TOLEDO HARBOR SEDIMENT MANAGEMENT AND USE SOLUTIONS
SECOND PUBLIC FORUM

Introduction

In 2010, the Ohio Lake Erie Commission (OLEC) was awarded a Great Lakes Restoration Initiative grant to complete the Toledo Harbor Sediment Management and Use Project. Over the last year, the Ohio Lake Erie Commission, Toledo-Lucas County Port Authority (TLCPA), and other members of the Toledo Harbor Dredge Management Task Force have worked with a technical team led by Hull & Associates, Inc. to identify and evaluate sustainable practices to manage dredged material from Toledo Harbor in a manner that balances economic and environmental aspects. As part of the Toledo Harbor Sediment Management and Use Project, two public forums were held to solicit stakeholder input and feedback on a variety of project aspects. This report summarizes the results of the second public forum.

Purpose

A second Toledo Harbor sediment management forum was held on Tuesday, June 19, 2012 from 1:00 p.m. - 4:00 p.m. at the Toledo Metropolitan Area Council of Governments Building, 300 Dr. Martin Luther King Jr. Drive, Toledo, OH 43604. The forum was jointly hosted by the Great Lakes Commission (GLC), OLEC, and TLCPA.

Forum attendees had the opportunity to learn about proposed sediment management and use options under consideration for incorporation into a local sediment management strategy for Toledo Harbor, as well as the evaluation approach used to prioritize the options. This forum provided an opportunity for stakeholder input regarding the evaluation approach and proposed options through a question and answer session and a post-forum survey. The input received from stakeholders will assist the Task Force as they prioritize and evaluate the technical alternatives proposed in the comprehensive Sediment Management and Use Plan for Toledo Harbor.

The major objectives of the second public forum were to:

- review potential sediment management and use options for Toledo Harbor;
- present the Technical Team's evaluation process for prioritizing sediment management and use options for Toledo Harbor;
- present the preliminary prioritized sediment management and use options identified for Toledo Harbor; and
- solicit feedback from stakeholders on the proposed evaluation process and preliminary sediment management and use options identified for Toledo Harbor.

Notification

TLCPA and OLEC invited stakeholders to attend the second public forum via e-mail, posting a meeting notice on the Great Lakes Information Network (GLIN) listserv, and by phone. Direct e-mail invitations were targeted to previous forum participants and known interested stakeholders. Provided in Appendix A is the invitation sent to Task Force Members, non-governmental agencies, interested parties, and the media. Additionally, the local newspaper, the Toledo Blade, published a preview article describing this forum, which is attached as Appendix B. Finally, Dredging Today, which publishes the latest developments in the dredging and port construction industry, posted an article describing this forum on their website, which is attached as Appendix C.

Participation

A diverse group of stakeholders participated in the second public forum. Stakeholders included 40 participants, self-identified as either unaffiliated citizens, or representatives affiliated with environmental and community organizations, research and academic institutions, the fishing industry, government agencies, commissions or local boards, and industry representatives. A complete list of participants is provided by Appendix D.

Forum Agenda and Presentation

Representatives from the GLC, OLEC, and TLCPA began the forum by sharing background information and conveying current challenges associated with sediment management in Toledo Harbor from a regional, state, and local perspective. Following these presentations, a project representative from Hull & Associates, Inc. provided an overview of the Toledo Harbor Sediment Management and Use Project, reviewed potential sediment management and use options, presented the Technical Team's evaluation process and results, and presented a preliminary prioritized approach for Toledo Harbor. The public forum concluded with a question and answer session and participant survey. The agenda and presentation for the second public forum are included as Appendices E and F, respectively. Minutes from the question and answer session are included in Appendix G.

Results of Participant Survey

Participants were asked to complete a survey following the presentation and question and answer session. The survey included feedback on their participation in the first forum as well as the information and options presented during the second forum. Twenty-two attendees submitted surveys. While the sample size is not sufficient to represent the larger City of Toledo or Western Lake Erie Basin, results from the survey are useful in qualitatively evaluating participants' opinions on various sediment management and use considerations. A copy of the survey, with the number of responses received for each question, can be found in Appendix H.

Of the 22 respondents, 8 people (or approximately 36%) attended the first public forum. All of the respondents that attended the first forum stated that they provided ideas through their participation in the roundtable session. When asked if the topics they discussed in the roundtable sessions were considered in the sediment management and use options analysis, seven of those that attended last year agreed or strongly agreed that their topics were considered; 1 respondent had a neutral opinion.

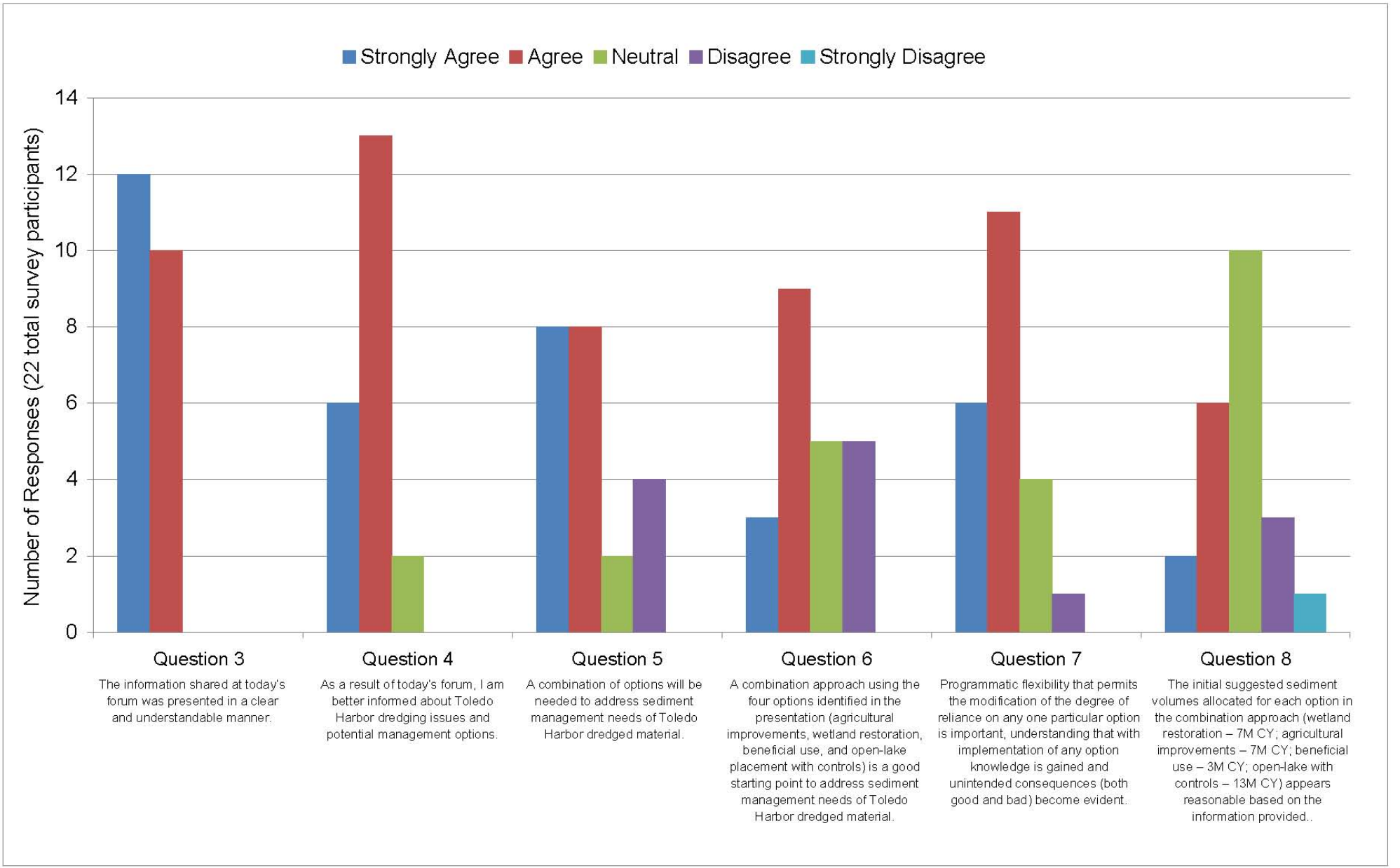
Survey participants were asked to answer questions 3-8 based on the second forum. Figure 1 presents a graphical representation of the results of these questions. All respondents strongly agreed or agreed that the information was presented in a clear and understandable manner. Most respondents (86%) also felt that they were better informed about Toledo Harbor dredging issues and potential management options as a result of the forum. Approximately 73% of survey participants strongly agreed or agreed that a combination approach will be needed to address sediment management needs of Toledo Harbor. When asked if the four proposed options for the combination approach (agricultural improvements, beneficial use, wetland restoration, and open-lake placement with controls) is a good starting point to address sediment management needs of Toledo Harbor dredged material, approximately 77% of respondents strongly agreed, agreed, or had a neutral position. Five respondents disagreed with the proposed options as part of the combination approach. The majority of respondents also strongly agreed (27%) or agreed (50%) that programmatic flexibility that permits modifying the degree of reliance on any one particular option is important, with the remaining respondents having a neutral position (18%) or disagreeing (5%). Finally, about half (45%) of respondents had a neutral position on the initial suggested sediment volumes allocated for each option in the combination approach, with the

remaining strongly agreeing or agreeing (36%) or strongly disagreeing or disagreeing (18%) with the initial suggested sediment volumes.

Most of the survey respondents favored a combination approach for addressing the sediment management issues at Toledo Harbor, with many supporting the proposed options under the combination option. Respondents also generally supported the idea of programmatic flexibility, or adaptive management, which allows for modification of reliance on any particular option based on actual experience. While the sample size is not sufficient to represent the larger western Lake Erie basin constituents, survey results, along with the comments and questions received, will assist the Task Force in developing a prioritized approach to managing Toledo Harbor dredged material which incorporates stakeholder feedback and balanced environmental and economic aspects.

Next Steps

A copy of this report will be hosted on the Ohio Lake Erie Commission's website, along with materials that were presented at the forum. This interim report will be incorporated into the Final Sediment Management and Use Plan for the Toledo Harbor, which is expected to be completed during the summer of 2012.


Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree
Number of Responses (22 total survey participants)
14
12
10
8
6
4
2
0
Question 3
The information shared at today's forum was presented in a clear and understandable manner.
Question 4
As a result of today's forum, I am better informed about Toledo Harbor dredging issues and potential management options.
Question 5
A combination of options will be needed to address sediment management needs of Toledo Harbor dredged material.
Question 6
A combination approach using the four options identified in the presentation (agricultural improvements, wetland restoration, beneficial use, and open-lake placement with controls) is a good starting point to address sediment management needs of Toledo Harbor dredged material.
Question 7
Programmatic flexibility that permits the modification of the degree of reliance on any one particular option is important, understanding that with implementation of any option knowledge is gained and unintended consequences (both good and bad) become evident.
Question 8
The initial suggested sediment volumes allocated for each option in the combination approach (wetland restoration – 7M CY; agricultural improvements – 7M CY; beneficial use – 3M CY; open-lake with controls – 13M CY) appears reasonable based on the information provided..

APPENDIX A

Second Public Forum Invitation

Toledo Harbor Sediment Management and Use Solutions:
Evaluation of Sediment Management and Use Options for Toledo Harbor
Public Forum #2

Tuesday, June 19, 2012
1:00 p.m. - 4:00 p.m.
Toledo Metropolitan Area Council of Governments Building
300 Dr. Martin Luther King Jr. Drive
Toledo, OH 43604

Introduction

Please join us for the second public forum to learn about potential sediment management and use solutions for Toledo Harbor. Over the last year, the Great Lakes Commission, Ohio Lake Erie Commission, Toledo-Lucas County Port Authority, and other members of the Toledo Harbor Dredge Management Task Force have worked with a technical team to evaluate sustainable practices to manage dredged material from Toledo Harbor in a manner that balances economic and environmental aspects. This forum is part of the Toledo Harbor Sediment Management and Use Solutions Project, funded by the Great Lakes Restoration Initiative.

