for all water exporters using a 3% discount rate. This equates to average annual benefits of $129 million after the tunnels are operating. If this annual benefit is extended over a 50 year period beginning in 2025, the present value of export water quality benefits are $2.328 billion using a 3% discount rate and $1.010 billion using a 6% discount rate.

When considering water quality benefits, it is important to note that the tunnel itself does not do anything to purify water supplies. It improves export water quality, because the tunnel moves Delta water exporters' diversion points to a stretch of the Sacramento River between Clarksburg and Courtland where water quality is better. The new intake would be upstream of the existing diversions of Sacramento River water by most Delta farmers, the Contra Costa Water District, and the cities of Stockton and Antioch, whereas the current intakes are downstream of these users. Thus, any water quality benefits received to the export projects will be at least partially offset by a degradation of water quality to those water users who will now be downstream of the massive intakes of the new tunnel. Many of these offsetting costs have not been thoroughly analyzed, but are at the root of much of the opposition to the proposed Delta tunnels. Some of these potential costs are included in the In-Delta and Upstream Impacts section in the cost assessment that follows.

Earthquake Risk Reduction:

A massive earthquake that floods Delta islands and disrupts water conveyance is frequently cited as the most important economic justification for an isolated water conveyance facility around the Delta. This is inaccurate. The Delta tunnels are often incorrectly portrayed as the only way to protect the economy from a catastrophic earthquake risk, and economic risks of water supply disruption are often inflated by including non-water supply economic losses. In this section, we first assess the economic benefit from the tunnels' earthquake protection assuming that there are no seismic upgrades to the Delta levee system. We use these values in the benefit-cost analysis. Second, we discuss alternative options for reducing seismic risk that protect against a broader set of economic risks at lower cost than the tunnels.

The scope of work for the BDCP "Economic Benefit" analysis described a correct approach for an economic assessment of seismic risks, "After developing estimates of the probability of various outage scenarios, Contractor will calculate expected losses and characterize the risk inherent to the current system." In the June 20 presentation at the BDCP meeting, the Brattle analysis did not include probabilities of outage scenarios or calculate expected losses. It only showed losses from a scenario when a massive earthquake occurs on the first year the tunnels are operating. However, it is straight forward to use these results to derive the expected annual losses called for in the scope of work.

The length of seismic outages that are currently being discussed as likely, especially in light of recent and planned responses to the levee and emergency response system and the effect of freshwater flushing out the Delta, is on the order of 6 to 12 months. According to the June 20 presentation by the Brattle Group, the estimated present value cost of an outage occurring in 2022 as $722 million for 6 months, and $2.093 billion for a 12 month water supply outage. The effect of discounting needs to be eliminated to calculate an expected annual loss. The undiscounted cost of a 6 to 12 month outage in 2022 is $970 million to $2.812 billion.

To calculate an expected value, these undiscounted expected annual losses would be multiplied by an annual probability of such a seismic event and failure occurring. According to Figure 5 in the executive summary[9] of the Delta Risk Management Strategy Phase 1 report, the annual probability of 10+ islands failing from earthquake is about 3%, and the annual probability of 30 or more islands failing is about 1%. Many engineers feel that these failure probabilities are far too high[10], but we utilize them below in the absence of more current published probabilities.

Table 1 Expected annual urban losses from a Delta earthquake

Annual Probability	6 mos outage ($970m)	12 mos outage ($2,812m)
.03	$29.1 m	$84.4 m
.02	$19.4 m	$56.3 m
.01	$9.7 m	$28.1 m

The median value in the table is about a $29 million expected annual urban losses that could be avoided if the Delta water supply tunnels were built. The Brattle presentation did not calculate agricultural losses, but assuming that the urban to agriculture ratio of earthquake protection benefits is similar to the water supply benefits, the expected annual benefits from earthquake protection are $48 million annually for urban and agriculture combined. If this annual benefit is extended over a 50 year period beginning in 2025, the present value of earthquake protection benefits are $866 million using a 3% discount rate and $376 million using a 6% discount rate. Although we use these values in the benefit-cost analysis, they are likely to be far too high as the earthquake probabilities are lower, and, as explained below, there are less costly options that could lower the risk of seismic water export outages to near zero.

If a massive earthquake were to cause ten or more Delta islands to simultaneously flood, the human and economic losses that would result are much larger than the impact on water supplies. According to the Delta Risk Management Strategy (DRMS) reports, hundreds of people in the Delta would drown in such a catastrophic flood, possibly more. In addition, the DRMS reports found that interruptions of export water supply would be only 20% of the economic loss of such a catastrophe. Much larger economic losses would come from disruptions to natural gas systems, electricity transmission and generation, state highways, ports, railroads, and significant losses of in-Delta businesses, homes, and farmland. Given the scale of these potential losses to multiple types of economic infrastructure, it makes sense to consider seismic upgrades to the Delta levee system that protect all economic values in the Delta, including water exports. Unlike a tunnel, seismic levee upgrades could also save hundreds of lives and prevent environmental destruction of such a catastrophic flood.

Two reports by state agencies have identified seismic levee upgrades as a viable earthquake risk reduction strategy in the Delta.[11] The Delta Protection Commission Economic Sustainability

[9] http://www.water.ca.gov/floodmgmt/dsmo/sab/drmsp/docs/drms_execsum_ph1_final_low.pdf

[10] For example, Dr. Robert Pyke, a well-known geotechnical engineer states that the probability of an earthquake flooding ten or more islands is much lower than 1%.

