Miami River Project

US Army Corps of Engineers
American Association of Port Authorities
Quality Partnership Initiative
Emerging Technologies

Patrick J. Kelly
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Miami River Background

- 5.5 mile navigable river flowing from Miami Airport to Bay of Biscayne
- Construction in 1930’s to authorized depth of 15 feet; width varies from 90 to 150 ft.
- Used by niche maritime commerce moving various goods to the Caribbean and Central America
- Channel not maintained, resulting in extensive shoaling
- Dredged material contains some contaminants—must be processed and disposed at a landfill
Miami River
Characterized By:

- River Traffic
- Numerous Bridges
- Significant Trash and Debris
- High Rise Buildings
- Important biological resources
Five year contract awarded by Jacksonville District to Weston/Bean JV
- 15 sections
- Dredge, process and dispose contaminated materials
- Work began September 2004
- Dredging/Processing completed November 2008

Cost Sharing
- Federal Channel 80% Fed/20% Non-Fed
- Bank to Bank 100% Non-Fed

Estimated cost ~ $90M including 15% for USACE
Project Challenges

- Funding Availability
- Dredging Issues
- Munitions and Explosives of Concern (MEC)
- Water Quality Modifications
- Processing Optimization
- Transportation
- Oversized Materials
- Disposal
# Miami River Schedule

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>Contract award</td>
<td>4/04</td>
</tr>
<tr>
<td>2005</td>
<td>Phase 1 (1)</td>
<td>9/04-11/05</td>
</tr>
<tr>
<td>2006</td>
<td>Awaiting Funding</td>
<td>11/05-5/07 (2)</td>
</tr>
<tr>
<td>2007</td>
<td>Phase II (3)</td>
<td>2/08-11/08</td>
</tr>
<tr>
<td>2008</td>
<td>Contract Expiration</td>
<td>4/09</td>
</tr>
</tbody>
</table>

**Notes:**

1. Includes 4 months to replace processing operation
2. Partial funding only for 2 of 9 remaining sections
3. Includes 2 months delay for MEC
**The Funding Challenge**

- **Issue**
  - Federal funding continually insufficient

- **Phase I/Sections 1-6**
  - Fed funding mainly from $25M of previously appropriated project funds
  - HQUSACE helped to reprogram funding 😊
  - Congress not helpful in appropriating sufficient funding 😟
  - Funding ran out at end of Section 6

- **Phase II/Sections 7-15**
  - Corps acknowledged insufficient funding to complete project without further demobilizations
  - Local sponsor to the rescue – 😊
    - Local advanced funding: all remaining funding ($8.7M) advanced early
    - Local contributed funding: $10.0M contribution to guarantee completion of project and without Fed obligation to repay
    - Kudos to sponsor advocate (Miami River Commission) for taking leadership role to make it happen
Remove sand, mud, trash and debris
- Minimize unpaid over-dredging
- Meet or exceed water quality requirements
- Minimize entrained water to the process
- Provide required grade of -15 feet with 2 feet of allowable overdepth
The Barredor del Rio

Some Gee Whiz Factoids

- Conventional bucket over environmental bucket
- Bucket holds ~ 4.5 yd³
- Dredge could extend 33 ft. for 17 ft. of depth
- Can dredge 150 yds => 3500 yds/day ideally
- Actually averaged about 1500 yds/day
- Bean’s GPS/CMS proved accurate to 1-2 inches
Barge Transport

- Conventional Barges Used
- Four Barges Provided Buffer Capacity
## The Water Quality Challenge

### Ever Changing Requirements (FLDEP)

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</thead>
<tbody>
<tr>
<td>Compliance Station</td>
<td>Mouth of river</td>
<td>Mouth of river</td>
<td>Close to dredge</td>
<td>Close to dredge</td>
<td>Close to dredge</td>
<td>Close to dredge</td>
</tr>
<tr>
<td>Trend Stations</td>
<td>2-1 upriver/2 downriver of dredge</td>
<td>5-increased sampling/monitoring</td>
<td>6-increased sampling/monitoring</td>
<td>6-increased monitoring frequency</td>
<td>7-increased monitoring</td>
<td>7-increased monitoring</td>
</tr>
<tr>
<td>Turbidity Criteria</td>
<td>&lt; 38 NTU total (1)</td>
<td>&lt; 7 NTU</td>
<td>&lt; 7 NTU</td>
<td>&lt;background +20 NTU</td>
<td>&lt;background +20 NTU</td>
<td>&lt;background +20 NTU except AS-15 (Maximum of background +15 NTU)</td>
</tr>
<tr>
<td>D.O. Criteria</td>
<td>&gt;0.09 mg/L</td>
<td>&gt;4.1 mg/L</td>
<td>&gt;4.1 mg/L</td>
<td>&gt;4.1 mg/L</td>
<td>&gt;2.0 mg/L</td>
<td>&gt;2.0 mg/L</td>
</tr>
</tbody>
</table>

(1) Background is 9 NTU
Mobile Soil Washing Plant /Boskalis Dolman

- Packaged within 38 containers
- Production of 150 tons/hour
- Separated beneficial reuse materials
- Robustly designed
- Fully Automated
Material Separation/
Boskalis Dolman

- Large Rock (1”-12”)
- Small Rock (<1”)
- Sand
- Hydrocyclones
- Excavator
- Shaker Screens
- Trommel
- Control Room
MUNITIONS AND EXPLOSIVES OF CONCERN (MEC)

- MEC uncovered in Sections 9 and 10 in April-May 2008
- Ceased operations totaling about 60 days
- Amended Site Safety and Health Plan
  - Attached shielding to dredge and landside excavator
  - Established exclusion area around excavator
  - Provided around-the-clock UXO personnel to perform MEC searches
UXO Personnel Duties

- Examine all material piles
- Separate munitions
- Transport to magazine area and store
- Transfer munitions to Miami Bomb Squad
The Truck Transport Challenge

- Extensive Training/Inspections
- 33,000 truck loads
- Loaded every 8-10 minutes
- Five trucks every hour on the road
- Only 3 incidents (no injuries)
- Managed by TRUCKFAST®
Materials Processed

- Rocks-Debris
- Clean Sand
- Dirty Sand
- Filter Cake
- Scrap Metal/Tires/Trash
**Disposal**

**Waste Management (WM) Landfills**
- Pompano Beach (42 miles)
- Medley (12 miles)
- Stayed open 24 hours/day

**Beneficial Reuse of Materials**
- Coarse stone: Roads (WM)
- Contaminated Sand: Daily covers (WM)
- Clean Sand: Final cover (WM)
- Filter Cakes: Daily cover (WM)
- Trash and Large Rocks: Landfill (WM)
- Metals: Recycled
- Tires: Washed and recovered
Successful Performance

- Removed, treated, transported and disposed of over 540,000 yds of contaminated material
- Overcame lack of timely funding and MEC issues
- Excellent safety record