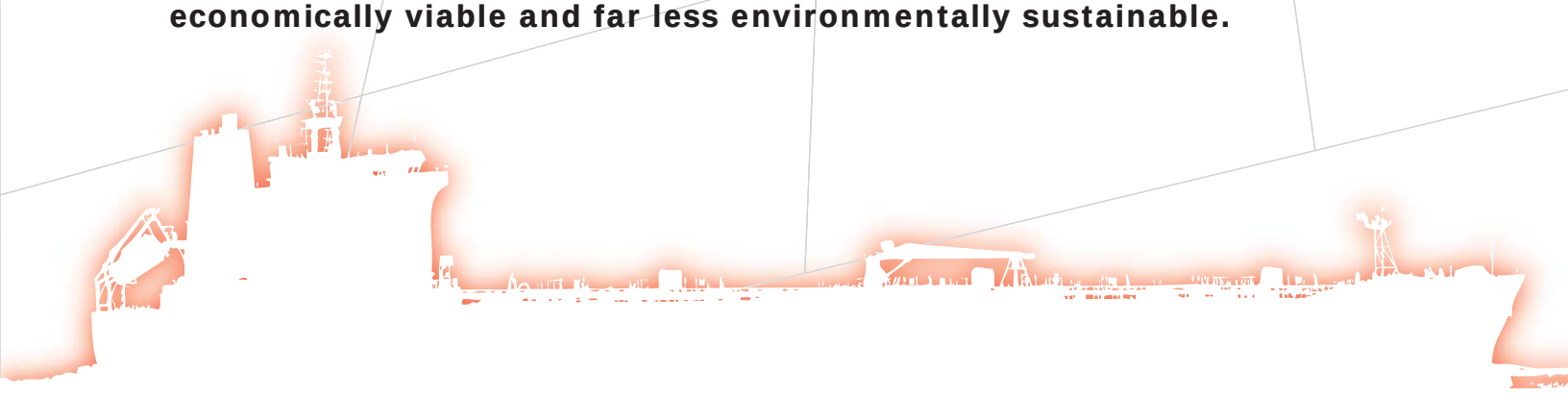
U.S. ARMY

US Army Corps of Engineers

Great Lakes Navigation System:
ECONOMIC STRENGTH
to the Nation

The Great Lakes Navigation System (GLNS) is a complex deepwater navigation system stretching 1,600 miles through all five Great Lakes and connecting channels from Duluth, Minnesota to Ogdensburg, New York. It is a non-linear system of interdependent locks, ports, harbors, navigational channels, dredged material disposal facilities and navigation structures. Maintaining Great Lakes navigation infrastructure as a viable, functional system is essential to preserving the health and vitality of the region and the nation in an environmentally sustainable manner.

The GLNS is a vital component of America's transportation system. It contains 25 of the nation's top 100 harbors by tonnage. The 63 large and smaller federal commercial ports on the Great Lakes are linked in trade with each other, with Canadian ports, and with ports throughout the rest of the world. Unlike ports along the eastern and western U.S. coasts that compete against each other for trade business, the GLNS is unique in that its ports do not compete with each other. Great Lakes ports are part of an overall system that competes against other modes of transportation that are less economically viable and far less environmentally sustainable.



Great Lakes Navigation System:
Economic Strength to the Nation

Creating Positive Economic Benefits

In 2006, approximately 173 million tons of commodities were transported to and from U.S. ports located on the waterways of the Great Lakes system. This accounts for about 10 percent of all U.S. waterborne domestic traffic. The Great Lakes Navigation System (GLNS) moves vast quantities of coal from Montana and Wyoming through Lake Superior ports to power-generating stations in many metropolitan areas of the Great Lakes.

The GLNS transports more than 80 percent of the iron ore used in the U.S. steel industry. Other commodities shipped through the system include coal, limestone, grain, salt, cement, processed iron and steel, petroleum products, chemicals and a variety of other goods. Economic forecasts project that the tonnage on the GLNS will continue to grow at a modest pace over the next 40 years, with an increase in tonnage of 25-30% expected by the year 2050.

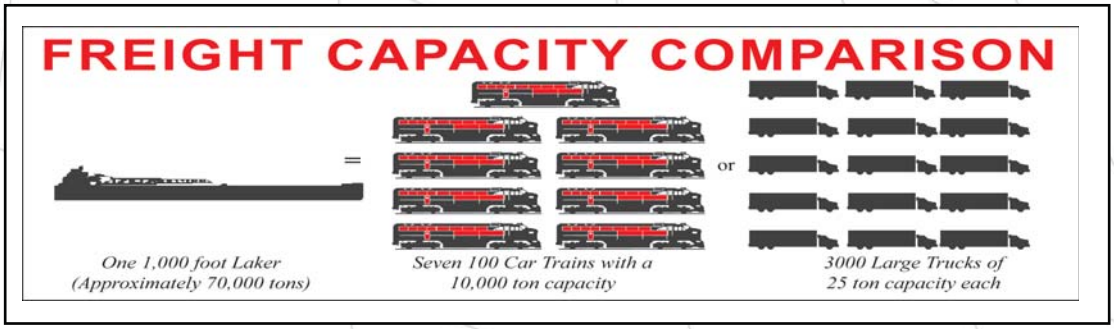
The true importance of the GLNS rests with its geographic location: the GLNS is located in the core of North America's industrial and manufacturing heartland. The prosperity of several key sectors of the U.S. economy depends on the Great Lakes navigation system. These sectors include iron and steel, cement manufacturing, energy production and agricultural exports. These industries depend on the availability of reliable, low-cost waterborne transportation. The GLNS saves approximately $3.6 billion per year over the next least costly mode of transportation. This translates directly into more competitive American steel, lower cost energy, and lower cost concrete for construction in our cities and on highways. The GLNS also provides a positive economic impact to the U.S. economy as a jobs provider.

