USACE ASSET MANAGEMENT
COASTAL SYSTEMS ASSET MANAGEMENT

CWG Briefing
15-Nov-2016

Bob Leitch
Asset Management Program Manager
Headquarters USACE
OUTLINE

- USACE Asset Management approach
- Coastal Systems Asset Management
USACE CIVIL WORKS ASSET MANAGEMENT

4 Focus Areas

- Maintenance Management
- Operational Condition Assessments
- Operational Risk Assessment
- Portfolio Analytics
COASTAL SYSTEMS ASSET MANAGEMENT

- Coastal Navigation Channels (CNC + Inland)
- Coastal Navigation Structures (CNS)
- Coastal Storm Damage Reduction Structures (CSDRS)
- Regional Sediment Management (RSM)
## CNC Asset Management

<table>
<thead>
<tr>
<th>No. Channels</th>
<th>Channels Ready</th>
<th>CSAT final</th>
<th>CPT alignment</th>
<th>In CPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRB</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>LRC</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>LRE</td>
<td>20</td>
<td>3</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>LRD</td>
<td>33</td>
<td>7</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>MVN</td>
<td>12</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>NAB</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NAE</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NAN</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NAO</td>
<td>7</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>NAP</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NAD</td>
<td>34</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NWP</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>NWS</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>NWD</td>
<td>9</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>POA</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>POH</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>POD</td>
<td>8</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SAC</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>SAJ</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>SAM</td>
<td>7</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>SAS</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SAW</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SAD</td>
<td>22</td>
<td>10</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>SPK</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>SPL</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>SPN</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>SPD</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>SWG</td>
<td>18</td>
<td>6</td>
<td>18</td>
<td>6</td>
</tr>
</tbody>
</table>

**Survey (Asset)**

**eHydro (Condition)**

**CSAT (Likelihood)**

**CPT (Consequences)**

**CPT (Consequences)**

**CSAT: Corps Shoaling Assessment Tool**

**CPT: Channel Portfolio Tool**
CNC CONDITION ASSESSMENT EXAMPLE

42’ x 600’ Channel

Old Condition – “A”; Middle Half of Channel @ 100%

New Condition (2 way Traffic) – “C”; 75% of width and 2’ restriction

New Condition (1 way Traffic) – “D”; 90% of width and 3’ restriction
## Volume Tables

<table>
<thead>
<tr>
<th>Dredge Cut (ft)</th>
<th>Now (CY)</th>
<th>6 months (CY)</th>
<th>12 months (CY)</th>
<th>18 months (CY)</th>
<th>24 months (CY)</th>
<th>30 months (CY)</th>
<th>36 months (CY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-45</td>
<td>195,320</td>
<td>271,020</td>
<td>373,070</td>
<td>492,200</td>
<td>624,890</td>
<td>771,020</td>
<td>931,220</td>
</tr>
<tr>
<td>-44</td>
<td>125,140</td>
<td>173,140</td>
<td>238,620</td>
<td>331,710</td>
<td>444,910</td>
<td>572,680</td>
<td>713,450</td>
</tr>
<tr>
<td>-43</td>
<td>76,249</td>
<td>109,860</td>
<td>153,260</td>
<td>210,570</td>
<td>293,080</td>
<td>399,730</td>
<td>522,310</td>
</tr>
<tr>
<td>-42</td>
<td>43,628</td>
<td>65,655</td>
<td>95,990</td>
<td>135,350</td>
<td>186,480</td>
<td>258,070</td>
<td>356,920</td>
</tr>
<tr>
<td>-41</td>
<td>24,409</td>
<td>37,093</td>
<td>56,313</td>
<td>83,402</td>
<td>119,100</td>
<td>165,270</td>
<td>227,370</td>
</tr>
<tr>
<td>-40</td>
<td>14,958</td>
<td>21,022</td>
<td>31,470</td>
<td>48,147</td>
<td>72,041</td>
<td>104,370</td>
<td>146,170</td>
</tr>
<tr>
<td>-39</td>
<td>10,060</td>
<td>13,343</td>
<td>18,250</td>
<td>26,832</td>
<td>41,017</td>
<td>61,922</td>
<td>91,020</td>
</tr>
<tr>
<td>-38</td>
<td>7,083</td>
<td>9,092</td>
<td>11,945</td>
<td>16,084</td>
<td>23,035</td>
<td>34,823</td>
<td>53,059</td>
</tr>
<tr>
<td>-37</td>
<td>5,194</td>
<td>6,480</td>
<td>8,241</td>
<td>10,728</td>
<td>14,312</td>
<td>19,888</td>
<td>29,576</td>
</tr>
<tr>
<td>-36</td>
<td>3,865</td>
<td>4,787</td>
<td>5,944</td>
<td>7,496</td>
<td>9,673</td>
<td>12,784</td>
<td>17,358</td>
</tr>
<tr>
<td>-35</td>
<td>2,806</td>
<td>3,555</td>
<td>4,412</td>
<td>5,465</td>
<td>6,843</td>
<td>8,751</td>
<td>11,457</td>
</tr>
</tbody>
</table>
Corps Shoaling Analysis Tool (CSAT)

