction operations cease and that the schedule dates be extended by the amount of days that the river reaches flood stage.

**Chapter 4 - Approach to Environmental Analysis**

Many commenters have explained in detail that the EIR/EIS' approach to environmental analysis is improper and confusing, and that analysis is not repeated here. Some of those flaws include:

- The EIR/EIS is insufficient in that it relies for the most part on the CEQA Appendix G checklist for thresholds of significance. The thresholds of significance are not tailored to impacts of this project (scale/breadth of potential

impacts). For a project of this magnitude, it was important to tailor the thresholds to the impacts that are likely to result.

- The EIR/EIS impermissibly uses a future condition as the baseline with respect to climate change. The EIR/EIS fails to disclose the existing conditions plus project.

- The EIR/EIS fails to provide project level review of CM 1. The programmatic review of implementing CMs 2-22 is also inadequate.

**Chapter 5 - Water Supply**

*Water Supply Effects on Local Communities are Ignored*

The EIR/EIS inexplicably fails to discuss the effect on local water supplies in the entire chapter dedicated to discussing the impacts to water supplies in the export areas. The approach in the EIR/EIS appears to be an attempt to hide the significant and unavoidable impacts on local water supplies while at the same time presenting a myopic and self-serving view of providing water supplies from the Delta. The following impacts should have been analyzed in relation to impacts on local water supplies:

| *Groundwater* | *Agricultural Resources* | *Water Quality* | *Surface Water* |
|---|---|---|---|
| GW-1 | AG-2 | WQ-5 | SW-2 |
| GW-2 | AG-4 | WQ-7 | SW-4 |
| GW-3 | | WQ-11 | SW-5 |
| GW-4 | | WQ-14 | SW-6 |
| GW-5 | | WQ-18 | |
| GW-6 | | WQ-22 | |
| GW-7 | | | |
| GW-8 | | | |
| GW-9 | | | |

*Water Supply Impacts from Transfers are Not Analyzed*

The EIR/EIS acknowledges that demands for water transfers would increase. (EIR/EIS, p. 5-66.) But the impacts of water transfers on water transferor areas are also not described. (EIR/EIS, p. 5-28.) Transfers are a part of the project and are made more likely by the project. The likely water supply impacts in transferor areas must be identified.

**Chapter 6 - Surface Water**

The surface water chapter relies extensively on modeling using a series of assumptions of reservoir operations that are not realistic, yielding effects such as running the reservoirs to a dead pool. The likely operational rules required to make that system function are not identified even though the modeling analysis demonstrates the problems with those assumptions. The models themselves have been demonstrated by DWR in 2014 to not respond in the expected linear manner at low outflows and high salinity, as described in the DWR barriers meetings. Other parties, including Thomas Cannon, have examined the outflow and compared them to actual monitoring data and determined that the models also underestimate salinity intrusion.

The analysis in the EIR/EIS focuses on Late Long-term effects while ignoring effects associated with Early Long-term, when the pumps were full operation, but the projected sea level rise has not occurred. These results should have been provided in the analysis since they were identified in the Plan, but not in the EIR/EIS despite their more severe environmental impacts. This requires public disclosure of these data, effects and mitigation.

Those models show an approximately 2.5 foot decline in water levels (peak stage elevation) below the pumps as a result of the project in the Early Long Term ("ELT"), and worsening of water quality in the upper Delta. (See Exhibit E and also Exhibit F, BECT Water Quality PowerPoint Handout.) Such surface water level changes will interfere with local water supply infrastructure, which requires a more detailed analysis than provided in this EIR/EIS.

Effects on riparian vegetation from surface water level changes are also not disclosed. Riparian trees such as cottonwoods can have their seedlings stranded and killed if the channel stage declines too quickly. Further, large stage swings can create dead zones where plants cannot establish, or selection for invasive weeds occurs as a result of the operational practices.

It is unclear by how much elevations would increase with the additional water sent to the northern pumps with reoperations and transfers. This increase in stage could cause even greater seepage and agricultural impairment, a specific impact that was analyzed previously by DWR but ignored in the EIR/EIS. (See DWR Bulletin No. 125

Sacramento Valley Seepage Investigation, August 1967.)[8] Given the desire of the project proponents to maintain lower outflows, the modeling effort need to be reanalyzed in light of recent data to meet the best available scientific standard and all document impacts should be discussed and mitigation measures developed for those impacts.

*Construction:* The changes in stage would also occur locally due to the creation of coffer dams, gabions and riprap for intake construction and any new docking facilities throughout the plan area. These features narrow the cross-section of the river or slough and raise the flood elevation for a given flood event, in some cases potentially exceeding the levee design requirements. These features can also cause the flow to act unstably depending on how they are designed, creating local scour and shear effects that can damage pumps, boat dock and bridges. These localized flood/scour and other hydraulic modification impacts are not described in sufficient detail to understand their potential impact in terms of levees, levee roads, docks, bridges and agricultural intakes. The permanent design features at the intakes, in particular the effects of bulbouts created at the end of the screens and any permanent cofferdam effects from CM 1 not described.

*Operation*: Surface water effects associated with increased seepage, scour and wind fetch impacts on levees are undisclosed for CMs 2-21. The project also includes maintenance dredging for CM 1. Dredging can cause localized seepage and local-scale hydraulic effects, neither of which are identified.

*Cumulative Impacts* : Use of NDD for additional water transfers is reasonably foreseeable and would lead to other surface water impacts. As described earlier, increased stage from increased exports, as well as water transfers, will have impacts that are not analyzed in the EIR/EIS. No quantified maximum of water that could be delivered through the new NDDs, framed as separate projects with own review, is provided in the BDCP. (BDCP, p. 4-90.)

**Chapter 7 - Groundwater**

The analysis of groundwater impacts from construction of CM is inadequate. In addition to reviewing the EIR/EIS, we also requested and received the modeling information from CH2M Hill upon which the analysis in the EIR/EIS was based. This modeling was needed to identify to what extent the sole source aquifer for local residents

[8] Available at: http://www.water.ca.gov/waterdatalibrary/docs/historic/Bulletins/Bulletin_125/Bulletin_125__1967.pdf

near Clarksburg would be impaired. LAND was given the Assumptions and Limitations explanation dated July 8, 2014. (See Exhibit M, BDCP Groundwater Modeling – Assumptions and Limitations.)

The Groundwater Chapter assumes 5-year construction analysis for dewatering. The analysis identifies that reservoir operations are modified, but not to the extent, and whether these modifications are consistent with the water quality analyses or are new and undisclosed projected water rules (or operations) necessary to support the BDCP. The description does not identify if these are project-level impacts or cumulative-plus-project impacts with expected regional water table changes. The effects associated with water transfers, identified elsewhere in the BDCP and publicly available documents (see Exhibit C), do not appear to have been considered.

The groundwater model that was used for the analysis is a variant of the regional USGS model (CVHM is a regional groundwater modeling application based on the MODFLOW-2000 computer 2 code). This model uses very broad parameters and assumptions regarding weather, geology, groundwater and agriculture to complete regional estimations. This model was apparently calibrated; however, the statistical analyses supporting that calibration and its adequacy or statistical power were not provided.

A new sub-model was created to look at a finer level of detail within the Delta, without describing what functioned effectively or ineffectively using the regional model and why this new model would be more effective for the purposes of analysis. (EIR/EIS, Appendix 7A-6). The source material cited for the analysis is USGS 34 Professional Paper 1766 (USGS, 2009). (EIR/EIS, p. 7A-5.) The analysis identifies that the Delta does not require this model for groundwater outflow since it is such a small factor (USGS Report, p. 67), and has the lowest potentiometric surface elevation (USGS Report, p. 86-91). This sub-model used unreferenced agricultural data from an undisclosed source to complete the analyses. If that data source was the Appendix 14 A ("This database contains crop information from DWR land use surveys covering counties in the study area"), or is it from the analysis of crop types used in the BDCP Statewide Economic Impact Report by the Brattle Group's The Farmland Mapping and Monitoring Program (FMMP) 2008 agricultural crop and land classification source, or the CVHM 2000 land use distribution, it is impossible to tell. However, each of these was out of date at the time of analysis and now grossly out of date. It also does not describe how the model was changed to meet the changes in crops for the modeled scenarios, if at all.

The description of the analysis is muddled and confusing. It is not clear why the BDCP went through this analysis in this manner, because it aggregated all 5 intakes into

one diversion – with all of them operating in the same manner and the same time. (EIR/EIS, Appendix 7A-19 to 20.) This could have been modeled with the regional approach. It has a gross error by assuming that the construction dewatering would only need to occur from February to April, and then only for the intakes/forebay. Water levels are high locally. They are also influenced by the non-homogeneous sandy and clay zones in the shallow aquifer that have profound localized seepage impacts identified in DWR Bulletin 125. Water levels are influenced by river stage and maintained by local reclamation district operations, as well as adjacent habitat management and farming practices. The project will likely have to dewater year-round during the construction of the intakes, *and for each of the tunnel launch/maintenance and air shafts*. (EIR/EIS, p. 7-46.) If indeed this was a project level analysis, those data should have been used to undertake a project-specific analysis, which would have been meaningful, instead of relying on cobbled together models using a set of generic assumptions that are readily disprovable.

*Deletion of GW-11 was Erroneous*

As shown in the public documents obtained under the PRA and FOIA, the BDCP relies on water transfers to meet flow requirements in addition to facilitating additional water transfers through the new facilities. (See Exhibit C.) Specific groundwater impacts resulting from water transfers from upstream areas not disclosed and are instead relegated to Chapter 30 - Growth Inducement. The EIR/EIS irrationally excludes analysis of groundwater impacts on the Sacramento Valley, citing an unsupported assumption that "a 2% increase in groundwater use in the Sacramento Valley to make up for any shortfalls in surface water supply is not anticipated to substantially impact the groundwater resources as long as the additional pumping is not concentrated in a particular area of the valley." (EIR/EIS, p. 7-32.) This approach is patently inadequate and fails to reasonably disclose the potential magnitude of environmental impacts that would result from planned and reasonably foreseeable water transfers.

**Chapter 8 - Water Quality**

The water quality modeling fails to examine near future ELT water quality with project conditions, without climate change assumptions and with the D1641 existing compliance point. Modeling does not show ELT conditions, only Late Long Term ("LLT"), despite being identified in the Plan. There is no project detail regarding the expected water quality from the massive dewatering projects, except from some assertions that it will be dealt with later. For a project this size, with potentially millions of gallons of dewatering releases per day, more detail is required to understand the environmental impacts and implications of this activity.

The project failed to complete an analysis of project water quality impacts without CM 1. (EIR/EIS, p. 8-4) Therefore it is impossible to understand what the water quality impacts of the project are in relationship to the various conservation measures, to the various alternatives, and what water quality mitigation measures might actually be feasible or infeasible. This is a fatal flaw in the analysis and requires reanalysis.

**Chapter 11 - Fish and Aquatic Resources**

Setting aside all of the impacts on the north Delta in particular, the analysis to date simply does not support a conclusion that the BDCP will lead to any benefits to listed fish species. In particular, significant take will continue to occur at the south Delta diversions and benefits to fish from north Delta diversions and habitat CMs are overstated. In particular, it is unreasonable for the BDCP and the EIR/EIS to assume that the screens on the orth Delta diversions would be 100 percent effective. The long term implication of the BDCP's failure to benefit fish will be continued decline of fish populations and increasing regulatory pressure on other water users in the system that are unable to obtain take authority and "no surprises" assurances under the BDCP.

**Chapter 12 - Terrestrial Biological Resources**

As a result of the planned large-scale conversion of lands to aquatic habitat, the BDCP has created the need to recreate significant amounts of terrestrial habitat elsewhere in the Plan area. This in turn increases the number of acres of productive farmland that is required to be converted by BDCP in order to meet target restoration goals. Conservation approaches that minimize conversion of existing terrestrial habitat should be considered as a means to avoid impacts to terrestrial habitat in the first place. Moreover, public lands should be prioritized for placement of new habitat rather than targeting agriculturally productive land in private ownership.

**Chapter 14 - Agricultural Resources**

The discussion of the BDCP's impacts on agricultural resources in the EIR/EIS is inadequate. The character and magnitude of the impact of the project on agricultural resources is not disclosed. Additionally, adequate mitigation is not provided. These flaws must be corrected in a recirculated EIR/EIS.

The Delta is the largest contiguous area of prime farmland in the state (738,000 acres total, over 400,000 in crops). Farming in the delta is compatible with protection of species, and has not significantly changed in the last 100 years. Delta fisheries collapsed after export facilities were constructed, not after reclamation of the Delta islands.

The Delta is one of the only areas of the state where farmland is not threatened by urban development. Each year we lose an average of 30,000 acres of farmland in California. In the Delta, the BDCP is the largest threat to agricultural land.]

*EIR/EIS Does Not Disclose Scale of Project Impacts*

CM 1 permanently converts almost 5,000 acres of prime agricultural lands to build the tunnels. (EIR/EIS, p. 14-109.) According to the EIR/EIS, habitat creation CMs (CMs 4, 5, 7, 8, 9 and 10) would "restore" approximately 83,800 acres, and setback levees for channel margin habitat could also require conversion of farmland. (EIS/EIR, p. 14-126.) Because "locations have not been selected for these activities, the extent of this effect is unknown and a definitive conclusion cannot be reached." (EIS/EIR, p. 14-126.)

Further confusing the situation, the BDCP contains conflicting information regarding the acreages to be converted. For instance, Chapter 12, states that 58,325 acres of cultivated land will be converted by the project. (BDCP, Table 12-ES-1.) The EIR/EIS erroneously fails to disclose how many acres of pastureland would be converted by the project.

Additionally, the EIR/EIS unreasonably assumes that taking agricultural land into the "reserve system" under CM 3 and CM 11 is beneficial to agriculture, will not create an impact on agricultural resources, and can serve as mitigation for the conversion of other agricultural land. However, these lands would be encumbered with restrictions that would prevent conversion to permanent crops and other crops that, according to the BDCP, do not provide habitat for the species the plan is seeking to cover. Replacing unrestricted agriculture with crop limited land under easement does not mitigate for the effects of project on agricultural resources.

In order to adequately disclose impacts to agricultural resources, the EIR/EIS must provide the quantity of farmland that will be converted – including all CMs. This number is found in BDCP Chapter 8. For purposes of cost estimation BDCP assumes purchase of 145,026 acres of land to carry out the plan. (BDCP, Table 8-1.) Since it is known that most of the land in the Delta is in agricultural use, it is reasonable to assume that the project would convert about 145,000 acres of farmland. The EIR/EIS is deficient in not disclosing this fact.

The EIR/EIS also fails to disclose other impacts on agriculture from the BDCP. Impact AG-2 discusses other impacts to agriculture, including changes in groundwater, increases in salinity levels, and disruption of agricultural infrastructure.

As discussed in relation to EIR/EIS Chapter 7 (Groundwater) there is inadequate disclosure of impacts to groundwater supplies from the entire project, including CM 1, which is allegedly analyzed at the project level of detail. Seepage from the Intermediate Forebay is mentioned, but no description of the likely effects on surrounding agriculture is provided. (EIR/EIS, p. 14-121.)

The EIR/EIS is deficient in failing to identify what the threshold of significance is for a significant impact on agriculture due to changes in salinity, instead relying on a qualitative analysis. (EIR/EIS, p. 14-28.) The discussion of changes in salinity fails to disclose the changes in salinity that are likely to occur in the north Delta, and discuses only two points of reference. (EIR/EIS, pp. 14-122 to 14-124.) The changes in salinity discussed in Chapter 14 are also only with respect to the late long term condition. The early long term salinity projections should also have been disclosed in the EIR/EIS. (See Exhibit F, BECT Water Quality PowerPoint Handout, pp. 2-9.)[9] Moreover, crop tolerance data presented in this chapter does not take into account salt loading over time. (EIR/EIS, Table 4-6.) Salinity levels in the north Delta tend to be much lower than other parts of the Delta; changes to these salinity levels will have long term impacts on the ability to sustain a wide variety of crops, including those that are intolerant of salinity.

The construction of the BDCP, particularly CM 1, will also interfere with agricultural operations by disrupting water delivery and water removal operations on the Delta islands. Neither the project description nor the analysis of CM 1 is sufficiently detailed to provide an understanding of how the project will interfere with ongoing agricultural operations. The existing ditches, pumps and other interior drainage facilities are vital to the maintenance of low-lying Delta lands, yet are not detailed in the EIR/EIS as existing conditions. CM 1 construction will interfere with operation of these facilities by, for instance, interfering with surface water supply delivery systems, excessive discharges from CM1 dewatering activities, and disconnecting or otherwise interfering with existing drainage systems.

The EIR/EIS fails to discuss impacts on agriculture caused by water level changes in the north Delta as a result of operation of CM 1. Once the new diversions are operating, they are so large that they will reduce water surface levels in the north delta by about a foot, making it difficult or impossible to irrigate crops with existing water diversion systems, many of which are siphons. (See comments on Chapter 6 – Surface

[9] Though Exhibit F states that it is not for distribution, it was later released as a public document under the California Public Records Act, and therefore is no longer a confidential draft.

Water and Exhibit E, BECT Surface Water PowerPoint Handout, pp. 3-10.) Though this impact is mentioned in Chapter 6 of the EIR/EIS, the document fails to disclose expected surface water changes in the ELT, instead only presenting predictions for the LLT, after the document assumes changes in sea level that could potentially bring water levels up toward pre-project levels.

*Habitat Projects will Impact Ongoing Agricultural Operations*

Implementation of CMs 2-11 also will interfere with agricultural operations. Flooding of an island can result in a variety of impacts on neighboring islands, including seepage waters that exceed existing local capacity, increased wind fetch, levee maintenance issues, and other changes in flow/hydrology. The BDCP also includes restrictions on aerial spraying within the Plan area. This impact on agriculture is not mentioned or analyzed in the EIR/EIS. Without proper mitigation, these impacts displace costs on neighboring local agencies and landowners, and interfere with ongoing farming operations.

Suisun Marsh projects have a clear potential to change tidal dynamics and salinity throughout the Delta, Cache Slough area projects (including Prospect Island) also have the same potential effects. (BDCP, Appendix 5.A.2, Climate Change Approach and Implications for Aquatic Species, p. 5.A.2-11.) The interaction of the various habitat projects can lead to increased salinity intrusion and resulting invasive clam (Corbula and Corbicula) increases and redistribution. DWR's various barrier projects throughout the Delta have similar confounding effects. Since the BDCP EIR/EIS failed to identify the locations of the proposed tidal restoration projects and the degree of impact associated with maximum build out of each ROA, it is impossible to tell what and where the project impacts will be on salinity and tidal increases/decreases.

Delta conservation activities for restoration, such as easements, are associated with a variety of potential impact to nearby landowners owners or lessees. Those problems range from simple trespass and fencing issues to promotion of listed species onto neighboring properties and legal restrictions on agricultural use. Currently, these types of problems are relatively easy to resolve with local HCPs or local land trusts because they are accessible and share some degree of responsibility and common ground with local landowners. More importantly, coverage under local HCPs is generally available to anyone who wants to participate and who follows the permit approach. Neither of these is true with the BDCP.

Fundamental problems in the Delta from habitat restoration projects that lead to detrimental impacts on agricultural operations include:

- Terrestrial weeds such as white top (perennial pepperweed) and arundo, which interfere with crops and levee maintenance;
- Aquatic weeds, such as Hydrilla, Hyacinth and Egeria densa which clog pumps;
- Insect pests (no spray zones);
- Interference with levees and access roads (culverts and drainages), either directly by not maintaining them or indirectly by refusing to pay PILT or Assessments, or voting against Assessments;
- Indirectly, increasing seepage or dramatically reducing groundwater.
- Wind fetch on levees across flooded islands;
- Indirectly increasing the difficulty obtaining permits for new/modified intakes and for levee maintenance and repairs; and
- Increased potential for take liability of neighboring farming operations that are simply continuing existing practices.

Additional work on mitigation strategies to address these impacts is needed for the EIR/EIS to be adequate.

*Proper Agricultural Resource Mitigation is Not Provided*

The mitigation provided in the EIR/EIS for impacts on agriculture is vague and lacks the necessary information to properly defer development of detail through use of a performance standard. (See CEQA Guidelines, § 15124.4, subd. (a)(1)(B).) The BDCP does not propose, and there is no way to actually mitigate, the massive impacts on Delta agriculture. Instead, the BDCP suggests economic assistance ideas that do not mitigate for the devastation of Delta agriculture.

Mitigation Measure AG-1 calls for the development of Agricultural Land Stewardship Plans to: (1) promote agricultural productivity, (2) minimize impacts on Williamson Act lands, and (3) undertake additional mitigation if (1) and (2) do not result in impacts being reduced to less than significant levels. While we have worked in good faith with DWR staff to attempt to help develop the Optional Agricultural Land Stewardship alternative mitigation program, the program presented in the EIR/EIS is not consistent with applicable requirements for mitigation of impacts to agricultural resources. In particular, the strategies are "nonexclusive, untested, and of unknown efficacy." (See *Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 93 (*CBE*).)

Mitigation Measure AG-1 – Conventional Mitigation Approach, calls for the purchase of agricultural conservation property interests as mitigation for the BDCP's

significant impacts to agricultural lands if it is determined that the Optional Agricultural Land Stewardship ("ALS") alternative mitigation program is not feasible. (EIR/EIS, pp. 14-117 to 121.)

Conventional mitigation at a ratio of at least 1:1 is consistent with *Masonite Corporation v. County of Mendocino* (2013) 218 Cal.App.4th 230. *Masonite* confirmed previous court of appeals decisions out of the Third, Fourth and Fifth Appellate Districts on the feasibility of conservation easements in mitigating the loss of prime agricultural land. (See *Citizens for Open Government v. City of Lodi* (2012) 205 Cal.App.4th 296; *Cherry Valley Pass Acres and Neighbors v. City of Beaumont* (2010) 190 Cal.App.4th 316; and *Building Industry Association of Central California v. County of Stanislaus, et al.* (2010) 190 Cal.App.4th 582.) The EIR/EIS is very unclear, however, about how it would be determined that conventional mitigation should be pursued instead of the ALS approach. Moreover, the approach in the EIR/EIS defers out making determinations on the feasibility of mitigation to a later date without sufficient guidance to constitute an enforceable performance standard. If the various affected entities were agreeable to the ALS approach, one suggested metric for funding purposes could be provision of funding for the strategies equal or greater to the amount that would be necessary to comply with the conventional mitigation approach of easement acquisition.

In any case, far more development of the ALS approach would be necessary for it to constitute adequate mitigation. Without any specific mitigation standard to be reached or any firm funding commitments, the ALS approach discussed in Mitigation Measure AG-1 is simply an idea, not a mitigation measure. With the scale of impact posed by BDCP, such a non-substantive attempt at mitigation is patently inadequate.

As mentioned above, it is inappropriate for the EIR/EIS to consider adequate mitigation for agricultural land conservation to include, for example, placing restrictions on existing farmland that prevent planting of permanent crops. This mistaken approach to mitigation unlawfully excuses the BDCP from actually mitigating for conversion of approximately 48,000 acres. (BDCP, p. 8-5 (cultivated lands needed for reserve system to provide habitat for covered terrestrial species).)

Restrictions on permanent crops in water export areas would be the best way to avoid BDCP's impacts to wildlife habitat and ensure that the SWP/CVP can vary water deliveries according to available supply. Such a program would reduce effects on agriculture in the San Joaquin Valley from future variability in water supply and avoid impacts on sustainable farming in the Delta, which has its own area of origin water supplies. Farmers who have decimated their own local water supplies and continue to plant permanent crops should not be allowed to export water from the Delta.

Mitigation aimed at addressing effects other than direct land conversion are also inadequate. For instance, Mitigation Measure GW-5 simply refers to the development of mitigation measures in the future to address seepage. (EIR/EIS, p. 7-51.) Without additional detail on the impacts and the means to address the impacts, this constitutes impermissible deferral of mitigation. Under CEQA, mitigation may be deferred when "mitigation is known to be feasible, but . . . practical considerations prohibit devising such measures early in the planning process, the agency can commit itself to eventually devising measures that will satisfy specific performance criteria clearly articulated at the time of project approval." (*Sacramento Old City Assn. v. City Council of Sacramento* (1991) 229 Cal.App.3d 1011, 1028 (*SOCA*) (performance measure of 90 percent parking utilization found adequate).)

The *SOCA* rule was applied in *CBE*, *supra*, 184 Cal.App.4th 70. In *CBE*, the court found a GHG mitigation plan inadequate because it had no more than a "generalized goal" of not increasing emissions and the "only criteria for 'success' of the ultimate mitigation plan adopted is the subjective judgment of the City Council, which presumably will make its decision outside of any public process a year after the Project has been approved." (184 Cal.App.4th at p. 93.) Similar to the *CBE* case, the formulation of appropriate mitigation for agricultural impacts in the form of conventional mitigation or the ALS would be deferred to the future without any process. Worse than *CBE*, Mitigation Measure AG-1 does not even contain a performance standard that must be met.

**Chapter 16 - Socioeconomics**

The analysis understates economic effects in the Delta resulting from loss of agricultural lands; fails to identify the degree of impact on high fieldworker jobs, such as orchard crops, versus more mechanized jobs; and ignores differences of impacts on rural versus urban, and traditional environmental justice communities. This failure to adequately identify project impacts cross-cuts to other environmental justice issues such as pesticide injuries to low income workers from CM 13, substitution and warnings to contaminated, fish, *plant, and frog* stocks for subsistence and cultural fishers and gatherers in CM 12.

The EIS/EIR identifies various western alignment routes that bisect Northern Delta reclamation districts including RD 999 and 150, such as Alternatives 1C, 2C and 6C. These alternatives would have significant impacts on the agriculture of those districts, and the ability of those and other districts to be able to provide their irrigation water (RD 999) or flood management (RD 150 and 999), as well as the underlying farms which may or may not provide their own irrigation water. Those impacts to agricultural

economics were assessed by independent research with expertise in modeling and experience in this particular form of analysis for rural communities. This analysis is found in Exhibit N, Social and Economic Implications of the Bay Delta Conservation Plan for Clarksburg, California, May 2009.[10]

**Chapter 18 - Cultural Resources**

According to *Madera Oversight Coalition, Inc. v. County of Madera* (2011) (2011) 199 Cal.App.4th 48, a determination whether an archaeological site is an historical resource: (1) is mandatory; (2) must be made sometime before the final EIR is certified; and (3) cannot be done after certification of the EIR. In that case, the court found the mitigation constituted improper deferral because it required a "verification" of whether the site was a historical resource before preservation and recovery actions would be required. (*Id*. at 81, citing CEQA Guidelines, § 15064.5, subd. (c)(1) ("When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource . . .").) With the lack of access to assess baseline cultural resource conditions for CM 1 (see EIR/EIS, Appendix 4.A - Summary of Survey Collection Efforts), as well as the lack of definition of where the restoration CMs 2-11 will take place, the EIR fails to provide an adequate analysis of potential impacts on cultural resources. Without such an analysis, formulation of adequate mitigation is not possible.

**Chapter 19 - Transportation**

The transportation section is inadequate in numerous ways and comes to unsupported conclusions.

Local communities will be severely impacted by construction of the project. In particular, agricultural commodities need to be shipped out of the area throughout the construction period. However, the number of expected transportation-related injuries and fatalities directly associated with the project from construction and operations is not disclosed. The sum of the total traffic miles by vehicle class is also not provided for the entire project.

Project truck loading impacts and weight restrictions (and associated mitigation) on local bridges is not fully analyzed. Bridge improvements are inexplicably identified as not being needed, yet the EIR/EIS fails to document how this conclusion was

[10] Please provide responses to Exhibit N.

supported by any information provided in the EIR/EIS. (EIR/EIS, p.19-182) The construction of several bridges appears in Appendix 3C in terms of scheduling, but bridges are not identified in the EIR/EIS Index. Bridges and their construction have significant traffic and environmental implications that do not appear to have been analyzed. The EIR/EIS must disclose whether Alternative 4 and/or other alternatives require bridge construction.

Where analysis does exist in the EIR/EIS, it is cursory and inadequate. For example BDCP proponents will make a "good faith effort" to enter into various encroachment permits and mitigation measures. If obtained, the impact is significant and unavoidable; yet if not, the impact is considered less than significant. The obvious mitigation measures need to be fully described and analyzed, not impermissibly deferred for each of the conservation measures that comprise the project.

The EIR/EIS does not adequately identify that increased truck travel due to construction would limit public safety routes and increase delay times. It fails to identify the extent of that delay, how much the mitigation would shorten the delay, and the implications of the delay to human health and safety. Bicycle impacts are found to be less than significant without any substantial rationale given the limited shoulder width and the lack of alternate routes. (Impact TRANS-1a)

Existing levels of service (using the available traffic counts between 2008 and 2012) should have been used to perform an intersection-level analysis. The limited number of Delta intersections would be easy to assess and analyze to assess project-level impacts. The analysis focused on pavement quality, but did not look a structural integrity of the infrastructure to support the truck loads, in particular heavy trucks during high flow events on levee roads.

The analysis states that "construction traffic patterns is not available for this level of analysis and it would be speculative and potentially misleading to assign construction related traffic by turning movement." (EIR/EIS, pp. 19-13 to 19-14.) The EIR/EIS fails to define the type and extent of its construction traffic impacts and instead assigns the question to speculation. While there is supposed to be project-level analysis for CM 1, the EIR/EIS fails to conduct the analysis or identify when and how it will occur.

Mitigation Measures TRANS-2a through TRANS-2c could reduce severity of this impact, but not necessarily to less than significant levels, as the BDCP proponents cannot ensure that the agreements or encroachment permits will be obtained from the relevant transportation agencies. (See Mitigation Measure TRANS-1c.) This hardly qualifies as analysis or effective mitigation. The "maybe we can" or "maybe we can't" approach

does not define what the specific environmental impacts result, and what may be feasible mitigation for these impacts, or how these impacts could simply have been avoided in the first place.

Essentially the EIR/EIS seems to find that Delta roads are in poor shape, so it does not really matter if they are made worse. Given the massive truck and vehicle traffic proposed by the BDCP for the key Delta roads, it is inconceivable why the project does not simply improve the roads to meet everyone's needs at a standard sufficient to meet the BDCP vehicle loads. To this end, LAND has developed best management practices for Delta roads that could apply to the project. (Exhibit O, Best Management Practices and Design Considerations for Delta Construction Projects.) These specifications should be incorporated into the transportation mitigation measures to ensure that local roads are not damaged and remain functional throughout construction and operation of the project.

**Chapter 20 - Public Services and Utilities**

*EIR/EIS Fails to Include Water Supply Assessment for Construction Water Demand*

The project will have a potable water demand of 165.7 million gallons over the nine-year construction period. (EIR/EIS, Table 20-3.) Yet the EIR/EIS fails to disclose how this water will be provided. Due to the scale and projected water use of the project, preparation of a Water Supply Assessment ("WSA") is required under Senate Bill 610. (Wat. Code, § 10912.) Projects that demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project must prepare a WSA.[11] (Wat. Code, § 10912, subd. (a)(7).) Though it varies by area, each dwelling unit typically uses 0.3 to 0.5 acre-feet per year; thus, at 0.3 acre feet per year, a 500 dwelling unit project would demand about 150 acre-feet per year. (See http://www.water.ca.gov/pubs/use/sb_610_sb_221_guidebook/guidebook.pdf, p. 3.) This project would demand 18.41 MAF per year, clearly exceeding the threshold. Thus, a WSA must be included in a recirculated EIR/EIS.

[11] Water Code section 10912, subdivision (a)(5) also requires preparation of a WSA for a processing plant occupying more than 40 acres of land. The applicability of this requirement was broadly construed in *Center for Biological Diversity v. County of San Bernardino* (2010) 185 Cal.App.4th 866, 887-888.

*EIR/EIS Fails to Account for Water Use from Evaporation, Seepage and Vegetation Water Use*

The environmental impacts of project associated water storage and evaporative losses, leakage, and power generation water requirements are minimized in the alternatives development (for instance by selction of a tunnel over a canal conveyance structure for the preferred alternative) but where then ignored for the rest of the analysis. According to a prior draft of the BDCP, "There are aqueduct and reservoir storage losses (i.e., evaporation and seepage) that are simulated by CALSIM to be about 170 taf/yr." (Administrative Draft BDCP, April 2012, Appendix 5.C, Attachment C.A-59 (CALSIM and DSM2 Results for the 3 Preliminary Proposal Modeling Scenarios).) The environmental impacts of evaporative losses from the project and the operations directly and indirectly associated with the project need to be analyzed quantitatively. Water losses reduce water availability, and increase electrical generation needed to pump the additional water, which has its own environmental impacts. These impacts are also not disclosed in the EIR/EIS.

For illustration, water losses under the project will be associated not just with the proposed new forebay and forebay expansions. Water loss will also occur from the increased seepage from raised stage levels in the Sacramento River and massive evaporation losses associated with CM 2, but also many of the habitat projects associated with both CM 1 mitigation and other project CMs. Water use from new project habitat will reduce outflows, impacts on water users and biological resources.

Aquatic vegetation, and in particular new open water associated with habitat, uses up to two times more water than the existing agricultural uses. DWR estimates that riparian vegetation and surface water use 67.5 acre-feet of water per year.[12] These water losses can be massive and there is no detail in the EIR/EIS quantifying these losses from creation of aquatic and other habitat. The EIR/EIS also fails to identify where the new water comes from, or how downstream senior water rights holders and Delta outflow will affected.

The CalFED EIR demonstrated that creating 28,000 acres of seasonal wetland could require 28,000 to 56,000 acre-feet of water per year of additional water. Restoring 58,000 to 74,000 acres of aquatic and riparian habitat would require an additional 175,000 to 222,000 acre-feet a year in the Delta. (CalFED Final EIS/EIR, p. 7.1-16.)

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[12] See DWR Bulletin 168, October 1978, Sacramento Valley Water Use Survey 1977, Table A-5.

Invasive weeds that are characteristic of Delta restoration sites also consume significant quantities of water. According to a 2004 study, for instance, about "one million acre-feet of water is consumed by star thistle each year in the Central Valley above and beyond what would be consumed by annual grasses."[13] Much of the existing public lands where habitat is planned in the Delta are covered with weeds, and those weeds have not been effectively managed.

**Chapter 21 - Energy**

The BDCP would create a significant new demand for energy during both construction and operation. A 230 kV transmission line is programmed to be built from the new intakes and the Intermediate forebay extending east to Highway 99. In all, 20 miles of permanent new transmission lines and 38 miles of temporary lines are proposed to be constructed. (BDCP, Appendix 5.J.C, Table 1.) The EIR/EIS, however, fails to describe the location of the transmission lines. (See CEQA Guidelines, § 15124, subds. (a)-(c).) While the area to the east of the Refuge is generally referenced as the location where the transmission lines will be placed, the exact location has not been determined. (See BDCP, Appendix 5.J.C, Figure 2; see also BDCP, Appendix 5.J, Table 5.J-6, 5.J.-7, 5.J.-8, note 20 (noting "final alignment is unknown").) Project-level detail clearly cannot be provided when the location and operator of this essential aspect of the project is not known.

The energy required for construction and operation of CM 1 will need to come from new power sources and transmission lines through the Cosumnes River Corridor outside of the plan area, and also within the plan area, which is full of species sensitive to these uses. The EIR/EIS fails to analyze the impacts of these interrelated and interdependent actions.

**Chapter 22 - Air Quality and Greenhouse Gases**

Dr. Pless conducted a technical review of the air quality impact analyses in the EIR/EIS; these comments are attached as Exhibit P.[14] Dr. Pless concluded: "The air quality and GHG analysis in the Draft EIR/EIS fails to meet minimum professional

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[13] Cal-IPC News, Newsletter of the California Invasive Plant Council (Summer 2014), p. 11, available at: http://origin.library.constantcontact.com/download/get/file/1101215423203-171/Cal-IPC_News_Summer2014.pdf.

[14] Please provide written responses to Dr. Pless's comments.

standards for disclosure of Project air quality impacts and fails to include all feasible mitigation measures to reduce identified significant impacts." Dr. Pless further noted: "It is not acceptable that one of the largest construction projects in California that will span almost a decade should receive less scrutiny than a run-of-the mill residential or commercial development." Dr. Pless recommended substantial revisions to the air quality and GHG section and mitigation measures to meet applicable NEPA and CEQA standards and recirculation of the Draft EIR/EIS for public review.

In particular, Dr. Pless made the following conclusions regarding the information provided by the EIR/EIS:

- Analyses of air quality and greenhouse gases were not adequately supported;
- Presents outdated, incomplete and superfluous information;
- Analyses of impacts due to criteria pollutant and greenhouse gas emissions resulting from project construction and operation are flawed and fail to identify and adequately mitigate significant impacts;
- Discussion of methodology and presentation of results is lengthy, confusing, repetitive and internally redundant;
- Discussion of significant impacts from criteria pollutant emissions is inadequate;
- Should have conducted dispersion modeling for criteria pollutant to determine compliance with ambient air quality standards rather than solely relying on quantitative thresholds of significance;
- Fails to analyze carbon monoxide concentrations from vehicle exhaust;
- Fails to quantify emissions for all construction phases and emission sources and, thus, underestimates construction emissions;
- Incorrectly calculates fugitive dust emissions from grading;
- Fails to account for fugitive dust emissions from site preparation, truck loading, entrained road dust, road paving, and architectural coatings;
- Relies on incorrect assumptions for trip lengths and underestimates on-road vehicle emissions;
- Overestimates the emission reduction effectiveness of environmental commitments;
- Underestimates health risks;
- Underestimates greenhouse gas emissions;
- Improperly defers analysis of compliance with the applicable air quality plans;
- Improperly defers analysis of the efficacy of mitigation measures; and
- Cumulative impacts analysis is substantially flawed.

Dr. Pless' analysis describes and documents that the EIR/EIS' analysis used its own, significantly lower, estimates for fugitive dust emissions and "tweaked" the models to get more favourable outcomes. In another case, the EIR/EIS simply did not model the generation of emissions from the 32 million cubic yards of tunnel muck and 8 million cubic yards of dredging material that will have to be disposed, and substantial amounts of borrow materials that would have to be brought to the tunnel construction sites.

Dr. Pless describes how the project air mitigation measures are similarly defective, with findings that the analytical approach not only improperly defers analysis and deprives the public of review, but also does not develop alternatives that would avoid or minimize the identified significant air quality impacts, rendering the EIR/EIS' conclusions regarding adverse and significant air quality impacts unsupported and premature.

The EIR/EIS wrongly concludes that cumulative GHG emissions from operation of CM 1 are less than significant and require no mitigation. Construction of CM 1 would produce over 1.7 million metric tons of equivalent carbon dioxide ("$CO_2e$") during an estimated 9-year construction period for the Dual Conveyance Tunnels. (EIR/EIS, Table 22-94.) An additional 161 metric tons of $CO_2$ewould be emitted every year under operation of the proposed project. (EIR/EIS, Table 22-96.) The EIR/EIS misleads the public by stating that there will be *reduced* GHG emissions under project operations because DWR will reduce GHG emissions statewide by compliance with its Climate Action Plan ("CAP") and make adjustments to its Renewable Energy Purchasing Program. The EIR/EIS then finds that no mitigation is necessary, even though operation of the tunnels would add approximately 1,405 GWh of additional net electricity demand each year. (EIR/EIS, pp. 22-43, 22-263.)

While a lead agency has some discretion to use a baseline consisting of environmental conditions projected to exist solely in the future, the agency must justify its decision by showing a baseline analysis based on an existing conditions would be misleading or without informational value. (*Neighbors for Smart Rail v. Exposition Metro Line Construction Authority* (2013) 57 Cal.4th 439, 453.) This was not done. Also, it is not reasonable to assume that DWR will comply with the CAP or change its REPP. Therefore, the EIR/EIS should have also disclosed GHG emissions without these assumptions of GHG reductions in the future.

**Chapter 24 - Hazards and Hazardous Material**

*Hazards Associated with Tunnel Muck Not Fully Analyzed*

The analysis of the tunnel muck and its chemical additives was not included as part of the EIR/EIS. A cursory sampling and analysis program was conducted in March 2014 under the DHCCP (RTM-Final 20140307). That analysis provides essentially no scientific or engineering information since it was based on a trivial number of soil samples, which were then composited. The number of samples is grossly insufficient to meet any geotechnical analysis standard (21 samples for 27,000,000 cubic yards over 35 miles of tunnels). Compositing the samples also eliminated defining any possible site specific considerations or utility. This analysis fails to identify what constitutes "hazardous" or provide any estimate as to what percent of the muck has the potential to be defined as hazardous. This is relevant because the regional hazardous waste capacity is far lower than the muck volume, and both that capacity and the potential for material to be classified as hazardous is unanalyzed except in the most cursory manner. The analysis does not define how many cubic yards of muck would likely meet the concentration of which chemicals would make the material, how would this material be transported to the landfill, what the air/GHG/traffic and other environmental impacts of that transport would be, the estimated accident rate and spill potential, the distances of the storage and to schools and other sensitive receptors, or how much capacity would be used at the landfills.

The local storage and handling of these materials is also not properly analyzed. For example, there is no information assessing what volatile compounds would be released from these piled muck materials during handling and drying. The water quality data provided in the post EIR/EIS report fail to identify the hazardous limits or any other CEQA/NEPA thresholds. A simple comparison of these data compared to US EPA's drinking water standards (http://water.epa.gov/drink/contaminants/#List) identifies that several of these Maximum Contaminant Limits or Maximum Contaminant Limit Goals are exceeded over the baseline through the addition of "conditioning" chemicals: for Antimony (in 3 of 4 conditioned samples); Arsenic (in 1 of 4 conditioned samples); Barium (in 1 of 4 conditioned samples). In addition, the muck solids in some cases had significantly elevated levels of copper, arsenic and diesel as a result of the conditioning. Landfills have their individual requirements for what constitutes "hazardous" and the EIR/EIS does not say which of these materials meet these criteria. Moreover, since the samples were homogenized, they do not represent either typical or worst case conditions.

Additional sampling will be required to determine the proper handling of tunnel muck to protect public health and safety and the environment.

**Chapter 26 - Mineral Resources**

*Failure to Disclose Applicable Requirements under the Surface Mining and Reclamation Act of 1977*

The EIR/EIS fails to disclose that the material borrowing tunnel excavation and likely habitat restoration would typically constitute surface mining under SMARA. Though DWR's activities may be exempt from typical SMARA oversight, DWR is required to prepare and obtain approval from the Department of Conservation a Reclamation Plan. (Pub. Resources Code, § 2714, subd. (i)(1).) DWR must prepare a "reclamation plan for lands affected by these activities" and reclaim the lands "in conformance with the standards specified in regulations of the board adopted pursuant to this chapter." DWR is also required to provide an annual report to the Department of Conservation. (Pub. Resources Code, § 2714, subd. (i)(1).) Given the significant volume of muck to be generated by the construction of CM 1 (among other CMs), preparation of a Reclamation Plan is in the public interest to ensure that lands where muck is placed are in fact reclaimed.

**Chapter 28 - Environmental Justice**

CEQA requires a process that provides an opportunity for meaningful participation of the public. According to Public Resources Code section 21061: "The purpose of an environmental impact report is to provide public agencies and the public in general with detailed information about the effect which a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project can be minimized; and to indicate alternatives to such a project." Public Resources Code section 21003, subdivision (b) provides: "Documents prepared pursuant to [CEQA] should be organized and written in such a manner that will be meaningful and useful to decision makers and to the public." CEQA Guidelines section 15201 explains that "Public participation is an essential part of the CEQA process. Each public agency should include provisions in its CEQA procedures for wide public involvement . . . in order to receive and evaluate public reactions to environmental issues relating to the agency's activities."[15]

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[15] Additionally, "[e]nvironmental review derives its vitality from public participation," and must be informed of significant impacts. (*Ocean View Estates Homeowners Assn., Inc. v. Montecito Water Dist.* (2004) 116 Cal.App.4th 396, 400.) Public review is crucial to ensuring government accountability and informed self-government. Public review serves a dual purpose in that it both bolsters the public's

The BDCP, however, is a study in how *not* to provide effective public participation in general, and for the environmental justice ("EJ") community specifically. In order for functional public policy to be developed, the impacted community must be involved in a substantive way to reduce project impacts, and ideally to develop some project benefits. The BDCP has 48 unavoidable adverse environmental impacts, and has not constructively engaged the local community on how to properly avoid or mitigate these impacts. Instead the EIR/EIS typically states that an issue, such as groundwater loss and contamination will be dealt with by relocating individuals or providing some form of alternative water supply. Displacing rural communities is a massive impact, simply inferred by the analysis but never adequately addressed.

While HCPs have less robust public participation requirements, the NCCP Act has fairly clear and extensive recommendations. The BDCP allegedly follows what they describe as the five-point HCP policy, but did not follow the much broader NCCP guidance. For example, the NCCP "lessons learned" and rich literature on effective public participation with EJ communities identify the need for a credible negotiated, inclusive dialog, with an independent trusted facilitator, was simply ignored. (See Fish & G. Code, § 2815.) [16] The BDCP lead agencies failed to effectively engage the large

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confidence in the government process, and provides lead agencies the appropriate resources and expertise on certain subjects regarding environmental impacts. (*Joy Road Area Forest and Watershed Ass'n v. California Dept. of Foresty and Fire Protection* (2006) 142 Cal.App. 4th 656, 670.)

[16] "The department shall establish, in cooperation with the parties to the planning agreement, a process for public participation throughout plan development and review to ensure that interested persons, including landowners, have an adequate opportunity to provide input to lead agencies, state and federal wildlife agencies, and others involved in preparing the plan. The public participation objectives of this section may be achieved through public working groups or advisory committees, established early in the process.
. . . .
(b) A requirement to make available in a reasonable and timely manner all draft plans, memoranda of understanding, maps, conservation guidelines, species coverage lists, and other planning documents associated with a natural community conservation plan that are subject to public review.
. . . .
(d) An outreach program to provide access to information for persons interested in the plan, including landowners, with an emphasis on obtaining input from a balanced variety of affected public and private interests, including state and local governments, county

Spanish-speaking and the locally impacted Laotian, Hmong, Russian and Ukrainian communities who either work in the areas that will be impacted by the project or rely on the resources of the Delta.

The BDCP principals began meeting in secret and always favored closed meetings from its beginning. When the BDCP process finally came to light in the Steering Committee period (2008-2011), secret closed meetings were held just after the public meeting. In order to formally participate in the Steering Committee, agencies and groups had to sign an agreement that they supported the export of water and a new conveyance system.[17] Non-members of the Steering Committee had to wait until the end of the several hour meeting to make any comments or ask questions. Technical work group handouts were not provided to members of the public until about 2009. (See Exhibit Q, Request for Handouts, May 20, 2008.)

With the transition from the Schwarzenegger to the Brown Administration in 2012, the BDCP went underground again, closing the public off from the technical meetings and all of the Principals' meetings. The Steering Committee stopped meeting altogether and a handful of public technical meetings were held to discuss a few issues, namely the Effects and the Economic analyses. Each of those meetings were arranged in order to maximize the consultant's time discussing essentially the same matters over and over again, and to minimize the questions from technical experts. A parallel "public participation" set of hearings was held around the release of the draft EIR/EIS, but these were strictly informational events and not the more substantive Steering Committee meetings. EJ communities we sent pro-forma notices, but never effectively engaged and the results of this are clear – further marginalization.

The BDCP's concept of public participation is a one-way pushing of conclusions on the community with no responses to Delta concerns. Simply stating that Delta EJ concerns were taken into account, but not reviewing them and responding to them, resulted in a waste of everyone's time.

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agricultural commissioners, agricultural organizations, landowners, conservation organizations, and the general public."

[17] Delta representatives, for instance, were interested in joining the BDCP Steering Committee. The precondition of consent to the existing Planning Agreement (October 6, 2006) and "acceptance of all past decisions of the Steering Committee" (including the Points of Agreement for Continuing into the Planning Process (November 6, 2007)), however, was unacceptable.

Throughout the process, the Resources directors kept claiming in the media that they were opening up the process and keeping the public involved. Nothing could be further from the truth. Hundreds of secret management, planning and financial meetings have been held with no public access. It is hard to understand what sort of public participation is believed to have occurred by the agencies, since the project still does not address the many multitude of concerns identified by Delta residents.

Finally, the BDCP process required commenters to use the federal FOIA and the PRA to obtain technical information associated with the project that was not disseminated by the baydeltaconservationplan.com website or included in the Plan or the EIR/EIS. This arduous process resulted in increased costs of participation and significant delays to obtain the most basic documents, such as meeting minutes and the technical analyses used to develop the project description and mitigation measures, for instance. This alienated any remaining EJ communities who simply could not provide the financial support to meet these challenges to even understand the project.

Largely as a result of inadequate outreach to EJ communities, the EIR/EIS utterly fails to disclose significant impacts on EJ communities. For instance, the EIR/EIS does not disclose the public health impacts associated with water contamination in the Delta from increased mercury levels caused by aquatic habitat creation. Increased mercury levels from habitat restoration will interfere with subsistence fishing of EJ communities.

**Chapter 29 - Climate Change**

Climate change was improperly incorporated into the EIR/EIS baseline. See comments on Chapter 22 regarding use of improper use of future baseline.

**Chapter 30 - Growth Inducement**

*Water Transfers Inappropriately Relegated to Growth Inducement Chapter*

All discussion of impacts of water transfers was moved to the Growth Inducement Chapter. (EIR/EIS, pp. pp. 30-117 to 30-126.) The Growth Inducement chapter, however, does not discuss all of the potentially significant impacts that may result from water transfers made: (1) to operate the new North Delta Diversions in the first place; or (2) in excess of the water exporter contract water supplies using the new capacity provided by the tunnels. Additionally, many of the impacts from water transfers have nothing to do with growth.

The EIR/EIS admits that "If the new north Delta facilities are not restricted to the current July through September transfer export window, crop idling or crop shifting-based transfers may become a more viable source of transfer water for much of the Sacramento Valley." (EIR/EIS, p. 30-118.) The EIR/EIS then excuses in depth analysis by claiming "transfers and other upstream water transactions are subject to a number of regulatory requirements that make it unlikely that significant adverse impacts will occur." (EIR/EIS, p. 30-118.) In addition to not even attempting to undertake a good faith analysis of the effects of all of the water transfers that are part of or a result of the BDCP, the EIR/EIS fails to address potential impacts of pre-1914 water rights transfers that do not require review by the SWRCB. These transfers could cumulatively lead to disastrous results in the areas of origin. Use of the SWRCB eWRMS system could provide a factual basis for conducting an analysis of impacts likely to occur from the transfer of such pre-1914 water rights.

The discussion of potential impacts in the context of growth inducement is misplaced and lacks the quantitative, fact-based detail necessary to adequately disclose potential impacts, especially impacts to the Sacramento Valley. Moreover, the analysis completely fails to acknowledge the additional transfers that are needed to operate CM 1 in the first place. (See Exhibit C, Water Transfer Documents.) The analysis of water transfers is completely inadequate and must be re-written; moreover, impacts associated with these transfers must be discussed within all of the relevant resource analysis chapters of the EIR/EIS, not buried in the Growth Inducement Chapter.

**Chapter 31 - Other CEQA/NEPA Required Sections**

***Appendix 31A – BDCP Later CM Activity Environmental Checklist***

This section should, but does not, include the transmission line approval process that will be needed to supply power for construction and operation of CM 1.

**Chapter 32 - Public Involvement, Consultation, and Coordination**

The public process for BDCP has been a major disappointment. After six years, hundreds of hours of meetings, thousands of hours of document reviewing and many letters, the BDCP as proposed still does not reflect a locally acceptable project A far more sophisticated and concerted effort would be necessary to constructively engage the community. Please see comments above on Chapter 28 - Environmental Justice.

## CONCLUSION

Local agencies in the Delta want, and have worked toward, a positive outcome from the BDCP – one that actually achieves the so-called co-equal goals, including protection of Delta communities. A positive outcome for everyone relies on a true collaborative approach and attention to protection of in-Delta values. The BDCP and associated EIR/EIS, after years of development, still does not present a project that would be acceptable to Delta communities. With significant revision to both the BDCP and the EIR/EIS, however, we believe it would be possible to reach broad consensus on actions to improve ecological conditions in the Delta while continuing to contribute to the water supply needs of other regions. Though we believe these documents are patently inadequate and must be revised and recirculated, we remain willing to work in good faith with the lead agencies and others toward an acceptable approach to management of Delta water and other resources.

Very truly yours,

**SOLURI MESERVE**
A Law Corporation

By: 
Osha R. Meserve

**BSK Associates**
Engineers & Laboratories

By: 
Erik Ringelberg

cc: The Honorable Sarah "Sally" Jewell
Secretary, U.S. Department of the Interior
1849 C Street, NW, Room 6156
Washington, DC 20240

EXHIBIT LIST:

| | |
|---|---|
| Exhibit A: | LAND NEPA Cooperating Agencies Letter, July 29, 2014 |
| Exhibit B: | FWS BDCP and EIS Assessment, January 14, 2014 |
| Exhibit C: | Water Transfer Documents |
| Exhibit D: | Groundwater References, CASGEM Basin Prioritization Process, June 2014 |
| Exhibit E: | BECT Surface Water PowerPoint Handout |
| Exhibit F: | BECT Water Quality PowerPoint Handout |
| Exhibit G: | Some Ideas for Improving SWP Yield |

| | |
|---|---|
| Exhibit H: | Gregory Gartrell Testimony, March 8, 2011 |
| Exhibit I: | LAND Letter to Christopher Earl, April 19, 2012 |
| Exhibit J: | LAND Letter re Water Bond BDCP Neutrality, July 11, 2014 |
| Exhibit K: | Critical Issues Document, edited by J. Maher, January 27, 2014 |
| Exhibit L: | DHCCP Conveyance Options: Normal vs. Emergency Design-Construction Process Costs for Jerry Meral, PowerPoint Presentation, estimated date January 30, 2013 |
| Exhibit M: | BDCP Groundwater Modeling – Assumptions and Limitations |
| Exhibit N: | Social and Economic Implications of the Bay Delta Conservation Plan for Clarksburg, California, May 2009 |
| Exhibit O: | Best Management Practices and Design Considerations for Delta Construction Projects |
| Exhibit P: | Dr. Pless' Comments on BDCP EIR/EIS, July 24, 2014 |
| Exhibit Q: | Request for Handouts, May 20, 2008 |

# EXHIBIT A

SOLURI MESERVE
a law corporation

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1010 F Street, Suite 100 · Sacramento, CA 95814

July 29, 2014

**SENT VIA EMAIL (mbanonis@usbr.gov)**

Ms. Michelle Banonis
U.S. Department of Interior
Bureau of Reclamation
801 I Street, Suite 140
Sacramento, CA 95814

**RE: BDCP Cooperating Agency Comments - BDCP Environmental Coordination Team (BECT)**

Dear Ms. Banonis:

NEPA cooperating agencies Reclamation Districts 3, 150, 551, and 999, which are members of the Local Agencies of the North Delta ("LAND"), have been assessing and commenting on some of the greatest issues of technical importance associated with the Bay Delta Conservation Plan ("BDCP") since its public inception. The issue of technical importance is a driving factor for LAND since its members have unique experience in land and water management in the Delta, as well as experience in land acquisition, mitigation and monitoring, as a result of their respective operations of water delivery, drainage and levee maintenance. These LAND members will also bear many of the economic and legal burdens of managing these facilities under the BDCP. Accordingly, these LAND members want to ensure that the projects have as minimal negative impact on their existing operations as feasible. To that end, LAND has taken a cooperating agency perspective, not just legally through its agreements with the U.S. Department of the Interior, Bureau of Reclamation ("BOR"), but also through its engagement with the other federal and state agencies and the project proponents.

LAND believes that the original premises of the BDCP, in particular Conservation Measure ("CM") 1 and its failure to reduce reliance on the Delta, are technically flawed in a fundamental way. Over several years, LAND has urged optimization of BOR project infrastructure and the Habitat Conservation ("HCP") planning elements to attempt to achieve their project purpose, minimize their effects on the environment, and meet the legal requirements of Senate Bill ("SB") 7x to protect Delta communities. BDCP ultimately responded by forgoing a proposed ring levee around Clarksburg, a proposed western habitat bypass along the ship channel, and by reducing the size of the intermediate forebay.

Notwithstanding these incremental improvements to the project, the BDCP still proposes to significantly impair the flood protection and water supply operations of the cooperating LAND districts. As the districts have identified in a separate letter, BDCP's analyses as presented in the Plan and the EIR/EIS, have significant deficiencies. Despite these issues, the analysis still clearly indicates that there has been a gross failure in the development of an effective HCP/Natural Community Conservation Planning ("NCCP") and project alternative since the preferred project has over 48 significant and unavoidable impacts.

The primary issues that concern all parties still remain, which include reliable water supplies, stable native species populations, take coverage for water operations and levee maintenance, and invasive species management. These issues, among others, will not be resolved with the current BDCP. This letter is broken into generalized problem statements, which are followed by technical comments.

**Problem Statements**

BDCP continues to inadequately address the following issues:

**Reconciling the Water Demand**: Removing millions of acre feet of water a year from a stressed system, and not designing that withdrawal to match the hydrologic cycle, is patently irresponsible. The BDCP's proposed operations take even more water out of the system, and take much more of it in drier years at the driest season of the year. No attempt is made by the BDCP to manage the demand side. The sole focus is to capture the supply side.

**HCP/NCCP**: This HCP/NCCP directly interferes with, and competes with, existing HCPs, conservation easements, habitat management plans, and refuge management plans. This HCP/NCCP is unique because it was developed without substantive input and support of those plans, or the participating local governments and landowners. Yet, the BDCP does not readily allow for future projects with similar goals and objectives to rely upon the BDCP HCP/NCCP, unlike other HCP/NCCPs.

**The South Delta Pumping Operations**: The BDCP fails to fundamentally address continued flow reversals and the massive fish killing in the South Delta. The engineered system needs to attempt to improve overall circulation, San Joaquin River connectivity, and some means of reducing take (and salvage losses). The BDCP claims this is the purpose of CM 1 (BDCP, p. 4-24), but then still proposes to operate the new facility only half of the time.

**The Existing Habitat Projects**: Tens of thousands of acres of existing publicly funded and/or managed lands have already been acquired with essentially no scientific analysis of their success or failures or active management for optimization for listed species needs (or even reducing weeds). Instead, the BDCP trades off successful terrestrial and riparian resources for yet more generic aquatic habitat. This is a numbers game instead of a quality-based effort that will simply put more species into peril, such as the greater sandhill crane.

**Invasive Species Management**: The BDCP proposes some sort of invasive species management, at an unspecified time in the future, and in some other unspecified analysis. This should be the highest priority under any future Delta scenario for any ecological outcome to be favorable in the Delta, and it has widespread support, yet it is the least developed of the conservation measures (CM 13 & 20). These may be difficult ecological issues, but the pelagic organism decline, as well as any attempt to counteract that decline, hinge in a large part on improving invasive species management.

**Inter basin Transfers**: The BDCP, as well as the grossly over appropriated San Joaquin system in general, is dependent on inter basin transfers of water. The transfers have significant and unanalyzed impacts in their areas of origin, and can result in further stream depletion with or without conjunctive use. This is a classic example of how the BDCP trades off the high ecological value tributaries to make up for systemic failure to manage the root causes of declining Delta fisheries.

**Agricultural Impacts**: The BDCP is also literally sacrificing an exceptionally high value, sustainable agricultural region for another region, which has devastated its local water supplies and has already created several ecological disasters. Massive Tulare Lake, the San Joaquin River, San Joaquin Valley groundwater, and the South Delta, as well as every large river in the lower water watershed has been captured, depleted and/or destroyed. The BDCP fails to even acknowledge this history and current practice, as well as the repercussions of continuing to subsidize these impacts and their resulting toxic agricultural drainage.