The steel industry relies heavily on iron ore carried by Great Lakes ships.

Providing a Low-Cost, Low-Emission Mode of Transportation

There are 44,000 jobs directly related to maritime transport (e.g., ports, shippers, longshoremen). Over 54,000 jobs in the mining industry are dependent on the GLNS. In the steel industry, 138,000 jobs are dependent on the GLNS. This is in addition to the hundreds of thousands of additional jobs that are related to these industries such as auto manufacturing.

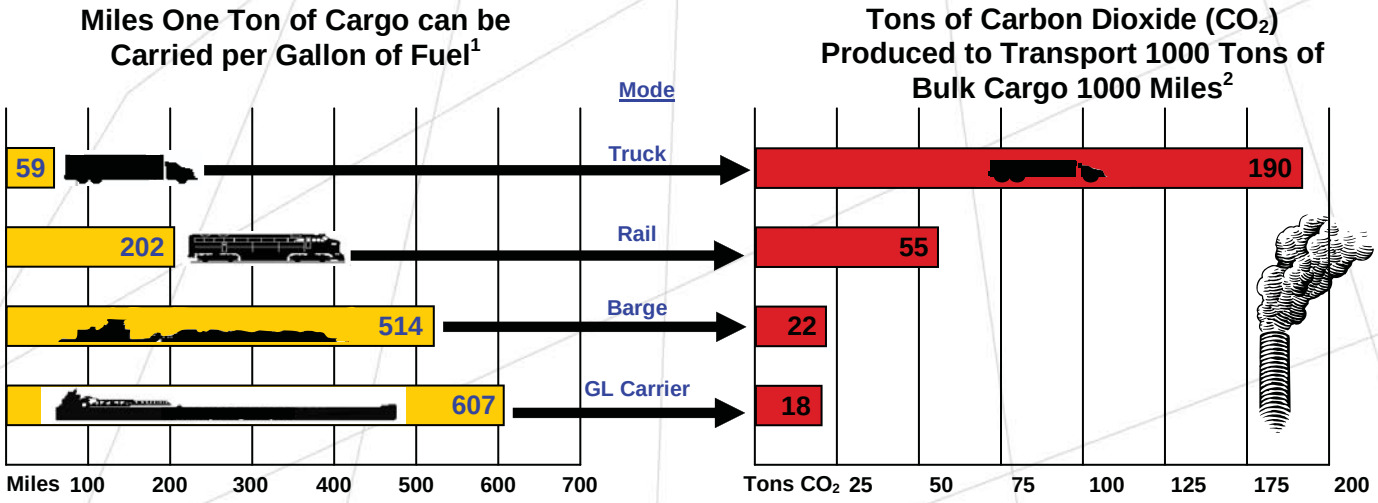
The GLNS plays a key role in preserving our nation's fuel. The fuel economy of maritime transportation is significantly higher than any form of ground transportation. For example, a Great Lakes carrier travels 607 miles on one gallon of fuel per ton of cargo. In contrast, a truck travels a mere 59 miles on one gallon of fuel per ton of cargo and a freight train travels only 202 miles on one gallon of fuel per ton of cargo. In one delivery, a 1,000-foot Great Lakes carrier supplies 70,000 tons of cargo. It would take nearly 3,000 semi truckloads to haul the same load. The trucking mode of transportation not only is much less fuel efficient, it creates significant wear-and-tear on the nation's infrastructure and increases congestion on already clogged roadway arteries.



Industry depends on the GLNS to deliver raw materials that are crucial to the manufacturing, construction, and power sectors of the U.S. economy.

Figure 1

Fuel Efficiency and Environmental Impact
Great Lakes Navigation



1. Source: USDOT Maritime Administration and Minnesota Department of Transportation
2. Assumes US DOE Fuel and Energy Emission Coefficient of 22.38 lbs of CO_2 per gallon (No.1,2,4 Fuel Oils and Diesel)

The amount of carbon dioxide emissions is also significantly lower in maritime transportation as compared to ground transportation, as shown in Figure 1. A cargo of 1,000 tons transported by a Great Lakes carrier produces 90 percent less carbon dioxide as compared to the same cargo transported by truck and 70 percent less than the same cargo transported by rail. The GLNS offers a fuel-efficient, low carbon producing, and low-cost option of transportation for millions of tons of bulk material that are vital to this country's industrial strength.

