CALIFORNIA DEPARTMENT OF WATER RESOURCES

Little Egbert Multi-Benefit Project Ecosystem Enhancement



Agenda

- Project Overview and Objectives
- Quick Recap
 - Feasibility Study Alternatives
 - Preliminary CEQA Alternatives being considered
- Wildlife Hazard Analysis
- Biological Basis of Design
- Ranking Criteria
- Discussion (Menti!)





Quick Recap: Feasibility Study





Revised Alternative 17



Revised Alternative 19



Revised Alternative 24

Feasibility Study Alternative #	North Breach	South Breach	Levee Repair	Tide Gate Structure	Balance Breaches	Habitat Berms	Sub-tidal Channel	Habitat Islands	South-Marsh Connection
17	Full Degrade to - 4.0	Full Degrade to - 10.0	Yes	Yes	Yes	Wide	Wide	Yes	Cache Slough via Bridge
19	to 7.5'	Full Degrade to - 10.0	Yes	Yes	Yes	Narrow	-	Yes	LET Internal
24	to 7.5'	to 7.5' with notch	Yes	Yes	No	Wide	Wide	Yes	LET Internal
26	Full Degrade to - 4.0	Full Degrade to - 10.0	Yes	No	No	Narrow	Narrow	No	Cache Slough via Bridge

Revised Alternative 26



Revised Alternative 17



Revised Alternative 19



Revised Alternative 24

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Revised Alternative 26

California Environmental Quality Act (CEQA)

Preliminary Alternatives being considered



No Action Alternatives

Current Conditions

- Restricted height levee still in place
- Tract maintains current land use with same crop restrictions and threat of inundation from flood events

Future Without Project (FWOP)

- Restricted height levee no longer in place
- Tract taken over by nature with next >25-yr flood event (ie, another Liberty Island situation)







Revised Alternative 17



Revised Alternative 24



Alternative 30

Alternative #	North Breach Elevation and Type	North Breach Length	Balance Breaches?	South Breach Elevation and Type	South Breach Length	South Tidal Connection	Bridge Req	Habitat Berms	Habitat Islands	Subtidal Channel
17	-4ft Elev, Full	2500 ft	yes -4ft Elev	-10ft Elev, Full	2000 ft	Cache Slough LET	Yes No	230 ft	yes	Wide
24	7.5ft Elev, Full	2500 ft	no	7.5ft Elev, Compound -4ft Elev	2000 ft	LET	No	230 ft	yes	Wide
30	2500 ft at -4 ft ELEV, additional 1800ft to the west at 6ft ELEV	4300 ft	no	7.5ft Elev, Compound -4ft Elev (double width of key)	2000 ft	LET	No	200 ft	yes	Wide
31	2500 ft at 2ft ELEV, additional 1800ft to the west at 6ft ELEV	4300 ft	no	-10ft Elev, Full	2000 ft	LET	No	200 ft	yes	Wide

Alternative 31

Recap: Feasibility Study – Wildlife Hazard Analysis



Safety Zones Vista Airport 0 R



SOURCE: California Airport Land Use Planning Handbook, October 2011; ESA, 2020

*NOTE: Crosshatched areas are in Sacramento County, outside the jurisdiction of the Solano County Airport Land Use Commission. The Rio Vista ALUCP is advisory only in these areas

Little Egbert Multi-Benefit Project Figure 3 Rio Vista Municipal Airport Safety Zones

Feasibility Study: Wildlife Hazard Analysis

- Prepared by ESA, Finalized in February 2023
- Field surveys conducted in two time periods:
 - Late-Spring and Summer (April-August 2020)
 - Fall and Winter (September 2021-March 2022)
- Most common species seen:
 - All Seasons: blackbirds
 - Fall and Winter: geese (mostly foraging in post-harvest fields)







Top 10 Most Abundant Bird Species Observed







With Project, potential changes in wildlife hazard include:

- Greatly reduced risk from large waterfowl (Canada goose, snow goose, white-fronted goose) that are of highest concern for bird strikes
- Reduced risk from blackbirds, swallows, raptors
- Increased risk from wading birds (heron, egret) and fisheating raptors (osprey); however, lower overall numbers/densities expected

With proposed land changes, the wildlife hazard risk would be no greater and would likely lessen with Project.