In addition to those more general problems and failures to develop an effective problem statement that deals with the fundamental issues of removing too much water from an already depleted watershed, there are a host of technical issues that are either inadequately addressed or simply not dealt with at all in the current BDCP analysis.

**Problems with Conceptual Development**

The CMs are a hodgepodge of an industrial water project and undeveloped window dressing "habitat" measures (CMs 2-13) that attempt to serve as mitigation for the impacts of CM 1. To what degree the CMs mitigate for the project and what degree they stabilize and recover covered species is unclear in the analysis, but should be the most obvious part of the BDCP. It is nearly impossible to discern what the habitat-associated mitigation measures are for CM 1 or for other CMs, and how these measures are different from the requirements to support species recovery. In just one illustration, miles of contiguous, mature riparian forest is lost for the intakes, project roads and other features, but replacement is deferred and piecemealed. The lapse in time before replacement of this critical ecological resource is 30-40 years, and the replacement is spatially re-distributed to areas other than where the original impact occurred.

The range of alternatives is incomplete and insufficient to adequately analyze the project. For illustration, Alternative 9 (Through Delta) is a potentially significant improvement on current conditions, but that is not reflected in the analysis. Regardless of the selected alternative, existing Delta channels will remain the primary route for water for a minimum of 10 years during construction of the preferred alternative. It would also remain the primary flow route for up to half the time under the preferred alternative. Yet the benefits of implementing this alternative, or portions of this alternative, are not discussed. Since it would be still a primary flow route, it should be optimized for better hydrodynamics and reduction of fish loss. The implications of this failure to analyze the obvious future impacts of the project, and how to mitigate for them both during construction and during operations demonstrates how the analysis and its conclusions fail to meet the Least Environmentally Damaging Practicable Alternative ("LEDPA").

The BDCP should consider all alternatives individually without CM 1. For example, there is no analysis of which combination of CM 2, 13 and 16 would result in the lowest environmental impacts and greatest environmental and water supply benefits. There is also no analysis of the environmental result of timing CM 1 after successful completion of CM 2, 13 and 16. This stepwise process was effectively the outcome of CalFED, but was not considered under the BDCP.

**Operational Uncertainties**

The issues of defective conceptual development described above create a weak foundation for operations and the analysis in the BDCP. For example, the screen losses for salmonids in the north Delta were based on a series of assumptions that were not

conservative. If depletions of groundwater resulting from water transfers and conjunctive use further damage the spawning areas upstream, the ecological impacts of those losses could be much higher than analyzed. The limits of those transfer operations and their environmental impacts are explicitly left out of the BDCP documents, yet could be responsible for much of the overall project impact on the environment.

The relationship between how pumping will be controlled under real-time operations ("RTO"), and new dam operational rules are not described in this analysis. Yet, based on the provided water quality modeling, the dams would have to be operated under new rules – rules that are not yet developed or analyzed. The ecological considerations of matching north Delta pumping locations and rates in real world conditions, upstream dam operations, intake bypass flows, CM 2 bypass flows, Delta Cross Channel, Steamboat and Sutter Slough flow reversals, Head of Old River Barrier, and south Delta pumping operations are simply not analyzed in the EIR/EIS.

The implications for this failure of describing operational conditions and providing an associated analysis are profound to the cooperating agency districts. The likely stage elevation and water quality changes associated with the project are also not identified. The districts are likely to be subject to greater seepage from increased stages associated with the project and its unanalyzed water transfers. The water elevations and rapid changes in those elevations can lead to scour on levees, seepage can lead to crop damage, and water quality degradation can lead to crop losses. The amount of loss cannot be predicted because the real time impacts of the project are simply not described. The means by which these impacts will be quantified by the project is not identified, placing the burden of monitoring and remediation on the districts.

The overall environmental impacts of the project itself, together with its mitigation, and the habitat implications to the cooperating agency districts, have not been analyzed. The districts protect riparian and wetland habitat, and at times have mitigation needs of their own. The HCP should be open to all with similar project needs so that the Delta's environmental needs are consistently managed through one program. Under the BDCP, however, the existing and proposed local HCPs will compete for mitigation land with each other and the districts. It appears that the districts would have to duplicate portions of the BDCP in their own Section 7 and 10 processes, if needed in the future.

The cooperating agency districts remain concerned that the significant environmental impacts of the project on both terrestrial and aquatic species will result on the burden being shifted from the beneficiaries of the project to the local districts. As the resource agencies discover the need for more species protections and restrictions due to

the inadequacies of the BDCP, the BDCP proponents will be protected as they will have received 50-year take authority with "no surprises" assurances. On the other hand, BDCP offers no process by which other landowners or agencies within the plan area may receive take authority if needed for ongoing activities. Though remotely possible, the districts believe that re-consultation on the BDCP is unlikely and that the agencies will instead place environmental restrictions on local districts and landowners. The districts support LEDPA alternatives described earlier because they are far likely to achieve real environmental benefits, which in turn reduces everyone's compliance burdens.

For example, the critical project monitoring and associated metrics are poorly defined and are likely not to provide any ecologically useful statistical information. This can lead to the requirement to take more land out of agriculture and put it into habitat, placing additional local burdens due to poor science. Or, local restrictions may be put into place based on flawed analysis. A transparent, robust monitoring analysis program must be developed.

The project's monomaniacal emphasis on aquatic species over terrestrial species remains a concern across the board. Project impacts may occur to terrestrial species, such as greater sandhill cranes, but the proposed inadequate project monitoring will likely not disclose whether reductions in populations are due to the project's impacts. That puts the districts at risk of being subjected to new environmental restrictions. Strong environmental support for all listed and covered species needs to be put in place before CM 1 so that species do stabilize and recover, and an effective statistically-sound monitoring program must be implemented to identify project benefits and impacts.

The water quality impacts of the project raise similar unresolved concerns for the districts. It appears that sediment reductions will lead to Delta smelt impacts, which are arbitrarily ignored. Selenium and methylmercury impacts from habitat restoration activities could also lead to Central Valley Regional Water Quality Control Board restrictions on districts to reduce loads created by the project.

Finally, the districts have repeatedly identified that levee road damage and access impacts as a result of the project have been inadequately or improperly analyzed. The EIR/EIS does not deal with the structural impacts of the project on the structural, access and maintenance of critical district infrastructure. The districts use these levees to protect their islands from flooding, support flood fighting, transport agricultural supplies, goods and services, and to provide rescue routes. There are simply no substitutes available to replace these structures and routes; yet, the BDCP's treatment of impacts on local infrastructure is cursory and trivial.

**Conclusion**

The LAND cooperating agency districts appreciate the opportunity to work with the federal lead agencies and the other cooperators to address these technical concerns that so profoundly affect the Delta. This letter has also been submitted as a formal comment on the BDCP and associated environmental documents.

Very truly yours,

**SOLURI MESERVE**
A Law Corporation

By: 
Osha R. Meserve

cc:

Ryan Wulff, NOAA-NMFS (BDCP.comments@noaa.gov)
Michael G. Nepstad, U.S. Army Corps of Engineers
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# EXHIBIT B

**LAND-71**

Webb, Heather <heather_webb@fws.gov>

# Re: BDCP and EIS Assesment

**Nobriga, Matt** <matt_nobriga@fws.gov> Tue, Jan 14, 2014 at 2:19 PM
To: "Rinek, Lori" <lori_rinek@fws.gov>
Cc: Barbara Beggs <barbara_beggs@fws.gov>, Heather Webb <Heather_Webb@fws.gov>

Lori,

Rather than keep you waiting, I added bubble comments to the latest tracker.

Matt

On Tue, Jan 14, 2014 at 8:55 AM, Rinek, Lori <lori_rinek@fws.gov> wrote:

> FYI.
>
> ---------- Forwarded message ----------
> From: **Hoover, Michael** <michael_hoover@fws.gov>
> Date: Mon, Jan 13, 2014 at 5:20 PM
> Subject: Re: BDCP and EIS Assesment
> To: "Hilts, Derek" <derek_hilts@fws.gov>, Lori Rinek <lori_rinek@fws.gov>
>
> Derek,
>
> Thanks for the info -- great again. A question -- since all alternatives are to be evaluated at an equal level of analysis, did you look over the modeling with a multiple-alternative hat to see if that's the case? As a example, I don't believe operations of Alternative 9's twin 7,500 cfs screens were actually modeled at 0.4 fps. If they were, were the assumptions similar to alternatives that would have diversions on the Sacramento River below Freeport -- i.e., 1-dimensional cross channel averages some distance downstream of the diversions? I think I know the answer, just checking with someone who actually looked over the modeling.
>
> **Mike Hoover**
> Assistant Field Supervisor
> U.S. Fish and Wildlife Service
> Bay-Delta Fish and Wildlife Office
> Sacramento, California
> (916) 930-5639 (desk)
> (916) 779-5618 (cell)
>
> On Mon, Jan 13, 2014 at 4:44 PM, Hilts, Derek <derek_hilts@fws.gov> wrote:
>
> > Hi Lori,
> > While the consultants DID add a lot of great information for those who would want modeling details, my search of the Public Draft version of Chapter 5 and its appendices and attachments makes me believe the following:
> >
> > 1. The full circle analysis was not presented, assuming it was ever done.
> > 2. The rationale for assuming a cross-sectional average 0.4 fps represents screen face velocities of 0.4 fps

**LAND-71**

was not presented.
3. Sensitivity of north delta diversion amounts to the 12,000 cfs Wilkins Slough flow threshold was not presented.
4. The un-intuitive result that NOD CVP ag service contractors would receive less in ALT6 than they would under the NAA was not discussed. This could be discussed offline, as many "whys" were not included in the document. If they were, Chapter 5 would balloon up to a much larger document.
5. The rationale for presenting monthly model results in terms of average flow to the nearest cfs was not discussed.
6. A discussion of modeling the south delta exports on a daily timestep WAS added. That's not to say it's good, but it was added.
7. A discussion of why 2020 level demands in the Sac Valley are okay to use when simulating 2060 conditions was not presented.
Hope that helps.
Derek

*Derek Hilts M.S., P.E.*
*U.S. Fish and Wildlife Service*
*Bay-Delta Fish and Wildlife Office*
*650 Capitol Mall Suite 8-300*
*Sacramento, CA 95814*
*916.930.5628*

On Fri, Jan 10, 2014 at 11:05 AM, Rinek, Lori <lori_rinek@fws.gov> wrote:

> I have been tasked by Mike C. to take the lead on determining where the public draft BDCP and EIS are in addressing our comments in the April Assessment memo and the current Federal Tracker list. I have attached both documents. Mike, was hoping I could have this by COB next Tuesday, I told him I wasn't sure but would try. NMFS has been working on this task since the documents came out and Mike has asked that we do the same. It is my opinion that most of our issues have still not been resolved and I am hoping that by just doing a cursory review we will be able to determine that.
>
> Matt, I can talk to Leanna and Derek about their comments and that will leave you more time to spend on yours ! And is we need more time, I am more that happy to tell Mike that ! Also trying to see if NMFS can share what they have done so far with us. Thanks !
>
> --
>
> _____
> Lori Rinek
> Fish and Wildlife Biologist
> (Section 10 Coordinator)
> Office: (916) 930-5652
> lori_rinek@fws.gov
>
> _____
> U.S. Fish and Wildlife Service
> San Francisco Bay-Delta Fish and Wildlife Office
> 650 Capitol Mall, Suite 8-300
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_____

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Matt Nobriga
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**BDCP Federal Open Issues Tracker 1.6.13 (mln011414).docx**
43K

PRELIMINARY WORKING DRAFT – FOR INTERNAL USE ONLY – March 28, 2014

# Federal List of Issues related to the Public Draft

The Federal agencies have compiled this initial list of open issues which will require additional work in order to support issuance of a scientifically sound and legally defensible final permit and record of decision. In compiling this initial list, the Federal agencies anticipate comments received through a robust public review process may alter or expand significantly upon this list, reflecting the basic function of NEPA public review processes.

## *"OPEN" ISSUES THAT WILL REQUIRE FURTHER REFINEMENTS BETWEEN DRAFT AND FINAL*

## I. ISSUES WITH CM 1 OPERATIONS

1. Real Time Operations
   a. **STATUS:** Further work is needed on four issues: 1) membership of real-time operations team: should PWAs be added to real-time operations teams; 2) whether the High Outflow Scenario (HOS) draws from Oroville only or whether other COA "adjustments" will occur; 3) whether water transfer programs are part of meeting the HOS requirements, and if so, how to address their NEPA/CEQA-related effects; and 4) whether the Head of Old River Barrier will be operated as agreed in Scenario 6 or some other way.

2. High Outflow Scenario (HOS) and Decision Tree
   a. **STATUS:** At present the only the HOS appears to be permittable based upon the best available science. The Services will only authorize operations that meet permit issuance criteria. The State's proposed project may therefore need to be changed at the time of permit issuance.
   b. The Plan needs to more clearly and specifically state the scientific work related to HOS/Decision Tree that will be carried out prior to operations with respect to salmonids.

3. North Delta Diversion Bypass flows
   a. **STATUS:** Requirements for the north Delta bypass diversion flows remain unresolved, with NMFS recommending Level 1 pumping only, subject to adaptive management. NMFS and DWR have agreed with State on a technical path forward (see second list).
   b. Depending on outcome of further discussions on this issue between draft and final, may need to revisit E/I ratio issue from NMFS progress assessment memos

4. CVP Upstream Operations.
   a. **STATUS:** Recent refinements to real time operations state that meeting BDCP exports will require an (unspecified) accounting between the CVP and the State project. This accounting needs to be clarified and agreed upon.
   b. This change raises several fundamental issues of project operations and project impacts and it may trigger additional NEPA/CEQA analyses. This change may also affect the scope and timing of the ESA section 7 consultations associated with the BDCP.

**Comment [MN1]:** I think all of our HCP Issue Area 3 comments have been adequately resolved – but other issue areas have ongoing unresolved issues.

**Comment [MN2]:** Is this missing our Governance comments from HCP Issue Area 6?

**Comment [MN3]:** This is missing our comment about the need for a 4-pronged Effects Analysis in the HCP Progress Memo (at best 75% complete if we agreed the analysis was credible), equal level of analysis among Alternatives and sub-alternatives in our EIR/S Progress Memo (2.4) and our request for clear flow and total fish entrainment summary plots (2.5; ~ 0% complete?).

c. NMFS and Reclamation may need to carry the modeling associated with these changes into the underlying Section 7 consultation and possibly develop conforming upstream operating criteria.

## II. ADAPTIVE MANAGEMENT, ASSURANCES AND FUNDING

5. Adaptive Limits and Assurances
   a. **STATUS:** The Adaptive Limits and Assurances package contains a number of unresolved issues that will require significant further specificity and analysis. They include the level of exports below which will trigger access to the supplemental adaptive management fund; the size and funding sources which will capitalize the fund; the availability of additional water transfers which may be required to cushion the difference between the minimum export targets and actual operations; the conformity of the package with the No Surprises regulations, and the issue of parity with other CVP contractors.
   b. The Services will seek additional flexibility in the adaptive management operations that do not need to "off-set" by the supplemental fund. The water fund, as crafted is only available for smelt species, not salmonids or sturgeon.

6. Program Budget, Implementation Costs and Funding Sources
   a. **STATUS**: A reliable financing plan is required for the BDCP program, including an agreed-to budget and agreed-to reliable funding commitments from appropriate Federal, state and PWA sources.

7. Implementing Agreement
   a. **STATUS:** The Implementing Agreement will require revisions as issues are resolved.

## III. SECTION 7/10 ISSUES

8. Section 7 Requirements for Permit Issuance.
   a. **STATUS:** The schedules and scope of analyses for the consultations on the issuance of the BDCP permits will require clarification once decisions on program scope and effects occur. Further, additional refinement will be needed on the timing and tiering of additional ESA reviews associated with other Federal implementation activities of BOR, the Corps of Engineers and EPA.

## IV. SIGNIFICANT ANALYTIC ISSUES

9. Terrestrial Species Issues in HCP
   a. **STATUS**: issues raised in FWS progress memo have not been adequately addressed. Remaining issues include: level of development of monitoring and research plans for specific species to support adaptive management; needed refinements to avoidance and minimization measures and impact analysis based on refinements to the tunnel alignment and associated structures; fixes for contaminants analysis; cumulative effects text for the salt marsh harvest mouse regarding late long-term condition with sea level rise; DWR's removal of the

**Comment [MN4]:** This is missing our EIR/S Issue Area 1 comment that ICF pick reasonable flow and biological thresholds in advance and use them (~ 0% complete). I don't know if NMFS made a similar request, but they should have.

Key thresholds for us include:

Frequency of Chipps Island X2 months
Frequency of Roe Island X2 months
Longfin smelt population growth flows (35K-45K cfs in the Feb-May timeframe)
Minimum floodplain inundation days for successful splittail reproduction

"stay ahead" provision from the plan (issue may apply to more than just terrestrial species).

b. Issues will require additional work on HCP between draft and final for resolution.

10. Flow and habitat analyses in HCP
    a. **STATUS:** issues that were raised in the NMFS and FWS progress memos have not been adequately addressed. Issues include: CM4 habitat restoration analyses and conclusions in the HCP and EIS assume 100% restoration success and fish species occupancy/use: sensitivity of overall effects analysis to these assumptions needs to be developed and reported; though improved, new Net Effects analyses in the HCP continue to combine outflow and restored habitat into one concept that is inconsistent with best available science, resulting in unrealistically optimistic overall conclusions regarding the embedded operations alternatives.
    b. Issue will require additional work on the HCP between draft and final to resolve.

11. Predation analyses in HCP
    a. **STATUS:** issues that were raised in the NMFS progress memos have not been adequately addressed. No inclusion of analysis of less than 100% successful predation removal program.

12. Contaminant/Turbidity analysis in HCP
    a. **STATUS:** issues raised in FWS progress memo and EIS review have not been adequately addressed. Issues include: arbitrary significance thresholds for biological or ecological effects (e.g. 8-9% additional reduction in Delta sediment loads determined to be insignificant without rationale); mercury and selenium modeling not credible in current state (DSM2 QUAL likely cannot be validated for these constituents); selenium analysis inadequate and incomplete; mercury and selenium effects analysis for covered species based on potentially inappropriate model species, reducing credibility of analysis; information about chemical additives used in tunnel drilling have not been provided nor has any data on contaminants present in in-river sediments that would be dredged and relocated.
    b. Issue will require additional work between draft and final to resolve.

13. Crane analysis in the HCP and EIS
    a. **STATUS:** issues raised by realignment of the tunnels have not been adequately addressed. Issues include: need additional discussion of minimization and mitigation measures for impacts to the SLNWR because the Refuge is the focal area receiving the greatest level of impact from the conveyance project; discussion of additional monitoring/adaptive management /minimization/mitigation for the Staten Island population of cranes is needed; discussion of additional minimization/mitigation measures for transmission line placement and further discussions on other indirect effects (noise, light etc) are needed.
    b. Issue will require additional work between draft and final for resolution.

14. Conservation Measures in the HCP
    a. **STATUS**: Issues have not been adequately resolved. Issues include: the "other stressors" conservation measures are inadequately developed and need

**Comment [MN5]:** Ch 5 and Appendix 5E have not addressed our HCP (Issue Area 1 and elsewhere) comments adequately; ~ 10% complete due to the writing and background, but ICF needs to provide a credible analysis:

1.Re-do the HabSuit Index curves to keep them within the bounds of the available data

2.Re-do the HabSuit Index analyses with a range of success criteria that are > 0%, but less than the current 100% assumptions so that we can see the sensitivity of results to input assumptions (including use of Lopez model, which has quantifiable variance than can be used for this analysis if a credible case for its use at all can be made).

3.Explain how predicted habitat improvements for a habitat specialist like delta smelt can exceed predictions for generalists like salmon and splittail.

4.Before it is concluded that big habitat and prod-acre gains predicted for delta smelt from the south Delta can be realized, need to show that this "enriched" water won't all be pumped out of the Delta (along with the fish in it that attempt to use that predicted productivity).

5.The best south Delta floodplains will deposit water right at the south Delta pumps – analysis needs to show what the fate of inverts and fish using these areas is expected to be before benefits can be claimed; inundation threshold applied to splittail is too short and inconsistent with the ca. 4-wk threshold used elsewhere.

6.Link flow into habitat analyses (analyze these components of habitat together and do so credibly). For instance, the Appendix 5E Exec Summary does not ever consider flow or flow regime as an explicit element of CM4 restoration outcomes.

Etc....

significant improvements to clarify role of BDCP amid other regulatory obligations, reduce uncertainty of success, and contribute to listed species recovery; further discussion among the federal and state fish and wildlife agencies needed to discuss the potential benefits and impacts due to restoration in the south Delta.

b. Issue will require additional work between draft and final for resolution.

15. EIS Summary Tables
    a. **STATUS**: Issues raised by the Summary Tables that will not be resolved for the public draft will need to be resolved for the final. They include: Executive Summary Tables - need refinement for the NEPA effects determination; a separate summary of NEPA effects determinations table needs to be included in each resource chapter; Alternative Comparison Summary Table – needs to be included in the final.
    b. Issue will require additional work between draft and final for resolution.

16. Water Surface Analysis in EIS
    a. **STATUS:** issues have not been adequately resolved. Issues include: need results of the UnTRIM-RMA-DSM2-ANN-CALSIM II "full circle analysis" alluded to in Appendix 5A atop page A-44 (checking salinity-flow relationships); need the rationale/sensitivity analysis that led to using a one-dimensional average cross-sectional velocity of 0.4 feet per second 1,000 feet downstream of each intake location; need analysis of how sensitive the CALSIM II results are to the assumption of a 12,000 cfs Wilkins Slough flow threshold for defining a Sacramento River pulse;
    b. Issue will require additional work between draft and final for resolution.

17. Site-Specific Analysis in HCP
    a. **STATUS**: issues raised in FWS progress memo have not been adequately resolved. Issue: the final BDCP must have the site specific information needed to complete our intra-service Sec 7.
    b. Issue will require additional work between draft and final for resolution.

18. FAST team
    a. **STATUS:** Currently the FAST team is only envisioned as being part of the interim period. We need be sure the FAST team, or something similar, is maintained throughout the implementation process.

19. Effects Analysis
    a. Analyze CS5 operations for the south Delta.
    b. Show/Discuss linkages between net effects and achievement of BGOs

**Comment [MN6]:** Our HCP comments transcend these…

20. Normalization Methods in Entrainment Appendix
    a. The assumption made was that "a relatively high number of fish would be expected to be entrained in a year of relatively high abundance." While this makes some sense for a comparison of juvenile salvage to juvenile abundance (as was done for winter-run using the JPE), it makes little to no sense for a comparison of juvenile salvage to adult abundance, which is what was done for most salmonids.

PRELIMINARY WORKING DRAFT – FOR INTERNAL USE ONLY – March 28, 2014

***COMMITMENTS** AGREED TO BE COMPLETED **BETWEEN DRAFT AND FINAL:***

21. "Roll-up"/aggregate analysis

22. Particle Tracking Method (PTM)
    a. Fry passage/survival issue
    b. Additional north Delta model runs

23. Delta Passage Model (DPM)
    a. Incorporate revisions to model based on NMFS and other agencies' comments
    b. Work on the relationship between exports and survival for SJ River fish
    c. Determine appropriate level of significance for flow/survival relationships (Newman/Perry) within the model.

24. Independent Scientific Review
    a. ND Bypass Flows
    b. Effects of Oroville operations on Feather River
    c. DPM
    d. Effects of habitat restoration & sea-level rise on tidal energy and river stage
    e. Appropriate interpretation of upstream flow and temperature models

25. Critical Habitat Analysis
    a. In EIR/EIS

26. Essential Fish Habitat Analyses
    a. BDCP and EIR/EIS

27. ND Diversion Bypass Flows analyses
    a. Update on when to expect analysis of controlling criteria.
    b. A "water costs analysis" showing the difference in average exports under each of the bypass criteria levels (Levels 1, 2 & 3)
    c. Analyses showing what the survival rates for ONLY level 1 pumping

28. EIS Action Alternatives
    a. Climate change and seismic risk for action alternatives

29. Continue work on habitat restoration analyses
    a. Floodplain
    b. Channel Margin Habitat
    c. Tidal Marsh
    d. Partial implementation (feasibility and uncertainty issue)
    e. Lessons learned from unintentional restoration examples
    f. Foodweb

30. Predation Measure (CM 15)
    a. Metric to measure success of program

**Comment [MN7]:** Progress last fall, but still not a credible analysis for any covered fish, but especially the smelts – even as a qualitative exercise (e.g., acknowledging professional disagreement among participants in a footnote does not meet our needs for addressing uncertainty). Perhaps 75% complete

**Comment [MN8]:** See comment above – maybe 10% complete; Public Draft write-ups are better, some elements of 2.1 starting to be addressed, continue to ignore Steve's issues with use of Lopez phyto model, overall analyses are not credible so conclusions are suspect.

b. Description of expected outcomes if less than fully successful

31. Non-Physical barriers
    a. Incorporate 2012 Geo Sl report

32. Stressor reduction targets for smelt entrainment

33. Fish Population Dynamics analyses (smelt, splittail)

34. Avoidance and Minimization Measures (CM22)
    a. Remove as a CM. Incorporate A&M's into other appropriate CM's.

35. EIS Terrestrial
    a. Refinements to the qualitative and net effects assessments.

36. Review/Address Existing Agency Comments and Terrestrial Technical Team Task List
    a. With agency representatives, compile and review existing lead agency comments associated with BDCP and EIR/EIS processes.
    b. With agency representatives, address these comments to improve and/or correct the documents while providing clarity and closure on items such as:
        - Document clarity and consistency
        - Adequacy of assumptions for alternatives, analyses and roles and responsibilities
        - Efficacy of project and program level analyses
        - Provision of a rigorous and supportable comparison between alternatives, and
        - Assurance of an equal-level of analysis for each alternative
    c. Address remaining tasks on the Terrestrial Technical Team list.

**Comment [MN9]:** And outflow/habitat and population growth; ~ 50% complete for smelts

**Comment [MN10]:** I know ICF is working on this; don't know how far along they are. The comment was very specific so they should know when they'll be finished.

# EXHIBIT C

# Summary Template
# For
# BDCP Financing Committee Action Items

**Action Item:** **Use of Habitat Funds to Provide Outflow**

This issue may be integrated into the decision-tree if the result of the State/federal meetings is a decision tree with insufficient yield to support the project. Even if it does not become part of the decision-tree it should remain in the mix of tools that can be used through the adaptive management program. Under this idea bond funds originally targeted toward habitat restoration could be reprogrammed for capital outlay programs such as purchase of water rights, fallowing programs, development of coordinated groundwater conjunctive use programs, and other water management techniques which would provide outflow needed for fish.

**Issue Leader:** Brent Walthall

**Summary:** This financing idea was to allow public funding for habitat to be reprogrammed for use in buying water for species protection. It has the enhanced value for the species of providing more benefits than would have been provided by habitat purchases, and also serves to reduce the perceived need for flow criteria that lack sufficient scientific support (e.g. Spring, Summer, Fall X2).

The following language is included in the 2014 bond act. The Finance Committee agreed that this language is clear enough to allow funds made available under this paragraph to be used for water purchases for species protection.

> "(b) One billion five hundred million dollars ($1,500,000,000) for projects to protect and enhance the sustainability of the Delta ecosystem, including any of the following:
>
> (1) Projects for the development and implementation of the Bay Delta Conservation Plan, consistent with Chapter 10 (commencing with Section 2800) of Division 3 of the Fish and Game Code. The projects shall be implemented through a cooperative effort among regulatory agencies, regulated and potentially regulated entities, and affected parties, including state and federal water contractors. These funds may be expended for the preparation of environmental documentation and environmental compliance.
>
> (2) Other projects to protect and restore native fish and wildlife dependent on the Delta ecosystem, including the acquisition of water rights and the removal or reduction of undesirable invasive species."

**Next Steps:**

1. This financing idea requires the passage of the 2014 water bond

2. Prior to passage of the 2014 water bond the BDCP and the DHCCP should be written to specifically allow for water purchases to be substituted for habitat purchases f the BDCP adaptive management plan indicates that is ecologically preferable.
3. The BDCP costs chapters should be written to acknowledge the potential use of bond funding for habitat or water purchases.

**See Attachment below**

# Water for Habitat

As part of the BDCP conservation measures, 30,000 acres of aquatic habitat will be developed in the next 15 years. The benefits of this habitat development for pelagic species like Delta and Longfin Smelt will be determined through careful monitoring and research.

If aquatic habitat development does not make sufficient progress in achieving the BDCP biological goals and objectives, funds that are projected to be used for additional development of aquatic habitat may be used for other actions that would be a surrogate for habitat. For example, if additional seasonal outflow is needed, the funds could be used for acquisition of water for outflow. Outflow (maintenance of salinity at various locations through release of water from upstream reservoirs) may be another way to achieve biological goals and objectives, subject to scientific analysis to be conducted in the upcoming years. The funds may also be used for other conservation purposes which could reduce diversions to achieve the goals and objectives.

The costs of developing the 30,000 acres of aquatic habitat will be covered in part by future bond funds, and in part by funds provided by water agencies pursuant to OCAP obligations. If no additional tidal marsh habitats are developed after the start of operation of CM1, around $3 billion would still be available to develop water for outflow purposes from future bond funds.

The amount of water that may be needed for additional outflow has not been determined, but it could be as much as 1.6 maf on an annual average basis. ICF has estimated that the actual difference on an annual average basis could be much lower, assuming that what is needed to satisfy the fishery agency outflow requirements would be about 700 taf per year (exports at a level of 5.2 maf/yr), and the original proposed project (5.9 maf/yr).

Funds could be used in a number of ways to produce an average of 700 taf of additional outflow.

**Purchase Water From Upstream Entities**

Water purchases, both short and long-term, are an important component of the water contractor's supplemental water programs. A key consideration for supporting a water purchase program for Delta habitat requirements will be whether those programs compete with existing or planned supplemental water transfer supplies.

Water Rights Purchase/Lease: All or a portion of the $3.0 billion would be used to purchase water from voluntary sellers. This option would include the purchase of lands with the appropriate water rights in either the Delta or the Sacramento Valley where the water supply could be re-managed for outflow or in-Delta habitat benefits. While transfers from the Sacramento Valley would most likely create the greatest amount of water, transfers from the San Joaquin Valley would also need to be investigated. This method has the potential to interfere with long-term transfers being contemplated by SWP or CVP south-of-Delta contractors, which could impact the availability and pricing of supplemental water supplies needed by the water contractors to meet hydrologic or regulatory shortages. In this instance this program could impact the water contractors. Additionally, there could be negative impacts in the areas from where land and water rights are being purchased. These impacts may have to be mitigated.

Annual Transfer Markets: Market transfers include obtaining fallowing agreements, creating conjunctive use agreements, or changing the time of year for rice tailwater release. These are generally considered annual transfers because costs are negotiated annually and are highly variable, subject to projected commodity or input values, especially in rice markets, which have traditionally supported a majority of the fallowing transfer programs. The cost of conjunctive use water has historically tracked with fallowing prices with a slight discount and are, therefore, also subject to annual negotiations. The re-management of rice tailwater is currently being explored by the water contractors as an additional

**Comment [JM1]:** Why not the northern San Joaquin Valley. Modesto ID is already selling water, and other districts like Merced and the Exchange Contractors might be willing to do so.

CC: see added text to at least reference SJR transfers.

tool to meet hydrologic or regulatory shortages. To use bond funds, these agreements would have to be long term, even though price may have to negotiated on an annual basis.
Fallowing and conjunctive use transfers are tools that the SWP/CVP contractors currently use on a regular basis to meet annual water shortages. Therefore, additional competition for a limited supplemental supply (estimated at 200-300 taf per year) would impact the water contractors.

**Develop New Storage**

Several storage projects have been considered that include expanding existing reservoir systems or developing new off-stream storage facilities. New storage could be used to capture water during high flow periods for use later to enhance Delta outflow. Potential projects fall within two general concepts South of Delta storage and Upstream of Delta Storage.

South of Delta Storage: Develop new or expand existing storage capability within the CVP/SWP place of use. The ability to improve the water supply associated with an isolated facility is greatly affected by the temporal delivery pattern. Expanding the capability to capture water when it is available will improve water supply. For example, analyses have been done to consider the benefits of expanded storage or unlimited demand. These analyses show that as much as 500 taf of additional water supply could be provided with additional flexibility downstream. Additional storage south of the CVP/SWP export facilities could include:

- Expand San Luis Reservoir
- Develop new off-stream storage south of the Delta
  - Los Banos Grande – 1.73 to 2.04 maf (Calfed 1997)
  - Orestimba – 0.38 to 1.14 maf (Calfed 1997)

If the BDCP develops new storage or expands existing storage south of the Delta, such projects would no longer be available for south-of-Delta contractors to develop as part of their own water management programs. Therefore, this option is considered non-neutral to the SWP/CVP contractors because such project will compete with the exports to develop similar projects that would allow them to fully utilize wet year flow that could be captured in the Delta through a new conveyance facility and used in drier or restricted years.

Upstream of Delta Storage: Develop new or expand existing storage capability upstream of the Delta. Additional upstream storage could be used to develop a water supply during wet years to meet additional outflow requirements in other years.

- Develop new on-stream storage upstream of the Delta

  Example: Temperance Flat Reservoir – 0.7 to 1.3 MAF at a construction cost of $2.9 to $4.0 billion.
- Develop new off-stream storage upstream of the Delta

  Example: Sites Reservoir – 1.2 to 1.8 MAF at a cost of $3.6 to $3.9 billion. The proposed facility includes the "public benefits" objectives of ecosystem improvements in the form of supplemental flows for the Delta, water quality, and water temperature. The project estimates that roughly 600 taf of ecosystem storage will be available and roughly 200 taf of ecosystem flows will be developed annually.
- Shasta Expansion – 6.5 to 18.5 foot raise (256 to 634 taf storage) at a construction cost of $0.8 to $1.1 billion). Recent feasibility studies identified the primary planning objectives as 1) increase anadromous fish survival and 2) increase water supply reliability. The project has identified a water supply benefit of between 76 to 133 taf annually with improved cold water pool management.

New or expanded storage north of the Delta that includes dedicated storage for ecosystem benefits are considered neutral to the water contractor.

The Bay Delta Conservation Plan
Response Outline of Water Acquisition/Shared Incentives Proposal

Mar. 29, 2013

**Central Theme: Cross-Program Asset Management**

The Bay Delta Conservation Plan (BDCP) program consists of the following major program areas: a large capital investment into building and operating, in accordance with specified criteria, new and improved water conveyance systems; a major habitat restoration program; a program of investments to reduce other stressors (predation, water quality problems, *etc*.); a significant monitoring and research program; and a governance system, including an adaptive management system though which to adjust the program in order to improve performance. Each of these major program areas will have a budget and funding to ensure their timely and effective implementation.

The BDCP adaptive management program currently recognizes the ability to shift BDCP resources across program areas to maximize the environmental and water supply benefits of the BDCP program. This cross-program asset management system is a major factor enabling program performance within the BDCP, both on a program area-specific basis and across the BDCP program as a whole. More specifically, the adaptive management program explicitly retains the ability of the program managers to shift committed financial assets within and across different program areas, including the habitat program, the programs to address other stressors, investments in R&D, and governance. While the BDCP program retains the ability of the managers to design and refine the elements of adaptive management as the program progresses, at the outset it contemplates tiered layers of flexibility, both within and across program areas, and on a variety of timing scales --- as part of the annual planning processes and also on longer time frame at more major "program check ins."

**Specific Measures**

1. BDCP proposes Conservation Measures including new conveyance facilities, collaborative science and adaptive management processes, and a process known as "Decision Tree," which is designed to test limited and specific hypotheses regarding outflow needs for species.

2. The state and federal permitting agencies will review the California Department of Water Resources' application for permitting the BDCP; make permitting decisions based on the content of the BDCP and the best available science at that time; specify the

operational criteria of the conveyance facilities based on that science; and incorporate the Decision Tree process in the permit.

3. In order to ensure outflow needs for species as well as manage operational risk for water supply, the BDCP will also include an ability to acquire water supplies to provide supplemental instream flows. Public Water Agencies will work with upstream agencies or export agencies on a voluntary basis to acquire water supplies through: 1) permanent or long-term (fifty years) purchases, 2) water conservation programs, and 3) development of new facilities. The ability to acquire water supplies for instream flow needs is a mechanism to jointly-share risk and to satisfy the co-equal goals over the term of any permit.

4. The state and federal agencies will work in coordination with the public water agencies in identifying upstream fisheries needs that could be achieved through this effort.

5. As the funding provided for in paragraph 10 is received, acquired water will be transferred to and held by the California Wildlife Conservation Board as an asset to support plan implementation and for project purposes.

6. Acquired water will be dedicated to outflow to meet Fall X2 and Spring X2 flow requirements or to meet the Scenario 6 w/ South Delta flow requirements should it be determined by the Decision Tree/Adaptive Management process that flows for these actions are required for the conservation of the covered aquatic species.

7. The acquired water may be dedicated to contributing to meeting the outflow or other operating parameters which may be required, to augment habitat and riverine productivity, to address continuing water quality impairments, or other functions.

8. If the acquired water held by the California Wildlife Conservation Board is not needed for the purposes described in paragraph 6, it will be managed by DWR, Reclamation, FWS, NOAA Fisheries, and DFW as another fungible asset available for project purposes, including for fish and wildlife enhancement or for annual sale to the Public Water Agencies to enhance exports. Any revenue generated from such sales shall be used for fisheries and environmental programs.

The Bay Delta Conservation Plan
Response Outline of Water Acquisition/Shared Incentives Proposal

Mar. 29, 2013

9. New conveyance construction efficiencies incentives (to come).

10. Federal and State agencies will contribute $1.0 - 1.5 billion in recognition of public benefits associated with the project. The final amount is subject to completion of the overall financing plan. The obligation of the Federal and State agencies set forth above has not been allocated between them and has yet to be determined.

NOTES:

1. These and all potential commitments herein are subject to Federal Administration review.
2. No attempt has been made to determine whether or not the concepts described in this paper require federal legislation.
3. This agreement expressly does not address whether the BDCP will include adaptive limits. The parties agree to take up that issue at a later time.

TO: Urban Bakersfield Advisory Committee

Agenda Item No. 5b

FROM: David Beard

DATE: October 23, 2013

SUBJECT: Discussion of State and Federal Issues Necessary for Continued Kern County Water Agency Participation in the Bay Delta Conservation Plan

Issue:

Discussion of State and federal issues necessary for continued Kern County Water Agency participation in the Bay Delta Conservation Plan.

Recommended Motion:

None – information only.

Discussion:

Following completion of the permit applications for the Bay Delta Conservation Plan (BDCP), Kern County Water Agency (Agency) staff began developing a list of State and federal issues that must be resolved before the Agency can make a decision on its continued participation in the BDCP. Resolution of these issues was not necessary to complete the public draft of the BDCP, but is essential to the Agency's efforts to build a business case to support a decision to continue participation in the BDCP or to withdraw.

The list of State and federal issues with a short description of each is included as Attachment 1.

Resolution of Issues Necessary to Inform Development of a Business Case to Support a Decision on Continued Funding for the Bay Delta Conservation Plan and the Delta Habitat Conservation and Conveyance Program

October 18, 2013

Transmittal of the Bay Delta Conservation Plan (BDCP) and the Delta Habitat Conservation and Conveyance Program (DHCCP) to the federal agencies on October 1, 2013 started the process of

publication in the Federal Register. The current schedule for publication in the Federal Register is December 6, 2013. On that date, the BDCP will become public and the 120-day formal public review period will begin.

Between October 1 and December 31, 2013, it is necessary to resolve several outstanding issues to support the development of a business case for continued Kern County Water Agency (KCWA) funding of the BDCP and DHCCP. KCWA staff has developed the following list of issues that need to be resolved prior to December 31, 2013 to facilitate a decision to continue funding the BDCP.

Federal Process Issues

1. When and how will a Biological Opinion (BiOp) be competed for the BDCP – The U.S. Department of the Interior previously stated that it might take as much as three years to develop a BiOp for the BDCP if it determines it must include all Central Valley Project (CVP) and State Water Project (SWP) contractors, and not just the CVP Delta division contractors.

2. National Marine Fisheries Service BiOp for Oroville Federal Energy Regulatory Commission (FERC) relicensing – NMFS has completed a draft of its BiOp for the Oroville FERC relicensing project. However, the results of that BiOp are not known, and ICF International has not been able to incorporate them into the BDCP. As a result, there is concern that the Oroville FERC BiOp may be inconsistent with the BDCP.

State Process Issues

3. Planning Agreement – Need to determine if a new Planning Agreement is required/needed/wanted, and if so, who will be the signatories.

4. SWP contract extension – The California Department of Water Resources (DWR) and the State Water Contractors (SWC) need to come to an agreement on a contract extension that matches the term of the BDCP and provides the SWC with a more appropriate role in managing SWP expenses.

5. Decision on Design-Build – Is design-build a viable option for the BDCP from an engineering perspective, and if so, can it be used if DWR constructs the project? Can it be used if a Joint

Powers Authority (JPA) constructs the project?

6. Strategy for State Water Resources Control Board (SWRCB) review and approval – The SWRCB will review and approve, modify, or deny permits necessary for the BDCP. The strategy for moving the BDCP through the SWRCB should be clearly laid out and understood.

7. Delta Stewardship Council (DSC) – DSC must review the BDCP and incorporate it into the Delta Plan. The strategy for moving the BDCP through the DSC process should be clearly laid out and understood.

Financing or Cost-Allocation Issues

8. Financing

a. Interim financing – Need a determination on how the project will be financed in the near-term (the first three years).

b. Long-term financing – Need to have a clear decision on how to finance the long-term costs, using a process that builds confidence that all options have been explored, and relies on financial experts with significant experience in financing very large public infrastructure.

9. Cost Allocation

a. Cost allocation between the State/federal sources and the Public Water Agencies (PWA).

b. Cost allocation between the CVP and the SWP.

i. Friant/Exchange Contractor issue.

c. Cost allocation among the SWP contractors.

i. Opt-in/Opt-out – This issue has developed into a discussion about what an individual contractor can do with the assets they acquire as a participant in the BDCP.

10. Coordinated Operations Agreement (COA) – The COA issues must be resolved among the CVP and SWP, and a decision on how to move forward must be made (legislation, simple amendment, etc…).

Implementation Issues

11. Implementation Agreement (IA) – Development of the IA has been stalled for several years. CVP and SWP permittees developed several versions of the IA, including a complete version that should be acceptable and shared with the State. State and federal agencies developed a separate IA.

12. Final decision on use of a JPA to construct the new conveyance facility – The permittees are in the final stages of developing a joint entity capable of constructing the new conveyance facility. The details of this new entity are not yet worked out, but efforts are in place to do so. The details of the joint entity and how it will operate should be worked out and agreed to prior to a decision on continued funding for the BDCP and DHCCP.

13. Enhanced Environmental Flow – Complete the structure for the Enhanced Environmental Flow Program. At a minimum, determine:

a. How much money will the State and federal governments be providing ($1 - $1.5 billion)?

b. What is the split?

c. What is the mechanism for the transfer of funds to reimburse the PWAs?

d. How will the PWAs acquire the water and/or other assets? (What's the decision-making process?)

e. What happens if the PWAs acquire the water and don't get reimbursed? (How can we ensure that the acquired water isn't just taken through regulatory actions?)

14. Supplemental Adaptive Management Fund – Complete the structure for the Supplemental Adaptive Management Fund.

a. What is the size of the fund? (At least $450 million?)

b. What is the split between federal, State and PWAs?

c. What is the mechanism for transfer of funds to the appropriate vehicle for holding the funds?

d. If assets are required, who will acquire the water and/or other assets? (What is the decision-making process?)

e. What happens if the PWAs provide funding and the State and/or federal government does not?

TO: Urban Bakersfield Advisory Committee

Agenda Item No. 5c

FROM: David Beard

DATE: October 23, 2013

SUBJECT: Discussion of Local Issues Necessary for Continued Kern County Water Agency Participation in the Bay Delta Conservation Plan

Issue:

Discussion of local issues necessary for continued Kern County Water Agency participation in the Bay Delta Conservation Plan.

Recommended Motion:

None – information only.

Discussion:

Member Units of the Kern County Water Agency (Agency) will soon be faced with a decision of whether to provide funding for the next phase of the Bay Delta Conservation Plan (BDCP) and Delta Habitat Conservation and Conveyance Program (DHCCP), which is expected to include completion of the engineering work and completion of any additional permitting activities, both of which are necessary to be completed in order to begin construction. There are a number of local issues that must be addressed prior to receiving additional Member Unit funding. Examples of these issues include: (1) what can a Member Unit do with State Water Project supplies; and (2) what is the cost allocation methodology among participating Member Units for their share of the BDCP and DHCCP.

On September 30, 2013, Agency staff distributed the preliminary list of local issues that have been identified to date, which is provided as Attachment 1.

Issues necessary to be resolved in order for Kern County Water Agency Member Units to make a decision about continued funding of the BDCP effort after current funding runs out.

Goal: Sufficiently resolve local issues that are necessary for local water users to make an informed

business decision regarding their participation in the BDCP and the Isolated Facility (Project).

Member Units of the Kern County Water Agency (Agency) will soon be faced with a decision of whether to provide funding for the next phase of the Project which is expected to include completion of the engineering work and completion of any additional permitting activities both of which are necessary to be completed in order to begin construction. There are a number of outstanding issues at the federal and state level that need to be resolved in order for any water user to make an informed decision about their participation in the project. Those issues are being addressed in the appropriate venues at the state and federal level and the results of those discussions will continue to be provided to the Agency Board of Directors and Member Units. In addition, there are a number of local issues that also need to be addressed prior to receiving additional funding from the MU's. The following list is the first draft of issues that have been identified to date. Agency staff will be working with the Agency Board and MU's to develop the complete list of issues that need to be addressed.

While the list is being finalized, the Agency Board of Directors will be discussing with the Member Units, the best structure for addressing these issues. In the past, large policy group meetings have been held to address important matters for the Agency and its Member Units. This may be the time for that type of meeting or any other one that meets the need to resolve these local issues.

1) What can a Member Unit do with their SWP supplies?

A number of issues are captured within this question that could dramatically affect a Member Unit's decision on participation in the Project. It is expected that many of the MU's would like to develop water management programs utilizing their SWP supplies that would help offset the costs of their participation in the Project. What programs would be permissible for MU's is an important question to be answered. Also, questions have been raised about what options would be available to a MU should the cost of participation in the Project become unaffordable?

A few of the related questions raised so far include:

Will SWP supplies be allowed to be transferred outside of Kern County on a short term, long term or

permanent basis? If allowed, what are the terms and conditions for such transfers?

What role will the Agency play in administering and facilitating such transfers?

Will all Table A and Article 21 supplies be treated the same?

2) What is the cost allocation methodology among local MU for the Kern County share of the project?

How will non-participants in the Project be treated? What is the structure that will insure that no additional costs are provided to non-participants and likewise that no additional benefits will be conveyed to the non-participants as described in the Supplemental Funding agreement

Will MU's be able to participate at less (or more) that their current level of participation in the SWP as defined by their Table A amounts? If so, what is the methodology for such changes?

**California Water Action Plan - Voluntary Water Acquisition Program to Support Upstream Needs and Delta Outflow Requirements**

Considerable uncertainty exists over the quantity and timing of Delta outflows needed to support the BDCP biological goals and objectives. For purposes of the BDCP, some of these outflow needs will be determined through a collaborative decision tree process prior to initial operations of the Delta conveyance facilities included in Conservation Measure 1 and others through ongoing adaptive management throughout the remainder of the BDCP permit duration. The Delta outflow requirements in place at any given time have a direct effect on SWP and CVP project operations and limit, in part, the levels of available exports to the Public Water Agencies participating in BDCP.

In order to provide for and ensure sufficient outflow for BDCP biological needs, a voluntary water acquisition program could be implemented. Water acquired in such a program would need to be long-term in nature and would be a natural element of the Statewide Water Action Plan recently proposed by the Governor. The significant financial contribution to acquire these flows by state and federal government of up to $1.5 billion, together with the significant investments by BDCP participants, provides the biological outflow requirements described in the Plan. The strength of such a program is that outflow requirements associated with the decision tree, as provided in the Plan, are guaranteed to be met because SWP and CVP exports would be curtailed to the extent necessary to meet those biological needs.

In achieving the co-equal goals and balancing the financial responsibilities among all BDCP participants, the state and federal agencies participating in BDCP could contribute the $1.5 billion to support a voluntary water acquisition program. If necessary, those funds may be augmented or partially obtained by reallocating other state and federal agency obligations for other BDCP conservation measures, should the adaptive management program conclude that all actions initially included in those conservation measures are not beneficial or the most efficient means of supporting the BDCP biological goals and objectives.

To support the California Water Action Plan and the BDCP, the Public Water Agencies will acquire, through voluntary sales, permanent or long-term (fifty years) water supplies from upstream agencies or export agencies. Once the Public Water Agencies have been reimbursed by the state of federal governments, water acquired from upstream agencies will be held by the California Wildlife

Conservation Board as assets for the benefit of the SWP and CVP. The SWP and CVP will remain responsible for meeting Delta outflow requirements as determined through the BDCP decision tree processes and adaptive management program, as specified by the permitting agencies. The priority use of the acquired water will be to support the "high outflow" outcomes of the decision trees as described in Section 3.4.1.4.4 and Table 3.4.1-1, if those flows are needed for the conservation of covered aquatic species. If additional needs are required to support adaptive management, available acquired water will be then prioritized for that purpose. Alternatively, if the decision tree process concludes these "high outflow" actions are not required, the acquired water will be managed by DWR, Reclamation, USFWS, NOAA Fisheries, and CDFW for other project purposes, including fish and wildlife enhancement, as informed by the adaptive management program.

In carrying out the purchases to support the water acquisition program, the Public Water Agencies will work with upstream and export water agencies, on a voluntary basis, together with DWR, Reclamation, USFWS, NOAA Fisheries, CDFW, and other state and federal regulatory agencies, to identify opportunities for using acquired water to concurrently meet other upstream flow or temperature requirements or objectives that support aquatic species. Water acquired under this program prior to initial operations of the Delta conveyance facilities included in Conservation Measure 1 will be managed by DWR, Reclamation, USFWS, NOAA Fisheries, and CDFW to support scientific investigations necessary to complete the decision tree process and to further the co-equal objectives of enhancing fish abundance and restoring water supply and water supply reliability.

*DRAFT—FOR DISCUSSION PURPOSES ONLY—DRAFT*
*February 24-25, 2014 Workshop*

**QUESTIONS TO FRAME ADAPTIVE MANAGEMENT/ ASSURANCES DISCUSSION**

1. **What is the concept of Enhanced Environmental Flows (EEF) and what would they be used for?**
   a) Would it support all adaptive management changes with impacts on water supply?
   b) Would it be used to offset the water supply impacts of the High Outflow Scenario?
   c) How much money would be needed for the EEF?
   d) Would the EEF be paid for entirely by the Supplemental Adaptive Management Fund (SAMF) or would it be a separate "account"?
   e) When would the EEF commence?
   f) How should the amount of water needed for the EEF be determined? (Does CS5 represent a good approximation?)

2. **How would adaptive management resources be drawn respectively from "1) interannual adjustments in operations, 2) sharing of water supply improvements, 3) funding shifts to the most effective conservation measures, 4) enhanced environmental flows, 5) Supplemental Adaptive Management Fund" ?** (p. 3.4-355)
   a) Must there be a determination of sufficient EEF/SAMF resources to offset an individual adaptive management action before an action can be taken?
   b) Could there be a range of actions within which no accounting would be needed?
   c) Is there a floor/limit on adaptive management changes that impact water supply?
   d) Can EFFs not required by the decision tree be used for purposes other than longfin/delta smelt outflow needs?

3. **What level of specificity for the EEF/SAMF concepts are needed to support completion of the plan?**
   a) Is there enough water likely available for acquisition from willing sellers to provide an adequate EEF?
   b) What kind of environmental documentation is needed for the EEF/SAMF concepts, and where should the analyses be included (final BDCP, EIS, BA/BiOp)?
   c) What level of specificity in water accounting and water management do we need to determine whether sufficient assets are likely available to meet foreseeable needs?
   d) What are the contributions of the PWAs, state and federal governments regarding funds for the EEF and/or SAMF?

| | |
|---|---|
| **From:** | Beck, Jim |
| **To:** | Walthall, Brent |
| **Subject:** | FW: Proposal for discussion now |
| **Date:** | Wednesday, February 26, 2014 4:17:23 PM |
| **Attachments:** | summary of assurances-water funds.docx |

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**From:** Zippin, David [mailto:David.Zippin@icfi.com]
**Sent:** Tuesday, February 25, 2014 3:14 PM
**To:** Beck, Jim; jkightlinger@mwdh2o.com
**Subject:** Proposal for discussion now

**From:** Belin, Letty [mailto:letty_belin@ios.doi.gov]
**Sent:** Tuesday, February 25, 2014 3:13 PM
**To:** Waldo, Jim; Zippin, David; mark cowin; Bonham, Chuck@Wildlife; William Stelle; King Moon Laura
**Subject:** Re: tentative bullets

On Tue, Feb 25, 2014 at 6:08 PM, Belin, Letty <letty_belin@ios.doi.gov> wrote:

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Letty Belin
Counselor to the Deputy Secretary
U.S. Department of the Interior
202-208-6291

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Letty Belin
Counselor to the Deputy Secretary
U.S. Department of the Interior
202-208-6291

1. Decision Tree applies to longfin and delta smelt – not other fish; provided, however, parallel adaptive management and other-species-driven decisions may also relate to the need for additional outflow.

2. Establish and fund an effort to acquire 1.3 MAF for environmental benefit not to exceed $3.5B

    a. Revolving fund capitalized by $1.5 Billion from PWAs. PWAs begin immediately to acquire long-term contracts at a discount from willing sellers.
    b. Regulatory agencies assist as appropriate in acquisition discussions, including as to seller assurance package(s).
    c. As state and federal funds are provided (~$2 Billion [placeholder]) that money is used to continue to acquire such contracts for environmental water.
    d. Upon acquisition of 1.3 MAF, additional state-federal funds used for partial reimbursement to PWAs [amount of reimbursement and terms to be determined].

3. PWAs' water risk is limited to ability to acquire enough water to get from low outflow scenario (4.7 MAF) to high outflow scenario (5.6 MAF)

4. Deal assumes assurances provided to sellers; assumes funds received by sellers invested in associated upstream fisheries benefits.

5. Must develop agreed upon approach to address scenarios such as (a) potential of not being able to acquire 1.3 MAF, (b) failure of public funding to be provided; or (c) other scenarios, and ensure incentives for acquisition program to acquire full amount.

