

Delta Levees Investment Strategy Update

Summary: Staff will provide an update on activities related to the development of the Delta Levees Investment Strategy (DLIS), first focusing on an effort by staff to review levee-related habitat enhancements and improvement projects in the Delta. This effort has resulted in a draft paper that will be available for public review and comment through Nov. 13, 2015. Staff will also present the updated schedule for the DLIS project and discuss changes with the Council.

Background

Over the past few months, Council staff has been focused on a variety of activities related to developing the DLIS. Among these activities is a review of levee-related habitat improvement projects in the Delta and their effectiveness for providing habitat for native terrestrial and aquatic species as well as the costs associated with these types of efforts. In addition, staff has continued to address recommendations from the Independent Scientific Review Panel charged with reviewing the DLIS methodology in June 2015. Staff and the ARCADIS team have made progress in addressing the Panel's recommendations, but continue to work through the more complicated elements including the water supply disruption metric and the probability of levee failure as it relates to multiple islands vs. single island failures. Council staff has been coordinating closely with several key partner agencies on our responses to the Panel's recommendations before moving the project into the next phase.

Today staff will: (1) present results from the levee-related habitat review that are included in a draft paper currently out for public review; and (2) discuss our process for addressing the Independent Review Panel's recommendations, and how this effort has affected the schedule for completing the DLIS.

Levee-Related Habitat Review

While investing in levee improvements to reduce risk, the State has both an opportunity and an obligation to enhance habitats to provide a net benefit to both terrestrial and aquatic species, and to mitigate for the adverse environmental impacts of levee projects (Water Code sections 85054, 12314(c), 12314(d) and 12987(d)). While the Delta Levees Investment Strategy appropriately focuses on flood risk reduction as a primary purpose of State levee investments, the Levee-Related Habitat Review is intended to provide guidance to ensure that those investments also contribute to long-term improvement of river corridors, with net benefit for fish and wildlife. Another goal of this review is to provide information about the costs of different habitat improvement options, specifically those options that can be linked with flood risk reduction projects. The DLIS team intends to use the Levee-Related Habitat Review to inform the development of investment concepts, as a source of cost data related to habitat improvements associated with levee projects, and as a source of recommendations for the Council to

consider in its DLIS-related update of the Delta Plan. The Executive Summary of the draft report has been included as Attachment 1. The full text of the report is available at <http://deltacouncil.ca.gov/docs/draft-levee-related-habitat-review>.

The Levee-Related Habitat Review was initiated in response to a suggestion by Carl Wilcox, Policy Advisor to the Director, Department of Fish and Wildlife (DFW) at the Feb. 26, 2015 Council meeting. Mr. Wilcox updated the Council on the habitat improvements accomplished as part of the Delta Levees Program. The Delta Levees Program provides critical financial assistance for flood protection in the Delta and includes the Delta Levees Maintenance Subventions Program (rehabilitation and maintenance of levees) and the Delta Levees Special Projects Program (levee improvements). He noted, however, that a good assessment of the ecosystem effects of levee projects was lacking and stated there is a science need to determine what benefits habitat improvement projects have provided, particularly habitat improvement projects on the water side of the levees.

In response to this suggestion, Council staff drafted a work plan for the Levee-Related Habitat Review and convened an advisory committee including DFW, Department of Water Resources (DWR), Delta Conservancy, National Marine Fisheries Service, U.S. Fish and Wildlife Service, consultants providing engineering services to reclamation districts, and other stakeholders. Through coordination with the advisory committee and other contacts, the research team, composed of Council staff and Council-funded Sea Grant Fellows, obtained descriptions of completed levee-related habitat improvement projects (hereafter, projects) and associated reports on monitoring that has been conducted within the Delta. Information about 14 levee-related projects was obtained from a query of 16 interviewees and 14 additional contacts provided by interviewees. The four main types of projects reviewed were setback levees, planting benches, planting vegetation on levees, and off-site floodplain habitat mitigation banks. Project effectiveness was evaluated in terms of: 1) the project's stated objectives, performance measures, monitoring, and results; and 2) whether or not a project could be shown to benefit aquatic and/or terrestrial species.

Based on the findings of this review, we recommend taking the following steps to ensure that project effectiveness can be better evaluated in the future.

- 1. Apply the adaptive management framework to future projects.** Project proponents need to use an adaptive management framework (as recommended in the Delta Plan) to facilitate scientific learning and reduce uncertainties, including evaluating how well the habitat-related aspects of levee improvements contributed to the establishment of ecosystem processes and the recovery of targeted species. This will require adequate funding for pre-project assessments (if feasible) as well as routine maintenance and post-project monitoring for some years following construction.
- 2. Track the incremental cost of habitat improvements.** Better cost accounting of the habitat element of levee projects is necessary to better understand how funds have been invested to improve habitat in the Delta. For example, costs could be

segregated by bidding construction and habitat components separately following the practice of the Sacramento Area Flood Control Agency (SAFCA). SAFCA does not bid/solicit levee improvements and habitat improvement projects in the same bid package, providing cost segregation and flexibility in selecting the qualified and experienced contractors to implement the habitat improvement component of a multi-objective project.

