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Contra Costa County Board of Supervisors

Sacramento County Board of Supervisors

San Joaquin County Board of Supervisors

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Cities of San Joaquin County

Cities of Contra Costa and Solano Counties

Cities of Sacramento and Yolo Counties

Central Delta Reclamation Districts

North Delta Reclamation Districts

South Delta Reclamation Districts

Business, Transportation and Housing

Department of Food and Agriculture

Natural Resources Agency

State Lands Commission

December 6, 2011

Dr. Clifford N. Dahm
Lead Scientist
Delta Science Program
980 9th St., Suite 1500
Sacramento, CA 95814

Dear Dr. Dahm:

We thank the Delta Science Program (DSP) for convening and coordinating the independent review of the Economic Sustainability Plan (ESP), and the useful feedback we have received from the panel's December 2, 2011 report titled, "Review of the Economic Sustainability Plan for the Sacramento-San Joaquin Delta." Attached is our response to the panel's review report.

For the most part, the review panel has validated the analysis in the ESP including several important elements that have been the target of inaccurate criticism. Most of the limitations the panel has identified in the ESP are really calls for additional analysis with which we generally agree or are challenges in developing the ESP that stem from the lack of clear definitions of concepts such as sustainability or reliability in the Delta Reform Act, the draft Delta Plan, the Delta Protection Commission's RFP, or even the academic literature. We are making several improvements to the ESP as a result of the review, the most substantial of which is strengthening the area of emergency response and evacuation planning. The revised ESP reflecting the comments from the Peer Review Panel will be completed in January 2012. If you have any questions regarding this letter and/or the attachment please contact Jeffrey Michael (University of the Pacific) at (209) 946-7385; or Michael Machado (DPC) at (916) 776-2290.

Sincerely,

Michael Machado
Executive Director,
Delta Protection Commission

Sincerely,

Dr. Jeffrey A. Michael
Principal Investigator,
Economic Sustainability Plan
University of the Pacific

Enclosure

Cc
Phil Isenberg, Chair of the Delta Stewardship Council
Don Nottoli, Chair of the Delta Protection Commission
Joe Grindstaff, Delta Stewardship Council
Dr. Lauren Hastings, Delta Science Program
Dr. Richard Norgaard, Delta Independent Science Board

Attachment to Response Letter on the Independent Review Panel's Review Report of the "Economic Sustainability Plan for the Sacramento-San Joaquin Delta

The review panel has recognized and validated the quality of the economic analysis in the ESP, stating in particular that chapters 2, 7, 8, 9 are "well drafted and use appropriate techniques." These chapters describe the overall composition of the Delta economy and detailed analysis of the key sectors of agriculture, recreation, and infrastructure services which include energy, transportation, and water systems. In particular, the review team commended the statistical analysis used in the agriculture sector, calling it "state of the art" in their November 2 verbal report. This validation is important because the key findings of these ESP chapters refute some myths about the Delta economy that have been advanced by others. These findings and myths include:

- The ESP validates agriculture as the key driver of the Delta economy. It is a myth that recreation and tourism is equal in importance to agriculture and is capable of replacing the contribution of agriculture in the future. Both agriculture and recreation could be negatively impacted by many water supply and environmental proposals for the Delta.
- Infrastructure services, including energy, transportation and regional water supplies dependent on the Delta, are of enormous importance to the regional and state economies, and exceed the economic value of water exports to the state. Economic sustainability for the Delta and the state requires greater consideration of these broader infrastructure values in Delta plans.
- The ESP shows that salinity significantly impacts Delta agriculture even at recently observed levels of water quality. It is a myth that Delta water quality standards can be weakened and an isolated conveyance introduced without negative impacts on Delta agriculture.

The review panel also validated a number of findings in the ESP regarding the Delta levee system that are too often overlooked. The review panel concurred with the recommendation contained in the ESP that the Delta-specific PL 84-99 standard should be the minimum standard for all Delta levees, and recommended that even higher standards comparable to urban levees should be used for levees that protect human life. The review panel found that the ESP "substantiates the importance of lowland levees" and "provides a potentially viable alternative to improve reliability of lowland levees." Some Delta studies downplay the importance of lowland levees in the central and western Delta because they are typically found on islands with predominantly agricultural use. In contrast, the ESP and other engineering studies point out failure of lowland levees put more stress on the overall integrity of the levee system. The concept of matching levee investment to land use ignores the fact that levees work together as a system and levees that are adjacent to lower value land uses are often most critical to the stability of the system or non-land based uses such as Delta boating which is most popular in the channels protected by lowland levees.

