Upper Mississippi Dredged Sands to Support Coastal Beach Nourishment

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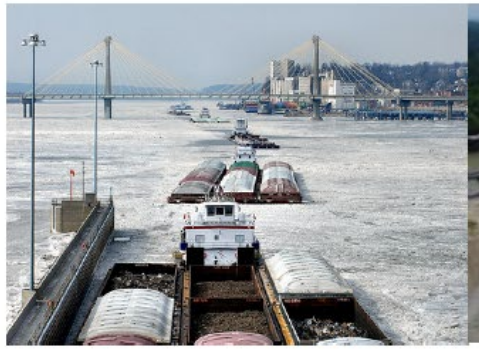
Marine Transportation System
Innovative Science and Technologies Toward Greater Sustainability

US Army Corps of Engineers

ERDC

USACE Navigation

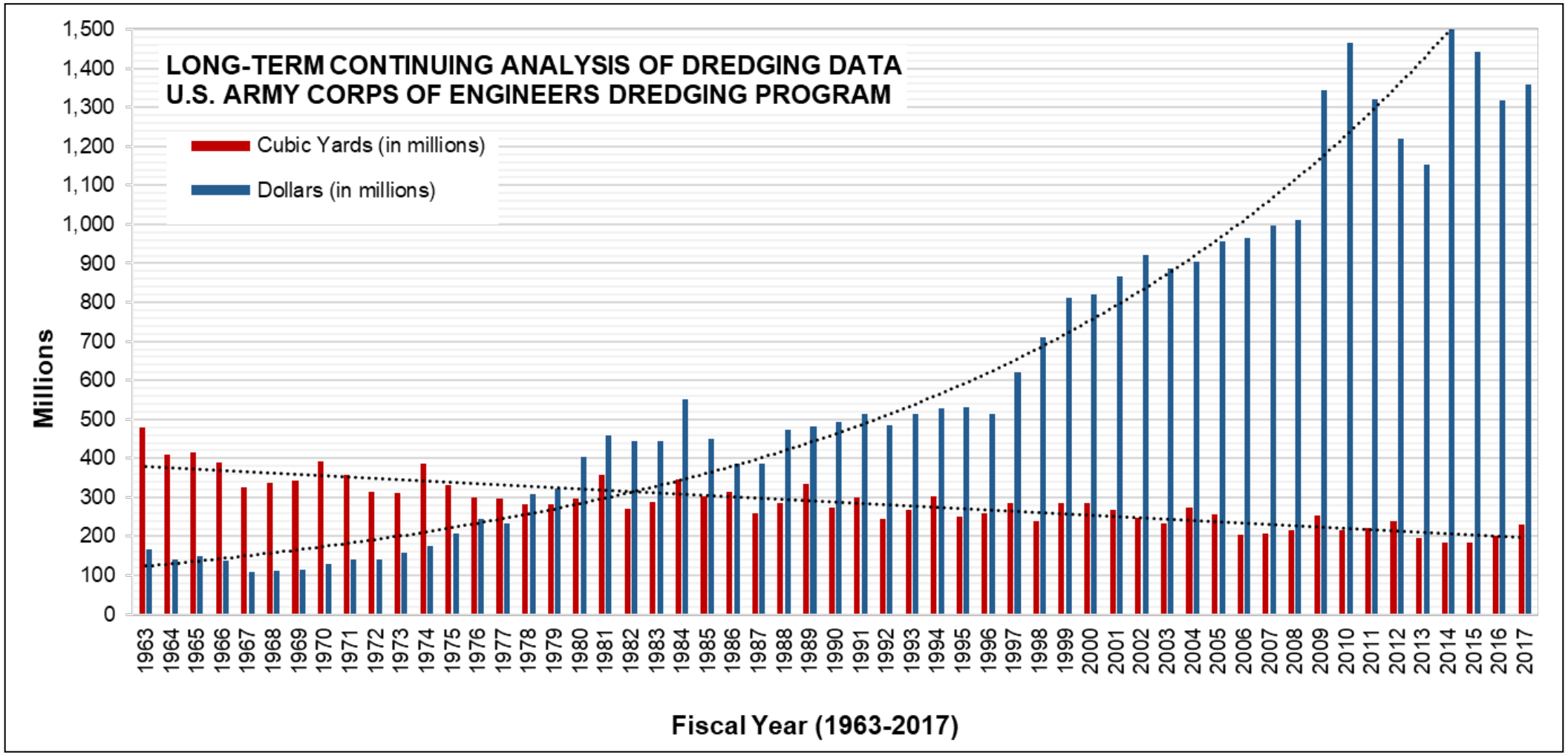
Provide safe, reliable, efficient, effective and environmentally sustainable waterborne transportation systems for movement of national security needs, commerce, and recreation.



USACE Navigation Stats

- **25,000 Miles of Navigable Waterways Maintained**
- **400 Major Ports**
- **200,000,000+ CY of material dredged annually**

Source: USACE Institute for Water Resources


LONG-TERM CONTINUING ANALYSIS OF DREDGING DATA
U.S. ARMY CORPS OF ENGINEERS DREDGING PROGRAM
Cubic Yards (in millions)
Dollars (in millions)
Millions
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
0
1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017
Fiscal Year (1963-2017)

US Army Corps of Engineers ®

Dredge Material is
- Increased dr
- Benefits the

There are opportu
- Operational
- If material is be considere

Partner collaborati
- Innovative pu
  - Maxim
  - Devel

Over the next 3-5 years, the Corps will expand th beneficial use of dredged material program. Achiev this vision will require all of us to be innovative an work alongside our partners, both internally and externally, to ensure we are finding the best use of sediments derived from our Navigation mission.

28 APR 2022

DEPARTMENT OF THE ARMY
HEADQUARTERS, US ARMY CORPS OF ENGINEERS
441 G STREET NORTHWEST
WASHINGTON DC 20314-1000

CECG

25 January 2023

Beneficial Use of Dredged Material Command Philosophy Notice

Teammates,

Today I am formally issuing a Beneficial Use of Dredged Material Command Philosophy Notice which outlines my vision for expanding the U.S. Army Corps of Engineers beneficial use of dredged material (BUDM) program. This philosophy notice aligns with two of my four key priorities for the organization, Partnerships and Innovate.