[11] "Economic Sustainability Plan for the Sacramento-San Joaquin River Delta." Delta Protection Commission. January 2012. http://www.forecast.pacific.edu/desp.html. "Risks and Options to Reduce Risks to Fishery and Water Supply Uses of the Sacramento/San Joaquin Delta." Department of Water Resources and Department of

Plan estimated the cost of 300 to 600 miles of seismic levee upgrades at between $2 billion and $4 billion, including riparian habitat enhancements on the enlarged levees. The Department of Water Resources' January 2008 AB 1200 found an "Improved Levees" scenario with 100 miles of seismic upgrades to eight islands in the south Delta was the lowest cost of three promising risk reduction strategies, including a peripheral canal.[12] In addition, a 2007 PPIC report estimated the cost of a similar Dutch style, "Fortress Delta" strategy at $4 billion.[13] Seismic levee upgrades are 1/6 to 1/3 the cost of the proposed water conveyance tunnel, and provide a much larger and broader range of risk reduction benefits to the economy.

Understanding the larger picture of earthquake risk is essential because benefit-cost analysis is based on "with and without" comparisons to the next best alternative. It is hard to envision that the state and federal governments would allow the seismic risk to human life and other economic assets in the Delta to remain unaddressed even if water exporters moved ahead with a Delta tunnel. Since necessary seismic upgrades to Delta levees could be completed by the time a Delta tunnel conveyance was constructed, a water supply tunnel would create no additional seismic protection for water exports. In this scenario, the earthquake risk reduction benefits of the water supply tunnel are zero.[14] Although we believe zero is a more appropriate value for benefit-cost analysis, we utilize the higher estimates that assume that alternative strategies to reduce seismic risk are not implemented, and thus the risks to the broader economy and public safety are ignored.

Environmental Benefits:

At equal levels of water exports, a water supply tunnel could have environmental benefits for endangered fish over the current diversion location in the south Delta that causes reverse flows in some Delta rivers and entrainment of endangered fish in the pumps. However, as water exports are increased beyond the no-tunnel estimate of 4.7 maf of average exports, the marginal environmental benefits of a tunnel diminish. The BDCP's most recent "effects analysis" found that an operating plan that includes 5.9 maf of average exports would harm many of the endangered species the BDCP intends to help. This benefit-cost analysis assumes an increase in water exports to a slightly lower level of 5.3 maf, near the top of the 4.3maf to 5.5maf range that is reported to be under current consideration. At higher levels of water exports, most if not all environmental benefits that could directly result from a tunnel are consumed or monetized in the form of higher water exports, and the environmental benefits of

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Fish and Game. January 2008.
http://www.water.ca.gov/floodmgmt/dsmo/sab/drmsp/docs/AB1200_Report_to_Legislature.pdf.

[12] The seismic upgrade of only 8 islands was found to reduce the cost of water export interruptions from the largest Delta earthquake by 2/3, and the strategy had the largest overall economic risk reduction because it also protected other economic assets from flood in the case of an earthquake.

[13] The PPIC ruled out a "fortress Delta" solution in 2007, because its $4 billion cost was seen as too high, and they assumed a peripheral canal cost only $3 billion. The PPIC also ignored or downplayed public safety and the risk to non-water supply infrastructure. See "Envisioning Futures for the Sacramento-San Joaquin Delta" Public Policy Institute of California, February 2007. http://www.ppic.org/main/publication.asp?i=671

[14] If the tunnel conveyance were implemented as part of a Delta policy package that prevented or delayed seismic levee upgrades in the Delta, it could be argued that that the net earthquake risk reduction benefits of a tunnel are negative compared to the next best alternative.

the BDCP would come from an extensive program of habitat restoration separately funded by state and federal taxpayers. If the tunnel did not result in increased water exports, there could be an increase in environmental benefits, but the water supply benefits would drop to zero. This trade-off between export water supplies and environmental benefits has been at the center of much of Delta discussions. Because increased water exports are essential to financing the tunnel by water contractors, we believe that a more environmentally beneficial scenario of tunnel conveyance that does not result in increases export water supplies is financially infeasible and irrelevant. Thus, we focus on the most realistic case of high water exports.

Costs of a Delta Water Supply Tunnel

Capital Costs:

We use the $12.7 billion construction cost estimate from Chapter 8 of the February 29, 2012 Draft Bay Delta Conservation Plan (BDCP).[15] There are news reports that tunnel cost estimates have risen to $14 billion[16] and possibly more. However, the proposed design change to a 9,000 cfs system with three intakes and large gravity fed tunnels may reduce construction costs. The elimination of two intakes and an intermediate pumping plant from the original 15,000 cfs design could reduce the cost estimate by about $2 billion. However, the gravity flow tunnels may have to be larger than originally estimated[17] which would increase costs. Since there are conflicting reports that costs have increased or decreased by roughly $2 billion, we stay with the original cost estimate. These figures are easy to revise once updated cost estimates are available. In addition, this construction cost estimate does not include costs for "avoidance and minimization" measures associated with construction of the tunnel conveyance, since no cost estimate for this component was included in the most recent draft of BDCP.

Chapter 8 of the BDCP describes a financing strategy for construction that would involve issuing a series of 4 revenue bonds with 40 year repayment terms. Debt servicing costs are estimated at $1.1 billion annually from 2021 through 2056, and the last of the bonds would be retired in 2061. Table 8-61 of BDCP Chapter 8 details the distribution of the $12.7 billion in construction costs over time. The present value of these construction costs are $10.777 billion using a 3% discount rate and $9.205 billion using a 6% discount rate.

Operating and Maintenance Costs:

The February 29, 2012 draft BDCP estimates operation and maintenance costs for the Delta tunnel at $85 million annually, including $17.8 million in electricity costs.[18] For the 50 year

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[15] http://baydeltaconservationplan.com/Libraries/Dynamic_Document_Library/BDCP_Chapter_8_-_Implementation_Costs_and_Funding_Sources_2-29-12.sflb.ashx

[16] Weiser, M. *Sacramento Bee,* February 20, 2012. "Water Tunnels Would Be Huge Project—If They Clear Huge Obstacles."