6. Permits will be issued for a 30 year term plus two 10 year presumed renewals.

# EXHIBIT D

# CALIFORNIA GROUNDWATER ELEVATION MONITORING

# BASIN PRIORITIZATION PROCESS

**June, 2014**

# APPENDIX A

# CASGEM Basin Prioritization Results
# Figures and Tables

## CASGEM Groundwater Basin Prioritization Results
## Sorted by Basin Number

| Basin count | Basin Number | Basin Name | Sub-Basin Name | Hydrologic Region | DWR Region Office | Basin Area | | 2010 Population | Data Component Ranking Value | | | | | | | | | | Overall Ranking | | Impact Comments | Other Information Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Acres | Sq. Mile | | Population | Population Growth | Public Supply Wells | Total Wells * | Irrigated Acreage | Groundwater Reliance | | | Impacts | Other Information | Overall Basin Ranking Score *** | Overall Basin Priority | | |
| | | | | | | | | | | | | | | GW Use ** | Percent of Total Supply ** | GW Reliance Total | | | | | | |
| 199 | 5-19 | COLLAYOMI VALLEY | | Sacramento River | NRO | 6,497 | 10.2 | 1,513 | 1 | 4 | 2 | 3 | 1 | 1 | 4 | 0 | 0 | 0 | **0.0** | Very Low | | |
| 200 | 5-2.01 | ALTURAS AREA | SOUTH FORK PITT RIVER | Sacramento River | NRO | 114,164 | 178.4 | 4,429 | 1 | 0 | 1 | 1.5 | 4 | 2 | 2 | 2 | 1 | 0 | **10.5** | Low | Declining GW Levels in some parts of the basin. | |
| 201 | 5-2.02 | ALTURAS AREA | WARM SPRINGS VALLEY | Sacramento River | NRO | 68,009 | 106.3 | 964 | 1 | 0 | 1 | 1.5 | 3 | 2 | 2 | 2 | 0 | 1 | **9.5** | Low | | 40' declining in GW levels since 2000, along the west side of the basin. |
| 202 | 5-20 | BERRYESSA VALLEY | | Sacramento River | NCRO | 1,375 | 2.1 | 0 | 0 | 0 | 0 | 0.75 | 0 | 0 | 0 | 0 | 0 | 0 | **0.0** | Very Low | | |
| 203 | 5-21.50 | SACRAMENTO VALLEY | RED BLUFF | Sacramento River | NRO | 274,489 | 428.9 | 28,053 | 1 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 0 | **16.0** | Medium | Some gw quality impairments as per B-118, declining gw levels in west-side subdivision, and very high number of domestic gw use wells. | |
| 204 | 5-21.51 | SACRAMENTO VALLEY | CORNING | Sacramento River | NRO | 205,473 | 321.1 | 18,852 | 1 | 2 | 1 | 3 | 4 | 5 | 4 | 4.5 | 2 | 2 | **19.5** | Medium | Continued GW level decline over most of the basin. | This basin is becoming increasing dependent on GW due to uncertain reliability of CVP TCCA surface water supply. |
| 205 | 5-21.52 | SACRAMENTO VALLEY | COLUSA | Sacramento River | NRO | 917,793 | 1,434.1 | 48,369 | 1 | 3 | 1 | 2.25 | 5 | 2 | 1 | 1.5 | 3 | 3 | **19.8** | Medium | Severely declining GW levels along the west-side of Glenn Co. Moderately declining GW levels in the Capay area. High TDS shallow aquifer in Maxwell- Williams area. | Increase in housing development along I5. GW- SW interaction is important to maintaining waterfowl refuges. Area is being highlighted as solution area for Delta outflow issues…proposed increase in CU and GW pumping. |
| 206 | 5-21.53 | SACRAMENTO VALLEY | BEND | Sacramento River | NRO | 21,748 | 34.0 | 554 | 1 | 0 | 1 | 2.25 | 1 | 1 | 3 | 0 | 0 | 0 | **0.0** | Very Low | | |
| 207 | 5-21.54 | SACRAMENTO VALLEY | ANTELOPE | Sacramento River | NRO | 18,696 | 29.2 | 6,124 | 1 | 1 | 4 | 3.75 | 4 | 5 | 4 | 4.5 | 2 | 0 | **20.3** | Medium | Nitrate issue in Domestic Wells. | |
| 208 | 5-21.55 | SACRAMENTO VALLEY | DYE CREEK | Sacramento River | NRO | 27,709 | 43.3 | 1,626 | 1 | 0 | 1 | 2.25 | 3 | 5 | 2 | 3.5 | 1 | 2 | **13.8** | Medium | Some documented Boron issues along east-side of basin. | Strong SW-GW interaction. GW Basin provides underflow to Mill Creek which supports endangered spring-run salmon. |
| 209 | 5-21.56 | SACRAMENTO VALLEY | LOS MOLINOS | Sacramento River | NRO | 33,148 | 51.8 | 2,220 | 1 | 0 | 2 | 2.25 | 3 | 2 | 2 | 2 | 1 | 3 | **14.3** | Medium | Boron issues along east-side of basin. | GW basin provides underflow to Mill Creek which supports endangered spring-run salmon. High sw- gw interaction for much of the western basin. |
| 210 | 5-21.57 | SACRAMENTO VALLEY | VINA | Sacramento River | NRO | 124,577 | 194.7 | 71,397 | 2 | 4 | 3 | 3.75 | 4 | 5 | 5 | 5 | 0 | 1 | **22.8** | High | | GW from this basin is a key source of sw inflow and serves eastside creeks which have endangered spring run. |
| 211 | 5-21.58 | SACRAMENTO VALLEY | WEST BUTTE | Sacramento River | NRO | 181,479 | 283.6 | 36,152 | 1 | 4 | 2 | 3 | 5 | 5 | 2 | 3.5 | 2 | 1 | **21.5** | High | Declining GW levels within the City of Chico and Durham areas (30-40' decline in mid-aquifer gw levels since 1998). High Nitrates in north and west Chico area. High density of GW contamination plumes surrounding City of Chico. | GW serves as a source of underflow to Butte Creek, which has endangered spring-run salmon. |
| 212 | 5-21.59 | SACRAMENTO VALLEY | EAST BUTTE | Sacramento River | NRO | 265,312 | 414.6 | 38,465 | 1 | 4 | 2 | 3 | 4 | 4 | 1 | 2.5 | 0 | 1 | **17.5** | Medium | | GW basin provides underflow to Butte Creek which supports endangered spring-run salmon. |
| 213 | 5-21.60 | SACRAMENTO VALLEY | NORTH YUBA | Sacramento River | NCRO | 103,152 | 161.2 | 14,667 | 1 | 1 | 2 | 2.25 | 4 | 4 | 2 | 3 | 0 | 1 | **14.3** | Medium | | Strong SW-GW interaction with Feather and Yuba River |
| 214 | 5-21.61 | SACRAMENTO VALLEY | SOUTH YUBA | Sacramento River | NCRO | 104,486 | 163.3 | 45,014 | 2 | 1 | 3 | 3 | 4 | 2 | 1 | 1.5 | 0 | 0 | **14.5** | Medium | | |
| 215 | 5-21.62 | SACRAMENTO VALLEY | SUTTER | Sacramento River | NCRO | 234,264 | 366.0 | 82,125 | 1 | 4 | 2 | 3 | 5 | 4 | 1 | 2.5 | 0 | 0 | **17.5** | Medium | | |
| 216 | 5-21.64 | SACRAMENTO VALLEY | NORTH AMERICAN | Sacramento River | NCRO | 340,170 | 531.5 | 832,746 | 3 | 3 | 4 | 3 | 4 | 5 | 2 | 3.5 | 1 | 1 | **22.5** | High | From B118: Elevated levels of TDS, chloride, sodium, bicarbonate, boron, fluoride, nitrate, iron manganese, and arsenic may be of concern in some locations (DWR 1997). There are 3 sites with significant groundwater contamination in the basin. | From B118: groundwater levels in southwestern Placer County and northern Sacramento County have generally declined with many wells declining at a rate of about one and one-half feet per year for the last 40 years or more (PCWA 1999) |
| 217 | 5-21.65 | SACRAMENTO VALLEY | SOUTH AMERICAN | Sacramento River | NCRO | 247,745 | 387.1 | 718,113 | 3 | 3 | 4 | 3.75 | 3 | 3 | 2 | 2.5 | 3 | 0 | **22.3** | High | From B118: Montgomery Watson (1997) listed seven sites within the subbasin with significant groundwater contamination. From Sac County GWMP: Overall decreasing groundwater level trend over past 50 years (~30ft) | |
| 218 | 5-21.66 | SACRAMENTO VALLEY | SOLANO | Sacramento River | NCRO | 424,832 | 663.8 | 119,263 | 1 | 3 | 2 | 3 | 5 | 2 | 1 | 1.5 | 0 | 0 | **15.5** | Medium | | |
| 219 | 5-21.67 | SACRAMENTO VALLEY | YOLO | Sacramento River | NCRO | 225,718 | 352.7 | 194,158 | 2 | 3 | 3 | 3.75 | 5 | 5 | 2 | 3.5 | 2 | 0 | **22.3** | High | Localized TDS problems preclude using gw for some M&I uses without treatment. Some subsidence in northeast of Davis and in northern Yolo. | |
| 220 | 5-21.68 | SACRAMENTO VALLEY | CAPAY VALLEY | Sacramento River | NCRO | 24,970 | 39.0 | 550 | 1 | 0 | 1 | 3 | 3 | 2 | 3 | 2.5 | 1 | 0 | **11.5** | Low | moderate to high levels of boron. | |

# EXHIBIT E

# Operations and Water Quality/Level Impacts from CM1



BDCP
BAY DELTA CONSERVATION PLAN

- Clarify constant "low level" pumping based on various flows
- Summary of immediate post project water stages and quality, looking at daily modeled values
  - Geographic focus areas: North Delta at Freeport, Sutter Slough, Steamboat, Ryer and Prospect Islands
- Review of outflow and export by water year type as well as representative years
- Review restoration location and climate change assumptions used in water quality modeling
- Review effectiveness of avoidance/mitigation for Delta water quality impacts

BDCP
BAY DELTA CONSERVATION PLAN

# Constant "Low Level" Pumping



- Applicable during December through June.
- Allows diversions of up to 6% of the river flow for flows greater than 5,000 cfs upstream of the north Delta diversion.
- No more than 300 cfs at any one intake, with a combined limit of 900 cfs for the three intakes in Alternative 4.
- The low level pumping is constrained such that the river flow downstream of the intakes never falls below 5,000 cfs.

BDCP
BAY DELTA CONSERVATION PLAN

LAND-71

# SUMMARY OF IMMEDIATE SIMULATED WATER LEVELS FOR ALTERNATIVE 4 AT ELT

(Results from model runs used for BDCP document)

FOR 3/13/14 BECT MEETING
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# Water Surface Elevations in the North Delta

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BAY DELTA CONSERVATION PLAN

LAND-71

- Water surface elevations in the Delta channels simulated on a tidal scale over a 16-year period (WY1976 – 1991), using the DSM2 model.
- DSM2 flow boundary conditions are from monthly CALSIM II outputs.
- Model results over the 16-year period for BDCP Alternative 4 decision tree scenarios are compared to the No Action Alternative at Early-Long Term (ELT).
- Daily maximum and daily minimum water levels are presented to understand BDCP effects across the tidal cycle.
- Results demonstrate expected changes in water levels under BDCP (changes due to modified CVP-SWP operations, north Delta diversion, large-scale tidal marsh restoration, and sea level rise).

# Sacramento River upstream of NDD Simulated Water Levels at ELT

BDCP
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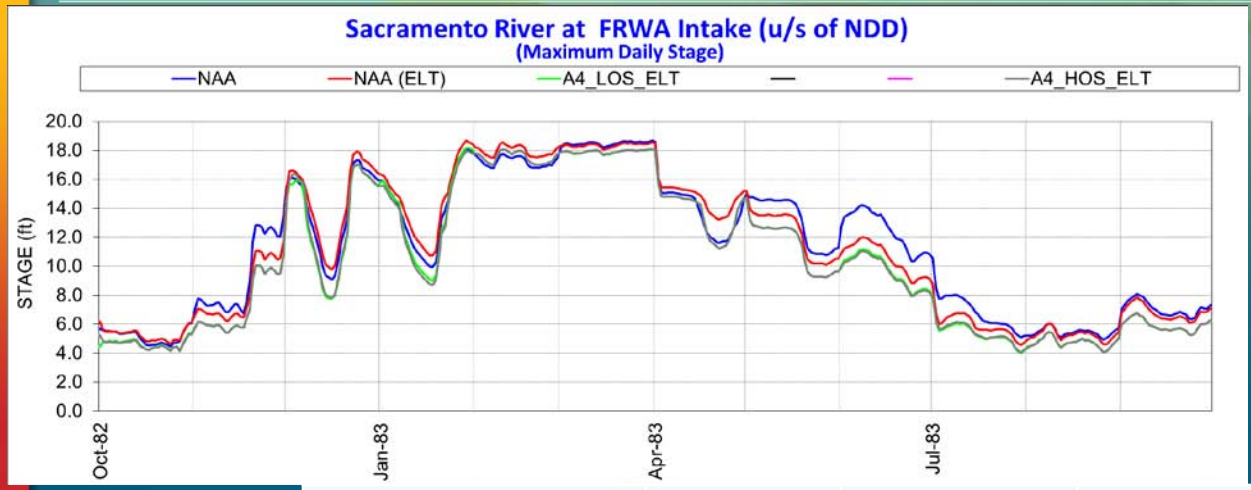
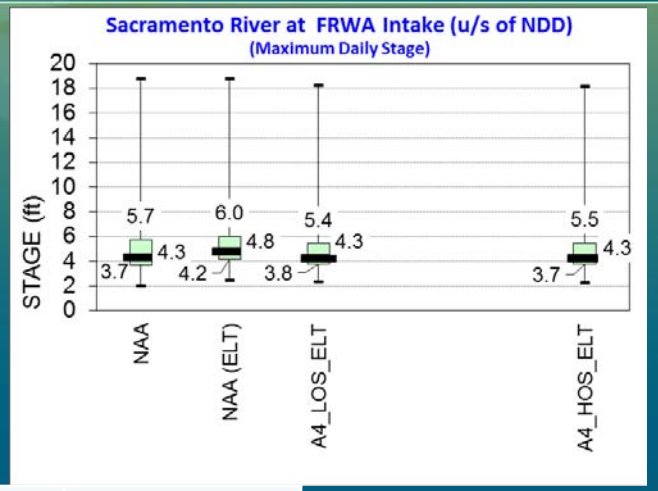
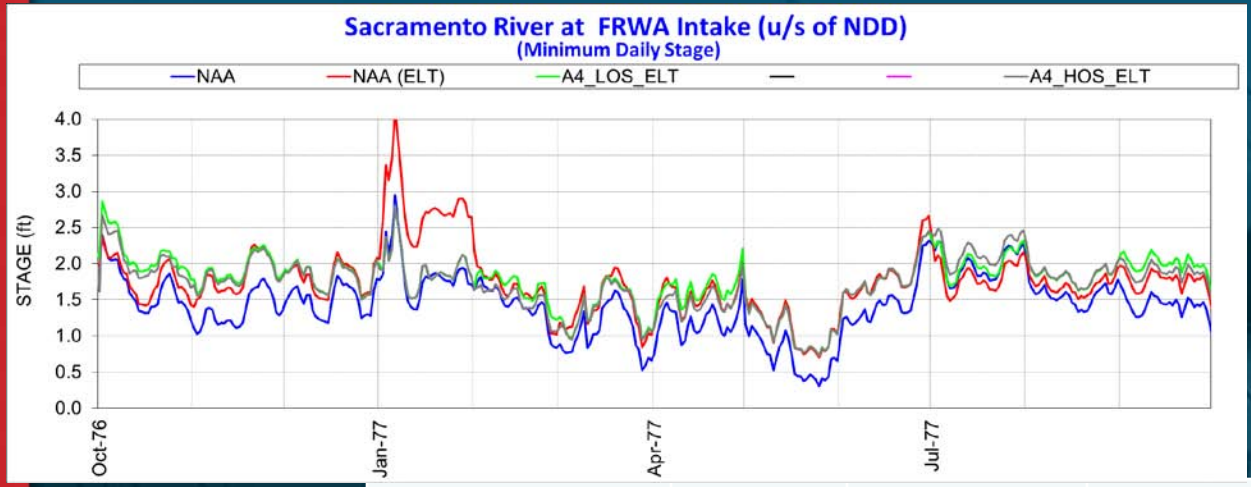
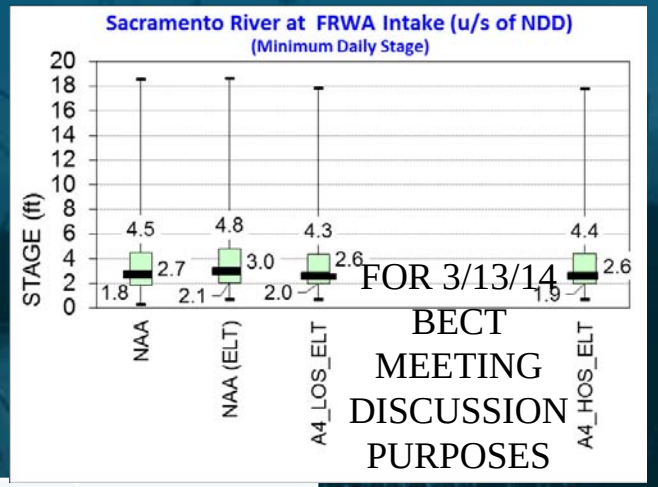



| | NAA | NAA (ELT) | A4_LOS_ELT | A4_HOS_ELT |
|---|---|---|---|---|
| **90%** of days less than | **12.2** | **12.5** | **10.7** | **10.7** |




| | NAA | NAA (ELT) | A4_LOS_ELT | A4_HOS_ELT |
|---|---|---|---|---|
| **10%** of days less than | **1.3** | **1.6** | **1.6** | **1.6** |

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# Sutter Slough upstream of Miner Slough Simulated Water Levels at ELT

BDCP
BAY DELTA CONSERVATION PLAN

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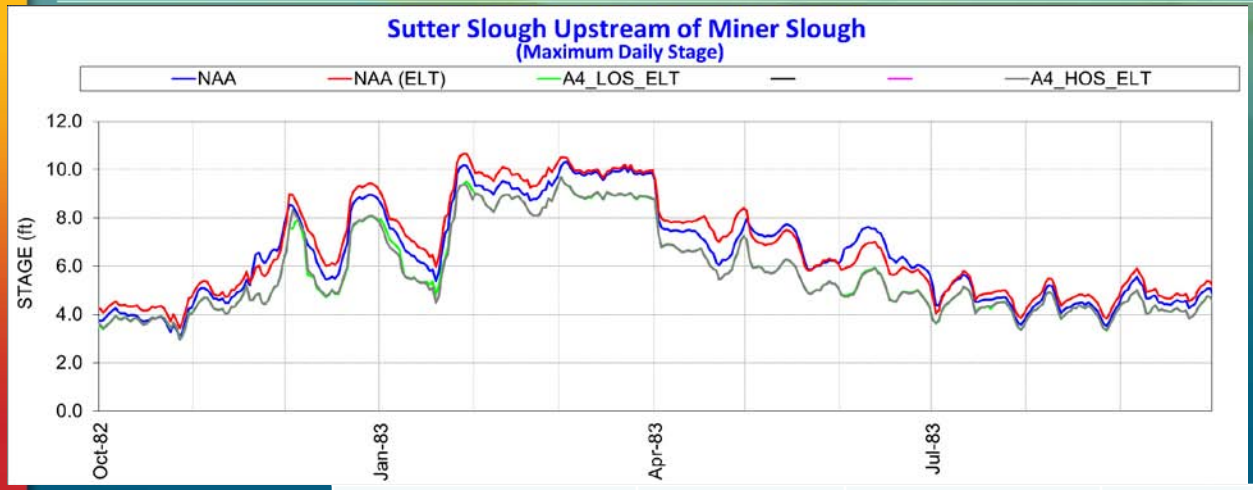
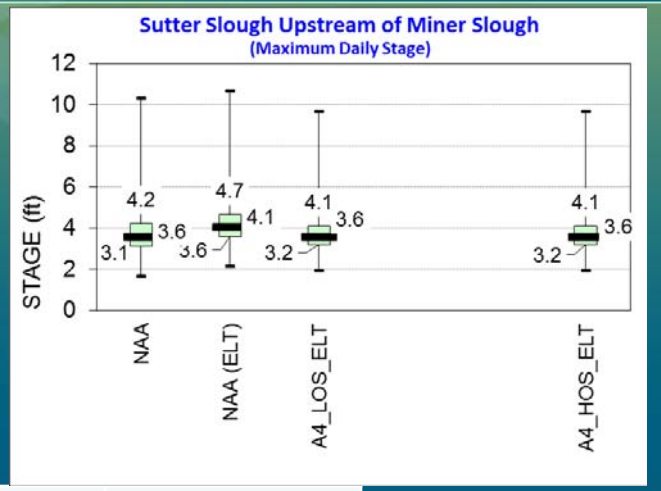
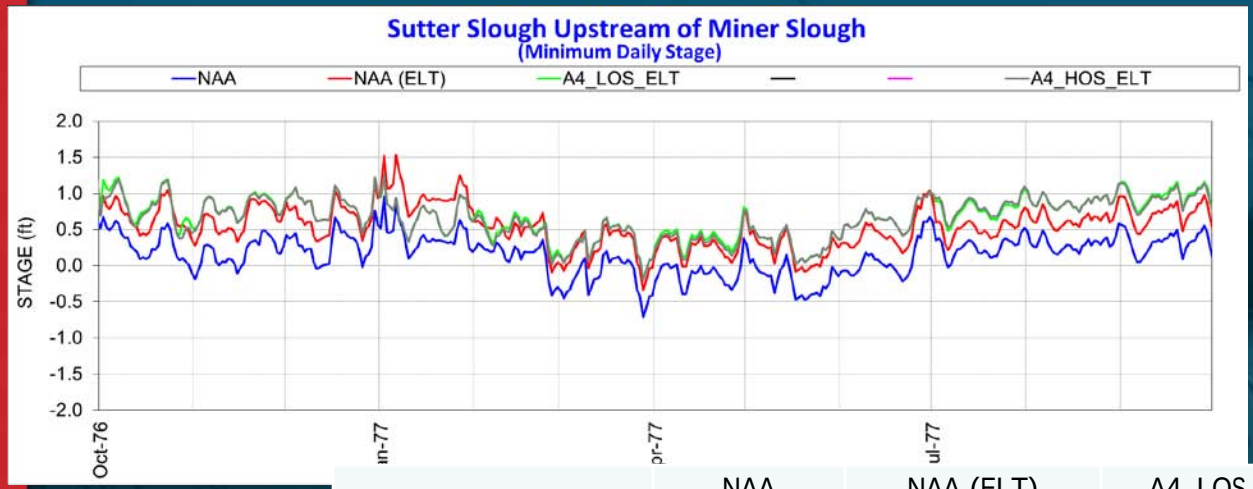
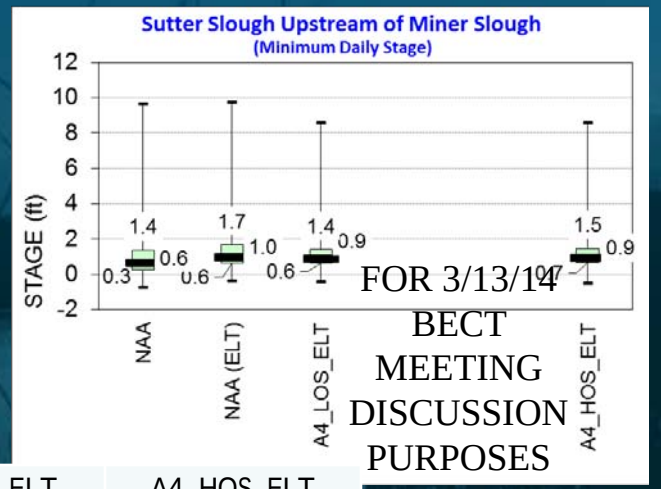



| | NAA | NAA (ELT) | A4_LOS_ELT | A4_HOS_ELT |
|---|---|---|---|---|
| **90%** of days less than | **6.3** | **6.8** | **5.3** | **5.3** |




| | NAA | NAA (ELT) | A4_LOS_ELT | A4_HOS_ELT |
|---|---|---|---|---|
| **10** % of days less than | **0.0** | **0.4** | **0.4** | **0.4** |

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# Steamboat Slough downstream of Sutter Slough Simulated Water Levels at ELT

BDCP
BAY DELTA CONSERVATION PLAN

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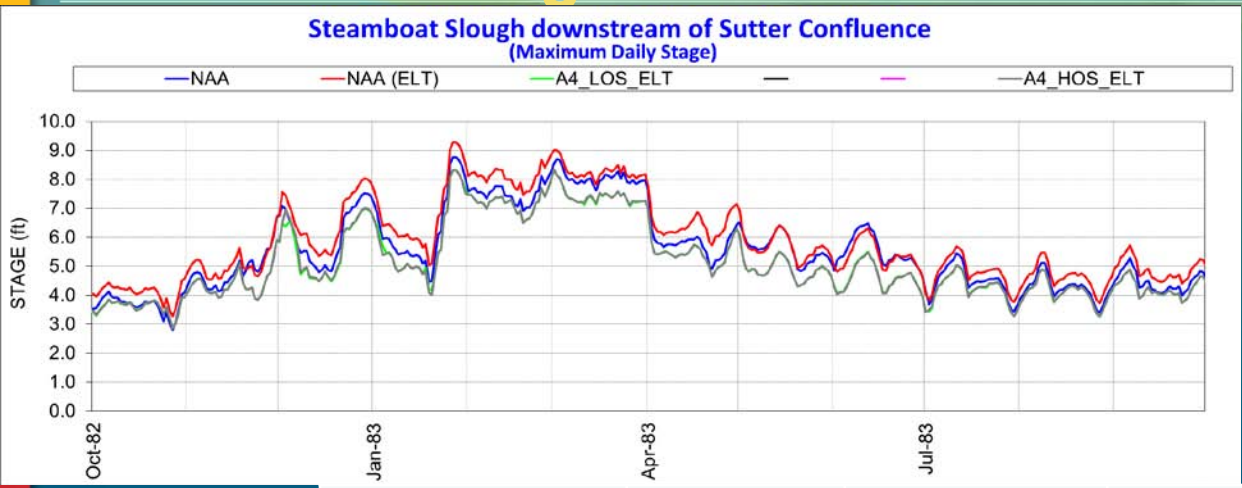
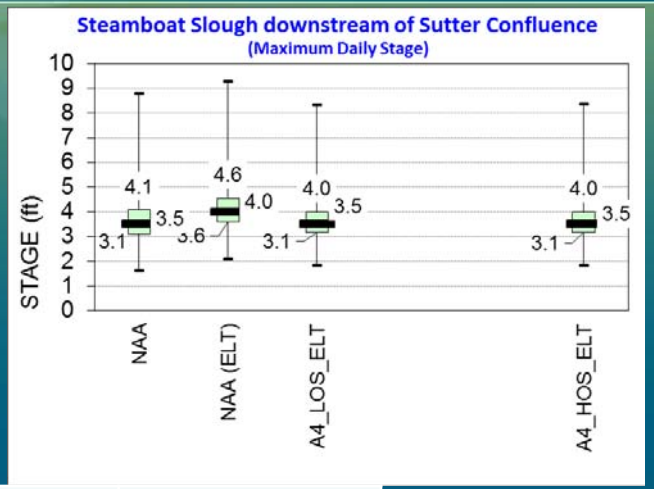
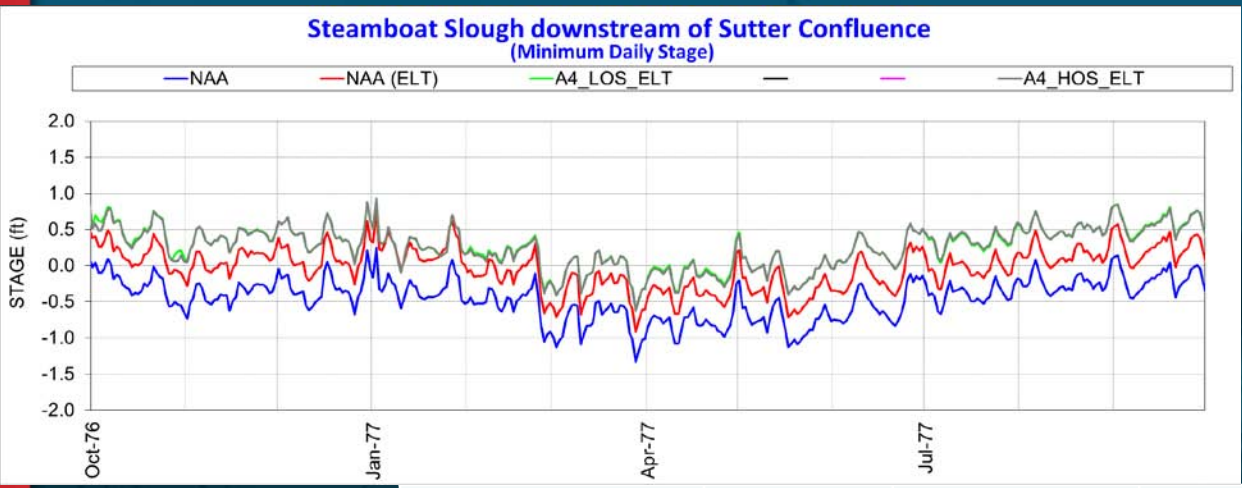
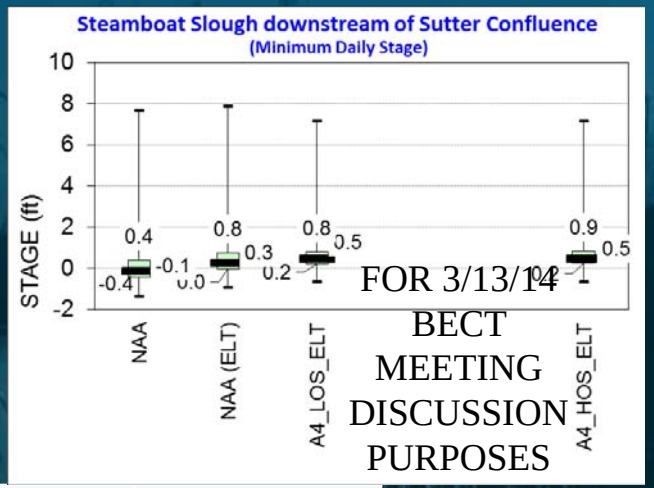



| | NAA | NAA (ELT) | A4_LOS_ELT | A4_HOS_ELT |
|---|---|---|---|---|
| **90** % of days less than | **5.3** | **5.6** | **4.8** | **4.8** |




| | NAA | NAA (ELT) | A4_LOS_ELT | A4_HOS_ELT |
|---|---|---|---|---|
| **10**% of days less than | **-0.6** | **-0.2** | **0.0** | **0.0** |

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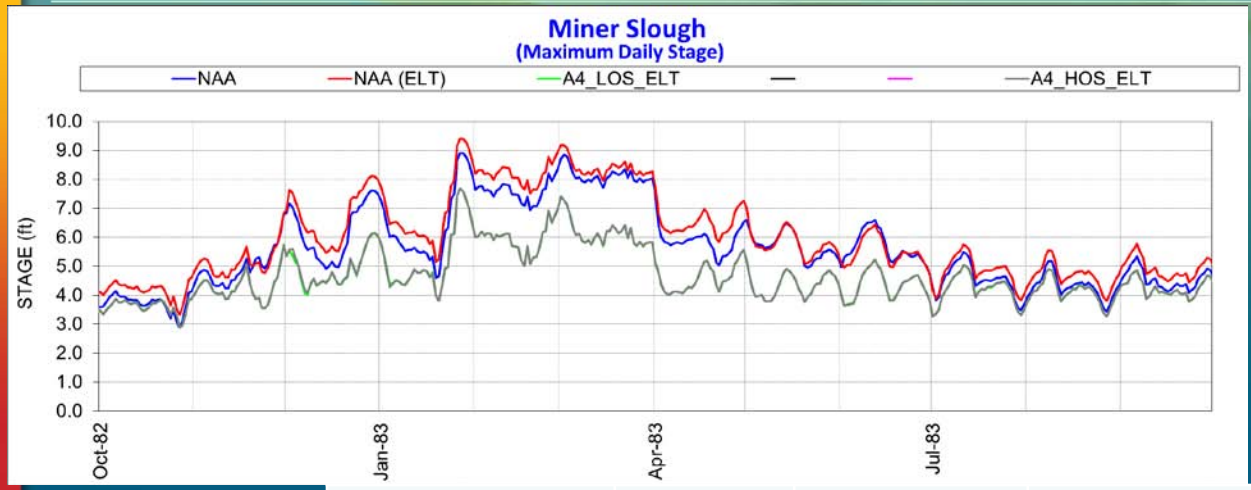
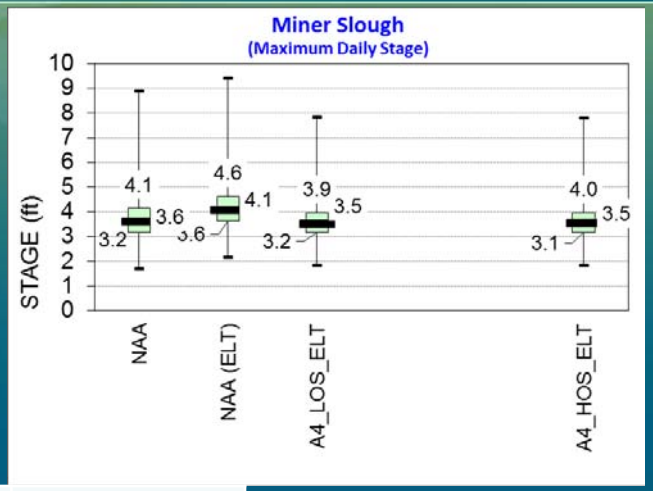
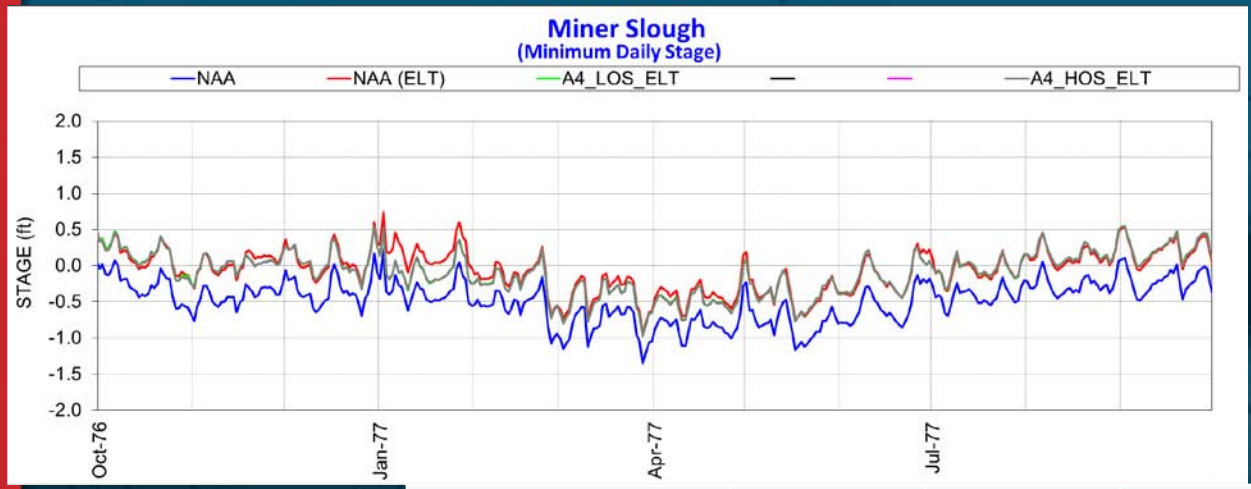
# Miner Slough Simulated Water Levels at ELT

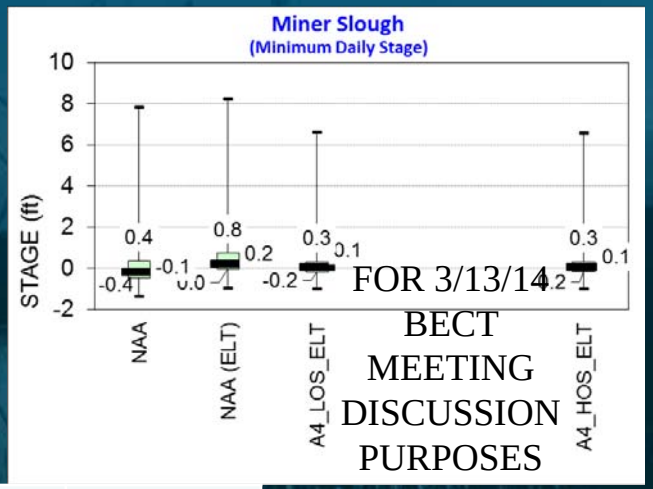
LAND-71




| | NAA | NAA (ELT) | A4_LOS_ELT | A4_HOS_ELT |
|---|---|---|---|---|
| **90**% of days less than | **5.4** | **5.7** | **4.5** | **4.5** |




| | NAA | NAA (ELT) | A4_LOS_ELT | A4_HOS_ELT |
|---|---|---|---|---|
| **10** % of days less than | **2.8** | **3.3** | **2.8** | **2.8** |

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# Cache Slough at Ryer Island Simulated Water Levels at ELT

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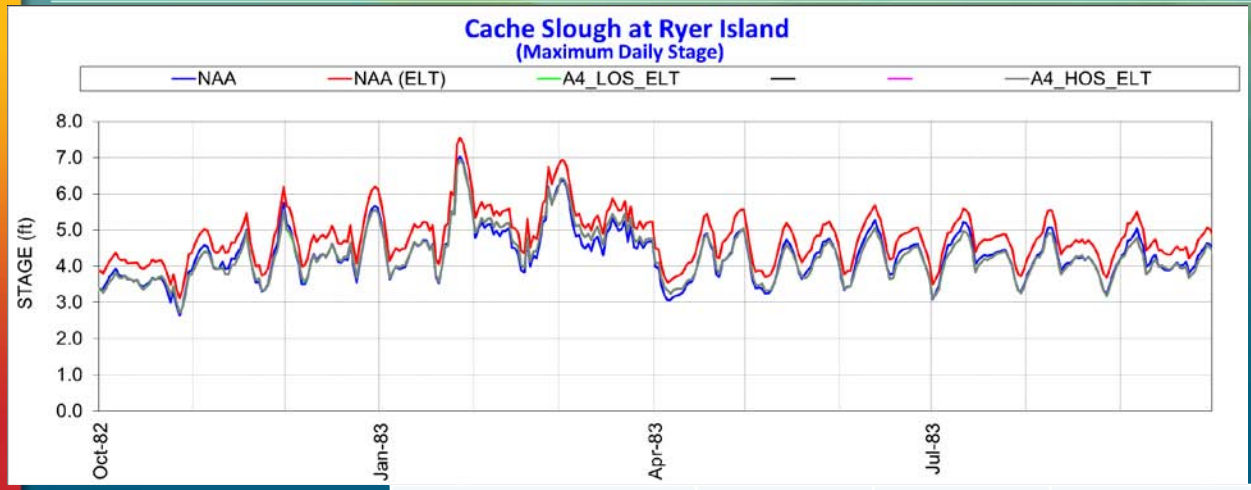
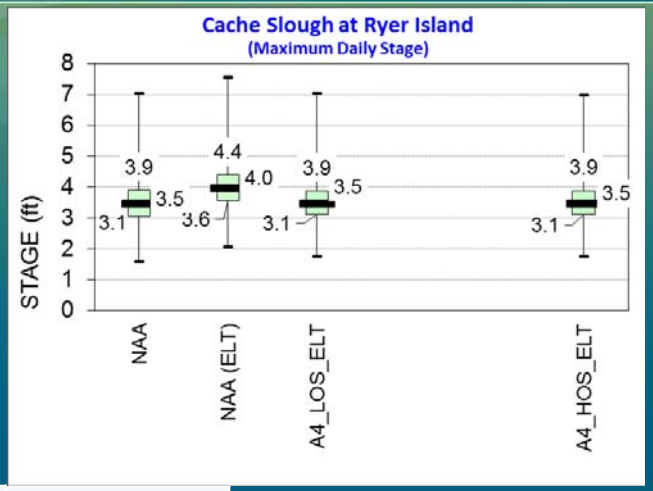
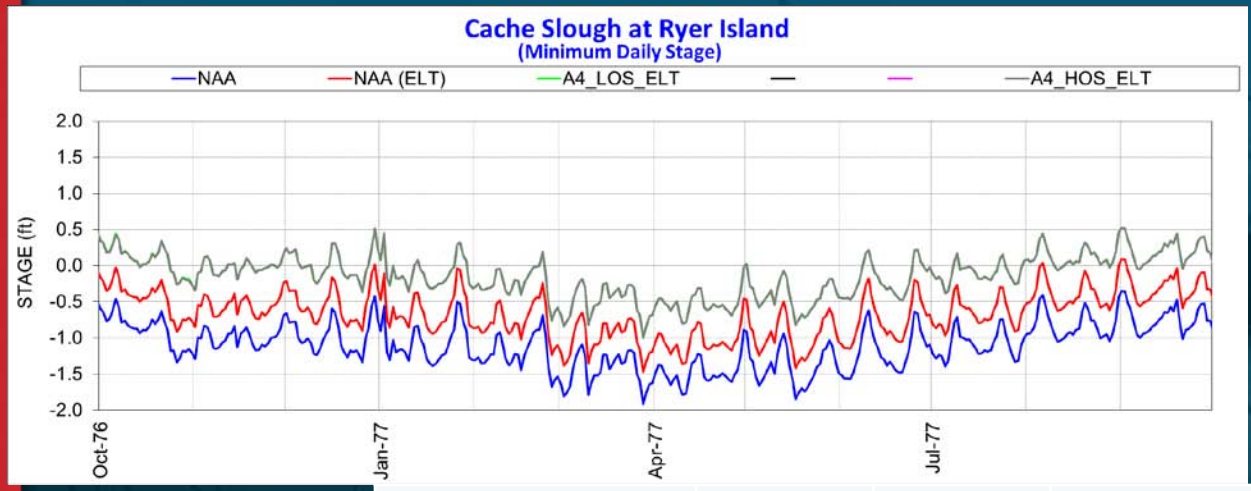
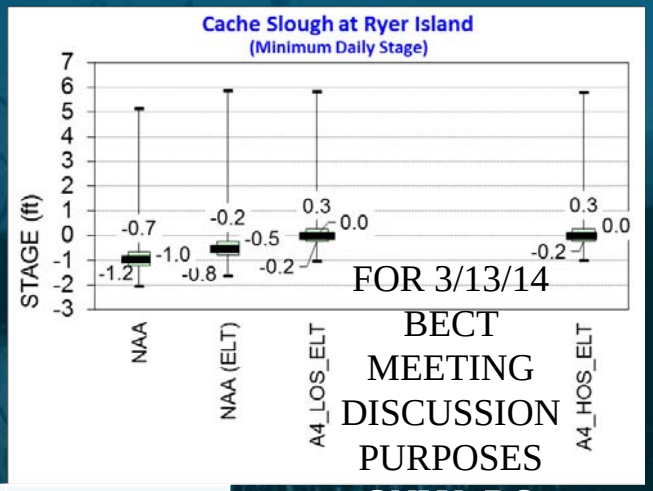



| | NAA | NAA (ELT) | A4_LOS_ELT | A4_HOS_ELT |
|---|---|---|---|---|
| **90**% of days less than | **4.3** | **4.8** | **4.3** | **4.3** |




| | NAA | NAA (ELT) | A4_LOS_ELT | A4_HOS_ELT |
|---|---|---|---|---|
| **10** % of days less than | **-1.4** | **-1.0** | **-0.4** | **-0.4** |

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# Summary of Water Level Changes for Alternative 4 at ELT

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- Water levels in the Delta are expected to increase at ELT because of sea level rise, even under the No Action Alternative.
- Daily minimum water levels expected to remain similar or increase by about 0.5 ft in most of the north Delta, except Miner Slough where decreases by about 0.5 ft.
- Daily maximum water levels expected to decrease by 0.5 ft to 1.8 ft in the north Delta.

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# SUMMARY OF SIMULATED DELTA OUTFLOW FOR ALTERNATIVE 4 AT LLT

(Information from Public Draft BDCP EIR/EIS Appendix 5A Section C)

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# Simulated Delta Outflow at LLT for Alternative 4

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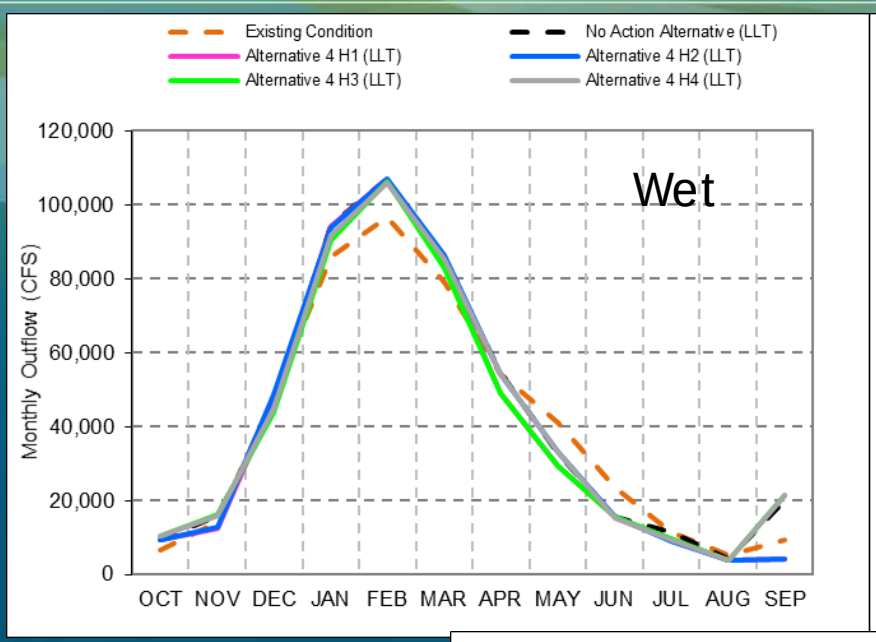


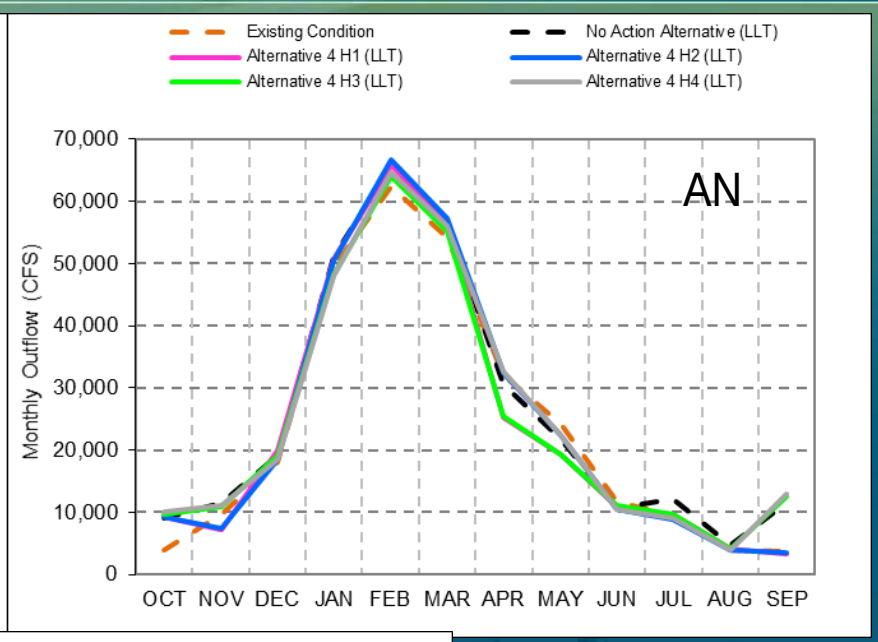


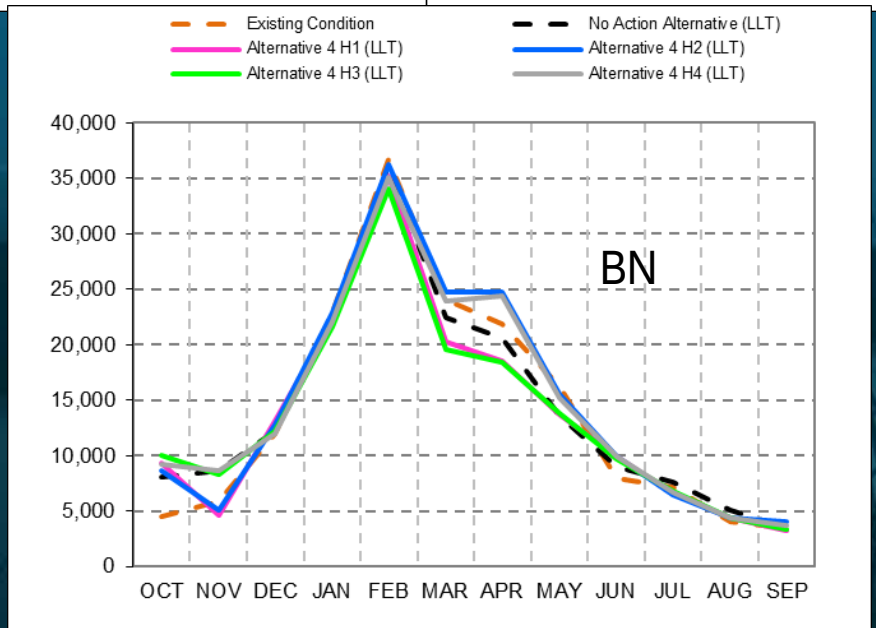


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# Simulated Delta Outflow at LLT for Alternative 4

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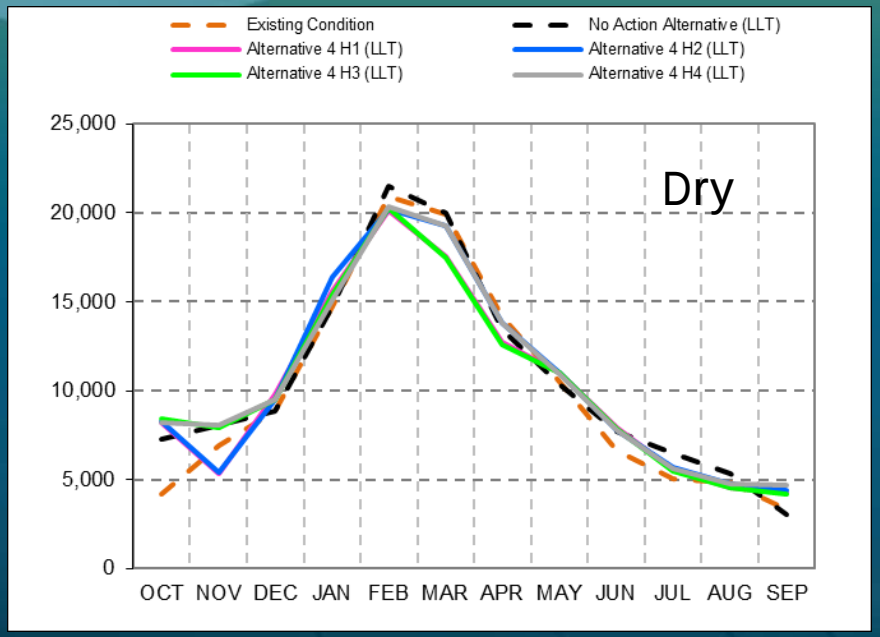


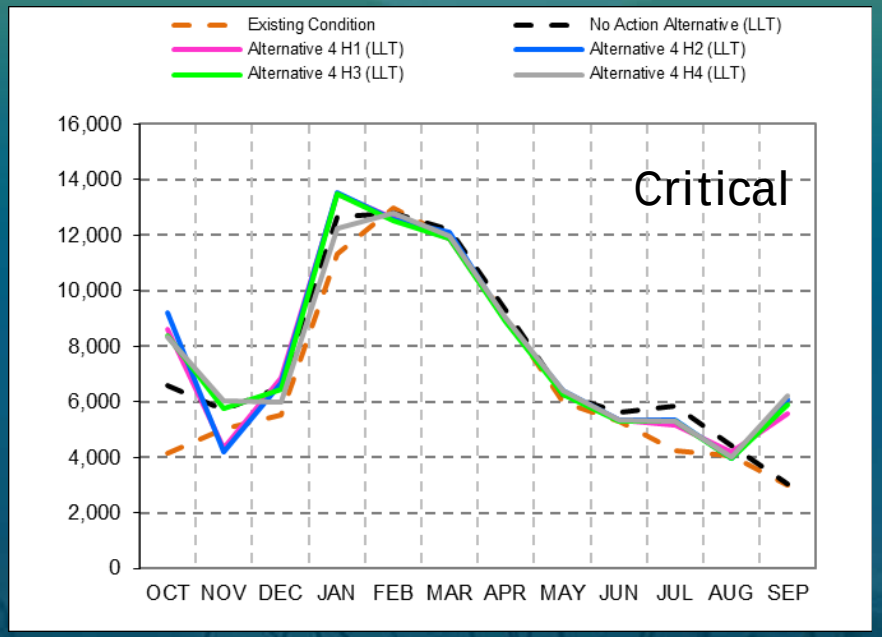


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# SUMMARY OF SIMULATED ANNUAL DELTA EXPORTS FOR ALTERNATIVE 4 AT LLT

(Information from Public Draft BDCP EIR/EIS Appendix 5A Section C

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# Annual Delta Exports at LLT for Alternative 4

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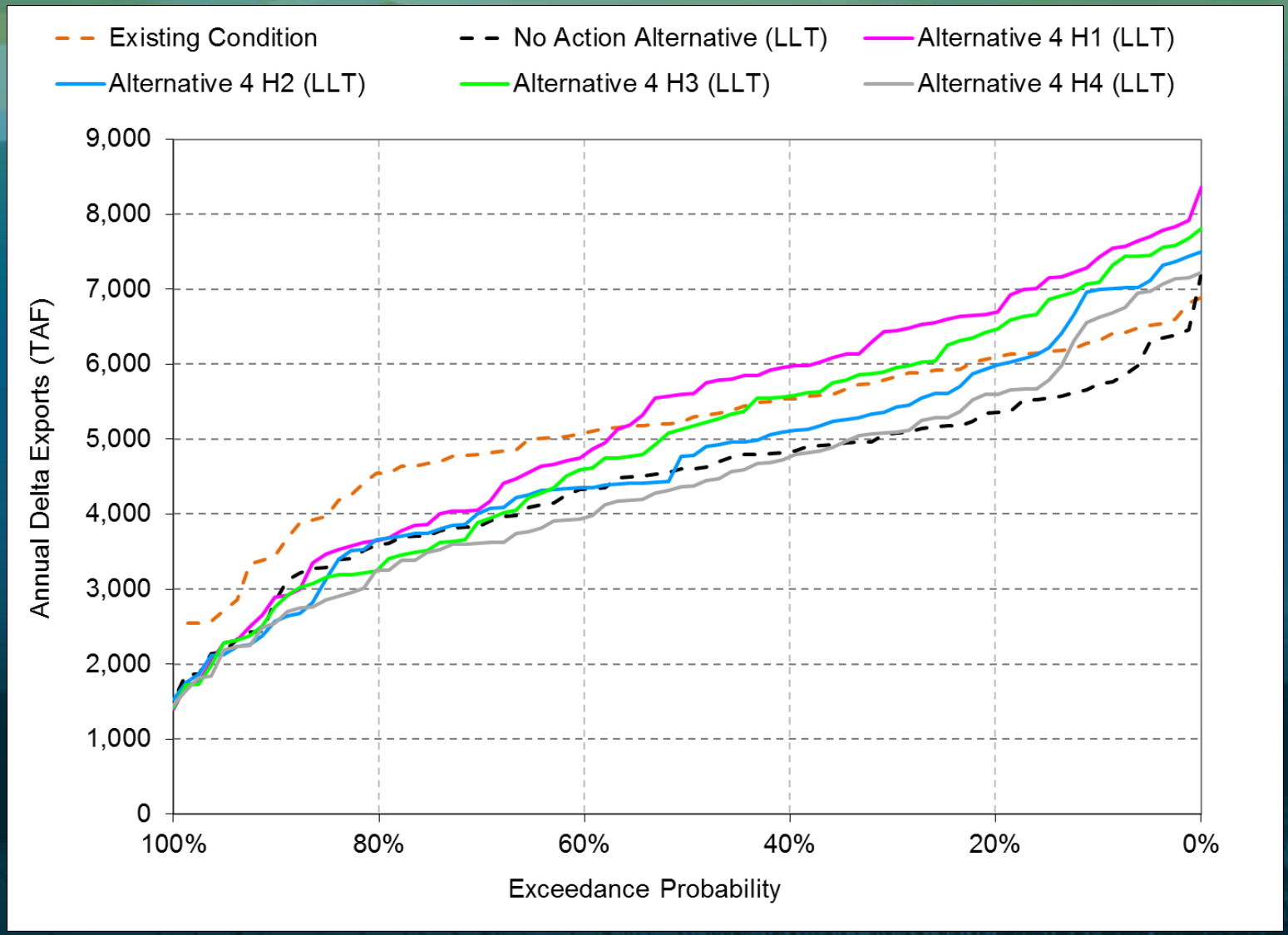


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# Annual Delta Exports at LLT for Alternative 4

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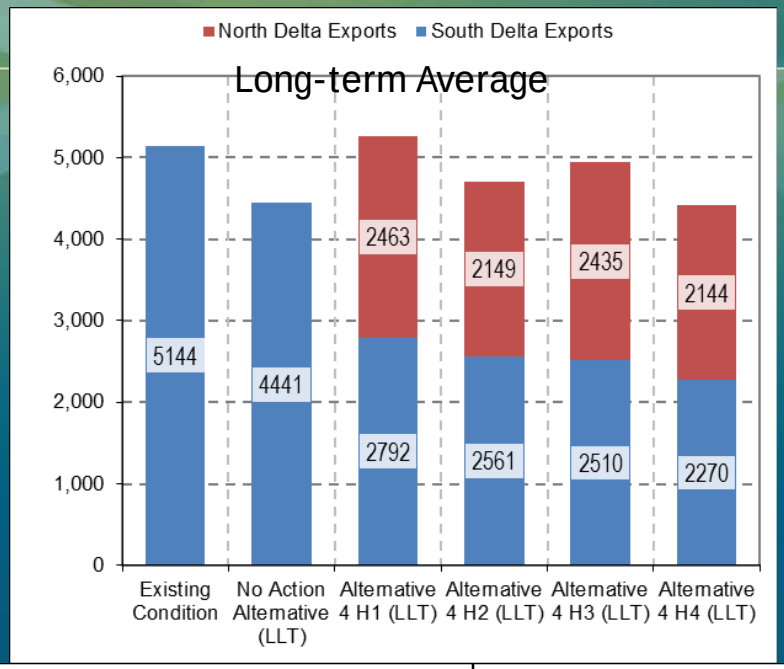


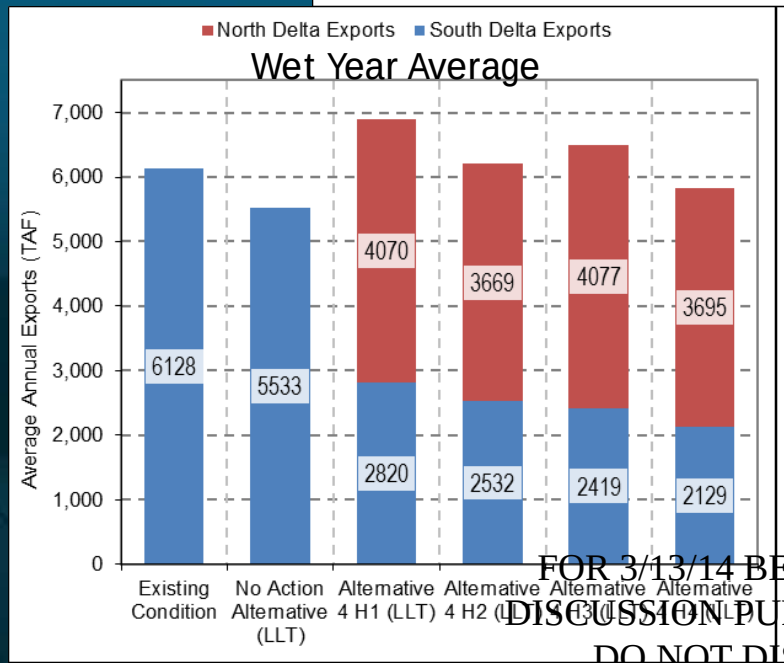


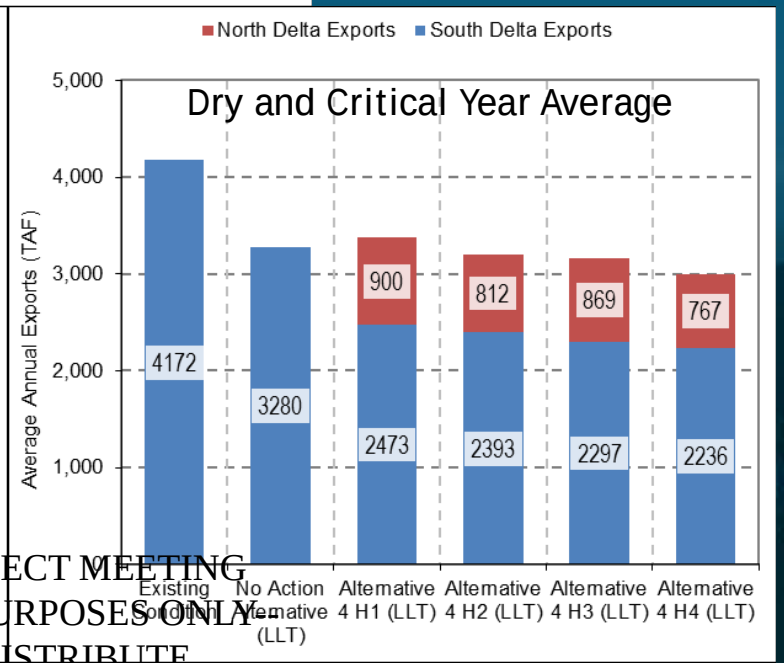

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# "HYPOTHETICAL" RESTORATION ASSUMPTIONS FOR BDCP MODELING

(Information from Public Draft BDCP EIR/EIS Appendix 5A Section D)

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# "Hypothetical" Restoration Assumptions for BDCP Modeling – ELT

