

# Great Lakes Navigation Update

February 2016



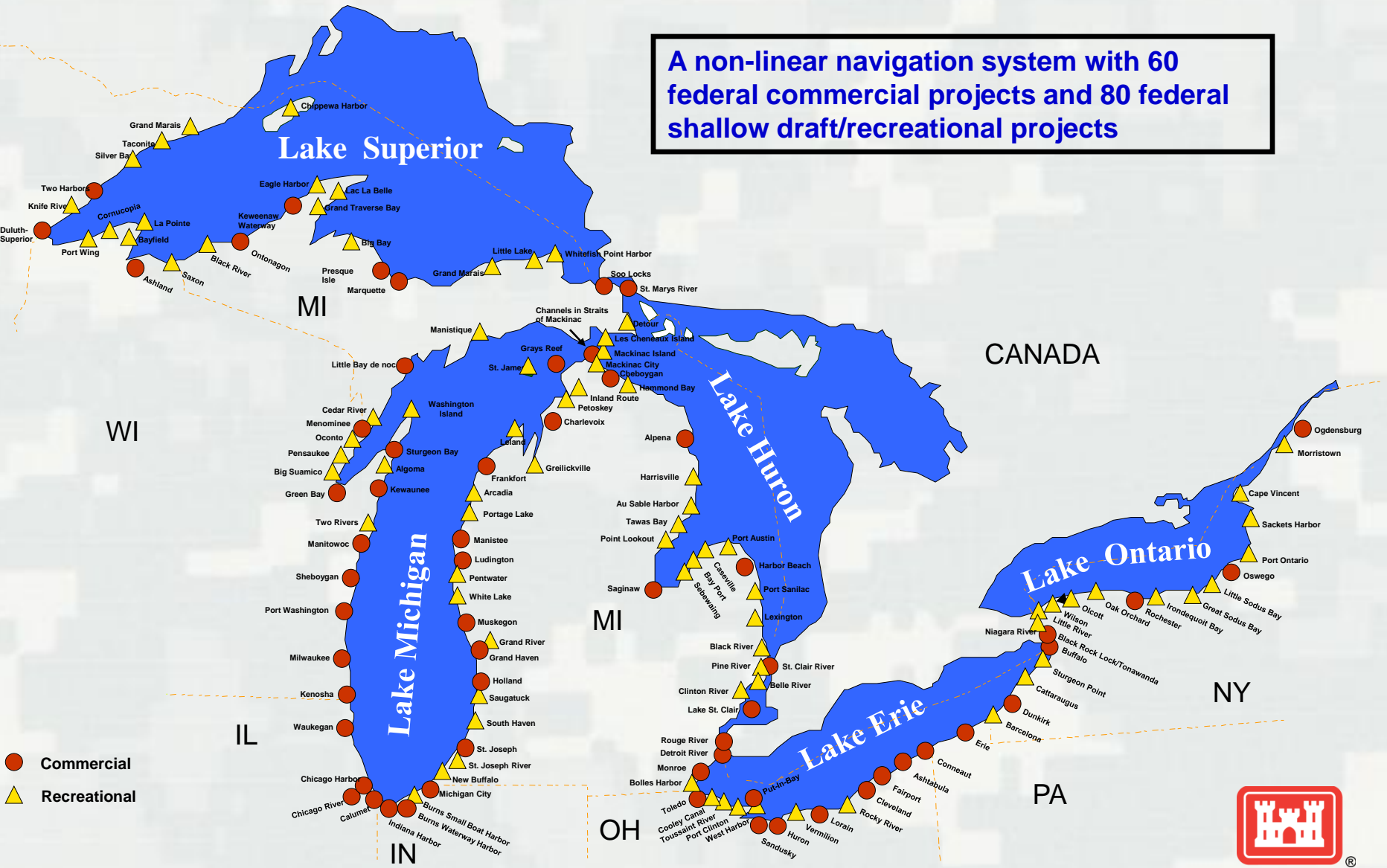
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# Federal Projects on the Great Lakes

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



- Commercial
- ▲ Recreational



# FY16 Corps Funding Status

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- Congress passed the FY16 Consolidated Appropriations Act; enacted Dec 18, 2015.
- The FY16 Appropriations bill included FY16 President's Budget with some adjustments, plus additional O&M funds for ongoing work – to be allocated by USACE HQ

## Additional Funding for Ongoing Work

- |                                     |         |
|-------------------------------------|---------|
| - Navigation Maintenance            | \$23.5M |
| - Deep-draft harbor and channel     | \$250M  |
| - Small, remote, or subsistence nav | \$48M   |



# FY16 Projects Funded from Additional Funds for Ongoing Work (\$32.9M)

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\$14M Dredging

Additional funds for:

- Duluth, MN
- Green Bay, WI
- Saginaw, MI
- Calumet, IL

New funding for:

- Alpena, MI
- Lorain, OH
- Fairport, OH
- Monroe, MI
- Manistique

\$10.9M Soo Asset Renewal

\$1.3M Chicago Lock Repairs

\$6.2M Structure Repairs (Ludington, Waukegan, Sandusky, Barcelona, Grand Haven)



# FY 16 Great Lakes Navigation Program

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\$142.8M Great Lakes Navigation Operations & Maintenance

## Key Items

\$59.2M in Dredging (30 projects – 4.4M cubic yards)