Dredged material is a valued resource that is not to be wasted, but instead used for benefits to the ecosystem, economy, and to deliver the USACE mission more effectively and efficiently across our portfolio of Navigation, Flood Risk Management and Aquatic Ecosystem Restoration projects.

Through a symbiotic relationship with navigation dredging, you are being called to generate productive and positive uses of dredged material. If there is a need for USACE to dredge an authorized channel, the operational strategy should inherently include beneficial use placement options. Equally, if there is a need for sediment, gravel, or rock material to implement a project, beneficial use from dredging operations within authorized channels should be considered as a source in the planning and execution strategy. We must do these things in compliance with applicable laws and regulations, including the Federal Standard for dredged material disposal or placement. A proper analysis of the total lifecycle cost of dredging and placement as well as the full benefits will result in an accurate determination of the Federal Standard.

USACE historically uses 30-40% of the sediments derived from the Navigation mission for beneficial purposes. I have established a goal for USACE to advance the practice of BUDM to 70% by the year 2030 ("70/30 Goal").

Achieving our vision will require purposeful documentation and an innovative pursuit both internally and externally with our partners and stakeholders. You will need to leverage available solutions, strategies, and tools to the maximum extent practicable while developing and applying new approaches and technologies to address the associated engineering challenges.

Districts and divisions are hereby called upon to participate in supporting this shared vision, provide input into the actions to be undertaken, and ensure ultimate success of the BUDM program.

Now is the time to get involved. For more information on how to get involved, contact Tiffany Burroughs, Chief Navigation, HQUSACE by phone at (202) 761-4474 or by email at tiffany.s.burroughs@usace.army.mil

BUILDING STRONG!

SCOTT A. SPELLMON
Lieutenant General, US Army
Commanding

erial

Chief of Engineers
70%
Beneficial Use Practices
by the year
2030
Target

National Policy for Beneficial Use of Dredged Material

Congressionally established by section 125 of WRDA 2020 in doing so, Congress has underscored the importance of the Beneficial Use of Dredged Material Program

Dredged material is valued as a esource not to be wasted but used for benefits to the ecosystem, economy, and project delivery

erships

Deliver the Mission

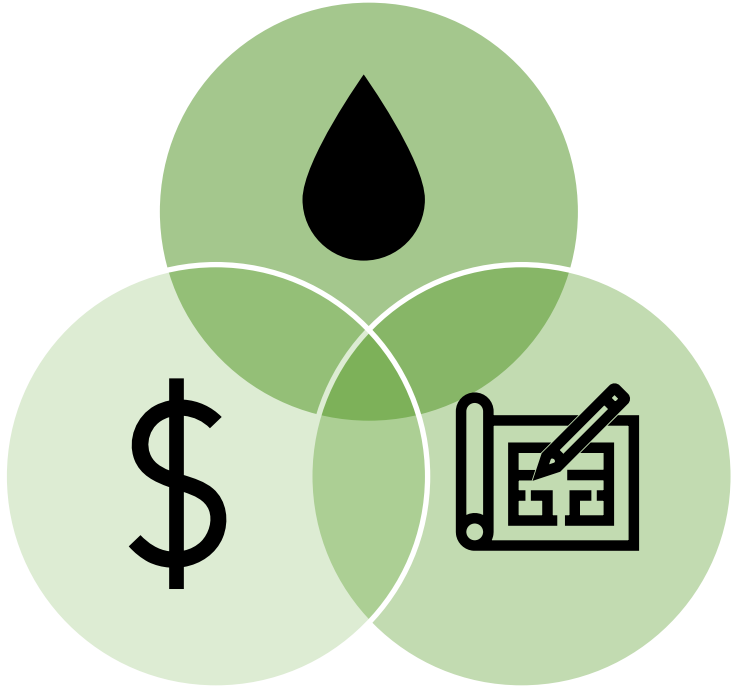
What is Beneficial Use of Dredged Material?

Beneficial Uses:

- **Land creation**
- **Land improvement**
- **Berm creation**
- **Shore protection**
- **Replacement fill**
- **Beach nourishment**
- **Capping**
- **Construction materials**
- **Aquaculture**
- **Topsoil**
- **Wildlife habitats**
- **Fisheries improvement**
- **Wetland restoration**
- **Others**

Beneficial uses are defined as "productive and positive uses of dredged material, which cover broad use categories ranging from fish and wildlife habitat development, to human recreation, to industrial/commercial uses" (Engineer Manual 1110-2-5025, 2015).

