July 29, 2014

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

sent via electronic mail: bdcp.comments@noaa.gov

Re: San Francisco Baykeeper Comments on the Draft Environmental Impact Report/Environmental Impact Statement for the Proposed Bay Delta Conservation Plan, Alameda, Contra Costa, Sacramento, Solano, and Yolo Counties, California

Dear Mr. Wulff,

As a leading water advocate for San Francisco Bay, Baykeeper supports solutions aimed to restore the health of the Bay-Delta and achieve sustainable freshwater diversions. Current proposals for the Bay Delta Conservation Plan (BDCP), however, fail to ensure basic protection of existing natural resources, while uncertainty regarding restoration of native fisheries is far too great to gain widespread support from the environmental community and other stakeholders. Public suspicion of the BDCP has undermined passage of any water bond, let alone one which advances the BDCP by financing mitigation projects through public debt.

Given the grave uncertainty of whether restoration will be successfully accomplished; the absence of feasible alternatives involving export reductions; the lack of adequate analysis in the EIS/EIR; and the lack of transparency regarding whether adequate flows shall be ensured through the Bay-Delta, Baykeeper cannot support the BDCP.

Stakeholders have already expressed numerous concerns with the BDCP EIS/EIR. Baykeeper supports comments submitted by the Environmental Water Caucus and we incorporate by reference their comment letter dated June 11, 2014. This supplemental letter serves to address particular issues of concern to Baykeeper and our 2,000 members.

Failure to include San Francisco Bay within the geographic scope of the BDCP

Despite the 2011 finding by the National Research Council that failure to analyze effects on San Francisco Bay within the BDCP environmental review represents a critical gap in the scope of the analysis, the EIR/EIS fails to analyze any effects downstream of the Plan Area.[1] Many species known from the Delta and Suisun Bay also rely on habitats downstream in San Pablo

[1] National Research Council (NRC). 2011. *A Review of the Use of Science and Adaptive Management in California's Draft Bay Delta Conservation Plan. Panel to Review California's Draft Bay Delta Conservation Plan; National Academy of Sciences*, National Academies Press, Washington, DC. 100 pp.

Bay and other subembayments of San Francisco Bay.[2] And sediments passing through the Delta are critical to the formation and maintenance and protection of wetlands, beaches, and urban infrastructure in downstream areas.[3] Comprehensive analysis of BDCP effects requires expansion of the Study Area to include San Pablo and San Francisco Bays.

In recent comments to the Draft EIR/EIS, the Delta Independent Science Board (ISB) explained how consequences of BDPC actions undertaken within the Plan Area will extend downstream to affect San Pablo and San Francisco Bays.[4] These consequences include changes in sedimentation, shifting circulation patterns, and impacts on fish health and ecology. Notably, while the Effects Analysis recognizes suspended sediment loads through the Delta have been declining and that new diversions would result in additional load reductions, the EIR/EIS makes no mention of downstream sediment effects on San Pablo or San Francisco Bays.

Sediment loss associated with BDCP actions must be assessed with respect to likely impacts on wetland restoration projects and the capacity of existing wetlands to adapt to sea level rise throughout the San Francisco Estuary. Hydrodynamic modeling and water quality effects analyses should encompass the entire Bay-Delta system to assist in this effort, consistent with comments by the 'fish agency', as well as the ISB and National Research Council.[5,6,7]

Similarly, effects on fish populations must be analyzed, at a minimum, to include those residing in or migrating through San Pablo Bay. San Pablo Bay hosts 11 listed species on a resident or migratory basis that are known also from the Study Area. And fish abundance within the Suisun and San Pablo Bays are both correlated with freshwater outflow.[8] Failure to analyze effects

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[2] Feyrer, F and Nobriga M. 2007. *Multi-decadal trends for three declining fish species: habitat patterns and mechanisms in the San Francisco Estuary, California, USA*. Canadian Journal of Fisheries and Aquatic Sciences 64:723-734.

[3] Barnard PL, Foxgrove AC, Elias EPL, Erikson LH, Hein JR, McGann M, Mizell K, Rosenbauer RJ, Swarzenski PW, Takesue RK, Wong FL, Woodrow DL. 2013. *Integration of bed characteristics, geochemical tracers, current measurements, and numerical modeling for assessing the provenance of beach sand in the San Francisco Bay Coastal System*. Marine Geology 345:181-206.