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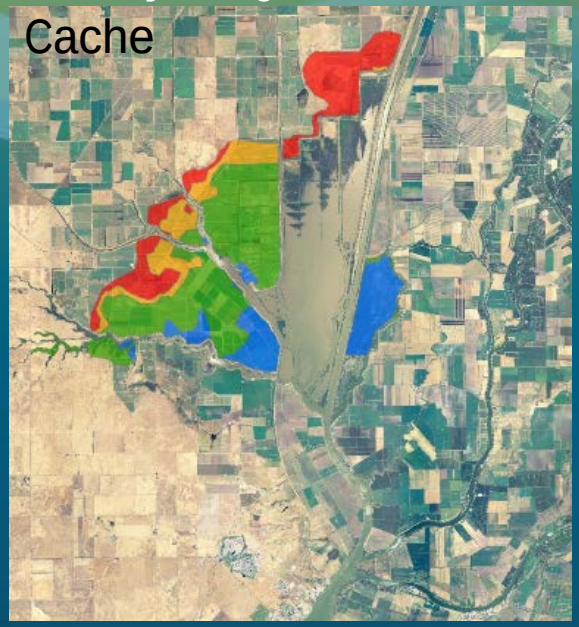
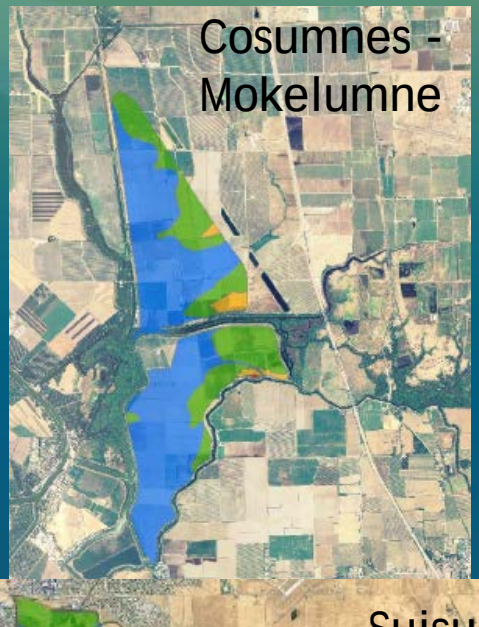
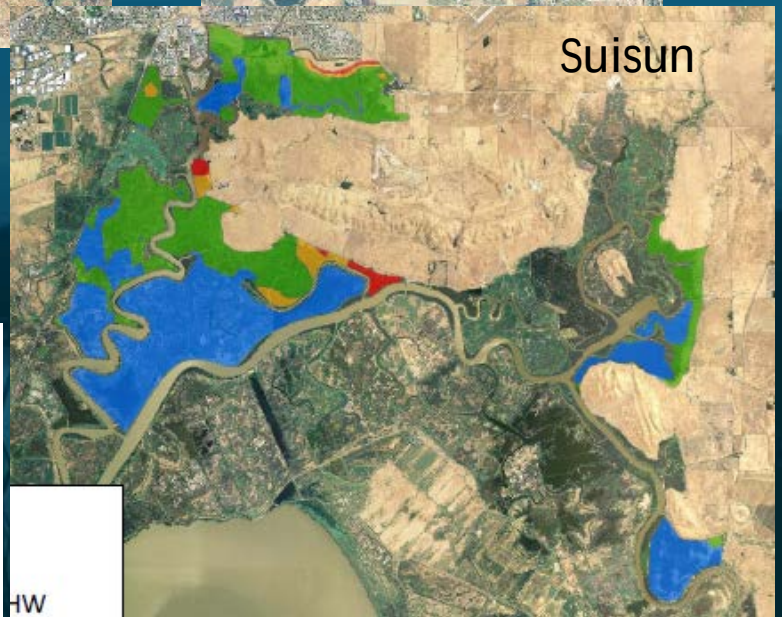
- **Early Long-Term: ~25000 acres of tidally connected open water areas in the Delta**





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# "Hypothetical" Restoration Assumptions for BDCP Modeling – LLT

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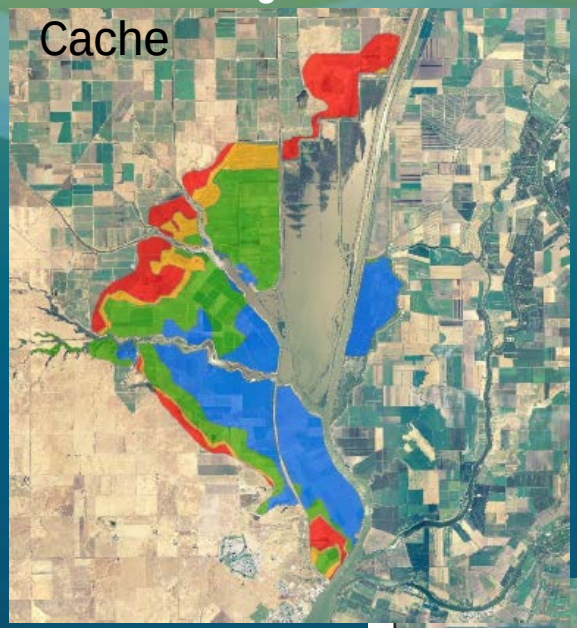
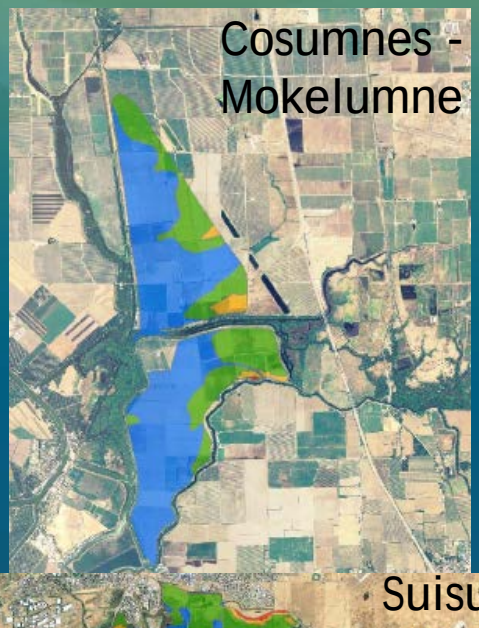
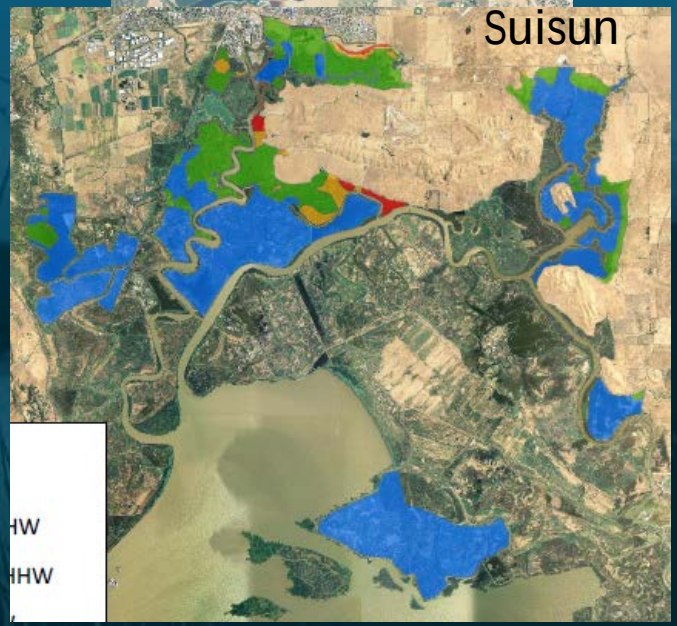
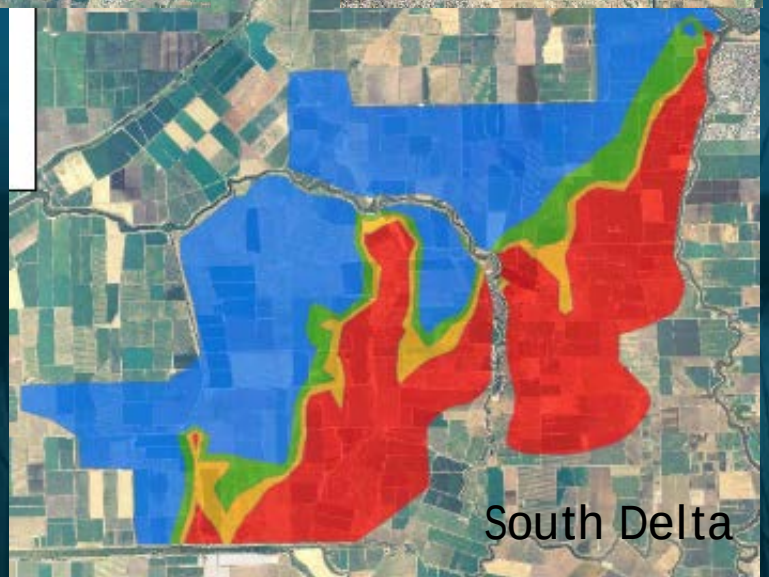
- **Late Long-Term: ~65000 acres of tidally connected open water areas in the Delta**





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# CLIMATE CHANGE ASSUMPTIONS FOR BDCP MODELING

(Information from Public Draft BDCP EIR/EIS Appendix 5A Sections A & D)

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# Climate Change Assumptions for BDCP Modeling

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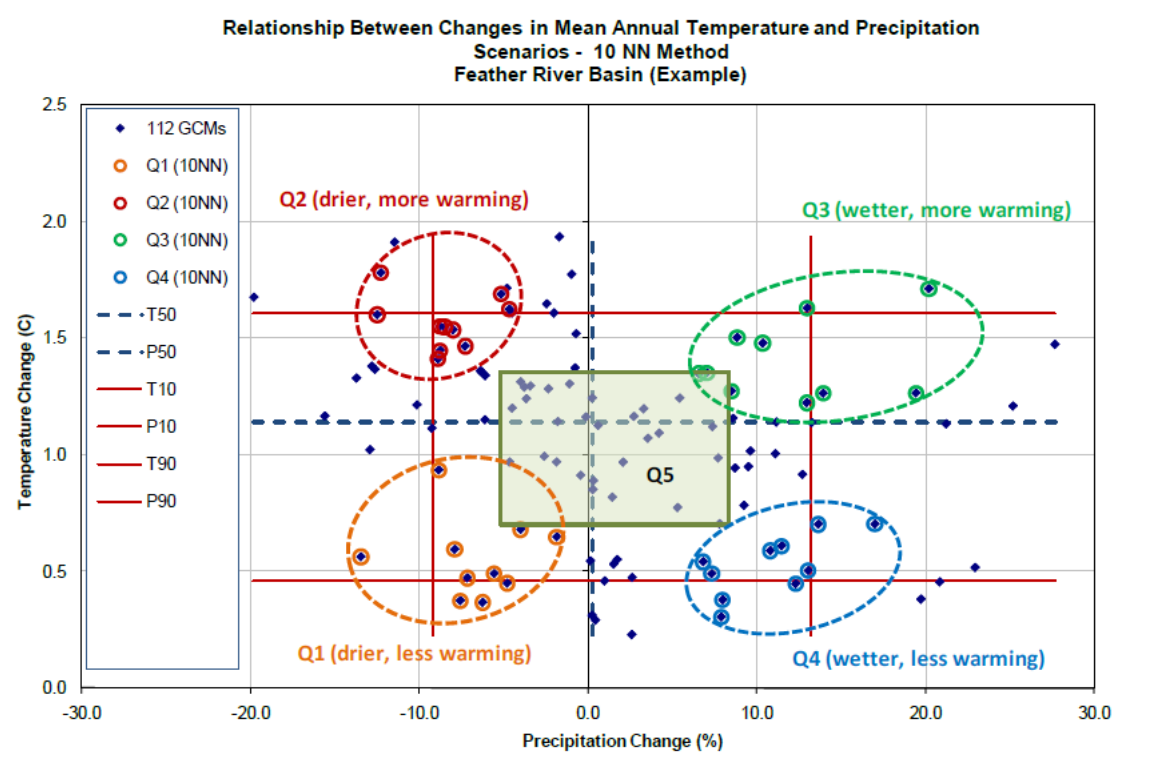
- 112 downscaled future climate projections (IPCC, AR4 – LLNL)
- 5 climate scenarios (Q5 – central tendency; Q1 – Q4 sensitivity bounds)

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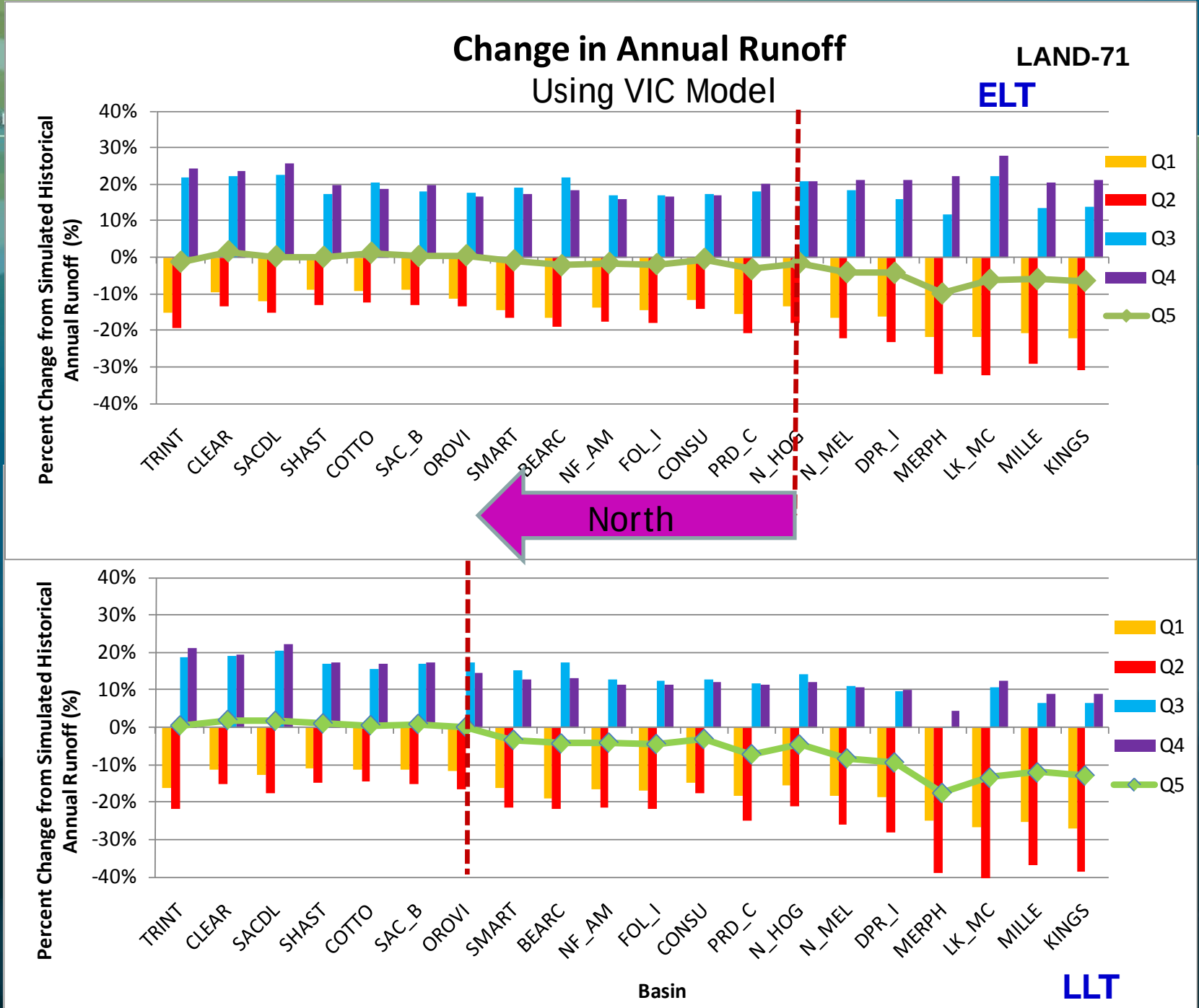

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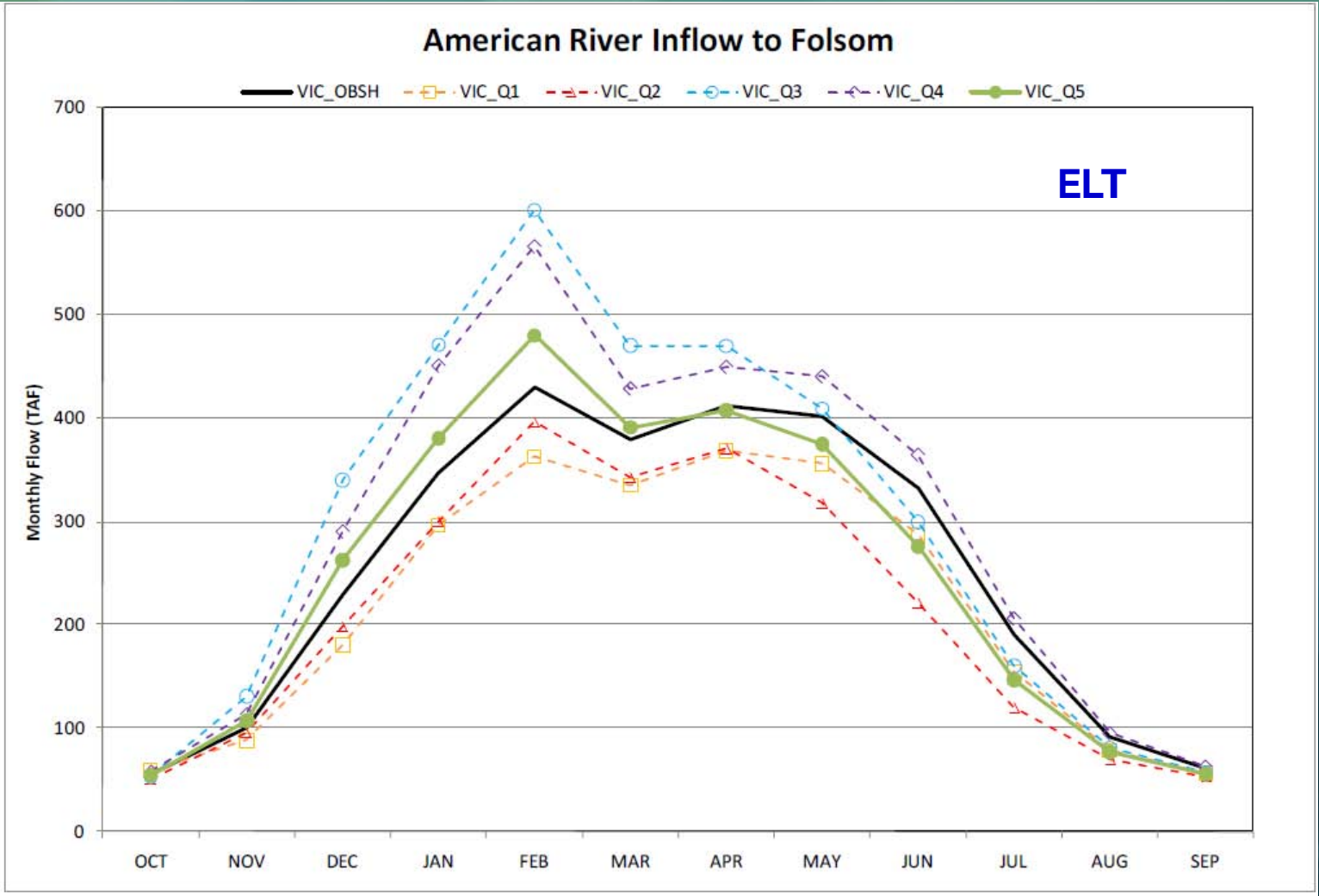
# Climate Change Effect
# Monthly Folsom Inflow

LAND-71

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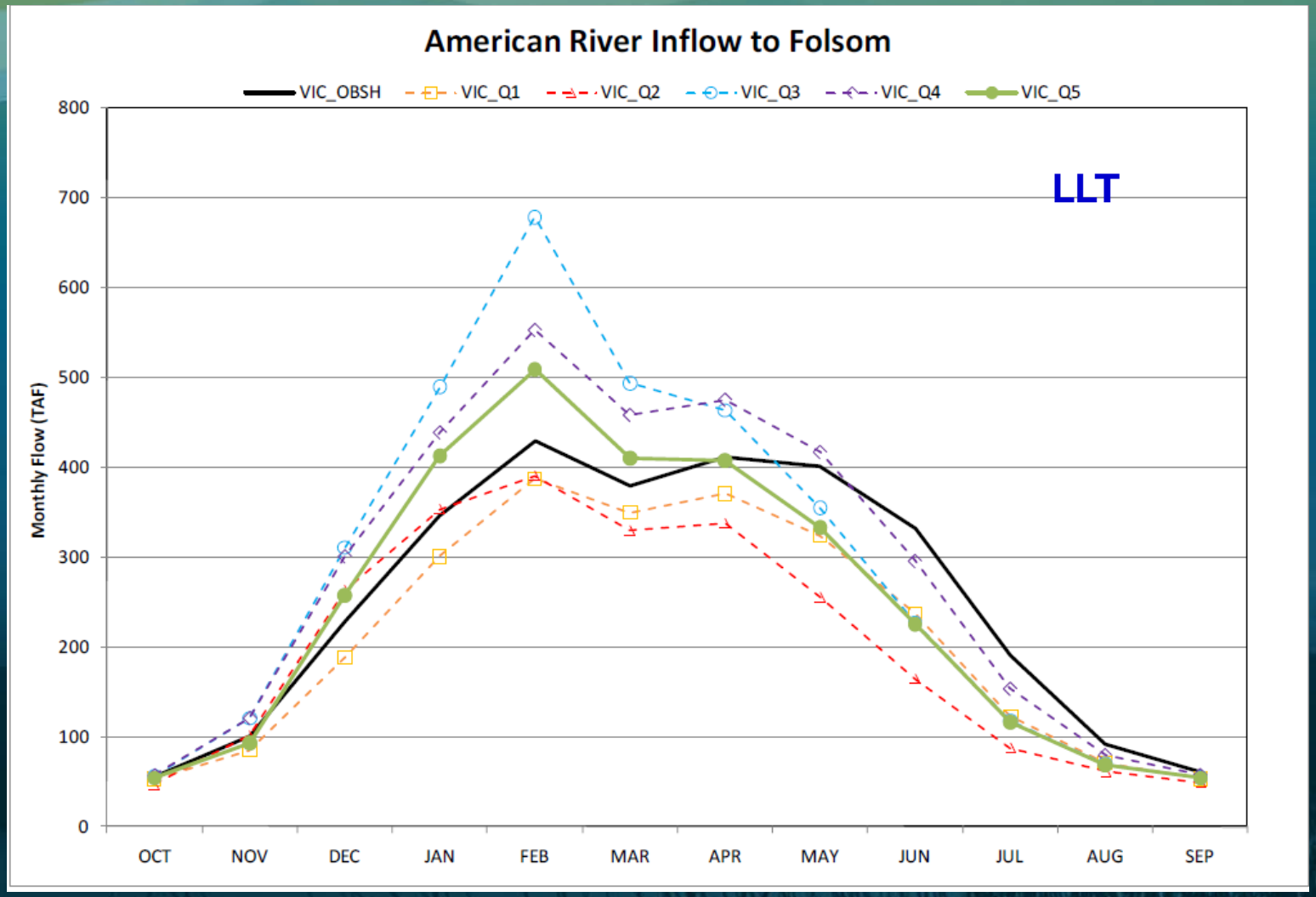
# Climate Change Effect
# Monthly Folsom Inflow

LAND-71

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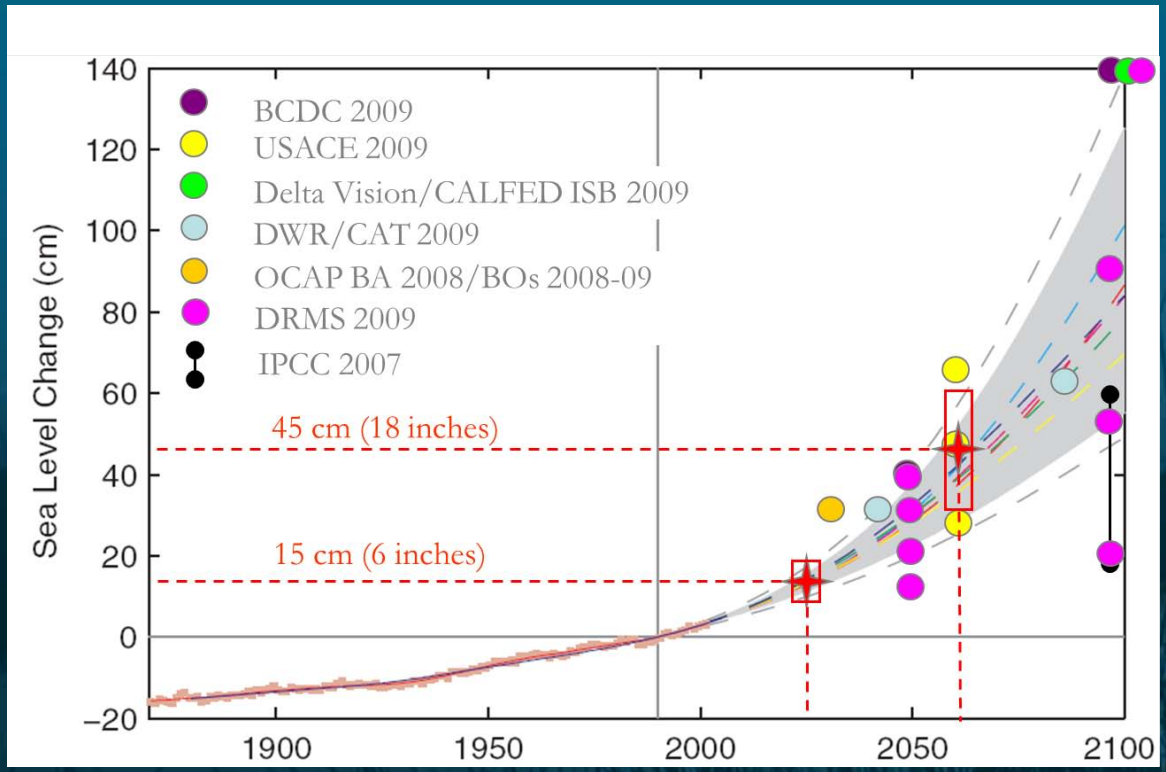
# Sea Level Rise Assumptions

- Sea level rise projections based on Rahmstorf (2007)
- 15 cm rise at ELT, and 45 cm rise at LLT at Golden Gate

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# EXHIBIT F

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# ELT vs. LLT Salinity

- Chapter 8 (Water Quality) assessed the LLT
  - LLT = 2060 climate, 45 cm SLR, 65k acres
  - ELT = 2025 climate, 15 cm SLR, 25k acres
- Requested to present ELT salinity data
- For Alternative 4, Scenario H3, Modeling indicates that in general
  - ELT salinity (EC) is equivalent to or lower than LLT salinity
  - Fewer exceedances in ELT than LLT

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# Sac River at Emmaton EC

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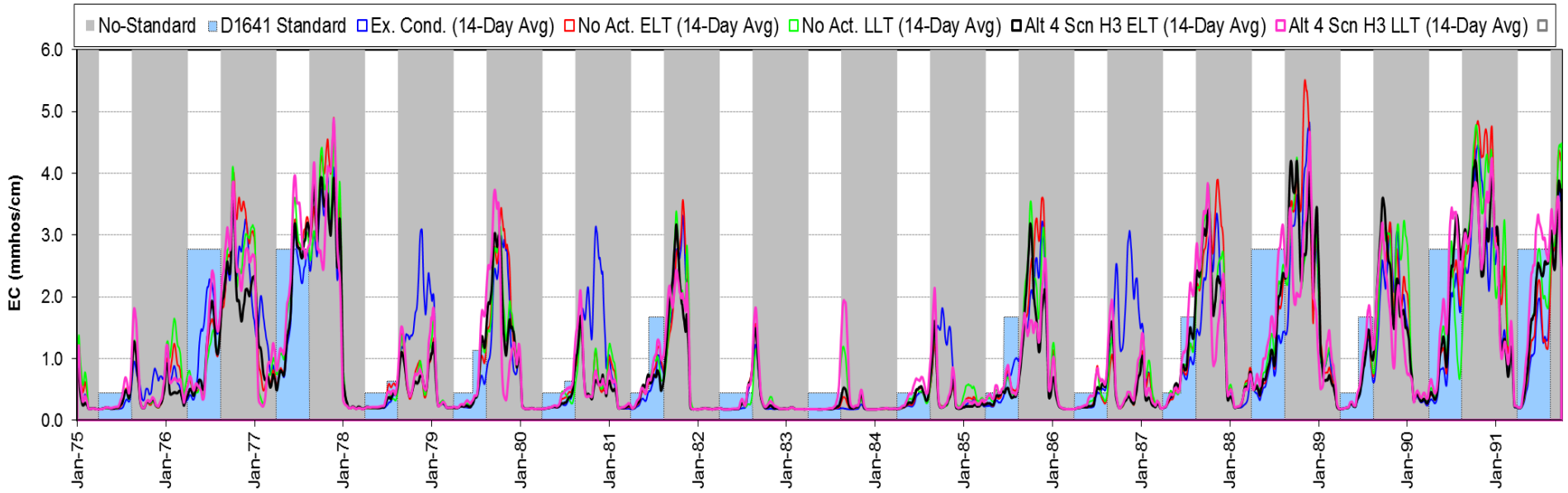


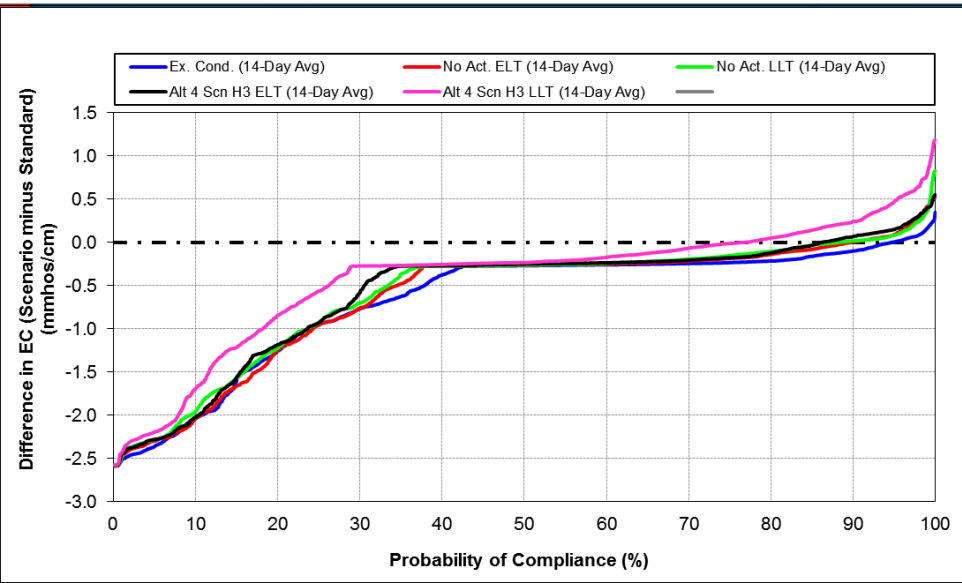


| Scenario | # of Days Standard Exceeded | % of Days Exceeded |
|---|---|---|
| Ex. Cond. | 120 | 5.51 |
| No Act. ELT | 221 | 10.16 |
| No Act. LLT | 258 | 11.86 |
| Alt 4 Scn H3 ELT | 306 | 14.06 |
| Alt 4 Scn H3 LLT | 507 | 23.30 |

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# San Joaquin River at Jersey Point EC

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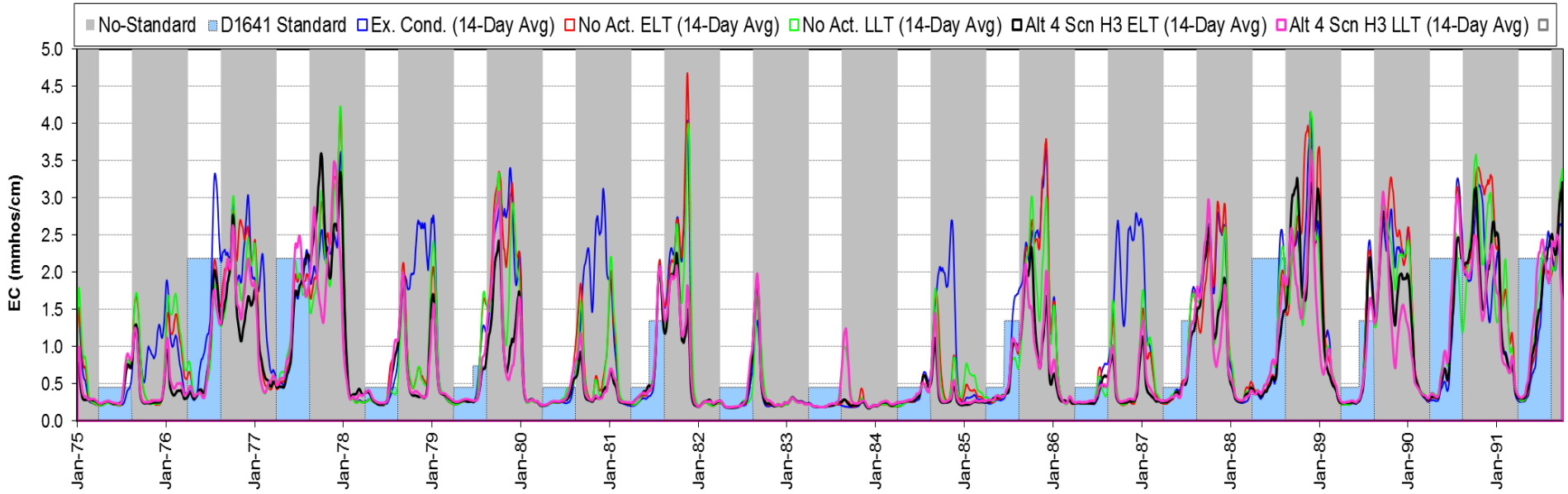


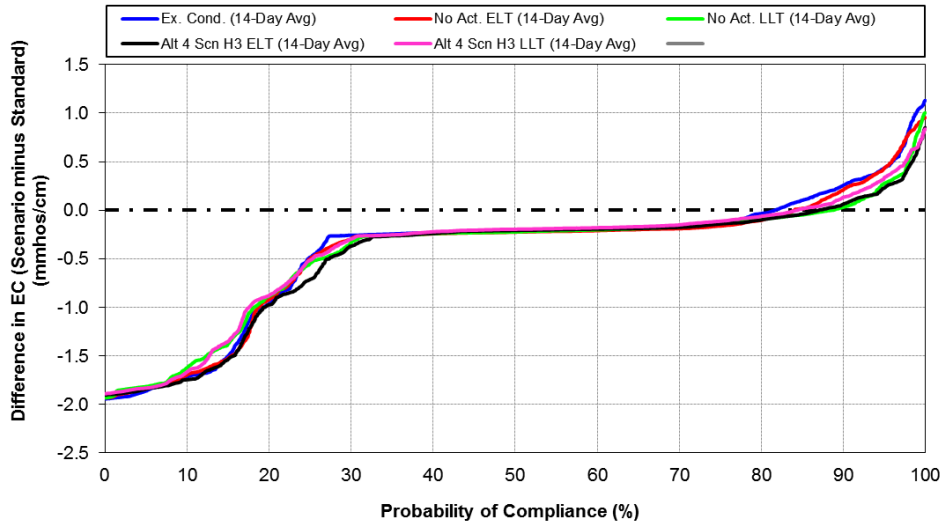


| Scenario | # of Days Standard Exceeded | % of Days Exceeded |
|---|---|---|
| Ex. Cond. | 415 | 19.07 |
| No Act. ELT | 336 | 15.44 |
| No Act. LLT | 230 | 10.57 |
| Alt 4 Scn H3 ELT | 268 | 12.32 |
| Alt 4 Scn H3 LLT | 327 | 15.03 |

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# Threemile Slough EC

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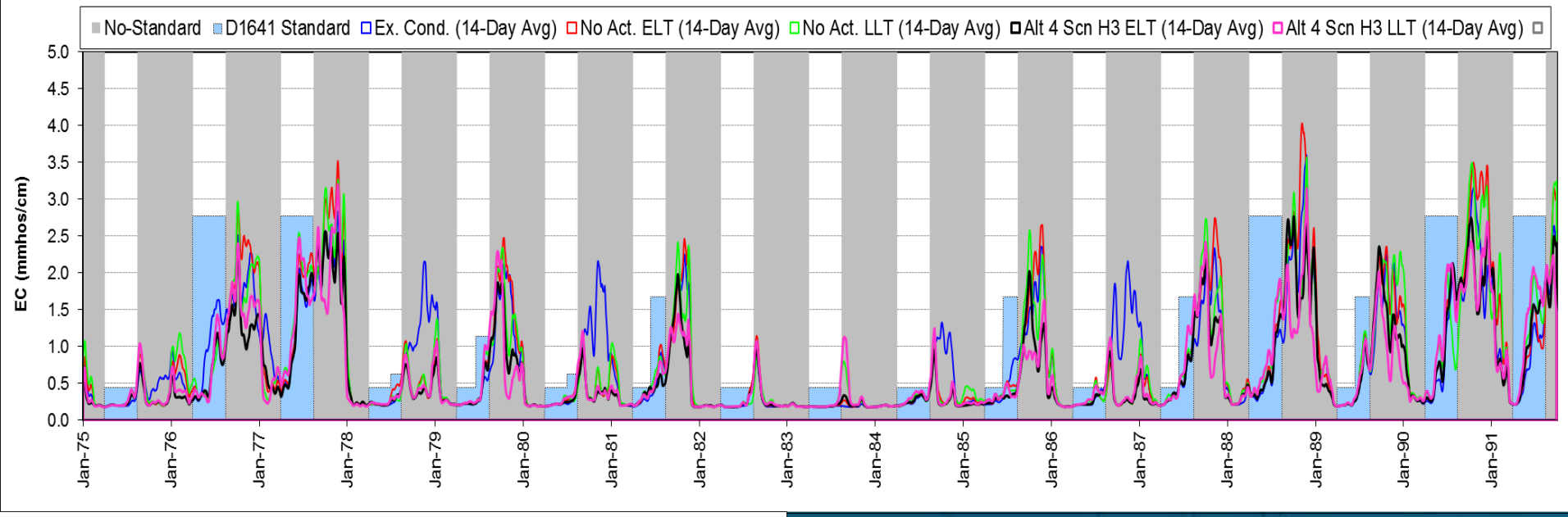


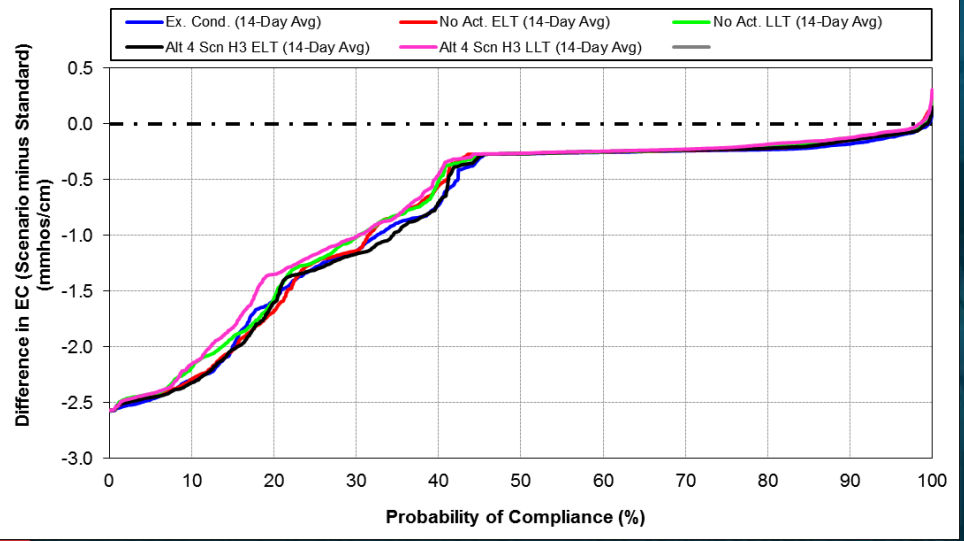


| Scenario | # of Days Standard Exceeded | % of Days Exceeded |
|---|---|---|
| Ex. Cond. | 11 | 0.51 |
| No Act. ELT | 29 | 1.33 |
| No Act. LLT | 26 | 1.19 |
| Alt 4 Scn H3 ELT | 11 | 0.51 |
| Alt 4 Scn H3 LLT | 33 | 1.52 |

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# Contra Costa PP#1 Chloride

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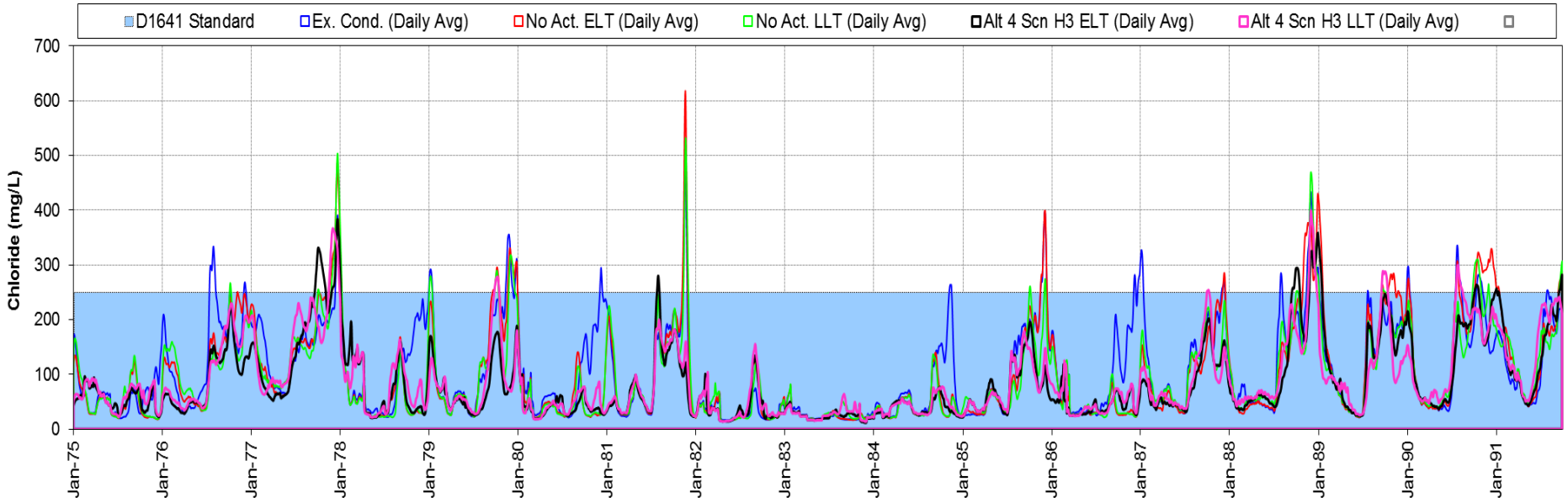


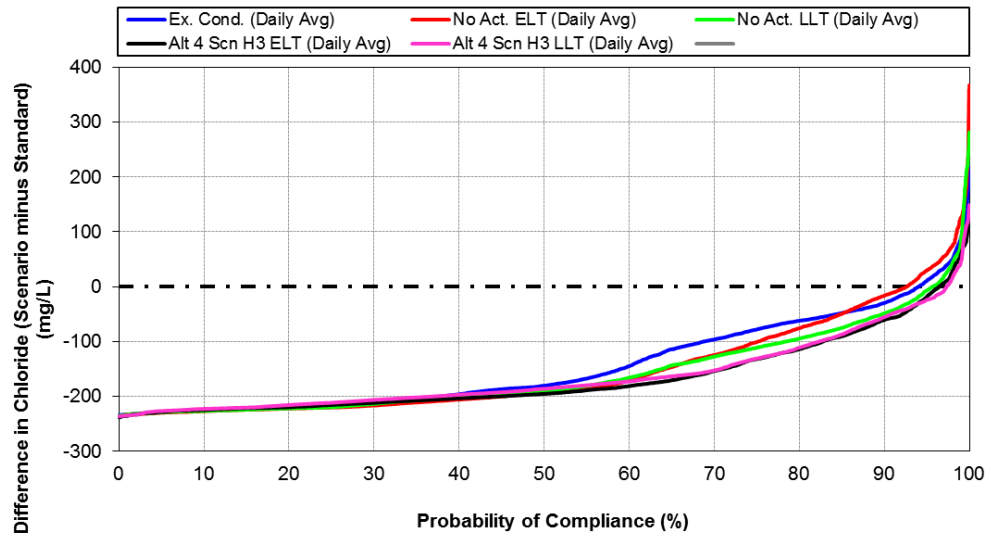


| Scenario | # of Days Exceeded | % of Days Exceeded |
|---|---|---|
| Ex. Cond. | 369 | 6.32 |
| No Act. ELT | 452 | 7.74 |
| No Act. LLT | 268 | 4.59 |
| Alt 4 Scn H3 ELT | 220 | 3.77 |
| Alt 4 Scn H3 LLT | 167 | 2.86 |

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# Sacramento River at Freeport

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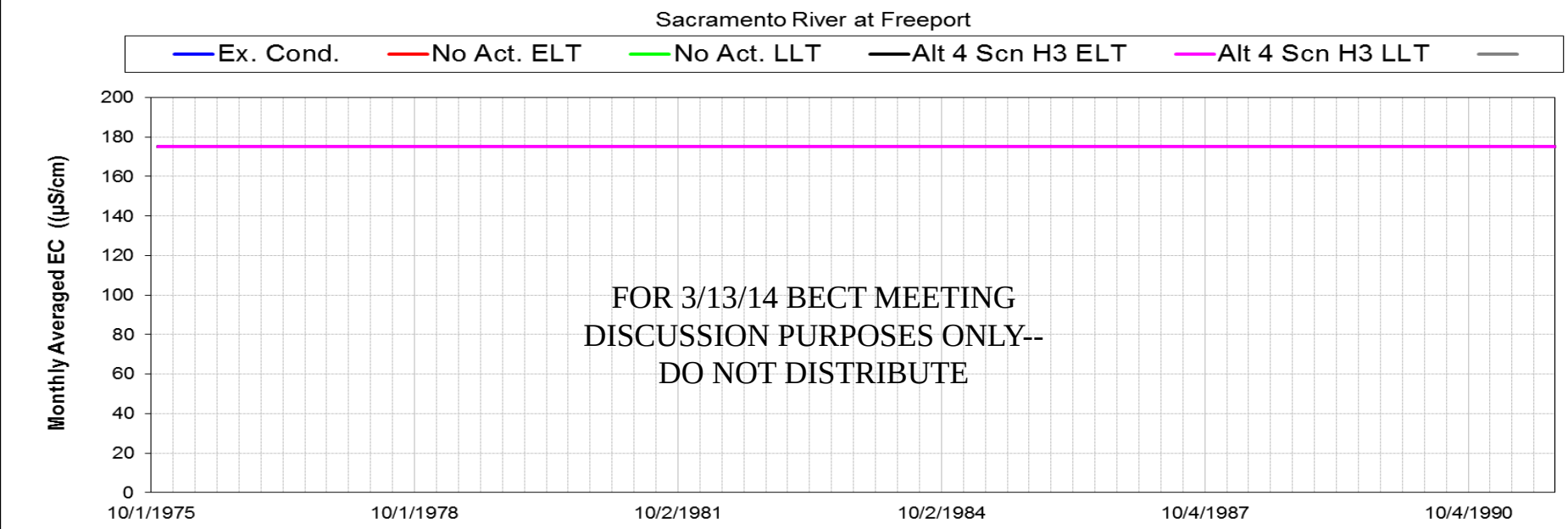
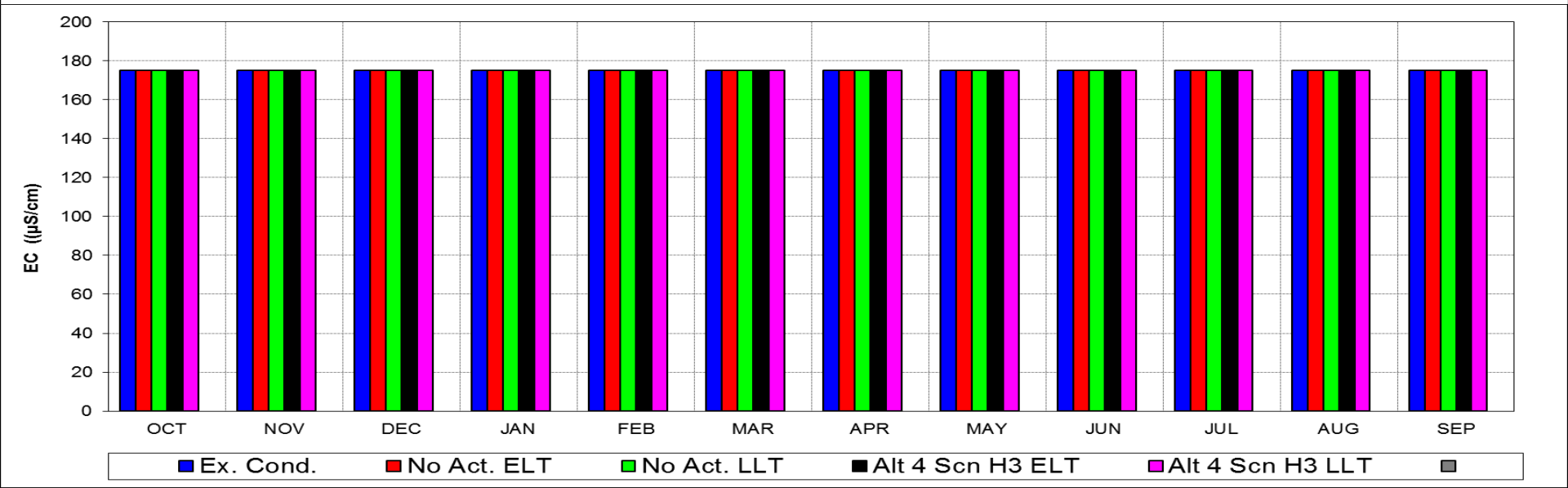
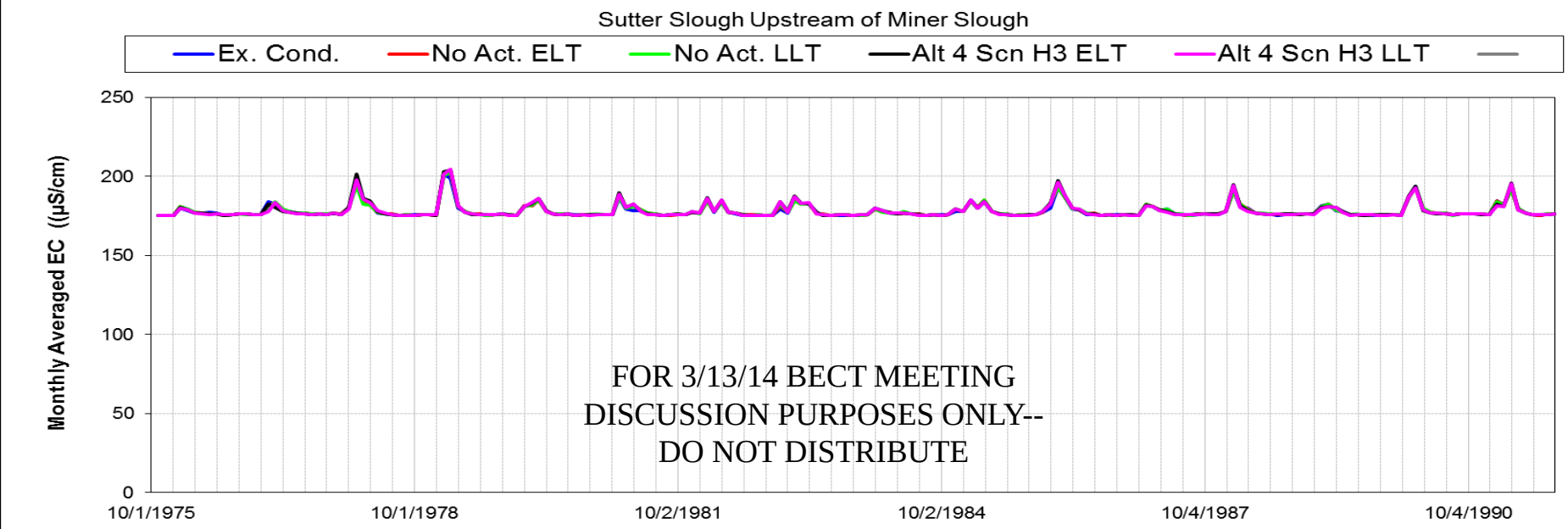
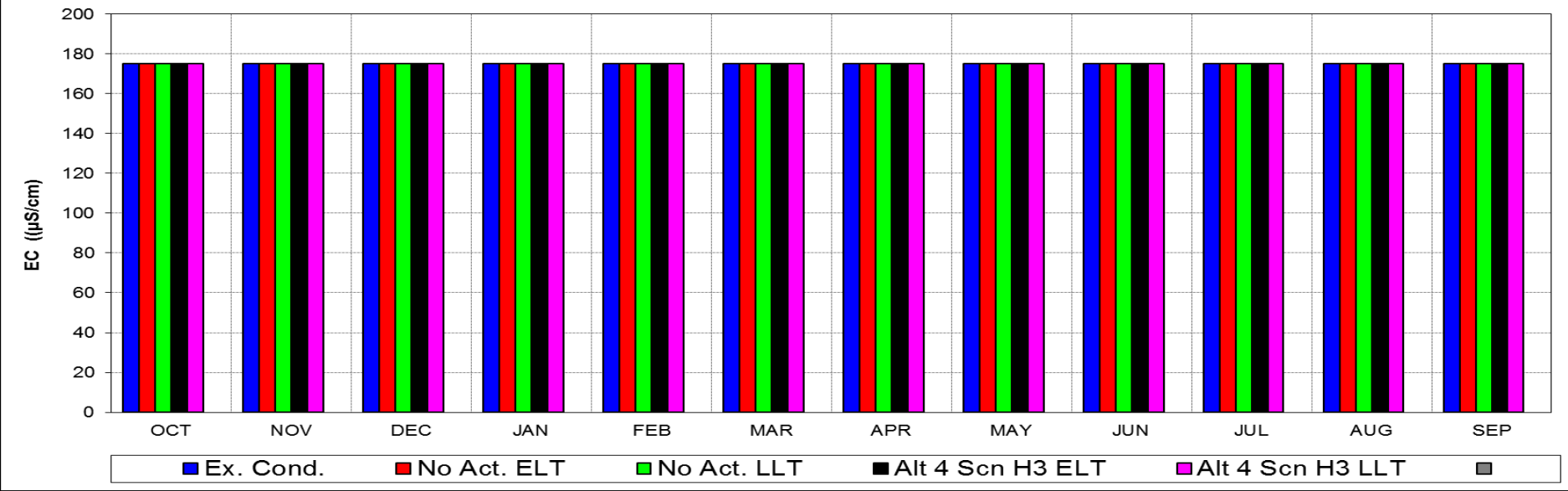


# Sutter Slough U.S. of Miner Slough





# Steamboat Slough D.S. of Sutter Confl.

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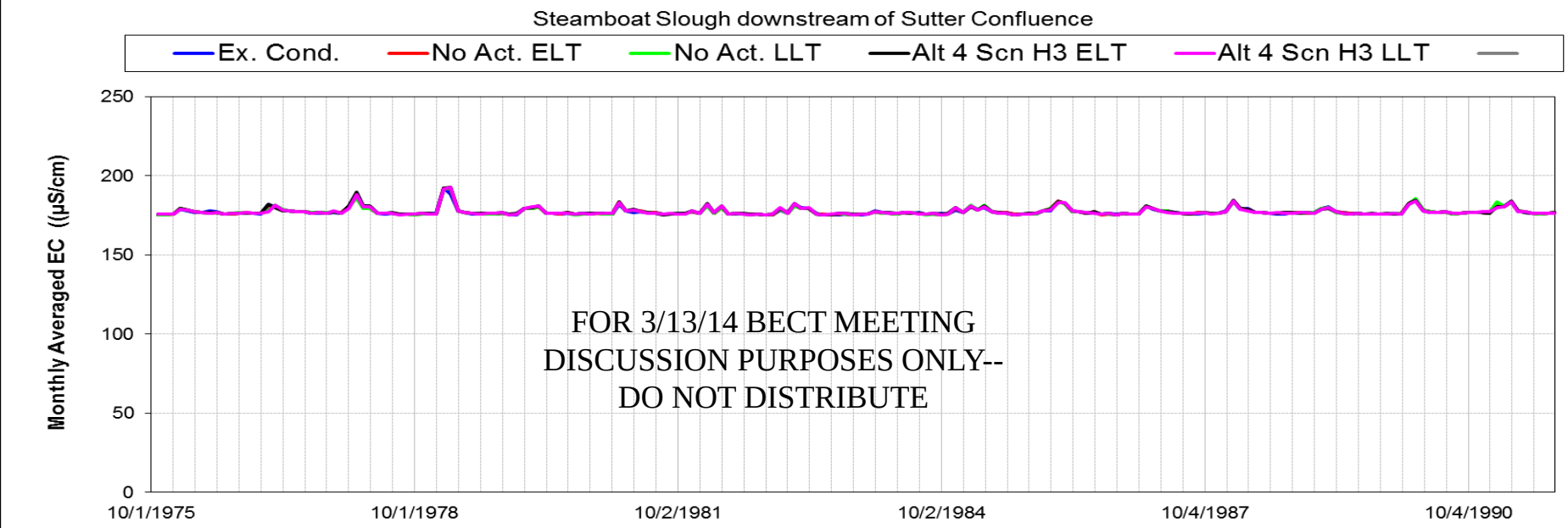


