Savannah Harbor Expansion Project

Presentation to the
Georgia Environmental Conference
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By
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Planning Division
Overview

- Panama Canal expansion
- Congressional authorization
- Project Summary
- Engineering features
- Environmental impacts and mitigation
- Economic issues
- Public & agency comments
- Schedule
Panama Canal Expansion Project

Completion: 2014

Panamax Vessel
Max: 4,800 TEUs

Post-Panamax Vessel
Max: 12,600 TEUs
The Corps’ role as directed by Congress

1. Evaluate expansion alternatives
   
   Considered structural & non-structural alternatives

   Detailed analysis of harbor deepening (44 - 48 foot depths)
   - Computer models of water and wave actions
   - Computer-simulated ship movements
   - Engineering analyses
   - Environmental analyses
   - Economic analyses

2. Provide mitigation plan for significant environmental impacts
   - Minimize environmental impacts for each depth
   - Compensate for those impacts
Unique Authorization

Project may be carried out only after…

…the Secretary of the Interior, the Secretary of Commerce, the Administrator of the Environmental Protection Agency, and the Secretary [Army] approve the selected plan and determine that the associated mitigation plan adequately addresses the potential environmental impacts of the project.
Agency Collaboration
Project Summary

- National Economic Development (NED) Plan: 47-foot Depth
- Annual net benefits: $116 M
- Total project cost during construction: $569 M
- Annual Operations & Maintenance: $27 M
- Environmental impacts can be mitigated to an acceptable level
- Mitigation requirements account for 41.6% of total project cost
3 Elements of the Project

- **Engineering**
  - Can the harbor be deepened?
  - What must be included to make it safe?
  - What’s the cost?

- **Environmental**
  - What are the impacts to the environment?
  - Can the project mitigate for the impacts?
  - What’s the cost of mitigation?

- **Economics**
  - Is it worthwhile? (Benefits versus Costs)
  - How does the Nation benefit from it?
  - How much benefit will the Nation receive?
Engineering Studies

More than 46 Individual Studies

- Soil borings for physical characterization of materials
- Geologic field investigations for aquifer investigations
- Ship simulation studies for channel design
- Ship wake studies to develop shoreline erosion estimates
- Coastal erosion analyses for Tybee Beach impacts
- Slope stability and HTRW analyses
- Hydrodynamic modeling of water quality and alternate flows
- Cost estimating and risk analysis of all design alternatives
- Designs of proposed structures required for mitigation
- Sea Level Rise Analysis
- Cost Risk Analysis
- Nearshore Disposal Placement Study
- Channel Extension Borings
- Hurricane Surge Modeling
- Supplemental Water Supply Costs
- Dredge Material Physical Analysis
- Fisheries Habitat Impacts With Mitigation
- Water Quality Impacts With Mitigation
- Mitigation Evaluation For Marsh Wetland Impacts
- Meeting Area Sensitivity Analysis
- Middle River Sill Sensitivity Analysis
- Upper Floridian Aquifer Ground Water Impacts
- Wetland March Impact Evaluation
- Dredge Material Management Plan
- Long Term Management Study
- Sediment Quality Evaluation
- Sedimentation Analysis
- ATM Marsh Succession Model Impact Evaluations
- USGS Marsh Succession Model Impact Evaluations
- Dredge Vertical Construction Accuracy
- Channel Improvement Navigation Study
- Simulation of Water Levels in Rivers and Tidal Marshes
Navigation Features

- Savannah National Wildlife Refuge
- Houlihan Bridge
- Garden City Terminal
- Black River
- Little River
- Middle River
- Savannah River

South Carolina

Georgia

Atlantic Ocean

- Channel Deepening
- Meeting Lanes
- Kings Island Turning
- Three Bends Widened
- Channel Extension
- Upland Dredge Disposal Areas
Navigation – Channel Design

Channel Design
- Extend existing slopes down further
- Deeper & Narrower Channel
- Minimal effects to the river’s banks
Environmental Evaluation
Environmental Evaluation

Draft Environmental Impact Statement provided detailed findings of the investigations on:

- Possible saltwater intrusion into the Upper Floridan aquifer
- Impacts to freshwater marshes – the Savannah National Wildlife Refuge
- Beach erosion
- Fish habitat
- Dissolved oxygen
- Endangered species
- Impacts to wetlands
- Dredged Material Management