Background

Finding solutions for sediment management in Toledo Harbor is imperative. The Port of Toledo is the most heavily dredged port in the Great Lakes with the annual removal of approximately one million cubic yards of sediment from the federal and non-federal channels located in the lower seven miles of the Maumee River and the approach channel that extends 19 miles in Maumee Bay. The Port of Toledo is critical to the economic viability of Northwest Ohio providing commerce to the entire Great Lakes region and facilitating international commerce and commodity transportation through the St. Lawrence Seaway by annually handling approximately 11 million tons of cargo. In addition to the economic value, western Lake Erie, including Maumee Bay, is one of the most ecologically diverse and productive systems in the Great Lakes. As a result, sediment management solutions must balance both economic and environmental factors.

Purpose

The goal of this forum is to solicit feedback from stakeholders on the prioritization of sediment management and use options identified for Toledo Harbor. During the forum, project representatives will discuss the project objectives, evaluation process, and proposed scoring matrix. A brief question and answer session will conclude the forum.

We hope you can join us!
There is no charge for this event, but we request a RSVP with your name and contact information to the Ohio Lake Erie Commission at lakeeriecommission@lakeerie.ohio.gov or 419-621-2040.

For more information about the project, please visit
http://www.lakeerie.ohio.gov/GLRI/ToledoHarbor.aspx.

Directions to the Dr. Martin Luther King, Jr. Plaza can be found on the next page.

Forum presented by:

Great Lakes Commission des Grands Lacs

Ohio | Lake Erie Commission

Toledo | Lucas County Port Authority

This effort is funded in part through a
Great Lakes Restoration Initiative Grant through U.S. EPA.

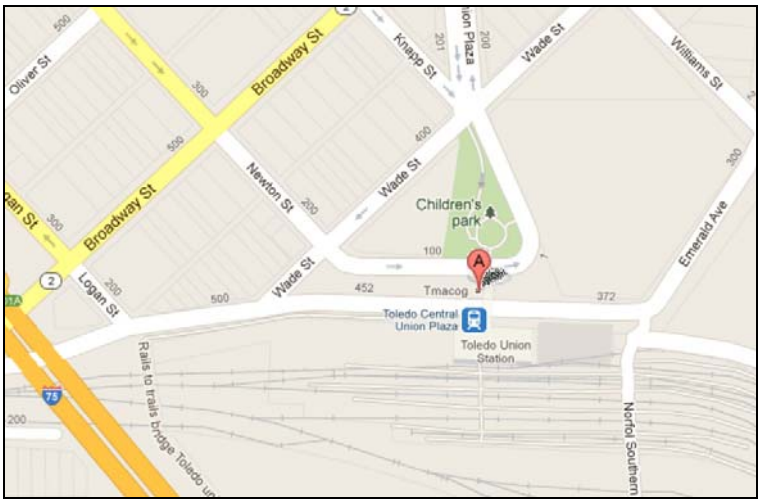
Directions from ANTHONY WAYNE TRAIL/US-25:
Take Anthony Wayne Trail/US-25 North (pass Toledo Zoo, pass South Ave, pass Western Ave; stay in RIGHT hand lane) to...
Exit on Collingwood Ave ramp (toward 1-75 South)...
Collingwood becomes Newton St...
Stay straight on Newton St (pass Broadway) to Central Union/Martin Luther King Plaza...
At STOP sign/Wade St, proceed straight and at next drive, veer to LEFT to upper level/Main Entrance
(there will be flag poles in front of main entrance)
Park in slanted parking spaces in front of the building and right of the main entrance...
Enter via Main Entrance

Directions from WEST/I-475:
Take 475 EAST to 475East/I-75 South to...
EXIT 202A/Washington St...stay in right hand lane to...
Summit St/Turn RIGHT; take Summit St to...
Newton St/Turn LEFT; proceed on Newton to Central Union/Martin Luther King Plaza...
At STOP sign/Wade St, proceed straight and at next drive, veer to LEFT to upper level/Main Entrance
(there will be flag poles in front of main entrance)
Park in slanted parking spaces in front of the building and to the right of the main entrance...
Enter via Main Entrance

Directions from NORTH/I-75:
1-75 South to...
EXIT 208/1-280 South (exit will be on LEFT)...follow 1-280 to...
EXIT 11/Greenbelt Parkway/OH-25 South to...
Cherry St/Turn LEFT to...
Summit St/Turn RIGHT (follow Summit St through downtown past Owens Corning; about mile, Summit turns into Broadway) proceed to...
Newton St/Turn LEFT; proceed on Newton to Central Union/Martin Luther King Plaza...
At STOP sign/Wade St, proceed straight and at next drive, veer to LEFT to upper level/Main Entrance
(there will be flag poles in front of main entrance)
Park in slanted parking spaces in front of the building and to the right of the main entrance...
Enter via Main Entrance

Directions from the SOUTH:
If taking OH Turnpike 1 -80/90; take EXIT 64/1- 75 North Toledo/Detroit...
1-75 NORTH to...
EXIT 201A Collingwood Ave/OH-25S...
Stay straight onto Logan St...
Take 2nd Right onto Collingwood Blvd...
Collingwood becomes Newton St...
Stay straight on Newton St (pass Broadway) to Central Union/Martin Luther King Plaza...
At STOP sign/Wade St, proceed straight and at next drive, veer to LEFT to upper level/Main Entrance
(there will be flag poles in front of main entrance)
Park in slanted parking spaces in front of the building and right of the main entrance...
Enter via Main Entrance

Directions from EAST from Route 2:
Take Route 2 WEST to...
Woodville Rd/OH-2 WEST (cross over Hi-Level bridge) to...
Summit St/Turn LEFT (at base of bridge; Summit turns into Broadway) proceed to...
Newton St/Turn LEFT; proceed on Newton to Central Union/Martin Luther King Plaza...
At STOP sign/Wade St, proceed straight and at next drive, veer to LEFT to upper level/Main Entrance
(there will be flag poles in front of main entrance)
Park in slanted parking spaces in front of the building and to the right of the main entrance...
Enter via Main Entrance



Forum presented by:

Great Lakes Commission des Grands Lacs

Ohio Lake Erie Commission

TOLEDO | LUCAS COUNTY PORT AUTHORITY

This effort is funded in part through a Great Lakes Restoration Initiative Grant through U.S. EPA.

APPENDIX B

Toledo Blade Article

toledoBlade.com

Printed Tuesday, June 26, 2012

Public forum wants harbor dredging input

Alternatives for managing sediment and other material dredged from Toledo Harbor's channels will be the subject of a public forum next week at the Toledo Metropolitan Area Council of Governments.

Over the last year, members of a local task force and technical experts have studied options for dredging management "in a manner that balances economic and environmental aspects," according to a task-force statement.

During the forum, scheduled for June 19 from 1 to 4 p.m., project representatives are to explain the project's objectives and evaluation process and are to present the various options that have been identified.

The forum's purpose is to solicit feedback from various Toledo Harbor interests.

It is to conclude with a question-and-answer session.

Agencies involved include the Great Lakes Commission, Ohio Lake Erie Commission, and the Toledo-Lucas County Port Authority.

There is no charge to attend, but reservations are requested and may be made by calling 419-621-2040 or emailing **lakeeriecommission@lakeerie.ohio.gov**.

APPENDIX C

Dredging Today Article

USA: Public Forum over Toledo Harbor Dredging Set for June 19

Posted on Jun 11th, 2012 with tags 19, Americas, dredging, Forum, harbor, June, News, over, public, set, Toledo, USA.

According to the Toledo Blade, alternatives for managing sediment and other material dredged from Toledo Harbor's channels will be the subject of a public forum next week at the Toledo Metropolitan Area Council of Governments.

During the forum, scheduled for June 19, from 1 to 4 p.m., project representatives are to explain the project's objectives and evaluation process and are to present the various options that have been identified.

Agencies involved include the Great Lakes Commission, Ohio Lake Erie Commission, and the Toledo-Lucas County Port Authority.

APPENDIX D

Second Public Forum Participants

TOLEDO HARBOR SECOND PUBLIC FORUM

ATTACHMENT D

LIST OF PARTICIPANTS

	FIRST NAME	LAST NAME	ORGANIZATION
1	Amy	Alduino	Ohio Department of Development
2	Kelly	Bensman*	Hull & Associates, Inc.
3	Sandy	Bihn	Western Lake Erie Waterkeepers, Inc.
4	Joseph	Cappel*	Toledo-Lucas County Port Authority
5	Fernando	Camargo*	Hull & Associates, Inc.
6	Tom	Chudde	TerraSea Environmental Solutions LLC
7	Libby	Dayton	Ohio State University
8	Janina	Douglas	Lake Erie Improvement Association
9	Kurt	Erichsen	Toledo Metropolitan Area Council of Governments
10	Kristin	Gardner*	Hull & Associates, Inc.
11	Sally	Gladwell	Mannik & Smith
12	Dan	Glomski	Ohio EPA
13	Sophie	Groach	Toledo Blade
14	Tom	Hays	Lucas County
15	Jeremy	Heyerly	URS
16	Gail	Hesse*	Ohio Lake Erie Commission
17	Phil	Hicks*	Hull & Associates, Inc.
18	Steven	Holland	Ohio Department of Natrual Resources -Office of Coastal Management
19	Alan	Horn	Ohio State University
20	Paul	Hotz	TTL
21	Jerry	King	NS Corp
22	David	Knight*	Great Lakes Commission
23	Roger	Knight	ODNR, Division of Wildlife
24	Mark	Loomis*	USEPA - Great Lakes National Program Office
25	Michael	Murray	National Wildlife Foundation
26	Arnold	Page	USACE
27	Terry	Perry	S&L Fertilizer
28	John	Recker	Ohio Deptartment of Transportation
29	Paul	Roman	City of Oregon
30	Rian	Sallee*	Ohio Lake Erie Commission
31	Terry	Shunkland	Partners for Clean Streams
32	Diane	Shunkland	Partners for Clean Streams
33	David	Spangler	Lake Erie Waterkeeper, Inc.
34	Roger	Streiffert	Toledo Metropolitan Area Council of Governments
35	Dan	Thomas	Resident
36	Pauline	Thorndike	USACE
37	Thea	Walsh	Ohio Department of Development
38	Lance	Wehrle	Cullen Park Org
39	John	Welch	West Sister Charter Boat
40	Scott	Woycik	LaFarge

Notes:
(*) Forum Organizer

APPENDIX E

Second Public Forum Agenda

Toledo Harbor Sediment Management and Use Solutions

Stakeholder Forum #2
Tuesday, June 19, 2012
1:00 p.m. - 4:00 p.m.
Toledo Metropolitan Area Council of Governments Building
300 Dr. Martin Luther King Jr. Drive, Toledo, OH 43604

AGENDA

1:00 p.m.	Welcome and Event Overview *Dave Knight, Special Projects Manager, Great Lakes Commission*
1:05 p.m.	Regional Perspective *Dave Knight, Special Projects Manager, Great Lakes Commission*
1:15 p.m.	State Perspective *Gail Hesse, Executive Director, Ohio Lake Erie Commission*
1:25 p.m.	Port Perspective *Joseph Cappel, Director of Cargo Development, Toledo-Lucas County Port Authority*
1:35 p.m.	Evaluation of Sediment Management and Use Options for the Toledo Harbor Sediment Management and Use Plan *John Hull, P.E., Principal, Hull & Associates, Inc.*
3:15 p.m.	Question and Answer Session Moderator: *Dave Knight, Special Projects Manager, Great Lakes Commission*
3:30 p.m.	Forum Wrap-Up, Next Steps, and Survey *John Hull, P.E., Principal, Hull & Associates, Inc.* *Dave Knight, Special Projects Manager, Great Lakes Commission* *Gail Hesse, Executive Director, Ohio Lake Erie Commission* *Joseph Cappel, Director of Cargo Development, Toledo-Lucas County Port Authority*

Ohio Lake Erie Commission | Toledo Lucas County Port Authority | Great Lakes Commission des Grands Lacs | Great Lakes Restoration

Toledo Harbor Sediment Management and Use Public Forum

PRESENTATION NOTES FORM

Thank you for attending this forum. We created this notes form so you can jot down any ideas, questions, comments, etc. you might have during the presentation. The general headings correspond to the discussion topics for the presentation.

