Water Levels and Maintaining Access to the Great Lakes and Connecting Channels

Great Lakes Commission Annual Meeting
March 6, 2013
Washington, D.C.

Fred L. Shusterich
President
Midwest Energy Resources Company

Member, GLMTF
GREAT LAKES MARITIME TASK FORCE

Promoting Shipping On America’s Fourth Sea Coast Since 1992

One Maritime Plaza - 3rd Floor  ♦  Toledo, Ohio  ♦  www.glmtf.org
In the Fall of 1991, the Andrea Gail left Gloucester, Mass. and headed for the fishing grounds of the North Atlantic. Two weeks later, an event took place that had never occurred in recorded history.

WOLFGANG PETERSEN

THE PERFECT STORM

HITS JUNE 30TH

www.perfectstorm.net
GREAT LAKES NAVIGATION SYSTEM

NO EARMARKS FAILING INFRASTRUCTURE

MORE SEDIMENTATION, LOWER BUDGETS, LOWER WATER LEVELS
Water Levels on Great Lakes

- All the Great Lakes are below their long term averages. Lake Michigan-Huron set new monthly record low levels in December and January and an all-time low in January.

- Levels on Lakes Superior and Michigan-Huron have been below average for over 14 years, the longest stretch in their recorded histories.

- Lake Erie has dropped two feet in the past year and had no seasonal rise in 2012 - first time the lake had no seasonal rise.

- The most probable forecast shows Lake Michigan-Huron setting new record lows again in February and March, and remaining near record low levels from April – July and most likely well beyond that.

- Lakes Superior and Michigan-Huron are expected to be 12 and 18 inches below chart datum, respectively, at the open of the 2013 navigation season in March.
# Feb 1, 2013 Lake Levels

<table>
<thead>
<tr>
<th></th>
<th>Superior</th>
<th>Mich-Huron</th>
<th>St. Clair</th>
<th>Erie</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LTA – Feb 13</strong></td>
<td>-11</td>
<td>-29</td>
<td>-11</td>
<td>-6</td>
</tr>
<tr>
<td><strong>Max – Feb 13</strong></td>
<td>-26</td>
<td>-61</td>
<td>-51</td>
<td>-37</td>
</tr>
<tr>
<td><strong>Max Year</strong></td>
<td>1986</td>
<td>1986</td>
<td>1986</td>
<td>1987</td>
</tr>
<tr>
<td><strong>Low – 13</strong></td>
<td>+9</td>
<td>-1</td>
<td>+24</td>
<td>+26</td>
</tr>
<tr>
<td></td>
<td>1926</td>
<td>1964</td>
<td>1926</td>
<td>1936</td>
</tr>
<tr>
<td><strong>Change Mar 13</strong></td>
<td>-2</td>
<td>-1</td>
<td>+2</td>
<td>+1</td>
</tr>
</tbody>
</table>
Great Lakes Economy

- 50% of U.S. Steelmaking Capacity
- 70% of U.S. Auto Manufacturing
- 55% of All Manufacturing

Great Lakes Shipping is Integral to the U.S. and Canadian Economies. It Creates
- 227,000 Jobs
- $33.5 Billion in business revenue
- $14.1 Billion in annual personal income
- $6.4 Billion in local purchases
- $4.6 Billion in tax revenue
- $3.6 Billion in Transportation Rate Savings
GREAT LAKES TRADE

• **U.S.- Flag Trade – 115 Million Tons**
  - Mostly U.S.-to-U.S., primarily within the upper four Lakes.
  - Iron ore, coal and limestone primary cargos.

• **Canadian-Flag – 65 Million Tons**
  - Trade between Duluth/Superior and Sept Iles.
  - Inbound ore from the Gulf of St. Lawrence, grain backhaul.
  - 82% of “Cross-Lake (U.S./Canada) trade.”
  - 52% of their total is to or from the U.S.