Biological Basis of Design



Relevant Plans & Strategies

- **CA Water Resilience Portfolio**
- **Bay-Delta Conservation Plan**
- **Rio Vista Airport Master Plan**
- Delta Risk Management Strategy
- **CVFPP & Conservation Strategy**
- Delta Plan
- Solano County-Cache Slough Complex HCP (in prep)
- Lower Sacramento/Delta North Regional Flood Management Plan
- Solano County Multispecies HCP (Draft 2012)
- Yolo HCP/NCCP





Landscape Context

- Sac-San Joaquin Delta
- Cache Slough Complex
- North Delta Habitat Arc











Little Egbert Multi-Benefit Project Feasibility Study

Figure 3-2 Topographic Map

Target Habitat Features

- High quality aquatic habitat for target fish species
- Aquatic habitat diversity
 - Islands to create a "third habitat edge" in subtidal
 - Size and spatial arrangement of aquatic features
- Riparian & tidal marsh habitats



Habitat Design – Tidal Wetlands

- Provide fish rearing & refuge habitat
- Produce "fish food"
- Goal: Increase amount of tidal wetland habitat Large patches with adjacent channels Large habitat berm





Habitat Design – Tidal Hydrology

- Enhances fish food export
- Minimizes stagnant conditions
- Prevents fish entrainment
- Goal: Increase tidal exchange to restore tidal inundation & fluctuation





Habitat Design – Tidal Aquatic

- Open water (>15 ft deep) and
- Subtidal flats (10-15ft)
- Goal: Create various depths for multiple fish species and lifestages – Mix of swales, flats, inlets, channels





Habitat Design - Floodplain

- Riparian and Upland habitat
- Connects terrestrial & aquatic habitat
- Goal: Increased shoreline in tidal-terrestrial zone (elevations 0-10 ft above MHHW)





Habitat Design – Minimize Invasives

- Limit invasive aquatic vegetation & non-native fish species
- Goal: Create appropriate depths & flow velocities to reduce establishment of invasive aquatic plants.



Species and Foodweb Production

Biological Resource	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Fish		D	elta Smelt s	pawning/larv	ae									
		Adult D	elta Smelt in	wetland		(some smelt present in cache slough area)								
		Spri	ng-run Chin	ook outmigr	ating									
			Fall-run	Chinook out	migrating									
		Winter-run	Chinook ou	utmigrating										
		Late-fall (Chinook out	migrating										
			Steelhead of	outmigrating										
	Mysid peak													
	Copepod peak (Eurytemora)					Pseudod	iaptomus	Limno	oithona					
Plankton														
					[iatom blooms			Microcystis blooms					
							Submerged aquatic vegetation peak							
Vegetation							Emergenta	aquatic vege						
Invasive						Floating aquatic vegetatio					vegetation p	beak		
Species	Clam recruitment								Clam peak biomass					

SOURCE:

Sherman, S., R. Hartman and D. Contreras, editors. 2017. Effects of Tidal Wetland Restoration on Fish: A suite of Conceptual Models. Interagency Ecological Program Technical Report 91. Department of Water Resources, Sacramento, California.





Results by Discipline Habitat

- Assessment of Food Web Productivity: Particle Tracking Analysis
 - Alternative 19 creates the most movement of particles, though still not ideal pattern
 - Alternative 24 particles did not readily leave the site, even after 14 days
 - Balance Breaches did not add much value to food web production
- Large, deep swale minimizes conditions that support submerged aquatic vegetation (SAV)
- Increases in the depth and width of the main interior channel improves the quantity, diversity, and connectivity of tidal aquatic habitat







Contact us!

- Questions? Reach Morgan, Lori, and/or Megan by emailing: LittleEgbertMBP@water.ca.gov
- Visit our website at: water.ca.gov/littleegbert

For more information on the Feasibility Study, visit the Little Egbert Joint Powers Agency at lejpa.org.