Regional, State, and Local Perspectives:

Toledo Harbor Sediment Management and Use Planning Introduction:

Potential Sediment Management and Use Options:

Ranking of Options:

Other Questions or Comments:

Ohio Lake Erie Commission | Toledo Lucas County Port Authority | Great Lakes Commission des Grands Lacs | Great Lakes Restoration

APPENDIX F

Second Public Forum Presentation

Toledo Sediment Management and Use Solutions

Evaluation of Sediment Management and Use Options for the Toledo Harbor Sediment Management and Use Plan

Public Forum #2
June 19, 2012
TMACOG Grand Lobby

Forum Organizers and Funders:

Ohio Lake Erie Commission

TOLEDO | LUCAS COUNTY PORT AUTHORITY

Great Lakes Commission des Grands Lacs

Great Lakes RESTORATION

Great Lakes Commission

Dave Knight

Special Projects Manager

Great Lakes Commission

Great Lakes Commission des Grands Lacs

glc.org/dredging

Great Lakes RESTORATION

2805 S. Industrial Hwy, Suite 100
Ann Arbor, MI 48104-6791
734.971.9135
dknight@glc.org

Logistics

- Restrooms
- Snacks/Beverages
- Health & Safety
- Agenda/Notes Page
- Survey

- Forum Rules
  - Please let the speaker know if something needs repeated
  - Please hold comments and questions pertaining to the content until the Q&A session
- Thank you for attending!

Today's Schedule

- Introduction to the issues from a regional, state, and local perspective
  - Dave Knight, Great Lakes Commission
  - Gail Hesse, Ohio Lake Erie Commission
  - Joe Cappel, Toledo-Lucas County Port Authority
- Presentation of Toledo Harbor Sediment Management and Use Options
  - John Hull, Hull & Associates, Inc.
- Question and Answer Session

Great Lakes Commission

- **The GLC interest historically**

GREAT LAKES DREDGING TEAM

The **Great Lakes Dredging Team** is a partnership of federal and state agencies created to assure that the dredging of U.S. harbors and channels throughout the Great Lakes, connecting channels and tributaries is conducted in a timely and cost effective manner while meeting environmental protection, restoration, and enhancement goals.

Great Lakes Commission

Great Lakes Dredging Team - Windows Internet Explorer

http://glc.org/dredging/index.html

File Edit View Favorites Tools Help

Favorites Pandora Suggested Sites Free Hotmail GLC Web Calendar MeritMail Log In phpMyAdmin 2.11.9.6 - ww... Newsbox Headlines Entry F... News in the Great Lakes Re...

Great Lakes Dredging Team

Site created and maintained by the Great Lakes Commission | www.glc.org

GREAT LAKES DREDGING TEAM

MEETINGS GET INVOLVED PUBLICATIONS LINKS MEMBERSHIP ABOUT GLDT

Beneficial Use

Case Studies

Contaminated Sediment

Dredging Around the Great Lakes

Dredged Material Management

Navigation Depths & Lake Levels

Research & Development Technologies

Soil Erosion & Sedimentation

Contact GLDT

WELCOME!

The **Great Lakes Dredging Team** is a partnership of federal and state agencies created to assure that the dredging of U.S. harbors and channels throughout the Great Lakes, connecting channels and tributaries is conducted in a timely and cost effective manner while meeting environmental protection, restoration, and enhancement goals.

NEW & NOTABLE

- **NEW! Great Lakes Dredging Team Annual Meeting Materials**
  Maumee Bay, Ohio - May 17-18, 2012
- **Final Report - Beneficial Use of Dredged Material and Collaboration**
  - *Appendices B-F*
- **Great Lakes Dredging Team Annual Meeting Summary**
  Cleveland, Ohio 5.20.2010
  (PDF)
- **Great Lakes System Dredged Material Management Long Term Strategic Plan**
  (PDF 1M)
- **Great Lakes Dredging Team Proceedings: 7.14.2009**
  (PDF 0.5M)
- **U.S. Army Corps of Engineers Regional Sediment Management Spring Workshop**
  May 13-14, 2009
  Download Presentations
  (PDF 38M)

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Great Lakes Commission

- **Products:**
  - **“Testing and Evaluating Dredged Material for Upland Beneficial Uses: A Regional Framework”**
  - **“Open Water Disposal of Dredged Materials in the Great Lakes-St. Lawrence River Basin”**
  - **“Waste “Beneficially Using Dredged Materials to Resource: Beneficial Use of Great Lakes Dredged Material”**
  - **“Decision Making Process for Dredged Material Management”**
  - **“Regional Approach for Dredging Windows Determination”**
  - **“Create/Restore Habitat and Restore Brownfields”**

Great Lakes Commission

- **The GLC interest going forward**
  - **Ongoing viability and growth for the Port of Toledo: Jobs**
  - **Environmental quality of the Lake Erie basin: Sustainability**
  - **Lessons for all Great Lakes navigation dredging projects: Technology transfer**
  - **Refinement of best management practices: Collaboration**

State Perspective

Gail Hesse

Executive Director

Ohio Lake Erie Commission

Ohio | Lake Erie Commission

lakeerie.ohio.gov

111 Shoreline Drive
Sandusky, Ohio 44870
419-621-2040
gail.hesse@lakeerie.ohio.gov

Lake Erie Economic Values

- **Lake Erie**
  - **$10.7 Billion Lake Erie Tourism**
  - **$1 Billion Lake Erie Fishing**
  - **3 million Ohio drinking water users**

Sediment Entering Lake Erie – April 2008

Algal Blooms in Lake Erie – August 2011

Photo: NOAA Satellite Image

Ohio EPA Comparative Analysis

WWTP Effluent vs. Dredged Sediment

For Quantity Perspective Only

Parameter	Toledo Bay View WWTP Effluent (based on 2008 data)	Toledo Harbor Dredged Sediment (based on 2004 data & 1.25 million CY)
Cadmium	Samples below detection limit	2.50 tons/yr
Lead	Samples below detection limit	48.03 tons/yr
Mercury	2.18 pounds/yr	620 pounds/yr
Silver	Samples below detection limit	0.61 tons/yr
Zinc	5.1 tons/yr	250.74 tons/yr
Total Phosphorus	69.4 tons/yr	1096 tons/yr (2010)
Total Suspended Solids	983 tons/yr	2,062,500 tons/yr (total solids)
Selenium	Samples below detection limit	1.25 tons/yr
Ammonia	20.4 tons/yr	311.65 tons/yr
Operating Expenses	$41 million based on 2007 Annual Report	FY10 Budget - $5 million

Ohio's Regulatory Role

- Ohio EPA issues a Section 401 Water Quality Certification to the Corps of Engineers
  - Historically issued on a 5 year cycle
  - Recently issued annually

- Status of 2012 WQC
  - Will include sampling in the open-lake placement area

Ohio's Position

- Toledo Harbor must be kept open
- Lake Erie must be restored
- Best approaches include beneficial use and source reduction
- Support cooperative partnerships
- Sustainable practices

The Economic Impact of the Port of Toledo

Joseph Cappel

Director of Cargo Development

Toledo-Lucas County Port Authority

TOLEDO | LUCAS COUNTY PORT AUTHORITY

toledoportauthority.org
toledoseaport.org
tourtheport.com
toledoexpress.com

One Maritime Plaza, Suite 701
Toledo, Ohio 43604
419.243.8251
jcappel@toledoportauthority.org

Great Lakes Shipping: Environmental Benefits

- Toledo's 15 Marine Terminals handle over 700 vessel calls and 12 million tons of cargo per year.

- Ships help preserve North American energy resources: Ships carry vast amounts of cargo long distances using significantly less fuel than trains and trucks. They are 4 times more efficient than trucks and 1.75 times more efficient than trains.

- Ships have the smallest carbon footprint: A Great Lakes freighter produces 70 percent less carbon dioxide per metric ton/kilometer compared to trucks.

- Ships remove congestion from roadways: The largest Great lakes vessel can carry 70,000 metric tons- the equivalent to 3000 truckloads or 700 rail cars.

Great Lakes Shipping: Economic Benefits

- The shipping industry employs 227,000 people in the U.S. and Canada and produces business revenue of $33.5 billion.
- Shipping contributes $4.6 billion in federal, state and local taxes each year.
- Electrical utilities, steel mills, construction companies, mining companies, manufacturers and farmers all depend on the 164 million tons of cargo delivered by Great Lakes ships each year.
- Marine transportation on the System provides $3.6 billion in annual savings compared to the next best all land transportation alternative.

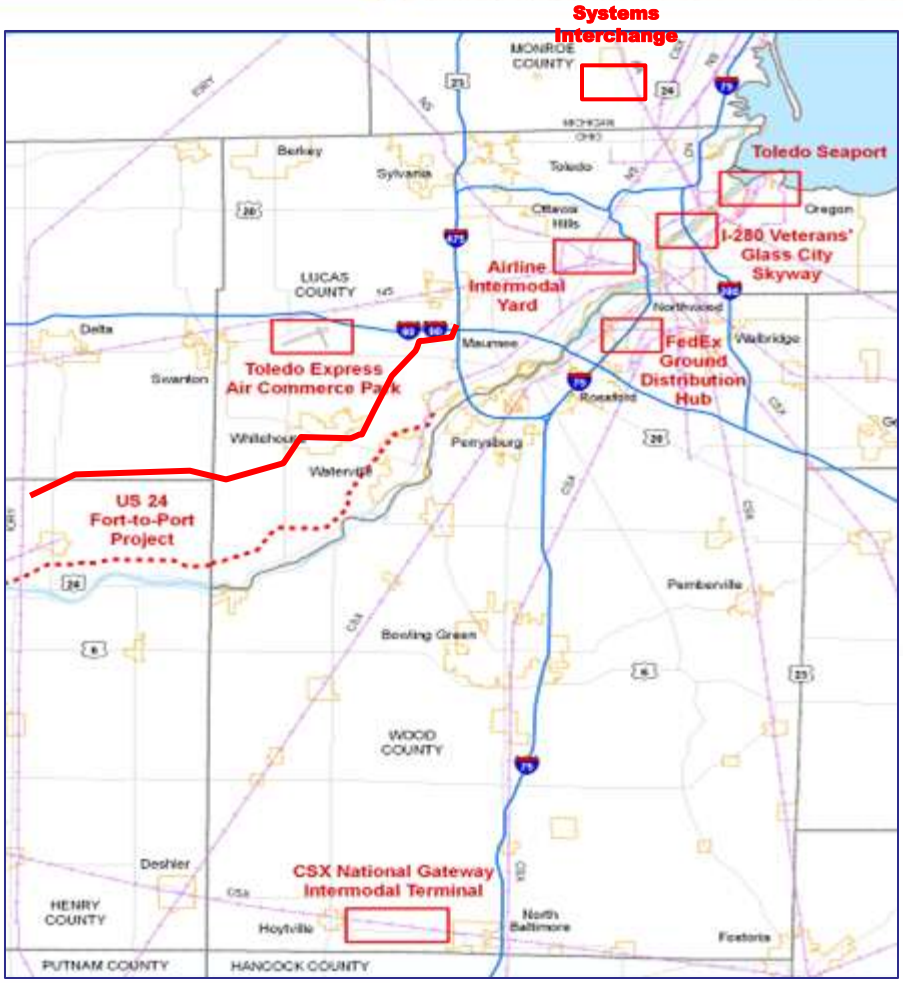
The Port of Toledo's Economic Impact

- 6,971 jobs are supported by the cargo moving via Toledo's marine terminals. 2,521 jobs were directly generated by the maritime activity at the terminals with wages and salaries totaling over $109 million.
- Direct business revenue received by the firms dependent upon the cargo handled at the Port totaled $381.3 Million in 2010.
- A total of $154.7 million in state and federal taxes were generated by cargo and vessel activity in 2010.