\$8.6M in Dredged Material Management

\$14.6M in Soo Asset Renewal

\$2.3M Chicago Lock Repairs

\$7.9M Structure Repair by Contract



# FY16 PBUD + Work Plan Dredging (\$59.2M)

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Duluth-Superior +  
Green Bay +

Erie

Indiana Harbor

Holland

Grand Haven

Saginaw River +

Ludington

Toledo

Presque Isle

Rouge River

Manistee

Conneaut

Sandusky

Cleveland

Alpena

Fairport

Huron

Waukegan

Burns Harbor

Monroe

Rochester

St. Joseph

Muskegon

Calumet +

Ontonagon

Lorain

Manistique

Manitowoc

Oswego



# FY16 Dredging Funding and Dredging Requirements



# FY 17 Great Lakes Navigation President's Budget

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\$102.8M Great Lakes Navigation Operations & Maintenance

## Key Items

\$38.4M in Dredging (20 projects – 3.2M cubic yards)

\$8.2M in Dredged Material Management

\$5.9M in Soo Asset Renewal





# FY17 PBUD Dredging Projects

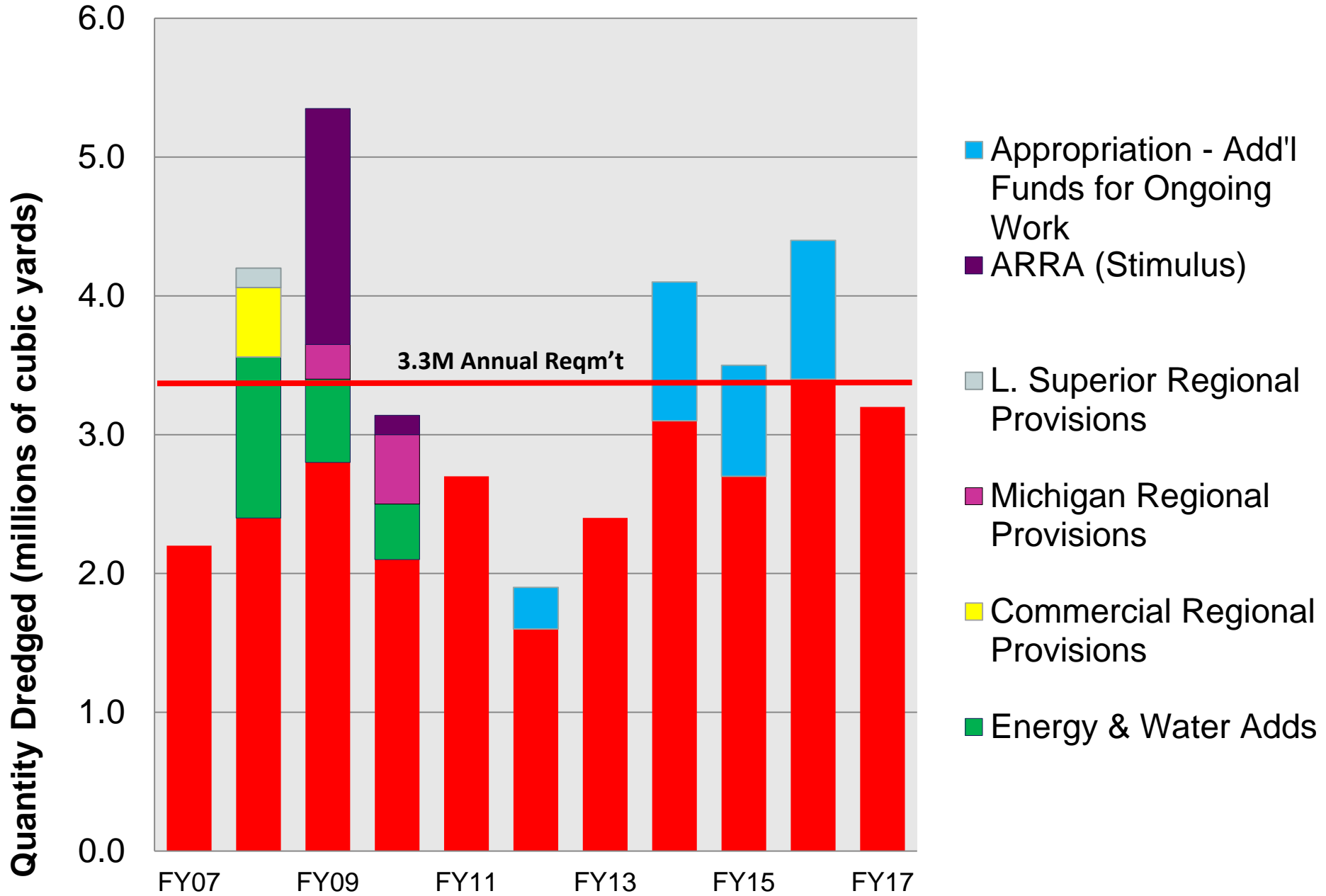
- Duluth-Superior
- Detroit River
- Green Bay
- Ashtabula
- St. Joseph
- Holland
- Grand Haven
- Burns Waterway
- Buffalo
- Keweenaw Waterway
- Indiana Harbor
- Sandusky
- Channels in Lake St. Clair
- Saginaw River
- Toledo
- Cleveland
- Calumet
- Waukegan
- Sturgeon Bay
- Fairport



