



**Testimony of Jonathan Rosenfield, Ph.D.
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Before the California Assembly
Committee on Water, Parks and Wildlife
October 19, 2011**

Chairman Huffman and Members of the Water, Parks, and Wildlife Committee, thank you for the invitation to discuss the status of the Bay Delta Conservation Plan (BDCP). The Bay Institute has participated in the development of BDCP for almost five years, during which time we have contributed technical understanding and analysis of the species, ecosystems, and water supply system of the Central Valley as well as designed planning and decision support-tools intended to improve the quality and transparency of this Plan. Furthermore, we have led efforts to define the adaptive management processes that are essential to the Plan's ultimate success.

INCORPORATING SCIENCE INTO THE BDCP -- As I described last year, The Bay Institute is committed to the BDCP's dual goals of recovering our devastated Delta ecosystem while providing a more *reliable* supply of water than our current system allows. I also described to you that we were disappointed with the Plan's inadequate progress as of November 2010. Since that time, our disappointment and frustration with BDCP has only increased. Simply put, the BDCP has not yet established a credible planning process that incorporates the best available science to address the needs of imperiled fish and wildlife species, nor has it developed the information necessary to determine whether the Plan will reduce reliance on Delta water supplies.

Last year, I described the building blocks of a scientifically credible plan that might merit a 50-year permit to take endangered species. Such a plan would include and link together:

- Meaningful **goals** and articulation of those goals in the form of plan **objectives** that are specific, measurable, achievable, relevant, and time-bound (S.M.A.R.T.);
 - in other words, the Plan must provide answers to the questions: "*What will BDCP contribute to the recovery of the dozen aquatic species that are currently imperiled by project operations?*" and "*What specifically will it look like to accomplish these goals?*"
- A well-researched analysis of the **stressors** that prevent us from attaining these goals and objectives currently and a **conservation strategy** that directly addresses these limiting factors with approaches that are likely to work, that do not themselves cause unmitigated impacts, and that are designed to account for levels of uncertainty in implementation;
 - when scientific uncertainty limits our ability to project specific outcomes from conservation measures, the Plan should state that this is the case so that this uncertainty can be incorporated into monitoring plans and accounted for in evaluating the permit application.

- An independent, data-driven, and transparent **adaptive management process** that establishes explicit **linkages** between attainment of restoration targets and future changes in water project operations and other plan elements within the boundaries of the plan; and
- A **governance structure** that ensures that management actions respond to new information in a timely manner that is based on science (and that is not dependent on the permittees determining whether Plan objectives are being met or whether additional resources should be allocated to more effective implementation).

The current Bay Delta Conservation Plan is woefully lacking in the development of and linkage between these elements. In May of this year, the National Research Council (NRC) of the National Academy of Sciences described this problem, calling BDCP:

... a long list of ecosystem management tactics or incomplete scientific efforts with no clear over-arching strategy to integrate the science, or implement the plan. ... In other words, there is a list but not a synthesized plan for the restoration activities. A systematic and comprehensive plan needs a clearly stated strategic view of what each major component of the plan is trying to accomplish, how it is going to do it, and why it is justified¹. [p.31]

they also stated:

...much of the BDCP appears to be a post-hoc rationalization of the water supply elements contained in the BDCP². [p.23].

In addition to the requirements listed above, BDCP must investigate reasonable avenues for improving water supply *reliability*, including those outside of the Delta, in order to comply with state policy to reduce reliance on Delta water supplies. This information could radically change the analysis and the selection of a preferred alternative (especially regarding facility sizing and operations). To date, the BDCP shows no sign that it will gather and analyze (much less, incorporate) the information necessary to comply with this provision of the legislation.

The new administration has promised to improve the way in which BDCP incorporates and responds to science, but these desperately needed modifications have been painfully slow to develop. For example, last year at this time, we were working toward meaningful goals and objectives for BDCP and we are still working toward them today. Similarly, the BDCP stakeholders and resource agencies have yet to commit to a process whereby rigorous evaluation of the Plan's efficacy in achieving goals and objectives results in necessary and appropriate modifications to the Conservation Strategy, before and after implementation (i.e. adaptive management). The Plan has not been altered in response to the NRC's finding that adaptive management under the BDCP has not been sufficiently developed or described. There are still no linkages between BDCP performance and the magnitude or certainty of the 50-year endangered species take permit or water supply assurances that the water exporters seek. Thus, although the Plan is developing goals and objectives, none of the Plan's owners will not commit to *attain* these targets.