Regional Transportation Investment

- I-75/475 Systems Interchange Ph 1 $98 M
- Toledo Seaport Improvements $35 M
- I-280 Veterans Glass City Skyway Bridge & Roadway Proj. $300 M
- NS Airline Yard Intermodal $13 M
- **FedEx Ground Facility** **$87 M**
- Toledo Express Airport **$7 M**
- **US 24 Fort-to-Port Highway** **$490 M**
- **CSX Northwest OH Intermodal** **$175 M**

Regional Investment $1,205 M



But…

- Investments in infrastructure & economic impact won't matter unless Toledo's dredging issues are addressed with sustainable solutions considering the needs of industry, community and environment.
- For every one inch of reduced draft, a lake trading vessel forfeits 50 to 270 tons of cargo from their payload. Ocean vessels lose 115 tons of cargo for each inch of lost draft.
- The International Reputation of the Port of Toledo is on the Line! One bad experience can cause a vessel never to return.
- This is a complex issue and there is no silver bullet solution. We need the best and brightest to collaborate - this plan is a result of the efforts of many stakeholders.
- If we can continue to work together to address the needs of commerce and the environment we will achieve great things!

Toledo Harbor Dredging Task Force

- Membership
  - Toledo-Lucas County Port Authority
  - State agencies
  - Federal agencies
  - Local officials
  - Non-governmental organizations (environmental, commercial, and recreational)

Overview of Options

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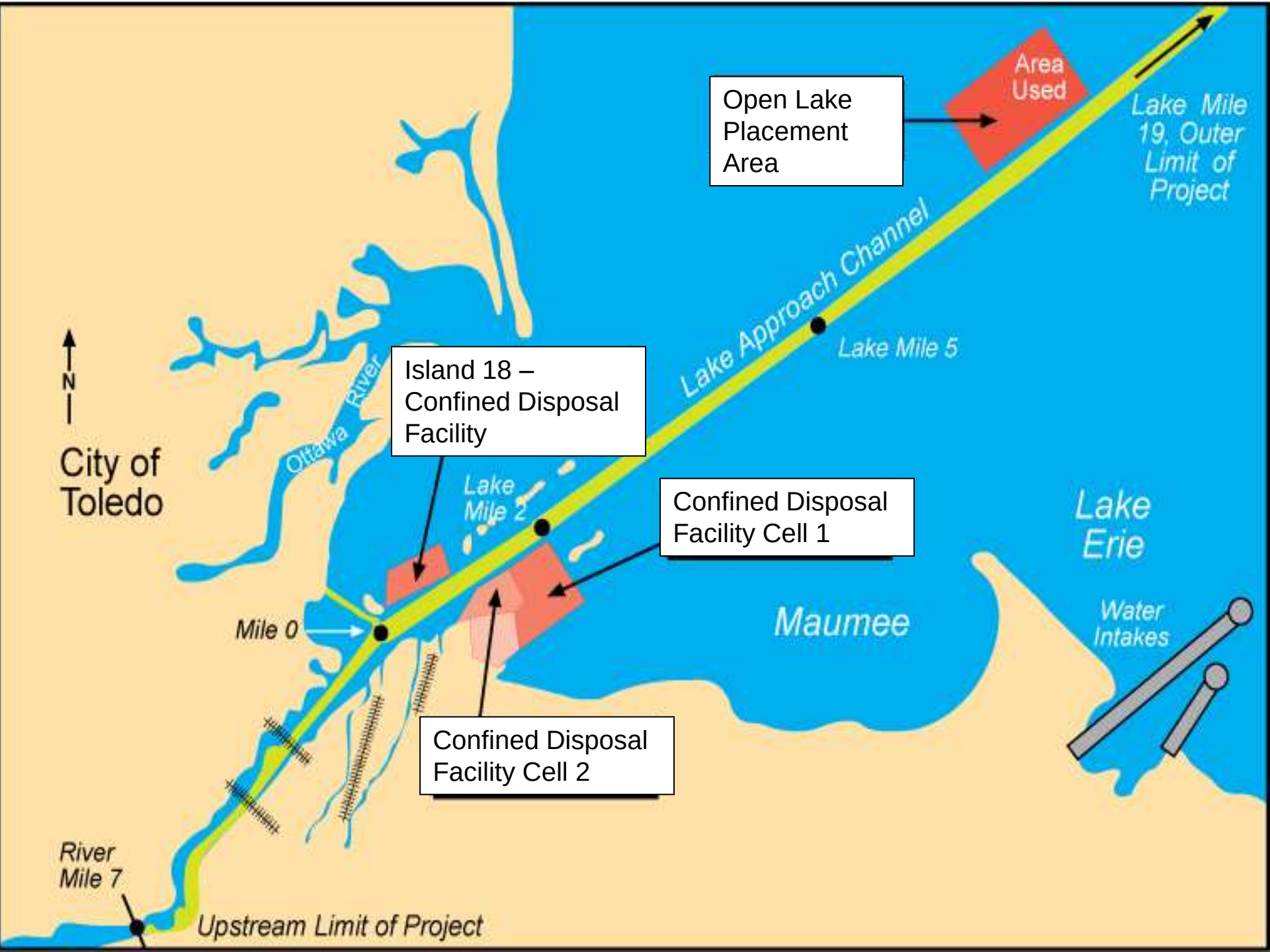
Toledo Harbor Sediment Management and Use

- Issues and Opportunities
- Technical Approaches
- Project Identification
- Prioritization for Implementation


Open Lake Placement Area
Area Used
Lake Mile 19, Outer Limit of Project
Lake Approach Channel
Lake Mile 5
Island 18 – Confined Disposal Facility
Ottawa River
Lake Mile 2
Confined Disposal Facility Cell 1
N
City of Toledo
Lake Erie
Mile 0
Maumee
Water Intakes
Confined Disposal Facility Cell 2
River Mile 7
Upstream Limit of Project

Toledo Harbor Sediment Management and Use Planning

- Introduction to the Project
  - The Ohio Lake Erie Commission was awarded a GLRI grant to create a sediment management strategy/plan for the Toledo Harbor that identifies and addresses:
    - recommended short-term (1-5 years) options
    - recommended long-term (30 year) options
    - funding needs/sources/mechanisms
    - timelines for implementation of recommended approaches

Toledo Harbor Sediment Management and Use Planning

- Sediment management and use plan status:
  - Solicited input on potential options and gathered value judgments from stakeholders on the importance of relative criteria to evaluate options (weighting factors)
    - Completion of June 2011 public forum
    - Completion of December 2011 Task Force consensus
  - Evaluation of short term (1-5 years) and long term (5-30 years) options
    - Compiled relevant data and information
    - Estimated dredge capacity needs
    - Completed preliminary screening of potential options identified internally and by stakeholders

Today's Objectives

- Review potential sediment use options
- Present Technical Team's evaluation process and results
- Present prioritized approaches for sediment management options
- Solicit input from stakeholders

Potential Sediment Use Options

- Solicited input on potential options from stakeholders at June 2011 Public Forum
  - Create Wetlands
  - Create Islands
  - New Metropark
  - Use of Geotubes
  - Erosion Control
  - Beneficial Use
  - Floodplain Berms

Identification of Options

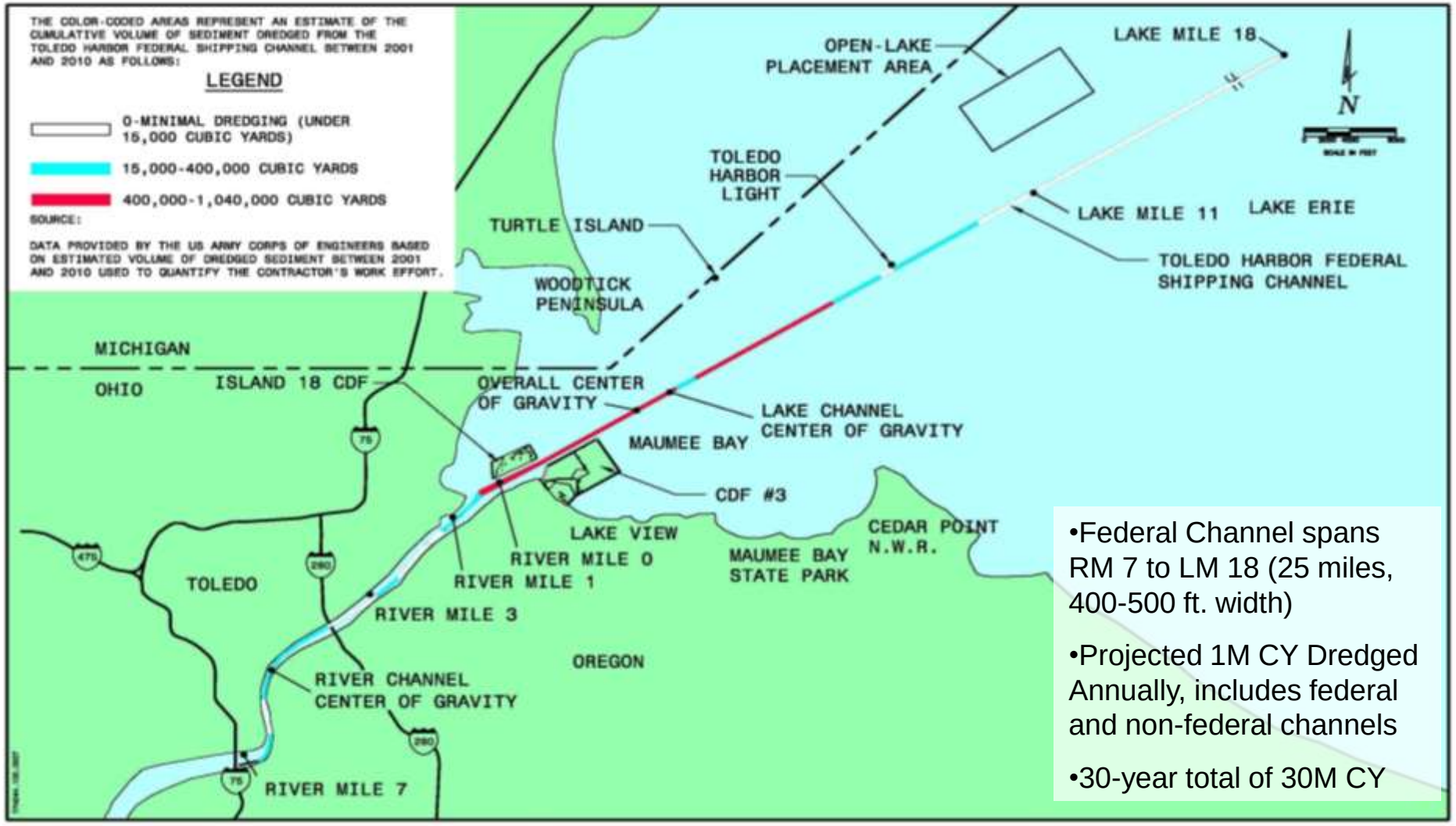
- Ideas from the 1st Public Forum were evaluated by the Technical Team

- Technical Team identified options/conceptual approaches to carry forward in the detailed evaluation using best professional judgment with respect to the conditions of Toledo Harbor and surrounding areas