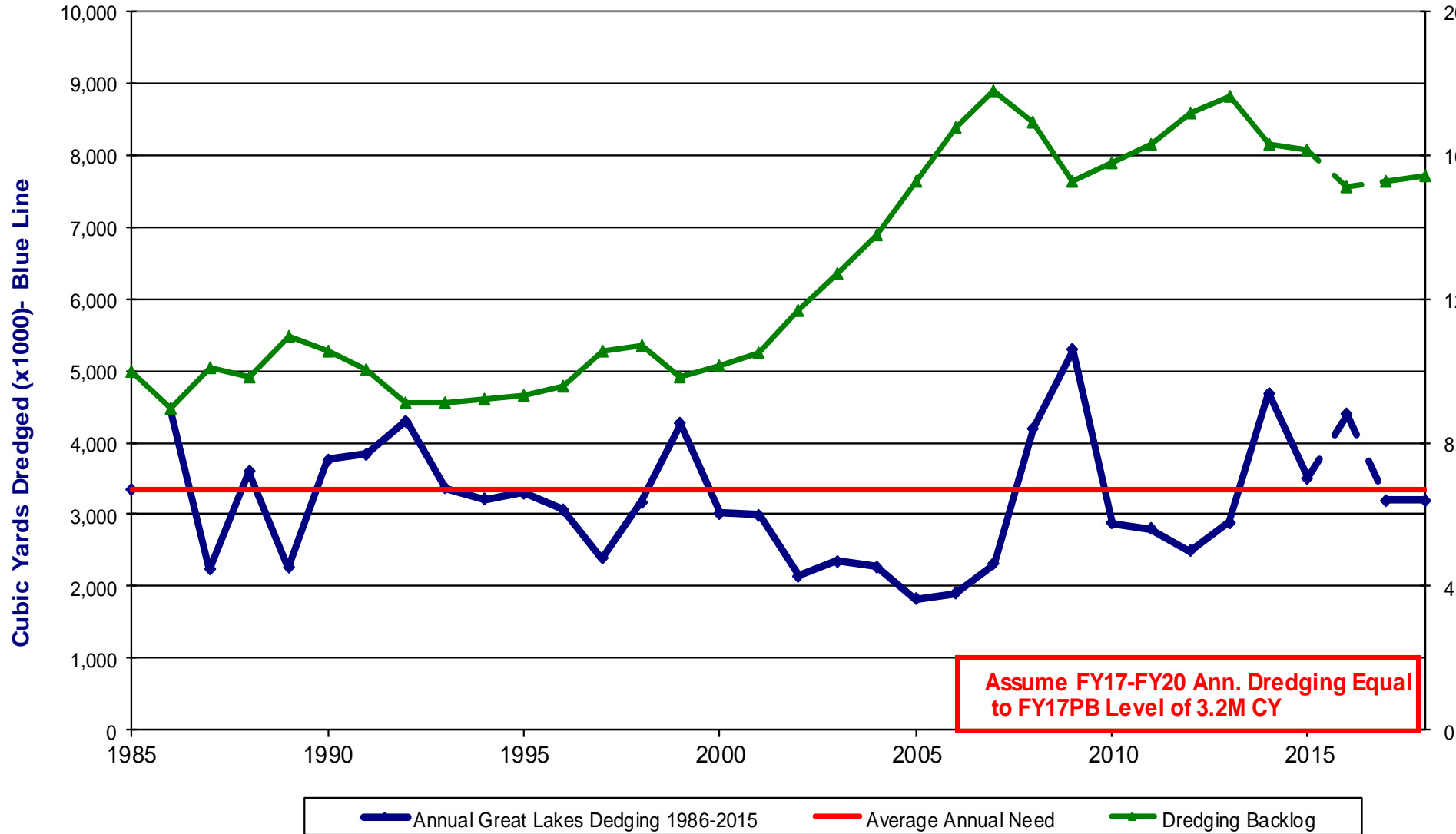
# FY17 President's Budget Dredging Projects