[17] Chapter 8 of the BDCP states that the tunnels would accommodate 7,000 cfs gravity feed, and DWR representatives at the June 20 meeting says that sizing had not been finalized but acknowledged that 9,000 cfs gravity feed tunnels may have to be larger than 15,000 cfs tunnels with an intermediate pumping plant.

[18] The electricity share of operating costs could decrease if tunnels are sized for gravity flows. Since electricity is a relatively small share of operating costs, we have not made an adjustment without further details of the impact.

period beginning in 2025, the present value of operating and maintenance costs are $1.533 billion using a 3% discount rate and $665 million using a 6% discount rate.

In-Delta and Upstream Costs:

The water supply tunnel will generate a variety of costs on in-Delta and upstream uses. As discussed before, the large new diversion on the Sacramento River will degrade water quality for those who divert Sacramento River downstream from the proposed intakes. These users include Delta farmers, the Contra Costa Water District, the Cities of Antioch and Stockton, industrial user such as power plants in eastern Contra Costa County, and the North Bay Aquaduct that serves Napa and Solano. In addition, the footprint of the tunnel facility will eliminate Delta farmland and property (although less than a surface canal), and three massive new water intakes will create substantial visual and noise pollution along a scenic, rural stretch of the Sacramento River, harming Delta residents and detracting from recreation and tourism in the area. Upstream users, such as the North State Water Alliance, are concerned that the tunnel operation could reduce upstream water supplies, and result in lower reservoir levels which could affect hydroelectric power generation and recreational use of reservoirs.

Economic values have not been estimated for most of these impacts. The Delta Protection Commission Economic Sustainability Plan estimated a water conveyance tunnel would result in an average of $65 million in annual losses for Delta agriculture; including about $50 million in losses from reduced water quality, and an additional $15 million in annual crop losses from roughly 8,000 acres of farmland lost to construction impacts and the physical footprint of the facilities.[19] It is possible that a tunnel with fewer intakes and operated for environmental benefits would be more protective of in-Delta water quality and result in lower impacts on Delta agriculture. Even if Delta agriculture impacts were lower than $65 million, the other impacts to in-Delta urban water intakes, Delta communities, and upstream water users would surely push the overall cost of in-Delta and upstream impacts higher. We use $65 million as a very conservative, preliminary estimate of the annual costs to in-Delta and upstream interests, and have not made any estimate of in-Delta costs associated with the construction activity itself. For the 50 year period beginning in 2025, the present value of estimated in-Delta and upstream costs are $1.173 billion using a 3% discount rate and $509 million using a 6% discount rate.

Benefit-Cost Ratio

Table 2 summarizes the benefits and costs detailed in the previous section. Using both a 3% and 6% discount rate, the economic benefits of the tunnels are about $7 billion less than the costs. Even without discounting, meaning that the time value or opportunity cost of money is ignored, the benefits are still $500 million lower than the cost through 2074. The benefit-cost ratio ranges from 0.3 to 0.5 depending on the discount rate used. Alternatively, costs are two to three times higher than the benefits.

[19] http://www.forecast.pacific.edu/desp.html

Table 2 Benefits and Costs of Delta Tunnels through 2074

Results are expressed as present discounted values calculated with 3% and 6% discount rates. Ending year of 2074 is fifty years after estimated completion of tunnels in 2025. (millions of current dollars)

Benefits ($ millions)	**3% Discount Rate**	**6% Discount Rate**
Export Water Supply at 5.3 maf of exports	3,916	1,670
Export Water Quality	2,328	1,010
Earthquake Risk Reduction	866	376
Environmental Benefits at 5.3maf of exports	0	0
Total Benefits ($ millions)	**7,110**	**3,056**
Costs ($ millions)		
Debt Service Capital Cost	10,777	9,205
Operation and Maintenance	1,533	666
In-Delta and Upstream Impacts	1,173	509
Total Costs ($ millions)	**13,484**	**10,380**
Net Benefits ($ millions)	**-6,374**	**-7,324**
Benefit-Cost Ratio	**0.527**	**0.297**
Cost-Benefit Ratio	**1.90**	**3.36**

Table 3 Estimated Annual Benefits and Costs in 2030

Benefits ($ millions)	**2030 Benefits/Costs**
Export Water Supply at 5.3 maf of exports	217
Export Water Quality	129
Earthquake Risk Reduction	47
Environmental Benefits at 5.3maf of exports	0
Total Annual Benefits ($ millions)	393
Costs ($ millions)	
Debt Service Capital Cost	1,100
Operation and Maintenance	85
In-Delta and Upstream Impacts	65
Total Annual Costs ($ millions)	**1,250**

Although we have been careful to use the most recent reliable values from the BDCP and reports of other state agencies, there is uncertainty surrounding any assessment of this kind. The uncertainties and any omitted values are balanced between items that help and harm the economic case for the tunnels. For example, the in-delta and upstream costs are almost certainly underestimated, and include no in-Delta impacts from the construction process, in-Delta municipal water supply and quality impacts, and a host of potential upstream impacts on water supplies from the Sacramento Valley to the east side of the San Joaquin Valley. As discussed in a previous section, the earthquake risk reduction benefit is likely overstated since it ignores the alternative of seismic upgrades to the Delta levee system. The water supply benefits and capital costs may also prove to be too optimistic, further weakening the case for the tunnels. On the other hand, the tunnels would facilitate water transfers from areas north of the Delta, benefits that have not been valued in this analysis. In addition, the initial Brattle

results did not include urban benefits to Santa Clara which receives some of their water supplies from the Delta. The cost of the tunnels may also be reduced if an alternative with fewer intakes is selected. Overall the uncertainties and omissions are balanced and it seems very unlikely that any of them could be large enough to change the conclusion given the size of the gap between costs and benefits.