Major Assumptions

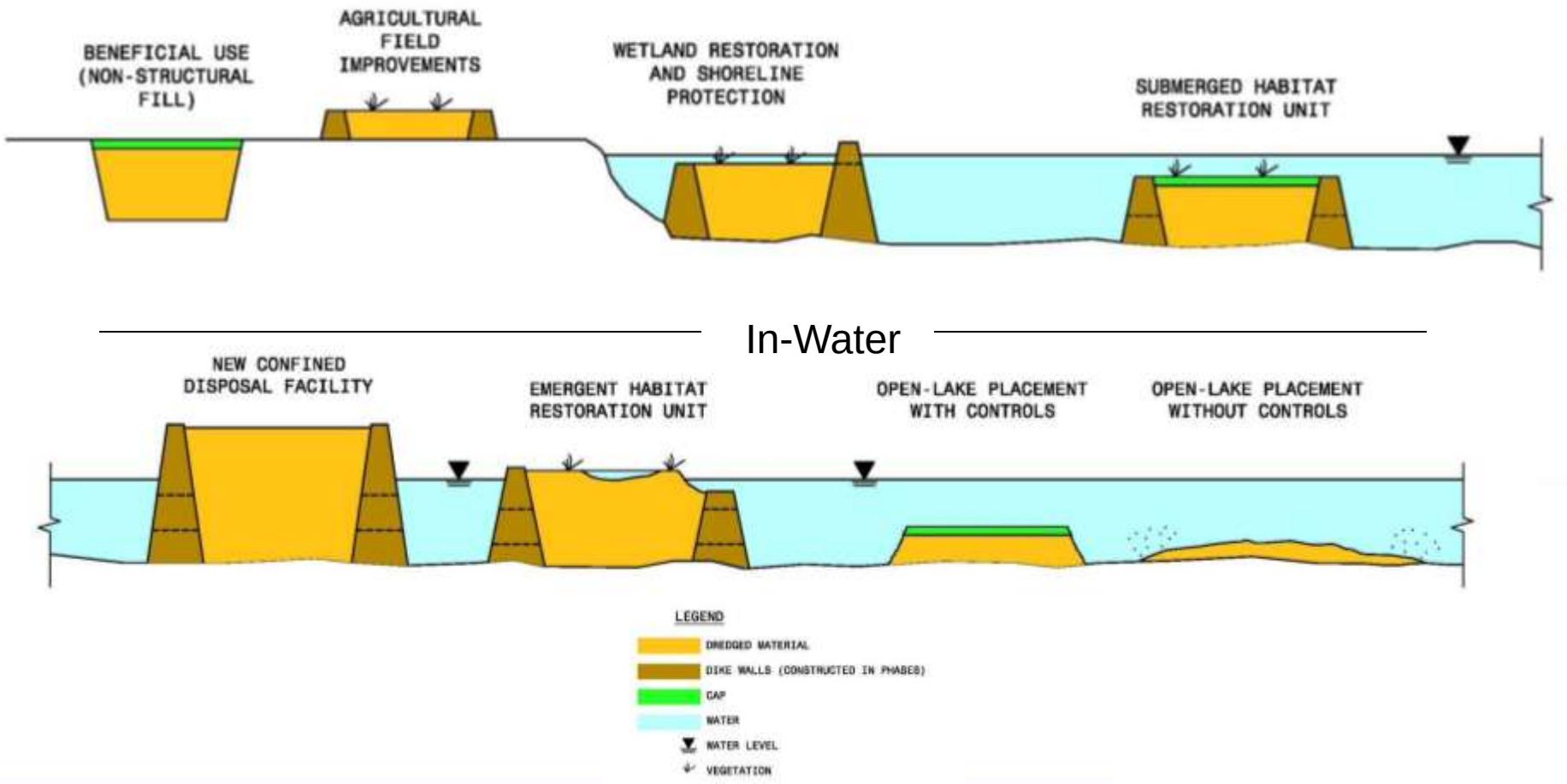
- No programmatic constraints
- A combination option is likely a better solution
- Option Costs
  - Basic recognition of major capital improvement and O&M costs
  - Used to serve as a relative comparison between options - not to be used as comprehensive cost estimate for each alternative
  - Approximate location of option used for estimating purposes

Toledo Harbor Dredging

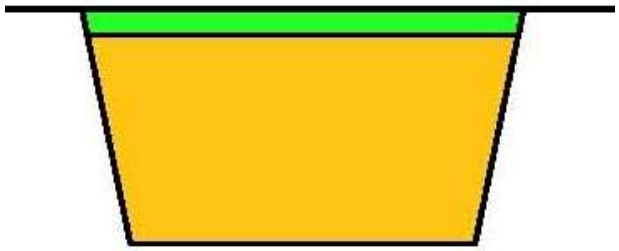


- Federal Channel spans RM 7 to LM 18 (25 miles, 400-500 ft. width)
- Projected 1M CY Dredged Annually, includes federal and non-federal channels
- 30-year total of 30M CY

Potential Sediment Management and Use Options



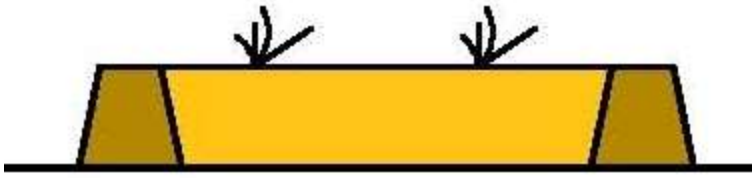
Beneficial Use of Dredged Material as Non-Structural Fill



Sediment off-loaded from barge/scow near the shore

- Use dredged materials in productive ways as a resource that results in environmental, economic, or social benefits.
- Examples:
  - Brownfield revitalization
  - Strip mine reclamation & solid waste management
  - Construction and industrial use (port development, airports, urban, residential)
  - Material transfer (fill, dikes, levees, parking lots, roads)

Agricultural Field Improvements

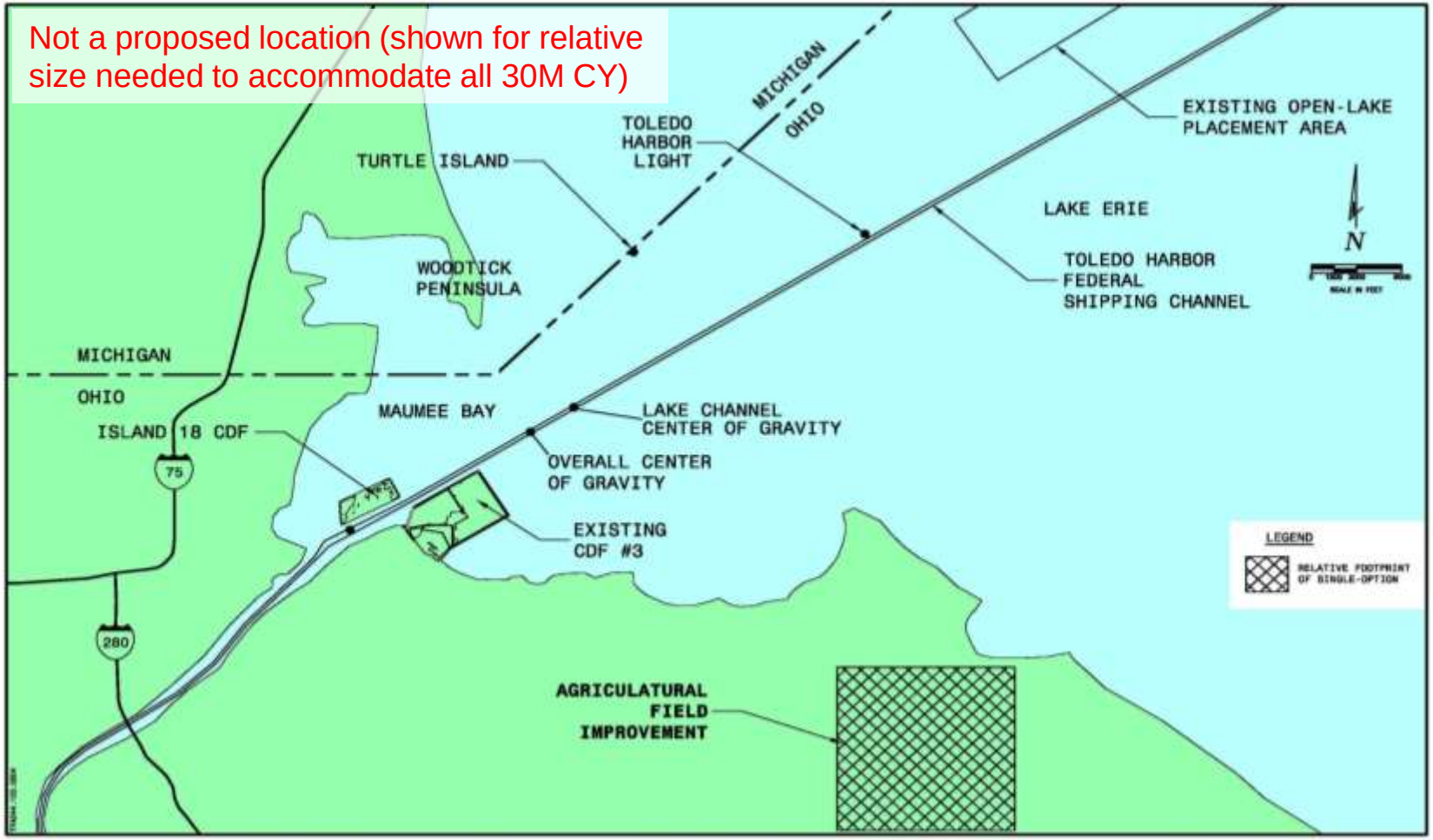


Sediment pumped onto shore from dredging operations center of gravity and subsequently pumped to final site via booster pump structure(s)

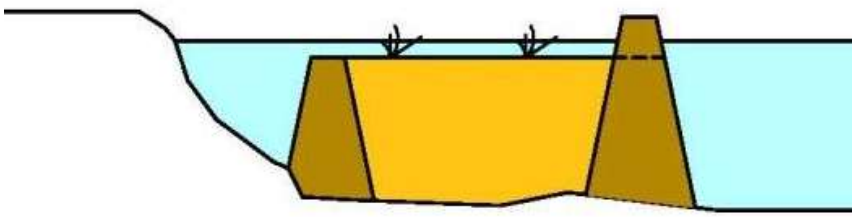
- Use dredged material to raise the elevation of agricultural fields, thus, improving drainage and future productivity
  - 5-mile radius
  - 10-mile radius
    - 4 ft. improvement height