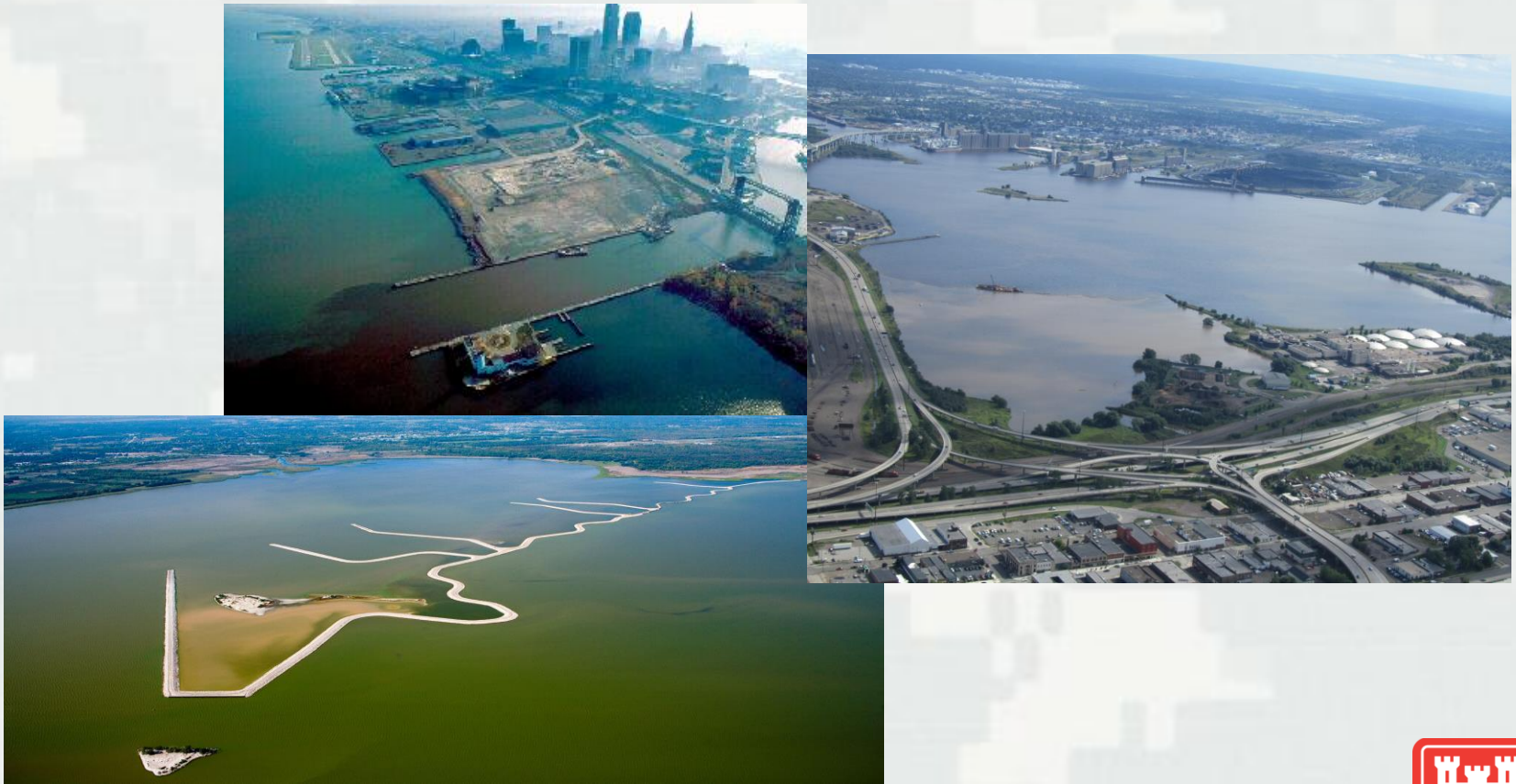
# Dredging Funding Trends 2007 – 2017



## Backlog Growth Under Constrained Dredging Funding 2016-2020



# Dredged Material Management



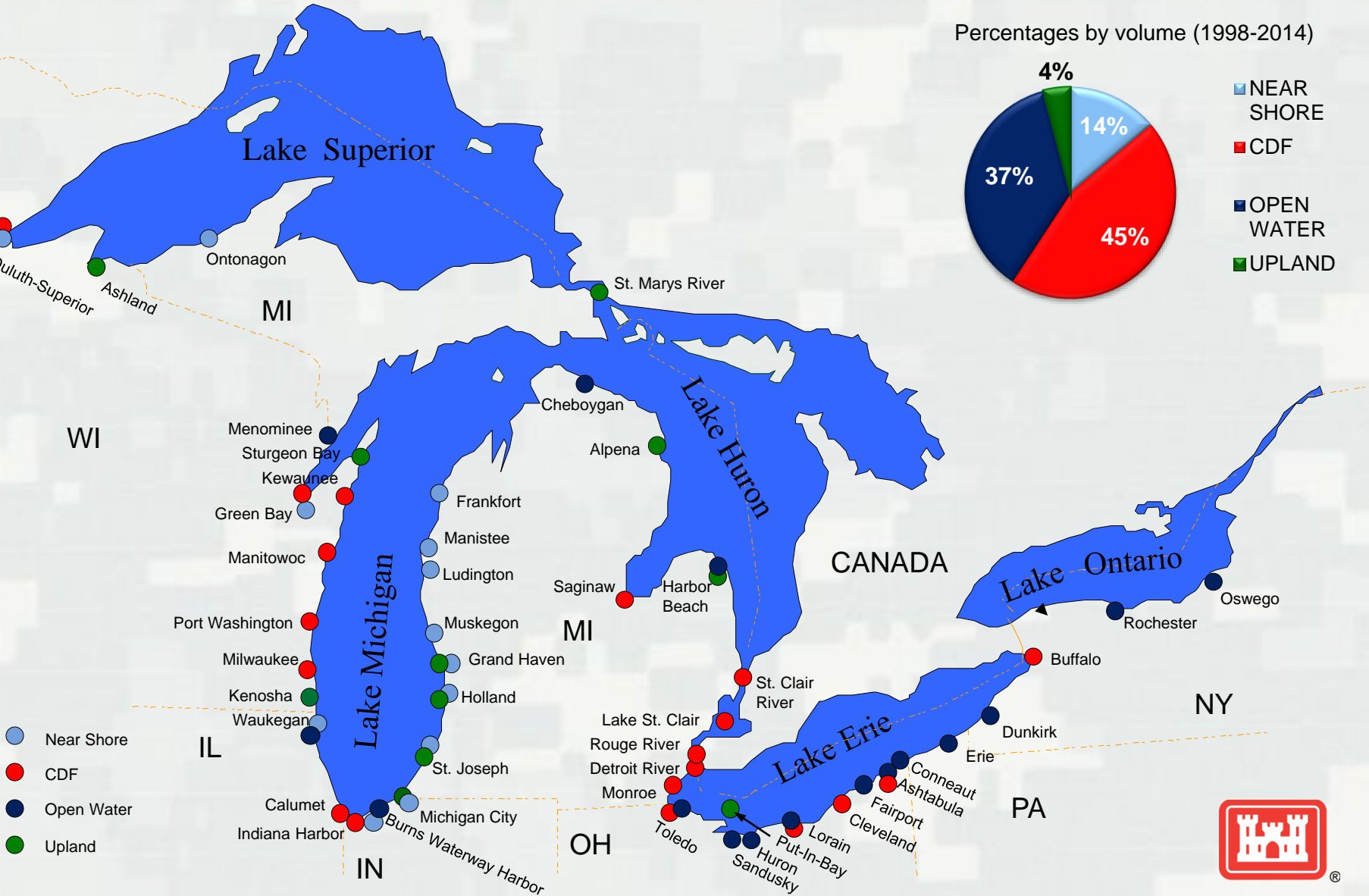
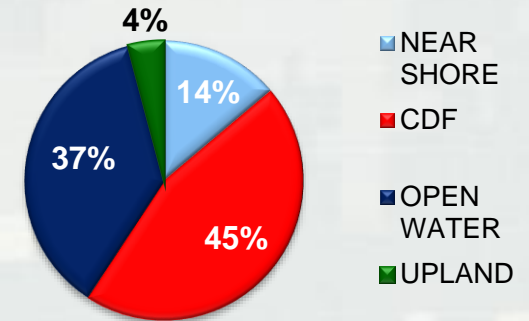
# Dredged Material Management Initiatives