The review panel states that "The concept of a 'fat levee' has merit and may prove to be a feasible and effective means to improve the stability of the levees." The panel feels the cost estimates for this strategy need additional substantiation. While it is prudent to be skeptical of initial cost estimates for large, public works our cost estimates were developed in consultation with engineers with detailed knowledge and experience working in the area, and we have more than doubled the base engineering and construction cost estimate to allow for additional program management costs. The way to more fully address the panel's skepticism is to further develop the "fat" levee concept and that will result in more detailed design and cost estimates. It is imperative that the Stewardship Council give it serious

consideration for the Delta Plan. In addition to the ESP and the independent review panel, both the PPIC and DRMS analysis have made similar findings as the ESP regarding the cost of similar strategies.[1] Given the many uncertainties regarding whether BDCP will succeed and isolated conveyance will prove financially or environmentally viable, it is prudent for the Delta Stewardship Council to consider alternative ideas to address the co-equal goals, particularly when those concepts are more supportive of sustaining and enhancing the Delta, protect a variety of other critical statewide energy and transportation infrastructure, and could prove to be more cost-effective.

The panel also identified a strength of the ESP is that it offers creative ideas for strengthening the Delta economy. Although the ESP is realistic about the challenges and constraints facing recreation, tourism, and legacy communities in the Delta, it does lay out strategies and plans that can be used to guide investment and strengthen these areas in the future. Even though the potential to supplant agriculture as a driver is limited, sustaining and enhancing recreation and tourism is an important and achievable goal for the Delta economy and quality of life.

We also agree with the panel's recommendations to the Delta Stewardship Council, many of which are similar to recommendations in the ESP. In particular, the review panel highlighted the public goods nature of the Delta and the problem of "free-riding" behavior of public and private beneficiaries of the levee system. The panel states, "we believe an equitable outcome concerning the distribution of benefits and costs of levee expenditures will ultimately require an agency with the authority to assign and assess beneficiaries their share of these costs." The panel also recognized the negative impacts of proposed isolated conveyance on the Delta and states, "Given that water exporters will be the primary beneficiaries of such a conveyance system, the DPC and the DSC need to ensure that the sponsors of a conveyance system fully pay for any and all Delta mitigation."

The review panel also identified six "Limitations of the Plan Relative to Charge." The remainder of this letter provides our response to each of these six specific limitations.

1. "The Sustainability Plan is not and should not be used for benefit-cost analyses of alternatives for improving water supply reliability and enhancing the ecosystem."

This limitation simply restates the limitations acknowledged up front in the ESP in Chapter 1 (pages 3-4), so obviously we agree with the review panels' call for comprehensive and credible cost-benefit analysis. Our only quibble is that since cost-benefit analysis was not in the ESP charge and we state the identical limitation in the plan, this statement is misplaced in this section and could be misinterpreted as identifying some type of error in the analysis.

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[1] The 2007 PPIC report described a similar strategy, "Fortress Delta" with estimated costs of approximately $4 billion. The PPIC removed the option in its initial screening not because it was unviable, but because of "extreme costs" compared to a peripheral canal they assumed would cost $3 billion or less. A January 2008 DWR report required by AB 1200 (Laird) identified seismically improved levees as one of 3 strategies with the highest risk-reduction potential, and noted that the improved levees scenario had the lowest cost of the three (See page 20, http://www.water.ca.gov/floodmgmt/dsmo/sab/drmsp/docs/AB1200_Report_to_Legislature.pdf). However, the final DRMS Phase 2 report was not released until a few months ago, and curiously did not contain any description, analysis or reference to the seismically improved levees that it had identified as one of the "three high-ranking building blocks" in the 2008 report.

It should be noted that there is a cost-benefit analysis of Delta options, the recently released DRMS phase 2 report.[2] Some of the strengths and weaknesses of the DRMS Phase 2 are discussed in the ESP, but we have only recently been able to examine the detailed findings of this new report. Below are some of the important findings from DRMS Phase 2 cost-benefit analysis that will be included in the final ESP.