Agricultural Field Improvements

Relative Footprint of 30M CY for Single-Option



Wetland Restoration and Shoreline Protection

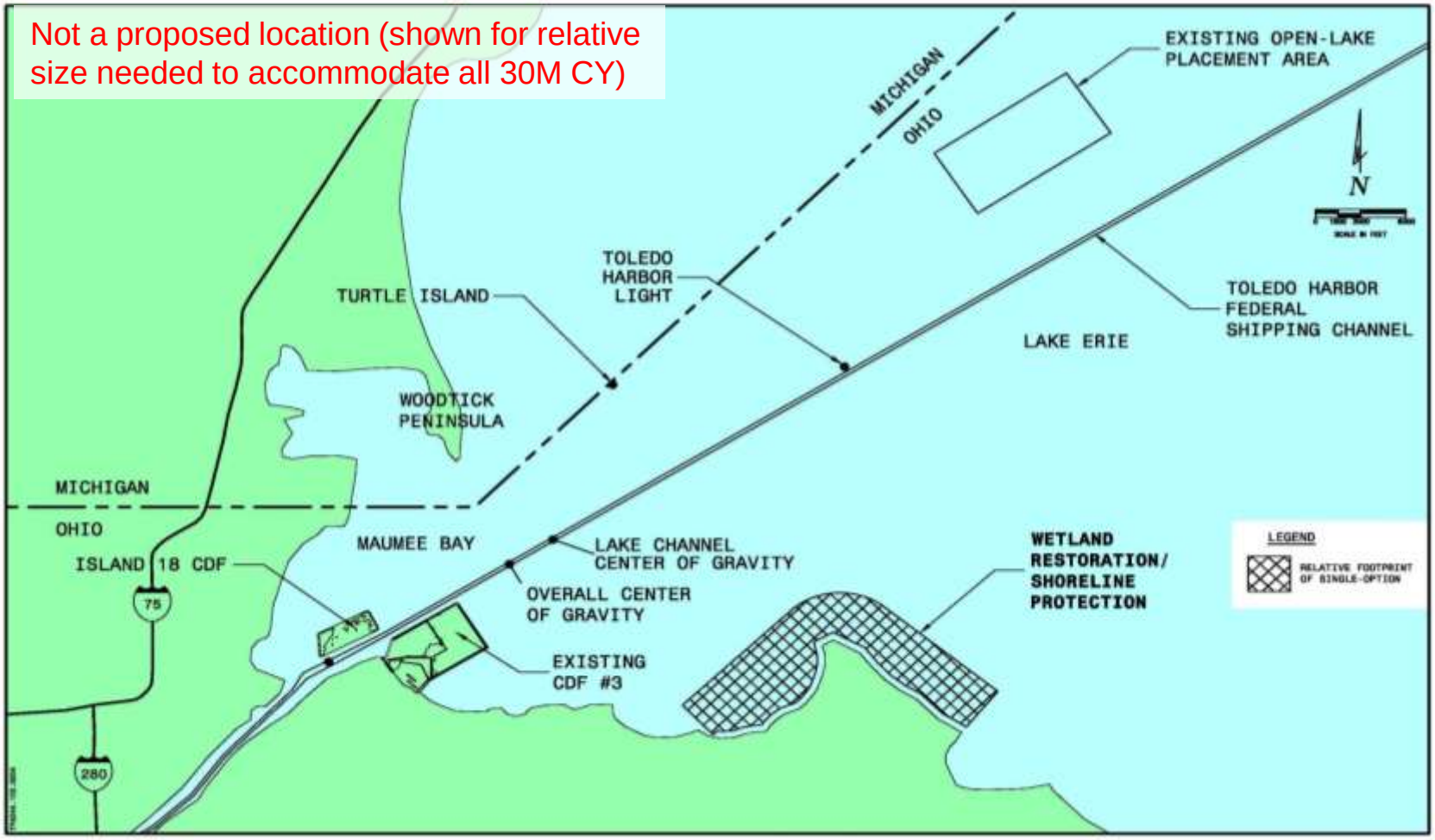


Sediment pumped from dredging operations center of gravity to final location

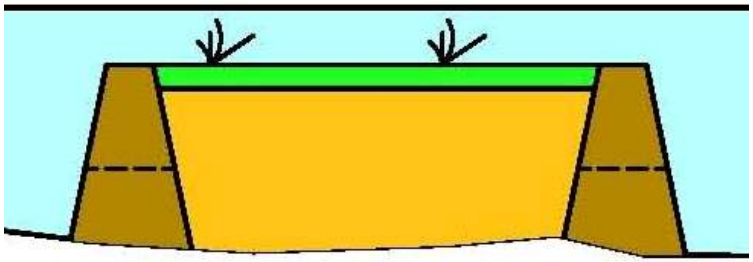
- Use dredged material to create additional wetland areas and a protective barrier for the existing shoreline
  - Structure base 5-7 ft. below LWD
  - Final dike surface 4-12 ft. above LWD
  - Final wetland surface near LWD

Wetland Restoration and Shoreline Protection

Relative Footprint of 30M CY for Single-Option



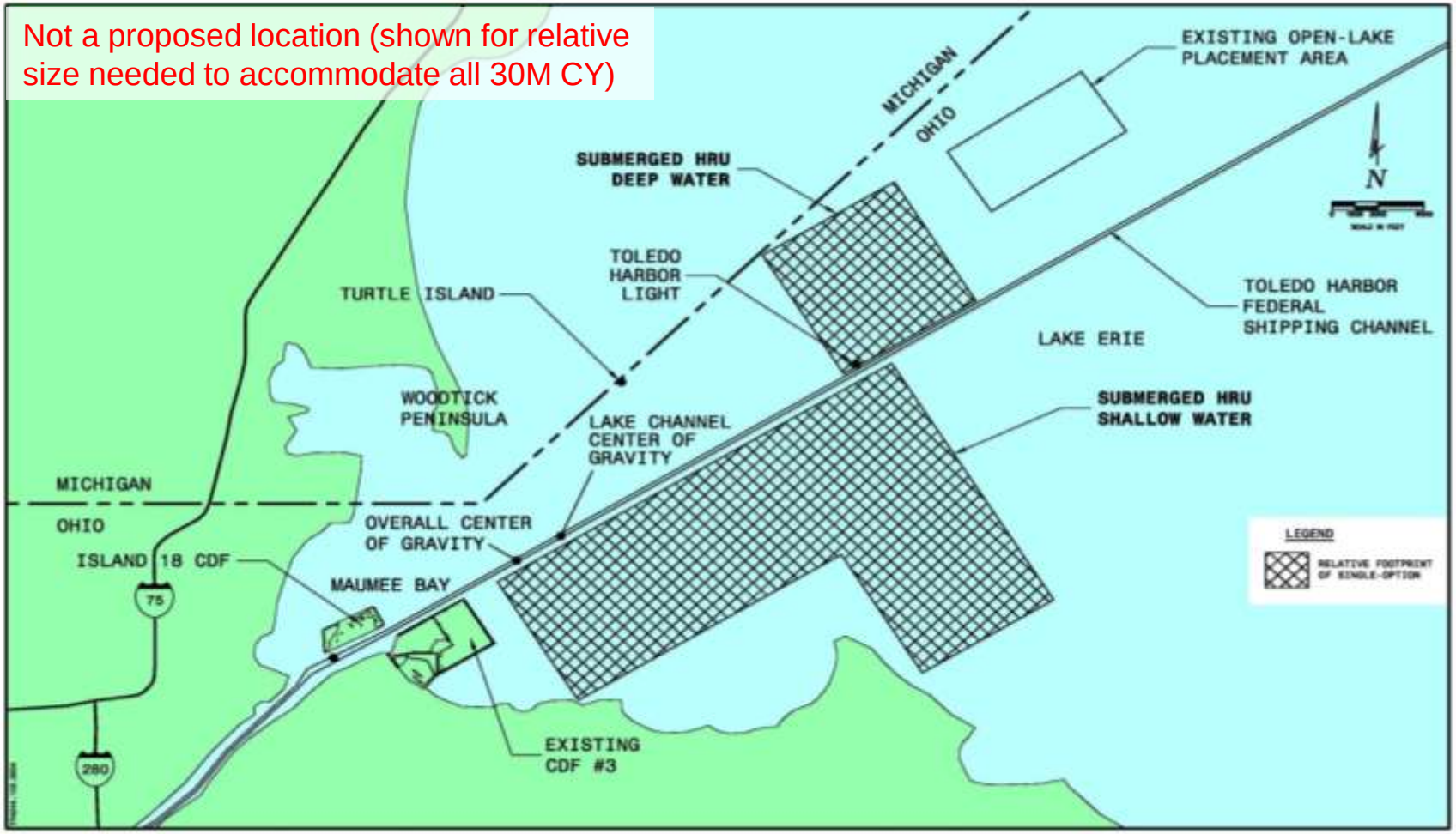
Submerged Habitat Restoration Unit



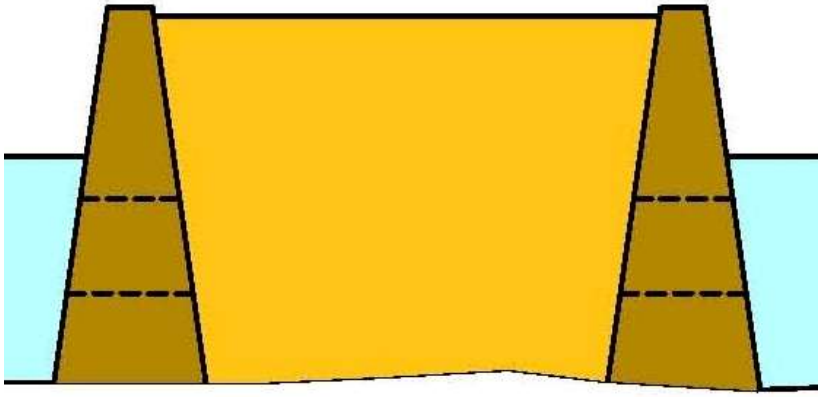
Dredged material transported from channel to final location via scow/barge and pumped or released into HRU diked area

- Use of dredged material to assist in the development of a Habitat Restoration Unit (HRU) that will provide future submerged wildlife refuge/habitat
  - Deep water HRU
    - Structure base 20 ft. below LWD
    - Final structure surface 10 ft. below LWD
  - Shallow water HRU
    - Structure base 7 ft. below LWD,
    - Final structure surface 3 ft. below LWD

Submerged Habitat Restoration Unit
Relative Footprint of 30M CY for Shallow and Deep Single-Options



New Confined Disposal Facility

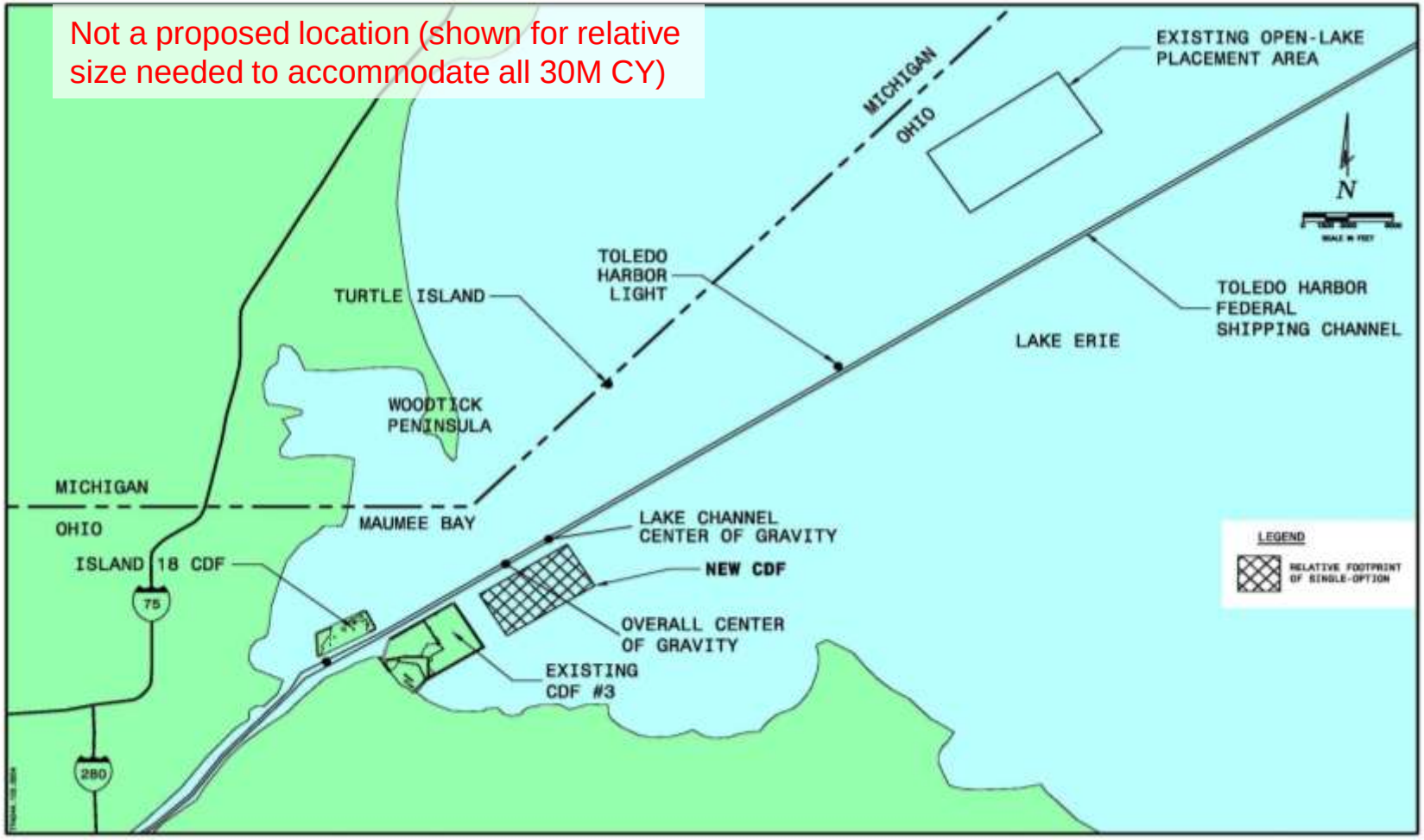


Dredged material transported from channel to final location via scow/barge and pumped or released into contained area

