Providing SMARTer Solutions to Water Resources Problems

Floodplain Management Association Annual Conference

Margaret Engesser, Project Manager
Dylan Van Dyne, Project Manager

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Agenda

- Planning Modernization
  - SMART Planning/3x3x3
  - Risk informed decision making
  - Role of the Non-Federal Sponsor

- Delta Islands and Levees
  - Project Overview
  - Transition into SMART Planning
  - Next steps after Feasibility Study
Planning Modernization

- What does this mean?
- Studies completed in less time/less money
- 3x3x3 Rule:
  - Under 3 years
  - Under $3 million
  - 3 levels of USACE vertical coordination
SMART Planning

1. Specify Problems and Opportunities
2. Define Existing Conditions
3. Define Future Without Project Conditions
4. Measures
5. Formulate Alternative Plans
6. Final Array
7. Tentatively Selected Plan
8. Feasibility Level Design
9. Recommended Plan
Feasibility Study Milestones

The Feasibility Study Process:
Key Decision & Product Milestones

~ 3 months
Scoping

~ 9 months
Alternative Evaluation & Analysis

~ 6 months
Feasibility Analysis of Selected Plan

~ 12 months
Washington-level Review

~ 6 months

Key
- Decision Milestone
- Product Milestone

Focus on alternatives identification and evaluation to identify a recommended plan for more detailed design

Focus on scaling the measures and features for the recommended plan

Alternative Milestone
Tentatively Selected Plan Milestone
Agency Decision Milestone
Draft Report Released for Concurrent Review
District Final Report Transmittal to MSC
MSC Final Report Transmittal to HQ
Chief’s Report Signed
Risk Informed Decision Making

- Integrate risk analysis into planning process
- Focus on uncertainty and level of detail
- Risk register
- Implementation/study/outcome risks
- Make decisions based on life safety risk, economic risk, and engineering/design risks
Role of the Non-Federal Sponsor

- Who?
- What is their role?
- Cost sharing responsibilities
Corps Civil Works Projects

- Four individual phases:
  - Feasibility
  - Design
  - Construction
  - Closeout

- The Corps’ five main missions include Ecosystem Restoration, a type of CW project
Purpose: To restore up to 340 acres of intertidal marsh habitat at Big Break Island in the western portion of the Sacramento-San Joaquin Delta using maintenance-dredged material from the Stockton Deep-Water Ship Channel.

This is the recommended plan moving forward
Project Area

Map showing project areas in California, including Los Angeles, Sacramento, San Francisco, Suisun Marsh, Legal Delta, Big Break, and San Francisco Bay.
What happens when you can’t meet 3x3x3?

- Waiver process overview
- Seek approval for an exemption pursuant to Section 1001 of the Water Resources Reform and Development Act (WRRDA) 2014
Project Partnership

- Coordination with non-Federal Sponsors: CA Department of Water Resources and East Bay Regional Parks District

- Non-federal sponsor letters of support
Project Implementation

- Chief’s Report – Dec 2018
  - Completes the Feasibility Phase of the project
- Pre-construction Engineering & Design (PED) = Design Phase
  - Design Agreement
  - PPA execution
  - Contract award
  - Construction completion
Questions?

Contact us:
Margaret.c.engesser@usace.army.mil
Dylan.r.vandyne@usace.army.mil
Identify the Problems

Problems

- Substantial loss (95%) and fragmentation of historic intertidal and tidal habitat areas and connectivity for native plants and wildlife, including over 35 Federal and State listed Threatened and Endangered species
- Flood risk in Delta due to levee failure and overtopping

Objectives

Ecosystem Restoration Objective:
- Increase area, connectivity, and diversity of native tidal and non-tidal aquatic, riparian, and related habitats

Flood Risk Management Objectives:
- Reduce the probability and consequences of flooding
- Improve resiliency and reduce the chance of loss of life and key infrastructure
## Develop Alternatives

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Annual Benefits (AAHU)</th>
<th>Total Annual Cost ($1,000)</th>
<th>Average Cost per AAHU ($1000/HU)</th>
<th>Incremental Annual Cost ($1,000)</th>
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<td>$0</td>
<td>$0.0</td>
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<td>3787.9</td>
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<td>$73.4</td>
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<td>10</td>
<td>3,788.80</td>
<td>$278,027</td>
<td>$73.4</td>
<td>$151</td>
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</table>
Ecosystem Restoration Alternatives

- Restore intertidal marsh habitat in flooded islands
- Goal is to reverse subsidence
- Source/cost of fill material is the main driver

Alternative 3
84 acres at Big Break
$10,700 per output

Alternative 7
1,105 acres at Big Break
9 acres at Little Frank’s
139 acres at Franks’ Tract
$45,800 per output

Alternative 9
1,105 acres at Big Break
273 acres at Little Frank’s
2,470 acres at Franks’ Tract
$91,200 per output
Significant Fish and Wildlife Resources

- **Institutional Significance**
  - Within Pacific Flyway – international importance
  - CA Bay-Delta is an estuary of national significance and a national priority aquatic ecosystem
  - Designated critical habitat for Federally listed fish species

- **Technical Significance**
  - Improved habitat for Delta smelt, a species under consideration for uplisting from Threatened to Endangered under ESA

- **Public Significance**
  - Beneficial reuse of dredged material is a priority action in the S.F. Estuary Partnership’s Comprehensive Conservation Management Plan under the National Estuary Program
Recommended Plan

- Total cost: $25,041,000
- Features
  - Restore 340 acres intertidal marsh at Big Break
  - 1M cubic yards of fill material required over 10 years
- Benefits
  - Habitat for threatened and endangered species
Recommended Plan Features

- The ecosystem restoration features of Alternative 3 include 340 acres of intertidal marsh habitat restoration using dredged material over approximately 10 years.