• **Oceangoing or “Salty” – 17 Million Tons**
  - Importing specialty and finished steel products, grain back overseas.
  - Canadian-owned, but flagged foreign with international crews.
Great Lakes Navigation System

- 60 Commercial Projects
- 79 Recreational Shallow Draft

>10M Ton Harbor
1-10M Ton Harbor
<1M Ton Harbor
Great Lakes Navigation
A Great Investment

$90 Mil for O&M
($40Mil dredging)

= $3.6+ Bil in lower transport costs
The Great Lakes Navigation System’s Transportation Rate Savings: $3.6 Billion/Year

<table>
<thead>
<tr>
<th>Commodity Group</th>
<th>(Oct 08) $FY08 SPT</th>
<th>CY 2006 Tonnage</th>
<th>Rate Savings Benefit*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>$24.02</td>
<td>1,636,000</td>
<td>$39,298,492</td>
</tr>
<tr>
<td>Maize</td>
<td>$32.17</td>
<td>1,875,000</td>
<td>$60,326,942</td>
</tr>
<tr>
<td>Soybeans</td>
<td>$30.60</td>
<td>1,161,000</td>
<td>$35,531,916</td>
</tr>
<tr>
<td>Other grains and seeds</td>
<td>$39.48</td>
<td>2,066,000</td>
<td>$81,570,722</td>
</tr>
<tr>
<td>Limestone</td>
<td>$21.78</td>
<td>30,908,000</td>
<td>$673,091,214</td>
</tr>
<tr>
<td>Other Minerals</td>
<td>$26.78</td>
<td>7,239,000</td>
<td>$193,848,497</td>
</tr>
<tr>
<td>Ores (including iron ore)</td>
<td>$12.89</td>
<td>58,848,000</td>
<td>$758,635,652</td>
</tr>
<tr>
<td>Coal</td>
<td>$18.05</td>
<td>44,896,000</td>
<td>$810,365,445</td>
</tr>
<tr>
<td>Petroleum Products</td>
<td>$27.43</td>
<td>5,067,000</td>
<td>$139,012,440</td>
</tr>
<tr>
<td>Cement</td>
<td>$46.00</td>
<td>7,151,000</td>
<td>$328,946,909</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>$42.73</td>
<td>12,166,000</td>
<td>$519,808,956</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>173,013,000</strong></td>
<td></td>
<td><strong>3,640,437,183</strong></td>
</tr>
</tbody>
</table>

* CY 2006 Great Lakes Waterborne Commerce; Oct 08 price level
LAND-BASED MODES OF TRANSPORTATION DON'T STACK UP TO SHIPS!

70,000
Net Tons

1 Vessel
47 Barges
700 Railroad Cars
2,800 25-Ton Trucks
HP Per Ton

0.2 - 0.3 Vessel

1 Railroad Cars

12 - 20 Trucks
Vessel HP/ton equivalent
A lawnmower could move a truck
One Ton of Cargo Equals....

- Takes 1.5 tons of iron ore to make a ton of steel. (Also 400 pounds of fluxstone, a type of limestone.) In total, takes 2.2 tons of Lake-delivered product to make a ton of steel.

- One mile of 4-lane highway needs 85,000 tons of aggregate as its base.

- A 70,000-ton cargo of low-sulfur coal keeps the power on in Greater Detroit for a day.
Every Inch Counts!

When inadequate dredging forces the 56 lakers enrolled in LCA to reduce draft by 1 inch, the fleet forfeits more than 8,000 tons of cargo each trip.

8,000 Tons is Enough...

Iron ore to produce the steel to build 6,000 cars (10 days of work for a major auto plant)
Coal to provide 3 hours of electricity for Greater Detroit
Limestone to build 24 homes.
## IMPACT OF DREDGING ON VESSEL CARRYING CAPACITY

(net tons)

<table>
<thead>
<tr>
<th>Great Lakes Bulk Carriers</th>
<th>Vessel Length (feet)</th>
<th>Per-Trip Carrying Capacity</th>
<th>Capacity Per Inch Of Draft</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,000</td>
<td>69,664</td>
<td>267</td>
</tr>
<tr>
<td></td>
<td>806</td>
<td>34,720</td>
<td>146</td>
</tr>
<tr>
<td></td>
<td>767</td>
<td>28,336</td>
<td>127</td>
</tr>
<tr>
<td></td>
<td>635</td>
<td>22,064</td>
<td>107</td>
</tr>
<tr>
<td></td>
<td>501</td>
<td>13,776</td>
<td>71</td>
</tr>
</tbody>
</table>

※Capacity per inch of draft reflects the incremental tonnage carried at normal loaded draft.
# Impact of Dredging Crisis on Per-Trip Carrying Capacity