- Construct a new confined disposal facility (CDF) to contain the material
  - Not specifically designed for habitat enhancement
  - Structure base 5 ft. below LWD
  - Final structure surface 30 ft. above LWD

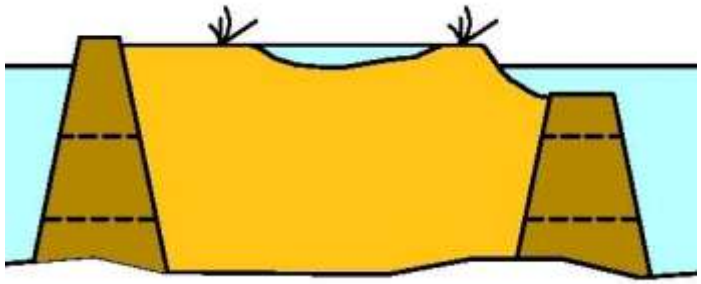
New Confined Disposal Facility

Relative Footprint of 30M CY for Single-Option



Emergent Habitat Restoration Unit

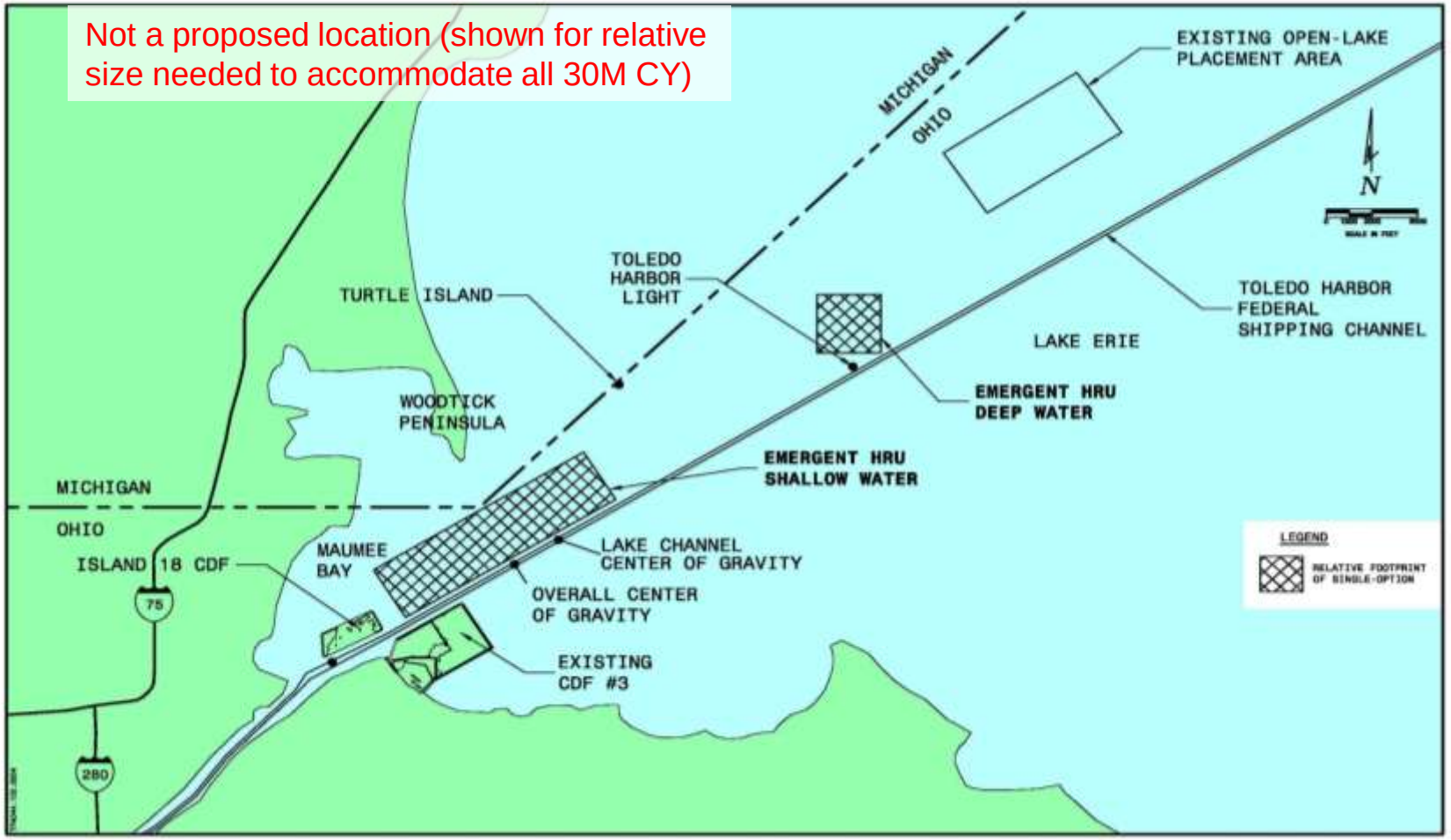
Poplar Island, MD (Source: USACE)



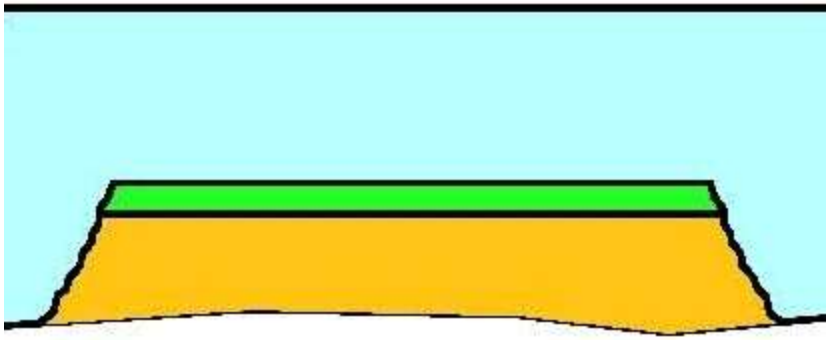
Dredged material transported from channel to final location via scow/barge and pumped or released into HRU diked area

- Use of dredged material to assist in the development of a Habitat Restoration Unit (HRU) that will provide a future emergent wildlife refuge/habitat
- Deep water HRU
  - Structure base 20 ft. below LWD
  - Final structure surface 30 ft. above LWD
- Shallow water HRU
  - Structure base 5 ft. below LWD,
  - Final structure surface 12.5 ft. above LWD

Emergent Habitat Restoration Unit
Relative Footprint of 30M CY for Shallow and Deep Single-Options



Open-Lake Placement with Controls

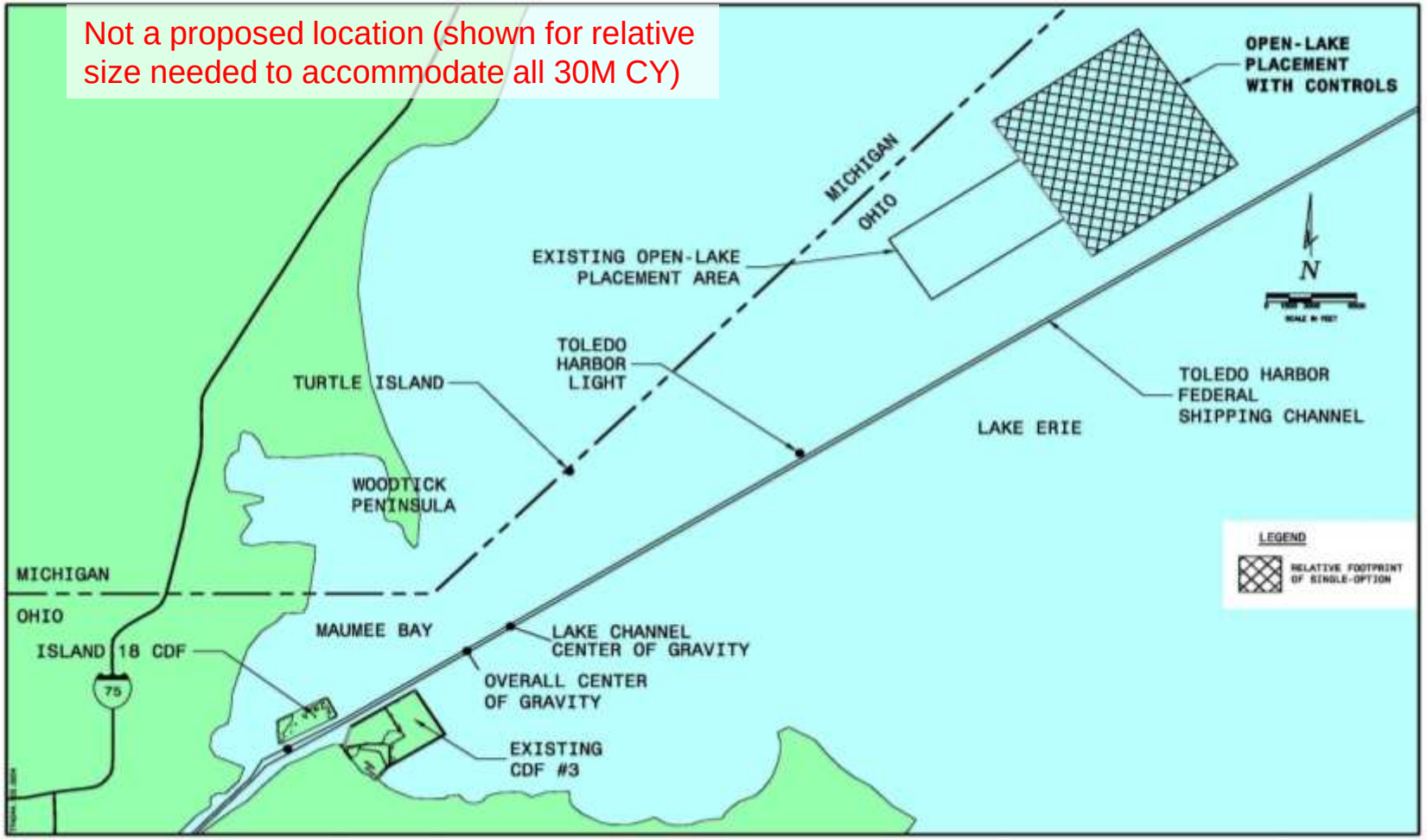


Dredged material transported from channel to final location via scow/barge and released to placement area