Ships in the Great Lakes have the capacity to transport cargo with less impact on the environment than trucks or trains.

Leveraging Mother Nature's Natural Dredging

The GLNS has a distinct advantage over other modes of transportation such as truck and rail: 90 percent of the shipping lanes in the GLNS use the lanes exactly as the glaciers left them. There is no need for maintaining these shipping lanes because they were gouged deep by the glaciers. The nation has entrusted the maintenance of the remaining 10 percent to the U.S. Army Corps of Engineers. This includes dredging the connecting channels and harbors and maintaining locks in proper working condition. This tremendous transportation route leverage is unrivaled in other modes of transportation – maintain 10 percent and get 90 percent free.

Strengthening the Navigation System

The U.S. Army Corps of Engineers has managed the GLNS since the 1820s. In recent years however, shrinking federal budgets combined with aging infrastructure and lower lake levels have strained the Corps' ability to adequately maintain the system. Consequently, a backlog of maintenance needs has accumulated, including rehabilitation and modernization of the locks at Sault Ste. Marie, Michigan (Soo Locks); dredging of over 17 million cubic yards of material from harbors and channels; construction or expansion of many critical dredged material disposal facilities; and repairs to many of the over 100 miles of breakwaters on the system. In addition, construction of a new lock at the Soo is essential to maintaining the reliability of the system.

Naturally deep channels in the Great Lakes allow deep draft ships to transit the vast majority of the system unimpeded.

Figure 2

The critical needs in the aging Great Lakes Navigation infrastructure are illustrated in red, indicating more than 50 percent have failed, or are failing.

Aging infrastructure, persistent low water levels and constrained budgets have combined to produce a situation in the Great Lakes Navigation System where over half the harbors and projects are rated either failing or failed (condition D/F); that is, they are not adequately serving the navigation needs for which they were designed. Figure 2 illustrates the deteriorating situation.

The Corps' Great Lakes Navigation team has taken the condition assessment illustrated above and identified a plan to address the critical needs of this regional system. The plan serves as a program implementation guide to engage stakeholders and focus resources on the system's most critical needs in terms of reducing risk and optimizing reliability. The plan describes the investments required for the GLNS for the years 2009-2013. The goal is to develop a regional asset management plan in coordination with stakeholders that articulates system priorities.

Locks: Lynch Pins of the System

The Corps operates and maintains three lock systems on the Great Lakes: The Soo Locks (Poe and MacArthur Locks), the Chicago Lock and the Black Rock Lock in Buffalo. The Chicago Lock is one of the busiest locks in the nation with annual lockages of 12,000. Over 35,000 commercial and recreational boats, with 680,000 passengers and 125,000 tons of freight, pass through the lock annually. The lock allows safe passage of boats navigating the 2 to 5 foot water level difference between Lake Michigan and the Chicago River. The lock also serves as a flood damage reduction structure with gates that must reliably open when needed to prevent flooding of downtown Chicago from the Chicago River. Routine annual operation and maintenance activities do not support needed repairs to the lock, which include the replacement of the four sector gates and the associated operating machinery and electrical systems.

The five year GLNS plan focuses on the following components:

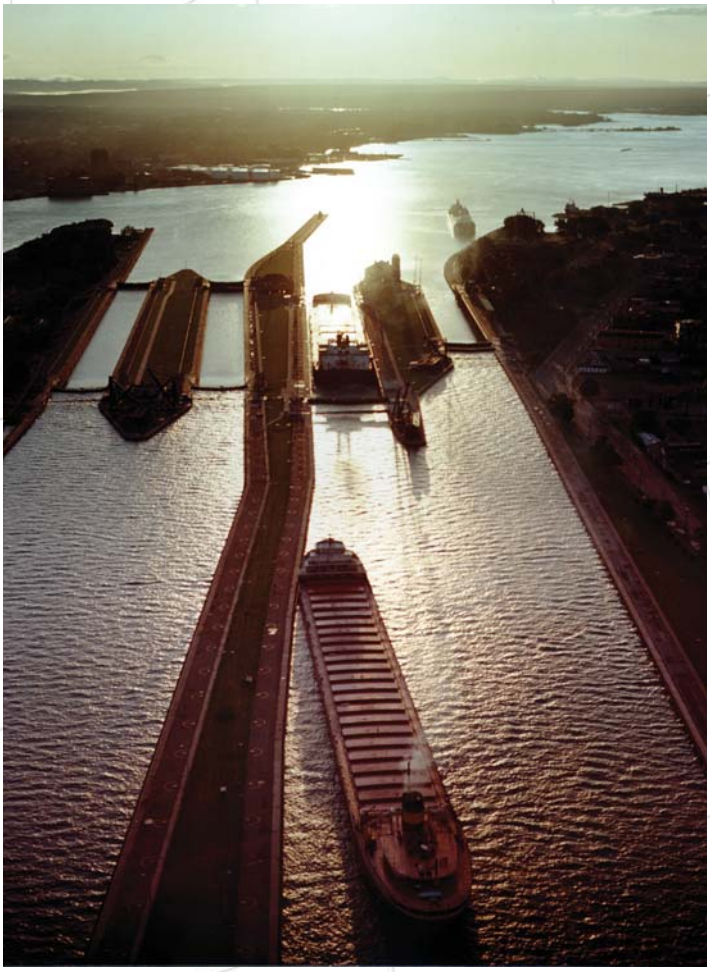
1. **Restoration of locks**
2. **Construction of a new lock at the Soo**
3. **Removal of dredging backlog**
4. **Expansion and construction of dredged material disposal facilities**
5. **Repair of breakwaters and structures**

The following sections describe each of the specific needs of the Great Lakes system in detail and explains the risks and consequences of not meeting those needs.

