Harbor Maintenance Operations and Funding: Opportunities and Challenges for the Great Lakes Region

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September 26, 2015
Great Lakes Navigation System Economic Data

- A non-linear interdependent system of 140 deep and shallow draft projects; commercial ports are dependent on each other for the efficiency and health of the system.

- 145M tons (5-year average) – (USACE Waterborne Commerce Statistics)

- 20% of tonnage is exported – to Canada or overseas (USACE Waterborne Commerce Statistics)

- GLNS saves the country $3.6 billion per year compared to the next least costly mode of transportation (USACE Inland Nav Center of Expertise)
Federal Projects on the Great Lakes

A non-linear navigation system with 60 federal commercial projects and 80 federal shallow draft/recreational projects
Great Lakes Navigation

Key Challenges

- Balancing System Requirements
  - Dredging
  - Dredged Material Management
  - Navigation structures
  - Soo Locks

- Interdependency requires using a system approach in prioritizing investments
Great Lakes Navigation System
Dredging
$111.6M  Great Lakes Navigation Operations & Maintenance

Key Items
- $49M in Dredging (25 projects – 3.4M cubic yards)
- $8.4M in Dredged Material Management
- $3.7M in Soo Asset Renewal
Dredging Funding Trends 2007 - 2016

- National Provisions
- ARRA (Stimulus)
- Lake Superior Regional Provisions
- Michigan Regional Provisions
- Commercial Regional Provisions
- Energy & Water Adds
- President's Budget

$40 M Annual Req’m’t

Funding (millions of dollars)
Historical Shallow Draft/Recreational Harbor Funding

![Bar chart showing the number of projects funded over fiscal years 2001 to 2015. The number of projects funded ranges from 0 to 30, with peaks in 2001, 2008, and 2010.](chart.png)
Dredged Material Management
Historical Perspective

- **1960**: Dredged material nearly exclusively disposed via open water placement.
- **1970**: 45 Great Lakes CDFs constructed and/or operated by USACE at a cost of $900M (2009 dollars).
- **1980**: Current CRITICAL situation. DMM strategies must be developed.
- **2000**: Execute sustainable DMM solutions.

1996 - Section 201 of the 1996 WRDA requires cost-sharing.

Navigation Structures
Great Lakes Navigation Structures - Purposes

Navigation structures intended purposes:
- Safeguard navigation from wave and ice damage (GL experience waves over 25 ft)
- Protect navigation channel from sediment shoaling
- Protect navigation channel from wave action (preserve the design wave climate to allow pilots to navigate the channel)

Additional benefits provided:
- Protect other navigation structures within harbor such as CDFs
- Protect critical city infrastructure (buildings, roads, power plants, water/wastewater plants)
- Provide essential flood and storm protection
Great Lakes Navigation Structure Conditions

- 50% of GL coastal structures were built before WWI
- Over 80% of all coastal structures exceed 50 years of age
- 45% have never undergone any significant repair effort due to funding constraints
- Over 30% of structures have timber crib core sections; recent low water levels have accelerated deterioration of the wood
Harbor Structure Condition Assessments

Cost to Restore Most Critical Harbors to Acceptable Level of Risk:

- Ashtabula Harbor: $39.0M
- Chicago Harbor: $19.6M
- Cleveland Harbor: $10.0M
- Fairport Harbor: $28.0M
- Lorain Harbor: $14.0M
- Milwaukee Harbor: $33.0M

Total: $143.6M
Lock Reliability
The Soo Locks
Lynch Pin of the Great Lakes Navigation System

- 70% of the commercial commodities transiting the Soo Locks are limited by size to the Poe Lock
  - Aging and deteriorating infrastructure; unscheduled outages increasing
  - There is currently no redundancy for the Poe Lock
  - The economic impact of a 30-day unscheduled closure of the Soo Locks = $160M

- Two major efforts are underway to improve reliability of the Soo Locks
  1. Maintain existing infrastructure through Asset Renewal Plan
  2. New lock with the same dimensions as the Poe Lock - BCR sensitivity analysis underway
Soo Locks Asset Renewal Long-Term Plan

Asset Renewal Plan will maximize reliability and reduce risk through 2035

$47.2M funded to date through FY14
- New hydraulics, stop logs, utilities
- Compressed Air System
- Gate Anchorage Replacement
- Mac Lock Controls Replacement

Remaining key priorities
- Poe Miter and Quoin Block Replacement
- Poe Electrical Rehabilitation
- Poe Lock Gate 1 Replacement
- Pier rehabilitation
New Poe-Size Lock

- WRDA 2007: Construction at 100% federal expense
- Inconsistent with Administration policy due to BCR of 0.73
- Conducted a partial benefits reanalysis to determine if some benefit categories were not captured or if insufficient information was used. Completed in Dec 2014.
GL Navigation Funding History

Fiscal Year

- **2008**: $60,000
- **2009**: $80,000
- **2010**: $100,000
- **2011**: $120,000
- **2012**: $140,000
- **2013**: $160,000
- **2014**: $180,000
- **2015**: $200,000

- **Navigable O&M and CDF Funds (in $000’s)**
  - **Executable – Backlog Reduction Funding Range**
  - **Sustainable Funding Range**

Legend:
- **ARRA**
- **Adds and National Provisions**
- **President's Budget**
Great Lakes Navigation System’s Transporting Rates Savings

$3.6 BILLION/year for a $90 Million/yr total investment!

- More competitive American steel
- Lower cost energy
- Lower cost concrete (construction)
- More competitive Grain for Export
- Less fuel consumption and greenhouse gas emissions
- Less congested highways/ rails
Questions