- Engage state agencies and other partners and stakeholders in developing innovative long-term solutions to dredged material management challenges.
- Foster partnership with USEPA with its Great Lakes Legacy Act (GLLA) and Great Lakes Restoration Initiative (GLRI) programs to leverage funding for projects supporting both environmental goals and navigation benefits.
- Maximize the use of fill management and facility adaptation, such as routine raising of perimeter dikes and reworking the material within the facility to create additional capacity.
- Aggressively pursue opportunities for beneficially using dredged material to preserve or create CDF capacity within limits of federal rules
- Collaborate with partner agencies leveraging local and federal programs to reduce the amount of material entering federal navigation channels – sediment traps

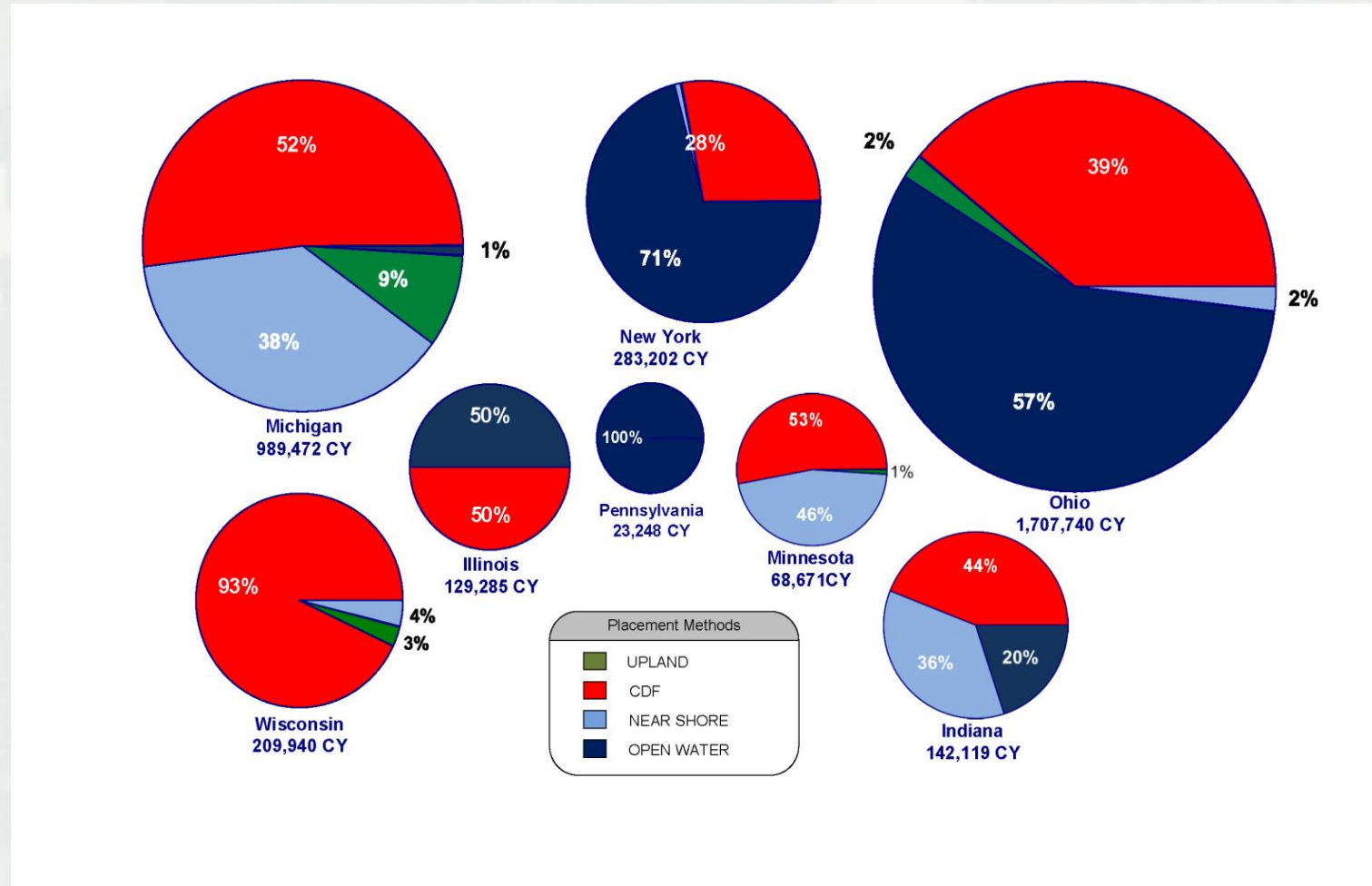


# Current Dredged Material Placement Methods

Percentages by volume (1998-2014)