Locks are critical infrastructure in the Great Lakes system. (Left) the Chicago Lock in Chicago, Ill.

The Black Rock Lock in Buffalo, New York provided safe passage for 328 commercial and 1,377 recreational boats in 2007. The lock and a two-mile-long pier that separates the channel from the Niagara River allow vessels to bypass the swift and dangerous waters of the Niagara River. Routine annual operation and maintenance activities do not support needed repairs to the lock, which include replacement of the gate sills and fendering.

The Soo Locks facility is located on the St. Marys River at Sault Ste. Marie, Mich., on the international border with Canada. The locks assist ships navigating the 21 foot drop from Lake Superior to the St. Marys River. There are two operating locks at the Soo: the 66 year old MacArthur Lock and the 40 year old Poe Lock.



(Above) The Soo Locks in Sault Ste. Marie, Mich. and the Black Rock Lock (bottom left) in Buffalo, N.Y.

The St. Marys River is a water bridge connecting Lake Superior with Lake Huron and serves as a critical link in the Great Lakes/St. Lawrence Seaway System. Over 80 million tons of commercial commodities pass through the Soo Locks annually. However, only the Poe Lock has the necessary dimensions to pass all Great Lakes vessels that are currently in operation. In the event that the Poe Lock is out of service, approximately 70 percent of commercial carrying capacity would be unable to transit the facility. The Lake Carriers' Association has described the Poe Lock as the "single point of failure that can cripple Great Lakes shipping." A recent study estimated that a 30-day unscheduled closure of the Soo Locks would have an economic impact to industry of $160 million.

Without the Poe Lock, America's steel industry would be severed from its major source of iron ore. Without the Poe Lock, power plants throughout the Great Lakes would not have sufficient coal to supply electricity to major cities such as Detroit and Toledo. There are two major efforts underway to ensure the reliability of the Soo Locks: maintaining the existing infrastructure through the Asset Renewal program and adding redundancy with the construction of a new lock with the same dimensions as the Poe Lock.

Two ships locking through at the Soo Locks in the MacArthur Lock on the left and the Poe Lock on the right.

Soo Locks Asset Renewal Plan: Improving Efficiency and Reducing Risks

The Poe Lock is the Achilles heel of the Great Lakes Navigation System. There is currently no redundancy for the Poe Lock. If the Poe Lock goes down, 60 million tons of commerce would have to go by alternate modes of transportation. In that event, the existing infrastructure is insufficient to support the vast quantities of tonnage that would have to bypass the lock. This underscores the tenuous situation that the Great Lakes shipping industry faces. Since the Poe Lock is a 40-year old facility, there are many potential points of failure. To reduce the risks of unscheduled lock outages and vessel delays, the Corps is implementing a multi-year plan to rehabilitate and modernize the existing infrastructure of the Soo Locks facility.

The Soo Locks is a critical link in the GLNS, allowing ships to carry raw materials such as coal, iron ore, and stone aggregate to ports throughout the system such as this one on the Rouge River.

The Corps has developed a detailed six-year Soo Locks Asset Renewal Plan that defines the project requirements needed to maximize reliability and reduce the risk of catastrophic failure at the Soo Locks. This plan outlines the work necessary over the next six years to prevent unscheduled closures and provide reliable infrastructure at the Soo Locks through the year 2035. Although construction of a new lock would provide the desired redundancy, a new lock would not be operational for a minimum of 10 years from now. In the meantime, the Corps must conduct the Asset Renewal program on the existing infrastructure at the Soo to reduce risks of unscheduled closures even while the new lock is under construction.

Critical repairs and upgrades that are part of the Asset Renewal Plan must be completed during the short 10-week period that the Soo Locks are shut down each winter.

The Soo Locks Asset Renewal Plan includes completely replacing the Poe Lock hydraulics system. The Poe Lock hydraulics system was responsible for four unscheduled outages in 2008, which delayed shipping on four separate occasions. The Poe Lock is currently equipped with 24 separate hydraulic power units. Each piece of equipment has its own hydraulic power unit, which has no redundant pump or motor. The new hydraulic system will have only 4 hydraulic power units, each of which is equipped with a redundant pump and motor. Other items in the Asset Renewal Plan include a new air compressor system, which is critical for deicing the gates, purchase of stoplogs so that the Poe gates can be removed and repaired if necessary, and rehabilitation of the Rock Cut, a critical hard-bottom channel in the St. Marys River where the steep banks are in need of stabilization. Funding for the full Asset Renewal Plan is $70 million, approximately $12-15 million per year. This is a cost-effective investment considering that the economic impact of a single 30-day unscheduled outage of the Soo Locks is $160 million.