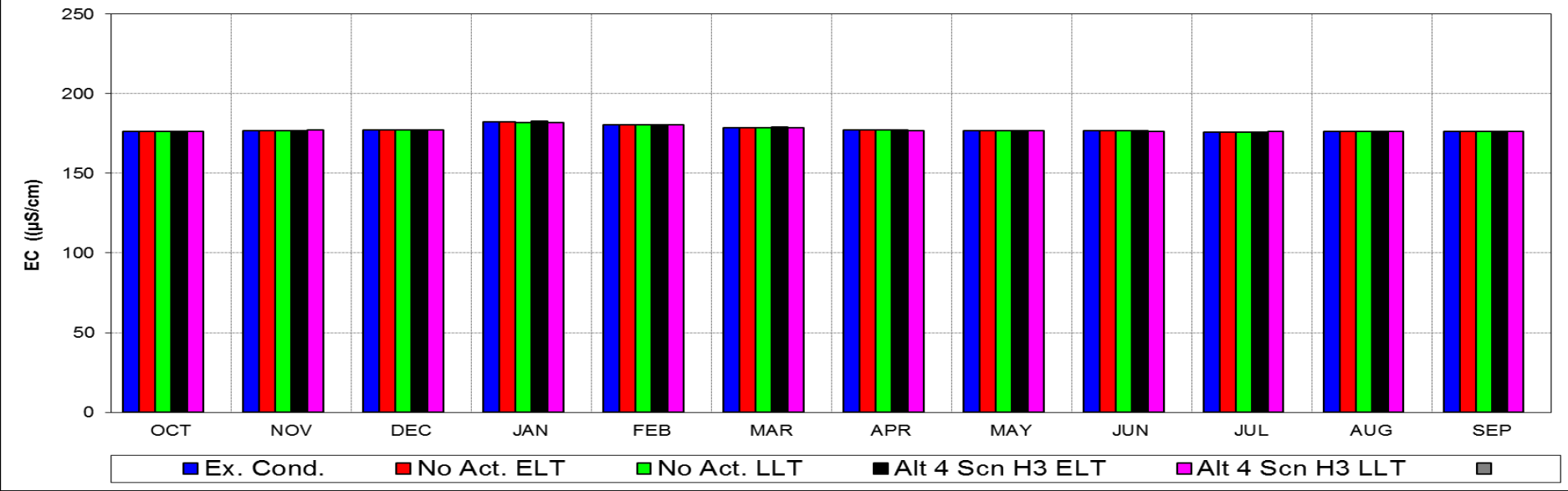

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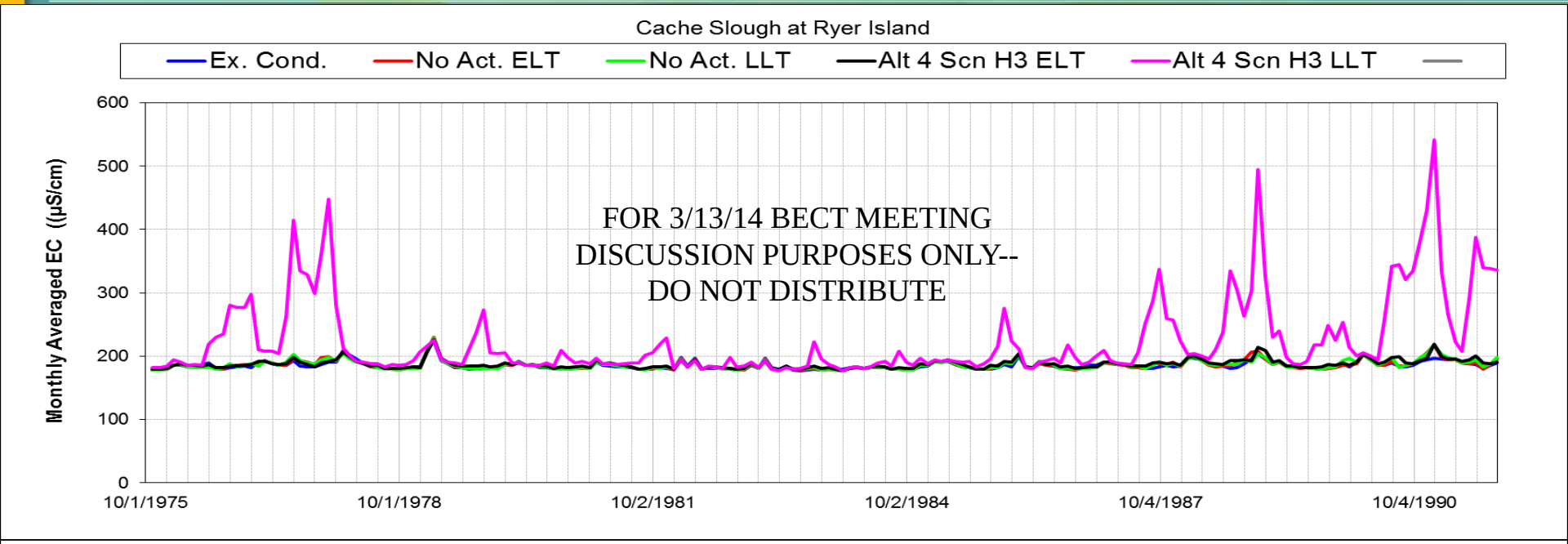
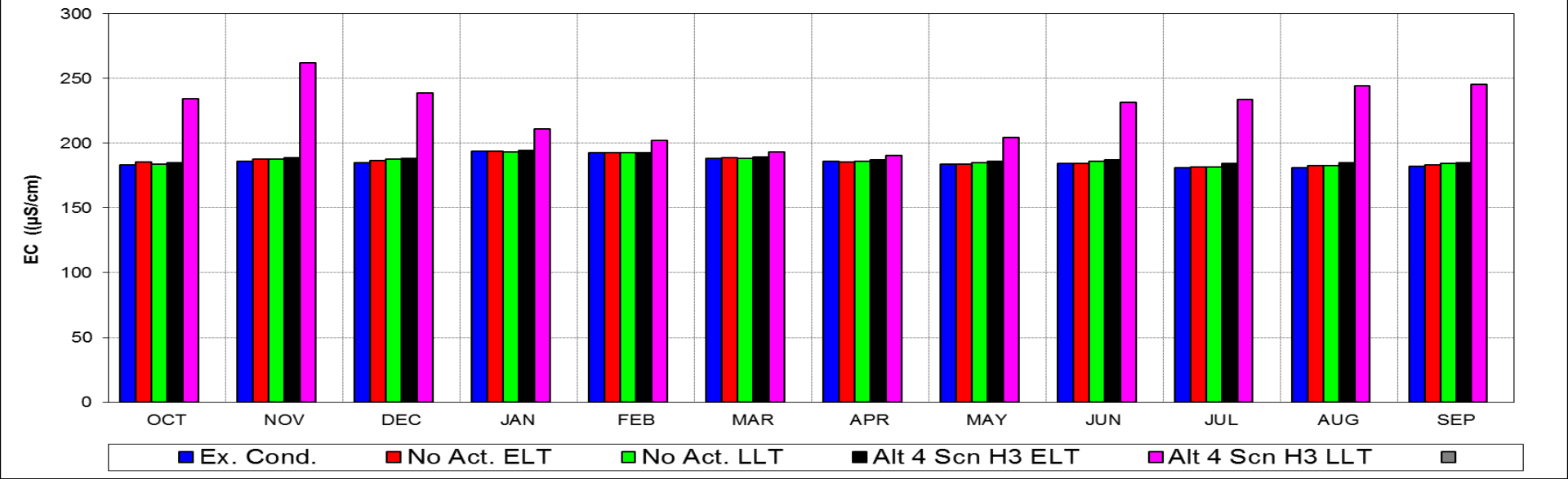
# Cache Slough at Ryer Island

LAND-71



BDCP
BAY DELTA CONSERVATION PLAN

# Effectiveness of Mitigation

LAND-71

- EC/Chloride/Bromide mitigation measures:
  - Conduct additional evaluation and modeling following initial operations of CM1
    - Uncertain whether existing salinity response actions of SWP/CVP facilities and water purveyors would be capable of offsetting predicted increases
    - If sufficient flexibility not feasible under Alternative 4 operations, then unavoidable
  - Consult with DFW/USFWS, and Suisun Marsh stakeholders, to identify potential actions to avoid or minimize chloride level increases in the marsh

BDCP
BAY DELTA CONSERVATION PLAN

LAND-71

# Other Commitments

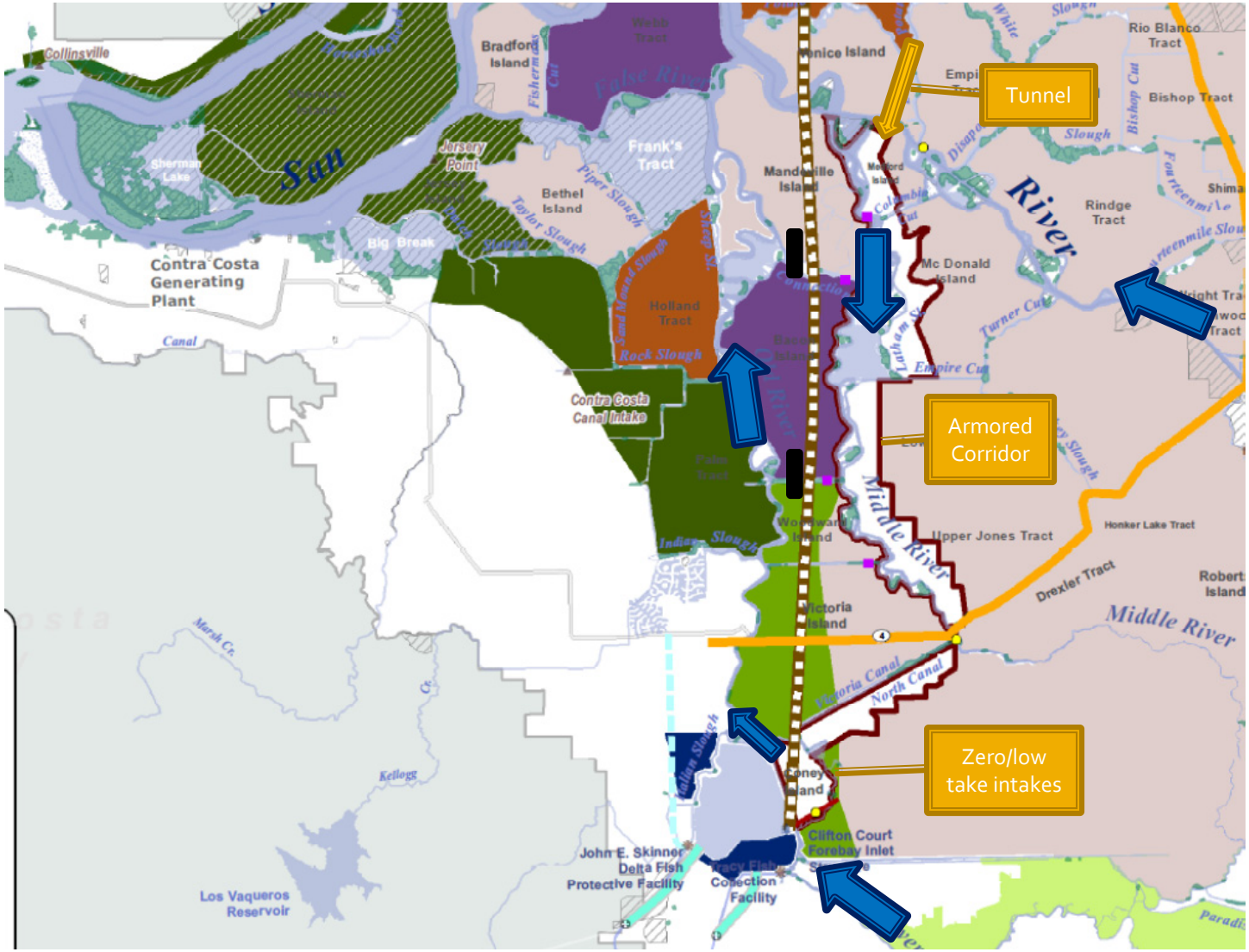
- Appendix 3B
- EC/Chloride/Bromide "Other Commitments:"
  - Actions the BDCP proponents commit to implementing to reduce potential economic or other effects related to environmental impacts, even if the underlying environmental impact is not fully reduced or remains unchanged
  - Examples:
    - Provide Funding Assistance to Acquire Alternative in-Basin Water Supplies, Storage, Conjunctive Uses, or Develop Water Transfers (municipal uses).
    - Develop demand management and/or conservation/recycling projects to extend available water supplies (municipal uses).
    - Assist with alternative crop or water management efficiency projects/facilities (agricultural uses).

# EXHIBIT G

# Delta dilemma: how to recover the lost treasure?

# Some ideas for improving SWP yield

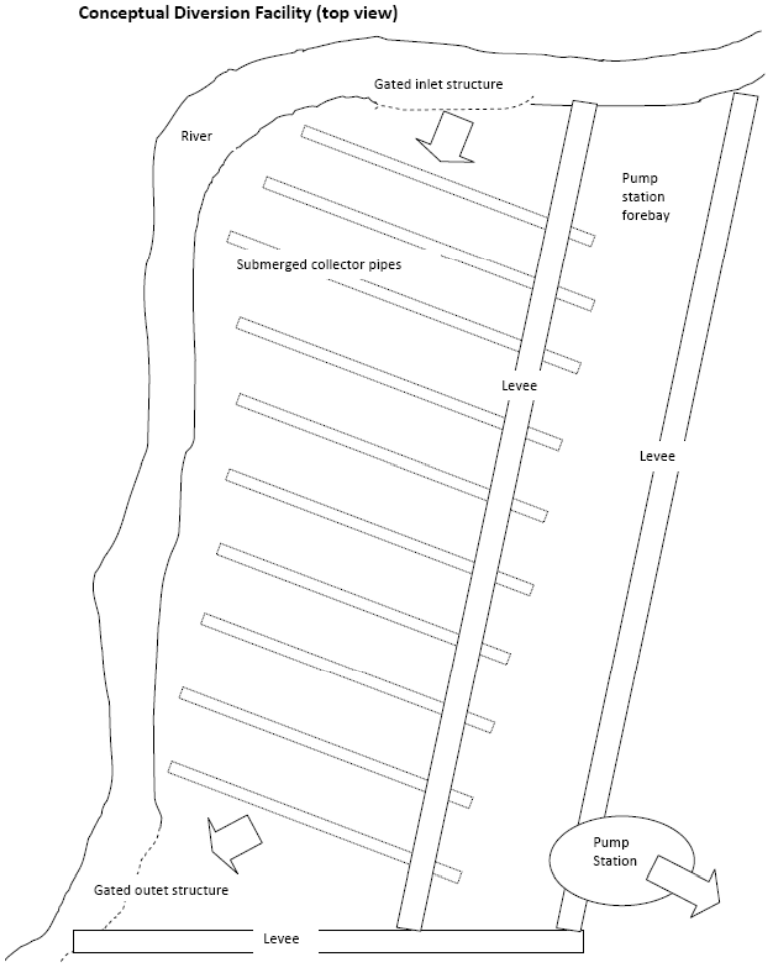
# Concepts for consideration (south Delta)

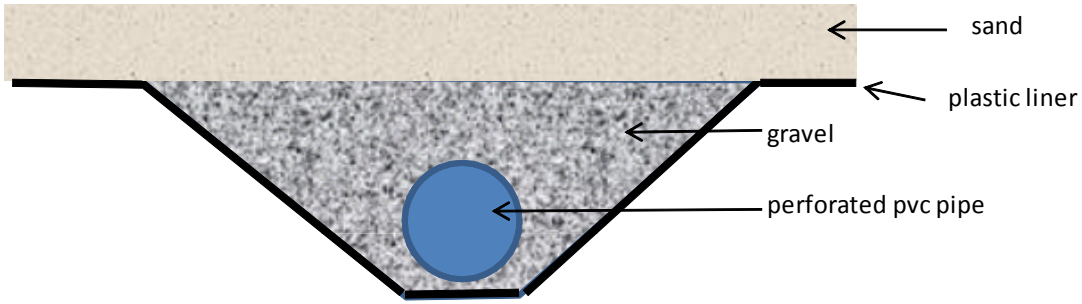


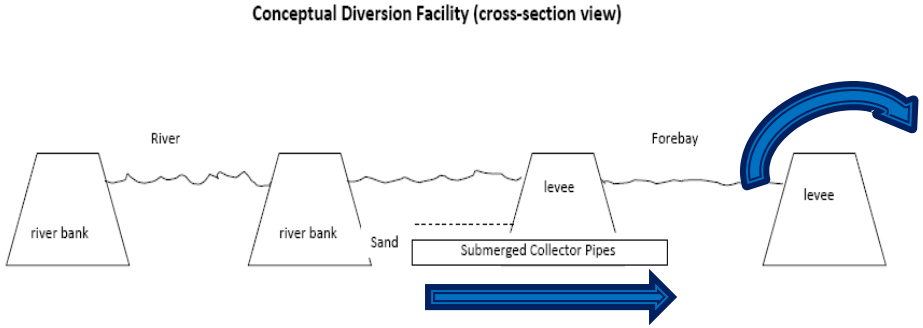
# Concepts for consideration:

- 1. Zero/low take facilities in south delta
- 2a. Armored & widened Middle River facility
- 2b. Improved fish passage: separation of Old & Middle rivers; more non-physical barriers to provide escape routes for fish
- 3. Tunnel under SJR

# Zero/low take Fish Screens

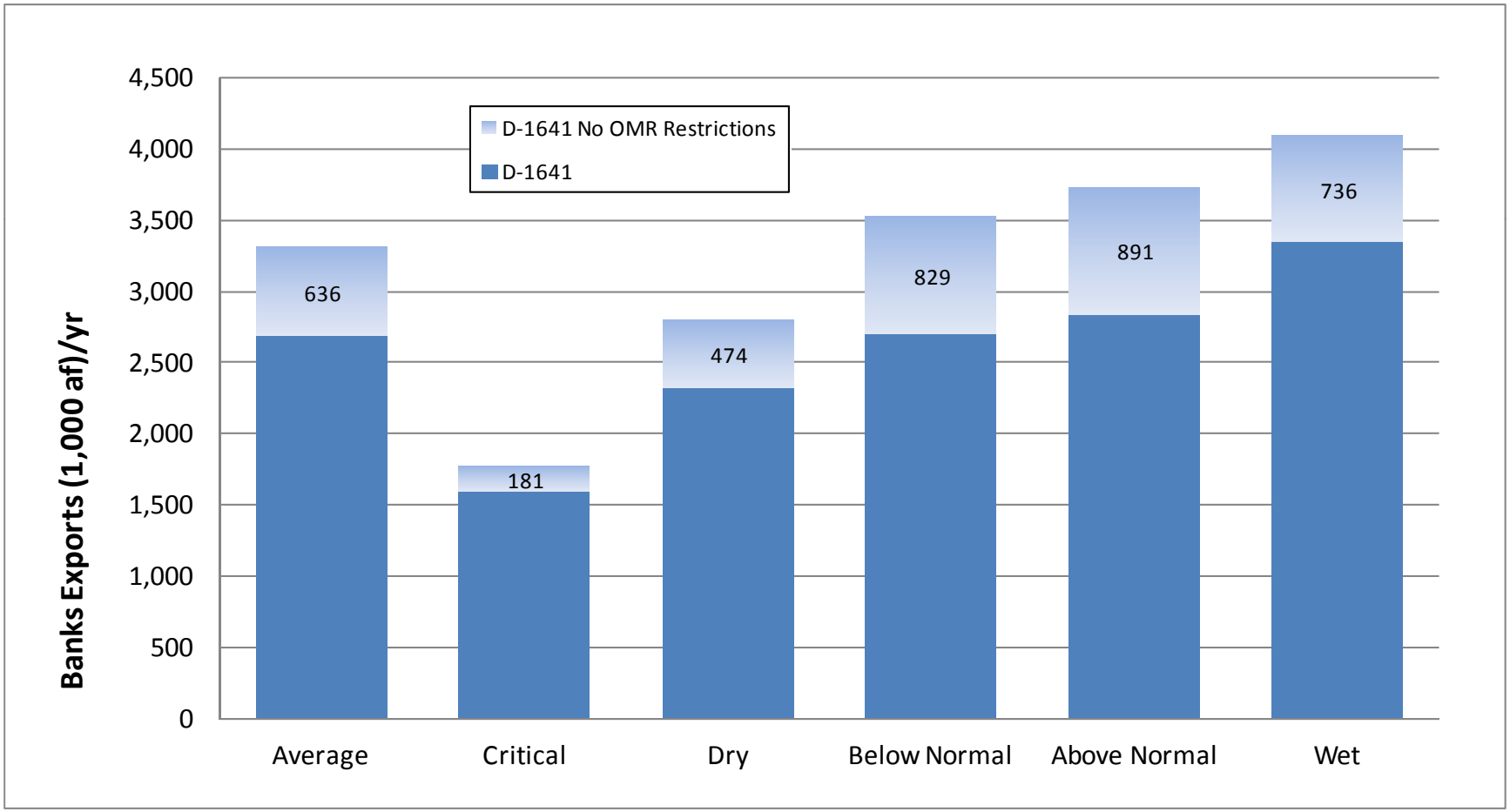



Zero-take fish screens with slow approach velocities allow flows to occur in natural directions

# Possible Changes in SWP Exports with Improved South Delta Fish Screens



# Zero/low take Intakes

- "With the correct water engineering, entrainment effects might be eliminated, allowing the maintenance of current diversion volumes, or possibly even permitting increased diversions." NAS 2012.
- Subsurface collectors already in use in biologically sensitive areas: Russian River, southern California desal plants. Can be constructed and maintained "in the dry" .
- Technically feasible (Layne-Christensen) and can work because tidal flows are around 10,000 cfs on Old River
- Prefeasibility study (Provost & Pritchard) suggests it is economically feasible
- Curt Schmute (MWD) developed higher yield estimates
- Significant biological advantages due to much slower approach velocities (600x) and improved south delta flow regime.
- Need reliable south delta diversions (3,000+ cfs) even with a tunnel to keep south Delta fresh (SWRCB requirement)

# What are the next steps?

- Decision: do you want to investigate these concepts?
- MU Committee?

# EXHIBIT H

**Senate Natural Resources and Water Committee**
**Senator Fran Pavley, Chair**

Statement of Contra Costa Water District
Gregory Gartrell
Assistant General Manager

Chair Pavley and committee members:

On behalf of the Contra Costa Water District (CCWD), I would like to thank the Committee for the opportunity to appear concerning the status of the Delta and Delta planning efforts. CCWD's testimony focuses on three key issues:

- First, immediate actions in the Delta. The need to implement immediate actions is more acute than ever and there is existing bond funding available to pay for them.
- Second, the isolated conveyance facility. The focus on a large isolated facility creates more conflict than water: studies show a small facility at half the cost provides the same water supply reliability as a larger facility. A small facility faces fewer barriers and appears to be implementable within a reasonable timeframe.
- Finally, the need for storage. To meet the "co-equal goals", increased storage will be needed: there is not enough water in drier years to meet all needs, and the need to store water in wet periods for use in dry periods will continue to grow.

**Immediate action projects continue to be urgently needed to stop the deterioration in the Delta while the Delta Stewardship Council and Bay-Delta Conservation Plan (BDCP) continue their efforts**

Even under the most optimistic of schedules, the Stewardship Council and the BDCP will take more than a decade to implement major projects, but the situation in the Delta demands action now. The most aggressive schedule for the BDCP would be completion of the environmental documentation in 2014, with construction of new conveyance facilities taking eight to ten years after that, assuming no delays from legal challenges. However, the current conditions in the Delta are not sustainable and require immediate actions to deal with emergency preparedness, flood protection, ecosystem restoration, water quality, and water supply reliability. There are actions that can be taken now that will help now, will sustain the system over the next 15 years and will continue to be useful in the long run. Action is needed now in the following areas:

***Emergency Preparedness***
We now know that "doomsday" scenarios from earlier studies that show earthquakes stopping all water exports from the Delta for years, or forever, are overstated. BDCP studies showed that a major earthquake involving a large number of simultaneous levee breaks during one of the worst droughts on record would have disrupted export supplies for only about three or four months. This is because the rivers don't stop flowing, and the salt and pollutants are flushed out of the channels by the water that can't be exported!

*This means we can deal with this potential threat now* by careful planning and preparation. An emergency could occur at any time; with proper planning and response, the disruption in water supplies can be minimized. To their credit, the Metropolitan Water District of Southern California (MWDSC) has already started developing potential strategies involving the placement of temporary barriers within Delta channels. To minimize water supply disruption, the State should also look at emergency response strategies that optimize reservoir operations in combination with temporary barriers to better flush salts from the Delta.

*Priority levees must be protected.* Certain levees protect valuable infrastructure, including roads, railroads, aqueducts and energy facilities. Other levees are essential in protecting islands that, if flooded, could exacerbate water quality problems. The State must ensure that these levees receive priority attention now to bring them up to the necessary standards to minimize risks of failure.

***Threemile Slough/Franks Tract Operable Barriers: Water Quality, Fishery Protection and Water Supply.***

The Department of Water Resources (DWR) is continuing its studies of barriers in the Threemile Slough and Franks Tract area of the Delta. The sloughs in this area provide a flow path that allows salinity and fish species of concern to be directed into the Central and South Delta. This flow pattern degrades water quality for all uses and exposes fish species of concern to predation and entrainment at the export pumps. The proposed barrier projects have the potential to provide benefits to both fish and water quality by limiting these flows when water quality or fish populations could be affected. DWR should quickly complete the studies and implement the projects.

***Fish Screens: Water Supply and Fishery Protection.***

Positive barrier fish screens work. CCWD has moved more than 1,000,000 acre-feet of water through its screen on Old River; monitoring has proved the screen to be highly effective, with no salmon and only one delta smelt larva collected past the fish screen. Positive barrier fish screens have been installed at CCWD's intake at Mallard Slough, at CCWD's new intake on Victoria Canal, and at the Freeport Regional Project's new intake on the Sacramento River. They are currently being installed at CCWD's intake on Rock Slough (completion is expected this summer) and at the City of Stockton's new Delta intake.

The latest studies show that losses of Delta smelt in Clifton Court Forebay are far worse than imagined, with measured levels between 95% and 99.9% depending of the age of the smelt. This means that for every smelt found at the salvage facility, between 20 and 1,000 smelt are likely to have been lost in the Forebay.

We know from the BDCP studies that an isolated facility will provide water supply reliability *only* if combined with substantial exports from the south Delta. We also now know that a massive levee failure scenario does not render the Delta unusable forever. BDCP studies show that massive sea level rise will not keep the Delta from freshening in wet periods. In fact, flooding areas for tidal wetland restoration or simply as a result of sea level rise will dampen tides and reduce seawater intrusion, counteracting the potential effects of sea level

rise on salinity intrusion and water quality. Consequently, it is likely that south Delta exports will remain an important part of export water supplies for many decades.

A demonstration fish screen of about 2,000 cfs could provide immediate fishery benefits, especially during the critical spring period when exports are reduced to about that level. If an isolated facility is built, some South Delta pumping will be required and this project will continue to be useful. CCWD, in concert with MWDSC and other urban water agencies, is continuing studies started by DWR to determine the best way to implement such a project. The results will help determine how such a demonstration project can go forward.

***Ecosystem Restoration.***

There are a set of actions that can be taken now to start restoration of the Delta Ecosystem. These include:

- Remove non-native submerged and floating aquatic vegetation from Delta waterways. This would be an expansion of the current program. Removing non-native invasive plants from Delta waterways will provide benefits to covered fish species by reducing predation mortality on juvenile salmon, steelhead, and splittail, by reducing habitat for non-native predatory fish; reducing predation mortality of delta smelt by increasing turbidity levels; and increasing food consumption by delta and longfin smelt by increasing turbidity levels.
- Improve the survival of outmigrating juvenile salmonids by using barriers to re-direct them away from channels in which survival is lower.
- Construct habitat projects with multiple benefits, including tidal marsh restoration, food web improvement, levee stability, and water quality improvement. The projects that are currently believed to be high-potential restoration sites include Cache Slough, Liberty Island, Prospect Island, Little Holland Tract, Lindsey Slough, and Dutch Slough; some of these projects are already well into planning and environmental documentation. These and other projects can be implemented without waiting years for the BDCP and Delta Plan.

Implementing these projects now does not foreclose or promote any future scenario for the Delta; rather they make the decisions easier. Funding and building these projects will provide definable assets for the State of California which fulfills the desire of the voters who passed bonds to rebuild the state's infrastructure.

Putting these projects in place now will provide information that will be necessary in making sound decisions on what to build in the future, on how best to stage those investments, and how best to operate the system. Failure to make these investments now will lead to future decisions made with inadequate information, and the risk of poor decisions and poor investments.

**The focus on a large isolated facility creates more conflict than water: studies show a small facility at half the cost provides the same water supply reliability as a larger facility. A small facility faces fewer barriers and appears to be implementable in a reasonable timeframe.**

Studies from the Bay-Delta Conservation Plan, the Delta Vision Stakeholder Process and the Delta Plan have overturned many commonly held beliefs about the Delta and what an isolated facility can and cannot do. Here is what the studies have taught us:

- A 3,000 cubic feet per second (cfs) isolated facility provides 97% of the supply that a 15,000 cfs facility does, at less than half the cost. The big facility is used at its full capacity less than 2% of the time, while it is totally empty 10% of the time. A large facility carries less than 3,000 cfs more than 60% of the time: a bigger tunnel does not get more water because most of the time there simply is not enough water to pump. At times when water is available in abundance, a large fraction can still be safely pumped from the south Delta, even with pumping restrictions that are the same as or similar to the existing restrictions. Those restrictions have been shown to be effective the past several years as take of fish species has plummeted at the Banks and Jones pumping facilities.
- Exporting all water exclusively through an isolated facility (no south Delta diversions) results in the exporters getting *significantly less water, not more* than they do now. If all exports are taken from intakes on the Sacramento River near Hood, the San Joaquin River and eastside tributaries are not available for export. Furthermore, to ensure adequate flow for fish in the Sacramento River, the exports must allow a certain amount of flow to bypass their proposed intake sites; without south Delta diversions, this water will also be lost to export.
- Exporting all or even most of the water through an isolated facility can turn the south Delta into a polluted, tidal "cesspool" because under most conditions, San Joaquin River flow (which consists primarily of drainage from the San Joaquin Valley) is insufficient to flush pollutants discharged into the south Delta. The south Delta sloshes back and forth with the tides, while accumulating these pollutants. The BDCP has no plan as yet to deal with this impact. A small facility can minimize these impacts.
- The Delta was *not* naturally salty or "fluctuating" from salty to fresh. Paleosalinity data show that the Delta was predominately fresh until the late 1800's, when it was channelized and water diversions started. The combined effects of: 1) channelization of the Delta, 2) draining of tidal marshes and 3) upstream, in-Delta and export diversions of freshwater have created the current salty conditions in the Delta, which are not natural. Published studies show consistently that the Delta is saltier now than it was at any time in the past 3,000 years.
- "Fluctuating salinity" (i.e., increasing salt levels to reduce invasive submerged aquatic vegetation and non-native fish) to control invasive species is not feasible. BDCP studies showed that such "fluctuations" cannot be made without creating devastating conditions for salmon and delta smelt (destroying that which was supposed to be saved).
- As previously described, the "doomsday" scenario of an earthquake stopping all exports for years, or forever, is overstated. BDCP studies showed that a major earthquake

involving numerous simultaneous levee breaks during of one of the worst droughts on record would have disrupted export supplies for only about three or four months.

It will be very difficult for a large facility to gain acceptance and support when studies show a smaller facility can be just as effective without producing the threat to in-Delta interests. The studies also show what should be apparent: the main problem we are facing is insufficient supplies in most years to meet all needs. Conveyance cannot move more water if water supply is limited to begin with. The focus should be on implementable solutions that solve the problems in ways that can be supported, and in ways that can be easily modified, do not preclude future adjustments, or result in stranded assets. Studies show that a large isolated facility is largely non-performing asset, especially in dry years when it could be idle for months at a time (although the mortgage payments must still be made). What is needed is not the biggest of all possible facilities, but an implementable project that realistically addresses the problems.

**To meet the co-equal goals, increased storage will be needed: there simply is not enough water in drier years to meet all needs, and there will continue to be a growing need to store water in wet periods for use in dry periods.**

Currently, as much as 75 to 80% of the basin runoff is diverted in dry years, while in wet years only 20 to 25% is diverted. All the recent fish population crashes have taken place in dry periods (1976-77 drought, 1987-1992 drought, 2001-2003 dry period, 2007-2010 drought). In order to meet the co-equal goals, it should be obvious that less water should be taken from the system overall, but especially in dry years. This is the conclusion of at least three recent independent scientific inquiries on the causes of the ecosystem decline.

California's climate gives us a drought every year: it starts in the spring when the rains stop, and ends when the rains recommence, usually in the following winter. Our current system of infrastructure deals with this problem effectively. Where we need to change is in dealing with the multi-year droughts: the state simply needs more storage (especially groundwater storage in the agricultural areas dependent on export water) if we are to avoid serious dry year shortages in the future. We cannot conserve or recycle our way out of this problem. For the long term, increased storage must be a part of the equation.

# EXHIBIT I

# Local Agencies of the North Delta

1010 F Street, Suite 100, Sacramento, CA 95814 (916) 455-7300
deltalandcoalition@gmail.com

April 19, 2012

SENT VIA EMAIL (cearle@icfi.com)

Christopher J. Earle, Ph.D.
Senior Ecologist
ICF INTERNATIONAL
6711 Capitol Way, Suite 504
Olympia, WA 98501

RE: Comments on BDCP Conservation Measure 21/Nonproject Diversions and the Related Issue of the Potential Need Inclusion of Certain Non-Project Diversions as Covered Actions

Dear Dr. Earle:

Thank you for contacting me regarding our concerns with Conservation Measure 21 ("CM 21") and coverage of non-Project diversions in the BDCP project area. Local Agencies of the North Delta ("LAND") is a collaboration of special districts focusing on public policy and regulatory changes in the Delta. LAND participants include: Reclamation Districts 3,150, 307, 349, 551, 554, 755, 813, 999 and 1002, covering over 70,000 acres within the Delta. Some of these agencies provide both water delivery and drainage services, while others only provide drainage services. These districts also assist in the maintenance of the levees that provide flood protection to farms and local communities.

Local agencies and other in-Delta water providers and users are reliant on pumps and associated intake structures to deliver water for agriculture. Various surveys have identified over 2,500 Delta water intakes, most of which do not have fish screens. Larger, refurbished or new intakes often include screens (usually welded stainless wire positive fish barriers) that are funded under a variety of cost-sharing programs.

Several studies have identified the CVP and SWP Project diversions are the most significant sources of direct take of both listed and game fish in the Delta, and other state studies have identified that smaller unscreened diversions have limited take of fish, and that take is predominately comprised of gamefish. As explained in December 2012 comments by LAND relating to CM 21, the BDCP Effects Analysis misstates the relative

contribution to take of listed species by small agricultural intakes within the Delta.[1] In particular the conclusion that small unscreened diversions are a significant source of take of special status fish is contrary to the findings of the Ecosystem Restoration Program, Ecosystem Strategy for Stage 2 Implementation Sacramento San Joaquin Delta Ecological Management Zone July 21, 2010 report ("ERP Report"). The ERP Report states that "small agricultural Delta agricultural diversions are likely to have a minor effect on pelagic (open water) fish, such as the [D]elta smelt." (ERP Report p. 50, citing Nobriga *et al*.[2]) As a result, larger diversions (such as those over 250 cfs), have been the focus for consideration of screening by state and federal agencies.

Thus, the attribution of significant take numbers to these small intakes in the Effects Analysis was erroneous. (See Effects Analysis, Appendix B, sections B.3.10 and B.4.4.3.) The Effects Analysis and CM 21 also incorrectly assume that land conversion to habitat and other wetland types will not require continuing use of existing intakes or installation of new intakes. Creation and maintenance of habitat in the Delta under the BDCP will require significant water supplies.

As we previously suggested in the BDCP Effects comments, prioritization of those screening projects with the most potential to benefit target species is essential. This is consistent with the conclusions of Peter B. Moyle and Joshua A. Israel with respect to screening as a measure to reduce entrainment of fish.[3] They concluded that "it does not seem appropriate to use public funds to provide new screens for most diversions (especially small diversions on large rivers) unless the projects have a strong evaluation component to them, including intensive before and after studies. Under an adaptive management framework, the "before" study should be evaluated by independent experts to see if the diversion does harm to fish populations, either individually or cumulatively." (Moyle and Israel, p. 27.)

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[1] LAND Comments on the BDCP Effects Analysis – Appendix A: Conceptual Foundation and Analytical Framework Appendix B: Entrainment [December 12, 2011] (See Attachment A.)

[2] Nobriga, M., Z. Matica, and Z. Hymanson. 2004. Evaluating Entrainment Vulnerability to Agricultural Irrigation Diversions: A Comparison Among Open-Water Fishes. American Fisheries Society Symposium 39:281-295, available at: http://www.fws.gov/stockton/afrp/SWRCB/12.%20Nobriga%20et%20al.%202004.pdf.

[3] Moyle, Peter B. and Joshua A. Israel, May 2005. Untested Assumptions: Effectiveness of Screening Diversions for Conservation of Fish Populations. Fisheries, Vol. 30 no. 5, available at: http://genome-lab.ucdavis.edu/people/Israel/Fisheries2005.pdf.

Specific Comments on Non-Project Diversions/CM 21

While the BDCP does not propose to screen existing SWP/CVP Project diversions in the South Delta despite their massive and continuing take of protected fish,[4] the February 2012 draft of the BDCP now includes CM 21 Non-Project Diversions. (BDCP, pp. 3-171 to 3-176.) A similar measure was previously included in the BDCP as Other Stressor Conservation Measure 20 ("OSCM 20"), but was ultimately dropped from the November 2010 draft BDCP, apparently because of its uncertain conservation value.[5] Though the concept has been somewhat refined since 2009, we have several concerns with the current approach to non-Project diversions in CM 21.

First, the underlying need for the measure is unsubstantiated. The stated purpose of CM 21 is:

> [T]o reduce incidental take of all covered fish except lamprey (which are not known to be affected by this stressor) by entrainment or impingement, and also to improve Delta ecosystem health by reducing the diversion of plankton and other nutritional resources into non-project diversions, thereby benefiting all covered fishes.

The discussion of CM 21, however, fails to identify and support the supposed purpose of the measure. It also fails to identify that by its own metrics, the Project Diversions (both existing in the South Delta and proposed in the North Delta), are vastly greater stressors than the individual or aggregate impacts of the non-Project diversions according to its own citations. CVP/SWP Project diversions remove approximately 5.6 million acre feet of water annually (MAF) along with the associated "diversion of plankton and other nutritional resources" entirely from the watershed. Contrastingly, the non-Project diversions divert a much smaller volume of water that is kept within the watershed and recycle nutrients from agricultural non-Project return flows.

Second, the implications of implementing CM 21 are also unsubstantiated. CM 21 asserts:

> Additionally, many of these unscreened diversions will be removed as a result of BDCP restoration activities, which will eliminate the need for

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[4] For these reasons, CalFED included the design and construction of fish screens at these facilities. Performance testing of the new screens was required to begin by 2006. (CalFED ROD, p. 49.)

[5] Reclamation District 999's original 2009 comments on OSCM 20 are included as Attachment B.

> many existing diversions by transforming cultivated lands into protected natural community types (CM3 Natural Communities Protection and Restoration).

How "many" diversions will be removed and where? How many acres of cultivated land will be removed? Won't the newly created community types also require water? What will be the net gain or loss of "nutrient resources"? During which life stage and what time of year will there be a "benefits to all covered fishes"? The purported purpose asserts that non-Project diversions lead to loss of "covered fish prey organisms," "reduces the potential for fish to be diverted to unsuitable or lethal waters," as well as "reduce incidental take of covered fish species" and "avoid or minimize entrainment and impingement," without identifying how many fish, which species of fish, where the purported impacts are occurring, or comparing the magnitudes of these purported impacts to the still unscreened Project diversions.

The water rights and other regulatory implications of removing, consolidating and relocating intakes are also not addressed. For instance, relocation of an intake would generally require the filing of a petition for change in point of diversion. (See, e.g., Wat. Code, § 1700-1706.) The relocation or significant modification to intakes also now require an expensive and time consuming permitting effort with the Central Valley Flood Control Board (formerly the Reclamation Board), as well as the US Army Corps of Engineers for project levees. As explained in comments dating back to December 2009 by LAND member agency RD 999, the BDCP must coordinate with the SWRCB and other regulatory entities to develop an effective program if changes to existing diversions are planned. (See Attachment B.)

As discussed above, CM 21 must protect species of listed fish by screening the intakes with the greatest impact first and prioritize further screening based on the effectiveness of installing screens. Instead, the BDCP fails to identify its direct role of listed species take at its existing unscreened operations in the South Delta and focuses on the impacts of diversions identified in its own citations as having the smallest effect.

BDCP consulting staff identified in the March 28, 2012 public meeting that indeed the continued use of the map with the 2,589 non-Project diversions did not accurately reflect the actual number (approximately 10) of the diversions that its own citations identified as having discernible ecological effect (250 cfs or greater). The metric that is identified as the CM objective is removal of 100 cfs per year over the 45 year, post-initiation phase, apparently achieved by removal of existing agricultural intakes for habitat projects. The resulting 4,500 cfs number is apparently not based on any actual analysis of need or priority, since none was provided, but apparently strictly as a result of land conversion proposed as other conservation measures. *Thus this metric will be*

*achieved regardless of the CM.* Meanwhile, a major scientifically identified risk factor for listed fish are losses associated with the existing South Delta Project intakes, which are still not proposed for screening. These diversions should be addressed first, then other unscreened diversions should be prioritized in order of size, and proximity to habitat for the poorer-swimming life stages of the listed species.

Need for Expansion of Covered Actions

As currently drafted, BDCP's current proposal for CM 21 lacks scientific support and is unlikely to achieve detectible ecological benefits, if any. CM 21 also does not address the need for BDCP to potentially include certain existing diversion facilities (other than those in Cache Slough) as covered actions. With a Project intent of introducing habitat creation projects throughout the Delta to increase the occurrence of Delta smelt and other fish, it is imperative to plan for this eventuality should it actually be successful. Otherwise, the BDCP would bring a regulatory problem to the local area without proper planning to ensure existing water users in the area are protected from negative regulatory consequences of this action.

Proposed Approach to Non-Project Diversions and Covered Actions

LAND proposes an integrative approach to the issue of non-Project diversions and Covered Actions. If there is a legitimate take consideration for these non-Project intakes (which should be established prior to any action), then the BDCP should extend take coverage to these intakes and take credit for the conservation benefit for intakes that are screened using BDCP funding. This is what BDCP has proposed for Cache Slough intakes, but not for any other non-Project intakes. (BDCP Chapter 4, pp. 4-19 to 4-21.)

The November 2011 draft of the Covered Actions Chapter of the BDCP – Section 4.1.5, included Table 4-5, Summary of Program Criteria for Diversion Screening. (Attachment C.) This table reflected current scientific information consistent with the Nobriga study, indicating that diversions with a capacity of 250 cfs or larger would receive a higher priority. Inexplicably, this table is no longer included in the February 2012 draft of the BDCP section 4.1.5, which addresses non-Project Diversions. This table provided an excellent foundation for decisionmaking and should be returned.

We propose that non-Project Diversions throughout the Delta should have the potential to be covered actions in BDCP Section 4.1.5. We support a priority scheme for screening intakes in current smelt habitat, and then extending the program following a concerted research program would provide the greatest ecological benefits at the lowest cost (consistent with table 4-5 referenced above). If the BDCP is successful in its habitat projects, it is intentionally bringing listed species into areas that do not have them

currently. Extending take coverage for the impacts directly associated with its Plan is the logical action under a HCP/NCCP as such plans are usually developed by and for the benefit of landowners within a plan area, not by outside interests with little or no property interests. Such an approach would also be a *no-harm* strategy for existing Delta water users.

* * *

We hope this information is helpful in thinking about how to improve the BDCP's approach to non-Project diversions and covered actions. Please contact us at your earliest convenience to discuss these issues further; we look forward to working with you to address these important considerations.

Very truly yours,

**SOLURI MESERVE**
A Law Corporation

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Don Thomas (thomasdon@SacCounty.net.)

# ATTACHMENT A

# Comments on the BDCP Effects Analysis-

## *Appendix A: Conceptual Foundation and Analytical Framework*

## *and*

## *Appendix B: Entrainment*

(December 12, 2011)

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*Prepared for: Local Agencies of the North Delta*

**By Erik Ringelberg, BSK Ecological Services Group Manager**

**12/20/2011**

BSK Associates
Engineers & Laboratories

OVERVIEW:
Over the last three years, participants and observers of the California Department of Water Resources (DWR) and federal Bureau of Reclamation's (BOR) Bay Delta Conservation Plan (BDCP) have identified what appeared to be confusion regarding the plan's purpose and direction, inconsistencies in the analysis, and problems with the plan's technical feasibility. The confusion, inconsistencies, and problems lead to many discussions in the Schwarzenegger administration Steering Committee meetings, numerous questions and comments to the BDCP's environmental consultants, and later under the Brown administration, questions directed to the Natural Resources Agency or the management committee.

In their simplest form, the confusion and questions largely rested on the BDCP's premise that exporting up to half of the water from the Sacramento River out of the watershed from the upper San Joaquin-Sacramento River Delta (Delta) would "help" or "save" the Delta. The proposed 15,000 cfs export flow and the creation of a massive new infrastructure in the Northern Delta would have massive immediate and long-term negative effects on the existing aquatic and terrestrial ecosystems, while the hoped-for ecological benefits to the South and Central Delta from the project are simply inferred and deferred to phases long after the project benefits for the exporters have occurred The BDCP describes this premise more artfully:

> "The Bay Delta Conservation Plan is designed to achieve the co-equal goals of providing for the conservation and management of aquatic and terrestrial species, including the restoration and enhancement of ecological functions in the Delta, and improving current water supplies and the reliability of delivery of water supplies conveyed through the State Water Project (SWP) and the Central Valley Project (CVP).[1]"

Initially, this intent appears reasonable. Southern California and the San Joaquin Valley are reliant on water from the Delta to some degree because they have already fully exploited their local water supplies, and there has been a significant decline in fish species (pelagic organism decline [POD]) that had resulted in various court orders to protect those species, often through water export restrictions. However, when reviewed even in a cursory manner, the proposed plan and its associated planning process to achieve those co-equal goals go far beyond that reasonable premise into a proposed project with minimal scientific and legal foundation.

The co-equal goals thereby become a marketing fiction, predicated on "improving current water supplies and the reliability," as if those goals were on equal legal footing to the Federal and State Endangered Species Act (ESA). There is no provision in the ESA that permits the particular interests of a project applicant to trump ESA requirements. Indeed, DWR and BOR, and their State and Federal Water Contractors had no interest in the co-equal goals until the courts required restrictions on export pumping under the ESA. Nevertheless, the need for secure water supplies, to the extent that is possible, and the need to protect species that are at risk of extinction, are both compelling social and legal issues that require some solutions.

[1] http://baydeltaconservationplan.com/Home.aspx

I. The Plan

Part of the scientific logic problems with the BDCP are directly caused by the pre-determination that the project would include: 1. a series of 5 intakes, each 20 times greater than the next biggest intake in the upper watershed, 2. a massive canal crossing several major rivers on its way to the existing southern Delta project pumps, and 3. the ability to export a total of up to 15,000 cfs (equal to the South Delta pumping facilities) from intakes concentrated in one reach of the Sacramento River without regard to the resulting ecological and hydraulic effects. Later ecological justifications for building that infrastructure were created, and then finally a scheme for "improving" the Delta's aquatic habitats for a listed fish, the Delta smelt, was presented. Almost a year after those project elements were outlined, a scheme for protecting terrestrial resources such as plants, animals and birds was developed. The BDCP Environmental Impact Report is intended to provide only programmatic (broad) coverage under the California Environmental Act (CEQA) for the "habitat" and project-level coverage for the water diversion and conveyance.

The scale of both the conveyance and habitat elements of the BDCP were defined prior to any threshold analysis to examine the relative benefits and impacts associated with these project elements. While it may in some limited cases be appropriate to set upper and lower bounds to help define the analysis, there needs to be a sensitivity analysis for each measure to see under what conditions it benefits or does not benefit a given species. This is how the effectiveness of the conservation measure is determined, and provides the foundation for determining if a proposed conservation measure should be kept, discarded or modified. For example, the BDCP instead predetermined the proposed North Delta diversion as a conservation measure, and then not did not reassess that and other measures to identify if there were particular thresholds that may be more effective or less effective for conservation.

An added problem is that the purported ecological benefits from the BDCP to listed fish are unclear at best, particularly given that the food chain that the fish are dependant on has almost entirely changed due to invasive clams (reduced phytoplankton), and the direct loss of high value fish food species (zooplankton). The BDCP does not address these fundamental aquatic ecosystem drivers, instead offering the creation of additional aquatic habitat in hope of long term benefits. Even that habitat plan, however, is being reviewed on a strictly programmatic level, and will need significant further review and analysis before it can be implemented. Meanwhile the diversion, storage, and conveyance project is highly detailed and ready to implement once the permits are issued. This sequencing indicates that the water reliability is actually more "co-equal" than the habitat improvements. Indeed, the standard project mitigation for the loss of the existing riparian and terrestrial habitat for the construction of the 5 intakes, two roughly mile-square storage areas, and the canal[2] appears to be conflated into some public "benefit-public pays" Habitat Conservation Plan (HCP[3]) and Natural Communities Conservation Plan (NCCP[4]).

HCPs are ordinarily developed by landowners and/or local governments planning to complete a specific project on their land, or to allow a class of similar activities over a large area, which is

[2] A tunnel or pair of tunnels that would replace the aboveground portions of the project, the canal, have been proposed and supported by some landowners and terrestrial habitat advocates, since it has less aboveground effects. Various cost projections differ as to the economic cost of either major alternative, largely it seems by no including mitigation and mitigation endowments for the canal.

[3] http://www.fws.gov/endangered/esa-library/pdf/HCP_Incidental_Take.pdf

[4] http://www.dfg.ca.gov/habcon/nccp/

likely to result in take[5] of listed species. In this case, the unscreened south Delta intakes currently "take" listed species, and the proposed project construction and the new project operations are also expected to "take" listed species.

The HCP-NCCP recovery standard and the need to use the best available science ensure that a project proponent can not simply drive a species (or several species) into extirpation or extinction, while claiming consistency with the HCP-NCCPA. Any project that proposes to move forward on the project without fully developing and permitting each the elements that make it a HCP-NCCP is not scientifically or legally defensible.

In the case of the BDCP, in a novel re-interpretation by DWR and BOR, most of the land proposed for BDCP's activities is owned by private individuals who have had no decision making role in the development of the HCP or proposed role for its governance. These same lands are also within the planning area of the 5 existing or proposed HCPs managed by local agencies. According to the November 2010 Working Draft of the BDCP, only approximately 6% of the acreage identified for habitat creation is available on publicly owned lands. Similarly under the NCCP, the very first step in the process is a planning agreement: "Planning agreements are developed with interested jurisdictions, landowners and other interested parties.[6]" The interested affected jurisdictions, namely counties and water/reclamation districts were not part of the planning agreement, nor were any landowners. Further, the BDCP failed to follow the NCCP's 2003 summary of "lessons learned" including:

- Involve All Affected Parties
- Anticipate all interests that may be affected
- Bring them in early, before any commitments are made
- Create an atmosphere of trust
- Foster "ownership" in the process by local interests
- Local land use authorities (cities, counties) must be involved

The BDCP and it processes have failed to follow the standard and most basic procedures used in HCPs and NCCPs. DWR and BOR must revisit and commit to the standard HCP-NCCP process and learn from the challenges that this project has run into already, and be informed by the lessons already well-understood from other planning processes, such as the Chesapeake and Everglade restoration processes. As stated earlier the needs for an effective set of solutions to address water reliability and extinction risk are needed. An effective process is also much likelier to achieve a financially, politically and socially sustainable outcome.

In addition to re-visiting the planning and process elements of how to complete a plan, the BDCP needs to examine the scientific foundation of the establishment of a HCP-NCCP.[6] A well-established and logical path for establishing a habitat or species improvement plan is to assess what the ecological needs for the species are, assess and weight the reasons for the apparent species or habitat decline, and then and only then identify which of those threats can be managed

[5] Endangered Species Act defines take as: harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect any threatened or endangered species.
[6] http://www.nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=6432

for in a series of conservation measures. The following schematic describes this process in its crudest form:

Identify problem(s) > Assess potential means for improvement(s) > Develop conservation measure(s) > Re-assess

This may appear to be overly simplistic (and it is), but it is the logical foundation for recovery plans. Here, the BDCP devised a proposed project, and then attempted to create ecological justifications for the project, and further conflated its *project* mitigation into the plan as conservation measures. The "Options Evaluation" process by which new isolated conveyance was selected in 2008 does not by any stretch of the imagination follow this logical approach. (See http://baydeltaconservationplan.com/BDCPPlanningProcess/BackgroundDocuments/OptionsEvaluationReport.aspx; see also http://baydeltaconservationplan.com/Libraries/Background_Documents/Executive_Summary.sflb.ashx, pp. ES-12 to ES-13 (summarizing results of limited "four dot" analysis).)

The BDCP's overt assertion that- the proposed project is the solution to the Delta's problems, while underemphasizing impacts of current Project operations, and obscuring the need for mitigation for the impacts of the proposed project was evident from the very beginning of BDCP process. The last minute afterthought of the protection of terrestrial species is evident throughout the last year of analysis, and all of the current detailed measures (including the Effects Analysis) still focus on fish species that limit full use of the existing south Delta project intakes.

To summarize, the only legitimate analysis from a scientific perspective is one that considers the individual species' needs, the population dynamics, the expected habitat trajectories; and then determines through careful analysis of the multiple variables, which conservation measures implemented in what fashion, over what period, and where on the landscape, can actually increase (by some conservative amount) the species viability. The purported "iterative nature" nature of this process, while accurate in a technical sense, is in fact currently being used by BDCP proponents to confuse the origins of the "conservation measure", arguing that the proposed project somehow didn't come first.

## EFFECTS ANALYSIS

### I. Process Comments

The Effects Analysis is the first major work product of the BDCP under the current administration. The analysis was focused on aquatic listed fish species, again, and should be retitled to "Aquatic Effects Analysis." The Effects Analysis was also provided to a new panel of scientific advisors for review. The BDCP's independent scientific advisory panels have repeatedly provided a clear set of analyses and consistent framework to assess potential project data gaps and logic challenges. The BDCP has had a series of recommendations from its Independent Science Advisors (ISA) and the National Academy of Sciences- National Research Council, and even recommendations made by Dr. Dahm, scientific advisor to the Delta Stewardship Council (DSC), the vast majority of which have gone unacknowledged. Various other technical experts have also provided technical comments directly to the BDCP, and no response to these comments has yet been provided.

In addition to essentially ignoring outside scientific concerns, the BDCP has still not discernibly taken into account local public stakeholder comments. The public participation process has no credibility or value to the participants if comments have no disposition. The scientific process demands technical responses to scientific considerations, which is the purpose of the standard, to identify and use the best available science, not ignore countervailing scientific citations and rely on non-scientific justifications.

To that end, numerous parties have repeatedly requested to be involved in and be able to provide peer-reviewed scientific evidence to the ISA and to the ad-hoc advisors. These requests have often gone unacknowledged, and have not been permitted under this administration. Failure to allow countervailing opinions, and provide the scientific advisors the full range of scientific information in an attempt to drive the outcome is a fatal flaw in this process and should be corrected immediately.

II. Specific Comments on the Effects Analysis- Appendix A

The Effects Analysis was again replete with the project confusion described earlier, specifically the confusion about what is the project that will conserve listed fish, and what is mitigation for that project. The habitat creation described by the BDCP would mitigate for the habitat destroyed by the proposed project (including both conveyance facilities and habitat creation). The fact that the BDCP appears to cause significant "take" even despite the provision of mitigation is evidence that the proposed project (conveyance and habitat creation) are not in fact conservation measures as defined in the ESA.

A long-standing flaw at the core of the effects analysis is the use of Delta Vision as either an plan that lead to BDCP, or some sort of regulation or law; Delta Vision is neither (A-3/A-11). Delta Vision findings have no force of law. BDCP was not developed outside of the diversion, conveyance, and storage proponents, and this is clear because the proposed project as a conservation measure would never be considered otherwise, and the other conservation measures proposed have almost no supporting analysis. It is obvious to most scientists and local residents that BDCP's highest likelihood of improving conditions for listed fish lay with the measures given the lowest analysis: those addressing invasive plants and animals.

The effects analysis also brings to the forefront the need to further refine and validate the various models that are used to complete the analyses (A7). Despite hundreds of millions of dollars invested in research in the Delta and model development, there is very little to show in terms of how to apply that understanding, namely how much does each variable influence the survival outcomes for targeted species? This is crucial to moving the BDCP process forward, and critical to the success of any project success. Transparent, effective models lead to common understandings and sometimes creative solutions.

In the broadest sense, the presentation of model runs gives the appearance of substance without providing logical rationale in terms of differentiation between the alternatives, little the degree of accuracy or precision of the analysis, or anything in regards to the sensitivity of the analysis. Where are the assumptions? What thresholds were discovered during the modeling? In addition, this dart-throwing process of looking at wet vs. dry years and showing some graphs of postulated outcomes is not a substitute for a directed scientific investigation that is specifically intended to

provide key decision points for adaptive management. The models at best look back into time by using particular historic water years; adaptive management needs to make decisions looking forward into uncertainty (A8).

Adaptive management is not supposed to be a substitute for knowledge or understanding or the failure to collect critical information in advance of an action: "Adaptive management of the BDCP will refine and test those expectations require monitoring, research and management experiments designed to test and refine the working hypothesis posed by the BDCP and allow the region to navigate through an uncertain future (Lee 1993)" [*sic*] The project cannot defer understanding of the potential and likely effects of the project and the conservation measures until the impacts occur at some point in the future.

The Relationship to Other Plans and Policies (A-11) fails to even identify the 5 other existing or proposed HCP-NCCPs, any County General Plans or policies, or any Federal species recovery plans. The same level of detail is missing from the Pelagic Organism Decline (POD), namely "cherry picking" citations[7] that do not identify the projects as a potential source of the POD, and even using citations that were roundly discredited in the National Academy of Sciences presentations (A-16).

Given that the sharp species decline occurred over a century after levees were built in the Delta, and decades after the wastewater treatment plants were commissioned, recent habitat decline and wastewater treatment appear minor factors in the POD, yet the BDCP focuses on those issues and not assessing and mitigating the relative impacts from the projects that comprise the BDCP. Indeed, land use is cited as a factor (A-17, A-21) although land use in the primary Delta has remained static for decades. What has changed includes invasive species, including zooplankton and clams, and the volume of Delta exports to Southern California during the POD. The continued use of un-cited and technically unsubstantiated declarations is not acceptable in a technical document. For example, "In addition, diversions both in tributaries and in the Delta remove a significant proportion of total available water." (A-21). How much water, in what water year, is consumptively lost in the tributaries and how much is exported and is proposed for export by the BDCP? This unsubstantiated and apparently unanalyzed assertion is typical of the limited technical depth provided in this section. A substantive analysis would provide technical citations, the assumptions used in the model, the expected error range, and an actual analysis of the seepage-evaporation (carriage) losses from the current conveyance, and the modeled losses from the proposed project alternatives, and the proposed habitat acreage evaporation and transpiration (E/T).

Additionally, the conceptual figure (A-28) that apparently is the foundation for the entire analysis describes the only impact or driver on Adjusted Potential is Land Use. This is clearly incorrect and again uniformly unsupported by the science. It should state Water and Land Use for any credibility. Climate and geology drive the biogeographic potential, it is not independent. Marine influences are limited factors and then only for certain species, at certain life stages, not a driver for "Species and Biological Communities." Future potential is bi-directional, not uni-directional towards Adjusted, and no "enhancers" are described. Is the purpose of the diagram to illustrate

[7] Again identified by the ISA, NAS, and again by the Science Panel, the BDCP needs to detail why it is not using citations that would be expected by other professionals and defend why it is relies on certain selected conclusions over others.

that the BDCP would only have benefits that would improve conditions relative to current conditions? That is not supported by the data presented in the chapter.

The same clear bias in favor of the project is shown by the arrows shown within that circle. For example, where are the NAS process drivers? Altered flow should include altered timing and volumes, and that radius should clearly include all of the "other stressors" that the BDCP has already identified.

III. Specific Comments on the Effects Analysis- Appendix B

The Effects Analysis itself demonstrated the foundational scientific problem with the BDCP: "*Entrainment of delta smelt at the south Delta export facilities may generally decrease under BDCP relative to existing biological conditions, although instances of increased entrainment are also possible*." [8] While the "study" was a black box analysis with no parameter or model initial conditions provided for independent review, the BDCP's own model result was that the BDCP may general decrease entrainment on Delta smelt or in fact increase it. This is unacceptable.

The Effects Analysis also misstates the relative contribution to take of listed species by small agricultural intakes within the Delta. Scientific studies have consistently concluded that "small agricultural Delta agricultural diversions are likely to have a minor effect on pelagic (open water) fish, such as the [D]elta smelt."[9] As a result, larger diversions (such as those over 250 cfs), have been the focus for consideration of screening by the agencies responsible for fish. Thus, prioritization of those screening projects with the most potential to benefit target species is essential. The Effects Analysis is simply wrong in Section B.3.10 (actually described in B.4.4.3) to attribute significant take numbers to these small intakes. Moreover, it is incorrect to assume that land conversion to other wetland types will not require continuing use of existing (or new intakes), as creation of habitat will require significant water supplies.

As with Appendix A, the details of the model assumptions and scientific evidence that significant take is associated with small intakes are not provided. The point of this "analysis" appears to be a conflation of project intake mortality on listed fish species with the well-studied and described insignificant impact from small Delta intakes. Equally concerning is the statement that a 16.6% reduction of intakes in the ROA could be removed for the purposes of habitat conversion (B.4.4.3.1). It is ridiculous that the intakes of similar (unstated) size, with the "lowest magnitude" of impact and the "lowest certainty," with a suggested minimal population-level effect, should then be considered a significant cause of take by the BDCP. This pointless exercise typifies the scattershot approach taken in the Effects Analysis. There are also significant problems with the both the description and the underlying concepts of Section B.0.1 Table B-2. The use of a symbol instead of the actual estimated percentages is unnecessarily confusing; this table should be revised to include actual percentages or ranges of percentages that apply to each item. The timing, extent and degree of South Delta and North Delta interoperation should also be described.