Some socio-economic considerations are also not included in the analysis. Most notably, the values of agricultural water do not include multiplier effects to capture the broader regional economic benefits created by water supplies. There are legitimate reasons why these indirect impacts are generally excluded from benefit-cost analysis, but the special role of agriculture in supporting the economic base of the Central Valley should be acknowledged. If these socio-economic values of agricultural production were included, the benefits would increase by about $100 million per year, a roughly 25% increase in total benefits. However, it is important to note that these socio-economic impacts are present for both areas that benefit from water exports from the tunnels, and for the in-Delta and upstream areas that are potentially harmed. Incorporating socio-economic impacts would increase both the benefits and the costs of the tunnels.

Financial Feasibility and Ratepayer Impacts

Benefit-cost analysis is sometimes confused with financial analysis and ratepayer impacts. Benefit-cost analysis does not estimate rate increases as these depend upon a number of financing assumptions, the amount of public investment, cost recovery principles, and business considerations of individual utilities. Benefit-cost analysis is a tool for policy analysis and decision making that informs whether a project is economically justified and should be built.

In contrast, financial feasibility analysis simply investigates whether a project can be financed and paid for, whether or not it is economically desirable or the most cost-effective way to meet a given objective. Financial feasibility must be demonstrated for certain regulatory requirements, and also must be proven to investors who are needed to buy bonds to finance construction. Financial feasibility is clearly linked to estimating ratepayer impacts since increased water rate revenue will be required to finance the bonds.

Despite the differences, the benefit-cost calculations raise serious questions about financial feasibility. If only the benefits and costs to water exporters in Table 2 are considered, the total benefits of the tunnels are still about $6 billion shy of the total costs that would be paid by the water agencies. However, there could be additional benefits to water agencies that are not accounted for in Table 2, such as the value of regulatory assurances that would be part of the BDCP. Financial feasibility also raises concerns about how the costs would be distributed across the state and federal water projects and urban and agricultural agencies.

Regulatory Assurance under the Endangered Species Act:

The tunnels are proposed as part of the BDCP, a habitat conservation plan (HCP) that may reduce regulatory risk to the exporting water agencies from further cuts in Delta water exports due to Endangered Species Act protections for endangered fish. This regulatory assurance would have tremendous value to the water agencies.

Despite its value to water agencies, we did not include regulatory assurance in the comprehensive benefit-cost analysis because the assurance does not create any value from a comprehensive, statewide perspective. Regulatory assurance transfers the risk of a negative environmental outcome from the export water agencies to the environment, taxpayers, and in-Delta and upstream resource users who might have to pay in place of water agencies if the tunnels turn out to be negative for endangered fish. If the value of the fisheries and the Delta environment are as high as the Brattle Group and BDCP estimate, then shifting this risk away from water exporters could actually be a net negative from a statewide perspective.

Despite the lack of statewide value, there is no denying that regulatory assurance is valuable to water exporters and contributes to their financial feasibility. But what is it worth? Preliminary modeling from the Brattle Group presented at the June 20, 2012 BDCP meeting suggests the value of regulatory assurance could be as high as $11 billion. That would exceed the $6-7 billion shortfall suggested by the benefit-cost analysis. However, this issue begs another important question.

Does regulatory assurance and a valid HCP granting incidental take permits for the water agencies require the peripheral tunnels? According to this analysis, the water agencies could pay up to $6 billion in habitat improvements for an HCP on the current through Delta conveyance system, and still come out economically ahead of paying for the $13 billion tunnels. It seems logical that the necessary investments for an HCP and regulatory assurance on a no-tunnel alternative would be no more expensive than the $4 billion expense of habitat creation in the current BDCP proposal. Taxpayers would benefit greatly from this approach since a water bond that further burdens the state's beleaguered general fund would be unnecessary to finance Delta habitat upgrades.

Will Costs Be Allocated Proportional to Water Supply, Economic Benefits, or Population?

Although the BDCP has yet to release a detailed financial plan with cost allocations between Delta export water agencies, the agencies have said that the cost of the tunnel would be paid in proportion to the water received through the tunnel. For example, Metropolitan Water District, has said it expects its ratepayers to pay for 28% of the cost of the tunnel, equivalent to their share of Delta water exports. However, the high cost of the Delta project raises serious affordability questions for the agricultural users who receive the majority of water exported from the Delta. The cost of irrigating with water exported through the tunnels would exceed the profits of many crops grown in the Central Valley.

A proportional financing plan is simple to implement, prevents cross-subsidies between urban and agricultural users and is consistent with California Proposition 218. However, financial feasibility for a proportional financing plan requires the benefits to exceed the cost for every water agency, a much tougher standard than assessing whether the collective benefits to the agencies exceed the collective costs to the agencies. As discussed above, a proportional cost allocation means the tunnels are clearly financially infeasible for agricultural water agencies who receive the majority of water exported from the Delta under proportional cost allocation.

The most recent draft of the BDCP suggests a non-proportional financing approach, and compares the cost of the tunnel to urban rather than agricultural water supply projects. In fact,

the draft BDCP financial analysis states the project is feasible because its per capita cost is smaller than some urban water projects financed by local urban water agencies. But the per capita financial feasibility analysis in the draft BDCP is inconsistent with the statements water contractors have made about proportional financing for the past five years. At the June 26, 2012 board meeting of the Metropolitan Water District (MWD), directors clearly expressed disapproval of the per capita financing suggested in the latest draft BDCP and MWD staff concurred.

Despite the fact that proportional cost allocation will clearly not work for financing the tunnels, water agencies have not put forward any other approach with their boards or ratepayers. The facts are that the tunnels are financially marginal for water agencies collectively, and that urban water use produces 2/3 of the benefit with 1/3 the water, and agricultural water use is 1/3 the benefit with 2/3 of the water. Financing the tunnels will either require a subsidy for agricultural users from urban ratepayers or taxpayers, or significant sales of water from agricultural to urban water agencies that will lead to fallowed fields in the Central Valley but more funds for bond repayment. But urban agencies and the government are adamant that there will be no ratepayer or taxpayer subsidies for farmers. And farmers insist that they have no intention of selling their water supplies to urban areas.