- The RP also recommends non-structural FRM measures under existing Federal and local authorities.
What happens when you can’t meet 3x3x3?

- Waiver process overview
- Seek approval for an exemption pursuant to Section 1001 of the Water Resources Reform and Development Act (WRRDA) 2014
Consequences of Study Termination

Lost opportunity for ecosystem restoration in the California Delta, an ecosystem of national significance

- Multiple Federally listed species would benefit from project construction, to include Delta smelt and salmonids

Lost opportunity for incorporating beneficial use of dredged material into annual O&M practices for the purpose of ecosystem restoration

- USACE is uniquely positioned to feasibly accomplish intertidal marsh restoration in the central Delta due to the nexus with dredging activities
## SMART Re-scoping

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Date Scheduled</th>
<th>Actual Date</th>
<th>Task</th>
<th>Original Planned Cost (Fed-Non-Fed)</th>
<th>Reason Milestone Missed</th>
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</thead>
<tbody>
<tr>
<td>SMART Start</td>
<td>Dec 2012</td>
<td>Dec 2012</td>
<td>Re-scoping Charrette</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>Alts MS</td>
<td>Apr 2013</td>
<td>Apr 2013</td>
<td>Analyses supporting Vertical Team concurrence on evaluation criteria and focused array of alternatives</td>
<td>$600,000</td>
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<td>TSP MS</td>
<td>Feb 2014</td>
<td>Feb 2014</td>
<td>Analysis for the TSP</td>
<td>$1,700,000</td>
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<td>ADM MS</td>
<td>Aug 2014</td>
<td>N/A</td>
<td>Detailed analysis for the ADM</td>
<td>$617,000</td>
<td>Funding delay due to FCSA Amendment; Cost Eng ATR comment/response; Dredging/ESA issue resolution.</td>
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<tr>
<td>CWRB</td>
<td>Oct 2014</td>
<td>N/A</td>
<td>Finalize report, prepare and present at CWRB</td>
<td>$150,000</td>
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<tr>
<td>Chief’s Report</td>
<td>Dec 2014</td>
<td>N/A</td>
<td>S/A review and Chief Report support</td>
<td>$50,000</td>
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</table>
# Economic Summary

## Annual Costs and Benefits for the Recommended Plan

<table>
<thead>
<tr>
<th>Item</th>
<th>Costs ($1,000s)</th>
<th>Benefits</th>
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</thead>
<tbody>
<tr>
<td>Investment Cost</td>
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<tr>
<td>First Cost(^1)</td>
<td>25,041</td>
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<tr>
<td>Interest During Construction (2.75% over 15 year construction period)</td>
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<tr>
<td>Total</td>
<td>33,213</td>
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<tr>
<td>Annual Cost</td>
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<tr>
<td>Interest and Amortization (2.75% over 50 year period of analysis)</td>
<td>1,230</td>
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<tr>
<td>OMRR&amp;R(^2)</td>
<td>5</td>
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<tr>
<td>Subtotal</td>
<td>1,235</td>
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<tr>
<td>Annual Benefits</td>
<td></td>
<td></td>
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<tr>
<td>Non-monetary (Ecosystem)</td>
<td></td>
<td>111.44 AAHU’s</td>
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</table>

October 2018 Price levels, 2.75% interest rate and a 50 year period of analysis.
## Cost Apportionment

Summary of Cost Sharing Responsibilities for the Recommended Plan ($1,000s).

<table>
<thead>
<tr>
<th>Item</th>
<th>Federal</th>
<th>Non-Federal</th>
<th>Total First Costs ($1,000s)</th>
</tr>
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<tbody>
<tr>
<td>Fish &amp; Wildlife Facilities</td>
<td>$6,125</td>
<td>$0</td>
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<tr>
<td>Marsh Development(^2)</td>
<td>$12,523</td>
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<tr>
<td>Lands and Damages</td>
<td>$107</td>
<td>$1,033</td>
<td>$1,140</td>
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<tr>
<td>Planning, Engineering, &amp; Design</td>
<td>$3,621</td>
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<tr>
<td>Construction Management</td>
<td>$1,632</td>
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<tr>
<td><strong>Subtotal</strong></td>
<td>$24,008</td>
<td>$1,033</td>
<td><strong>$25,041</strong></td>
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<td>Additional Cash Contribution</td>
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<td><strong>Subtotal</strong></td>
<td>$16,277</td>
<td>$8,764</td>
<td><strong>$25,041</strong></td>
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<tr>
<td><strong>Percentage</strong></td>
<td>65%</td>
<td>35%</td>
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</table>
Environmental Compliance

- **NEPA**
  - Published Notice of Intent – Jan 2013
  - Released Draft Report – April 2014
  - Final EIS Scheduled for Release in October 2018

- **NHPA, Section 106**
  - Concurrence Letter received from State Historic Preservation Officer (SHPO) – May 2014

- **ESA**
  - National Marine Fisheries Service Concurrence Letter – June 2018
  - U.S. Fish and Wildlife Service Biological Opinion – June 2018
Public Involvement

- Sign FCSA  
  - May 2006
- Public Scoping Meeting  
  – February 2013
- Published Draft Report  
  – April 2014
- Agency Decision Milestone  
  – April 2017

Areas of Controversy

- Public Review did not identify any major areas of controversy
- Multiple comments were received expressing concern about potential impacts to drinking water from salinity effects; however, the dredged material is expected to contain a similar salinity level as the restoration area.