33 CFR 335.7 - “Federal standard”

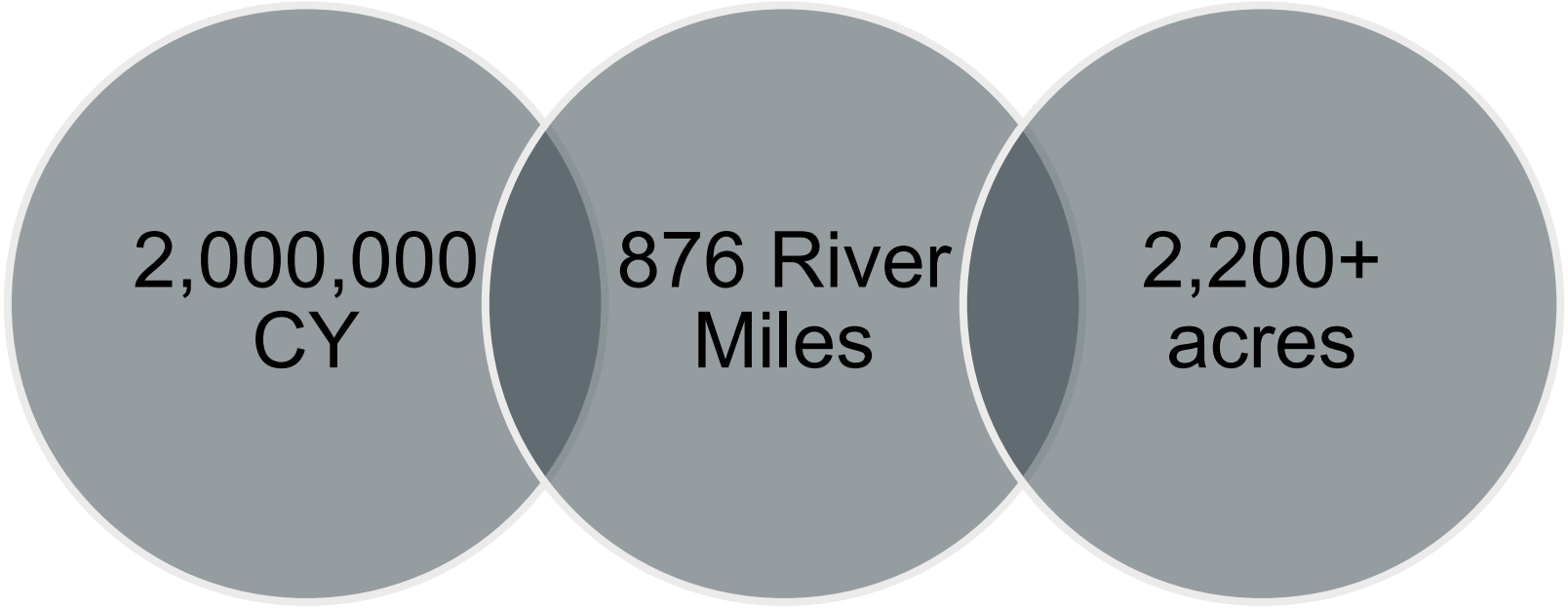


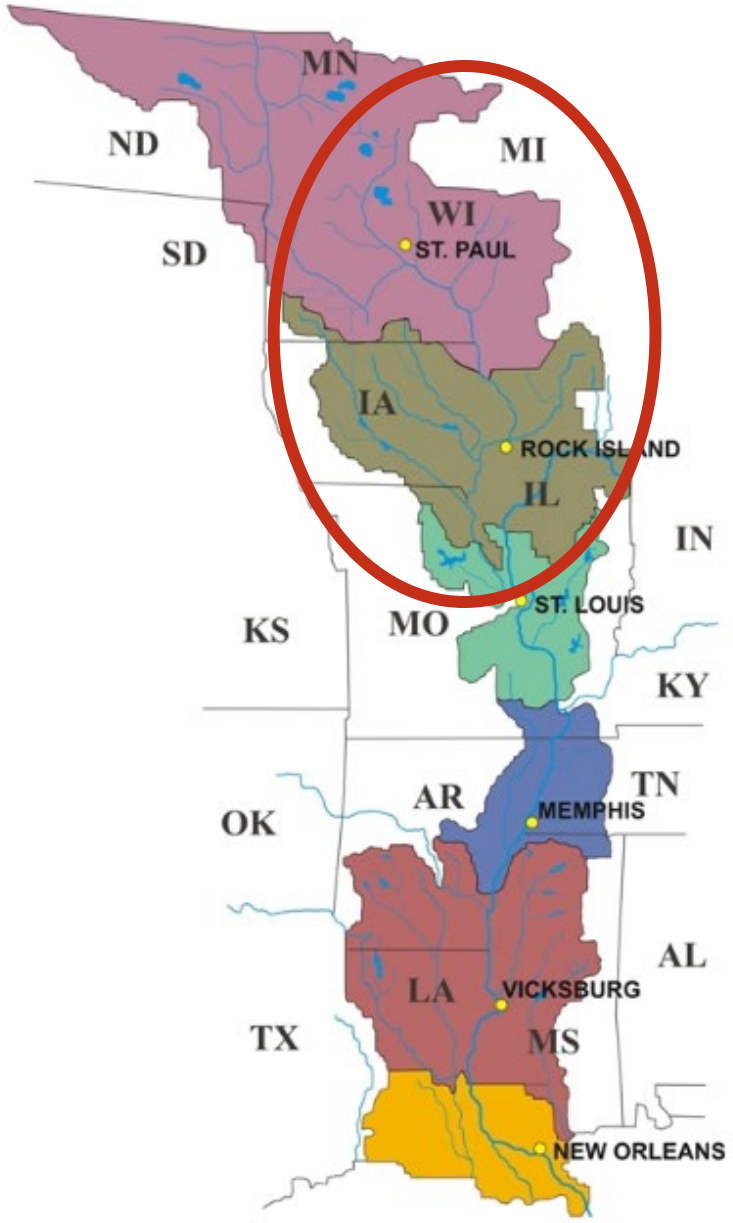
“Federal standard means the dredged material disposal alternative or alternatives identified by the Corps which represent the least costly alternatives consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process or ocean dumping criteria”

33 CFR 335.7 - “Federal standard” and Beneficial Use

- **Non-Federal partners to cover increased cost of placement.**
- **Transportation of material is generally limiting factor in achieving BU**
- **Combine projects with other USACE Districts and Federal Agencies to fall within Federal Standard**