New Soo Lock: Providing Critical Redundancy

Congress has recognized the need for a second Poe-sized lock for over 20 years. The 1986 Water Resources Development Act (WRDA) authorized construction of a new lock, but the project has had many funding challenges over the years. The 2007 WRDA, however, authorized construction of the new lock at full federal expense.

Having full redundancy at the Soo Locks offers many benefits to the regional and national economy. However, another important aspect of the project is the economic benefit of the construction itself. Construction of the new lock would generate approximately 15,000 jobs over the expected 10-year construction period. This equates to an estimated $540 million in wages. These are jobs related not only to the construction industry, but also include all the associated jobs for suppliers and service providers.

If Congress directs initiation of construction of the new lock at the Soo by providing funding in 2009, the Corps is prepared to execute $100 million, which includes awarding contracts for the cofferdam, channel deepening within the cofferdam, and guide wall construction. In fiscal year 2010, the Corps could execute another $25 million for excavation outside the cofferdam and award the lock chamber contract. Construction of the lock itself would likely begin in late 2011 or 2012 and require at least six years to complete. The current working estimate for construction of the entire project is $490 million (2008 dollars).

Construction of the new lock would generate approximately 15,000 jobs over the expected 10-year construction period.

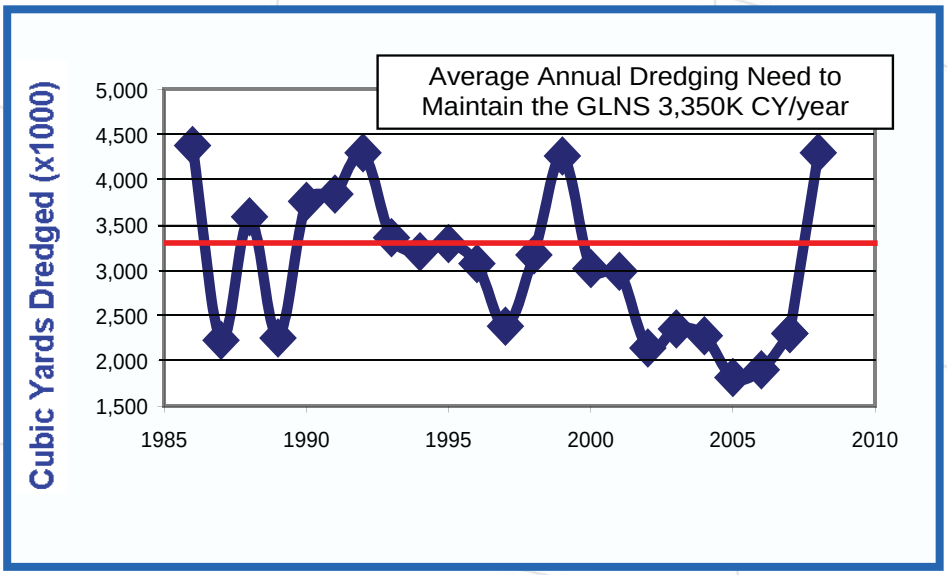
(Far left) The Poe Lock, completed in 1968, was the last lock built in the Soo Locks system, the only passage between Lake Superior and the lower lakes. (Left) The new lock will replace two of the older locks, as shown in an artist's rendition.

Backlog Dredging: Restoring Channel Functionality

Dredging is vital to the functionality of the GLNS as a whole. Constrained funding over the past eight years has allowed a critical dredging backlog to grow to an unprecedented level in major navigation channels and harbors. The growth of backlog, especially combined with low water levels over the past 10 years, increases costs to shippers and industry. When harbors and channels shoal in, ships have to light load, which increases the transportation cost because more trips are required. The Lake Carriers' Association reports that for every one foot in lost draft, the Great Lakes fleet forfeits more than 200,000 tons of cargo each trip. This equates to over 16 million lost tons per year per foot of lost draft, which has a large negative impact on our national economy.

In 2008, for the first time in eight years, the Corps was provided funds that allowed some backlog to be dredged. In addition to the increased funds, the Corps was also given flexibility in terms of three regional dredging provisions, which proved to be an efficient means to meet critical system needs and optimize scarce dredging funds. The three provisions allowed the Corps to work with stakeholders in an open, technically-based process using current shoaling conditions, water levels, and contractors bids to decide on the best allocation of scarce dredging funds. These three provisions increased the flexibility and improved the effectiveness of the 2008 fiscal year dredging program.

Lack of adequate dredging causes vessels to lightload to safely transit channels and ports.



Hydraulic dredging (top) and mechanical dredging (above) are the types of dredging operations used to clear channels and harbors on the Great Lakes.

The federal budgeting process requires the Corps to project system needs two years in advance. However, the regional dredging provisions in the 2008 budget allowed the Corps and stakeholders to take a holistic view of the system and apply the funds to the most critical needs in the year they were used, thus increasing the efficiency of dredging funds by applying the funds to real-time needs.