The result is that mere days from the Governor's expected announcement that the state is building the tunnels, water agencies still can't provide details on how much it will really cost their ratepayers or explain how they would generate the nearly $1.2 billion per year necessary for debt service and operating costs. There has been some informal discussion about pricing strategies that would yield more revenue for debt service such as differential pricing by reliability or allocating costs proportional to economic benefits instead of water quantity. However, it is unclear if such new pricing schemes are practical, supported by ratepayers or consistent with Proposition 218.

Of course, the main reason that financing the tunnels is so challenging is that the project does not provide economic benefits that exceed its cost. The recent recession is a powerful reminder that no amount of financial engineering can change the fundamental economics of an investment from bad to good.

Conclusion

This report updates an initial benefit-cost analysis of the water conveyance tunnels at the center of the Bay Delta Conservation Plan (BDCP). Primarily using the results of the BDCP's own economic benefit and cost studies, we find a benefit-cost ratios ranging from 0.3 to 0.5, meaning that there are between $1.90 and $3.36 of costs for every $1 in economic benefits. To put this in perspective, this benefit-cost ratio is 80% lower than those estimated for the State's high-speed rail project.

When these very low benefit-cost ratios are considered alongside the inconsistent and incomplete financial plans, it is clear that the Delta water conveyance tunnels proposed in the draft BDCP are not justified on an economic or financial basis.

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Governor Brown and Obama Administration Outline Path Forward for Bay Delta Conservation Plan

California, Interior, NOAA Reaffirm commitment to comprehensive solution to California's water supplies and a healthy ecosystem

SACRAMENTO, CA – California Governor Edmund G. Brown Jr., Secretary of the Interior Ken Salazar, and National Oceanic and Atmospheric Administration (NOAA) Assistant Administrator for Fisheries Eric Schwaab today outlined revisions to the proposed Bay Delta Conservation Plan (BDCP) that, along with a full range of alternative proposals, will undergo a rigorous public environmental review in the coming months. In announcing the path forward for an enhanced BDCP process, the officials emphasized that California's water system is unsustainable from an environmental and economic perspective, and that the BDCP is a key part of a comprehensive solution to achieve the dual goals of a reliable water supply for California and a healthy California Bay Delta ecosystem that supports the State's economy.

Population growth, habitat loss and ongoing threats to levee stability and water supply have crippled the California Bay Delta, threatening the health and economies of California communities. The revised approach, which is grounded in science, is designed to help restore fish populations, protect water quality, and improve the reliability of water supplies for all water users who receive deliveries from state and federal projects. It improves on key aspects of previous proposals and offers a strong governance model, financing options, a scientific review process and a steadfast conservation foundation for a new water conveyance facility to move water and help restore the health of the ecosystem.

"A healthy Delta ecosystem and a reliable water supply are profoundly important to California's future," said Governor Brown. "This proposal balances the concerns of those who live and work

in the Delta, those who rely on it for water and those who appreciate its beauty, fish, waterfowl and wildlife."

"As broken and outdated as California's water system is, we are also closer than ever to forging a lasting and sustainable solution that strengthens California's water security and restores the health of the Delta," said Secretary Salazar. "Through our joint federal-state partnership, and with science as our guide, we are a taking a comprehensive approach to tackling California's water problems when it comes to increasing efficiency and improving conservation. Today marks an important step forward in transforming a shared vision into a practical, effective solution. With California's water system at constant risk of failure, nobody can afford the dangers or costs of inaction."

"The status quo isn't working for fish, communities around or dependent upon the Bay Delta, economic development, or water resources management," said Dr. Jane Lubchenco, Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator. "Our proposed changes to the BDCP reflect important improvements in shaping a comprehensive strategy to fix a broken system. Because this is a complicated issue and we do not have all the answers today, we will continue to evaluate and refine the proposal. We call upon the many participants throughout California to join us in staying focused on science-based solutions."

The elements of a preferred proposal include the construction of water intake facilities with a total capacity of 9,000 cubic feet per second -- down from an earlier proposal of 15,000 cfs – operations of which would be phased in over several years and a conveyance designed to use gravity flow to maximize energy efficiency and to minimize environmental impact. Many other alternatives, including no conveyance facility, and facilities with capacities ranging from 3,000 to 15,000 cfs, will also be fully considered as part of the upcoming environmental review process.

Governor Brown and Secretary Salazar affirmed their commitment to continue working with water users, non-governmental organizations and local governments to achieve the co-equal goals in a manner that incentivizes reduced, efficient water use throughout California and that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta.

Having identified the key elements of a proposal, the parties expect to issue a draft Bay Delta Conservation Plan and corresponding Environmental Impact Report/Environmental Impact Statement for public review this fall. In recognition that water supply reliability and affordability elements are vitally important to the public water agencies who are expected to pay for any proposed facilities, the state and federal agencies will work intensively with the public water agencies and other interested parties over the next 90 days to address these important questions. State and federal agencies will continue to refine the proposals announced today and will issue a major progress report after the completion of this initial work.

The proposal outlined today is based on shared objectives, including:

- ***Science:*** In order to determine the benefits of additional habitat and Delta outflow to fish, the State and U.S. governments are developing a process, including independent scientific review, to

ensure that science is playing a neutral and informative role in determining a way forward for the BDCP. All parties, including water users, conservation groups and public agencies will be invited to fully participate in the process. Science will guide how to best restore the ecosystem and how much water can be exported.

- ***Conservation:*** The BDCP will contain biological goals and objectives to improve the status of a wide variety of listed species and species of concern under the Endangered Species Act, and will quickly implement new habitat projects in the Suisun Marsh and the Delta upon completion of appropriate environmental reviews.