## Major Great Lakes Vessel Classes

<table>
<thead>
<tr>
<th>Major Great Lakes Vessel Classes</th>
<th>Vessel Length (feet)</th>
<th>Per-Trip Carrying Capacity (net tons)</th>
<th>Capacity Per Foot Of Draft (net tons)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Freighter</td>
<td>1,000</td>
<td>69,664</td>
<td>3,204</td>
</tr>
<tr>
<td>Mid-Size Freighter</td>
<td>806</td>
<td>34,720</td>
<td>1,752</td>
</tr>
<tr>
<td>Small Freighter</td>
<td>767</td>
<td>28,336</td>
<td>1,524</td>
</tr>
<tr>
<td>Medium Freighter</td>
<td>730</td>
<td>27,558</td>
<td>1,380</td>
</tr>
<tr>
<td>Small Freighter</td>
<td>635</td>
<td>22,064</td>
<td>1,284</td>
</tr>
<tr>
<td>Tiny Freighter</td>
<td>501</td>
<td>13,776</td>
<td>852</td>
</tr>
</tbody>
</table>
Inadequate Dredging System-Wide

2006 Marad Study

Lost Inches, Lost Efficiencies

2006 – 2013 = -7"

Duluth -18"

2006 – 2013 = -15"

Green Bay -24"

Caleste -12"
Stoneport -12"
Alpena -24"

St. Marys River -18"

Cleveland -54"

Saginaw -60"
Muskegon -24"
Grand Haven -54"
Holland -54"

St. Joseph -54"

Indiana Harbor -48"

Huron -24"

Waukegan -84"
Calumet -48"

Lake Michigan

Lake Huron

Lake Ontario

Lake Superior

St. Lawrence River
Dredging Crisis Hampering Coal Trade

- U.S.-flag Lakers have carried as much as 71,369 tons of coal in one trip.
- Top cargo in 2012 was 67,530 tons.
- By end of the 2012 most cargos were less than 62,000 tons.
- Lack of dredging costing 14% of per-trip carrying capacity.
DEFINITIONS

- CG
  Construction & General

- O&M
  Operations & Maintenance

- Inland Trust Fund
  Fuel Tax Funds CG on Inland Rivers

- Harbor Maintenance Trust Fund
  Cargo Value Taxed to Maintain Coastal Ports O&M

- LRD
  Lakes River Division Created by WRDA 95 and established in 97
SOURCES OF FUNDS

• Taxpayers – General Treasury
  Rivers 50% of CG and 100% of O&M
  Coastal – 75% of CG

• Inland Waterways Trust Fund
  – Pays 50% of Construction on Inland Rivers

• Harbor Maintenance Trust Fund
  – Pays 100% of Operations & Maintenance
    at Coastal Ports (Great Lakes, East, West, Gulf)
Harbor Maintenance Trust Fund

$ in Millions

Fiscal Year

Expenditures
Revenue
O&M Funding in the President's Budget
1995 - 2012

Great Lakes Navigation O&M Funding
Ohio River Navigation O&M Funding
Nationwide O&M Funding

National - FY95-FY12 Increased 20%
Ohio River FY95-FY12 Increased 41%
Great Lakes FY95-FY12 Increased 5%

No O&M spike corresponding to dredging spike!
Regional Condition Assessment

A Great Lakes regional team was established in 2008 to conduct Asset Management-based condition assessments of all Great Lakes commercial navigation structures; the Team works with USACE Engineering Research and Development Center and collaborates with the National Coastal Asset Management Board.

- Assessments completed to date
- Conditions assessment by segments: 45% of structures are rated C or worse
  - 22 miles (21%) rated C – Probably inadequate
  - 22 miles (21%) rated D – Inadequate
  - 3 miles (3%) rated F – Failed
- Cost to conduct major repair of structures: $15 – 20M per mile
Navigation Structures

Most navigation structures are more than 70 years old and in need of repair and rehabilitation.

400 year recapitalization rate
Realities

• Inadequate Funding for Decades
• Declining Corps Budgets
• Unique “System”
  – Domestic but Coastal
  – Dry-Bulk
  – Manufacturing Focused
• Congressional Adds More Difficult
• Vulnerable to System Failure
• Project not System funded
  – System BCR of 40:1
  – $3.6 billion for $90 million
QUESTIONS