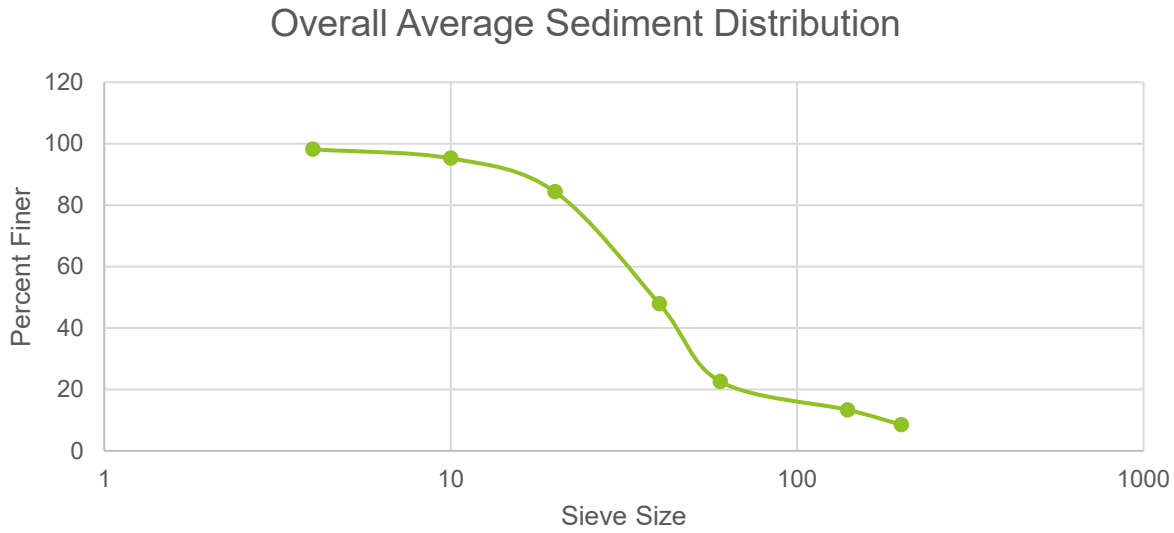
Upper Mississippi River Dredging





UMR Dredged Sands

Material size: approximately 0.5 mm to 1 mm

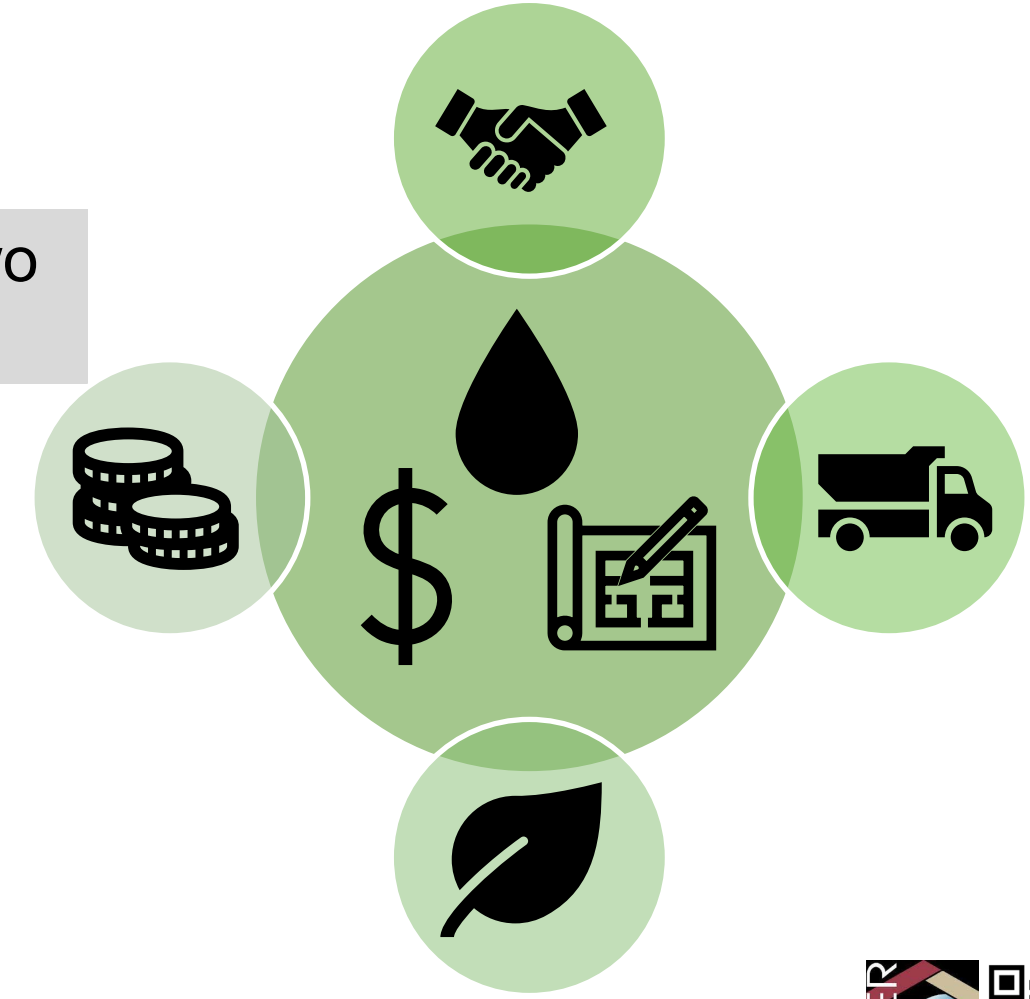


Can federal standard be achieved across two projects by shipping and acquiring entities?

How to Assess Multi-Modal Transport to Support Coastal Beach Nourishment?

Can federal standard be achieved across two projects by shipping and acquiring entities?

- Assess costs of both projects alone vs. cost to use UMR sand
- Optimal transport path between UMRS dredge placement areas and coastal projects.
- Assessing logistics and costs for five potential receiving projects utilizing two existing dredged placement sites.