- ***Cooperation and Governance:*** State and U.S. governments will work cooperatively with local water agencies, environmental organizations, and Delta governments and districts under a proposed governance structure to achieve an open, transparent, and inclusive process, allowing affected parties to play an appropriate role in the governance and implementation of the BDCP.

- ***Finance:*** State and U.S. governments are committed to the "user pay" principle, and the state and federal water contractors agree that the costs of the new water conveyance facility and associated mitigation of that facility will be paid through charges to the water users who would benefit from its development and operation. Habitat and other conservation measures in the BDCP would be financed in part by the contractors, but would mostly be paid by the state over a period of 40 years, with likely additional investment by the federal government through existing programs.

- ***Adaptive Management:*** The proposal reflects the shared commitment by state and U.S. governments to incorporate adaptive management to ensure flexibility as factors such as climate change, new invasive species, and unexpected prolonged drought continue to affect the biology and water supplies of the Delta.

- ***Sustaining Delta Communities:*** The State and U.S. governments recognize the need to preserve the unique communities and agricultural productivity of the Delta. State and federal agencies will continue investment in the Delta for flood protection, community development, and biological restoration.

- ***Protecting Upstream Water Users:*** State and U.S. governments will make sure implementation of BDCP will not result in adverse effects on the water rights of those in the watershed of the Delta, nor will it impose any obligations on water users upstream of the Delta to supplement flows in and through the Delta.

- ***Improved Water Management State-wide:*** State and U.S. governments will continue to explore new ways to satisfy competing water demands, including commitments to an Integrated Water Management approach, reducing water demand, increasing water supply, and improving efficiency of operations. The Metropolitan Water District of Southern California and the Santa Clara Valley Water District - the two largest urban regional water agencies-- have committed to exceed the urban water savings target established in the 2009 Delta Reform Act by saving 700,000 acre-feet a year based on predicted future demands. This includes a commitment by Southern California to annually save more water through conservation and recycling than it

receives, on average, from Northern California, as well as a commitment from the Santa Clara County Water District to meet Silicon Valley's future increases in demand through conservation and recycling. With respect to agricultural water use, the Bureau of Reclamation has worked with local water agencies to invest close to $50 million over the last eight years in efficiency improvements in California. Reclamation is now partnering with the Natural Resources Conservation Service to provide funding for projects that improve water management and create new supplies for agricultural irrigation. In the last two years, approximately $15 million in federal funding has been invested in this effort. The State of California has invested more than $47 million in similar programs since 2001.

For more information on today's announcement, including a q&a document and information on how the proposal is expected to improve fish species, please visit:
http://baydeltaconservationplan.com

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FRIENDS OF THE RIVER

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January 11, 2013

Cindy Messer
Delta Stewardship Council
980 Ninth Street, Suite 1500
Sacramento, CA 95814

Re: Comments on Final Draft Delta Plan (DP), Recirculated Draft Programmatic Environmental Impact Report (RDPEIR) and Proposed Delta Plan Rulemaking Package (Regulations) **including Presentation of New Alternatives 2A and 2B**

Dear Ms. Messer and Council Members:

This organization, Friends of the River, objects to approval of the Delta Plan (DP), RDPEIR, and Regulations. This organization is included as a commenter in the detailed comments submitted by the Environmental Water Caucus (EWC). These brief additional comments are submitted solely on behalf of this organization. A fundamental threshold CEQA violation carried out by the Delta Plan, RDPEIR and Regulations is that they call for carrying out the "alternative" of developing new conveyance facilities to divert huge quantities of freshwater from the Sacramento River upstream from the Delta for the benefit of exporters south of the Delta. These documents call for that even though no true alternative to developing new conveyance has ever been considered by either the Council or by the exporters creating the BDCP project. This failure to consider an alternative that would avoid or substantially lessen the massive environmental impacts that would occur with construction and operation of new water delivery conveyance must be remedied by full consideration of a reasonable range of alternatives in a recirculated Draft EIR.

The Council Process Violates CEQA by Failing to Develop and Consider a Range of Reasonable Alternatives to Developing New Conveyance

Close to two years ago, the National Academy of Sciences declared in reviewing the draft BDCP that: "[c]hoosing the alternative project before evaluating alternative ways to reach a preferred outcome would be post hoc rationalization— in other words, putting the cart before the horse. Scientific reasons for not considering alternative actions are not presented in the plan." (National Academy of Sciences, Report in Brief at p. 2, May 5, 2011).

In all that time, nothing has changed in this regard. The Council is still succumbing to the will of exporters who still want a conveyance that will take 15,000 cfs of freshwater out of the Sacramento River upstream from the Delta. The Delta would be left to face ever worsening salinity intrusion from the Bay due to a projected rise in the sea level by as much as 55" by 2100 (DP 80, 91) while the Revised Project further worsens salinity intrusion by taking out massive quantities of freshwater before it even reaches the Delta.

Conclusions in an EIR must be supported by substantial evidence. CEQA Guidelines section 15384 defines substantial evidence as "enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached." "Substantial evidence shall include facts, reasonable assumptions predicated upon facts, and expert opinion supported by facts." "Argument, speculation, unsubstantiated opinion or narrative, evidence which is clearly erroneous or inaccurate, or evidence of social or economic impacts which do not contribute to or are not caused by physical impacts on the environment does not constitute substantial evidence."

All that the subject documents contain to support the Revised Project alternative and the call for improved, meaning new conveyance, is argument, speculation, and unsubstantiated opinion and narrative. A new Draft EIR must be prepared and recirculated because "the draft EIR [and RPDEIR] was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded." (CEQA Guidelines, § 15088.5 (a)(4).) This entire process has been permeated from the outset with pre-decisional bias to develop the massive new conveyance capacity. As set forth in detail in the EWC comments there has been incomplete compliance with CEQA and there has been no public trust doctrine analysis performed.