The Corps has identified system needs to restore the Great Lakes navigation channels to full functionality (maintenance of channels to authorized depths and sufficient widths). Currently, due to limited funding, most commercial navigation channels are maintained at less than the fully functional level, which has resulted in a backlog of dredging needs throughout the system.

Approximately 3.35 million cubic yards of material are deposited annually in the federal harbors and channels of the Great Lakes. From the mid 1990s to 2007, constrained funding led to a growth of dredging backlog of over 18 million cubic yards by the end of 2007. In 2008, for the first time in 8 years, funds allowed for dredging more than the annual requirement, which reduced the backlog by approximately one million cubic yards to bring the backlog back down to 17 million cubic yards. Approximately $40 million is required each year to keep up with the annual dredging requirement. Another $200 million is required to completely remove the growing dredging backlog and restore the harbors and channels to full functionality.

Dredged Material Disposal Capacity: Ensuring Dredging Ability in the Future

Dredged material from about 40 percent of the harbors and channels on the Great Lakes must be disposed in confined disposal facilities (CDFs). There are 22 active CDFs on the Great Lakes. CDFs provide important environmental benefits in that they serve as a secure storage facility for material that is not suitable for open lake placement. However, nearly a third of the existing CDFs have no more than 5 years remaining capacity left. Without adequate CDF capacity, dredging operations will be limited, leaving shoaled material in the harbors and channels. For example, dredging of Cleveland Harbor is constrained by CDF capacity as the Corps and local sponsor work through an expensive construction plan for a new CDF.

Funding on the order of $30-40 million per year is needed to keep up with CDF construction needs on the Great Lakes. The increasing cost of CDF construction and increased environmental concerns make expanding the practice of beneficial reuse of material in the existing CDFs essential. Finding beneficial uses for stored CDF material removes the material from the CDF, thus creating additional capacity and extending the life of the facility. Programs that prevent soil erosion in the watershed can reduce sediment load to harbors, which decreases dredging needs. These initiatives have multiple environmental and economic benefits; two of which are a reduced need for dredging and reduced need for disposal capacity.

Dredging at Cleveland Harbor is currently limited by disposal capacity. Interim measures to increase capacity are being employed while construction of a new CDF is being planned.

Breakwaters and Structures: Providing Critical Protection

There are over 130 coastal cities and towns on the Great Lakes with federal navigation projects that include breakwaters; 63 of these projects currently support commercial navigation. Originally built to safeguard navigation in the federal harbors from waves and ice, these structures also provide critical flood and storm damage protection for buildings, roads, facilities and municipal infrastructure. In many cases, cities and downtowns have 'grown up' behind and are now safeguarded by federal breakwaters.

The Cleveland Harbor in Ohio (above left) and the Chicago Harbor in Illinois (left) provide critical flood and storm damage protection while supporting commercial navigation.

Over 50 percent of the coastal structures on the Great Lakes were built prior to World War I (1918) and 80 percent are older than their typical 50-year design life. Federal funding for maintenance of projects is prioritized based on economic benefits related to commercial navigation. Federal breakwaters at harbors with small amounts of commercial navigation are a low priority for funding. Funding for structure repairs at harbors with significant levels of commercial navigation has also been under funded for the last decade. The Corps' floating plant performs some preventive maintenance and minor repairs but does not have the capacity to perform major repairs or reconstruction.

The GLNS has approximately $50 million in annual needs for structure repairs. The majority of these needs represent significant repairs or reconstruction of navigation structures. In 2007 the three Great Lakes Districts formed a regional, multi-disciplined breakwater assessment team that developed technical assessment criteria and began inspecting and rating breakwaters around the Great Lakes. The breakwater assessment team's work will allow the Corps to prioritize these needs on a regional level so that the most urgent structures are given priority in the budget process each year.

The Corps floating plant performs maintenance and emergency repairs at breakwaters across the Great Lakes.

Summary of Critical System Needs

Significant investments are needed to effectively and efficiently operate and maintain the GLNS for the benefit of the Great Lakes region and the nation.

The combined needs of the system amount to over $200 million each year for the commercial projects as shown in Table 1. This does not include an estimated $20-40 million per year for shallow-draft (recreational) harbors. Table 1 identifies only the operation & maintenance needs and specifically does not include the construction general funding that will be needed for the new lock at the Soo.