[4] Parker A, Simenstad C, George TL, Monsen N, Parker T, Ruggerone G, Skalski J. 2013. *Delta Science Program Independent Review Panel Report BDCP Effects Analysis Review, Phase 3*. Prepared for the Delta Stewardship Council, Delta Science Program.

[5] CA Department of Fish and Wildlife. April 2012. *BDCP EA (Ch. 5) Staff "Red Flag" Review Comprehensive List*. Available at http://baydeltaconservationplan.com/

[6] Parker A, Simenstad C, George TL, Monsen N, Parker T, Ruggerone G, Skalski J. 2013. *Delta Science Program Independent Review Panel Report BDCP Effects Analysis Review, Phase 3*. Prepared for the Delta Stewardship Council, Delta Science Program.

[7] National Research Council (NRC). 2011. *A Review of the Use of Science and Adaptive Management in California's Draft Bay Delta Conservation Plan. Panel to Review California's Draft Bay Delta Conservation Plan; National Academy of Sciences*, National Academies Press, Washington, DC. 100 pp.

[8] Swanson C. 2011. State of San Francisco Bay 2011, Appendix F: Living Resources - Fish Indicators and Index Technical Appendix. Available at http://sfep.sfei.org/

within downstream embayments defies recommendations by seasoned experts and the intent of CEQA/NEPA.

BDCP fails to quantify methylmercury production and threatens methylmercury TMDL

Impacts associated with enhanced methylmercury production resulting from wetland restoration actions of the BDCP are expected to be significant and unavoidable. Particular effects associated with *Impact WQ-14: Effects on Mercury Concentrations Resulting from Implementation of CM2-CM22*, however, were deemed too speculative. And as a result, efforts were not made to even estimate methylmercury production associated with the BDCP and associated restoration efforts. Modeling conducted in support of the mercury effects analysis (Appendix 8I) failed to incorporate anticipated increases in methylmercury production, thereby undermining the entire analysis.

Baykeeper is supportive of wetland restoration in the Delta, regardless of BDCP outcomes, yet the public must be informed whether methylmercury objectives established in the 2010 Total Maximum Daily Load (TMDL) are feasible following BDCP implementation.[9] Will BDCP actions result in unacceptable impacts to birds and aquatic life and could human health risks be exacerbated due to mercury exposure? Are viable mitigation strategies available to reduce these risks? The effectiveness of those potential strategies defined in the EIR/EIS to reduce methylmercury production or exposure is largely untested and unknown.

Restoration efforts in the San Francisco Estuary have in recent years been accompanied by studies related to methylmercury production and bioaccumulation.[10,11] This includes studies which have taken place within the Plan Area to specifically support restoration efforts aligned to the BDCP. [12,13,14,15] The results of these studies enable modeling of methylmercury loads from the

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[9] Central Valley Regional Water Quality Control Board. 2010. *Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Methylmercury and Total Mercury in the Sacramento-San Joaquin River Delta Estuary (Attachment 1 to Resolution No. R5-2010-0043)*.

[10] Ackerman, JT, Marvin-DiPasquale M, Slotton D, Eagles-Smith CA, Herzog, A Hartman MP, Agee JL, Ayers S. 2013. *The South Bay mercury project: using biosentinels to monitor effects of wetland restoration for the South Bay Salt Pond Restoration Project*. Report prepared for the South Bay Salt Pond Restoration Project and Resources Legacy Fund, 227p.

[11] Yee D, Collins J, Grenier L, Takakawa J, Tsao-Melcer D, Woo I, Schwarzbach S, Marvin-DiPasquale M, Windham L, Krabbenhoft D, Olund S, DeWild J. 2008. *Mercury and Methylmercury Processes in North San Francisco Bay Tidal Wetland Ecosystems (CalFed ERP02D-P62 Final Report)*. Prepared for the California Bay-Delta Authority Ecosystem Restoration Program, 67p.

[12] Windham-Myers, L, Fleck JA, Ackerman JT, Marvin-DiPasquale M, Stricker CA, Helm WA, Bachand PAM, Eagles-Smith CA, Gill G, Stephenson M, Alpers CN. 2014. *Mercury cycling in agricultural and managed wetlands: A synthesis of methylmercury production, hydrologic export, and bioaccumulation from an integrated field study*. Science of the Total Environment. v.484:221-231.