THE NEW BDCP (SAME AS THE OLD BDCP) -- The State and the water exporter community claim that much progress has been made on the BDCP since the version the NRC received last

¹ National Research Council. 2010. A Review of the Use of Science and Adaptive Management in California's Draft Bay Delta Conservation Plan. Available at: <http://www.nap.edu/catalog/13148.html>

² Ibid.

winter. By contrast, we believe the Plan is mostly unchanged from what it was in November of 2010. As an example, I refer you to the “Conceptual Foundation” of the BDCP Effects Analysis, which was released on the web less than three weeks ago³. It describes BDCP’s approach to ecosystem conservation as:

... relatively simple and consist[ing] of two major categories of actions ...: First, construction of a new water intake on the Sacramento River ... (dual conveyance); and second restoration of aquatic, wetland, floodplain and upland areas to provide habitat and ecological benefits for fish and wildlife.

Regarding the first prong of this strategy, dual conveyance, BDCP ignores the best available science and is internally inconsistent as to its effects on the covered species. The conservation rationale claimed for creating a new water diversion in the North Delta is to significantly reduce or eliminate “take” of imperiled species and modification of habitat that results from water export operations at the South Delta facilities. These problems are well known: every day between ~900 and ~61,000 fish are “salvaged” at the South Delta pumps. This year alone, more than 9,000,000 individuals of one endemic fish species, the Sacramento splittail, were counted at the pumps. Tens of thousands of Chinook salmon and Central Valley steelhead, including three federally-listed endangered species, were also taken at the pumps this year. These salvage numbers seriously underestimate the actual impact of entrainment on fish populations and the Delta ecosystem.

Yet the water users and the Department of Water Resources have argued persistently, in court and in policy arenas, that export operations cause little or no harm to salmon, steelhead, Sacramento splittail, smelt, sturgeon, or any other imperiled or valuable species. Furthermore, their witnesses have stated under oath the opinion that the rate of fresh water exports at the pumps is not related to the rate of fish entrainment⁴.

These claims simply cannot be squared with the claim in the new BDCP Effects Analysis - prepared with the assistance of the same “experts” – that:

*BDCP will substantially change the amount and pattern of water exports from SWP/CVP facilities, which is expected to reduce the number of fish of all species entrained, relative to existing biological conditions*⁵ [p. B-6]

The BDCP persistently ignores the findings of peer-reviewed, published research that indicates that entrainment is, at times, a relatively important stressor of Chinook salmon and Delta smelt populations⁶ in favor of analyses that tend to minimize the problem, while simultaneously

³ BDCP Effects Analysis 2011, Appendix A, Conceptual Foundation and Analytical Framework for Effects Analysis. Available at: http://www.deltacouncil.ca.gov/sites/default/files/documents/files/App_A_Conceptual_Foundation_Analytical%20Framework_092911_v_DSP.pdf

⁴ Specifically, one “expert” stated “...the potential for exports to adversely impact migration of juvenile salmonids is relatively small” and that “the export-influenced hydrodynamic effect hypothesized to exist for juvenile salmon is either absent or too small to be reliably detected” @ 25: Decl. of Bradley Cavallo in Supp. of Plaintiffs’ Motion for Preliminary Injunction (1:09-CV-1053 OWW DLB), Document 552, The Consolidated Salmonid Cases

⁵ BDCP Effects Analysis. 2011, Appendix B, Entrainment Available at: http://www.deltacouncil.ca.gov/sites/default/files/documents/files/App_B_Entrainment_MASTER_08242011.pdf.

⁶ “The proportion of [salmon] salvaged increased with export flow, with a mean value around 10% at the highest export flows recorded” and “Losses of adult delta smelt were 1–50%...” Kimmerer, W.J. 2008. Losses of Sacramento River Chinook Salmon and Delta Smelt (*Hypomesus transpacificus*) to Entrainment in Water

arguing that the north Delta diversion will significantly reduce entrainment. In the space of one paragraph, the new Effects Analysis' Appendix on Entrainment⁷ claims both that:

- entrainment of juvenile winter-run Chinook salmon and steelhead under the BDCP will decline ~60% compared to existing biological conditions, and
- although entrainment losses of winter-run Chinook salmon will increase during some periods, overall entrainment is already well below 1% in all water-year types. [p. B-6]

Which is it? The Bay Institute believes that fish entrainment is a significant problem that we should do something about and that a new North Delta diversion might be part of that solution. The water exporter community has long argued that entrainment is not a significant enough problem to warrant action (especially if there is an associated water cost) – this position is not supported by scientific research, but at least it is internally consistent. The BDCP would have us believe that entrainment is not a significant problem, but it is a problem with a multi-billion dollar solution (the north Delta diversion) that we should proceed with on an “aggressive” schedule. This inconsistent and illogical reasoning has been offered for every covered species in the Delta and in all versions of the BDCP and its Effects Analysis that I have read.

FAILURE TO INCORPORATE (OR CONSIDER) THE IMPORTANCE OF FRESH WATER FLOWS --

Despite the conclusions of the State Water Resources Control Board and other California and federal resource agencies, the BDCP fails to address the fact that: “*The best available science suggests that current flows are insufficient to protect the public trust*”⁸. The Plan’s proponents are still unwilling to even discuss (much less, incorporate) the role that fresh water flows into, through, and (particularly) out of the Delta play in creating habitats for covered species in the estuary and in alleviating many of the stressors that have been identified in this ecosystem. Indeed, the 2010 Effects Analysis found that reductions in fresh water flow out of the Delta would occur under the BDCP and that this would have a massive negative impact on pelagic fish in the upper Estuary – yet in the past year, BDCP has not proposed any operational changes that would alter this impact.