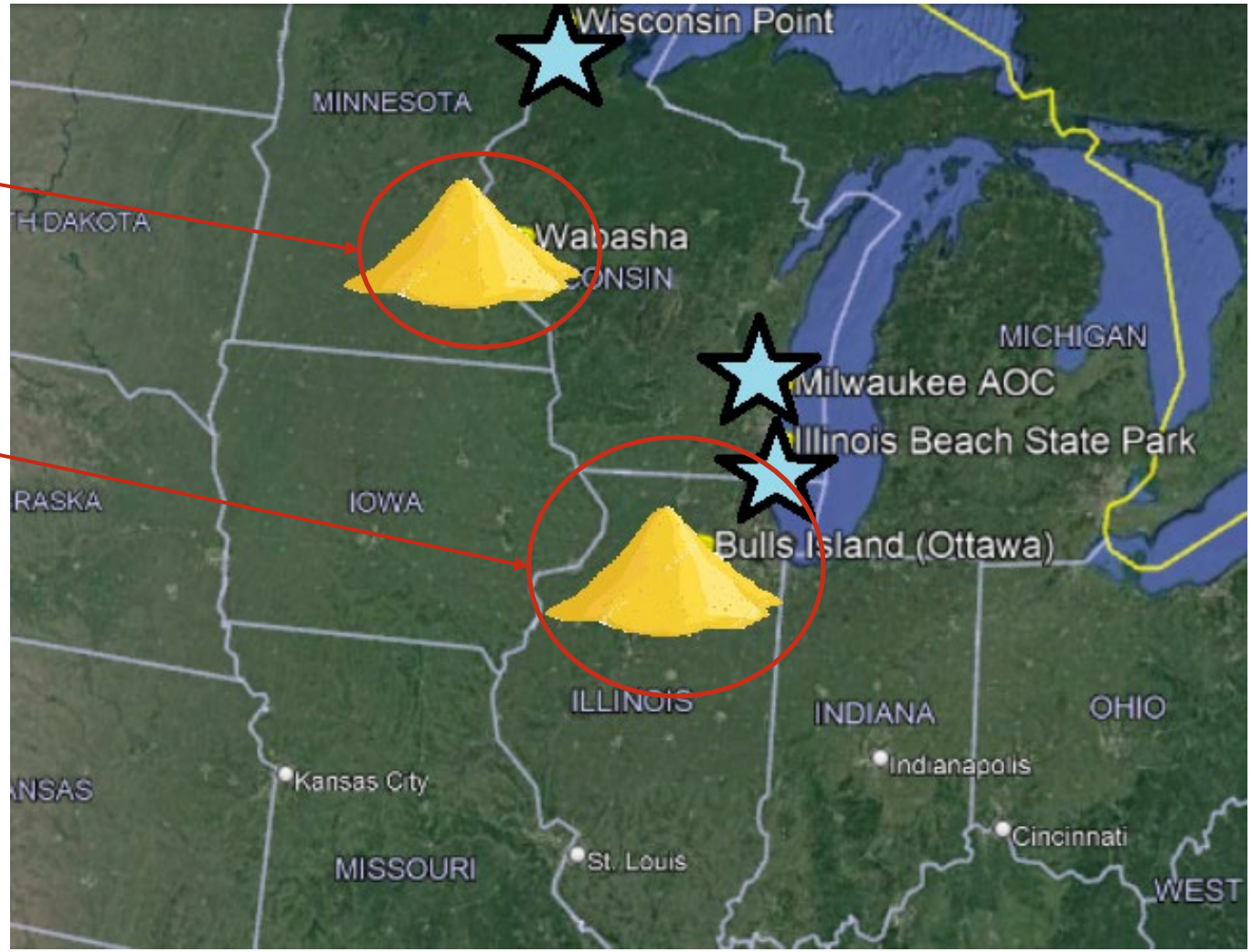
Origin/Destination Locations

Wabasha Pit, Wabasha, MN

- Located directly adjacent to CPKC Rail Line
- Approx. 5MCY stockpiled sand

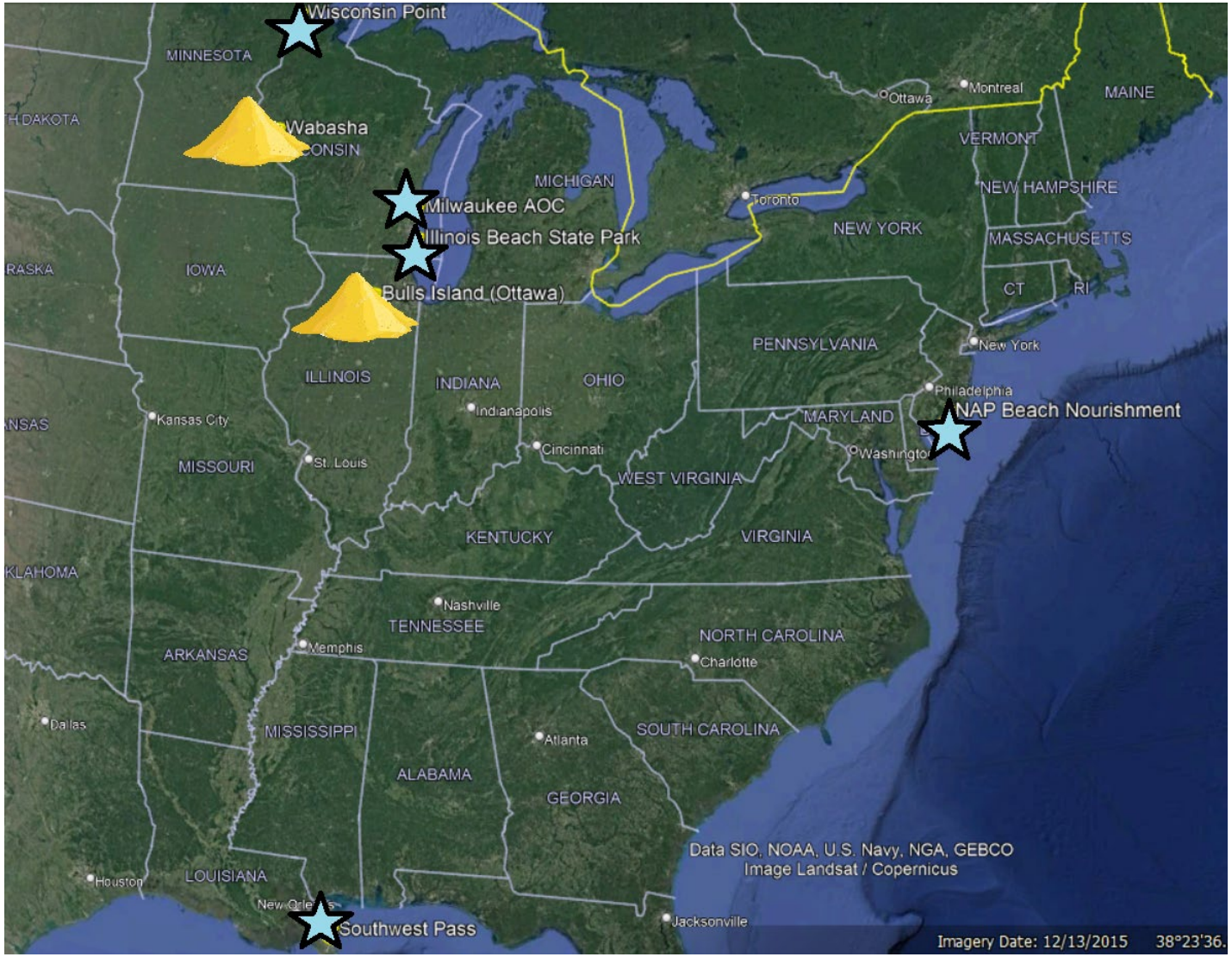
Bulls Island (Ottawa, IL)