- The "improved levees" scenario was found to have the highest benefit-cost ratio of all 4 scenarios, including the isolated conveyance scenario.[3]
- Water export interruption only accounts for 20% of the economic cost associated with a large earthquake scenario that would flood between 10 and 30 Delta islands.
- Water export interruption accounts for less than 2% of the economic cost associated with non-seismic flood events such as storms.

Levee upgrades perform well in cost-benefit analysis of Delta options, because they reduce risk in all areas including water conveyance, other infrastructure, and in-Delta property. In contrast, isolated conveyance only protects water exports which DRMS clearly identifies as a minority of the economic risks.

2. "The Plan does not explicitly provide information to prioritize how future resources are invested in the Delta."

While the ESP does not have an explicit list or ranking of investment priorities, the ESP does provide substantial information and strategies to guide investments in the Delta. For example, the recreation plan and Legacy Community chapters lay out investment needs and strategies and highlight the need for a Facilitator Organization to strategically coordinate investments among other duties.

When it comes to levees, the ESP actually does go through an exercise of considering levee upgrades on an island by island cost-benefit basis. The ESP finds that there are 4 small islands with a total of 16.7 levee miles that may not warrant PL 84-99 levee upgrades on a cost-benefit basis and therefore these would have low investment priority. It is true that we recommend PL 84-99 for all Delta levees, because the modest net benefit from putting lower priority on these 16.7 miles of levees is not worth the cost, delays and complexity of deviating from a standards-based approach. Since the panel stated that PL 84-99 should be the minimum standard for all existing Delta levees, it is clear that they agree with our assessment. Prioritization will be required in identifying what we estimate are 300-600 miles of levees that should receive seismic upgrades to the fat levee standards, and this would be an important part of further development of this component.

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[2] http://www.water.ca.gov/floodmgmt/dsmo/sab/drmsp/phase2_information.cfm

[3] This was true even though DRMS Phase 2 assumed isolated conveyance construction costs were under $5 billion, less than half current estimates and the "improved levees" scenario omitted the improved levee upgrades that were identified as having high risk reduction benefits in the 2008 AB 1200 report to the legislature. (See page 20, http://www.water.ca.gov/floodmgmt/dsmo/sab/drmsp/docs/AB1200_Report_to_Legislature.pdf

3. "The Plan does not offer a clear or viable definition of economic sustainability."

This is a good point, but we emphasize that the review panel does not offer a suggestion on a preferred or standard definition or even an example of an effective definition. In fact, the review panel notes that sustainability is an imprecise concept for which measurable metrics are difficult to identify and that it is a hard concept to implement. However, the panel is correct that the strong definition in the ESP that limits substitutability is problematic, but reflects the desires of Delta stakeholders and the performance measures in the Delta Stewardship Council's 5th Delta Plan.

We will add discussion of the impact of allowing additional substitutability into the final ESP. However, we anticipate it will have little to no impact on the recommendations because one of the findings of the ESP is that the opportunity to substitute agriculture with growth in other economic sectors in the Delta is limited. The ESP already acknowledges that movement to higher value agriculture could accommodate some loss of agricultural land to environmental restoration. Even if substitutability for possible recreation growth were included in the definition of sustainability, this alternative definition of sustainability would, at most, only allow for an additional 5% decline in agricultural output. Such a calculation was actually included in an earlier draft of the ESP but was eliminated in response to stakeholder feedback and the fact that he it had virtually no effect on the recommendations. Even utilizing an alternative definition of sustainability, a sustainable Delta economy is unable to accommodate the impact of a large 15,000 cfs isolated conveyance or over 100,000 acres converted to habitat as envisioned in the Bay Delta Conservation Plan. However, the Economic Sustainability Plan is supportive of the co-equal goals including the vast majority of ecosystem enhancements that have been proposed for the Delta.

4. "The Plan provides a potentially optimistic and misleading estimate for the cost of upgrading lowland levees."

As discussed above, we agree that additional development and more refined cost estimates of the "fat levee" concept are needed. However, the cost estimate for seismic levee upgrades in the ESP is substantiated and consistent with other reports. The cost of PL 84-99 upgrades is generally accepted and validated by a number of past and current projects in the Delta, and we assume this criticism is not directed to the estimated costs of PL 84-99 projects.