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[8] http://www.deltacouncil.ca.gov/sites/default/files/documents/files/BDCP_Effects_Analysis_Review_Overview_of_Draft_Appendix_B_Entrainment.pdf

[9] Ecosystem Restoration Program, Ecosystem Strategy for Stage 2 Implementation Sacramento San Joaquin Delta Ecological Management Zone (July 21, 2010), available at: http://www.deltacouncil.ca.gov/sites/default/files/documents/files/ERP_Excerpts_for_3rd_Staff_Draft_Delta_Plan.pdf, citing Nobriga et al. (2005) available at: http://www.fws.gov/stockton/afrp/SWRCB/12.%20Nobriga%20et%20al.%202004.pdf.

The assertion that the North Delta intake screening would function perfectly for the life of the permit is also unsubstantiated. A fine slot metal screen placed in the flow of a major river will get eroded by sediment drawn into the intakes, direct sediment impingement on the screen and that associated erosion and mechanical damage, and woody debris and human associated debris impact damage. That damage individually, and in aggregate, leads to increased impingement and reduced screening effectiveness. The reduced efficiency is difficult to detect and measure, and in practice only grossly damaged screens get replaced. Each of these points assumes that the intake was designed, installed, and operated correctly. That is often not the case. The "stacking" of each of these reductions of idealized efficiency must be calculated and analyzed, however ultimately the analysis cannot rely on absurd assumptions.

CONCLUSIONS

The fundamental premises of the BDCP analysis and the a-priori determination of the conservation measures must be re-examined. In particular, a detailed review of the ecological problems threatening fish, wildlife, and their associated habitats of the Delta and the relative effects of each of the potential conservation measures (individually and in aggregate) on each of those problems must be completed *before* conservation measures are selected. Appendices A and B fall far short of the level of analysis, transparency of basic model assumptions and conditions, and scientific foundation needed for a proposed project of this magnitude. As a result, the Effects Analysis chapters should be re-written to address these concerns.

# ATTACHMENT B

**Bay Delta Conservation Plan**
**Review Document Comment Form**

**Document:** **Non-Project Diversions Entrainment Reduction Measure OSCM 21, Comments on Chapter 3 and Chapter 8 (additional)**

**Name:** Erik Ringelberg/Osha Meserve **Affiliation:** Reclamation District 999 (Clarksburg District)

**Date:** 12/18/09

Please use this form to document your comments to the above document. Please number your comments in the first column and indicate the page, section, and line number (if provided) that reference the comment's location in the review document in the next three columns. **Return completed comment forms to Rick Wilder (wilderrm@saic.com).**

To be of the greatest value to the document development process, please make your comments as specific as possible (e.g., rather than stating that more current information is available regarding a topic, provide the additional information [or indicate where it may be acquired]; rather than indicating that you disagree with a statement, indicate why you disagree with the statement and recommend alternative text for the statement). Do not enter information in the **Disposition** column. This column will be used by SAIC to record how each comment was addressed during the document revision process.

| No. | Page # | Section # | Line # | Comment | Disposition |
|---|---|---|---|---|---|
| 1. | 3-167 | | | OSCM 20 and other measures include as a goal of the BDCP increasing smelt populations as well as better protecting existing smelt populations in the Delta. Thus, it is imperative that screening on all diversions (Project and no-Project) be designed to screen out delta smelt. | |
| 2. | 3-167 | | | With respect to participation of owners of existing diversions, it is imperative that the conservation measure be designed to encourage participation by those diversion owners. For instance, those who participate will need assurances that participation will not lead to change their underlying water rights. This will especially be an issue with respect to the plan to consolidate diversion points. Consolidation of diversions that are | |

| | | | | | |
|---|---|---|---|---|---|
| | | | | subject to the jurisdiction of the SWRCB will require the processing of a petition for a change in point of diversion under Water Code (e.g. § 1735) will be necessary. | |
| 3. | 3-167 | | | To determine the best approach to consolidations from a SWRBC and water rights perspective, developers of this conservation measure should confer with the SWRCB and in-Delta diversion representatives. For instance, it may be appropriate to shield voluntary participants in these programs who can preliminarily demonstrate legal water rights from SWRCB water rights enforcement investigations/proceedings that could otherwise occur in during processing of petitions to change points of diversion. Without such assurances, many diverters may be unwilling to help implement this measure, potentially rendering it completely ineffective. | |
| 4. | 8-27 | 8 | | The cost estimate for implementation of OSCM 21 should include the costs of any water rights proceedings made necessary by consolidation of diversions; participating diverters cannot be expected to bear these costs. | |
| 5. | 8-27 | 8 | | Also important to the success of this measure will be the development of a concerted outreach program to diverters for potential participation. Project cost estimates should include these efforts. | |

**Table 4-5. Summary of Program Criteria for Diversion Screening**

| Criterion | Example | Program |
|---|---|---|
| Diversion diameter size and volume | Diversions with larger diameters receive a higher priority<br>Diversions with a capacity of 250 cfs receive a higher priority | Suisun Marsh Diversion Screening Program<br>DFG Statewide Fish Screening Policy |
| Location | Diversions located in a waterway that supports the migratory pattern of species (e.g., do not dead end) and has a documented presence of species receives a higher priority. | Suisun Marsh Diversion Screening Program |
| Diversion addition or modification | New diversions or intakes of existing diversions that are enlarged or relocated receive a higher priority | DFG Statewide Fish Screening Policy |
| Number of species impacted or biological benefits | More species protected by the screen receive higher priority | Reclamation Anadromous Fish Screen Program |
| Cooperation of landowners | Diversions located on a cooperative land owner's property receive a higher priority | Suisun Marsh Diversion Screening Program |
| Permanency of diversion | Diversions that will not be relocated or consolidated receive a higher priority | Suisun Marsh Diversion Screening Program |
| Cost | N/A | Reclamation Anadromous Fish Screen Program |

Current restoration scenarios estimate that in the Cache Slough area, 9 diversions will be removed in the first 10 years of plan implementation and another 15 by the end of the plan term, thereby reducing the total number of diversions covered by the plan from 47 to 23. Which diversions would be removed, has not been determined.

## ~~4.2.3~~4.1.6 Habitat Restoration, Enhancement, and Management Activities

Habitat restoration, enhancement, and management activities are covered activities, and ~~under BDCP~~ include all actions that may be undertaken to implement the physical habitat conservation measures described in Chapter 3, *Conservation Strategy*. These activities ~~would~~will be performed in accordance with provisions of Section 3.4.5, Avoidance and Minimization Measures. Types of actions necessary to implement habitat restoration and enhancement conservation measures are anticipated to include, but are not limited to~~:~~ the following actions.

- Grading, excavating, and placement of fill material.
- Breaching, modifying, or removing existing levees and construction of new levees.
- Modifying, demolishing, and removing existing infrastructure (e.g., buildings, roads, fences, electric transmission and gas lines, irrigation infrastructure).

# EXHIBIT J

# Local Agencies of the North Delta

1010 F Street, Suite 100, Sacramento, CA 95814
(916) 455-7300, osha@semlawyers.com

July 11, 2014

Honorable Edmond G. Brown
Governor of the State of California
State Capitol, Suite 1173
Sacramento, CA 95814

**RE: Bay Delta Conservation Plan Neutrality for Water Bond**

Dear Governor Brown:

On behalf of the Local Agencies of the North Delta ("LAND"), we write to urge you to work toward development of a water bond that supports crucial water projects for communities across the state, but does not mire the debate by funding the Bay Delta Conservation Plan ("BDCP") – directly or indirectly – and may therefore be considered "BDCP neutral." LAND is a coalition comprised of reclamation and water districts in the northern geographic area of the Delta.[1] As local agencies in the areas most impacted by the 48 significant and unavoidable impacts of the BDCP on the Delta environment and communities, the LAND coalition strongly believes that only a BDCP neutral Water Bond will be successful.

The BDCP is a habitat conservation plan to authorize the taking of threatened and endangered species by the state and federal water projects. The BDCP authorizes the construction of the water export Tunnels as well as 21 other "Conservation Measures" aimed at restoration and other related actions in the Delta. BDCP Chapter 8 (Implementation Costs and Funding Sources) makes clear that it is relying on the public, through a combination of state and federal funds and two successive state water bonds, to pay $7.824 billion (before interest in today's dollars) toward the cost of BDCP. Chapter 8 describes how state bond measures would provide $3.759 billion in funds to carry out the project. Taxpayers, through other state and federal funding allocations, would also pay the remaining $4 billion needed for the estimated $25 billion dollar project, including

[1] LAND is a coalition comprised of reclamation and levee maintenance districts and water agencies in the northern geographic area of the Delta. LAND member agencies cover an approximately 118,000 acre area of the Delta; current LAND participants include Reclamation Districts 3, 150, 307, 317, 349, 407, 501, 551, 554, 556, 563, 744, 755, 813, 999, 1002, 2111, 2067 and the Brannan-Andrus Levee Maintenance District. Some of these agencies provide both water delivery and drainage services, while others only provide drainage services. These districts also assist in the maintenance of the levees that provide flood protection to homes and farms.

portions of the mitigation for the tunnels and environmental impacts of the pumping. *With the water exporters proposing only to pay for the cost of the water export Tunnels and less than one-eighth of the other costs ($903 million), the public is expected to pay the rest.*

While many versions of the water bond have stated that funds for the water export Tunnels would not be included, funding for other parts of the BDCP continues to be proposed. In particular, so-called "Delta restoration funds" continue to be proposed. A BDCP neutral water bond would not include any funds for implementation of any aspect of BDCP, meaning:

- No direct or indirect funding for BDCP Conservation Measures 1-22 as described in the BDCP;
- No funding for purchase of instream flows needed to operate the proposed BDCP new north Delta intakes or otherwise meet the compliance or mitigation needs of the state and federal water projects; and
- No funding for compliance with other BDCP permit conditions or mitigation requirements that could be relied upon by or facilitate BDCP.

In general, a BDCP neutral water bond could include funding for:

- Delta habitat enhancements on Delta islands and in the Yolo Bypass already in public or non-governmental organization ownership that are not already required of the state and federal water projects;
- Projects that create and more efficiently utilize local and regional water supplies that result in reduced reliance on the Delta; and
- Upgrading levees to the minimum PL84-99 standard to protect local communities and ongoing agriculture, current through-Delta conveyance corridors, and infrastructure of statewide and local importance.

Local Delta interests insist on a BDCP neutral water bond and will carefully review all versions of the bond presented to ensure that they are indeed BDCP neutral. Specific issues associated with habitat restoration, purchase of instream flows and mitigation are discussed in more detail below.

**Habitat Restoration**

Several hundred million dollars have already been spent on planning, land acquisition and restoration in the Delta. The results have not been positive. Despite over 40,000 acres of publicly held or managed intertidal and open water habitat in the Delta primary zone, native fish species are not stabilizing. The majority of publicly held land

in the Delta receives little or no management. Simply acquiring new land without attempting to manage and understand the functionality of existing conservation lands is a recipe for continued failure and is unworthy of public funding.

The draft BDCP and accompanying environmental document are still out for public review; due to the many inadequacies of these documents, significant revisions and recirculation of documents will be necessary before any entitlements are granted. Moreover, *all* of the independent science reviews of BDCP have questioned the ability of the proposed habitat restoration to actually result in benefits to listed fish, potentially leading to better water supply reliability. The lack of adequate freshwater flows – which the Tunnels would remove from the north Delta, thereby exacerbating the problem – continues to be the single most important factor for survival of our imperiled fish populations.

Outside the habitat already required under the 2009 Biological Opinions for state and federal water projects, which require 8,000 acres of intertidal/subtidal habitat as well as a significant increase in floodplain habitat in the Yolo Bypass, there is no general consensus that major restoration activities in the Delta will lead to improved conditions for imperiled fish, or provide improvements in the reliability of water supplies.

There are, however, some habitat projects that do have local support and that would have independent utility outside of BDCP. Some funding for such projects could be provided in a water bond. Such habitat restoration in the Delta would need to:

- Be placed on land that is already owned by a public or nonprofit entity for conservation purposes;
- Have local community support and/or broad stakeholder support, such as the projects developed in the Coalition to Support Delta Projects process;
- Include funds for in lieu tax payments to address impacts to local public agencies;
- Be spent on willing seller land purchases only on lands that were not condemned;
- Be directly linkable to improvements to ecosystems by the Independent Science Board or other credible source;
- Not be required conditions or mitigation for other water projects, such as existing state and federal water project operations or the proposed BDCP;
- Include good neighbor policies to reduce land use conflicts and provide neighboring landowner protections from any take liability caused by the creation of new habitat or enhancement of existing habitat.

**Instream Flow Water Purchases/Transfers**

BDCP records obtained through the Freedom of Information Act and the California Public Records Act show that the BDCP plans to use water bond funds to help fund purchases over the next 50 years of up to 1.3 million acre feet of water annually from upstream areas, such as the Sacramento Valley. These purchases, referred to as "enhanced environmental flows" or "EEF" are needed to facilitate the level of pumping that the BDCP water exporters want for the new North Delta intakes. The EEF appear in the BDCP as part of the approach to adaptive management because: (1) the amount and types of habitat contemplated by the BDCP may not be feasible; and (2) the habitat that would be built under BDCP will likely not function as planned.

Public documents obtained by LAND indicate that the purchased water is being planned as a means to make up for flows that would be removed from the Sacramento River by the BDCP Tunnels. The water contractors propose to put forth $1.5 billion out of a total expected cost of $3.5 billion for such water purchases. The public would be expected to provide the remaining $2 billion according to the proposal. This amount of water is expected to allow the BDCP proponents to operate under the "Low Outflow Alternative," which provides an additional *900,000 acre feet* annually of export water. Recent analysis has identified that the amount of BDCP predicted outflow water has been miscalculated in favor of the BDCP. While the documents we have obtained indicate that some remaining transferred water could remain in the Sacramento River downstream of the new water intakes, it is not clear that 1.3 million acre feet of water over a 50-year period is even available for purchase. Moreover, the effects of transferring 1.3 million acre feet of water over a 50-year period to the BDCP tunnels on Sacramento Valley groundwater resources, wildlife habitat and local economies, remain unstudied and undisclosed.

BDCP proponents have made no secret of the fact that they plan to fund the majority of the EEF purchases with public funds. For instance, documents dating back to at least 2012 indicate that the BDCP proponents intended to monitor the water bond negotiations to ensure that EEF for BDCP could be funded. The documents acknowledge that the bond now slated for the 2014 ballot (written in 2009) would explicitly pay for water purchases for BDCP. (SB7X2, proposed Water Code, § 79731, subd. (b)(2).) Moreover, the draft Watershed Chapter of the Water Bond that was released by your office at the end of June 2014 included significant funds – possibly up to $800,000 million – toward instream water purchases that are needed by BDCP.

Current proposals for water purchases in the bond are reminiscent of the failed Environmental Water Account, where the public purchase of 'environmental' water with bond funds was shown to be a waste. From 2000-2007, an 'environmental water

account' was set up and spent nearly $200 million in public funds as the species crashed and the State Water Project over pumped the Delta, creating, huge profits for private landowners such as billionaire Stewart Resnick, as reported in the Contra Costa Times in 2008.

We believe that the actual need for instream purchases for legitimate environmental purposes is limited, and that significant funding in a water bond is not necessary. Therefore, any water purchases to be bond funded must:

- Not be provided directly or indirectly to offset the effects of state and federal water project diversions under BDCP and related take permits; and
- Be a permanent water transfer approved through the SWRCB Water Code section 1707 transfer process and specifically require that the purpose of the transfer is not to meet regulatory or mitigation requirements.

**OR**

- Alternatively, all bond funded water purchases must be in waterways that are outside of the Delta Watershed.

**Mitigation for BDCP Should Not be Bond Funded**

BDCP proponents claim that mitigation for the Tunnels will not be paid by the public. But their definition of mitigation is not clear. Habitat creation, for instance, is mitigation for the impacts of the Tunnels. Significantly, there is no "Tunnels only" BDCP alternative being proposed. Only with the habitat and other related Conservation Measures, could the BDCP potentially result in issuance of take authority under the state and federal endangered species acts. Chapter 8 of the BDCP indicates that the state and federal water contractors expect to pay only $903 million in other costs besides the Tunnels. The rest of the cost – some $7.24 billion dollars in today's dollars, a significant amount of which could only be characterized as mitigation – is expected to be paid by state and federal taxpayers.

*Thus, there should be no water bond funds for direct or indirect mitigation for the effects of the overall BDCP project, or for the effects of existing operation of the state and federal water projects.*

* * *

In order to put forward an economically and socially responsible and politically feasible water bond, there must be strict adherence to BDCP neutrality. Insistence upon

inclusion of funding for actions necessary for the BDCP to proceed as a habitat conservation plan will imperil funding for crucial water projects that will help make California's water system more sustainable and drought resilient. Only submittal of a truly BDCP neutral water bond to the voters this fall will allow funding for these other water projects to proceed unimpeded by the controversy surrounding BDCP. Thank you for considering the information contained in this letter.

Very truly yours,

**SOLURI MESERVE**
A Law Corporation

By: 
Osha R. Meserve

cc: Members, California State Legislature
John Laird, Secretary, California Natural Resources Agency
Martha Guzman-Aceves, Deputy Legislative Secretary, Governor's Office

# EXHIBIT K

# Critical Issues
# January 27, 2014

**Threshold Issues Requiring Attention**

- **The current level of federal effort is jeopardizing the BDCP.** The engagement of the federal agencies must dramatically improve to ensure that water supplies and species populations improve. The available solutions are limited to direct communication between the governor, Senator Feinstein and the White House. The purpose of that communication is to secure a commitment from the federal administration that it will direct its agencies to participate in the BDCP as a full partner with the state and as a project proponent.
- **The BDCP proposed project provides insufficient water supplies.** As currently proposed, the BDCP will not result in sufficient water supply benefits to support a decision to continue funding the development of this program. In general terms, the BDCP should result in a level of water supply reliability of approximately 75% for both SWP and CVP water service contractors. The available solutions are to increase the yield of the BDCP through changes in default assumptions, to implement publicly funded programs that help meet environmental water demands, and, given the substantial commitment of water and other resources being made in BDCP, to establish a minimum water supply below which water will not be taken from SWP and CVP water service contractors for other purposes, including environmental purposes.
- **The cost of the BDCP is high, and there is significant concern that it will increase**. Recent experience shows that the cost of large public works projects tends to increase during construction. The cost of the BDCP is so high there is no room for any increase in cost. To reduce the likelihood of cost increases during construction, all costs need to be controlled by the entities that choose to fund construction of the BDCP. The available solutions are to allow DWR to retain design approval, while delegating all construction-related decisions to the local public agencies that volunteer to pay for the construction of the tunnels.
- **The BDCP's regulatory assurances to permittees are weak**. Strong regulatory assurances increase the willingness of local public agencies to fund the BDCP and construction of the new conveyance facilities. The assurances currently included in the BDCP are unclear and uncertain. The available solutions include clear delineation of permittee commitments of water, financial and other resources so that permittees can rely upon a minimum water supply from the project, and clear commitment that a lack of funding by the state and federal agencies doesn't invalidate the permits for operation of the new conveyance facilities.

**Additional detail on each of these issues and possible solutions were provided to the governor's staff in prior meetings.**

# EXHIBIT L

# DHCCP Conveyance Options

## Normal vs Emergency Design-Construction Process Costs

For

Jerry Meral

# DHCCP Conveyance Options

- Design and construction costs for the Modified Pipeline/Tunnel Option as defined in the conceptual engineering report is compared to the following two options (defined by Jerry Meral):
  1. Nothing has been built, and we have to build the 2 tunnels immediately (under emergency conditions)
  2. The 3000 cfs facility has been built earlier, and we have to add 6000 cfs of capacity (6000 cfs under emergency conditions)
- Emergency conditions can vary widely and would need to be better defined to adequately develop cost estimates. However after discussions with staff and 5RMK a minimum of 25 percent emergency premium can be expected for the proposed concept and can easily exceed 100 percent of the current estimate under more severe conditions. Therefore, the two options above were estimated at the 25 and 100 percent emergency premium levels.

# DHCCP Conveyance Options Cost
## Emergency Design-Construction Assumptions

- **Emergency Premium Percentage is driven by:**
  1. Limited availability of qualified specialty contractors
  2. Urgent need by stake holders to get facility online
  3. Competition for labor and equipment during regional events
  4. Nature of emergency such as flooding of islands which may require different tunnel alignment

# DHCCP Conveyance Option Costs
## Emergency Design-Construction Assumptions

- **Costs based on and emergency premium of 25 percent assumes the following:**
  - Moderate event causing loss of several islands and increasing salinity in the south Delta
  - Conveyance alignment is as proposed in the MPTO Conceptual Report
  - Conveyance engineering is complete through the preliminary design level
  - Land acquisition issues have been resolved
  - Emergency contracting methods are available to contracting authority
  - Streamline environmental requirements
  - Proposed sites are available for construction (no flooding)
  - Utilities cooperate and expedite temporary and permanent power
  - Roads are accessible
  - Consultants, contractors and vendors are sufficiently available
  - Full support by the various stake holders

# DHCCP Conveyance Option Costs
## Emergency Design-Construction Assumptions

- **Costs based on and emergency premium of 100 percent or more assumes the following:**
  - Significant event causing loss of many islands and eliminating access to PTO alignment due to flooding
  - Conveyance is along an eastern tunnel alignment to avoid flooded Delta (adds 11 miles of tunneling and increase tunnel ID to 41.5')
  - Same as previous slide plus
  - Land acquisition issues can be expedited

# DHCCP Conveyance Option Costs

## Normal vs Emergency Design-Construction Process

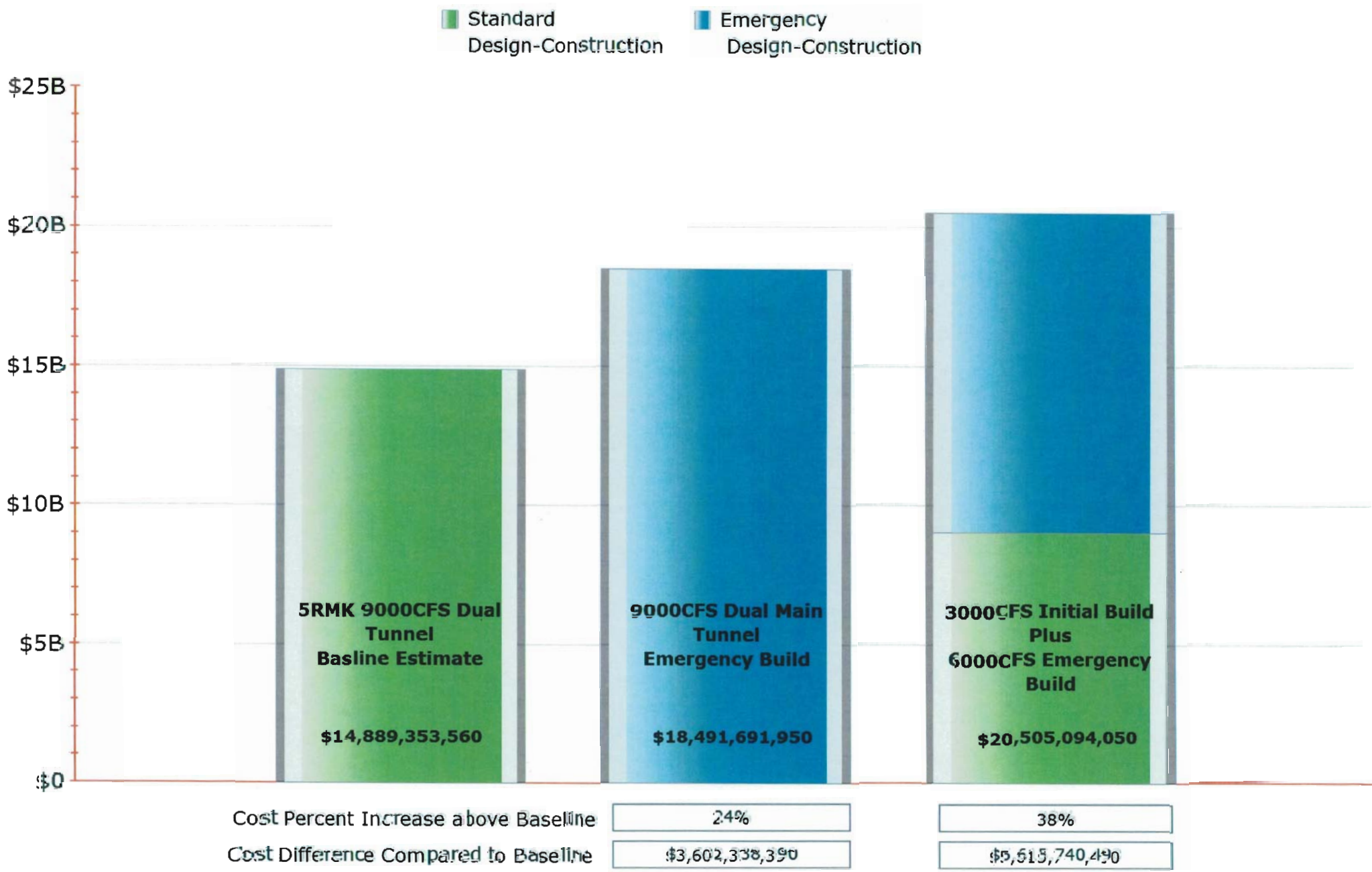
| Costs Based on Emergency Premium of 25 Percent | | | | |
|---|---|---|---|---|
| Option | Normal Design-Construction Process | Emergency Design Construction Process | Total | Difference vs Baseline |
| 5RMK 9000CFS Dual Tunnel Basline Estimate | $14.9 B | $0.0 B | $14.9 B | NA |
| 9000CFS Dual Main Tunnel Emergency Build | $0.0 B | $18.5 B | $18.5 B | $3.6 B |
| 3000CFS Initial Build Plus 6000CFS Emergency Build | $9.0 B | $11.5 B | $20.5 B | $5.6 B |

# DHCCP Conveyance Options Costs

LAND-71

## Emergency Premium of 25%

Standard vs Emergency Design-Construct Process




| | | |
|---|---|---|
| Cost Percent Increase above Baseline | 24% | 38% |
| Cost Difference Compared to Baseline | $3,602,338,390 | $5,615,740,490 |

# DHCCP Conveyance Option Costs

## Normal vs Emergency Design-Construction Process

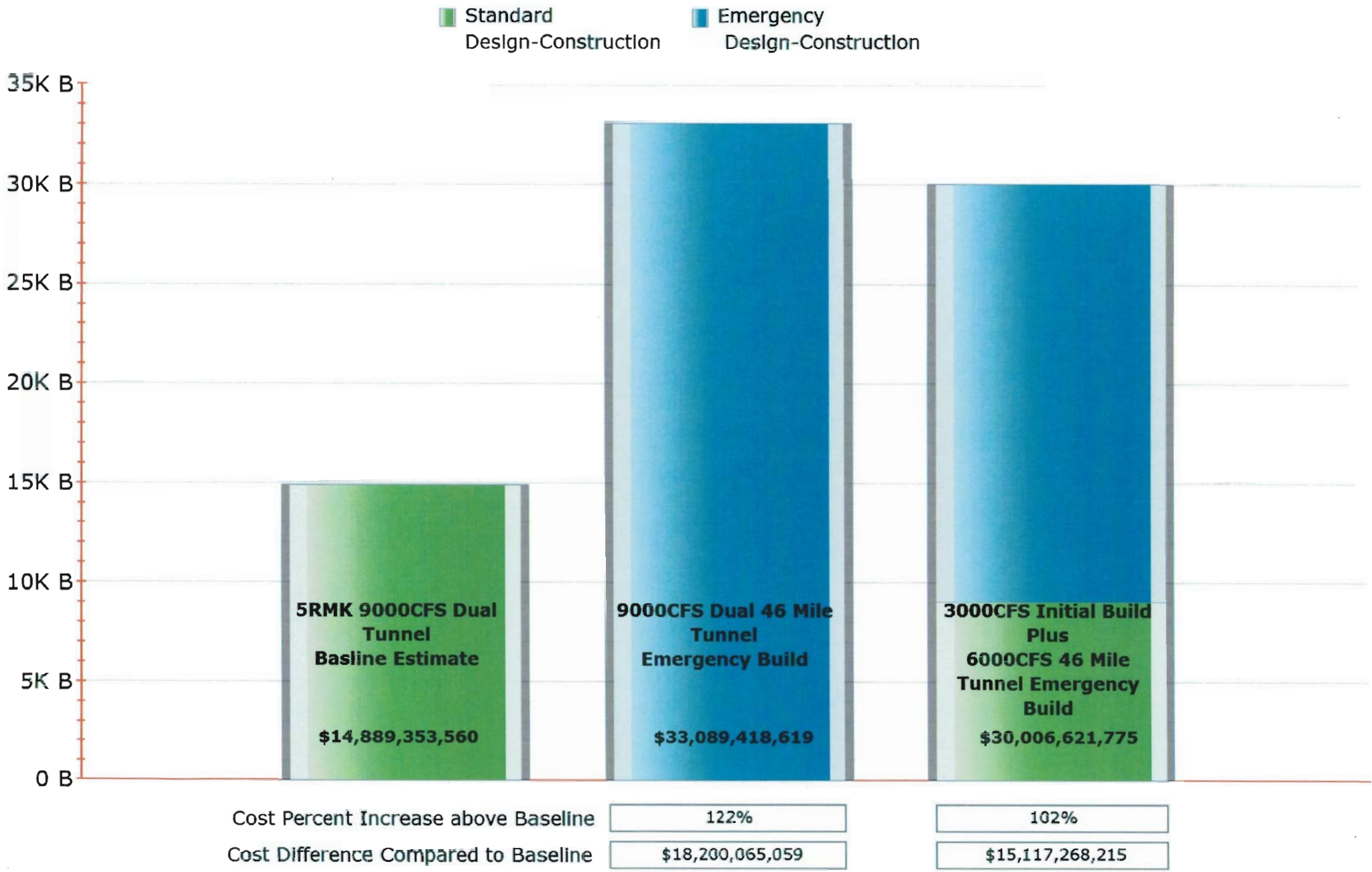
| Costs Based on Emergency Premium of 100 Percent | | | | |
|---|---|---|---|---|
| Option | Normal Design-Construction Process | Emergency Design Construction Process | Total | Difference vs Baseline |
| 5RMK 9000CFS Dual Tunnel Basline Estimate | $14.9 B | $0.0 B | $14.9 B | $.0 B |
| 9000CFS Dual 46 Mile Tunnel Emergency Build | $0.0 B | $33.1 B | $33.1 B | $18.2 B |
| 3000CFS Initial Build Plus 6000CFS 46 Mile Tunnel Emergency Build | $9.0 B | $21.0 B | $30.0 B | $15.1 B |

# DHCCP Conveyance Options Costs

LAND-71

## Emergency Premium of 100%

Standard vs Emergency Design-Construct Process




| | | |
|---|---|---|
| Cost Percent Increase above Baseline | 122% | 102% |
| Cost Difference Compared to Baseline | $18,200,065,059 | $15,117,268,215 |

# EXHIBIT M

# BDCP Groundwater Modeling - Assumptions and Limitations

Date: 8 July 2014

Prepared by: CH2M HILL

Prepared for: California Department of Water Resources

The groundwater resources impacts analysis for the BDCP EIR/EIS was accomplished with the use of two numerical groundwater flow models: CVHM (Central Valley Hydrologic Model) and CVHM-D (Central Valley Hydrologic Model-Delta). Detailed assumptions for the development and application of these models are described in **Appendix 7A Groundwater Model Documentation** of the EIR/EIS, and the impacts analysis is provided in **Chapter 7 Groundwater**. A summary of assumptions is provided below.

## CVHM

CVHM is a three-dimensional numerical groundwater flow model developed by the USGS in 2009 and documented in *Groundwater Availability of the Central Valley Aquifer, California*. CVHM simulates surface water flows, groundwater flows, and land subsidence in response to stresses from water use and climate variability throughout the entire Central Valley. It uses the MODFLOW-2000 code combined with a module called the Farm Process (FMP) to simulate groundwater and surface water flow, irrigated agriculture, and other key processes in the Central Valley on a monthly basis from April 1961 through September 2003. The CVHM domain is subdivided laterally into 1-square-mile grid-blocks over a 20,000-square-mile area, and vertically into 10 layers ranging in thickness from 50 feet near the land surface to 750 feet at depth. CVHM was calibrated by USGS using a combination of trial-and-error and automated methods.

**BDCP Assumptions**:

- The overall construction and calibration of CVHM by USGS was unchanged during the analysis.
- Land use distribution as developed by USGS was kept the same.
- The original physical representation of the geology (texture model) and calibrated hydrogeologic characteristics (hydraulic conductivity) developed by USGS for CVHM were used.
- The model array files represent input files that pertain to each cell of the model, such as:
    - The physical layering of the model and the texture analysis (layer thickness, hydraulic conductivity, storage coefficient)
    - The land use distribution at the surface (used by FMP)
    - The climate variables (reference evapotranspiration [ET] and precipitation)

  None of the model array files were modified for the CVHM runs

- The model assumes confined aquifer conditions.
- The CVHM domain is consistent with the definition of the study area as described in Section 1.5 of the EIR/EIS.
- The Sacramento Valley Groundwater Basin, within the CVHM domain, is not considered in the groundwater impacts analysis because it is anticipated that, overall, the changes in surface water deliveries in the Sacramento Valley would be minimal due to the project alternatives and would not substantially impact the groundwater resources. Therefore, no modifications to deliveries in the Sacramento Valley were made in CVHM.

- To capture the correlation between surface water deliveries and groundwater withdrawals, and the associated impacts on groundwater in the San Joaquin Valley and Tulare Lake Basins, the impact analysis was conducted using CVHM with linkage to CALSIM II for modifications in inflows and project deliveries. The Delta exports simulated by CALSIM II were used as inputs into CVHM to assess impacts on groundwater levels due to changes in surface water deliveries. Because CALSIM II assumes the same deliveries for the different types of conveyance per alternative, CVHM also used only one delivery time series per alternative (not distinguishing any "sub-alternative;" e.g., 1A, 1B, 1C). Therefore, the impacts for Alternatives 1A, 1B, and 1C are assumed to be the same within the Export Service Areas. Similarly, impacts for Alternatives 6A, 6B, and 6C are also assumed to be the same within the Export Service Areas. The same holds true for Alternatives 2A, 2B, and 2C.
- For each alternative run and baseline run:
    - The groundwater pumping distribution for 2003, the most recent available in CVHM, was assumed for the duration of the 42-year predictive simulation period.
    - The 2003 surface water diversions for all Water Budget Subareas (WBSs) were also assumed for the duration of the predictive simulation.
    - The most current land use distribution available from CVHM as developed by USGS (approximately year 2000) was kept constant throughout the predictive simulation.
    - The hydrologic and climatic data used in the historical model was repeated in the predictive models
- Each of the 9 BDCP alternatives were simulated with CVHM.

### CVHM-D

CVHM-D was used to evaluate the effects of the construction and long-term operation of the water conveyance facilities associated with BDCP on groundwater resources in the Delta Region. CVHM-D is essentially a higher resolution version of CVHM with a smaller model domain footprint centered on the Delta Region that simulates hydrologic processes in the Delta Region at a more refined grid-cell spacing of 0.25 mile (compared with the grid-cell spacing of 1 mile with CVHM). It uses the MODFLOW-2005 groundwater flow model code combined with FMP. There were no changes from the original CVHM in geology or hydrogeology characteristics distribution and assumptions.

Five fundamental modifications were made to CVHM for application to this project:

- Model domain extent of CVHM was reduced to include only the Delta Region (original CVHM WBSs 6, 7, 8, 9, and 11).
- Model grid-cell spacing was reduced from 1-mile to 0.25-mile centers.
- The original Water Budget Subarea 9 for CVHM was split into 23 smaller water budgets subareas.
- Additional streams, sloughs, and canals were incorporated (Old River combined with Grant Line Canal, Middle River, Georgiana Slough, South Fork of Mokelumne River).
- Boundary conditions in the Delta Region were refined to allow for more precise simulation of water routing in the Delta Region, as compared to CVHM.

**BDCP Assumptions**:

- The CVHM domain was reduced by eliminating most of the Sacramento Valley and San Joaquin Valley from the domain when developing CVHM-D. This modification allowed for greater precision in model output in the Delta Region.
- Boundary conditions on the northern and southern edges of CVHM-D were specified as General Head Boundaries (GHBs) with associated groundwater heads that reflect groundwater levels consistent with monthly groundwater level output from CVHM. Thus, CVHM was run initially to assign transient groundwater levels to the GHBs on the northern and southern boundaries of CVHM-

D. This methodology ensured that the information contained in the overall CVHM was transferred to the refined scale CVHM-D.

- The CVHM flows from streams that flow from the original CVHM domain into the CVHM-D domain were used as boundary inflows into the CVHM-D domain.
- CVHM-D was not calibrated as it was developed as an application of an existing calibrated model.
- Land use model array files were modified for CVHM-D alternative operation runs to account for the footprint of the conveyance facilities and the conversion of associated farmland to non-farmland or water bodies and therefore reduced irrigation needs.
- None of the physical model array files were modified for CVHM-D; in other words, the model layers and texture characteristics were kept intact from the original CVHM.
- Surface water diversions in CVHM-D reflect:
    - Agricultural diversions to irrigate Delta farms; a total of 24 diversion locations were incorporated to convey irrigation water to 18 irrigated farms in the model. Estimates of the maximum diverted surface water deliveries available for each farm during each stress period were developed from estimates of annual crop demands for each farm based on the total acreage of irrigated farmland (assuming an irrigation efficiency of 65%) and included as time series in the FMP module.
    - Municipal and industrial diversions: time series were obtained from CALSIM II outputs; a total of 12 surface water municipal and industrial (M&I) diversions were included in CVHM-D, lumped into 6 diversion locations.
    - Total Delta exports: the diversion location needed to be situated in the model at a location where water from the correct rivers was diverted. Due to limitations in the surface flow routing (SFR) module (which does not allow for reverse flows) the selected location in CVHM-D for this diversion is at the confluence of the Mokelumne River with the San Joaquin River. This export location in the model ensures that less water flows out from the Delta to the ocean, while leaving enough water in the streams to satisfy agricultural irrigation demand and M&I diversions. The simulated export time series from CALSIM II was used for each alternative simulation in CVHM-D. Because CVHM-D does not explicitly incorporate the California Aqueduct and Delta-Mendota Canal in the model simulations, the water diverted for South Delta exports was taken out of the overall available surface water balance of the model.
- The Yolo Bypass area, the Deep Water Ship Channel and the sloughs in the Yolo Bypass area were simulated by imposing a drain boundary condition, with the drain elevations defined by the land surface elevation within each model cell.
- The open water bodies that were simulated in CVHM-D were configured as GHBs with a specified head and conductance for Clifton Court, Franks Tract, and Mildred Island.
- Baseline models: for CVHM-D, the Existing Conditions (EC) baseline was considered comparable to the No Action Alternative (NAA) without sea level rise and climate change, as Delta outflows do not change substantially between the two scenarios, and no new conveyance is built in the Delta under either scenario that could result in differential impacts. The construction of the NAA model is nearly identical to that of the historical CVHM-D model, except for a few input assumptions and boundary conditions that were modified. The groundwater pumping distribution for 2003, the most recent available in CVHM, was assumed to be reasonable for the duration of the 42-year simulation period. The 2003 surface water diversions for WBSs (farms) 6, 7, 8 and 11 were also assumed to be reasonable for the duration of the simulation. The most current land use distribution available from CVHM (approximately year 2000) was kept constant throughout the NAA simulation. The hydrologic

and climatic data used in the historical CVHM-D model was repeated in the NAA model. Therefore it was assumed that the water year 1962 through 2003 hydrology is a reasonable representation of the hydrology that could occur over the next 42 years. This model was used for the comparison of each BDCP alternative to the existing conditions (or NAA without sea level rise and climate change).

- Construction dewatering of project infrastructure was simulated by adding drains (from the MODFLOW drain package) in the model cells that represent the location of the infrastructure to be built. The NAA model was used as the basis for the construction dewatering model development. Construction dewatering simulations were performed for Alternatives 1A, 1B, 1C, 2A, and 4, as they all differ enough to warrant specific analysis. Other alternatives that present only slight modifications from these, were evaluated qualitatively.
- For the operations simulations, selected components of the fully built conveyance infrastructure for each type of conveyance that had the potential to cause impacts on shallow groundwater levels were included in CVHM-D. Alternatives 1A, 1B (lined and unlined), and 1C (lined and unlined) were simulated to evaluate typical impacts from a tunnel, east canal, and west canal alignment options, respectively. Each BDCP fully built alternative simulated with CVHM-D included assumptions of sea level rise and climate change and was compared to both the EC model and the No Action Alternative model with sea level rise and climate change.
- Alternative 9 does not require any new separate conveyance system to be built. It relies on existing streams and channels in the Delta and includes changes to existing State Water Project (SWP) and Central Valley Project (CVP) water conveyance infrastructure and operations. This alternative cannot be accurately simulated with CVHM-D because this model does not incorporate every channel and SWP and CVP conveyance in the Delta that would be used for this alternative. Therefore, the analysis of Alternative 9 in the Delta was done qualitatively.

### Model Limitations

CVHM and CVHM-D are powerful tools that, when used carefully and in a comparative manner, can provide useful insight into processes of the physical system. Although it is impossible to predict future hydrology, land use, and water use with certainty, CVHM and CVHM-D were used to forecast impacts to groundwater resources that could result from implementation of the BDCP alternatives to aid in development of the BDCP EIR/EIS. Mathematical models like CVHM and CVHM-D can only approximate processes of physical systems. Models are inherently inexact because the mathematical description of the physical system is imperfect and the understanding of interrelated physical processes is incomplete. CVHM and CVHM-D simulate groundwater conditions in the Delta Region with cells on one-mile and quarter-mile centers, respectively. Therefore, surface water and groundwater features that occur at a scale smaller than one mile and one quarter mile cannot be simulated in CVHM and CVHM-D, respectively.

# EXHIBIT N

# Social and Economic Implications of the Bay Delta Conservation Plan for Clarksburg, California

Submitted to Wallace-Kuhl & Associates
(916) 372-1434

by Kristin Aldred Cheek
May 2009

# Social and Economic Implications of the Bay Delta Conservation Plan for Clarksburg, California

## Background

The California Department of Water Resources, along with several other state and federal agencies, is evaluating alternatives for future management of the Sacramento-San Joaquin Bay Delta under a process called the Bay Delta Conservation Plan (BDCP). The purpose of the BDCP is to "provide for the recovery of endangered and sensitive species and their habitats in the Delta in a way that also will provide for the protection and restoration of water supplies" (State of California Department of Water Resources, 2007).

The outcome of the BDCP is expected to consist of capital and later operational improvements to the water supply conveyance system, along with a habitat restoration program informed by monitoring and adaptive management (State of California Department of Water Resources, 2008b). One stated objective of the BDCP is "to obtain long-term (50-year) permits to operate water and energy projects, both existing and new" (State of California Department of Water Resources, n.d., a). "Rearranging" the Delta will likely have significant consequences for residents and for local commerce. Some productive agricultural land may become the site of a canal or be converted to wetlands or riparian habitat. Changes in management of the Delta can affect land use patterns, businesses, economies, families, and ultimately communities.

In March of 2008, the Department announced that it would be preparing an Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for the BDCP, which they expect to complete by 2010. The EIS will contain an analysis of the direct, indirect, and cumulative effects of the BDCP, including those on land use, population, recreation, and historical/cultural resources. According to documents presented to landowners, the BDCP EIS will "analyze environmental effects of the proposed action" (including topics such as socioeconomic, biological and cultural impacts) (State of California Department of Water Resources, n.d., a and b) and evaluate "the potential impacts on agricultural, cultural, and economic resources" (State of California Department of Water Resources, 2008a).

The Delta Vision is a related process initiated by the California Governor's Office. It consists of three groups: the Delta Vision Blue Ribbon Task Force, the Delta Vision Stakeholder Coordination Group, and the Delta Vision Committee. Delta Vision participants based their work on the idea that ecosystem restoration and reliable water supplies should be "co-equal goals," meaning one cannot be accomplished without the other (Governor's Delta Vision Blue Ribbon Task Force, 2008). The process resulted in an Implementation Report, Strategic Plan, and a Final Report in December 2008. The Blue Ribbon Task Force called for collecting socioeconomic data, and the Implementation Committee concurred (Delta Vision Committee, 2008).

Thus far, the projects and proposals related to the BDCP have not included a comprehensive review of socioeconomic impacts that might result from land use changes in the Delta. When economic costs have been considered, it has been at the statewide level (see for example, Public Policy Institute of California, 2008). This report looks specifically at potential economic and social implications of the BDCP for Reclamation District 999 and Clarksburg, California, identifying issues that would be appropriate for inclusion in an EIS analysis. Though the specific scope of changes Delta management (including which lands might be converted) is not yet known, it is possible to delineate potential social and economic impacts.

## Approach

This report focuses on the community capacity, community well-being, and economy of the Clarksburg community. It describes current conditions in Clarksburg using both published data and residents' perceptions obtained through formal interviews. The report also explores potential social and economic impacts related to the BDCP using information gathered from BDCP documents, public comments from the community to the various BDCP entities, phone interviews with local residents and experts, and estimates of potential acreages affected and local agricultural sales figures.

Changes in land management inevitably result in social and economic impacts for individuals and communities, and humans and human communities are recognized today as an important part of ecosystem management. In the late 20th century, as land management shifted from commodity or single-species focused management to broader and more comprehensive ecosystem or landscape management, an associated shift broadened and deepened the study of social and economic impacts related to land management. There were three major ecosystem studies in the western United States in the 1990s that included not only biophysical assessments, but in-depth, scientific social assessments: the Forest Ecosystem Management Team (FEMAT, or the Northwest Forest Plan; USDA Forest Service and others, 1993), the Sierra Nevada Ecosystem Project (SNEP; Kusel, 1996 and Doak and Kusel, 1996), and the Interior Columbia Basin Ecosystem Management Project (ICBEMP; Harris and others, 2000). Each described the social and economic conditions of communities in the management area and explored the ability of communities to respond to changes in land management (Donoghue and Sturtevant, 2007).

FEMAT, SNEP, ICBEMP, as well as many other studies, have examined *community capacity* or *community resiliency*, two related concepts having to do with a community's ability to adapt and to marshal its assets to achieve community objectives. Communities are described quantitatively and qualitatively in terms of important assets and conditions. Assets include physical capital (natural, built, financial, and economic), human capital (residents' skills, abilities, education, and experiences), and social capital (the ability and willingness of people to work together for community goals). High capacity indicates that the community will be more likely to be able to expand opportunities and meet needs, and reflects a community's ability to improve well-being (including socioeconomic status) for its residents (Doak and Kusel, 1996; Kusel, 1996). Researchers have used these concepts to understand how natural resource dependent communities might be prepared to cope with major ecosystem management and related policy changes. It is also important to ask how a change in ecosystem management might impact a community's ability to respond to unrelated changes and to thrive in the future, as external conditions can influence capacity (Lyons and Reimer, 2006; Magis, 2007) and job losses in communities can lead to long-term reductions in capacity (Kusel, 1996).

Numerous studies have concluded that social capital, including strong social networks and civic engagement, plays a crucial role in a community's success and is the primary determinant of economic development (Marre and Weber, 2007; Donoghue and Haynes, 2002; Kusel, 1996; Doak and Kusel, 1996). Social capital is so important in part because it is what enables a community to use its other assets. As Donoghue and Sturtevant (2007) describe, "The ability of a community to adapt to change and to take advantage of opportunities depends not just on a community's stock of assets, but also on whether or not it can activate these assets to solve a problem or achieve desired outcomes." ICBEMP researchers concluded that, "importantly, even though a community's resources, including its amenities and attractiveness, can be factors influencing development, a decisive, major determinant of a community's resilience clearly is its residents—in particular, the willingness of residents to take leadership roles, organize, and realize their community's potential. Community residents are a central defining element in creating the future of rural communities." Other important factors for capacity include a community's attractiveness, availability of community services, economic diversity, infrastructure, and strong links to centers of political and economic influence. Also, of particular relevance to Clarksburg, Doak and Kusel

(1996) found that higher community capacity in some places was linked to "a long history and the continued presence of multiple old families."

Primary data collection for the major ecosystem management studies noted above consisted of focus groups with key informants (residents active in and knowledgeable about local community life, business owners, local government officials, educational leaders, and so on) or similar interviews and surveys. This study adapted definitions and questions related to community capacity from Doak and Kusel (1996) for interviews with several Clarksburg community members, including lifelong residents and relative newcomers, farm owners (grapes and field crops), and people employed in education, agricultural services, or local services, or working in professional fields outside the community. The interviews also explored community identity, social and economic conditions, impressions of the BDCP, and potential impacts from the BDCP.

Along with community capacity or resiliency, social assessments related to ecosystem management changes generally include a suite of quantitative socioeconomic indicators that reflect community well-being. For example, on-going monitoring related to the Northwest Forest Plan tracks poverty, educational attainment, occupational diversity, housing tenure, unemployment, and children in households with public assistance income (Donoghue and Haynes, 2002). This report includes data from the 2000 Decennial Census at the zip code level. In terms of published data, the zip code boundary matched most closely with the area that residents define as Clarksburg. It encompasses the town of Clarksburg, Reclamation District 999, and Reclamation Districts 150 and 307, stretching between the Sacramento River and the Sacramento River Deep Water Ship Channel. The area is similar to the one Yolo County has proposed for the Clarksburg Agricultural District, which encompasses about 36,000 acres (Yolo County Board of Supervisors, n.d., b). This report also includes data from local schools.

Economic impact data was based an estimate of the location of BDCP activities (provided by Wallace-Kuhl & Associates), acreages of crops on land that falls within the potentially affected area (identified plot-by-plot by a local resident), and gross sales figures from the Yolo County Agriculture Department, unless otherwise noted.

## Community Setting and Demographics

Clarksburg is a small, unincorporated community southwest of Sacramento in Yolo County, California. It is in the northern reaches of the Delta, within the BDCP planning area. It includes a small town on the Sacramento River, which is home to approximately 500 people (County of Yolo, 2009c). The Sacramento Area Council of Government puts the total 2001 population of the Clarksburg Regional Analysis District, which includes the town and the outlying areas, at 1,501 (2002). Nearly all the land in the community is classified as agricultural (County of Yolo, 2009c). Clarksburg is referred to often as a "heritage" or "legacy" community in the Delta (see for example, County of Yolo, 2009b).

Clarksburg is characterized in part by multi-generational farms and families. For example, Clarksburg Community Church was built in 1937 by "original settler families" and "many of these same pioneers and many more of their descendants are to be found attending the church today" (Clarksburg Community Church, n.d). Much of the farmland in Clarksburg is owned by a small number of families, with sixteen family groups owning almost half of the area's active farmland (Yolo County Board of Supervisors, n.d., a). One resident described the setting in Clarksburg as "a pastoral legacy that we anticipate will prosper for centuries, and that exemplifies the kind of special place that Delta agricultural interests recognize as critical to the area's future" (Heringer, 2008).

### *Agriculture and Land Use*

Clarksburg is a rural agricultural community with a strong history and plans to expand, particularly in wine grapes and related value-added sectors. Farming in the area began in the mid-1800s and Reclamation District 999, covering the largest portion of the community, was created in the early 1900s. The District has never flooded since its levies were closed (Marshall, 1992).

The major crops in Clarksburg are, by acreage: alfalfa (32%); grapes (30%); wheat (12%); safflower (8%); and tomatoes (5%). Other significant crops include: cucumber seed, corn, ornamental turf, ryegrass, and pears. Combined, these top ten crops make up more than 95 percent of Clarksburg's active farmland (Yolo County Board of Supervisors, n.d., a).

Farmers started planting wine grapes in the 1960s. Today, the area is part of the larger, formally recognized Clarksburg Appellation, where 31 varietals are grown on 11,000 acres (County of Yolo, 2009b; Applied Development Economics, 2008). Ten of these varietals bring a higher price per ton than the state average. Acreage planted in vineyards has more than doubled during the past 10 years, and this trend is expected to continue (Applied Development Economics, 2008). Clarksburg has been dubbed a "hotbed" for grape growing and wineries. With the increase in planting and contracts for grapes in recent years, there has also been a sharp increase in land prices (Lamb, 2008). Clarksburg is home to several wine companies, including Bogle Winery, Carvalho Family Winery, Heringer Estates, and Wilson Vineyards, with additional wineries sourcing grapes from the region. Bogle Winery, a family-owned company with 65 employees, is one of the largest in the country. Revenues were $50 million in 2005 and were expected to reach about $56 million in 2006 (Lamb, 2006). Five wineries use the Old Sugar Mill facility, which is also planned to include a visitor's center, microbrewery, artist studios and galleries, and other attractions to make it a destination (Old Sugar Mill, n.d.). (The mill was once the site of a processing facility that served area beet growers.) There is a custom crush facility at the Old Sugar Mill, but nearly all of the grapes grown in Clarksburg are processed elsewhere (Applied Development Economics, 2008).

Yolo County is currently finishing an update to its general plan, which will extend to 2030. The general plan will guide land use decisions and future development in the unincorporated areas of the County, including Clarksburg. One of the draft plan's central themes is the "primacy of agriculture and related endeavors" in the County (County of Yolo, n.d.). The core principles of the plan are to "preserve the rich soil resources" and minimize urbanization (County of Yolo, 2009a). The plan identifies Clarksburg as "the focus of the County's premier wine-growing region." Yolo County is exploring the potential of expanding the Clarksburg wine industry (Applied Development Economics, 2008). The most probable scenario for growth calls for 52 wineries by 2017, which would translate to 756 new jobs and $235 million in wages and returns to investors.

The County is also completing plans for establishing the Clarksburg Agricultural District, reflecting the unique characteristics and value of the Clarksburg area and its wine grape growing potential. The resolution calling for the District describes the area as one with an emerging value-added industry. It also notes that the area accounts for 9.4 percent of the County's active farmland, yet produces nearly 22 percent of the value of the County's five major crops (Yolo County Board of Supervisors, n.d., b). The County seeks to promote wine grape growing, establish local crushing, fermentation, bottling, and storage capacity, and promote tourism (County of Yolo, 2009b).

### *Recreation and Tourism*

Clarksburg offers an attractive setting that draws visitors to fish, boat, and to visit the wineries. On average, about 150 people visit Clarksburg wineries each day. However, there are few amenities to serve visitors, to extend their visits, or to keep visitor dollars in the local economy (Applied Development Economics, 2008). There are two marinas and a small tour boat. The County maintains four acres of

public river access in Clarksburg, and hopes to develop more public access points and to build and connect trails (County of Yolo, 2009). There is no commercial hunting in Clarksburg. There is a deli and a small store in town. The community lacks lodging, entertainment, or fuel services.

### *Schools*

Clarksburg is part of the River Delta Unified School District, which includes five elementary, two junior, and two high schools in Yolo, Sacramento, and Solano Counties. The Clarksburg schools serve a large number of English Learners and socio-economically disadvantaged students. The Delta Elementary Charter School was established by local residents in 2006, shortly after the School District decided to close the elementary school in Clarksburg and bus local students to a different community. In 2004-2005 at Clarksburg Elementary School, fifty-two percent of the student body were free or reduced school lunch program participants. Fifty-one percent were English learners (Delta Elementary Charter School, n.d., b). In 2006-2007 at Clarksburg Middle School, 46 percent of students were economically disadvantaged and 36 percent were English learners. The school did not meet the Adequate Yearly Progress criteria under No Child Left Behind in 2006-2007 (River Delta Unified School District, 2007a). Delta High School in Clarksburg serves 220 students in grades 10-12 from several communities. In 2006-2007, 42 percent of students were economically disadvantaged and 41 percent were English learners (River Delta Unified School District, 2007b).

### *Community Demographics*

#### Housing

A larger percentage of Clarksburg area residents live in renter-occupied housing than in the County, state, or nation.

| | U.S. | California | Yolo County | Clarksburg area (95612) |
|---|---|---|---|---|
| Population in owner-occupied housing | 69% | 58% | 54% | 47% |
| Population in renter-occupied housing | 31% | 42% | 46% | 53% |

(U.S. Census Bureau, 2000.)

#### Educational Attainment

Clarksburg educational attainment rates for persons 25 years and older are lower for both secondary school and higher education than in the County, state, or nation.

| | U.S. | California | Yolo County | Clarksburg area (95612) |
|---|---|---|---|---|
| High School diploma or higher | 80% | 77% | 80% | 72% |
| Associate's Degree or higher | 31% | 34% | 40% | 23% |

(U.S. Census Bureau, 2000.)

## Poverty

The percent of Clarksburg residents living below the poverty line is similar to the statewide and national figures, but lower than Yolo County's. When people living below 200 percent of the poverty level are included, it reflects a higher proportion of Clarksburg residents than for other areas - more than 10 percent higher than at the national level.

| | U.S. | California | Yolo County | Clarksburg area (95612) |
|---|---|---|---|---|
| Percent living up to .99 of poverty level | 12% | 14% | 18% | 14% |
| Percent living up to 1.99 of poverty level | 30% | 33% | 37% | 41% |

(U.S. Census Bureau, 2000.)

## Employment by Industry

As the table below shows, there is much less employment diversity in Clarksburg than in other areas. A very large percentage of employed Clarksburg residents are working in agriculture (42%). Other occupations with significant employment include educational, health and social services (12%), construction (9%), and professional (9%).

| | U.S. | California | Yolo County | Clarksburg area (95612) |
|---|---|---|---|---|
| Agriculture, forestry, fishing, hunting, mining | 2% | 2% | 4% | 42% |
| Construction | 7% | 6% | 6% | 9% |
| Manufacturing | 14% | 13% | 6% | 6% |
| Wholesale | 4% | 4% | 4% | 1% |
| Retail | 12% | 11% | 10% | 5% |
| Transportation, warehousing, utilities | 5% | 5% | 5% | 1% |
| Information | 3% | 4% | 2% | 1% |
| Finance, insurance, real estate | 7% | 7% | 5% | 3% |
| Professional, scientific, administrative, waste management | 9% | 12% | 10% | 9% |
| Educational, health and social services | 20% | 19% | 29% | 12% |
| Arts, entertainment, recreation, accommodation, and food services | 8% | 8% | 7% | 3% |
| Other services | 5% | 5% | 5% | 6% |
| Public administration | 5% | 5% | 8% | 2% |

(U.S. Census Bureau, 2000.)

According to the 2000 Census, more than 40 percent of people working did so outside of the county. About the same percentage reported working at home or driving less than 15 minutes to work.

## Community Well Being and Community Capacity[1]

### *Social and Economic Conditions*

The Blue Ribbon Task Force described Clarksburg as a place of "history and cozy timeliness"(2008). It seems residents would agree. Persons interviewed for this report described Clarksburg as a "true community," one of the last of its kind, a dying breed, like communities were in the 1930s and 40s, a community that is not changing like others. Clarksburg is a small, rural, beautiful farming community that is peaceful, safe, and quiet. Life revolves around the schools, churches, Boy Scouts (one of the oldest troops in the nation), fire department, and farms. Traditions are important. The community is strengthened in part by multi-generational families, but is also home to people from diverse backgrounds. It is viewed as a close-knit community where people know each other well, help one another raise their children, and care deeply about their quality of life. People are thought to be personable, open, and generous. They like to work together and generally get along well. For a large number of residents, including a significant percentage of school-age children, Spanish is their first language. (According to the 2000 Census, 42 percent of the population is Hispanic.)

Clarksburg also has a number of challenges. Like many other small communities, it has dealt with declining school enrollments. The community needs a new firehouse, but so far has been unable to raise sufficient funds for it. There is limited housing, which is considered as a barrier for people wishing to move back to the community. The community was divided in opinions about a recent proposal for a new housing development at the Old Sugar Mill site.