We strongly support the EWC alternative which has been labeled Alternative 2. However, we present two additional alternatives in an attempt to help the Council and its EIR preparers to start down the road finally, of complying with CEQA and satisfying the obligations created by the public trust doctrine. These two alternatives are set forth below. Because the Council has been presented with three alternatives that substantially lessen significant and unavoidable impacts identified in the Draft Plan, recirculation of a new Draft EIR is now

required. CEQA Guidelines section 15088.5(a)(3) requires recirculation when a feasible project alternative considerably different from others previously analyzed would clearly lessen significant environmental impacts of the project, but the project's proponents decline to adopt it. Alternative 2, 2A, and 2B are feasible alternatives that must be analyzed in a recirculated Draft EIR.

New Alternatives 2A and 2B Would Avoid the Adverse Impacts of the Revised Project

Alternative 2A: This alternative can be thought of as "think before you act." Under Alternative 2A, the Delta Plan and the Regulations would not encourage or recommend new or improved conveyance, water intakes, conveyance facilities, exporting more water in the wet years, optimizing diversions in wet years, and the like at this time. The decision whether to call for new conveyance would await the determination of such fundamental issues as water supply availability and the environmental impacts of supplying the water under CEQA including a helpful guide as to what is necessary, set forth in the California Supreme Court's decision in *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412. The decision whether to call for new conveyance would also await your determination that would take into consideration a cost-benefit analysis and public trust doctrine analysis. The decision would also await the Council's preparation and circulation of a new Draft EIR so that the decision-making public agencies, and the public itself, would have the benefit of full environmental disclosure, consideration of the true project and its environmental impacts, and thus the ability to make an informed choice among reasonable alternatives.

The RDPEIR demonstrates the lengths the EIR preparers are willing to go to in order to reach the desired pre-decisional conclusion that the Revised Project is environmentally superior. They may assert that the detailed CEQA analysis, water availability determinations, and public trust doctrine analysis will and/or should be made by other agencies such as the BDCP lead and responsible agencies and/or the State Water Resources Control Board (SWRCB). On the contrary, in order to proceed in a manner required by law ***some*** public agency must make these critical determinations ***before*** the threshold choice of alternatives is made to call for new conveyance. If the Council is unable or unwilling to do this work, a policy or recommendation calling for new conveyance cannot lawfully be adopted unless and until the CEQA and public trust doctrine analysis has been done in the BDCP process and/or the SWRCB process.

We maintain that Alternative 2 is the environmentally superior alternative that should be adopted at this time. If, however, the Council does not do that, Alternative 2A must be adopted if any alternative is adopted because there has not been sufficient CEQA analysis and compliance or any cost-benefit and public trust doctrine analysis to support calling for, encouraging, or recommending new conveyance at this time. Alternative 2A would lessen the significant environmental impacts of the project by not calling for new conveyance and diversion of significant quantities of freshwater upstream from the Delta.

Alternative 2B ("Phased Reduced Exports Alternative"): Alternative 2B is also similar to Alternative 2 in that no new conveyance would be recommended prior to a robust CEQA, water supply and public trust doctrine analysis. This Alternative, however, lowers reduction in exports compared with Alternative 2, and/or, phases in reductions in exports over time by phasing out exports to impaired agricultural lands that will or should eventually cease production. This Alternative eases the practical constraints involved in reducing exports within a reasonable amount of time, given that any new conveyance would not be projected to be in operation before about 2026.

Analysis of these additional Alternatives would help the Council achieve its legal obligation to consider a reasonable range of alternatives. Thus far, the Council has failed to develop any reasonable alternatives to have more conveyance to export more water. Alternative 2 was presented to the Council by the EWC. As a public agency responsible for complying with CEQA, it is the Council that has the responsibility to ***develop a reasonable range of alternatives***. The Council should not simply reject Alternative 2 by characterizing the export reductions as being too severe. Rather, the Council should undertake to develop an alternative that on the one hand, like Alternative 2 does not call for new conveyance, but on the other hand, does not reduce exports to as great a degree as is done by Alternative 2. For example, Alternative 2B could include assessing limitations of exports to a maximum of 3,500,000 acre-feet/year which is more than the exports under Alternative 2.

An EIR must "describe ***a range*** of reasonable alternatives to the project, . . which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." CEQA Guidelines, § 15126.6(a) (emphasis added). "Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly." CEQA Guidelines, § 15126.6, subd. (b). The Council has not described ***a range*** of reasonable alternatives to the project which would avoid the adverse impacts of adding large new diversions of freshwater upstream from the Delta even though these alternatives would not reduce exports as much as would be accomplished by Alternative 2. This deficiency in the CEQA process is so profound that a new Draft EIR describing and considering new alternatives 2A and 2B must be prepared and circulated. Adopting the Delta Plan, Regulations, and certifying a Final EIR without doing so would be failure to proceed in a manner required by CEQA. These are not violations that can be cured simply by responding to comments in a Final EIR.

Finally, the Council may continue to make the lulling statements already made in the subject CEQA documents claiming, so to speak, that the Council is not really doing anything now in terms of developing new conveyance and that environmental impact analysis will take place in the future. It appears that the Council is trying to mislead the public into believing that the Delta Plan is not a real threat to the Delta, but that later on, the BDCP preparers will jump up and say that the Delta Tunnels are consistent with the Delta Plan call for new conveyance and that the threshold decision to develop new conveyance was made in the Delta Plan. Unless the Council eliminates the call for improved, new, conveyance and the like from the Delta Plan and Regulations, it will be necessary to challenge the Delta Plan, RDPEIR, and Regulations if approved and adopted, in court to prevent that "not now, not ever" unlawful end run on CEQA from being successful. Approval of any calls for new conveyance, optimizing diversions in the wet years and the like must be deferred until CEQA has been complied with and the public trust doctrine analysis has been performed.