- Located on Illinois River
- Approx. 500KCY stockpiled sand



Destination Locations

- Illinois Beach State Park
- Milwaukee Area of Concern
- Wisconsin Point
- Philadelphia District
- Coastal, LA/New Orleans District



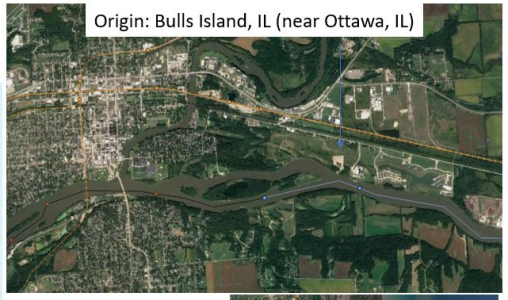
Illinois Beach State Park

- $73M project; protecting 2.2 miles of beach shoreline set for 2023
- Renourishing the shoreline with nearly 430,000 CY of sand.
- Illinois State Geological Survey - river sand is geotechnically superior for beach use.

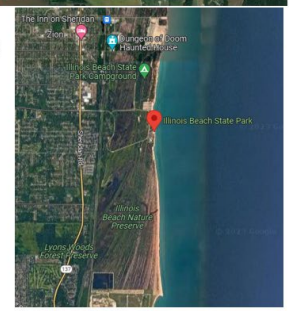
Local Estimate	UMR Material (Wabasha via Rail)	UMR Material (Bulls Island via Barge)
$55/CY	$38/CY	$30/CY

Scenario 1.A – Bull Island to IBSP by water

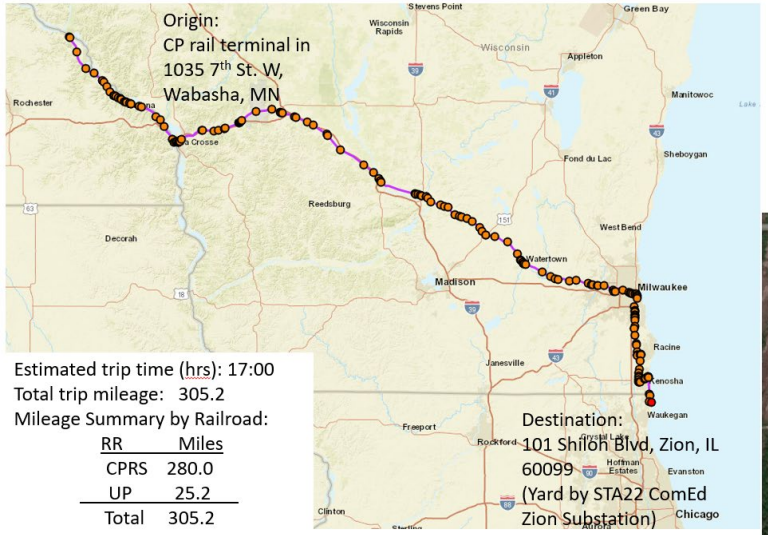
Trip summary:
Estimated trip time: 5 days and 23hs
Trip mileage: 135.3



Destination:
Illinois Beach State Park



Scenario 1.B – Wabasha to IBSP by rail

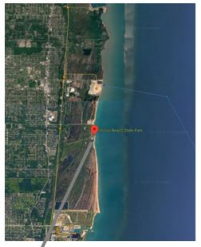


Estimated trip time (hrs): 17:00
Total trip mileage: 305.2
Mileage Summary by Railroad:

RR	Miles
CPRS	280.0
UP	25.2
Total	305.2

Destination:
101 Shilon Blvd, Zion, IL 60099
(Yard by STA22 ComEd Zion Substation)

IBSP seems to be accessible by water and rail (CN & UP, yellow lines)

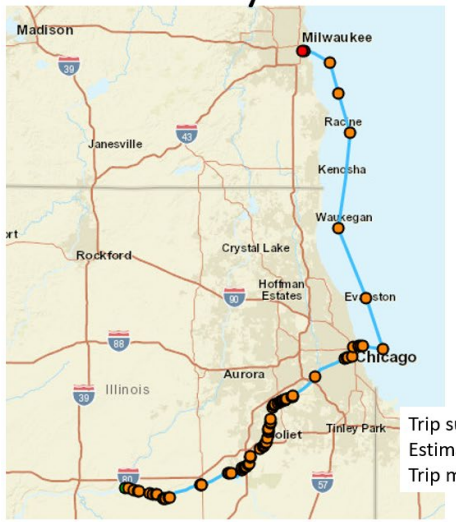


Milwaukee Estuary – Area of Concern

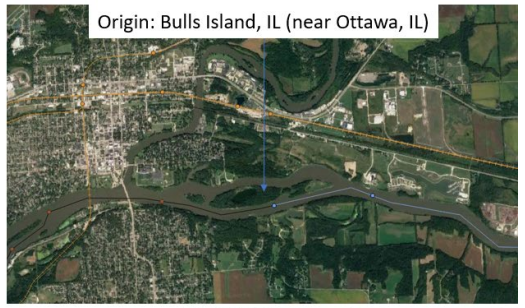
- $450 million toward clean up of 2 MCY sediments
- Approx. 500,000 CY of material will be needed to construct and cap a new confined disposal facility.
- UMR dredged material suitable for capping.