[13] Windham-Myers L, Marvin-DiPasquale M, Kakouros E, Agee JL, Kieu LH, Stricker CA, Fleck JA, Ackerman JT. 2013. *Mercury cycling in agricultural and managed wetlands of California, USA: Seasonal influences of vegetation on mercury methylation, storage, and transport*. Science of the Total Environment. v.484:308-318.

BCDP Plan Area and associated mitigation strategies to minimize impacts to the entire San Francisco Estuary, including downstream portions of San Francisco Bay.

Magnitude and likelihood of impacts associated with sea level rise inadequately assessed

Sea level rise (SLR) related impacts identified in the EIR/EIS include salinity intrusion, impacts to water storage capacity and State Water Project (SWP)/Central Valley Project (CVP) deliveries, water transfer effects, levee failure, and other flood impacts. These impacts, however, are generally discussed conceptually and no effort is made to quantify the magnitude and likelihood of SLR-related impacts at various SLR scenarios. Where SLR was modeled this information was not conveyed within a risk assessment framework of use to decision makers and the public. The public therefore has no opportunity to judge the economic, social or environmental risks of SLR placed upon BDCP assets or mitigation projects.

California deserves to be informed of the likely and potential risks to proposed conveyance infrastructure and ecosystems associated with SLR, increased storm surge, and shifting climate patterns - and how these risks may shift following implementation of the BDCP. Such impacts are within the capabilities of existing modeling strategies and have already been assessed within the Plan Area in some instances.[16,17,18,19] If the BDCP project or associated mitigation strategies will prove ineffective or uneconomic in a matter of decades as a result of SLR, Californians should know.

Effects analysis inadequately addresses impacts from increased selenium concentrations

Selenium concentrations in the San Francisco Estuary are reasonably expected to increase under the BCDC during some conditions, since northern intakes will reduce freshwater available to dilute selenium enriched waters of the San Joaquin River. Authors of the EIR/EIS used a selenium bioaccumulation model developed by leading selenium scientists to arrive at the

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[14] Windham-Myers L, Marvin-DiPasquale M, Fleck J, Alpers CN, Ackerman J, Eagles-Smith C, Stricker C, Stephenson M, Feliz D, Gill G, Bachand P, Brice A, Kulakow R. 2010. *Methylmercury cycling, bioaccumulation, and export from agricultural and non-agricultural wetlands in the Yolo Bypass*. Prepared for the Central Valley Regional Water Quality Control Board.

[15] Alpers, CN., JA. Fleck, M Marvin-DiPasquale, CA Stricker, M Stephenson, HE Taylor. 2014. *Mercury cycling in agricultural and managed wetlands, Yolo Bypass, California: Spatial and seasonal variations in water quality*. Science of the Total Environment. v.484:276-287.

[16] Cloern JE, Knowles N, Brown LR, Cayan D, Dettinger MD, Morgan TL, Schoellhamer DH, Stacey MT, van der Wegen M, Wagner RW, Jassby AD. 2011. *Projected Evolution of California's San Francisco Bay-Delta-River System in a Century of Climate Change*. PLoS ONE 6(9): e24465. doi:10.1371/journal.pone.0024465

[17] Mount J and Twiss R. 2005. *Subsidence, sea level rise, and seismicity in the Sacramento-San Joaquin Delta*. San Francisco Estuary and Watershed Science, 3(1).

[18] Suddeth RJ, Mount J, Lund JR. 2010. *Levee Decisions and Sustainability for the Sacramento-San Joaquin Delta*. San Francisco Estuary and Watershed Science, 8(2)

[19] Medellín-Azuara J, Howitt RE, Hanak E, Lund JR, Fleenor WE. 2014. *Agricultural Losses from Salinity in California's Sacramento-San Joaquin Delta*. San Francisco Estuary and Watershed Science, 12(1)

conclusion that Alternatives 1-5 '…would result in essentially no change in selenium concentrations throughout the Delta' and that impacts are considered less than significant, requiring no mitigation. This is because fish tissue guidelines for selenium are already exceeded for listed sturgeon under Existing Conditions and these Alternatives would result in less than 10% increase in Se concentrations in fish tissue, compared to Existing Conditions. Impacts associated with Alternatives 6-9 are considered significant, given an expected 20-23% increase in sturgeon tissue concentrations.