- What will the channels look like in the future?
- Use historical survey data from eHydro to generate difference grid sets between dredging events
- Predict average shoaling rates and dredging requirements per channel reach
- Report volumes at different depth/time intervals

Average annual shoaling rate
- Warm colors – higher shoaling rates
- Cool colors – lower shoaling rates
CHANNEL PORTFOLIO TOOL (CONSEQUENCES)
Next Steps

CNC Asset Management

Districts upload surveys through eHydro

CPT uploads volume tables with shoaling predictions for use in work package

CSAT pulls new surveys and generates shoaling rate predictions and volume tables
CNS ASSET MANAGEMENT

Level 1 OCA
District Condition Assessment
- Structural Condition Rating
- Functional Condition Rating
- District Condition Rating

Level 2 OCA
Coastal Structures Management and Ranking Tool (CSMART)
- Weighted Criteria for Ranking
  - District Condition Rating
  - Tonnage
  - Subsistence
  - National Security
  - Cruise/Ferry Passengers Etc.

- On-site Assessment
  - Quality Control / Quality Assessment

- Ranked List of Priorities

- High Priority Projects

Risk-Informed Prioritization Ranked List of Structures

Investment Decision

National AM Processes
DISTRICT CONDITION ASSESSMENT TOOL - CNS

Entry Fields:
- District
- Project
- Structure
- Structure Type
- SCR w/ Remarks
- FCR w/ Remarks
- DCR (calculated)
- SRA
- Consequence Rating
- Primary Auth. Function
- CWIS
- P2
- FEM
- Lat / Long
- District Comments
- QA/QC Comments

Features:
- Links to Google Earth
- Direct linkage to CSMART for data sharing
- Print to Excel
CNS ASSET MANAGEMENT SNAPSHOT

- ~1000 Coastal Structures (Level 1 OCA completed)
- 8 prototype Level 2 OCAs completed
- 3 formal Level 2 OCAs completed, 1 planned
- Level 2 OCAs validated Level 1 conclusions
- 83% in A & B condition
SEC. 1104. FEDERAL BREAKWATERS AND JETTIES.
(a) IN GENERAL.—The Secretary, at Federal expense, shall establish an inventory and conduct an assessment of the general structural condition of all Federal breakwaters and jetties protecting harbors and inland harbors within the United States.
(b) CONTENTS.—The inventory and assessment carried out under subsection (a) shall include—
(1) compiling location information for all Federal breakwaters and jetties protecting harbors and inland harbors within the United States;
(2) determining the general structural condition of each breakwater and jetty;
(3) analyzing the potential risks to navigational safety, and the impact on the periodic maintenance dredging needs of protected harbors and inland harbors, resulting from the general structural condition of each breakwater and jetty; and
(4) estimating the costs, for each breakwater and jetty, to restore or maintain the breakwater or jetty to authorized levels and the total of all such costs.
(c) REPORT TO CONGRESS.—Not later than 1 year after the date of enactment of this Act, the Secretary shall submit to Congress a report on the results of the inventory and assessment carried out under subsection (a).