# Dredged Material Management by State (1998 – 2014)





# Navigation Structures



# Great Lakes Navigation Structures - Purposes

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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



**Control and reduce  
shoaling in  
navigation channel**

**Control wave climate  
within navigation  
channel and harbor**



# Great Lakes Navigation Structure Conditions

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- 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



# Regional Risk Communication Meetings



# Soo Locks 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**

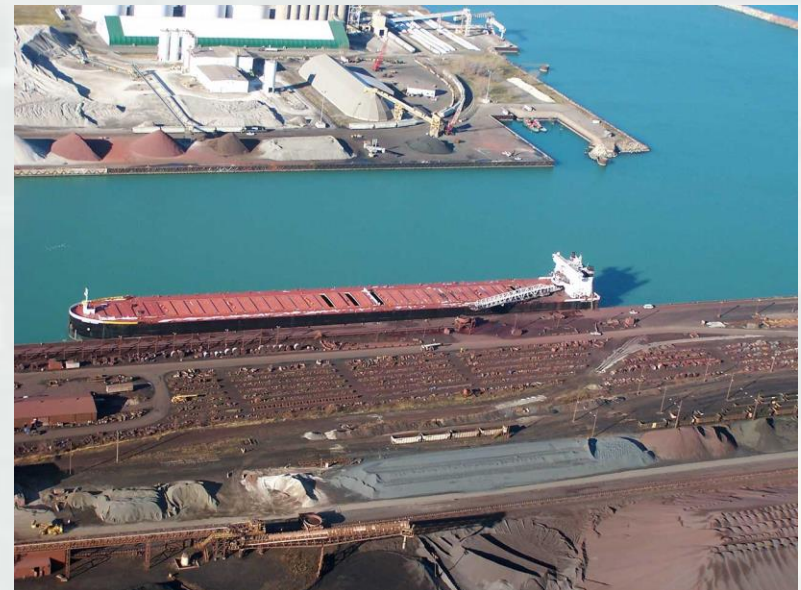
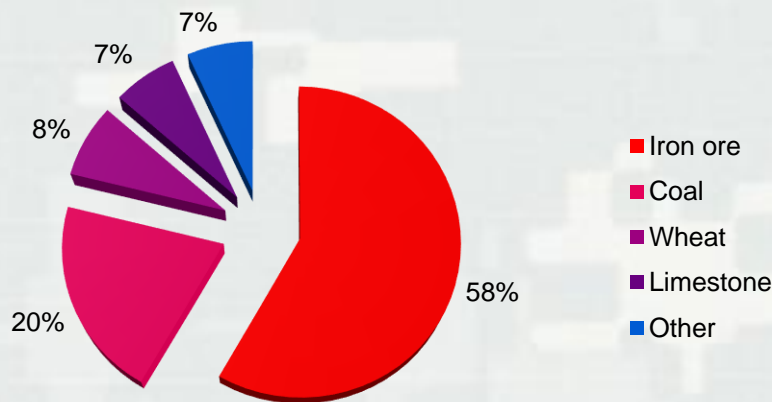
- Aging and deteriorating infrastructure; unscheduled outages are increasing
- There is currently no redundancy for the Poe Lock
- The economic impact of a 30-day unscheduled closure of the Soo Locks = \$160M



# Soo Locks – Iron Ore Impact Assessment

- Iron ore is by far the number one commodity transiting the Soo Locks
- 97% of iron ore mined in U.S. comes from Mesabi Range in MN or Marquette Range in MI.
- Integrated steel mills are located on the lower lakes Great Lakes; do not have the infrastructure to accept iron ore by any means but ship.
- Most of this iron ore passes through the Soo Locks.

Soo Locks 2013 Tonnage



# Corps Locks: Value and Economic Consequences

## Results – Ranked by Cost 30-day MAIN CHAMBER CLOSURE

	<u>mmtons</u>	<u>tons</u>	<u>30-day conseq</u>
<b><i>Soo Locks</i></b>	<b>71.4</b>	<b>5</b>	<b>1</b>
Calcasieu L, GIWW	36.7	19	2
Bowman L, GIWW	36.1	20	3
Lagrange L&D	25.4	25	4
Peoria LD	22.6	31	5
Bayou Boeuf Lock	25.9	24	6
Miss River LD24	23.9	27	7
Miss River LD22	23.3	29	8
Miss River LD19	20.8	33	9
Miss River LD25	23.9	28	10