Residents equate the economy in Clarksburg with farming. Agriculture is viewed as stable and supporting the community's existence. "The only thing going on is ag," said one resident, while another stated, "The economy is agriculture." Farms are thought to be in decent financial shape because they have been managed by multiple generations of the same families. A large portion of residents are farm owners, laborers, and service providers, but there are also residents who commute to professional and government jobs, and a number of artists (musicians, photographers, and others). There are no job opportunities for the "general public;" people do not tend to move to Clarksburg for work. There are seasonal migrant workers who work on the farms, as well as a permanent farm labor contingent. People of all economic "levels" live in Clarksburg, from part-time agricultural workers to white-collar professionals and large business owners. There are few service businesses in town.

Clarksburg has undergone a number of changes. Long-time residents remember when the community had two auto dealers, a barber shop, a beauty parlor, a gas station, two markets, a hardware store, a lumber yard, and the sugar mill was processing local beets. They attribute many of the retail losses to development in Sacramento, which has spread southward, as well as a shift in demographics in Clarksburg. The community has lost a lot of population since the 1960s, in part due to advances in farming and the need for fewer laborers. In addition, as newer residents with jobs in Sacramento moved in, they continued to do their shopping, get their hair cut, and so on in Sacramento.

Crops in Clarksburg have changed as well. A number of years ago, farming focused on corn, tomatoes, and beets. Recently, as growing tomatoes became financially unviable, the community lost its tomato processing facility. It was a cooperative company and some farmers lost capital when it failed. The emphasis in crops has shifted to alfalfa and wine grapes. Community members seem to welcome this, noting that wine grapes are more valuable and provide more year-round employment and more stability than other crops.

[1] Information in this section is from interviews with Clarksburg residents, unless otherwise noted.

Despite changes, residents feel that the social fabric of the community has remained intact. Newcomers are welcome and tend to want to protect the characteristics that drew them to the community. Farmers continue to uphold the values passed on by prior generations. Volunteerism remains strong. Residents consider the community generally healthy, given its nice setting, residents who get along well, variety of people, and a sense that "everyone pitches in for everyone." Some feel that the community is somewhat fragile simply because of its small population and would like to see a broader range of residents, more young families, more variety in local businesses, and more job opportunities. Residents see a future for the community in boutique wineries and ag tourism, perhaps becoming the next Napa in terms of price to value ratio. With high quality grapes, room to expand, and water access, Clarksburg is in a position to grow its wine industry.

### *Community Capacity*

#### Physical Capital

Naturally, many of the community's assets are related to agriculture. Residents cite rich farmland, access to water, a unique microclimate that allows the growth of premium crops, the Clarksburg Wine Appellation designation, and Yolo County's emphasis on agriculture and protecting agricultural land as positive assets for the community. Local farms now boast significant investments in permanent crops, including orchards and wine grapes. Also, because many farmers are well-established, they reportedly have existing relationships with banks, revolving lines of credit, and savings. The Old Sugar Mill, with its wineries and custom crush facility, is another asset.

Despite the small size of the town, there is good access to transportation and services. Clarksburg is about 15-20 minutes from Sacramento. Businesses have access to the Port of Sacramento, Sacramento International Airport, the Deep Water Ship Channel, and major federal highways (80 and 5).

Some residents move back to the community because of the schools. The schools' small size means that everyone has opportunities to participate in activities. The Charter School draws residents from other communities looking for a small, safe setting for their children. Other assets include the fire district, churches, a library, good Reclamation Districts that take care of levees and ditches, and a well-maintained residential area, where people take pride in their homes (the County Plan lists all housing units in town as being in good condition).

The community has several infrastructure needs. It currently lacks a community wastewater or water system, relying instead on septic systems and private wells. This lack of infrastructure is a barrier for the community to establish a large-scale processor for the wine industry. (See Applied Development Economics, 2008 for more information.) Other needs include expanded broadband access and a new firehouse.

Contradictory state and federal regulations, along with the costs of complying with regulations, are another challenge. As one resident described, a government agency might consider a tree on a levy to be a threat to the levy's integrity and threaten a fine if the tree is not removed. But, another agency might look at the tree as habitat and threaten a fine if it is removed. Situations like this lead to frustration and uncertainty. Today, residents fear that issues revolving around water management in the Delta will limit the ability to attract new capital.

#### Human Capital

According to community members, the people who settled the Clarksburg area believed in education. When the Holland Land District (now Reclamation District 999) was settled in the 1920s, developers specifically recruited college graduates. One of the first things built in the town was a school, followed by boy and girl scout camps, and a church. Today, residents still value education and youth.

Clarksburg is home to people with a wide variety of skills and perspectives, particularly given its small size. The village of Clarksburg is now home to professionals and artists with different backgrounds, including lobbyists, attorneys, judges, educators, designers, sculptors, photographers, and musicians. A lot of people can and do help on community projects. As one resident said, "talent surfaces when it's called for." Clarksburg is also fortunate to have what one resident called "generational wisdom." Many people who move away for education and jobs come back to town, get involved, and carry on local traditions.

As the business of farming gets more complex, one resident expressed concern that some local operators do not employ modern accounting systems and other methods that would help them manage their operations, and stated that this generation of farms is not faring as well as the last. Others point to farms adapting by shifting to grapes and other crops as evidence of farmers' business savvy.

The future of the community rests in part with the ability of residents to envision possibilities. One resident feels that Clarksburg needs more people with fresh ideas and worries that the community has become "more sterile." There were upwards of 8,000 residents at one time, more racial diversity, and more young residents.

## Social Capital

When asked about people's willingness and ability to work together for community goals, residents described a place where people work closely together, where there are many organizations that help youth and the needy, where there is a lot of volunteerism, where everyone turns out to donate blood when a community member falls ill, and where there are sometimes disagreements, but people "agree to disagree." The proposed Sugar Mill project was divisive and polarizing, but some believe that the community emerged stronger as a result, with a greater ability to articulate its desired future.

One example of the community's strength that many residents shared was the charter school project. Clarksburg is part of a geographically large school district. The district decided to close the elementary school in Clarksburg, reportedly without soliciting local input. With community action and fundraising, residents were able to put together a charter school in about six months, something described as a remarkable feat.

The community has faced several potentially "life-altering" threats from outside, with the school closure and BDCP being the latest. Each time, once people are aware of issues that might affect the community, there is a lot of involvement. Just one day after hearing about an early BDCP meeting, 300 residents came to listen and speak. As one resident who told the story said, "it just takes a phone call to get support." But threats from the outside are difficult to manage. Though there is significant community spirit and an ability and willingness to work on community projects (like the original redevelopment of the Sugar Mill or establishment of the charter school), it is more difficult to get people involved in issues from "the larger world" that affect Clarksburg (like the BDCP). The community remains somewhat isolated and idyllic, and facing these issues is a challenge. Within the large group of active residents is an informal small group of community leaders, numbering about two dozen or so people. It includes both long-time farmers and newer Clarksburg residents. They go to many meetings and donate a lot of time. They also provide financial support for community issues. They have been involved in different issues over a period of time, something causes stress and takes a tremendous personal toll. Some people in the community feel they "fight with everything." For many of them, their way of life is connected to what their grandparents and great-grandparents did. It's their heritage; they are deeply invested Clarksburg.

## The BDCP[2]

### *Local Impressions of the BDCP*

Clarksburg residents are skeptical about the extent to which the BDCP has to do with habitat. They described the BDCP as a slick political strategy, an effort to control water, and a "huge smoke and mirrors project" from water contractors trying to get water for southern California. Some feel that after an attempt to build a peripheral canal in the 1980s failed due to environmental groups' opposition, this new attempt was repackaged with restoration projects to gain approval from the environmental community, but that it's still fundamentally about transferring water. The contractors make money and the environmentalists get habitat, while Clarksburg is "offered up as a pawn" to get the project done.

Residents are also concerned that the analyses being done look at costs and benefits to the state as a whole, and do not consider small communities like Clarksburg. Some feel there has been no meaningful effort to involve people in the Delta and that the process has "grossly ignored" the local population and economics. They point to the Delta Vision's co-equal goals, which ignore the third "leg" that supports the Delta: communities and their economies. They have also noted that the process does not consider humans a "species," like it does fish and other Delta inhabitants (Bureau of Reclamation, 2008). Despite all this, residents of the Delta will feel the impact of decisions more than any other stakeholders (Heringer, 2008). Some residents think Clarksburg, an area with a small population, probably looked like an "easy target" on a map. But, in the words of one resident, "The Delta is not a blank slate. People live here. People work here. People fish and boat and walk their dogs here." (McGowan, 2009) Community members are working to have their voice heard. One resident said, "When we heard what was happening, we stood up and said, 'wait, we're here.' We're like Whoville."

The project also feels rushed. One resident described the process as "engineered from the beginning to miss major steps." A public meeting in April 2008 offered no defined alternatives, and another almost one year later still lacked clearly defined alternatives. Yet, the process is "charging ahead" with "extremely aggressive, arbitrary political deadlines."

Meanwhile, a lot of people in Clarksburg do not have access to computers to read BDCP information, do not have time to go to meetings, and many (more than a third of adults according to one resident) cannot read English. There is miscommunication and a lack of information. The process feels wrong and unjust. The project looks broad and nebulous, and people are unable to keep track of shifting maps and alternatives, or figure out how different Delta projects fit together. Many people are confused and afraid.

Resident's biggest fear related to the BDCP is that it has the "potential to destroy the community," "the potential to disrupt everything we do." This fear comes from an understanding that farming is the foundation of the community's character, values, history, and economy. If the ability to maintain farms is at stake, then the community's future is at stake. "If [the BDCP] impacts farming negatively, you're going to kill the town. [Farming] is the backbone." One resident said, "Ten percent loss may be 100 percent," referring to the potential for 10 percent of the area to be converted to habitat ultimately leading to the downfall of the community. Others predict lose in population, loss in farms, lost opportunities for growth, and a town that changes, but adapts and continues. The prospect of 50-year permits compounds uncertainty and "puts a cloud on the district" for the foreseeable future.

For many residents, the potential changes are quite personal. "I'll lose the ability to do what I love." "I'll lose my home." "I will go out of business." A farm manager who resides in on-farm housing described his biggest fear: "If I lose my job, where will I go? I'm too young to retire and too old to start over." One farm owner contemplating the possibility of being bought out for land conversion lamented the loss of the

[2] Information in this section is from interviews with Clarksburg residents, unless otherwise noted.

revenue potential he's created on his farm, and predicted he would not be able to recover financially from a sale. Others also showed concern for neighboring communities, not wanting to simply shift the burden from Clarksburg to another community. There is a lot of uncertainty surrounding what lands might be converted, when it might happen, what the long-term effects of land and water management changes might have, and so on, but more specific potential impacts are described below.

### *Potential Impacts*

Direct and Indirect Economic Impacts

The most salient potential impacts are direct losses in farm acreage. This report looked at two potential scenarios: (A) a western alignment for a new canal adjacent to the Deep Water Ship Channel, and (B) an area along the west side of the Sacramento River that would be impacted by a levee strengthening effort or a pipeline for intakes. Wallace-Kuhl & Associates provided a map with approximate locations of these two scenarios overlaid with parcel numbers. A resident farmer who is familiar with the area visually checked each plot and recorded what crops are being grown. The BDCP projects do not follow parcel boundaries; they cut through the parcels. The farmer's estimate includes the entire acreage in each parcel, noting that a project cutting through a field would likely impact the whole field. (Farmers losing a portion of a parcel to habitat will have to adjust roads, irrigation, end posts, trellises, and so on.)

**Scenario A (Western Alignment)**

| | Acres (RD 999 & 765) | Revenue/Acre[3] | Total Annual Revenue Losses |
|---|---|---|---|
| Alfalfa | 1,566 | $963 | $1,507,915 |
| Wheat | 1,215 | $342 | $415,503 |
| Safflower | 901 | $357 | $321,269 |
| Wine grapes | 655 | $3,908 | $2,560,067 |
| Pasture | 599 | $13 | $7,721 |
| Dichondra | 124 | $5,177 | $641,954 |
| Cucumber | 120 | $2,611 | $313,374 |
| Orchard | 85 | $3,202 | $272,202 |
| | 5,265 | - | $6,040,004 |

**Scenario B (West side of Sacramento River)**

| | Acres (RD 307 & 150) | Revenue/Acre | Total Annual Revenue Losses |
|---|---|---|---|
| Wine grapes | 1,981 | $3,908 | $7,742,736 |
| Alfalfa | 848 | $963 | $816,546 |
| Wheat | 666 | $342 | $227,757 |
| Orchard | 600 | $3,202 | $1,921,427 |
| Rootstock | 28 | $16,285 | $455,967 |
| Pasture | 23 | $13 | $296 |
| | 4,146 | | $11,164,729 |

Quantitative impact estimates listed above are limited to direct gross revenues based on acreages and average revenues per acre. Using an economic input-output model for a small county (or even smaller area) is time consuming and expensive, as "off-the-shelf" models (i.e., IMPLAN), particularly for small counties, need ground truthing and correcting. An input-output model would provide estimates of income and jobs losses associated with this revenue loss, as well as losses to businesses supported by purchases

[3] Derived from the Yolo County Agricultural Department's 2007 Agricultural Crop Report (n.d.). Dichondra was assigned to pasture and grass and seed; cucumbers to miscellaneous vegetables; orchards to fruit and nuts, miscellaneous; rootstock to nursery products, propagative stock; others as stated.

from these farms and their employers (the "multiplier effect"). As farmers lose revenue, reduce their operations and numbers of employees (or go out of business), other area businesses are impacted. These businesses include general retail and service businesses, farm labor contractors, and other farm services (e.g., equipment repair, seed suppliers, chemical and fertilizer suppliers, etc.).

It is not clear how each individual farm would adapt to losing a portion of its acreage, whether each would remain viable. Farmers still have to support their fixed overhead costs while facing diminished revenues. For example, a study detailing typical vineyard costs puts office expenses at $150 per acre (University of California Ingels and others, 2008). If a vineyard is viable with these costs at a certain acreage and loses some acreage, it would have to cover costs with the remaining acreage. One farm CFO described two types of overhead costs: production and corporate. Production costs include those related to facilities, field support staff (e.g., a foreman). Corporate costs include accounting, office, legal, and the owner's salary. This farm allocates costs by acre. A loss in acreage does not change overhead, just direct costs (field workers, seed, fertilizer, etc.). The business's strategy is to increase acreage and decrease cost per acre. Per acre cost and profitability is the key to success. Losing acreage clearly works against this.

There are also impacts on processing facilities of the impacted crops. The path for Scenario A runs through a seed mill that processes half of the area's dichondra seed. Though most wine grapes are processed out of the county, there are several wine operations in the community.

Finally, there are concerns about increased operational costs for farms. Farms rely on water from the river to continue operating. Some residents are concerned about the long-term water availability and quality. Concerns include reduced supply, salinity, less dilution of Sacramento's treated wastewater entering the river upstream of Clarksburg, as well as problems with seepage, changes in drainage in fields, and changes in groundwater levels. Other potential operational costs include the potential for fish screens, reduced yields if farms are required to reduce chemical use, crop losses from an increase in migratory birds, and increased shared expenses for the Reclamation Districts.

There is some potential for losses in agriculture to be offset by gains in tourism and recreation as habitat for fish and waterfowl improves. However, it is not known if additional public access points to encourage non-resident visitation will be developed, and the local economy currently has few services to capture visitor spending (see the discussion below on "Future Development").

Reclamation District 999

Conversion of agricultural lands to habitat will reduce the Reclamation District's revenues. Farms now pay $30 per acre to support the District (Ingels and others, 2008), which maintains levies and provides stormwater drainage services. A loss in revenues could threaten the viability of the District and/or drive up costs for remaining farm acreage. At the same time, costs to manage the District would likely increase. The District is carefully engineered, and putting new structures in it to manage water will change how it functions. This could lead to the need for changes in the existing structures, further increasing costs (Webber, 2009).

Under Scenario A, the District would lose approximately $158,000, or 31 percent of its property assessment revenues in 2006-2007. Under Scenario B, it would lose approximately $124,000, or 24 percent of its assessments (total District revenues from California State Controller, 2008). The District currently employs three full time people: a manager, a field staffer, and a mechanic.

## Future Development

The BDCP process is already affecting existing businesses, and has the potential to impact the community's development plans. The trend in Clarksburg has been toward converting field crops to higher-value wine grapes. One farm that could be impacted by the BDCP increased wine grape acreage

by 15 percent this year. But others said the BDCP process had halted their plans to convert more acreage to wine grapes or to put more capital into their farms. A business owner who serves the grape industry stated he has tabled plans to invest in land and buildings because of the uncertainty with the BDCP.

The biggest potential loss could be the opportunity to expand the wine industry and associated tourism. A report exploring the potential for the wine industry suggests a scenario that would provide 756 new jobs and $235 million in wages and return to investors. But it cites the BDCP as a potential barrier. As local counties point out, "The ability to attract processing facilities depends on volume and if a large portion of the existing and future agriculture is lost, there will never be sufficient economies of scale to develop the value-added benefits of local production and processing" (Delta Counties Coalition, 2008).

### Local Organizations and Services

Because of current constraints on new development, loss of existing homes on farms (farm owner and employee residences) would not likely be offset by new homes in the near term. A loss in population would effect the whole community (Bureau of Reclamation, 2008).

Clarksburg schools, including the new Charter School, are an important to the fabric of the community. Population loss will translate into less average daily attendance at the schools, which will reduce school funding. The schools' fixed costs, including administration and building maintenance, would likely remain the same, meaning they would become less financially viable. Because Clarksburg is part of a regional district and students from other communities attend local schools, residents also noted that other communities could be affected by any impacts on Clarksburg schools. The local volunteer fire district could lose volunteers if population goes down. The fire district is not only important because it responds to medical and fire emergencies. It hosts dinners, parades, and other community events throughout the year, events that bring people together. Residents view it as an integral part of the community and are concerned about its future. Like the schools and fire district, the local churches provide a way for community members to connect. With community population loss, the churches could lose congregants and financial support.

The Clarksburg Wine Growers and Vintner's Association is a volunteer group that collects $3 per acre in dues (Ingels and others, 2008) and would be affected by losses in wine grape acreages.

### Community Capacity

Given the dominance of agriculture in the community, land conversions stemming from the BDCP would impact all aspects of community capacity. The most direct impact would be the loss of farmland, the community's vital physical asset. Most importantly, the BDCP would affect social capital. While social capital is strong, it is also vulnerable because of the small size of the community. Some residents see the potential for a very dramatic impact on social capital, if some of the community's leaders lose their farms and leave the area. Several of the area's informal leaders are directly in the path of one or more of the BDCP scenarios: "It has the potential to bankrupt several community pillars who make us who we are."

### Historical Resources, Other Issues

There are seven county-recognized historical resources in Clarksburg and 1200 recorded cultural resources in the county (the locations of these are confidential) (County of Yolo, 2009d). This report did not consider how these resources might be affected.

There are many other concerns that residents have raised, including the potential for increased mosquito-related illnesses and abatement costs, changes in the community's transportation routes, and negative impacts on food security and global food needs. For more information, see Bureau of Reclamation, 2008 and Delta Counties Coalition, 2008.

## Summary: Observations and Recommendations

*The well-being of the Clarksburg community is bound together with agriculture.* More than 40 percent of the workforce is directly employed in farming.

*The Clarksburg area has the potential to lose millions of dollars in direct farm revenue due to BDCP land management changes* (more than $11 million annually in one scenario and $6 million annually in another). This will translate directly into losses in jobs and income in agriculture, as well as additional losses in businesses and services that rely on spending from agricultural firms and employees (the multiplier effect, which is not included in these figures).

*Reclamation District 999 is at risk of losing a large percentage of its revenues from property assessments* (31 percent in one scenario, 24 percent in the other).

*Economies of scale, for businesses and for local services, are key, as are the interrelationships between businesses.* There are several issues critical to Clarksburg that are not easily measured, such as the financial viability of farms or organizations that lose a percentage of their revenues, how a grower would cope with losing a local processing facility, or how a processor would cope with losing a portion of its supply.

*Clarksburg is at risk of losing some of its most valuable social capital assets: active, involved local leaders.* Social capital is critical to community capacity, and therefore to a community's success. Several local leaders may be directly impacted by the BDCP, and important community organizations may be indirectly impacted.

*The community is also at risk of losing a portion of its most important physical asset, its farmland.*

*Impacts begin with the discussion of land use changes, not just with implementation of those changes.* Some businesses owners are hesitating to make investments given the uncertainty surrounding the BDCP.

*The BDCP EIS should address community-level impacts*. Rural communities are especially vulnerable to change. Communities of place and of shared identity, not necessarily defined by legal boundaries, are the appropriate and essential level of study for social assessments. Assessments above the community level mask differences across communities and the impact of changes on residents. (For a complete review of the literature and justification for using the community rather than the county or regional level for assessment, see Harris and others 2000, who note that reliance on counties for analysis has been "abandoned," the reasons for which would apply to larger areas for analysis as well.)

*The BDCP EIS should go well beyond studying economic impacts*. Economic analysis alone is inadequate (Harris and others, 2000). Furthermore, economic analysis should go beyond input-output modeling, which will not account for economies of scale (for businesses or for local services), additional costs of doing business, and so on.

*BDCP socioeconomic assessments should address community capacity.* Community capacity (or resiliency) has emerged as an important factor in a community's success. Studying it at the local level can inform decision makers about how communities might respond to changes in land management.

*BDCP socioeconomic assessments should include meaningful local participation*. Recent major ecosystem studies have employed some form of local self-assessment, involving community members in describing and understanding local conditions and potential responses to changes.

*BDCP assessments should consider how the project will impact socioeconomically disadvantaged residents.* Clarksburg schools serve a large percentage of disadvantaged students.

*Agencies preparing the EIS should consider more ways to reach community members*, both to inform and to solicit input that can improve decision-making. Shindler and others (1999) note that "having a variety of mechanisms and forums for involving people is essential to reach different segments of the population who have differing abilities or resources to participate" and describe additional characteristics of successful citizen-agency interactions. In addition, consideration should be given to community members for whom English is a second language. A large portion of local students are English learners, and according to one resident more than one-third of adults in the community do not read English.

*An economic recovery plan tied to the BDCP should examine how communities will be able to mobilize to take advantage of new opportunities,* especially if those communities are experiencing diminished social capital as a result of changes in land management. Social capital is what enables communities to use its other assets, like financial resources. The plan should also consider long-term monitoring to understand changes over time.

*A compensation or recovery plan should consider residents who work for local businesses and who rent homes, as well as business and home owners.* The Delta Vision Committee Implementation Report discusses developing a Delta Economic Plan by 2011 and calls for identifying programs and projects "that have the potential to quickly improve the economic vitality of the Delta" (2008). How will such plans address displaced foremen, irrigation workers, administrative and professional staff, farm laborers, agricultural service business owners and workers, or others dependent on ag-related spending, or workers living in farm housing? Will economic development efforts targeted at developing new business help the same people impacted by the BDCP?

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## About the Author

Kristin Aldred Cheek is an independent social science researcher and writer specializing in natural resources and sustainability. Her experience includes faculty research assistantship appointments at the University of Montana and Oregon State University, where she completed several economic impact studies. She is the co-author of a Forest Service publication on citizen participation in natural resource decision-making, which includes a framework for monitoring and evaluating citizen-agency interactions in adaptive management settings. She received a master's degree from the College of Forestry at Oregon State University; her thesis was a study on how a federal policy related to the community capacity of several natural-resource dependent communities. (http://www.linkedin.com/in/kristinaldredcheek ; Phone: 603-780-4807)

# EXHIBIT O

# Best Management Practices and Design Considerations for Delta Construction Projects-

## A White Paper to aid in planning projects that impact or include roads in the Sacramento-San Joaquin Delta

*By*: BSK Associates

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## Delta Road Design Elements

**Introduction**-The Sacramento San Joaquin Delta (Delta) public road infrastructure has structural, geometric and aesthetic characteristics that require careful evaluation when using or redeveloping it for large-scale construction projects. Delta roads are unusual in several ways, as they are typically placed on major river levees. Poorly sited roads can also function as levees by accident because of poor local drainage and insufficient culverts. Major Delta roads are typically elevated, sometimes by 20 or more feet above the surrounding terrain. This elevation difference can exacerbate traffic noise, significantly increasing local sound and light disturbance from vehicle traffic. Delta roads frequently have limited to no shoulder, abrupt egress, poor sightlines, mixed quality subgrades, and differential foundation settling.

Each of these issues can be addressed during road rehabilitation, reconstruction or new design. Typically a road stripped to the base or sub-base can have some elements included that improve the lifespan of the road significantly, particularly in support of heavy vehicle traffic. Improved surface courses, including recycled rubber developed several decades ago, can significantly improve public safety and wear. Counties and local reclamation districts typically maintain these roads and their levees as part of the critical transportation and public safety infrastructure.

**Project Design**-Construction projects proposed for the Delta under various programs and projects, including legacy Calfed, Bay Delta Conservation Plan (BDCP), and others, must be sensitive to the local road design considerations. At a minimum, potential road and bridge impacts should be addressed in coordination with the individual county public works departments, and the local reclamation districts responsible for levee maintenance and drainage. The specific recommendations provided in this review are intended to lessen likely project road associated impacts, including reducing road noise, maintaining safety, and reducing the burden on local roadways from individual projects and their aggregated cumulative impacts.

Regional Programs and projects can inadvertently pass the impacts of road damage and the costs of the repairs on to the local community. Delta infrastructure is least able to sustain these impacts and thus should have special protections. Regional projects should not be allowed to pursue narrow project objectives; they should be encouraged to minimize local impacts. Project proponents should strongly consider adding value to their projects by adding improvements to roads that cost little to implement, but do require advance planning, such as guard rails, pullouts, permanent signage, sound reducing surfaces, and bike lanes.

The first task for new project planners is to identify and communicate with local agencies to ensure that the roads and bridges can physically withstand the proposed vehicle traffic and truck loads. Many Delta transportation facilities are beyond their design life and may not meet their rated specifications. For example when traffic was redirected along Highway 160 during the flooding of the Interstate Freeways in 1996, heavy truck traffic created severe ground motion effects. Those effects included heaving and liquefaction of the road bed which was visible to observers. The effects of high water tables must be analyzed when designing roads and for their reconstruction in the Delta.

The second task is to plan for the road damage that the proposed project will cause. That mitigation should include direct funding for the impact cost to the county and reclamation district(s); and, when the project can include road reconstruction, rebuilding the road to standards that can withstand the local soil conditions and the continued heavy loads and traffic associated with the project and likely future phases of that project.

The third task is to establish an effective traffic and communication plan through signage for delays (including an accurate estimated delay time) and temporary rerouting directions and closures, both at the main highway junctions and at the project itself. The fourth task is to restrict construction and redirection projects outside of the produce trucking seasons, particularly for pears and grapes. Because of the few roads and lack of easy turnarounds, a small flagging operation during harvest can literally shut down traffic for several miles, creating gridlock and public safety issues.

Lastly, road design and reconstruction should be completed at a scale and with an aesthetic that complements the local historic communities. Designs that that adequately accommodate traffic, allowing safe pullouts, while encouraging drivers to stay within the posted speed limits are preferred. The existing Delta aesthetic with its historic bridges, roadside trees and narrow levees should not be replaced with contemporary designs unless they blend with, and retain, existing design elements in Delta communities.

**Design Life**-California Highway Design Manual (CHDM) identifies the pavement design life for new construction and reconstruction of roadways in Table 612.2. For the Delta, given the nature of the many proposed projects and the required operations and maintenance of those new projects, the road and shoulder design should automatically follow the 15,000 or greater Average Annual Daily Truck Traffic (AADTT) at a design life of 40 years.

That conservative approach should be followed regardless of the per project AADTT for a variety of reasons, including: proposed project needs of new facilities and their impacts on roadways exceed 40 years; the impact of the project on the community from noise, lights and traffic, and on the roadways themselves; re-construction of the roadways is exceptionally

challenging given the lack of any reasonable alternative routes; the cumulative AADTT from all of the projects would likely be close to or exceed 15,000; the lack of locations for vehicle weighing can promote truck overloading, leading to much higher roadway impacts than a simple AADTT calculation provides; and, the projects should be responsible for both their short-term and the long-term impacts on local infrastructure. In addition, in terms of design standards, the use of rubberized asphalt and geotextile materials should be integrated into the pavement design to increase overall design life, typically reduce site specific repair needs, and to reduce sound impacts.

**Widening**-Most Delta roads lack the lateral area for widening. However, if a road is getting a new base or if it is a new construction, sufficient room for bicycle lanes should be planned, even if only constructed on one side of the roadway. Consideration should be given to developing turn-outs and pull-outs where possible to allow vehicles to safely leave the roadway and to allow passing.

**Resurfacing**-Rubberized asphalt should be used in every resurfacing and new construction project. The advantages of rubberized asphalt are well-established by Caltrans, and supported by decades of research, and examples can be found throughout the Sacramento region. The reduction of sound, increased traction and surface life, as well as re-use of a high-carbon footprint product are all compelling rationale for the use this product. Further information and standards can be found at the following weblinks: http://www.dot.ca.gov/hq/maint/Pavement/Offices/Pavement_Engineering/PDF/Asphalt-Rubber-Usage-Guide.pdf http://www.dot.ca.gov/dist1/d1lab/rac.htm

**New Construction or Reconstruction**-Caltrans has developed a series of specific standards for every element of road design. New construction or road re-design should use the preceding Design-Life standards provided above, and follow the most current Caltrans design, which can be found at http://www.dot.ca.gov/hq/oppd/hdm/pdf/english/chp0610.pdf

**Conclusions**-By working closely with the local County and relevant reclamation district(s), project environmental planners can avoid potential project impacts to local roadways, and as needed develop mitigation under the California Environmental Quality Act. Equally importantly, project proponents can provide early consultation in order to identify these issues well in advance of the design and selection process. Engaging the local community can save significant time, money and conflict over what are really fairly simple engineering issues.

# EXHIBIT P

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**BY EMAIL**

July 24, 2014

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*Re: Comments on Draft Environmental Impact Report/Environmental Impact Statement for Bay Delta Conservation Plan*

Dear Ms. Meserve,

Per your request, I reviewed the Draft Environmental Impact Report/Environmental Impact Report ("Draft EIR/EIS") for the Bay Delta Conservation Plan ("BDCP" or "the Project") published for review by the U.S. Department of the Interior, Bureau of Reclamation ("Reclamation"); U.S. Department of Fish and Wildlife Service ("USFWS") and the U.S. Department of Commerce, National Oceanographic and Atmospheric Administration, National Marine Fisheries Service ("NMFS") as the lead agencies for compliance with the National Environmental Policy Act ("NEPA") and the California Department of Water Resources ("DWR") as the lead agency for compliance with the California Environmental Quality Act ("CEQA").[1] My review focuses on air quality and greenhouse gas impacts under CEQA, but my comments are equally applicable to the corresponding NEPA review.

My qualifications as an environmental expert include a doctorate in Environmental Science and Engineering from the University of California Los Angeles. I am a court-recognized expert and have prepared comments and testimony on air quality, public health and global climate change in the environmental review process of numerous projects under CEQA and NEPA and federal and state Clean Air Acts

[1] Reclamation, USFWS, NMFS, DWR, Draft EIR/EIS, Bay Delta Conservation Plan, Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties, California, December 13, 2013; baydeltaconservationplan.com/PublicReview/PublicReviewDraftEIR-EIS.aspx and http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/Public_Draft_BDCP_EIR-EIS_Cover_Title_Sheet.sflb.ashx.

review, including a number of large-scale development projects and specific plans (*e.g.*, the Los Angeles World Airports Expansion Master Plan and the City of Sacramento Railyards Specific Plan). My résumé is attached to this letter.

## I. Project Description

The BDCP is a long-term multiple purpose plan consisting of a habitat conservation plan and a natural community conservation plan for the Sacramento-San Joaquin River Delta ("the Delta"). It is intended to address federal Endangered Species Act and California Natural Community Conservation Planning Act compliance for the operation of the existing State Water Project ("SWP") Delta facilities and for the construction and operation of conveyance facilities for the movement of water entering the Delta from the Sacramento Valley watershed to the existing State Water Project and federal Central Valley Project ("CVP") pumping plants in the southern Delta. The BDCP intends to set out a conservation strategy for the Delta designed to restore and protect ecosystem health, water supply, and water quality within a stable regulatory framework through the following:

- New and/or modified state water conveyance facilities and operation of the SWP and the CVP in the Delta.
- Conservation, protection, restoration, and enhancement of habitats for native fish, wildlife, and plants within the Delta.
- Actions to address other ecological stressors to covered aquatic species in the Delta.
- Adaptive management of water conveyance facilities operations; the protection, restoration and enhancement of habitats; and measures to reduce other ecological stressors.[2]

In addition to the No Action Alternative, the Draft EIR/EIS describes 15 action alternatives which are variations of conservation plans that differ primarily in the location, design, conveyance capacity, and rules that would determine the operation of conveyance facilities implemented under BDCP Conservation Measure CM-1. For instance, the alternatives range from the proposed construction of one 3,000-cubic feet per second ("cfs") intake to five such intake facilities, representing a range of north Delta conveyance capacities from 3,000 cfs to 15,000 cfs. The operational rules also include varying requirements for Delta outflow and river flows in the south Delta. The range of alternatives also includes different amounts and types of habitat restoration and enhancement.[3] For purposes of CEQA review, Alternative 4 – Dual Conveyance

[2] Draft EIR/EIS, pp. 1-1 and 3-1.

[3] Draft EIR/EIS, p. 3-2.

with Modified Pipeline/Tunnel and Intakes 2, 3, and 5 (9,000 cfs; Operational Scenario H) – is the Preferred Alternative.[4] Alternative 4 would require construction of three intakes, an intermediate forebay and a conveyance facility that would consist of buried pipelines and tunnels.[5]

My review focuses on Alternative 4, the CEQA Preferred Alternative; however, most of my comments are equally applicable to the other alternatives and for evaluation of the BDCP under NEPA.

## II. The Draft EIR/EIS's Analyses of Air Quality and Greenhouse Gases Are Not Adequately Supported

The BDCP website, which posts the Draft EIR/EIS, appendices, and other supporting documents, fails to provide the following supporting documentation that forms the basis for estimates of air pollutant and greenhouse gas emissions presented in the Draft EIR/EIS, Chapter 22:

- Spreadsheets used to calculate electrical energy demand for the construction of the water conveyance facilities and the additional energy required for pumping at the alternative BDCP north Delta intakes and associated conveyance facilities, as described in the Draft EIR/EIS, Chapter 21, Section 21.3.1;
- Spreadsheets used to calculate criteria pollutant and greenhouse gas emissions from heavy-duty off-road equipment, marine vessels, locomotives, on-road vehicles, helicopters, fugitive dust from land disturbance, electricity usage, concrete batching during construction per the emission calculation methodology described in the Draft EIR/EIS, Appendix 22A, Section 22A.1.2;
- Spreadsheets used to scale construction emissions for Alternatives 1C, 2C, 3, 4, 5, 6C, 7 and 8 per the methodology described in the Draft EIR/EIS, Appendix 22A, Section 22A.1.3;
- Spreadsheets used to calculate operational criteria pollutant and greenhouse gas emissions from maintenance activities and electricity usage per the methodology described in the Draft EIR/EIS, Appendix 22A, Section 22A.2;

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[4] Draft EIR/EIS, p. 3-3.

[5] Draft EIR/EIS, p. ES-27.

- CalEEMod modeling files used to determine fugitive dust PM10 emissions, as described in Draft EIR/EIS, Appendix 22A, Section 22A.1.2.6;
- Spreadsheets used to calculate health risks, as described in the Draft EIR/EIS, Appendix 22C; and
- Files for dispersion modeling (AERSCREEN and AERMOD) of particulate matter concentrations and diesel particulate matter ("DPM"), as described in the Draft EIR/EIS, Appendix 22C.

Access to this documentation is integral to any meaningful review of the air quality, health risk and greenhouse gas analyses presented in Chapter 22 of the Draft EIR/EIS; without this documentation, proper review and verification of the Project's impacts on air quality and associated health risks and global climate change, as quantified and presented by the Draft EIR/EIS, are not possible.

In my extensive experience with the public review process under NEPA and CEQA, this documentation is routinely provided in appendices and in the few cases it was unintentionally omitted was supplied without delay. It is acceptable that an environmental review document of this magnitude (1.4 Gigabytes of information on tens of thousands of pages) that analyzes a long-term project with implications and impacts as far-reaching as the BDCP does not provide this essential information to the public and the reviewing agencies, including the affected air districts. I suggest that you contact the CEQA and NEPA lead agencies and request that all spreadsheets and modeling files supporting the air quality and greenhouse gas analysis be posted on the BDCP website and request that the lead agencies extend the comment period to allow for adequate review.

In response to your office's April 29, 2014 request for this documentation most of the requested files were provided on May 16, 2014. However, the PDF files containing spreadsheets with the health risk calculations are illegible and the Excel spreadsheets containing criteria pollutant and greenhouse gas ("GHG") emission estimates are not functional, *i.e.*, all equations and crosslinks were removed, thereby unnecessarily hampering review. Since all equations and crosslinks between spreadsheets can be re-established with enough patience and time, provided that all assumptions are laid out in detail, I find that the consulting firm's concerns regarding functionality and proprietary reasons[6] are not reasonable. I note that other consulting firms frequently provide fully functional spreadsheets upon request by interested reviewers (only sometimes requiring a confidentiality agreement). In any case, even though review of the provided files was hampered and unnecessarily time-consuming, I identified several issues of concern, as discussed in Comment IV.

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[6] Personal communication Meserve/Laura Yoon, ICF International, July 15, 2014.

I requested supporting modeling files and spreadsheets for the health risk assessment on July 15, 2014[7]; as of July 24, one day before the end of the comment period, I have not received a response and am therefore unable to properly review the results of the health risk assessment.

## III. The Draft EIR/EIS Presents Outdated, Incomplete and Superfluous Information

In Chapter 22, *Air Quality and Greenhouse Gases*, the Draft EIR/EIS presents the following outdated data and standards:

a. The Draft EIR/EIS states that data on existing air quality conditions, *i.e.*, baseline air quality, were presented "for the last 3 years for which complete monitoring data are available (2008-2010)."[8] However, at the time the Draft EIR/EIS was published (November 2013), complete monitoring data for the years 2011 and 2012 were available and should have been presented.

b. The Draft EIR/EIS presents national and California ambient air quality standards ("AAQS") in Table 22-5, apparently based on information obtained from the California Air Resources Board ("CARB") in 2012.[9] This information is outdated. On December 14, 2012, almost a year before the Draft EIR/EIS was published for review, the U.S. Environmental Protection Agency ("EPA") lowered the national primary annual ambient air quality standard for particulate matter equal to or smaller than 2.5 micrometers ("PM2.5") from 15.0 micrograms per cubic meter ("$\mu g/m^3$") to 12.0 $\mu g/m^3$.[10] The Draft EIR/EIS cites to the superseded standard of 15.0 $\mu g/m^3$.

c. The Draft EIR/EIS presents 8-hour ambient air quality standards for carbon monoxide ("CO") for Lake Tahoe[11], which are not relevant to the Project and should be omitted.

d. The Draft EIR/EIS presents ambient air quality standards for a number of pollutants that it does not analyze including for hydrogen

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[7] *Ibid.*

[8] Draft EIR/EIS, p. 22-9.

[9] Draft EIR/EIS, footnote to Table 22-5, p. 22-14.

[10] CARB, Area Designations for the Federal PM2.5 Standards; http://www.arb.ca.gov/desig/pm25desig/pm25desig.htm.

[11] Draft EIR/EIS, Table 22-5, p. 22-14.

sulfide ("$H_2S$"), vinyl chloride, sulfate particles, and lead particles.[12] I recommend that that the Final EIR/EIS either include an explanation why it deemed analysis of $H_2S$, vinyl chloride, sulfate particles, and lead particles not necessary or omit reference to these standards.

e. The Draft EIR/EIS presents direct global warming potentials ("GWPs") for several GHGs based on reports published in 1996 and 2001 by the International Governmental Panel on Climate Change ("IPCC").[13] The GWP is a relative measure of how much heat a GHG traps in the atmosphere; it compares the amount of heat trapped by a gas in question to the amount of heat trapped by carbon dioxide ("$CO_2$") based on a certain time horizon. For methane ("$CH_4$"), the Draft EIR/EIS presents a GWP of 21 over a 100-year time horizon. This information is outdated: in 2007, the IPCC updated the GWP for methane to 25 over a 100-year time horizon[14] and the EPA accordingly updated its GHG reporting rule in 2013.[15] The most recent IPCC report, published in 2013, which includes climate-carbon feedbacks, updated the GWP for methane to 34 over a 100-year time horizon,[16] a 36 percent increase over the IPCC's 2007 recommendation[17] and a 62 percent increase over the IPCC's 1996 recommendation[18] which the Draft EIR/EIS relied upon.

This outdated, incomplete or superfluous information must be updated in the main body and the supporting appendices of the EIR/EIS, Chapter 22, and any analyses must be updated accordingly.

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[12] Draft EIR/EIS, Table 22-5, p. 22-14.

[13] Draft EIR/EIS, Table 22-1, p. 22-8.

[14] IPCC, Fourth Assessment Report: Climate Change 2007; http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html.

[15] EPA, 40 CFR Part 98, [EPA-HQ-OAR-2012-0934; FRL-9902-95-OAR], RIN 2060-AR52, 2013 Revisions to the Greenhouse Gas Reporting Rule and Final Confidentiality Determinations for New or Substantially Revised Data Elements, November 15, 2013, Table 2, page 21; http://www.epa.gov/ghgreporting/documents/pdf/2013/documents/2013-data-elements.pdf.

[16] IPCC, Working Group I Contribution to the IPCC Fifth Assessment Report, Climate Change 2013: The Physical Science Basis Final Draft Underlying Scientific-Technical Assessment, September 30, 2013; http://www.climatechange2013.org/images/uploads/WGIAR5_WGI-12Doc2b_FinalDraft_All.pdf.

[17] (34)/(25) = 1.36.

[18] (34)/(21) = 1.62.

## IV. The Draft EIR/EIS's Analyses of Impacts due to Criteria Pollutant and Greenhouse Gas Emissions Resulting from Project Construction and Operation Are Flawed and Fail to Identify and Adequately Mitigate Significant Impacts

The BDCP affects three air basins, the Sacramento Valley Air Basin ("SVAB"), the San Joaquin Valley Air Basin ("SJVAB"), and the San Francisco Bay Area Air Basin ("SFBAAB"). Depending on the alternative, the areas affected by construction and operation of the BDCP in these air basins are under the jurisdiction of three or four air districts, the Yolo-Solano Air Quality Management District ("YSAQMD"), the Sacramento Metropolitan Air Quality Management District ("SMAQMD"), the Bay Area Air Quality Management District ("BAAQMD"), and the San Joaquin Valley Air Pollution Control District ("SJVAPCD").

The Draft EIR presents emission estimates for criteria pollutants, specifically for reactive organic gases ("ROG") and nitrogen oxides ("NOx"), which are both ozone precursors, CO, particulate matter equal to or smaller than 10 micrometers ("PM10"), PM2.5, and sulfur dioxide ("$SO_2$") separately for each of the 15 action alternatives and by affected air district and compares them to the quantitative significance thresholds developed by the respective air district for purposes determining adverse effects under NEPA and significant impacts under CEQA.[19] The Draft EIR/EIS notes that its emission estimates include implementation of the *Environmental Commitments* described in Appendix 3B.[20]

### IV.A The Draft EIR/EIS's Discussion of Methodology and Presentation of Results Is Lengthy, Confusing, Repetitive and Internally Redundant

The Draft EIR's Chapter 22, *Air Quality and Greenhouse Gases*, is 408 pages long (without appendices) in what looks like a 10 point font size for the body text. The sheer length of this chapter, its monotonous formatting and repetitive and internally redundant structure frustrate public review and defeat the requirements of CEQA and NEPA for full and readily accessible disclosure of information.

After the discussion of the *Affected Environment/Environmental Setting* in Section 22.1 (12 pages), the Regulatory Setting in Section 22.2 (17 pages), the *Methods for Analysis* in Section 22.3.1 (8 pages), and *Determination of Effects* in Section 22.3.2 (7 pages), which sets out thresholds of significance and approach to comparing emissions to thresholds, the Draft EIR/EIS's presentation of *Effects and Mitigation Approaches* in Section 22.3 stretches over 359 pages, much of which is repetitive and

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[19] Draft EIR/EIS, Table 22-86, p. 22-226.

[20] Draft EIR/EIS, p. 22-270.

redundant. Specifically, its analysis of criteria pollutant and greenhouse gas emissions and associated impacts, follows the same structure for each of the 15 action alternatives:

a) Summary of methodology.

b) Presentation of emission estimates in tables (criteria pollutants from electricity consumption, construction and operation).

c) Discussion of *NEPA Effects* and *CEQA Conclusions* including applicable mitigation measures for each of the following impacts:

| | |
|---|---|
| **Impact AQ-1:** | Generation of *Criteria Pollutants* in Excess of the **YSAQMD** Thresholds during *Construction* of the Proposed Water Conveyance Facility |
| **Impact AQ-2:** | Generation of *Criteria Pollutants* in Excess of the **SMAQMD** Thresholds during *Construction* of the Proposed Water Conveyance Facility |
| **Impact AQ-3:** | Generation of *Criteria Pollutants* in Excess of the **BAAQMD** Thresholds during *Construction* of the Proposed Water Conveyance Facility |
| **Impact AQ-4:** | Generation of *Criteria Pollutants* in Excess of the **SJVAPCD** Thresholds during *Construction* of the Proposed Water Conveyance Facility |
| **Impact AQ-5:** | Generation of *Criteria Pollutants* in Excess of the **YSAQMD** Thresholds from *Operation and Maintenance* of the Proposed Water Conveyance Facility |
| **Impact AQ-6:** | Generation of *Criteria Pollutants* in Excess of the **SMAQMD** Thresholds from *Operation and Maintenance* of the Proposed Water Conveyance Facility |
| **Impact AQ-7:** | Generation of *Criteria Pollutants* in Excess of the **BAAQMD** Thresholds from *Operation and Maintenance* of the Proposed Water Conveyance Facility |
| **Impact AQ-8:** | Generation of *Criteria Pollutants* in Excess of the **SJVAPCD** Thresholds from *Operation and Maintenance* of the Proposed Water Conveyance Facility |
| **Impact AQ-9:** | Generation of *Criteria Pollutants* in the Excess of **Federal *De Minimis*** Thresholds from *Construction* and *Operation and Maintenance* of the Proposed Water Conveyance Facility |
| **Impact AQ-10:** | Exposure of Sensitive Receptors to *Health Threats* in Excess of **YSAQMD's** Health-Risk Assessment Thresholds |
| **Impact AQ-11:** | Exposure of Sensitive Receptors to *Health Threats* in Excess of **SMAQMD's** Health-Risk Assessment Thresholds |
| **Impact AQ-12:** | Exposure of Sensitive Receptors to *Health Threats* in Excess of **SJVAPCD's** Health-Risk Assessment Thresholds |
| **Impact AQ-13:** | Exposure of Sensitive Receptors to *Health Threats* in Excess of **BAAQMD's** Health-Risk Assessment Thresholds |

| | |
|---|---|
| **Impact AQ-14:** | Creation of Potential *Odors* Affecting a Substantial Number of People during **Construction** of the Proposed Water Conveyance Facility |
| **Impact AQ-15:** | Generation of *Cumulative Greenhouse Gas* Emissions during **Construction** of the Proposed Water Conveyance Facility |
| **Impact AQ-16:** | Generation of *Cumulative Greenhouse Gas* Emissions from **Operation and Maintenance** of the Proposed Water Conveyance Facility and Increased Pumping |
| **Impact AQ-17:** | Generation of *Cumulative Greenhouse Gas* Emissions from **Increased CVP Pumping as a Result of Implementation of CM1** |
| **Impact AQ-18:** | Generation of *Criteria Pollutants* from **Implementation of CM2-CM11** |
| **Impact AQ-19:** | Generation of *Cumulative Greenhouse Gas* Emissions from **Implementation of CM2–CM11**[21] |

Because of this repetitive structure, which analyzes each of the 19 impacts separately for each of the 15 alternatives and follows more or less the same outline within each impact discussion, the Draft EIR/EIS, contains a multitude of recurring statements, and sometimes whole paragraphs (where "X" stands for any of the 15 action alternatives):

> *Electricity consumption*
>
> - Construction and operation of Alternative [X] would require the use of electricity, which would be supplied by the California electrical grid. Power plants located throughout the state supply the grid with power, which will be distributed to the Study area to meet project demand. Power supplied by statewide power plants will generate criteria pollutants. Because these power plants are located throughout the state, criteria pollutant emissions associated with … [Alternative X] electricity demand cannot be ascribed to a specific air basin or air district within the study area and it cannot be determined whether the air pollutant emissions associated with electricity generation would degrade air quality in a specific air basin or air district within the Study area. … Criteria pollutant emissions from electricity consumption, which are summarized in Table [] for Alternative [X] … are therefore provided for informational purposes only and are not included in the impact conclusion. [Here, one wonders why the Draft EIR/EIS bothers to waste half a page of discussion and another half- to three quarters of a page on a table providing emission estimates for each alternative that are then not analyzed. I suggest that this information be omitted.]

[21] The formatting of the impacts (bold, italic and underline) is not found in the Draft EIR/EIS and is provided here to show which analyses address similar impacts.

*Construction*

- Mobile and stationary construction equipment exhaust, employee vehicle exhaust, and dust from clearing the land would generate emissions of ozone precursors (ROG and NOx), CO, PM10, PM2.5, and $SO_2$. … Emissions estimates include implementation of environmental commitments (see Appendix 3B, *Environmental Commitments*). Although emissions are presented in different units (pounds and tons), the amounts of emissions are identical (i.e., 2,000 pounds is identical to 1 ton).
- As discussed in Section 22.3.1.1, daily emissions represent a conservative assessment of construction impacts due to calculation methodology. Moreover, as shown in Appendix 22B, *Air Quality Assumptions*, construction activities during several phases will likely occur concurrently. To ensure a conservative analysis, the maximum daily emissions during these periods of overlap were estimated assuming all equipment would operate at the same time—this gives the maximum total project-related air quality impact during construction. Violations of the air district thresholds are shown in <u>underlined</u> text.

*Operation*

- Operation and maintenance activities under Alternative [X] would result in mobile-source emissions of ROG, NOx, CO, PM10, PM2.5, and $SO_2$. Emissions were quantified for both 2025 and 2060 conditions, although activities would take place annually until project decommissioning. Future emissions, in general, are anticipated to lessen because of continuing improvements in vehicle and equipment engine technology."
- Although emissions are presented in different units (pounds and tons), the amounts of emissions are identical (i.e., 2,000 pounds is identical to 1 ton). Summarizing emissions in both pounds per day and tons per year is necessary to evaluate project-level effects against the appropriate air district thresholds, which are given in both pounds and tons (*see* Table 22-9).

*Health Risk*

- "Diesel-fueled engines, which generate DPM, would be used during construction of the proposed water conveyance facility. These coarse and fine particles may be composed of elemental carbon with adsorbed materials, such as organic compounds, sulfate, nitrate, metals, and other trace elements. The coarse and fine particles are respirable, which means that they can avoid many of the human respiratory system's defense mechanisms and enter deeply into the lungs. DPM poses inhalation-related chronic non-cancer and cancer health threats."
- "The BDCP will involve the operation of hundreds of pieces of mobile and stationary diesel-fueled construction equipment for multiple years in close proximity to sensitive receptors. Primary sources of DPM from construction include exhaust emissions from off-road vehicles

(e.g., loaders, dozers, graders) and portable equipment (e.g., compressors, cranes, generators), as well as barges carrying construction materials."

These statements, repeated for each alternative, by no means an exhaustive list, could have easily been incorporated into a summary text that applies to all alternatives.

Another example of the internally redundant organization of this section: only three of the 15 alternatives, Alternatives 1C, 2C, and 6C, would require construction of permanent features in areas under jurisdiction of the YSAQMD. Yet, the analysis of Impacts AQ-1 and AQ-5 includes the following repetitive discussion for each of the other 12 alternatives, *i.e.*, Alternatives 1A, 1B, 2A, 2B, 4, 5, 6A, 6B, 7, 8 and 9, (where "X" stands for any of these 12 alternatives):

> **Impact AQ-1: Generation of Criteria Pollutants in Excess of the YSAQMD Thresholds during Construction of the Proposed Water Conveyance Facility**
>
> ***NEPA Effects:*** Construction of Alternative [X] would occur in the SMAQMD, SJVAPCD, and BAAQMD. No construction emissions would be generated in the YSAQMD. Consequently, construction of Alternative [X] would neither exceed the YSAQMD thresholds of significance nor result in an adverse effect to air quality.
>
> ***CEQA Conclusion:*** Construction emissions generated by the alternative would not exceed YSAQMD's thresholds of significance. This impact would be less than significant.
>
> **Impact AQ-5: Generation of Criteria Pollutants in Excess of the YSAQMD Thresholds from Operation and Maintenance of the Proposed Water Conveyance Facility**
>
> ***NEPA Effects:*** Alternative [X] would not construct any permanent features in the YSAQMD that would require routine operations and maintenance. No operational emissions would be generated in the YSAQMD. Consequently, operation of Alternative [X] would neither exceed the YSAQMD thresholds of significance nor result in an adverse effect to air quality.
>
> ***CEQA Conclusion:*** Operational emissions generated by the alternative would not exceed YSAQMD's thresholds of significance. This impact would be less than significant. No mitigation is required.

This entire discussion, repeated word-for-word for each of the 12 alternatives without activities in the YSAQMD, could have simply been replaced by a summary table in a strategic location indicating that an analysis of impacts is not applicable for these alternatives.

Similarly, the bulk of Draft EIR/EIS's language for construction Mitigation Measures AQ-2a and AQ-2b, laid out in the discussion for Alternative 4 for the

SMAQMD/Sacramento Federal Nonattainment Area ("SFNA"), which spans almost four pages[22], is identical to Mitigation Measures AQ-3a and AQ-3b for the BAAQMD/SFBAAB and Mitigation Measures AQ-4a and AQ-4b for the SJVAPCD/SJVAB.

In other words, the presentation of the methodology and impacts for each alternative is often redundant and could have been considerably shortened by consolidating repetitive information, *e.g.*, in introductory paragraphs to Section 23.3, *Environmental Consequences*, and/or in summary tables before the alternative-specific discussion in Section 22.3, *Determination of Effects*. In fact, providing summary tables instead of repetitive discussions would go a long way towards shortening the 408-page *Air Quality and Greenhouse Gases* section and towards helping to orient the reader and provide a more readily accessible discussion.

I understand that Chapter 22, *Air Quality and Greenhouse Gases*, was intentionally structured to be consistent with other sections of the EIR/EIS[23]; however, I suggest that the preparers of the document rethink the organization of this section (and other similarly problematic sections) and carefully assess whether a more streamlined internal organization wouldn't be more practical and make the document more readily accessible for public review in order to understand impacts associated with BDCP alternatives and proposed mitigation measures. In addition, distinctly different formatting of headings for impact analyses and mitigation measures would serve as a visual aid (currently the only difference in the heading formatting is indented text for mitigation measures, which is inconsistently applied throughout the chapter). To enhance the document's organization, the document preparers should also consider including a header on each page citing to the alternative under review; renumbering of impacts: AQ-1 through AQ-4 as AQ-1a through AQ-1d, AQ-5 through AQ-8 as AQ-2a through AQ-2d, and AQ-10 through AQ-13 as AQ-3a through AQ-3d, etc., as they each cover the same type of impacts within the four affected air districts; and making use of more distinct formatting for various sections.

### IV.B The Draft EIR/EIS's Discussion of Significant Impacts from Criteria Pollutant Emissions Is Inadequate

In addition to providing the above-described multi-paragraph, repetitive discussion for each alternative, the Draft EIR/EIS provides summary tables with criteria

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[22] Draft EIR/EIS, pp. 22-230 through 22-233.

[23] Personal communication Pless/Laura Yoon, ICF International, July 18, 2014.

pollutant emission estimates for Project construction[24] and operation[25] for each affected air district compared to the respective air district's quantitative significance thresholds (where significant impacts are underlined). For the SMAQMD, the Draft EIR/EIS additionally provides a summary table with results of PM10 dispersion modeling compared to the air district's quantitative significance threshold for increases in PM10 concentrations. The Draft EIR/EIS then goes through the NEPA and CEQA impacts for each of the above-summarized 19 impacts (AQ-1 through AQ-19) and identifies which pollutants would exceed applicable air district thresholds and would therefore be considered significant, typically in just one sentence that provides little to no additional information beyond that provided in the summary tables or prior discussions. The Draft EIR/EIS fails entirely to put these significant impacts on air quality into perspective; in other words, it provides no discussion of the severity of the resulting impacts or a discussion of the impacts in the context of the respective air basin's existing air quality.

As an example: For impacts resulting from construction of Alternative 4 in the SFBAAB under the BAAQMD's jurisdiction, the Draft EIR/EIS simply states that emissions would exceed the respective significance threshold for ROGs in the years 2019 through 2021 and 2024 and for NOx during the years 2017 through 2024.[26] Review of Draft EIR/EIS Table 22-86 shows that maximum daily emissions of ROG during Alternative 4 construction would be up to 167 pounds per day ("lbs/day") (Year 2020), exceeding the BAAQMD's daily significance threshold for ROG of 54 lbs/day ***by 209%;***[27] maximum daily emissions of NOx during Alternative 4 construction would be up to 1,030 lbs/day (Year 2020), exceeding the BAAQMD's daily significance threshold for NOx (54 lbs/day) ***more than 18 times, or by 1807%.***[28] The chart below illustrates the immensity of ROG and NOx emissions within the SFBAAB over the 9-year construction phase of Alternative 4 (2016 through 2024) in comparison to the BAAQMD's significance thresholds for these pollutants. The Draft EIR/EIS makes no effort to put emissions of these ozone precursors into context with respect to the federal and state ozone non-attainment status of the region.

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[24] For example: Draft EIR/EIS, Table 22-86, Criteria Pollutant Emissions from Construction of Alternative 4 (lbs/day and tons/year).

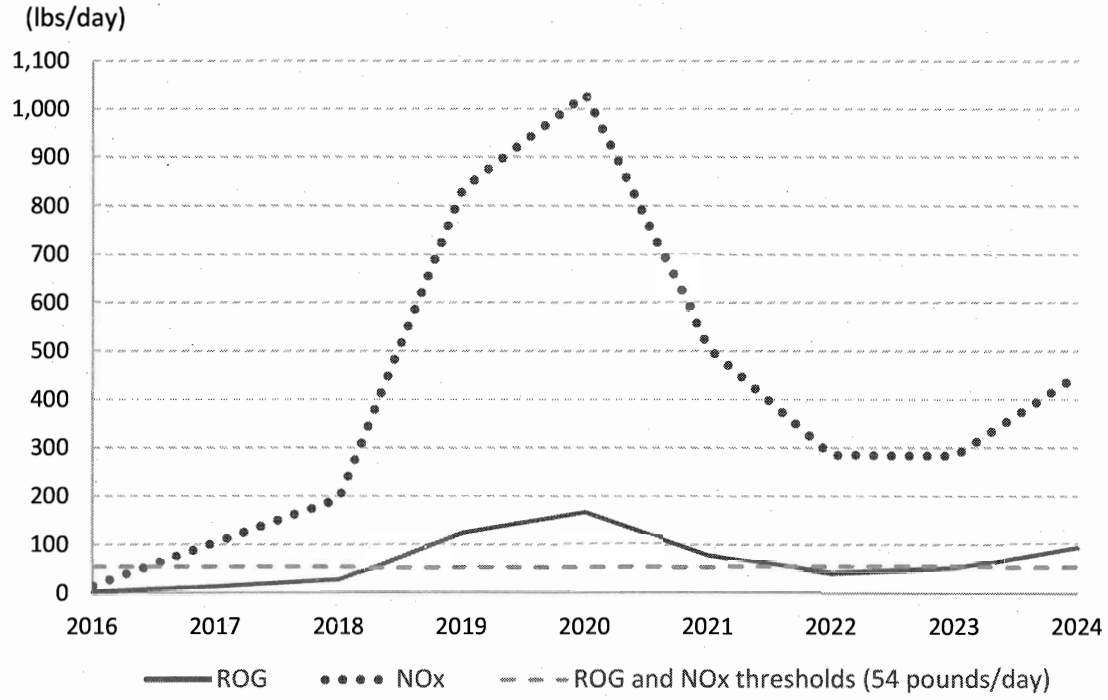
[25] For example: Draft EIR/EIS, Table 22-87, Criteria Pollutant Emissions from Operation of Alternative 4 (lbs/day and tons/year).