The comparisons to post-Katrina New Orleans are deceptive. The engineering experts who worked on the ESP have significant experience with levees in both New Orleans and the Delta, and have offered several explanations for why levee improvement in the Delta is significantly less costly. These explanations will be included in the final ESP. Furthermore, the cost estimates were developed in consultation with local engineers who design and build many levee improvement projects in the Delta and are very familiar with the costs and constraints.

We have identified two credible reports that have discussed similar levee upgrades in the Delta that appear to have comparable costs. As discussed in the ESP, the first is the 2007 PPIC report which estimated costs of roughly $4 billion for its "Fortress Delta" alternative. We have also recently learned that the DRMS Phase 2 analysis conducted for the Department of Water Resources developed and

analyzed a Seismically Improved Levees "building block" that is similar to the recommended strategy in the ESP. As discussed previously, the detailed description and results of the Seismically Improved Levees component was not included in the final report of DRMS Phase 2, but we have requested the information from DWR. The brief summary in the 2008 DWR report to the Legislature is qualitative and does not include exact costs. However, it does state that the "improved levees" scenario which includes the seismically improved levees building block has the lowest costs of all the scenarios. This implies that the cost of seismically improved levees is probably less than the $5 billion estimated for isolated conveyance in the final DRMS report.

We emphasize that the cost of these levee upgrades must be considered in the context of their large economic benefits as discussed in our response to Limitation 1.

5. "The Plan does not address the need for evacuation planning to protect public safety."

This is a valid criticism, and we acknowledge that our treatment of emergency response and evacuation planning was thin. In response to the review panel's initial comments on this topic during the November 2nd feedback session, we took the proactive step of engaging a regional expert on these issues with extensive experience in the Delta to review and develop detailed emergency plans and strategies to be recommended in the ESP. This addition will be included in the final version of the ESP.

6. "The Plan's approach of upgrading the levee system will not necessarily improve Delta water supply reliability because the recommended upgrades are not shown to substantively reduce disruptions due to large earthquakes and they will have little impact on restrictions in pumping due to the Endangered Species Act."

This criticism is not well supported, and was not included in the initial findings communicated in the November 2 meeting. Even the water exporters advocating for an isolated conveyance system have acknowledged in many forums that upgrading the levee system would improve water supply reliability. The DRMS reports cited by the review panel as support did not consider the kind of seismically resistant and repairable upgrade to the existing levee system described in the ESP.

The panel refers to the fact that the "Armored Pathway" option includes seismically resistant setback levees, but these levees only protect the pathway, not the entire island and thus do nothing to reduce the risk of island flooding due to a seismic event. As a result, DRMS found that the "Armored Pathway" option increased water supply reliability for seismic events that flood 10 or fewer islands, but did not reduce water supply interruptions for the most devastating scenarios in which a seismic event floods more than 10 islands. In contrast, the upgrades to the "fat" levee upgrades discussed in the ESP protect entire islands in the highest risk areas, and the probability of a seismic event that would flood 10 or more islands is much lower than in the case of the "Armored Pathway". Certainly, the exact amount of risk reduction can not be quantified by without further analysis, and that needs to be done. However, the statement in this limitation is far too strong, and we are confident that these levee upgrades would substantially improve water supply reliability by reducing risk to water exports from both seismic and flood hazards.

The comment also points to a second part of water supply reliability, the quantity of water that can be exported from the Delta which has been curtailed by recent judicial ruling involving the ESA. It is true that the ESP does not address this quantity aspect of reliability, and it is still unclear whether even an isolated conveyance will allow for any significant increase in water exports. Furthermore, the Delta Reform Act states that it is the policy of the state to reduce reliance on the Delta in meeting the state's future water supply needs. The 5th draft Delta Plan clearly states that actions to reduce reliance on the Delta improve water supply reliability, and we agree with that assessment. Thus, it is clear that the 2009 Delta Reform Act is not focused on increasing the quantity of water exported, and it is preventing catastrophic interruptions of supply that are the most important component of reliability. The levee strategy in the ESP would substantially reduce this risk and result in a more reliable water supply for California, and it would also increase reliability for all users of Delta water, whereas isolated conveyance would only increase reliability for the State Water Project and Central Valley Project.