



DELTA STEWARDSHIP COUNCIL
A California State Agency

980 NINTH STREET, SUITE 1500
SACRAMENTO, CALIFORNIA 95814
WWW.DELTACOUNCIL.CA.GOV
(916) 445-5511

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To: Cindy Messer, Deputy Executive Officer, Planning
Delta Stewardship Council

Dave Mraz, Chief Principle Engineer, Delta Levees and Environmental Engineering
California Department of Water Resources

From: Delta Stewardship Council, Delta Science Program

Subject: **Pre-meeting Comments for DLIS Methodology Peer Review**

In anticipation of the Delta Levee Investment Strategy (DLIS) Review meeting to be held on May 19 and 20, 2015, members of the independent scientific review panel (Panel) participated in a teleconference to discuss the technical memoranda (TM) developed by ARCADIS. This meeting was to establish the review and writing responsibilities of each panel member and to provide guidance to ARCADIS on any topic areas the Panel would like covered in the presentations and Q&A sessions. This memorandum summarizes these topic areas.

Overall Comment

The TMs are well-written and organized.

Specific Requests from the Panel on areas it would like Covered in the Presentations

General

1. The panel is charged with reviewing the methodology developed to identify no less than three prioritized groups of Delta islands based on their importance to maintain economic, social, and environmental assets-of-State-interest and their ability to mitigate those State interests associated with flooding on Delta islands. Please explain how the tool, developed from the methodology, will be used to prioritize groups.
2. It is unclear how the Bay Delta Conservation Plan (BDCP), or its successor, is accounted for in the methodology. Please provide a description of this in the presentations. Will the current proposal to separate the BDCP into separate components (water conveyance and ecosystem) affect any of the analyses (assumptions, predictions) contained in the TMs? How is the uncertainty surrounding these actions accounted for in the methodology?
3. The risk-based methodology being developed for prioritizing investments is generally reasonable and appropriate. The F-N diagram is useful for comparative studies of alternatives of what appear to be objective numerical scores. However, a number of

"Coequal goals" means the two goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place."

– CA Water Code §85054

subjective inputs are needed for estimating failure probabilities and their consequences. Please describe how the inputs were elicited and who is responsible for developing the inputs and prioritizing the outputs to assure balance and avoid conflicts of interest.

4. Please discuss the rationale used to account for impacts to endangered species and other ecosystem services. Which ones were selected for a cost/benefit analysis, which ones were not, and why?
5. Please provide information about the different levee repair and maintenance strategies that are proposed as part of long term planning (strategy) and examples of how the Planning Tool can be used in developing these different strategies.
6. Provide additional details on how the appropriate levels of protection are defined in the methodology.

Recommendations Specific to Some of the Technical Memoranda

1. TM 2.1: Baseline Information on Islands and Tracts, Assets, Hazards and Beneficiaries
 - a. Please include a discussion on the availability, transparency and differences in data quality in different areas of the Delta, including how this could affect the methodology. For example, dates of the crop patterns, land use acreage information, and evacuation routes. Please also discuss how the data gaps will be filled. Were the census data updated given we are halfway through a census decade?
 - b. Please describe how residential structures were reconciled to population counts. How were commercial and residential structures defined? Are houseboats considered commercial or residential?
2. TM 2.2: Levee Hazards, Risks, and Consequences
 - a. Please discuss how the daytime/nighttime variation in population was considered in your population at risk models. How was the potential flow of people moving through the Delta area (for example, commuting to and from work) included as part of the at risk assessment?
 - b. Please explain how, for the live-safety aspect of the report, fatalities and injuries were included as direct and tangible consequences. How were lives valued?
 - c. Please discuss the rationale, when assessing flood impacts, for using the average elevation of the levee rather than the lowest elevation point.
 - d. Please provide additional discussion on estimating the Expected Annual Fatalities (EAF). Are there accepted criteria for defining the percentages of fatalities associated with the depth of water?
 - e. Please provide additional discussion about the uncertainties associated with developing the fragility curves on an island-by-island basis and how these curves can be extended and adapted to include interactions of various types among groups of islands and for the entire system.
 - f. Please discuss the methodology that was used to address storm surge and wave run.

3. TM 3.1: Methodology

- a. Please discuss if/how the island-by-island assessments will be rolled up to address risks and investments for the entire Delta system; how are multiple island failures addressed?
- b. When developing the assessment of risks, please discuss if/how the values or costs of one island providing services to other islands were factored in.
- c. In the presentation, please clarify how the investment score was calculated and how individual scores were aggregated.
- d. The TM mentions that the data were converted to a common scale. Please discuss what that common scale was.
- e. Please describe why California average annual recreational days and travel populations apply to the Delta.
- f. Please describe how uncertainty associated with the analyses in this TM is characterized.
- g. Please provide further descriptions of how land use changes, including changes within the agricultural sector, were projected into the future for the 2030 and 2050 analyses.