Failure to Effectively Require Mitigation or Describe a Truly Environmentally Superior Alternative under CEQA and the Endangered Species Act

As pointed out in detail in the EWC comments, the RPDEIR concedes that the Revised Project would have significant and unavoidable environmental impacts including violation of water quality standards and adverse effects on special status species. (RPDEIR 24-10). Alternative 2 (and 2A and 2B), however, would result in far fewer significant and unavoidable environmental impacts than any of the other alternatives analyzed in the PDEIR or RPEIR. The RPDEIR concedes that "Alternative 2 contributes more to improving conditions for biological resources and arresting ecosystem decline than the Revised Project." (RPDEIR 25-7). Alternative 2 clearly meets the project objectives reducing reliance on the Delta in meeting the state's future water needs through regional self-reliance, is consistent with the Delta Reform Act, is implementable in a comprehensive, concurrent, and interrelated fashion, and can be accomplished as rapidly as realistically possible without jeopardizing ultimate success. Under CEQA, if an alternative is presented that meets project objectives and can reduce significant impacts to a less than significant level, the lead agency must adopt this alternative if feasible. *Mountain Lion Foundation v. Fish & Game Com.* (1997) 16 Cal.4th 105, 134. "CEQA compels government first to identify the [significant] environmental effects of projects, and then to mitigate those adverse effects through the imposition of feasible mitigation measures or through the selection of feasible alternatives." *Sierra Club v. State Board of Forestry* (1994) 7 Cal.4th 1215, 1233, Pub. Resources Code, § 21002. To simply accept such significant impacts while ignoring viable alternatives violates CEQA.

The proposed mitigation measures offered by the Plan also fail to meet CEQA's standards. Proposed mitigation is not sufficient unless such mitigation is implemented as a condition of future development. In its current state, there are no repercussions if subsequent

project proponents choose to adopt some mitigation measures but not others or no mitigation measures at all. Proposed mitigation cannot be mere suggestions, and instead must be fully enforceable. *Federation of Hillside & Canyon Assn. v. City of Los Angeles* (2d Dist. 2000) 83 Cal.App.4th 1252, 1259.

The failure to require mitigation for endangered species impacts also violates the Federal Endangered Species Act. There is no discretion under the Endangered Species Act to authorize a project that would jeopardize survival of listed fish or adversely modify critical habitat. *Center for Biological Diversity v. United States Bureau of Land Management(Ruby Pipeline Case),* 698 F.3d 1101 (9th Cir. 2012). In the *Ruby Pipeline* case, the Fish and Wildlife Service's Biological Opinion analyzing the impacts of a natural gas pipeline incorporated voluntary conservation actions as mitigation measures which factored into its determination that the project would not jeopardize the continued existence of several endangered species and would not adversely affect critical habitat. The Ninth Circuit found the Service's determination to be arbitrary and capricious because the conservation measures were mislabeled and unenforceable. The *Ruby Pipeline* case confirms the standard that valid mitigation measures must be enforceable under the Endangered Species Act and may not be simply voluntary suggestions.

If the Fish and Wildlife Service concludes that jeopardy or adverse modification is likely, then any take resulting from the proposed action is subject to Section 9 liability. *See Sierra Club v. Babbitt,* 65 F.3d 1502, 1505 (9th Cir. 1995). In its discussion of section 7 of the ESA in *TVA v. Hill,* the Supreme Court made clear that "Congress considered and rejected language that would have permitted an agency to weigh the preservation of species against the agency's primary mission." *Ctr. for Biological Diversity, supra*, pp.1115-16, citing *Sierra Club v. Marsh* (1987) 816 F.2d 1376. Thus, the Council may not summarily reject alternatives and mitigation measures that would avoid impacts to endangered species simply because the Council would rather increase export conveyance capacity.

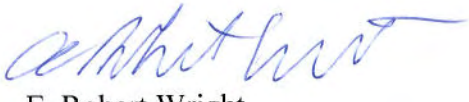
In addition, mitigation measures here are dependent on actions that may never come to pass. Bond measures that have already been pulled from the ballot twice and that may never pass are not the effective mitigation required under the Endangered Species Act. Mitigation measures must be an integrated part of the project, so that if a measure is not implemented, re-initiation of consultation under the Endangered Species Act is automatically triggered. *Sierra Club v. Marsh* (1987) 816 F.2d 1376. The Delta Plan allows exporters to avoid all costs of the worsening salinity intrusion in the Delta that will result from the BDCP and shifts those costs on to the taxpayers. The problem for the Council in that regard is that mitigation must be real and assured. In the words of the Ninth Circuit, "any risk to listed species thereby created [by the project] 'must be borne by the project, not by the endangered species.'" *Center for Biological Diversity,* 698 F.3d 1101, 1115.

The EIR Fails to Adequately Analyze the Impacts to Upstream Areas that Will Result from the Delta Plan Policies.

The EIR does not include an analysis of how the proposed BDCP conveyance will affect upstream reservoir operations, and how regulatory restrictions on these reservoirs will affect proposed project operations. Such an omission frustrates the public participation goals of CEQA. The decision in *Friends of the Eel River v. Sonoma County Water Agency* (2003) 108 Cal.App.4th 859, held an EIR insufficient to comply with CEQA in analyzing cumulative impacts with respect to a proposed increase in an agency's withdrawal of water from the Russian River. By failing to consider possible curtailment of water from the Eel River, the EIR failed to alert decision-makers and the public "to the possibility that the Agency will not be able to supply water to its customers in an environmentally sound way." 108 Cal.App.4th at 871. The failure to discuss the nature of altered reservoir operations and the related environmental impacts has frustrated the ability of public to understand the true nature of the Delta Plan, and has resulted in a failure to develop accurate mitigation measures and a reasonable range of alternatives.

Please call if you have any questions on our comments.

Sincerely,



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