[26] Draft EIR/EIS, p. 22-234.

[27] Year 2020: (167 pounds ROG/day) / (54 pounds ROG/day) – (1) = 2.09.

[28] Year 2020: (1030 pounds NOx/day) / (54 pounds NOx/day) – (1) = 18.07.

**Alternative 4 daily construction emissions of ROG and NOx (accounting for *Environmental Commitments*) compared to BAAQMD's CEQA daily construction significance thresholds for ROG and NOx**




Emissions in the above chart include the mitigating effects of the *Environmental Commitments* laid out by the Draft EIR/EIS. (For a discussion of the Draft EIR/EIS's unrealistic approach regarding their effectiveness, *see* Comment IV.E.4.) The above chart illustrates just how enormous construction emissions of ROG and NOx would be under Alternative 4 and how much these already mitigated emissions would exceed the significance thresholds established by the affected air district; thresholds which are generally considered to be indicators whether emissions are expected to result in or contribute substantially to a violation of an AAQS. Given the SFBAAB's nonattainment status for federal and state ozone standards and the almost decade-long construction period, emissions of this magnitude suggest that construction of the BDCP would impede attainment of AAQS. Analyses of other pollutants and air basins suffer from the same problems. I suggest that the Draft EIR/EIS be revised to illustrate and discuss impacts of criteria pollutant emissions in context and provide air dispersion modeling, as discussed in the next comment.

### IV.C The Draft EIR/EIS Should Have Conducted Dispersion Modeling for Criteria Pollutant to Determine Compliance with Ambient Air Quality Standards Rather than Solely Relying on Quantitative Thresholds of Significance

For most pollutants, the Draft EIR/EIS relies solely on a comparison of estimated construction and operational emissions to quantitative daily or annual CEQA thresholds of significance developed by the affected air districts. These thresholds were developed for determining the significance of distinct and short-term land use projects, not for a large-scale linear construction project that extends across multiple counties and air basins over almost a decade, and can therefore not be solely relied upon to demonstrate compliance. In addition to quantifying emissions compartmentalized for each air district, an adequate evaluation of air quality impacts for such a large-scale linear project would also include dispersion modeling of resultant pollutant concentrations in ambient air to determine where, when and how often ambient air quality standards would be exceeded. Given the ozone and PM10 and PM2.5 nonattainment status of all three affected air basins[29] and the large amounts of ozone and particulate matter precursor emissions during the 9-year construction period, modeling of ambient concentrations of these pollutants would provide a greater understanding of the Project's local and regional impacts on air quality. Modeling of pollutant concentrations in ambient air is typically provided for large-scale projects such as the BDCP.

### IV.D The Draft EIR/EIS Fails to Analyze Carbon Monoxide Concentrations from Vehicle Exhaust

The Draft EIR/EIS identifies CO as a pollutant of concern that would emitted with motor vehicle exhaust,[30] and identifies the quantitative significance thresholds of established by the four air districts, which are defined as a violation of a state AAQS for CO.[31] Yet, the Draft EIR/EIS provides no discussion of CO impacts, presumably because none of the affected air districts has established quantitative mass emissions thresholds for CO and instead define the threshold as a violation of a state AAQS for CO, which requires modeling of resulting concentrations in ambient air. The Draft EIR/EIS does not discuss why it deems an analysis and modeling of ground-level CO concentrations beyond providing CO emission estimates for the construction and operational phases of the BDCP for either phase unnecessary. Given that CO emissions during some years of construction by far exceed the CEQA significance thresholds of 550 lbs/day established by many air districts in California (*e.g.*, Imperial County Air

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[29] Draft EIR/EIS, Table 2-4, p. 22-13.

[30] Draft EIR/EIS, Section 22.1.3, p. 22-2-5.

[31] Draft EIR/EIS, Table 22-9, p. 22-42.

Pollution Control District[32], Monterey Bay Unified Air Pollution Control District[33], San Luis Obispo Air Pollution Control District[34], and the South Coast Air Quality Management District[35]) – *e.g.*, for Alternative 1B in the SMAQMD (2015: 879 lbs/day; 2016: 1,279 lbs/day; 2017: 1,214 lbs/day) and in the SJVAPCD (2015: 2,650 lbs/day; 2016: 2,409 pounds per day; 2017: 1876 lbs/day) for Alternative 4 in the BAAQMD (2020: 723 lbs/day) – ground level concentrations of CO should be modeled to determine whether vehicle exhaust during construction would result in violation of state standards. The Draft EIR/EIS should be revised to include an appropriate analysis and discussion.

### IV.E The Draft EIR/EIS Fails to Quantify Emissions for All Construction Phases and Emission Sources and, thus, Underestimates Construction Emissions

The Draft EIR/EIS quantifies emissions of criteria pollutants generated by mobile and stationary construction equipment exhaust, employee vehicle exhaust, and fugitive dust from land clearing during the Project's 9-year construction phase.[36] These emissions are substantially underestimated due to incorrect assumptions and methodologies.

#### *IV.E.1 The Draft EIR/EIS Incorrectly Calculates Fugitive Dust Emissions from Grading*

The Draft EIR/EIS states that it quantified fugitive dust emissions (without project commitments) using CalEEMod; estimates of the acres disturbed as a result of the major water conveyance features were obtained using geographic information

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[32] Imperial County Air Pollution Control District, CEQA Air Quality Handbook, Guidelines for the Implementation of the California Environmental Quality Act of 1970, as Amended, November 2007; http://www.co.imperial.ca.us/airpollution/Forms%20&%20Documents/CEQA/CEQA%20Handbk%20Nov%202007.pdf.

[33] Monterey Bay Unified Air Pollution Control District, CEQA Air Quality Guidelines, 2008; http://mbuapcd.org/pdf/CEQA_full%20(1).pdf.

[34] San Luis Obispo County Air Pollution Control District, CEQA Air Quality Handbook, A Guide for Assessing the Air Quality Impacts for Projects Subject to CEQA Review, April 2003; http://www.slocounty.ca.gov/Assets/PW/LOWWP/Reference+Materials+for+County/CEQA+Air+Quality+Handbook.pdf.

[35] South Coast Air Quality Management District, SCAQMD Air Quality Significance Thresholds, March 2011; http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2.

[36] Draft EIR/EIS, p. 22-270.

systems ("GIS").[37] The provided spreadsheets[38] summarize CalEEMod outputs for fugitive dust PM10 emission from grading of specific areas such as tunnels, forebays, and river intakes for summer conditions (has higher dust daily emissions than winter). The CalEEMod runs for each structure assumed "General Heavy Industry" as land use with 10,000 square feet and lot acreage equal to grading acreage and assuming the grading phase occurs all in one day.[39] The spreadsheets then divide these CalEEMod outputs for each structure by the number of days grading is expected to arrive at daily emissions in lbs/day. The Draft EIR/EIS does not give an explanation why it deems this approach reasonable. This approach is not consistent with the assumptions incorporated into CalEEMod and, as a result, by far underestimates daily fugitive dust PM10 emissions:

CalEEMod summer reports provide emission estimates for fugitive dust PM10 and PM2.5 emissions from material movement in lbs/day. These emission estimates incorporate assumptions about the number and type of equipment depending on the acreage graded and the number of days anticipated for the respective construction phase. Running CalEEMod for the acreage to be graded, assuming it would occur all in one day and dividing the results by the expected number of days of grading does not result in the same fugitive dust emissions as running CalEEMod for the acreage to be graded and specifying the period during which grading would occur. For example, for Alternative 4, the Draft EIR calculates fugitive dust PM10 emissions for River Intake 1 at 0.559 lbs/day assuming that grading of 190.85 acres would occur over 363.3 days:

> (CalEEMod assuming 190.85 acres graded on one (1) day: 203.31 pounds fugitive dust PM10) / (363.3 days) = **0.559 lbs/day fugitive dust PM10 during grading**

I ran CalEEMod as intended, *i.e.*, assuming 190.85 acres would be graded over 363.3 days and otherwise relying on the Draft EIR/EIS's assumptions (model run attached):

> CalEEMod assuming 363.3 days and 190.85 acres graded: **6.84 lbs/day fugitive dust PM10 emissions during grading**

The model run using the entire time period for the acreage to be graded results in fugitive dust PM10 emissions that are ***more than ten times higher*** than those calculated by the Draft EIR. Clearly, the model cannot be "tweaked" the way the Draft EIR/EIS approached the fugitive emission estimates for grading.

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[37] Draft EIR/EIS, Appx. 22A, p. 22A-13.

[38] "Construction_Dust.xlsx" and "Construction_Dust_Alt4.xlsx".

[39] *Ibid, see* Footnote "Tunnel CalEEMod dust methodology."

Further, even if the Draft EIR/EIS's approach were acceptable, the assumption of 363.3 days to grade 190.3 acres is too high and, thus, results in a substantial underestimate of emissions.

The Draft EIR/EIS's estimates of fugitive dust PM2.5 emissions suffer from the same incorrect approach because the Draft EIR/EIS scales PM2.5 from PM10 emissions by a factor of 0.108. The Draft EIR/EIS provides no explanation why it does not rely on the PM2.5 emissions output generated by CalEEMod. Review of CalEEMod shows that the Draft EIR/EIS's scaling factor by far underestimates fugitive dust PM2.5 emissions during grading: the factor derived from the CalEEMod model run discussed above is 0.503[40], ***five times higher*** than that assumed by the Draft EIR/EIS.

*IV.E.2 The Draft EIR/EIS Fails to Account for Fugitive Dust Emissions from Site Preparation, Truck Loading, Entrained Road Dust, Road Paving, and Architectural Coatings*

In addition to, and for some structures simultaneously with, grading, fugitive dust would also be generated during site preparation and bulldozing and result from entrained road dust from haul truck and construction worker commuter vehicles on paved and unpaved roads, truck loading and unloading on site. The Draft EIR/EIS makes no attempt to estimate these emissions. In particular, construction would generate 32 million cubic yards of tunnel muck and 8 million cubic yards of dredging material that will have to be disposed of and substantial amounts of borrow materials that would have to be brought to the tunnel construction sites.[41] Further, construction of some of the BDCP structures will require road paving and the use of architectural coatings, which both result in ROG emissions. The Draft EIR makes no mention of these emission sources and, thus, by far underestimates maximum daily emissions during construction.

*IV.E.3 The Draft EIR/EIS's Relies on Incorrect Assumptions for Trip Lengths and Underestimates On-Road Vehicle Emissions*

The Draft EIR/EIS estimates emissions from on-road vehicles for materials hauling and general crew movement during construction assuming:

- Vehicle trips used for materials hauling and general crew movement would be 9.5 miles in all air districts, based on Plan area CalEEMod default trips lengths for "commercial work" trips.

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[40] (PM2.5: 3.4382 lbs/day) / (PM10: 6.8351 lbs/day) = 0.5032.

[41] Maven's Notebook, A Water, Science and Policy Blog, A Preliminary Analysis of the Infrastructure of the Bay Delta Conservation Plan, February 13, 2014; http://mavensnotebook.com/2014/02/13/the-infrastructure-of-the-bay-delta-conservation-plan-the-san-diego-county-water-authority-begins-a-preliminary-analysis/.

- Employee vehicle trips would be 10.8 miles in the YSAQMD, SMAQMD, and SJVAPCD, based on Plan area CalEEMod default trips lengths for "home based work" trips.
- Employee vehicle trips would be 12.4 miles in the BAAQMD, based on Plan area CalEEMod default trips lengths for "home based work" trips.[42]

This approach by far underestimates on-road vehicle emissions because the default trip lengths from CalEEMod are far too short for construction activities occurring under the BDCP. First, the CalEEMod default trip lengths for commercial and home-based work trips are not applicable to the construction phase and but were developed for CalEEMod to calculate operational emissions; the location of construction activities for the BDCP throughout mostly rural areas will require considerably longer construction worker commutes and haul vehicle trips than if the BDCP were located in an urbanized area. Based on a report by the Electric Power Research Institute ("EPRI"), *Socioeconomic Impacts of Power Plants*, construction workers will commute as much as 60 miles daily to construction sites from their homes rather than relocate, and considerably further on a weekly basis.[43] This indicates that the construction workforce would likely come from much farther than about 10 miles from the construction sites. Further, the conceptual engineering report indicates that there may not be enough suitable borrow material[44], suggesting that borrow material will have to be sourced from far and wide, requiring considerably longer haul distances than assumed by the Draft EIR/EIS.

### *IV.E.4 The Draft EIR/EIS Overestimates the Emission Reduction Effectiveness of Environmental Commitments*

The Draft EIR/EIS calculates emissions during construction assuming implementation of several *Environmental Commitments* to reduce construction-related pollutants, including:

- Electrification of 5% of equipment in the following general categories:
  - Air compressors
  - Cranes
  - Excavators
  - Pumps
  - Other construction equipment
  - Loaders
  - Dozers

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[42] Draft EIR/EIS, Appx. 22A, pp. 22A-11 and 22A-12.

[43] http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=EA-3660.

[44] Maven's Notebook, *op. cit.*

- Electrification of all materials-handling equipment and welders.
- Electrification of 75% of general industrial equipment.
- Electrification of 10% of light duty on-road vehicles.
- Use of diesel particulate filters on 100% of all non-electrified off-road, marine, and locomotive equipment.
- Use of compressed natural gas (CNG) in 10% of heavy-duty trucks and 50% of forklifts.
- Use of Tier 4 engines in diesel locomotives.[45]

The Draft EIR/EIS contains no discussion of the feasibility of these assumptions. For example, there may not be a diesel particulate filter ("DPF") available for all off-road, marine vessels or locomotive equipment. If the Draft EIR/EIS relies on the effectiveness of the *Environmental Commitments* for all equipment, it must demonstrate their feasibility.

Further, the Draft EIR/EIS assumes that installation of DPFs would result in an 85% of PM10 and PM2.5, based on information obtained from CARB.[46] Review of the CARB's website shows that an 85% reduction in particulate matter emissions is achieved only by Level 3 DPFs; Level 2 DPFs achieve only a 50% reduction and Level 1 DPFs only 25% reduction. Since the Environmental Commitments do not specify what level of DPF would be installed, an 85% reduction cannot be guaranteed. Further, the Level 3 DPFs achieving an 85% particulate matter reduction were verified by CARB for particular engine years and types of equipment; it cannot be assumed that a Level 3 DPF is available for all construction equipment across the board. For the often very old, heavy-duty off-road equipment such as graders or dozers[47], which often account for the highest emissions from a construction fleet, there may be none available.

What's more, the Draft EIR/EIS assumes an 85% emission reduction over the state-wide fleet-average for each equipment, many of which already have DPFs installed or are newer models for which an 85% reduction cannot be achieved as they already comply with CARB standards for newer equipment.

Finally, there is currently only one DPF available for marine vessels, a Level 2 DPF manufactured by Rypos, Inc., which is verified for "certain diesel engines that are either certified marine engine originally manufactured from model year 2004 to 2009,

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[45] Draft EIR/EIS, Appx. 3B, p. 3B-23.

[46] Draft EIR/EIS, Appx. 22A, p. 22A-18.

[47] *See* Union of Concerned Scientists, Digging Up Trouble, The Health Risk of Construction Pollution in California, November 2006; http://www.ucsusa.org/assets/documents/clean_vehicles/digging-up-trouble.pdf.

marine engines modified with the Clean Cam Technology System (CCTS) technology, or other marine engines meeting the terms and conditions specified in the Executive Order."[48] This DPF only achieves a 50% particulate matter reduction. Further, it is unlikely, that the marine vessels that would be used during the BDCP construction qualify for installation of this particular DPF. Thus, the 85% reduction efficiency for DPFs cannot be applied to marine vessels.

Thus, the Draft EIR/EIS's across-the-board assumption of 85% particulate matter emission reductions due to installation of DPFs on all non-electrified diesel-powered equipment by far underestimates emissions. Instead, the lead agency should rephrase the *Environmental Commitments* to specify the most stringent Tier-rating applicable for each type of equipment (without any "if feasible" or "if available") and the Draft EIR/EIS should be revised accordingly.

Review of the *Environmental Commitments* shows that they are inadequately worded and not enforceable and that there is considerable room for improvements. Instead, a considerably higher reduction in carcinogenic diesel particulate matter emissions can be achieved by requiring the use of new or higher-tiered equipment that would comply with the latest EPA and CARB emission standards.

(The Draft EIR's assumptions for the emission reduction efficiency for measures addressing fugitive dust are similarly flawed. However, due to time constraints, I was unable to summarize the deficiencies.

### IV.F The Draft EIR/EIS Improperly Defers Analysis of Compliance with the Applicable Air Quality Plans and Its Conclusions Regarding Project Compliance Are Not Supported

The Draft EIR/EIS considers effects to be adverse under NEPA and/or significant under CEQA if they would conflict with or obstruct implementation of the applicable air quality plan. The Draft EIR/EIS defines "conflict with or obstruct" as circumstances in which total direct and indirect emissions in excess of General Conformity *de minimis* thresholds do not conform to the appropriate air basin state implementation plans ("SIPs"), where conformance would be demonstrated by satisfying any of the following requirements:

- Showing that the emission increases caused by the federal action are included in the SIP.
- Demonstrating that the State agrees to revise the SIP to include to include emission increases.

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[48] CARB, Verification Procedure – Marine; http://www.arb.ca.gov/diesel/verdev/vt/marine.htm.

- Offsetting the action's emissions in the same or nearby area to net zero within the same time frame as they are generated.
- Mitigating to reduce the emissions increase to net zero.
- Utilizing a combination of the above options.[49]

The BDCP affects three air basins, the SVAB, the SJVAB, and the SFBAAB. The Draft EIR/EIS analyzes compliance with the applicable air quality plans in Impact AQ-9 and presents a summary table for criteria pollutant emissions from construction and operation of Alternative 4 and finds that applicable federal *de minimis* thresholds for NOx in the SFNA, SJVAB, and SFBAAB would be exceeded during construction during one or more years of construction[50], requiring a federal Conformity Determination. For each air basin, the Draft EIR claims that Appendix 22E, *Conformity Letters*, include demonstrations "by the federal lead agencies (Reclamation, USFWS, and NMFS) that project emissions would not result in an increase in regional NOx emissions, as construction-related NOx emissions would be fully offset to zero through implementation of Mitigation Measures [AQ-2a and AQ-2b for the SFNA, AQ-4a and AQ-4b for the SJVAB, and AQ-3a and AQ-3b for the SFBAAB], which require additional onsite mitigation and/or offsets" which "will ensure the requirements of the mitigation and offset program are implemented and conformity requirements are met."[51] However, Appendix 22E, *Conformity Letters*, contain no such demonstrations but instead states: "Confirmation of a general conformity determination is expected as part of the general conformity consultation process. Documentation on the conformity determination (e.g., memos, meeting minutes, etc.) will be provided at a later date."

This approach not only improperly defers analysis and deprives the public of review, it also renders the Draft EIR/EIS's conclusions regarding adverse and significant impacts unsupported and premature. Further, the federal lead agencies do not have statutory authority over implementing the SIPs in the three affected air basins but rather the four air districts, BAAQMD, SMAQMD, SJVAPCD, and YSAQMD, are responsible for implementing plans to attain state and federal ambient air quality standards in these air basins and must be consulted regarding the federal conformity determination.

Further, as a recent letter from the SJVAPCD indicates, the non-enforceable "good faith efforts" required by the DWR in these mitigation measures have not produced any enforceable commitment and conversations have come to a standstill. The SJVAPCD also points out that mitigation efforts performed outside of the District's

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[49] Draft EIR/EIS, p. 22-39.

[50] Draft EIR/EIS, Table 22-89, p. 22-45 and pp. 22-246 through 248.

[51] Draft EIR/EIS, pp. 246-247.

oversight have generally come up far short in reducing emissions. Thus, it is unclear how the lead agencies would demonstrate conformity.

The Draft EIR/EIS should be recirculated for public review once federal conformity determinations have been completed and once all air districts have entered into the development mitigation contracts specified in Mitigation Measures AQ-2a, AQ-2b, AQ-3a, AQ-3b, AQ-4a, and AQ-4b. (*See* also Comment IV.F.)

### IV.G The Draft EIR/EIS Underestimates Health Risks

The Draft EIR/EIS presents the results of a health risk assessment for diesel particulate matter ("DPM") emissions contained in combustion exhaust during the construction phase in Impacts AQ-10 through AQ-13 for each alternative. This health risk assessment is based on emission estimates that include an 85% reduction in DPM emissions for installation of DPFs on all non-electrified diesel-powered construction equipment. As discussed in Comment IV.E.4, these emissions are by far underestimated and, thus, the health risks are equally underestimated.

### IV.H The Draft EIR/EIS Underestimates Greenhouse Gas Emissions

The Draft EIR/EIS substantially underestimates emissions of greenhouse gases because it a) relies on a $CO_2$ emission factor that is not applicable to BDCP construction and b) takes credit for re-absorption of $CO_2$ far in excess of the findings of scientific studies for this process.

#### *IV.H.1 The Draft EIR/EIS Relies on an Unsupported Carbon Dioxide Emission Factor for Concrete and Likely Substantially Underestimates Greenhouse Gas Emissions*

Construction of the various facilities associated with the BDCP such as intakes, pumping plants, control structure/forebays, canals, siphons, buried pipelines and tunnels would require vast amounts of concrete; for Alternative 4, the Draft EIR/EIS estimates close to five (5) million cubic yards.[52] Concrete is made by mixing cement, water, and aggregates (sand and gravel, crushed stone, or other granular materials) and contains about 7 to 15% of cement by weight; higher compressive strengths are achieved by increasing the amount of cement and reducing the water content of the mix.[53] Cement manufacturing releases large amounts of carbon dioxide ("$CO_2$") through fuel combustion (~40%) and calcination (~60%). The $CO_2$ emissions due to

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[52] Draft EIR/EIS, Appx. 22A, Table 22A-9, p. 22A-16.

[53] Portland Cement Association, Technical Brief, Green in Practice 102 - Concrete, Cement, and $CO_2$; http://www.concretethinker.com/technicalbrief/Concrete-Cement-CO2.aspx.

calcination are formed when the raw materials (mostly limestone and clay) are heated to over 2500°F and $CO_2$ is released from the decomposed limestone to form calcium oxide ("CaO").[54] The Portland Cement Association ("PCA") conducted a life cycle assessment ("PCA Study") for a variety of concrete mixes, mainly differing in cement content and, thus, compressive strength. The PCA Study determined that concrete production generates $CO_2$ emissions from 318 pounds per cubic yard of concrete ("lbs $CO_2$/cuyd") for low-compressive strength concrete mix of 3,000 pounds per square inch ("psi") up to 555 lbs $CO_2$/cuyd for high-compressive strength concrete mix with 5,000 psi. [55] The Draft EIR/EIS does not discuss the types and properties of concrete required for the various project components but instead relies on an average value of 400 lbs $CO_2$/cuyd[56] for concrete batching (which can be scaled to a compressive strength of about 3,030 psi in the LCA Study).

Normal strength Portland cement concrete varies from 3,000 to 6,000 psi[57] and structural concrete is often specified at 4,000 to 5,000 psi,[58] but depending on the application can be much higher (up to 19,000 psi).[59] For example, the Federal Highway Administration ("FHWA") recommends compressive strengths of 3,500 to 4,500 psi for cast-in-place concrete lining of road tunnels, 4,000 to 5,000 psi for precast segments, and 5,000 psi to 7,000 psi for one pass lining segments.[60] Presumably many parts of the BDCP would require structural concrete with higher compressive strength and associated higher $CO_2$ emission factors than assumed by the Draft EIR/EIS. Thus, GHG emissions are likely substantially underestimated. The Draft EIR/EIS should be revised to include an analysis of the concrete properties required for the various BDCP structures and the $CO_2$ emission factors should be selected/scaled and GHG emission calculations revised accordingly.

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[54] *Ibid.*

[55] Michael A. Nisbet, Medgar L. Marceau, and Martha G. VanGeem, PCA, Environmental Life Cycle Inventory of Portland Cement Concrete, PCA R&D SERIAL NO. 2137a, revised July, 2002; http://www.nrmca.org/taskforce/item_2_talkingpoints/sustainability/sustainability/sn2137a.pdf.

[56] Draft EIR, p. 22-32.

[57] The Engineering Toolbox, Concrete Properties, Properties of Normal Strength Portland Cement Concrete; http://www.engineeringtoolbox.com/concrete-properties-d_1223.html.

[58] Nisbet et al., *op cit.*

[59] PCA, High-Strength Concrete; http://www.cement.org/cement-concrete-basics/products/high-strength-concrete.

[60] FHWA, Technical Manual for Design and Construction of Road Tunnels - Civil Elements, Chapter 10 - Tunnel Lining; http://www.fhwa.dot.gov/bridge/tunnel/pubs/nhi09010/10a.cfm.

### *IV.H.2 Emissions Reductions from Reabsorption of $CO_2$ into Concrete Are Unrealistic and Not Scientifically Supported*

After hardening, concrete re-absorbs small quantities of $CO_2$ and undergoes a series of reactions in a reverse process to calcination, called carbonation, to form calcium carbonate ("$CaCO_3$"), or calcite, and possibly other carbon-based chemical compounds,[61] The Draft EIR/EIS discusses and accounts for $CO_2$ reabsorption in its quantification of greenhouse gas emissions as follows:

> Emissions benefits from $CO_2$ absorption associated with concrete use were calculated using information provided by Portland Cement Association (Portland Cement Association 2011). Over the lifetime of a concrete structure, approximately 57% of the $CO_2$ emitted during calcination will be reabsorbed into the limestone of the structure. Roughly 50% of these emissions will be absorbed once the structure is demolished and returned to fine particles (typically through recycling). To account for the partial reabsorption of $CO_2$ during the life of the structure, emissions generated by calcination were multiplied by 7%. Because 2025 conditions only occurs 3–5 years after concrete manufacturing, $CO_2$ absorption benefits were assigned to 2060 conditions. $CO_2$ emissions reabsorbed by concrete recycling (50%) were not quantified since project demolition is outside the scope of the analysis.[62]

The Draft EIR/EIS does not explain how it concluded that 7% carbonation of the $CO_2$ emissions during calcination in 2060, *i.e.*, 34 years after construction is complete, is appropriate and reasonable for the BDCP's structures. Based on a literature review, the Draft EIR/EIS by far overestimates the greenhouse gas benefits attributable to concrete carbonation:

The carbonation process is conceptually straightforward: $CO_2$ gas molecules diffuse into the small pores at the surface of concrete and react with calcium hydroxide ("CaOH"), locking calcium carbonate within the pores. This blocks additional $CO_2$ from penetrating deeper into the concrete, effectively limiting the amount of carbonation that can occur in concrete to a modest layer near the surface. Carbonation is not only surface-oriented, it is also slow[63] and the net $CO_2$ uptake during the service life of a structure is strongly dependent on the type of concrete, its application, and the environment it is exposed to. The speed of carbonation is governed by the size and geometry of the porosity, the degree of water saturation, the type of cement/binder, the

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[61] Aggregate Research, Concrete Found to Absorb $CO_2$ Making It More Environmentally Friendly than First Thought, May 19, 2009; http://www.aggregateresearch.com/articles/16260/Concrete-Found-to-Absorb-CO2-Making-it-More-Environmentally-Friendly-Than-First-Thought.aspx.

[62] Draft EIR/EIS, p. 22-34.

[63] Alan S.E. Kren, Civil and Structural Engineer, Assessing the Role of Concrete Carbonation in Sustainable Practice, November 2009; http://cenews.com/article/7672/assessing_the_role_of_concrete_carbonation_in_sustainable_practice.

temperature, etc. Depending on the compressive strength and exposure conditions, carbonation depths after 70 years of service life have been determined between about 4 millimeters (about 0.16 inches) and about 84 millimeters (about 3.3 inches) with the shorter depths corresponding to high compressive strength concrete in wet or buried conditions and the longer depths corresponding to low-compressive strength concrete under indoors or sheltered conditions.[64] In other words, wet and buried concrete does not easily carbonate[65] which is due to biological degradation and the slowness of exchange reactions between water and the gases in the atmosphere.[66] What's more, many modern concrete mixes incorporate complementary cementing materials ("CCMs") such as fly ash or slag; these mixes do not favor carbonation because the CCMs react with the CaOH to form secondary hydration reaction products such as calcium-silicate-hydrates that are not readily carbonated.[67]

In fact, carbonation of concrete is traditionally viewed as a deterioration mechanism, because it lowers the pH of the concrete, which in turn causes the reinforcement steel to lose its electrochemical protection promoting corrosion. Indeed for many concrete structures the concrete composition and reinforcement cover are designed to avoid carbonation-induced reinforcement corrosion during the service life of the concrete and carbonation of these structures is negligible,[68] luckily one should think for all the high-rises and dams that are still in service after more than seven decades.

I also note that the Draft EIR/EIS's reference to an approximately 57% $CO_2$ uptake over the lifetime of a concrete structure, can be traced to a life cycle assessment study for country-wide concrete $CO_2$ lifecycles in four Nordic countries, specifically for Denmark.[69] The 57%, which was determined for a 100-year period, include the effects of demolition after a 70-year service life; demolition assumes crushing of concrete, which vastly increases the exposed the surface area over the remaining 30 years and accounts for 34% of total $CO_2$ absorption; *i.e.*, during the 70-year service life only 24% of the $CO_2$ absorbed during calcination are absorbed. For the other three countries, total $CO_2$ uptake – also including demolition – compared to the $CO_2$ emitted during calcination

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[64] Claus Pade and Maria Guimaraes, The $CO_2$ Uptake of Concrete in a 100 Year Perspective, Cement and Concrete Research, Vol. 37, pp. 1348-1356, 2007; http://www.scribd.com/doc/71750575/Pade-and-Guimaraes-1.

[65] *Ibid.*

[66] Kren, *op. cit.*

[67] Kren, *op. cit.*

[68] *Ibid.*

[69] Pade and Guimaraes, *op. cit.*

was considerably lower at 33% for Norway and Sweden and 34% for Iceland.[70] Thus, citing only to the Denmark results without noting that they represent an outlier is disingenuous. Further, this study was performed on country-wide basis which makes assumptions about the specific types of concrete used (ready-mix concretes with various compressive strengths, pre-cast concrete products and pre-cast elements), the volumes of concretes used in various applications (hollow blocks, other slabs, roof, walls, facades, columns/beams, etc.), exposure conditions (indoor/outdoor, painted/exposed), and typical thickness of the structural elements (between 0.03 and 0.4 meters, *i.e.*, between 1.2 and 15.7 inches).[71] Therefore, the resulting country-wide estimates for $CO_2$ reabsorption rates in Nordic countries are not representative for the types of concrete used and the thickness and exposures of BDCP concrete structures. A similar study for the U.S. estimated only a 7.6% of $CO_2$ uptake compared to the $CO_2$ emitted during calcination (without demolition) for a 100-year service life,[72] considerably less than determined for the four Nordic countries.

Thus, the Draft EIR/EIS's assumption of 7% $CO_2$ absorption after 34 years compared to the $CO_2$ emitted during calcination is not supported, especially not given the types of concrete structures that would be constructed for the BDCP, *i.e.*, wet and/or buried water conveyance structures, which will show very little carbonation. Thus, the Draft EIR/EIS's GHG emissions are considerably underestimated.

Given the absence of a generally accepted methodology, if the Draft EIR/EIS insists on accounting for carbonation for the BDCP, it must, for a given concrete structure, first determine the type of concrete used (including compressive strength, cement and CCM content), the thickness of the structure, and its exposure. Based on this information it can then calculate the depth of carbonation in 2060, *i.e.*, after 34 years, based on the equations and carbonation rate constants provided in the literature, including the above cited studies. I suggest that the Draft EIR/EIS omit accounting for carbonation benefits, especially given that it does not account for the CO2 that is currently sequestered in vegetation and would be removed by the BDCP.

### IV.I The Draft EIR/EIS Improperly Defers Analysis of the Efficacy of Mitigation Measures

The Draft EIR/EIS improperly defers the analysis of the efficacy of a number of mitigation measures into the future:

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[70] *Ibid.*

[71] *Ibid.*

[72] *Ibid.*

Mitigation Measure AQ-2a, AQ-2b, AQ-3a, AQ-3b, AQ-4a, and AQ-4b: Undertake a "good faith effort" to enter into a contract with the affected air districts to develop a mitigation program that would mitigate and offset emission to net zero.

Mitigation Measure AQ-15: Develop and Implement a GHG Mitigation Program

Mitigation Measure AQ-18: Develop an Air Quality Mitigation Plan ("AQMP")

Mitigation Measure AQ-19: Prepare a Land Use Sequestration Analysis

In order to quantify mitigated emissions, as required under CEQA, the lead agency may not defer the analysis of the efficacy of the above mitigation measures into the future.

*IV.I.1 BAAQMD Mitigation Measures AQ-3a and 3b*

In order to mitigate the significant impacts on air quality resulting from ozone precursor emissions during Project construction, the Draft EIR/EIS proposes Mitigation Measures AQ-3a and AQ-3b, which are intended to reduce emissions to net zero (0) for emissions in excess of General Conformity *de minimis* thresholds and to quantities below the BAAQMD's applicable CEQA thresholds of significance:

**AQ-3a:** Undertake a good faith effort to enter into a development mitigation contract with the BAAQMD in order to reduce of criteria pollutant emissions within the BAAQMD through the creation of offsetting reductions of emissions occurring within the SFBAAB. The preferred means of undertaking such offsite mitigation shall be through a partnership with the BAAQMD involving the payment of offsite mitigation fees.[73]

**AQ-3b:** Should DWR be unable to enter into what they regard as a satisfactory agreement with BAAQMD as contemplated by Mitigation Measure AQ-3a, or should DWR enter into an agreement with BAAQMD but find themselves unable to meet the performance standards set forth in Mitigation Measure AQ-3a, DWR will develop an alternative or complementary offsite mitigation program to reduce criteria pollutant emissions.[74]

These "mitigation measures" and the Draft EIR/EIS's discussion are inadequate.

*First*, the Draft EIR/EIS improperly defers analysis of the feasibility of its proposed mitigation measures. Over the several years it took to develop the Draft EIR/EIS, the preparers of the document could (and should) have developed a

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[73] Draft EIR/EIS, p. 22-236.

[74] Draft EIR/EIS, p. 22-237.

mitigation plan in cooperation with the BAAQMD and quantified the emission reductions that can potentially be achieved. There is no guarantee that such emission reductions would in fact be available through feasible and enforceable programs that would concurrently reduce emissions in the affected areas. As such, the Draft EIR cannot conclude that impacts on air quality would be reduced to a level of less than significance. In fact, as discussed below, impacts on air quality during Project construction will likely remain significant after implementation of all proposed mitigation measures and the *Environmental Commitments* outlined in Chapter 3B.

*Second*, Mitigation Measure AQ-3b acknowledges that the proposed "good faith" effort may not result in a favorable outcome:

- If a sufficient number of emissions reduction projects are not identified to meet the required performance standard, DWR will consult with BAAQMD, the ARB, or a qualified air quality expert employed by or retained by DWR to ensure conformity is met through some other means of achieving the performance standards of achieving net zero (0) for emissions in excess of General Conformity de minimis thresholds (where applicable) and of achieving quantities below applicable BAAQMD CEQA thresholds for other pollutants.[75]

This paragraph is meaningless. Since the *Environmental Commitments* have mostly exhausted all feasible mitigation, consultation with the BAAQMD and ARB or a "qualified air quality expert" would not come up with any more meaningful mitigation measures than already exhausted under Mitigation Measures AQ-3a and AQ-3b. In other words, if these measures fail, the Project construction would continue to result in significant unmitigated impacts on air quality.

*Third*, Mitigation Measure AQ-3a (as well as AQ-2a and AQ-4a) relies principally on offsite mitigation, specifically on financial contributions to mitigation funds or programs administered by the BAAQMD and the CARB. This approach is not adequate under CEQA. Significant emissions must be mitigated by *on-site measures* to the extent feasible. There is considerable potential for reducing construction emissions beyond the measures outlined in the *Environmental Commitments* 3B1.9, Construction Equipment Exhaust Reduction Plan, and 3B.1.18, Fugitive Dust Control Plan, which are already incorporated into the Draft EIR/EIS's emission estimates.[76] Additional feasible mitigation measures are available and should be required to reduce the Project's significant impacts on air quality.

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[75] Draft EIR, p. 22-238.

[76] Draft EIR/EIS, pp. 3B-23 and 3B-24 and 3B-33 and 3B-34.

*Fourth*, the Draft EIR/EIS does not develop alternatives that would avoid or minimize the identified significant air quality impacts.

The corresponding mitigation measures for the other affected air districts are equally flawed.

### *IV.I.2 SJVAPCD Mitigation Measures AQ-2c and AQ-18*

Other examples of the Draft/EIR's inadequate mitigation measures include proposed Mitigation Measures AQ-2c and AQ-12, which are intended to mitigate significant particulate matter impacts from construction in the SJVAPCD-administered air basin. Here, the Draft EIR/EIS proposes to relocate residents with an adequate distance to construction to avoid excess health threats due to PM10 and PM2.5 emissions. This would be verified by a health risk assessment.[77] This mitigation measure is not acceptable. First, the determination of its feasibility is deferred. Further, rather than relocating the receptors, the Draft EIR/EIS should evaluate the feasibility to relocate the emission sources that generate the emissions, *e.g.*, the concrete batch plant, and/or reduce emissions via best available control technology and demonstrate via ambient air quality modeling and a health risk assessment that ambient air quality standards and health risk standards would not be exceeded.

In short, the Draft EIR/EIS's half-hearted attempt at explaining away the significant impacts on air quality is not acceptable and fails to identify significant impacts on air quality and properly mitigate these impacts to the extent feasible before resorting to off-site mitigation. In my opinion, the Draft EIR/EIS misleads the public by maintaining that construction emissions could be mitigated to less than significance by proposed mitigation measures and *Environmental Commitments*.

### *IV.I.3 The Environmental Commitments for Reductions of Diesel Particulate Matter Emissions Are Inadequate and Additional Feasible Mitigation Measures Exist and Must Be Required*

As discussed above, a considerably higher reduction in carcinogenic diesel particulate matter emissions than simply requiring installation of DPFs on all non-electrified diesel-powered off-road, marine, and locomotive equipment can be achieved by requiring the use of new or higher-tiered equipment that would comply with the latest EPA and CARB emission standards. This requirement should be extended to on-road vehicles such as the numerous haul and delivery trucks.

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[77] Draft EIR/EIS, pp. 22-233 and 22-251.

### IV.J The Draft EIR/EIS's Cumulative Impacts Analysis Is Substantially Flawed

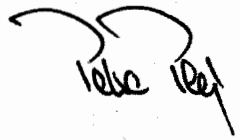
The cumulative analysis presented in the Draft EIR/EIS is essentially the same as the project-level analysis. The Draft EIR/EIS simply identifies cumulative impacts only where it identified a Project impact on an individual level. There is no real discussion of cumulative impacts which must include "past, present, and probable future projects." In addition to the overlapping construction in several counties, proper cumulative impact analyses for air quality and greenhouse gas emissions must identify other past, present and probable future projects that would occur in the affected air basins or a summary of projections in the relevant planning documents.

## V. Recommendation

The air quality and GHG analysis in the Draft EIR/EIS fails to meet minimum professional standards for disclosure of Project air quality impacts and fails to include all feasible mitigation measures to reduce identified significant impacts. After wading through 408 pages of discussion, the reviewer is still left without a substantive understanding of the air quality and GHG impacts of this massive project. It is not acceptable that one of the largest construction projects in California that will span almost a decade should receive less scrutiny than a run-of-the mill residential or commercial development. I recommend that the lead agencies substantially revise the air quality and GHG section and mitigation measures to meet applicable NEPA and CEQA standards and recirculate the Draft EIR/EIS for public review, including all supporting spreadsheets, modeling files, and other supporting documentation.

Please call me at (415) 492-2131 or e-mail at petra.pless@gmail.com if you have any questions. While I have tried my best to include current weblinks to all documents cited in my comments, if you have trouble retrieving any of these documents or if no weblink is provided, I will gladly make those documents available upon request.

With best regards,



Petra Pless, D.Env.

Attachment: CalEEMOd output

# BDCP

**San Joaquin County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| | 0.00 | | 190.85 | 10,000.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Rural | **Wind Speed (m/s)** | 2.7 | **Precipitation Freq (Days)** | 51 |
| **Climate Zone** | 4 | | | **Operational Year** | 2014 |
| **Utility Company** | | | | | |
| **CO2 Intensity (lb/MWhr)** | 0 | **CH4 Intensity (lb/MWhr)** | 0 | **N2O Intensity (lb/MWhr)** | 0 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - see deir

Construction Phase - DEIR/EIS: 363.3 days of grading

Grading - Draft EIR/EIS: 190.85 acres graded

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblConstructionPhase | NumDays | 310.00 | 363.00 |
| tblConstructionPhase | NumDaysWeek | 5.00 | 7.00 |
| tblGrading | AcresOfGrading | 907.50 | 190.85 |
| tblProjectCharacteristics | UrbanizationLevel | Urban | Rural |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2015 | | | | | 6.8351 | | | 3.4382 | | | | | | | | |
| **Total** | | | | | **6.8351** | | | **3.4382** | | | | | | | | |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2015 | | | | | 6.8351 | | | 3.4382 | | | | | | | | |
| **Total** | | | | | **6.8351** | | | **3.4382** | | | | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Percent Reduction** | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 2.2 Overall Operational

### Unmitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | | | | | | | | | | | | | | | | |
| **Total** | | | | | | | | | | | | | | | | |

### Mitigated Operational

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | | | | | | | | | | | | | | | | |
| **Total** | | | | | | | | | | | | | | | | |

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio-CO2 | Total CO2 | CH4 | N20 | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percent Reduction | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Grading | Grading | 1/1/2015 | 12/29/2015 | 7 | 363 | see DEIR/S |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 190.85**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Grading | Excavators | 2 | 8.00 | 162 | 0.38 |
| Grading | Graders | 1 | 8.00 | 174 | 0.41 |
| Grading | Scrapers | 2 | 8.00 | 361 | 0.48 |
| Grading | Rubber Tired Dozers | 1 | 8.00 | 255 | 0.40 |
| Grading | Tractors/Loaders/Backhoes | 2 | 8.00 | 97 | 0.37 |

### Trips and VMT

| Phase Name | Offroad Equipment Count | Worker Trip Number | Vendor Trip Number | Hauling Trip Number | Worker Trip Length | Vendor Trip Length | Hauling Trip Length | Worker Vehicle Class | Vendor Vehicle Class | Hauling Vehicle Class |
|---|---|---|---|---|---|---|---|---|---|---|
| Grading | 8 | 20.00 | 0.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Grading - 2015

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 6.5797 | | | 3.3704 | | | | | | | | |
| Off-Road | | | | | | | | | | | | | | | | |
| **Total** | | | | | **6.5797** | | | **3.3704** | | | | | | | | |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | | | | | 0.0000 | | | 0.0000 | | | | | | | | |
| Vendor | | | | | 0.0000 | | | 0.0000 | | | | | | | | |
| Worker | | | | | 0.2555 | | | 0.0678 | | | | | | | | |
| **Total** | | | | | **0.2555** | | | **0.0678** | | | | | | | | |

## 3.2 Grading - 2015

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 6.5797 | | | 3.3704 | | | | | | | | |
| Off-Road | | | | | | | | | | | | | | | | |
| **Total** | | | | | **6.5797** | | | **3.3704** | | | | | | | | |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | | | | | 0.0000 | | | 0.0000 | | | | | | | | |
| Vendor | | | | | 0.0000 | | | 0.0000 | | | | | | | | |
| Worker | | | | | 0.2555 | | | 0.0678 | | | | | | | | |
| **Total** | | | | | **0.2555** | | | **0.0678** | | | | | | | | |

## 4.0 Operational Detail - Mobile

### 4.1 Mitigation Measures Mobile

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| Total | | | | | |

### 4.3 Trip Type Information

| | Miles | | | Trip % | | | Trip Purpose % | | |
|---|---|---|---|---|---|---|---|---|---|
| Land Use | H-W or C-W | H-S or C-C | H-O or C-NW | H-W or C-W | H-S or C-C | H-O or C-NW | Primary | Diverted | Pass-by |

| LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.464897 | 0.064671 | 0.160031 | 0.170037 | 0.045757 | 0.006091 | 0.016523 | 0.060002 | 0.001132 | 0.001521 | 0.006337 | 0.000666 | 0.002335 |

### 4.4 Fleet Mix

## 5.0 Energy Detail

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

## 6.0 Area Detail

### 6.1 Mitigation Measures Area

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | | | | | | | | | | | | | | | | |
| Unmitigated | | | | | | | | | | | | | | | | |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | | | | | | | | | | | | | | | | |
| Consumer Products | | | | | | | | | | | | | | | | |
| Landscaping | | | | | | | | | | | | | | | | |
| **Total** | | | | | | | | | | | | | | | | |

### 6.2 Area by SubCategory

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | | | | | | | | | | | | | | | | |
| Consumer Products | | | | | | | | | | | | | | | | |
| Landscaping | | | | | | | | | | | | | | | | |
| **Total** | | | | | | | | | | | | | | | | |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|

## 10.0 Vegetation

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Dr. Pless is a court-recognized expert with over 20 years of experience in environmental consulting conducting and managing interdisciplinary environmental research projects and preparing and reviewing environmental permits and other documents for U.S. and European stakeholder groups. Her broad-based experience includes air quality and air pollution control; water quality, water supply, and water pollution control; biological resources; public health and safety; noise studies; California Environmental Quality Act ("CEQA"), Clean Air Act ("CAA"), and National Environmental Policy Act ("NEPA") review; industrial ecology and risk assessment; and use of a wide range of environmental software.

## EDUCATION

Doctorate in Environmental Science and Engineering (D.Env.), University of California Los Angeles, 2001

Master of Science (equivalent) in Biology (focus on Limnology), Technical University of Munich, Germany, 1991

## PROFESSIONAL HISTORY

Pless Environmental, Inc., Principal, 2008–present

Environmental Consultant, Sole Proprietor, 2006–2008

Leson & Associates (previously Leson Environmental Consulting), Kensington, CA, Environmental Scientist/Project Manager, 1997–2005

University of California Los Angeles, Graduate Research Assistant/Teaching Assistant, 1994–1996

ECON Research and Development, Environmental Scientist, Ingelheim, Germany, 1992–1993

Biocontrol, Environmental Projects Manager, Ingelheim, Germany, 1991–1992

## REPRESENTATIVE EXPERIENCE

### Air Quality and Pollution Control

Projects include CEQA/NEPA review; CAA attainment and non-attainment new source review; prevention of significant deterioration ("PSD") and Title V permitting; control technology analyses (BACT, LAER, RACT, BARCT, BART, MACT); technology evaluations and cost-effectiveness analyses; criteria and toxic pollutant and greenhouse gas emission inventories; emission offsets; ambient and source monitoring; analysis of emissions estimates and ambient air pollutant concentration modeling. Some typical projects include:

- Provided expert support for intervention in California Energy Commission ("CEC") proceedings for numerous power plants including natural gas-fired, integrated gasification combined-cycle, geothermal (flash and binary) solar (thermal and photovoltaic) facilities with respect to air quality including emission reduction credits, hazards and hazardous materials, public health, noise, and biological resources.
- Critically reviewed and prepared technical comments on the air quality, biology, noise, water quality, and public health and safety sections of CEQA/NEPA documents for numerous commercial, residential, and industrial projects (*e.g.*, power plants, airports, residential developments, retail developments, university expansions, hospitals, refineries, slaughterhouses, asphalt plants, food processing facilities, slaughterhouses, feedlots, printing facilities, mines, quarries, landfills, and recycling facilities) and provided litigation support in a number of cases filed under CEQA.
- Critically reviewed and prepared technical comments on the air quality and public health sections of the Los Angeles Airport Master Plan (Draft, Supplement, and Final Environmental Impact Statement/Environmental Impact Report) for the City of El Segundo. Provided technical comments on the Draft and Final General Conformity Determination for the preferred alternative submitted to the Federal Aviation Administration.
- Prepared comments on proposed PSD and Title V permit best available control technology ("BACT") analysis for greenhouse gas emissions from a proposed direct reduced iron facility in Louisiana.
- Prepared technical comments on U.S. Environmental Protection Agency ("EPA")'s *Inhalation of Fugitive Dust: A Screening Assessment of the Risks Posed by Coal Combustion Waste Landfills* prepared for EPA's proposed coal combustion waste landfill rule.
- Prepared technical comments on the potential air quality impacts of the California Air Resources Board's *Proposed Actions to Further Reduce Particulate Matter at High Priority California Railyards*.
- For several California refineries, evaluated compliance of fired sources with Bay Area Air Quality Management District Rule 9-10. This required evaluation and review of hundreds of source tests to determine if refinery-wide emission caps and compliance monitoring provisions were being met.
- Critically reviewed and prepared technical comments on draft Title V permits for several refineries and other industrial facilities in California.
- Evaluated the public health impacts of locating big-box retail developments in densely populated areas in California and Hawaii. Monitored and evaluated impacts of diesel exhaust emissions and noise on surrounding residential communities.
- In conjunction with the permitting of several residential and commercial developments, conducted studies to determine baseline concentrations of diesel exhaust particulate matter using an aethalometer.
- For an Indiana steel mill, evaluated technology to control NOx and CO emissions from fired sources, including electric arc furnaces and reheat furnaces, to establish BACT. This required a comprehensive review of U.S. and European operating experience. The lowest emission levels were being achieved by steel mills using selective catalytic reduction ("SCR") and selective non-catalytic reduction ("SNCR") in Sweden and The Netherlands.

- For a California petroleum coke calciner, evaluated technology to control NOx, CO, VOCs, and PM10 emissions from the kiln and pyroscrubbers to establish BACT and LAER. This required a review of state and federal clearinghouses, working with regulatory agencies and pollution control vendors, and obtaining and reviewing permits and emissions data from other similar facilities. The best-controlled facilities were located in the South Coast Air Quality Management District.
- For a Kentucky coal-fired power plant, identified the lowest NOx levels that had been permitted and demonstrated in practice to establish BACT. Reviewed operating experience of European, Japanese, and U.S. facilities and evaluated continuous emission monitoring data. The lowest NOx levels had been permitted and achieved in Denmark and in the U.S. in Texas and New York.
- In support of efforts to lower the CO BACT level for power plant emissions, evaluated the contribution of CO emissions to tropospheric ozone formation and co-authored report on same.
- Critically reviewed and prepared technical comments on applications for certification ("AFCs") for numerous natural-gas fired, solar, biomass, and geothermal power plants in California permitted by the California Energy Commission. The comments addressed construction and operational emissions inventories and dispersion modeling, BACT determinations for combustion turbine generators, fluidized bed combustors, diesel emergency generators, etc.
- Critically reviewed and prepared technical comments on draft PSD permits for several natural gas-fired power plants in California, Indiana, and Oregon. The comments addressed emission inventories, greenhouse gas emissions, BACT, case-by-case MACT, compliance monitoring, cost-effectiveness analyses, and enforceability of permit limits.
- For a California refinery, evaluated technology to control NOx and CO emissions from CO Boilers to establish RACT/BARCT to comply with BAAQMD Rule 9-10. This required a review of BACT/RACT/LAER clearinghouses, working with regulatory agencies across the U.S., and reviewing federal and state regulations and State Implementation Plans ("SIPs"). The lowest levels were required in a South Coast Air Quality Management District rule and in the Texas SIP.
- In support of several federal lawsuits filed under the federal Clean Air Act, prepared cost-effectiveness analyses for SCR and oxidation catalysts for simple cycle gas turbines and evaluated opacity data.
- Provided litigation support for a CEQA lawsuit addressing the adequacy of pollution control equipment at a biomass cogeneration plant.
- Prepared comments and provided litigation support on several proposed regulations including the Mojave Desert Air Quality Management District Rule 1406 (fugitive dust emission reduction credits for road paving); South Coast Air Quality Management District Rule 1316, San Joaquin Valley Air Pollution Control District Rule 2201, Antelope Valley Air Quality Management District Regulation XIII, and Mojave Desert Air Quality Management District Regulation XIII (implementation of December 2002 amendments to the federal Clean Air Act).
- Critically reviewed draft permits for several ethanol plants in California, Indiana, Ohio, and Illinois and prepared technical comments.

- Reviewed state-wide average emissions, state-of-the-art control devices, and emissions standards for construction equipment and developed recommendations for mitigation measures for numerous large construction projects.
- Researched sustainable building concepts and alternative energy and determined their feasibility for residential and commercial developments, *e.g.*, regional shopping malls and hospitals.
- Provided comprehensive environmental and regulatory services for an industrial laundry chain. Facilitated permit process with the South Coast Air Quality Management District. Developed test protocol for VOC emissions, conducted field tests, and used mass balance methods to estimate emissions. Reduced disposal costs for solvent-containing waste streams by identifying alternative disposal options. Performed health risk screening for air toxics emissions. Provided permitting support. Renegotiated sewer surcharges with wastewater treatment plant. Identified new customers for shop-towel recycling services.
- Designed computer model to predict performance of biological air pollution control (biofilters) as part of a collaborative technology assessment project, co-funded by several major chemical manufacturers.
- Experience using a wide range of environmental software, including air dispersion models, air emission modeling software, database programs, and geographic information systems.

## Water Quality and Pollution Control

Experience in water quality and pollution control, including surface water and ground water quality and supply studies, evaluating water and wastewater treatment technologies, and identifying, evaluating and implementing pollution controls. Some typical projects include:

- Evaluated impacts of on-shore oil drilling activities on large-scale coastal erosion in Nigeria.
- For a 500-MW combined-cycle power plant, prepared a study to evaluate the impact of proposed groundwater pumping on local water quality and supply, including a nearby stream, springs, and a spring-fed waterfall. The study was docketed with the California Energy Commission.
- For a 500-MW combined-cycle power plant, identified and evaluated methods to reduce water use and water quality impacts. These included the use of zero-liquid-discharge systems and alternative cooling technologies, including dry and parallel wet-dry cooling. Prepared cost analyses and evaluated impact of options on water resources. This work led to a settlement in which parallel wet dry cooling and a crystallizer were selected, replacing 100 percent groundwater pumping and wastewater disposal to evaporation ponds.
- For a homeowner's association, reviewed a California Coastal Commission staff report on the replacement of 12,000 linear feet of wooden bulkhead with PVC sheet pile armor. Researched and evaluated impact of proposed project on lagoon water quality, including sediment resuspension, potential leaching of additives and sealants, and long-term stability. Summarized results in technical report.

## Applied Ecology, Industrial Ecology and Risk Assessment

Experience in applied ecology, industrial ecology and risk assessment, including human and ecological risk assessments, life cycle assessment, evaluation and licensing of new chemicals, and fate and transport studies of contaminants. Experienced in botanical, phytoplankton, and intertidal species identification and water chemistry analyses. Some typical projects include:

- Conducted technical, ecological, and economic assessments of product lines from agricultural fiber crops for European equipment manufacturer; co-authored proprietary client reports.
- Developed life cycle assessment methodology for industrial products, including agricultural fiber crops and mineral fibers; analyzed technical feasibility and markets for thermal insulation materials from natural plant fibers and conducted comparative life cycle assessments.
- For the California Coastal Conservancy, San Francisco Estuary Institute, Invasive Spartina Project, evaluated the potential use of a new aquatic pesticide for eradication of non-native, invasive cordgrass (*Spartina spp.*) species in the San Francisco Estuary with respect to water quality, biological resources, and human health and safety. Assisted staff in preparing an amendment to the Final EIR.
- Evaluated likelihood that organochlorine pesticide concentrations detected at a U.S. naval air station are residuals from past applications of these pesticides consistent with manufacturers' recommendations. Retained as expert witness in federal court case.
- Prepared human health risk assessments of air pollutant emissions from several industrial and commercial establishments, including power plants, refineries, and commercial laundries.
- Managed and conducted laboratory studies to license pesticides. This work included the evaluation of the adequacy and identification of deficiencies in existing physical/chemical and health effects data sets, initiating and supervising studies to fill data gaps, conducting environmental fate and transport studies, and QA/QC compliance at subcontractor laboratories. Prepared licensing applications and coordinated the registration process with German environmental protection agencies. This work led to regulatory approval of several pesticide applications in less than six months.
- Designed and implemented database on physical/chemical properties, environmental fate, and health impacts of pesticides for a major multi-national pesticide manufacturer.
- Designed and managed experimental toxicological study on potential interference of delta-9-tetrahydrocannabinol in food products with U.S. employee drug testing; co-authored peer-reviewed publication.
- Critically reviewed and prepared technical comments on applications for certification for several natural-gas fired, solar, and geothermal power plants and transmission lines in California permitted by the California Energy Commission. The comments addressed avian collisions and electrocution, construction and operational noise impacts on wildlife, risks from brine ponds, and impacts on endangered species.
- For a 180-MW geothermal power plant, evaluated the impacts of plant construction and operation on the fragile desert ecosystem in the Salton Sea area. This work included baseline noise monitoring and assessing the impact of noise, brine handling and disposal, and air emissions on local biota, public health, and welfare.

- Designed research protocols for a coastal ecological inventory in Southern California; developed sampling methodologies, coordinated field sampling, determined species abundance and distribution in intertidal zone, and conducted statistical data analyses.
- Designed and conducted limnological study on effects of physical/chemical parameters on phytoplankton succession; performed water chemistry analyses and identified phytoplankton species; co-authored two journal articles on results.

## PRO BONO ACTIVITIES

Founding member of "SecondAid," a non-profit organization providing tsunami relief for the recovery of small family businesses in Sri Lanka. (www.secondaid.org.)

## PUBLICATIONS & RECOMMENDATIONS

Available upon request.

# EXHIBIT Q

## Osha Meserve

**From:** Rawlings, Marcus <MARCUS.RAWLINGS@saic.com>
**Sent:** Tuesday, May 20, 2008 12:30 PM
**To:** Beth Gerbutavicius; Cylinder, Paul D.
**Cc:** Wilson-Weatherly, Holly K.; rawlingsms@saic.com; Wilder, Richard M.; osha@semlawyers.com
**Subject:** RE: Add to listing?

Beth: is she with one of the Steering Committee member agencies? If not, I thought our rule was that we only distribute meeting materials to individuals associated with Steering Committee agencies.

Thanks,
Pete

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**From:** Beth Gerbutavicius [mailto:beth.gerbutavicius@resources.ca.gov]
**Sent:** Tuesday, May 20, 2008 12:07 PM
**To:** Cylinder, Paul D.
**Cc:** Wilson-Weatherly, Holly K.; rawlingsms@saic.com; Wilder, Richard M.; osha@semlawyers.com
**Subject:** Add to listing?

Osha Meserve (osha@semlawyers.com) would like to be able to get the handouts from the Other Stressors Working Group meeting (this afternoon) and to be added to the list if possible. Her phone number is (916) 445-7300

Beth Gerbutavicius, AGPA
Resources Agency
(916) 653-5227
email: b.gerbs@resources.ca.gov