Although research cited in the EIS/EIR draws differing conclusions to those found in the Effects Analysis, regarding the potential impacts and role played by freshwater outflows and export volumes, the EIR/EIS fails to discuss the findings of renowned experts in the area of selenium risks in the Bay-Delta. Statements found outside the realm of scientific papers include frank warnings by Dr. Sam Luoma regarding selenium risks associated with the BDCP, such as "It's clearly a serious problem and it could get worse', and "We're trading clean Sacramento River water and in return we're getting low-quality San Joaquin River water". An EPA scientist was quoted in the same article saying "we shouldn't be adding any more selenium into the system".[20] While the BDCP may not result in increased selenium loads, increased concentrations pose serious risks to wildlife and human health.

Recent research by USGS and UC Davis researchers states the San Francisco Bay-Delta Regional Ecosystem Restoration Implementation Plan (DRERIP) Ecosystem-Scale Selenium Model indicates selenium bioaccumulation and toxicity concerns for higher trophic level species. Risks are exacerbated by increased water diversions. Researchers noted that enough is known to adequately characterize the distribution of Se through the Bay-Delta ecosystem, though the available data from which to validate the outcomes is dated and does not include conditions within low flow conditions. Although the EIR/EIS cited this paper, the issue of data quality is not discussed in the EIR/EIS, nor are other key concerns cited in Presser and Luoma (2013).

Model results suggest that a fish tissue guideline of 5 ug/L for sturgeon (the current regulatory guideline) would ultimately require elimination of all enriched Se inputs to the Bay under existing conditions, including Se from the San Joaquin River with agricultural origins.[21] Separate modeling efforts found that increased flows from the San Joaquin River during low flow conditions (e.g. November) results in elevated concentrations of dissolved selenium (5.0 nmol/L-1) in the Northern Reach of San Francisco Bay.[22] This concentration approximates levels

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[20] Taugher M. *Environmental Toxins in San Francisco Bay could increase with Delta Water Plan*. Contra Costa Times. 15 September 2011. Accessed online on 24 July 2014.
[21] Presser TS and Luoma SM. 2013. *Ecosystem-scale Selenium Model for the San Francisco Bay-Delta Regional Ecosystem Restoration Implementation Plan*. San Francisco Estuary and Watershed Science, 11(1)
[22] Meseck SL and Cutter GA. 2006. *Evaluating the biogeochemical cycle of selenium in San Francisco Bay through modeling*. Limnol. Oceanogr. 51(5): 2018–2032

recorded in the 1980s and 1990s, prior to mandated reductions in selenium dischargers from Bay Area oil refineries.[23] The BCDC EIR/EIS fails to recognize the range of effects on listed species or adequately recognize efforts by USEPA to develop site-specific fish and wildlife Se criteria for federally listed species and designated critical habitat affected by Se in California.[24,25]

Selenium bioaccumulation is complicated by multiple factors and risks vary by sub-region within the San Francisco Estuary. Scientists have the ability, however, to quantify these risks. Given that a fundamental objective of the BCDP is to protect and restore natural communities and ecosystems, the EIR/EIS must incorporate at least some of the numerous reports and peer-reviewed papers related to selenium impacts in the Bay-Delta and determine options for mitigating existing risks, in addition to those anticipated under BDCP implementation.

Sincerely,

Ian Wren

Staff Scientist, San Francisco Baykeeper

[23] Cutter GA and Cutter LS. 2004. *Selenium biogeochemistry in the San Francisco Bay estuary: Changes in water column behavior*. Estuar. Coast. Shelf Sci. 6: 463–476.
[24] U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration National Marine Fisheries Service. 2000. Final biological opinion on the effects of the U.S. Environmental Protection Agency's "Final Rule for the Promulgation of Water Quality Standards: Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California. U.S. Fish and Wildlife Service and National Marine Fisheries Service. 323 p.
[25] U.S. Environmental Protection Agency. 2011. Update on California Toxics Rule and Endangered Species Act (September, 2011): Selenium. San Francisco, (CA): U.S. Environmental Protection Agency, Region 9. Available from: http://www.epa.gov/region9/water/ctr/ Accessed 20 June 2014.

Appendix A: Copies of Cited Reports and Scientific Literature