Table 1

GLNS Needs FY09-FY13 Operation & Maintenance (Commercial Harbors)

FY	Annual Maint. Dredging (x1000)	Backlog Removal Dredging (x1000)	CDFs & DMMPs (x1000)	Breakwater Prev. Maint. & Rehab. (x1000)	Soo Locks Asset Renewal (x1000)	Other Navigation O&M Costs (x1000)[1]	**Total System O&M Need (x1000)**
FY09	$40,200	$41,600	$32,000	$47,700	$12,900	$39,000	**$213,400**
FY10	$41,000	$42,400	$26,000	$48,500	$12,300	$39,800	**$210,000**
FY11	$42,000	$43,200	$14,000	$49,500	$19,000	$50,300	**$218,000**
FY12	$42,800	$44,200	$38,000	$50,700	$9,900	$41,200	**$226,800**
FY13	$43,700	$45,000	$33,000	$52,000	$8,300	$42,400	**$224,400**

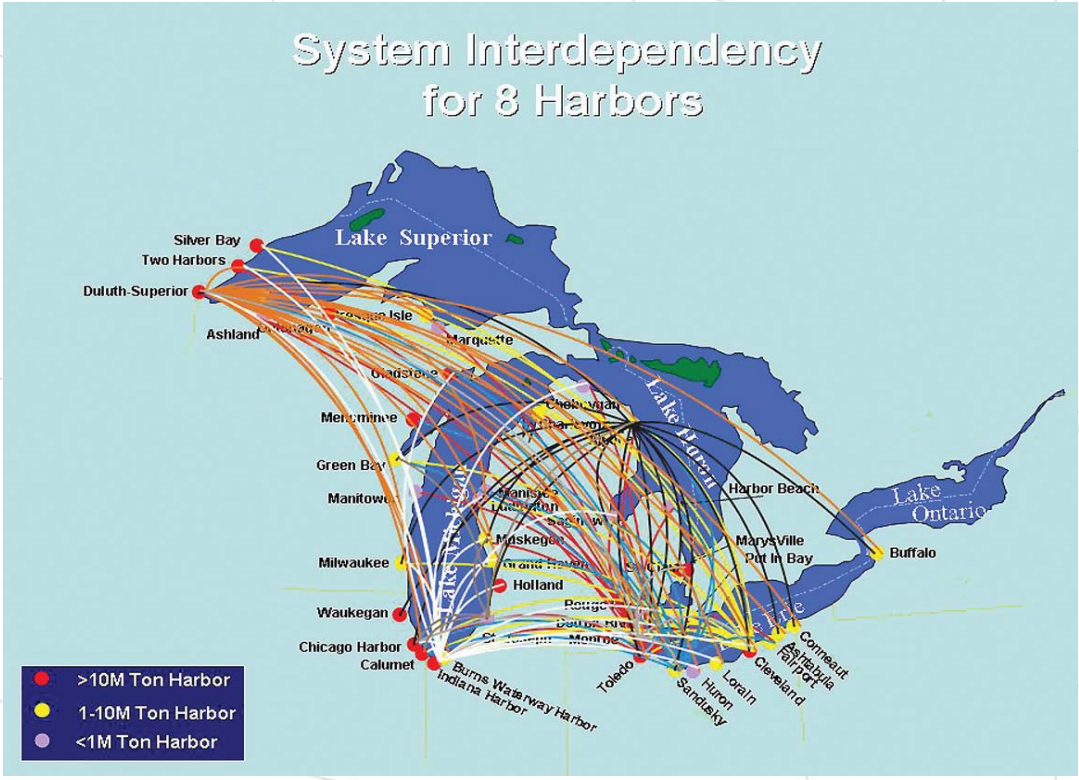
[1]Other Navigation costs include routine operation and maintenance of locks, project condition surveys, environmental activities, real estate support, and other staff support: FY11 includes $10M for new gates at Chicago Lock.

Individual Pieces Working Interdependently to Form a System

The Great Lakes is a unique system consisting of over 130 individually authorized projects. The 63 individual commercial projects range from handling less than 1 million tons of cargo to over 45 million tons. These ports ship to and from each other in a complex pattern of interdependency. The long-term viability of each port is dependent on the long-term viability of other ports in the system. This interdependency among U.S. ports is unique compared to most other U.S. ports that are either in a linear river system or major coastal ports that are dependent upon foreign trade. Loss of outbound