# Corps Locks: Value and Economic Consequences

## Results – Ranked by tons MAIN CHAMBER CLOSURE

	<u>mmtons</u>	Ranked by: <u>30-day conseq tons</u>	
Ohio River LD 52	88.8	42	1
Ohio River LD 53	76.7	105	2
Newburgh LD	76.2	23	3
Smithland LD	75.0	128	4
<b>Soo Locks</b>	<b>69.5</b>	<b>1</b>	<b>5</b>
John T. Myers LD	69.4	49	6
McAlpine LD	65.2	137	7
Cannelton LD	64.9	46	8
Miss River LD27	58.7	38	9
Markland LD	55.6	96	10





US Army Corps of Engineers

# A Quick History of the Soo Locks

1968

## Second Poe Lock opens

As the design for a new lock neared completion it became clear that an even larger lock would be needed as boats measuring 1,000 feet-long were being planned. Originally set to be 1,000 feet-long and 100 feet-wide it was redesigned to its current size of 1,200 feet-long and 110 feet-wide.



2009

## Preparatory work for new lock completed

Funds were provided to build coffer dams at each end of the Sabin Lock and to dredge the approach channels to 28.5 feet.



1919

## Sabin Lock opens

An exact twin of the Davis Lock, it was begun even before the Davis was finished. It is also the only lock on the site named for a civilian, Louis Sabin, the only civilian to ever serve as the Detroit District Engineer.



1896

## Poe Lock opens

Built on the site of the former State Lock, the Poe lock was 800 feet long and 100 feet wide.



1855

## “State Lock” opens

Built in only two years this tandem lock used two chambers each measuring 350' X 70' and each with a lift of 10 feet to bypass the rapids.

This lock was operated and maintained by the State of Michigan.



1798

## First Lock on St. Marys River

To support the growing fur trade, the Northwest Fur Company built a canoe lock on the north shore of the river. This lock was approximately 40 feet-long and 9 feet-wide.



1750

1800

1850

1900

1950

2000

2050

Today

1814

## Lock Destroyed

During the War of 1812 American forces destroyed the British lock. Goods had to be unloaded and stored in warehouses at either end of the falls and transported on a railway running down Portage Avenue.



1883

## Wietzel Lock opens

This lock was the first one to fill and empty the chamber through openings in the floor, reducing turbulence in the lock.

During its construction in 1881 the entire facility was transferred from the state to the U.S. Army Corps of Engineers.



1914

## Davis Lock opens

At 1,350 feet-long the Davis lock held the honor of being the longest lock in the world when it opened.



1943

## MacArthur Lock opens

Opening of a new, deeper lock became a matter of national security during World War II and the MacArthur Lock was built in 15 months. During the war thousands of soldiers were stationed at the Soo to protect the locks and the flow of iron ore.



1986

## New Lock Authorized

As part of the Water Resources Development Act, Congress authorized the construction of a new lock to be built on the site of the Sabin and Davis Locks. This new lock will be the same size as the Poe Lock.

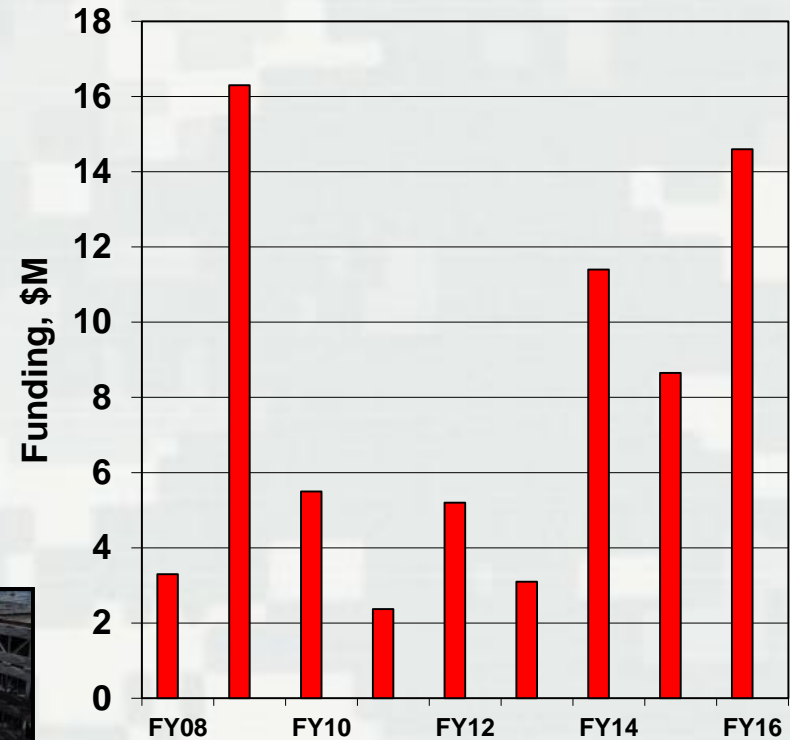


It has been nearly 50 years since a new lock was built at the Soo

# Soo Locks Asset Renewal Long-Term Plan

Asset Renewal Plan will maximize reliability and reduce risk through 2035

- \$70.5M funded to date through FY16
  - New hydraulics, stop logs, utilities
  - Compressed Air System
  - Gate Anchorage Replacement
  - Mac and Poe Electrical System Replacement
- Remaining key priorities
  - Poe Miter and Quoin Block Replacement
  - Poe Lock Gate 1 Replacement
  - Pier rehabilitation



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# New Replacement Lock



- WRDA 2007: Construction at 100% federal expense
- Inconsistent with Administration policy due to BCR of 0.73
- Currently conducting an economic reevaluation to update both the benefits and the costs to update the BCR.
- Economic Reevaluation began in Nov 2015; expected to take 24 months to complete.