The study concluded the environmental impacts can be mitigated to an acceptable level.
Salinity Changes

- Decreasing Salinity in Back River
- 0.5 ppt Contour Existing Channel (42 ft)
- Increasing Salinity in Front River
- 0.5 ppt Contour Deepened Channel (47 ft)
# Wetland Mitigation

<table>
<thead>
<tr>
<th>Depth</th>
<th>Freshwater Wetland Impacts W/O Mitigation (Acres)</th>
<th>Freshwater Wetland Impacts After Flow Re-Routing (Acres)</th>
<th>Freshwater Wetland Required Preservation (Acres)</th>
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</thead>
<tbody>
<tr>
<td>44-Foot</td>
<td>576</td>
<td>-332</td>
<td>0</td>
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<tr>
<td>45-Foot</td>
<td>967</td>
<td>32</td>
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<tr>
<td>46-Foot</td>
<td>1,057</td>
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<td>2,188</td>
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<tr>
<td>47-Foot</td>
<td>1,177</td>
<td>223</td>
<td>2,245</td>
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<tr>
<td>48-Foot</td>
<td>1,212</td>
<td>337</td>
<td>2,683</td>
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- To mitigate the conversion of 223 acres of tidal freshwater wetland to saltwater wetland, 2,245 acres would be acquired and provided to the Savannah National Wildlife Refuge.

- To mitigate for 14 acres of tidal salt marsh that must be excavated, 45 acres of tidal salt marsh would be restored.
Economics
Economics

- National economic benefits of $116 M per year
  - Corps only counts National benefits
  - Local and regional benefits may also exist
- Lower transportation costs for imports and exports
- Wider/deeper Panama Canal will lead to larger ships worldwide
Current Regional Benefits of Savannah Harbor
Source: Terry College of Business, University of GA, 2010

Georgia
- 295,433 full and part time jobs
- $61.7 billion in sales
- $26.8 billion in gross state product
- $15.5 billion in income
- $3.5 billion in federal taxes
- $1.5 billion in state taxes
- $1.1 billion in local taxes

South Carolina
- 19,704 full and part time jobs
- $4.3 billion in sales
- $1.5 billion in gross state product
- $959 million in income
- $190 million in federal taxes
- $84 million in state taxes
- $63 million in local taxes
Economic Analysis

TEU Projections

2032 Container Fleet
(6,500,000 TEUs)

* Garden City Terminal reaches maximum TEU throughput capacity in 2032
Benefits of Deeper Channel

Deeper channel lowers transportation costs through:

- Deeper vessel loading
- Fewer, larger ships to carry more Twenty-foot Equivalent Units
- Less congestion in the harbor
- Lower transportation costs may = lower consumer product costs
Public Engagement

- Stakeholders Evaluation Group (GPA-sponsored)
  - Open forum for the public since 1999 (67+ meetings)
  - Meeting schedule reported in media
  - Summary of meetings reported in media

- Public comment period (written, online, verbal)
  - Initial 45-day period; extended to 60 days at public request
  - Comments become part of the record; addressed in Final Report

- Public Workshop
  - Widely publicized; attended by 500+
  - Booths on engineering, economics, environmental aspects
  - Staffed by Corps experts: engineers, biologists, economists
  - Open forum for questions & comments
Summary of Comments

- District received over 1,100 written letters, e-mails, and dictated responses
  - Federal and state agencies, environmental groups, civic organizations, and private citizens
- Majority of respondents (684) gave general comments of support:
  - 84% Private Citizens
  - 6% Local Business
  - 6% Regional Business
  - 4% Civic Organizations/Groups
Summary of Comments

- Many respondents submitted letters containing more than one comment. As a result, the District received a total of 2,540 comments.

- Comments (2,540) were grouped into four broad categories:
Summary of Comments

- Nearshore placement
- Impacts to wetlands
- Water Quality
- Air Quality
- Dissolved oxygen systems
- Fish passage at Augusta
- Timing of mitigation features
- Post-Construction monitoring
- Adaptive Management
Report Schedule

- Public review of Draft Report
- Comment period closed
- Revise Report

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<tbody>
<tr>
<td>Public workshop</td>
<td>Evaluation of public and agency comments</td>
<td>Final Report for public review</td>
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- Public workshop
- Evaluation of public and agency comments
- Final Report for public review
Conclusion