Figure 3

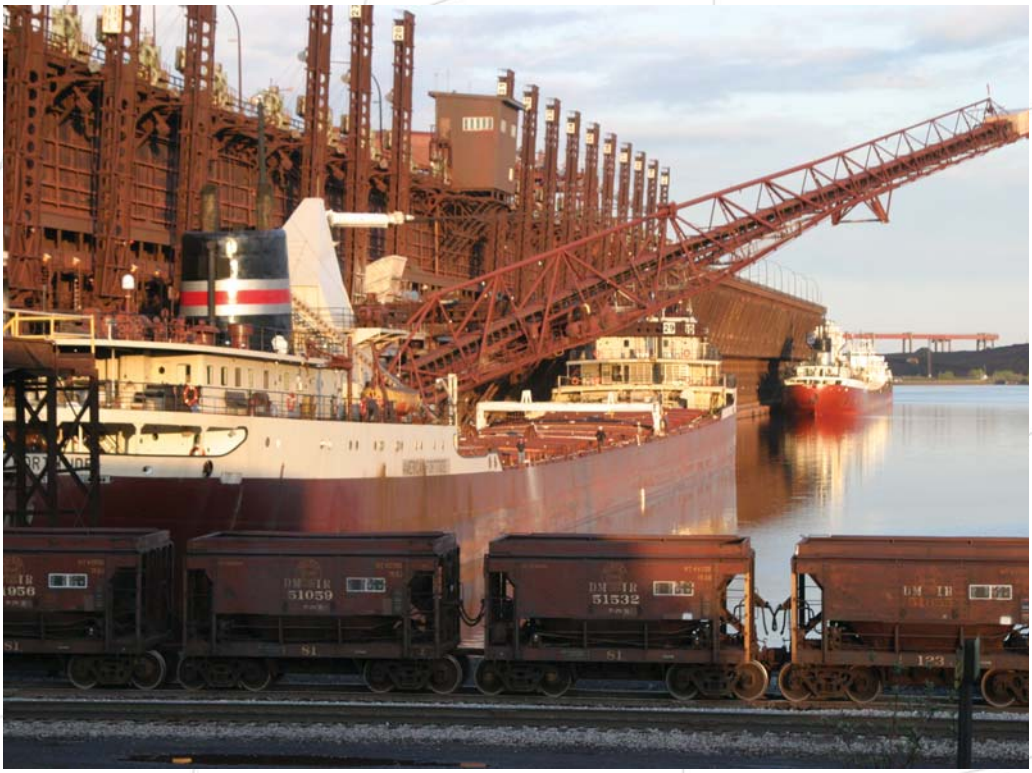
Figure 4



Great Lakes Navigation System: Economically and Environmentally Beneficial to the Nation

or inbound tonnage not only affects one port, it also is a loss at its interdependent ports. Loss or diminishment of any single project in the long-term potentially affects the viability of the system as a whole. Figures 3 and 4 on the previous page illustrate the interdependent shipping patterns of the Duluth-Superior port and eight selected ports on the Great Lakes system. This illustrates the complex pattern of interdependency on just a small subset of the over 60 commercial ports on the Great Lakes system.

If the GLNS is to remain reliable, its infrastructure must be maintained. The system consists of locks, shipping channels, ports, navigation structures, confined disposal facilities, as well as interfaces to other transportation modes. Locks can experience deterioration to components such as walls and gates, or mechanical failures that affect gate movement or the control of water in and out of lock chambers. Navigation channels accumulate sediment over time and must be dredged regularly to maintain required depth. Entry channels into ports are especially prone to shoaling due to storms. Failure to adequately fund dredging operations increases costs to shippers and industry and limits production capabilities and ultimately harms the national economy. Failure to provide adequate capacity to place contaminated dredged material limits the amount of dredging that can occur.



The Great Lakes Navigation System handles nearly 200 million tons of cargo a year, that in turn, drive the U.S. economy.

Dredging and confined dredged material disposal capacity go hand-in-hand and must be planned accordingly. Failure to adequately maintain navigation channels affects safe navigation into and out of ports and through connecting channels and also affects the ability of these structures to reduce flood damages to the critical infrastructure that has built up in the cities behind the structures.

Investments in the Great Lakes Navigation System pay off many times over in economic benefits on a local, regional and national level. The GLNS provides jobs directly related to the maritime industry and indirectly related through associated industries. The system also offers significant savings over alternate modes of transportation. Compared to the next least expensive mode of transportation, the Great Lakes Navigation System saves industry $3.6 billion dollars per year. In direct benefits, U.S. ports generated about $3.4 billion dollars of revenue and $1.3 billion in federal, state and local tax revenues in 2001.

The Great Lakes navigation system offers an environmentally sustainable mode of transportation, providing significant savings in fuel economy and greenhouse gas emissions over rail and truck transportation. The GLNS also has a distinct advantage over other modes of transportation such as truck and rail because 90 percent of the shipping lanes in the GLNS are usable exactly as the glaciers left them. The nation has entrusted the maintenance of the remaining 10 percent to the U.S. Army Corps of Engi-

The GLNS supports jobs in many industries along the lakes. Here a self-unloading vessel discharges fluxstone in Duluth that will be used in the iron ore pelletizing process. The pellets then are shipped from Duluth to U.S. and Canadian steel mills throughout the Great Lakes region.

neers. This includes dredging the connecting channels and harbors and maintaining locks in proper working condition. This tremendous transportation route leverage is unrivaled in other modes of transportation – maintain 10 percent and get 90 percent free.

A reliable, cost effective transportation network is one advantage that American businesses have in the global economy. The GLNS offers this economical and environmentally sustainable network. Maintaining Great Lakes navigation infrastructure as a viable, functional system is essential to preserving the health and vitality of the region and the nation in an environmentally sustainable manner.

The Great Lakes Navigation System provides sustainable economic strength to the nation.

US Army Corps of Engineers

Great Lakes Navigation Team contact information:

Great Lakes Navigation Business Line Manager
Michael O'Bryan
313-226-6444

Buffalo Operations Office
Kathy Griffin
1776 Niagara St.
Buffalo, NY 14207-3199
716-879-4315

Chicago Operations Office
Shamel Abou-El-Seoud
111 N. Canal St.
Chicago, IL 60606-7206
312-846-5470

Detroit Operations Office
Wayne Schloop
477 Michigan Ave.
Detroit, MI 48226-2523
313-226-5013

Support Resource:
Public Affairs Office
Lynn Duerod
313-226-4680

Completed January 2009