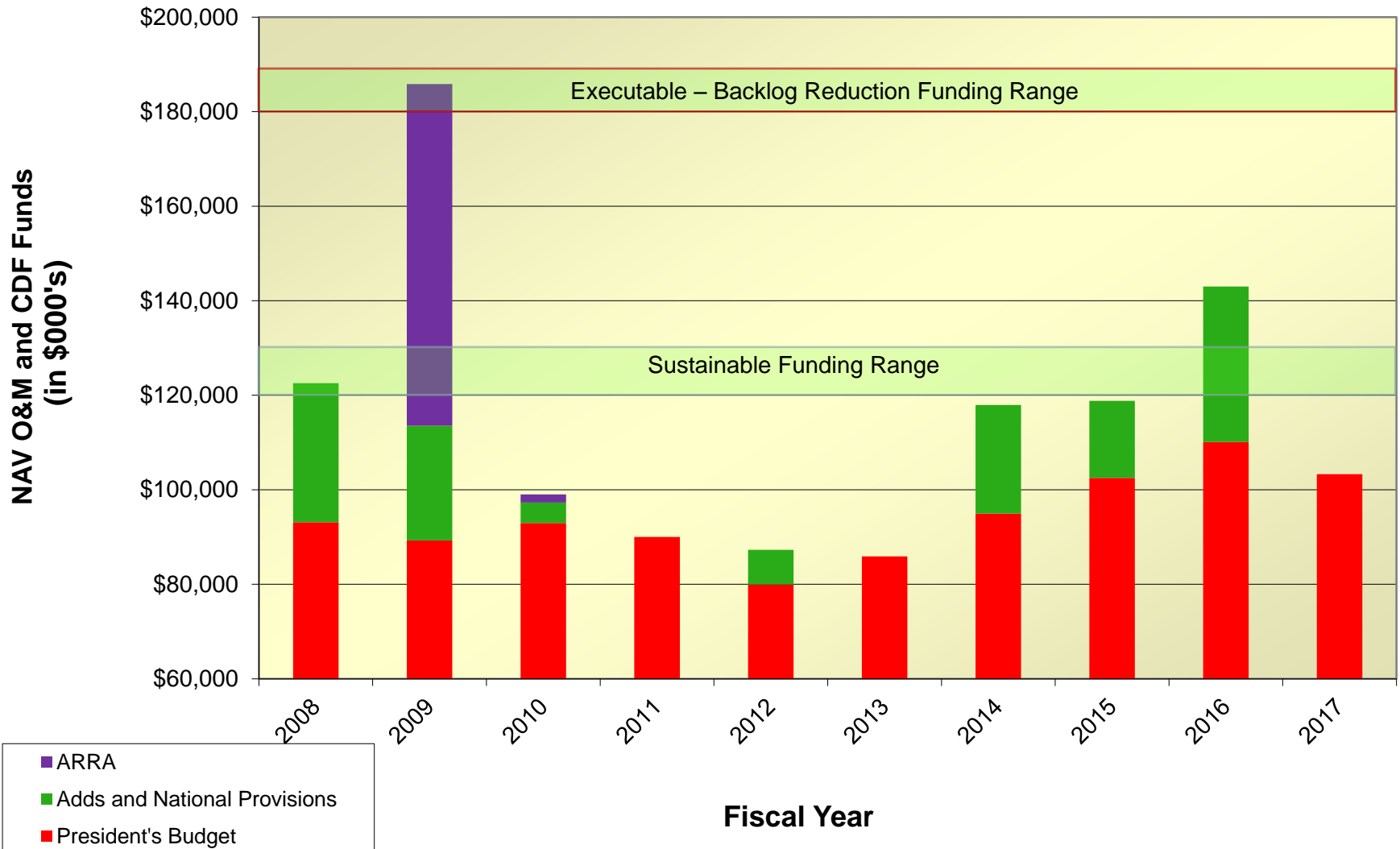


# Economic Reevaluation Report

- The outcome of Partial Benefits Analysis in 2014 was that a level 3 Economic Reevaluation Report (ERR) is warranted as described in Civil Works Policy Memorandum 12-001
  - Economic data is > 5 yrs old
- Funding in the amount of \$1.3M has been received to fund the ERR
- Specialists from several Districts will be involved along with the Planning Center of Expertise for Inland Navigation (Huntington) and the Civil Works Cost Engineering MCX (Walla Walla)
- The entire ERR process is expected to take 24 months from the receipt of funds



# GL Navigation Funding History



# Communication

- Stakeholders Meetings
  - ▶ Shallow Draft/Recreational Harbor Stakeholder Meeting - March 2, 2016  
Detroit, MI and all District and Area Offices
  - ▶ Annual Stakeholder Meeting  
April 14, 2016 Chicago, IL
- Web Site:  
[www.lre.usace.army.mil/greatlakes/navigation](http://www.lre.usace.army.mil/greatlakes/navigation)
  - ▶ Fact Sheets, Presentations
  - ▶ Requests for information, to be added to mailing list, etc.: [glnavigation@usace.army.mil](mailto:glnavigation@usace.army.mil)



# Key Great Lakes Navigation Contacts

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[www.lre.usace.army.mil/greatlakes/navigation](http://www.lre.usace.army.mil/greatlakes/navigation)

