

DRAFT

**DRERIP Coarse-Level Evaluation Summary:
Cache Slough Complex Freshwater Tidal Marsh Restoration**

Highlighted Text = Evaluator comments

Evaluation Date: July 28, 2008

Coarse-Level Evaluators:

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Action Description

Restore entire Cache Slough complex as follows:

- a. Cache Slough, including Haas Slough and Hastings Cut (~9000 acres),
- b. Lindsey Slough, including Barker Slough and Calhoun Cut (~6000 acres),
- c. Liberty Island, Little Holland, Westlands property, and Shag Slough (~10,000 acres)
- d. Little Egbert Tract (~2300 acres)

Approach: The approach includes:

1. Breach and setback levees and dikes to provide for tidal exchange with restored habitats.
2. Modify ditches and cuts to make channel pattern more dendritic.
3. Relocate Barker Pumping Station intake to outside of this zone to reduce entrainment of production and fish. This action must occur **before** area south of Lindsey Slough is restored.
4. Restore stream functions of erosion and sedimentation (e.g., Uliatus Flood Control channel) to improve spawning conditions for delta smelt (available data indicates they may spawn over sand/gravel substrates)
5. Restore Calhoun Cut Ecological Preserve according to PWA feasibility analysis

Note: This action is submitted for coarse-level evaluation of its likely biological performance in achieving BDCP conservation objectives. This action has not yet been evaluated for its financial or institutional feasibility. 1

6. Little Egbert Tract will be developed initially as subtidal habitat for tule growth and reverse subsidence/carbon sequestration due to elevation.

Recommendation. Consider providing Toe Drain flows to increase net outflow from Cache Slough to Delta to export food.

Outcomes: Expected outcomes of this action include:

1. Increased primary and secondary production in the marsh complex available to larval and juvenile splittail, delta smelt, green and white sturgeon, steelhead, and all runs of Chinook salmon.
2. Increased export of primary and secondary production to the Delta ecosystem available to all stages of delta and longfin smelt, green and white sturgeon, splittail, and salmonids. **Clarify that increased production in marsh is exported via Yolo bypass flows and tidal exchange and could be in fish produced from floodplain.**
3. **Splittail produced on floodplain increases export of food/carbon as fish flesh to Delta. Zoltan M. says splittail do this in dry years**
4. Increased spawning habitat area for delta smelt and splittail, particularly in drier years, to increase spawning success.
5. Improved rearing habitat for larval and juvenile delta smelt, splittail, green and white sturgeon, and juvenile steelhead and Chinook salmon. **(Sturgeon could benefit with floodplain flows--Zoltan.)**
6. Reduced summer/fall water temperature through nocturnal thermal exchange and reintroduction of cooled water to Delta waterways.

Team made minor edits to clarify outcome statements in addition to those edits shown in bold above.

Additional Positive Outcomes

1. **Chinook salmon. Reduced predation via higher cover.**
2. **Reduction in loading of land use related contaminants (e.g., pesticides)**

Negative Outcomes

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1. Could increased flows decrease delta smelt habitat values.
2. Potential adverse effects on flood control system
3. Increase predation by birds, raccoons, and non-native fish increase (velocity gradients)
4. Drain floodplain too rapidly so lose foodweb benefits—design issue
5. Could result in egeria infestation and increase of bass, non-native predator habitats
6. Possibility for short-term nutrient driven blooms with flooding of agricultural lands

Other Comments

1. Make large breaches to avoid creating habitat for predators that congregate near smaller openings—may be area for targeted research
2. Potential for boundary condition change: Ec may change with cessation of agriculture

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