Rather than protect and restore the patterns and volumes of fresh water flows in this Estuary, the second prong of the BDCP’s “simple” formula is to restore shallow water “habitats”. This despite the State Board’s warning that: *flow and physical habitat interact in many ways, but they are not interchangeable.* Faith in the BDCP’s planned “habitat for water” exchange was also questioned by a different NRC expert panel, which assessed the US Fish and Wildlife Service’s Biological Opinion for Delta smelt⁹. This panel concluded:

...the conceptual foundation for [creation or restoration of 8,000 acres of intertidal and subtidal habitat] is weak because the relationship between tidal habitats and food availability for smelt is poorly understood.... [p. 6]

The committee recommended a phased approach to this shallow water habitat restoration

Diversions in the Sacramento-San Joaquin Delta. San Francisco Estuary and Watershed Science. Vol. 6, Issue 2 (June), Article 2.

⁷ BDCP Effects Analysis. 2011, Appendix B, Entrainment Available at:

http://www.deltacouncil.ca.gov/sites/default/files/documents/files/App_B_Entrainment_MASTER_08242011.pdf.

⁸ State Water Resources Control Board Development of Flow Criteria for the Sacramento-San Joaquin River Ecosystem, 2010, p. 1. Available at:

http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/final_rpt080310.pdf

⁹ National Research Council. 2010. Sustainable Water and Environmental Management in the California Bay-Delta. Available at: http://www.nap.edu/openbook.php?record_id=12881

...with the first phase to include the development of an implementation and adaptive management plan ... In addition, there should be consideration of the types and amounts of tidal habitats necessary to produce the expected outcomes and how they can be achieved and sustained in the long term. [p. 6]

So, BDCP relies almost completely on a habitat restoration scheme of dubious merit¹⁰ and a new diversion facility to avoid entrainment (despite the fact that the Effects Analysis cannot seem to decide whether entrainment is a problem worth solving). Meanwhile, the timing and volume of fresh water flow through, and out of, the Delta—the environmental variables with the strongest scientific support as important drivers of ecosystem processes and species populations—receive hardly any attention in BDCP, except when their “water cost” is calculated.

RUSHING (“AGGRESSIVELY”) AWAY FROM POTENTIAL SOLUTIONS -- When I spoke to you in November 2010, I identified an unrealistic, unattainable, and arbitrary timeline as a serious impediment to progress in the BDCP. A year later, the State is again committed to an “aggressive” timeline. We all want the solutions promised by a credible BDCP to be proposed, studied, approved, and implemented rapidly – our ecosystem and imperiled species can barely wait for a credible alternative to the destruction wrought by present water export practices – however, implementation of a bad plan, that relies on speculative assumptions, that ignores the bulk of the scientific research on this and other estuaries, and that has no process for improving based on new information will only move the goal further away. Indeed, by committing to an “aggressive” schedule without also committing to a rigorous and credible planning process that seeks out and incorporates the best available science, the State of California may be speeding away from a solution rather than towards one.

CONCLUSION AND REQUEST FOR LEGISLATIVE DIRECTION -- The Bay Institute’s continued participation in the BDCP effort depends entirely on whether the federal and state agencies responsible for protection of our fish, wildlife, and water resources will force the Plan to:

- 1) assure meaningful recovery and conservation outcomes to at least the same extent as the water exporter’s seek assurances regarding future water supply commitments, and
- 2) implement planning and management frameworks that integrate the best available science and that respond to the lessons of that science with definitive corrective actions.

To that end, we respectfully request that the legislature require the Delta Science Program to conduct a thorough assessment the likelihood that the draft final BDCP will achieve its objectives and to convey that finding formally to Department of Fish and Game well before DFG must decide whether to issue a permit for BDCP.

Thank you again for this opportunity to discuss the Bay Delta Conservation Plan with you.

¹⁰ To be clear, some of the BDCPs proposed habitat restoration actions (e.g. modifications to the Yolo Bypass) are likely to provide real benefits to some fish species; but many are ill conceived, poorly described, and simply assert benefits that they are highly unlikely to produce. This should not be news to the BDCP’s creators. In early 2009, technical panels convened by BDCP to evaluate its Conservation Strategy (“DRERIP Reviews”) found that most of the proposed conservation measures had a low to medium probability of producing low or medium magnitude positive effects; many measures were found to carry a risk of producing some negative (unintended) effects as well. The Bay Institute supports large-scale habitat restoration throughout the estuary; we only wish to make clear that the many benefits of restoring this habitat are not likely to include the recovery of a number of the covered species.