- 3. Carefully consider the tradeoffs associated with onsite and offsite mitigation.** While offsite mitigation for the environmental impacts of Delta levee projects often has practical advantages, it is important to ensure that mitigation takes into consideration life history requirements of native species. For example, degradation of channel margin habitat along migratory corridors for salmon should be mitigated on-site or at least elsewhere along the same migratory corridor. Our review indicated there are opportunities to promote on-site habitat improvements for levee projects that can also protect and enhance flood risk reduction, including the use of planting benches on the water side of levees and extra-wide levees where willing landowners can be found (this alternative requires a larger footprint on the land side of levees).
- 4. Use landscape-scale planning to guide project siting and design.** In general, larger and more complex habitats will serve to benefit a wider array of wildlife (Brown 2003, Herbold et al., 2014). Regardless of the size of an improvement site, projects should not be planned independently of one another, but viewed in a landscape context. For example, efforts should be made to link together fragmented patches of riparian forest to incrementally build towards large contiguous habitat corridors.
- 5. Measure fish and wildlife response through a standardized regional monitoring program.** By promoting a regional monitoring framework (e.g., the DFW-led Interagency Ecological Program Tidal Wetlands Monitoring Project Work Team), instead of developing monitoring protocols on a project-by-project basis, it will become easier to compare results across projects and improve understanding of the effectiveness of different habitat improvement options. Regional monitoring also supports program-level adaptive management and a landscape-scale approach, as described in *Recommendation 4*. Monitoring, research, and modeling should be linked and designed to close important knowledge gaps at relevant time and space scales (Delta Independent Science Board, Fish and Flows 2015). Additional and long-term funding is needed for this programmatic monitoring.
- 6. Continue to use DWR's and DFW's Delta Levees and Habitat Advisory Committee (DLHAC) as a venue to discuss the incorporation of effective habitat improvement components into levee projects.** The DLHAC is a regular standing meeting of representatives of DWR, DFW, Delta RDs, Delta engineers, and other Delta stakeholders. Since the group involves many Delta RDs and their engineers, it represents an opportunity for RDs to collaborate with State agencies to plan and adaptively implement and manage habitat projects under their jurisdiction.

Council staff looks forward to receiving public comment on this draft report. The comment period is from Oct. 15 to Nov. 13, 2015. A final version of the report will be presented to the Council for endorsement at its January 2016 meeting.

Delta Levees Investment Strategy (DLIS) Update

For today's briefing, staff will focus on the updated DLIS project schedule (Attachment 2). The timeline for key project milestones has changed and additional time will be required to complete this project. This shift is due primarily to time needed to address the recommendations from the independent scientific review panel about DLIS methodology and to coordinate responses with key partner agencies before the project moves to the next phase.

Major schedule changes include:

- Analytical work continuing into Summer 2016
- Development of a draft levees investment strategy occurring in Fall 2016
- Draft EIR to be completed by the end of 2016 and certified in early 2017
- Draft Delta Plan revised regulations by end of 2016, Council adopts draft regulations in early 2017 and then submits revised regulations to Office of Administrative Law

Next Steps

In the coming months, Council staff will undertake the following activities:

- Finalize methodology in response to the independent scientific review panel's recommendations,
 - Confirming with key partner agencies that the water supply disruption metric is adequate given currently available data/information;
 - Verifying, with key stakeholders, the islands that are important to water supply disruption as identified by the decision-support tool;
 - Conducting additional analysis (outside of the decision-support tool) of multiple island failure;
 - Investigate approaches to capturing secondary economic impacts
- Investigate additional sources of data/information (per stakeholder comments at the October 12 DLIS workshop) including information on habitat protection easements and discuss with water users islands in the Delta that are key to protecting water supply and/or quality for the north Delta.
- Continue QA/QC of data currently in the decision-support tool.
- Demonstrate the decision-support tool to focus groups and the public
- Develop a list of Delta islands/tracts ranked by risk for Council consideration and approval. This list will form the basis for developing alternative levee investment concepts.
- Develop levee improvement investment concepts (e.g., levee armoring, set-back levees and other "green" improvements, increased height/width improvements, etc.), through an interactive process with stakeholder groups (e.g., flood

management experts, water users, environmental groups, and others). Information will be used to assess and rank alternative investment concepts' effectiveness in reducing risks to key Delta assets.

In early 2016, staff will present alternative portfolios of levee investments as an output of the decision-support tool to the Council and stakeholders. These investment portfolios will inform in-depth discussion and deliberations regarding overall risk-reduction, cost-effectiveness and tradeoffs. Results of these discussions and subsequent Council guidance on preferred investment portfolios will inform a draft investment strategy and alternatives, including a preferred alternative, to include in the draft Environmental Impact Report.

List of Attachments

Attachment 1: Levee-Related Habitat Review; Executive Summary
Attachment 2: Revised Project Schedule

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