Local Estimate	UMR Material (Wabasha via Rail)	UMR Material (Bulls Island via Barge)
$48/CY	$25/CY	$32/CY

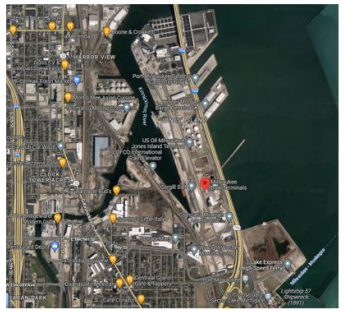
Scenario 2 – Bull Island to Milwaukee by water



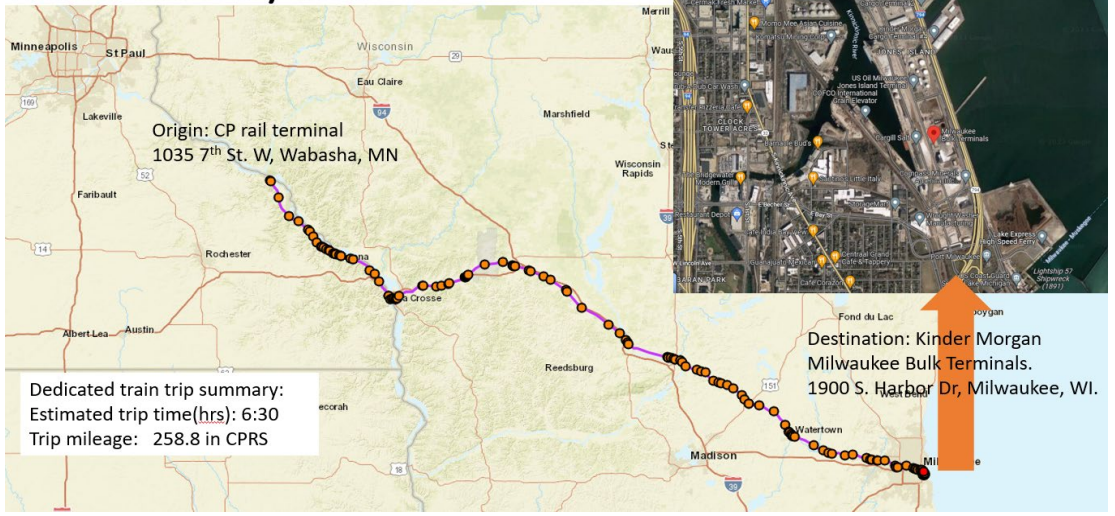
Trip summary:
Estimated trip time: 6 days and 5 hs
Trip mileage: 180



Destination:
Kinder Morgan
Milwaukee Bulk
Terminals.
1900 S. Harbor Dr,
Milwaukee, WI.



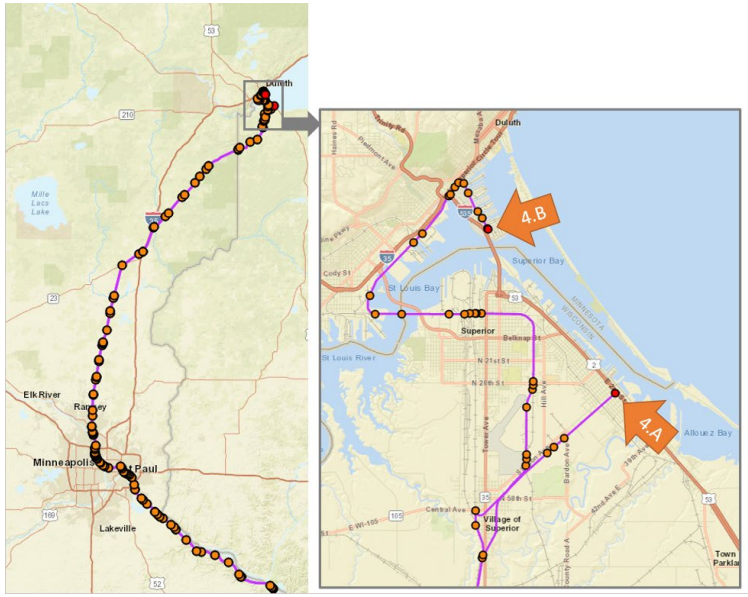
Scenario 3 – Wabasha to Milwaukee by Rail



Wisconsin Point, Lake Superior

- Wisconsin Point is a natural area and recreational area subject to beach erosion and habitat fragmentation.
- Current plan is to use local dredged sediments IF they are suitable, and/if quantities allow. UMR Sands identified as alternative.

Local Estimate	UMR Material (Wabasha via Rail)
TBD	$25/CY



Origin: CP rail terminal in 1035 7t St. W, Wabasha, MN

4.B. Rice's Point (several termina near 602 Helberg Dr, Duluth, MN 55802
Estimated trip time (hrs): 7:44
Trip mileage: 232.2 in CPRS

4.A. Hansen-Mueller Terminal. 21st Ave E, Superior, WI
Estimated trip time (hrs): 10:35
Total trip mileage: 223.5
Mileage Summary by Railroad:

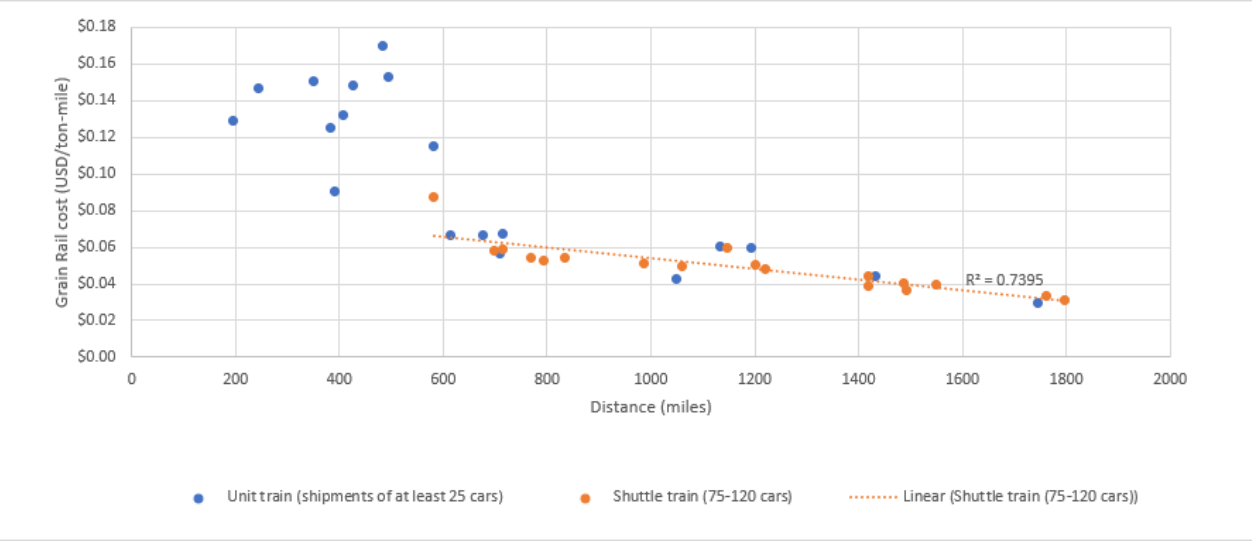
RR	Miles
BNSF	143.0
CPRS	80.5
Total	223.5

Philadelphia District (NAP) Beach Nourishment

- NAP historically performs the most non-O&M dredging beach nourishment projects.

- Finalizing “Final-Mile” analysis, cannot use trucks, must transload and place on beach via barge/pipe.

Local Estimate	UMR Material (Wabasha via Rail)	“Final-Mile”
$42/CY	$65/CY	>$30/CY



Scenario 5A–Wabasha to East Coast (Philadelphia) by Rail

Origin: Wabasha pit, operated by Canadian Pacific (CPRS)
5A-Destination: Kinder Morgan Bulk terminal near Morrisville, PA (NE on Delaware River from Philly), 1 Sinter Rd, Morrisville, PA 19067 (CSXT)

Scenario 5B–Wabasha to East Coast (Baltimore) by Rail

Origin: Wabasha pit, operated by Canadian Pacific (CPRS)
Destination: Sparrows Point, Baltimore, MD (Tradepoint, CSXT) – several terminals, suggest to contact Tradepoint
Tradepoint Atlantic Industry in Motion East Coast Port and Logistics Center https://www.tradepointatlantic.com/

Coastal, LA & New Orleans District

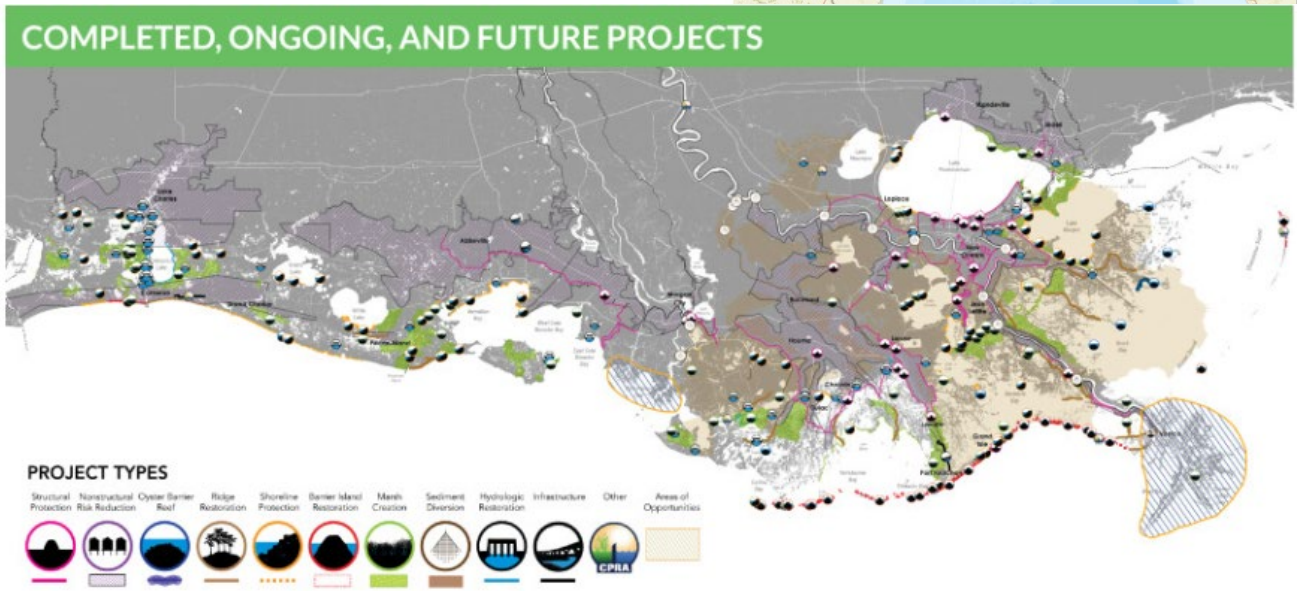
Local Estimate	UMR Material (Wabasha via Barge)
n/a	$72/CY

Scenario 6: Wabasha to Southwest Pass by water

Origin: Wabasha pit (closest inland waterways node at L/D 4)
6-Destination: Southwest Pass.

Trip Summary by barge:
Distance: 1719 miles
Trip time: 29 days

Travel time source: http://www.mblx.com/map 29 days to connect New Orleans, LA (RM 100) and St Paul, MN (RM 837)



https://coastal.la.gov/

Findings/Next Steps

- Medium distance is unique 150-300, similar transport costs. Long distance (over 600 miles) could be beneficial for rail transport.
- From river-to-ship adds handling costs, but offloading ships much easier/efficient than train.
- Finalize last mile analyses and obtain contractor estimates to finalize estimated costs.
- Material can be used for other forms of BU, including industrial applications. This feasibility study serves as a proof of concept that sand can be moved out of the region in a cost-effective manner.

We Need Help!..

Federal/State/Local Partners for identification of projects and sponsorship.

Industry Expertise to assist in multi-modal analyses and cost-effective transport/placement.

Thank you!

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Questions?