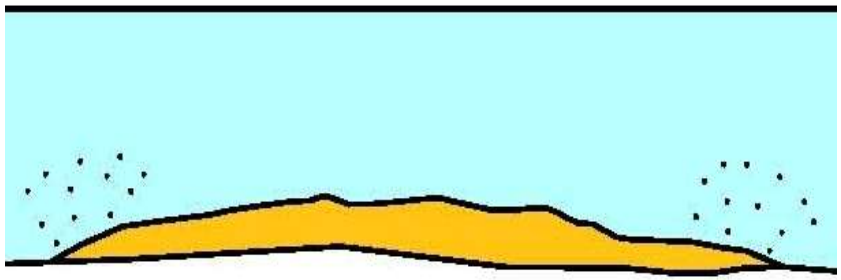
- Open-lake placement with controls to decrease nutrient availability and/or increase shear strength of material
  - Potential HRU aspect
  - Either at or near the current open lake placement area

Open-Lake Placement with Controls

Relative Footprint of 30M CY for Single-Option



Open-Lake Placement without Controls

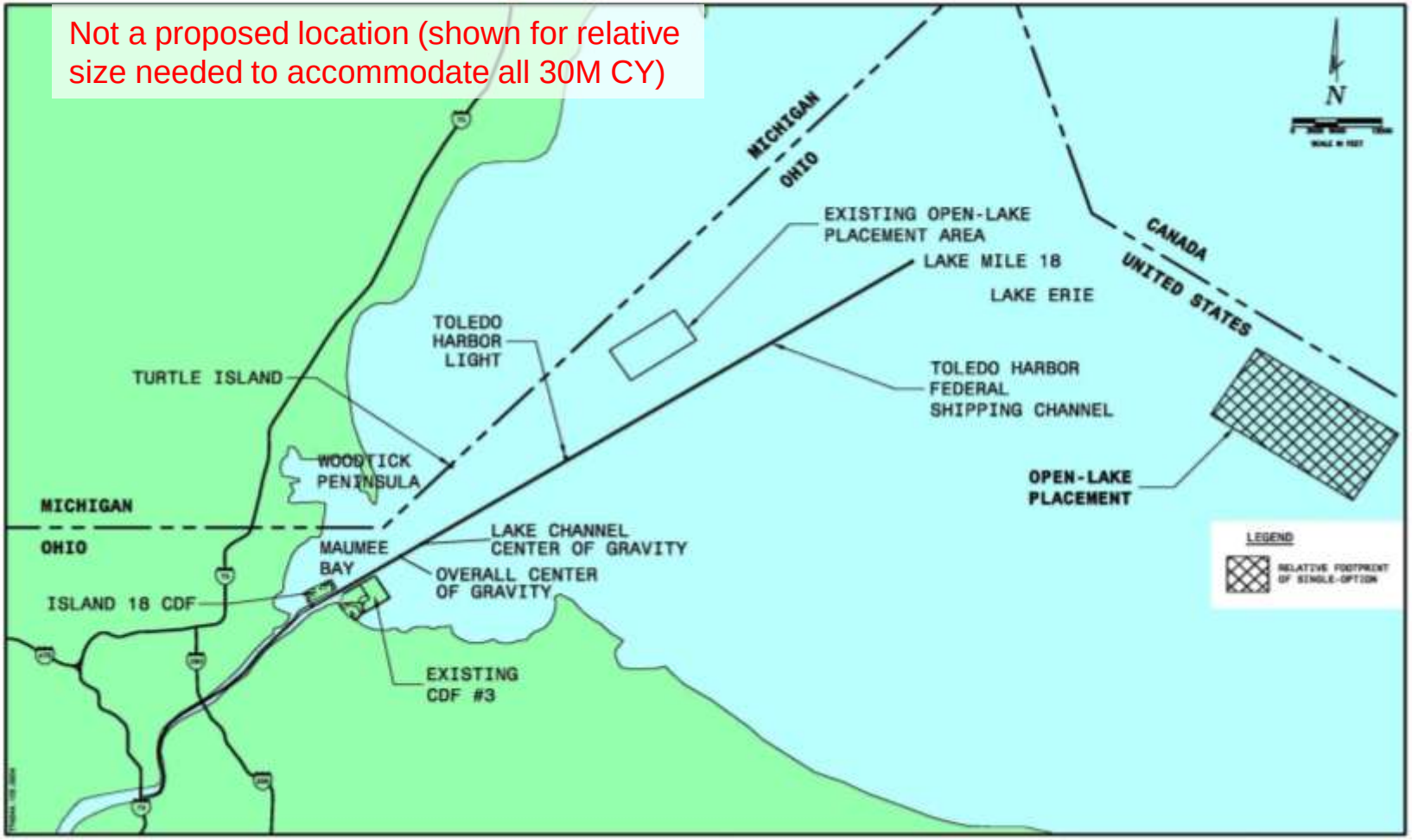


Dredged material transported from channel to final location via scow/barge and released to placement area

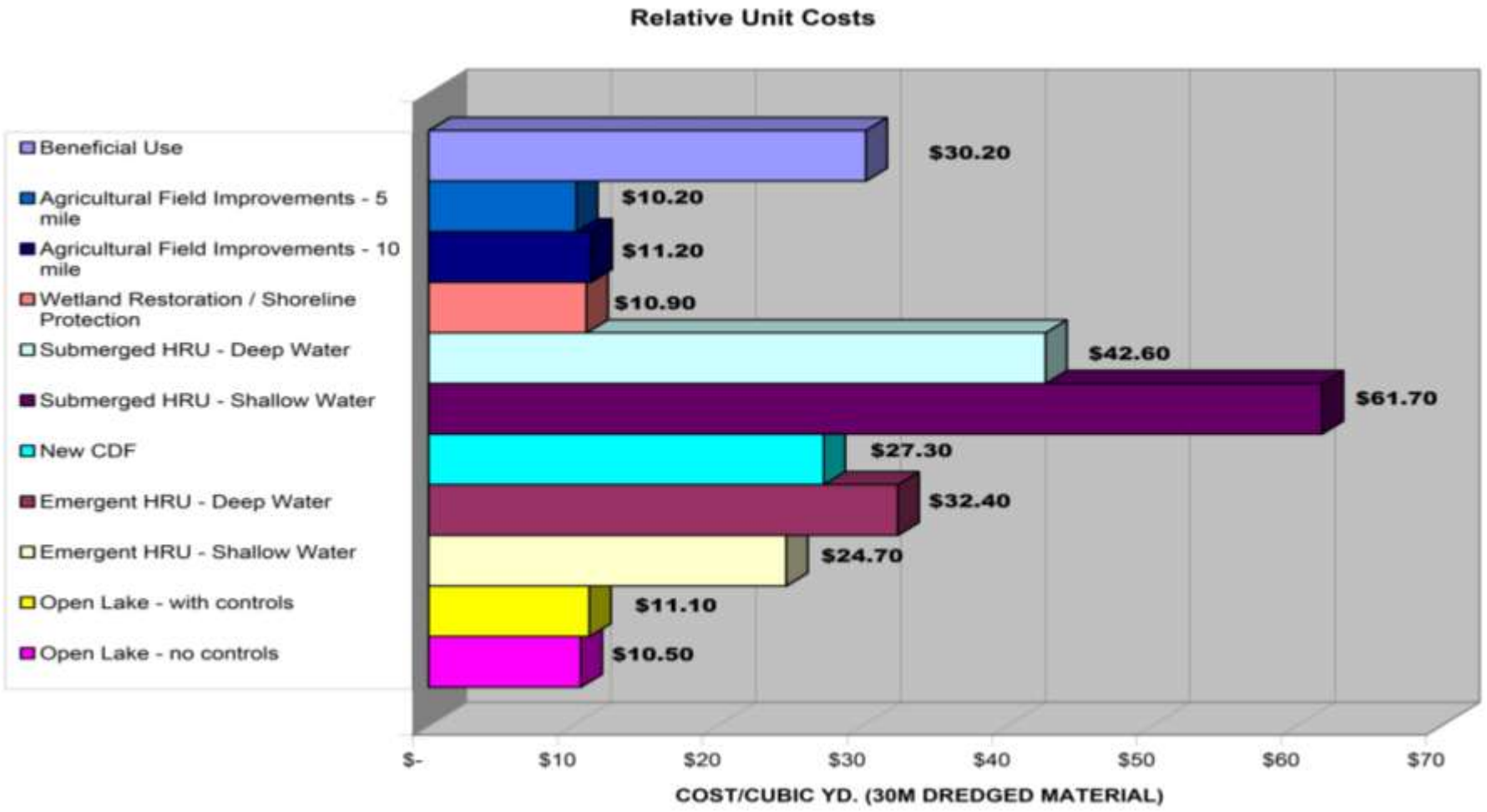
- Relocated/new open-lake placement from overall dredging operations center
  - No controls
  - Minimizes the potential for individual redistribution of sediment in the Western Lake Erie Basin
  - Possible reduction in influence of algae blooms

Open-Lake Placement without Controls

Relative Footprint of 30M CY for Single-Option



Single Option Relative Unit Costs



Toledo Harbor Sediment Management and Use Options

- Is one option that can accommodate all 30 million CY feasible?
  - Complex logistics
  - Compounded eco-habitat uses/impacts
  - Unintended consequences
  - Programmatic constraints

Evaluation Process

- Each option evaluated to receive all of the 30-year estimated dredged material volume (30M CY) – despite initial assumption that a Combination Option is likely a better solution
- Initial evaluation did not consider
  - All aspects of a specific location of option
  - Current programmatic/regulatory restrictions
  - Funding availability and sources
  - Limitations on currently accepted practices
  - Inflation of current market costs
- Initial evaluation did consider
  - Location relative to Center of Gravity of estimated volume of material dredged between 2001-2010
  - Current lake bathymetry
  - Current market costs

Evaluation Process (Continued)

- Matrix to score the dredge material management and use options across six major categories of technical criteria and sub-categories identified and discussed at the June 2011 Public Forum:
  - Feasibility
  - Ecological Benefits
  - Environmental Impacts
  - Human Benefits
  - Economic Benefits
  - Implementation Cost

Evaluation Process (Continued)

For each Technical Criteria category:

Weighting Factors

- Assigned by Task Force members
- 1-100, for each technical criteria category

Technical Criteria

- Assigned by Hull Technical Team
- 1-5, for multiple technical criteria for each option

Avg. Weighting Factor

x

Avg. Technical Criteria Score

=

Score for Each Option

June 2011 Public Forum Input

- Summarized in public forum report and posted online and discussed at Task Force meeting
  - Input on ranking of major factors was considered by the Task Force in weighting factor determination
  - Input on sub-categories was considered by technical team in development of technical criteria scoring

Feasibility

Scale:

1 - Highly complicated
2 - Moderately to highly complicated
3 - Moderately complicated
4 – Minimally to moderately complicated
5 - Minimally complicated

Technical Criteria	Beneficial Use	Emergent HRU - Deep Water	Emergent HRU - Shallow Water	Submerged HRU - Deep Water	Submerged HRU - Shallow Water	Wetland Restoration & Shoreline Protection	Agricultural Field Improvements (5-mile radius)	Agricultural Field Improvements (10-mile radius)	Open-Lake - No Controls	Open-Lake - With Controls	New CDF
Placement Timing and Sequencing	1	5	5	5	4	3	3	4	5	4	5
Capacity Expansion Capability	5	5	4	5	3	2	5	5	5	5	4
Size of Overall Footprint	2	4	2	2	1	2	2	2	3	3	3
Implementation/Construction Complexity	4	1	2	2	2	3	4	3	5	4	3
Construction Duration	5	1	2	2	2	3	4	4	5	5	2
Site Accessibility	4	4	4	4	4	4	4	3	2	4	4
Average Score	**3.5**	**3.3**	**3.2**	**3.3**	**2.7**	**2.8**	**3.7**	**3.5**	**4.2**	**4.2**	**3.5**

Ecological Benefits/Effects

Scale:

1- negative overall effect, high level of effort to overcome
2- negative effect, moderate level of effort to overcome
3 - minimal effect
4 - positive effect, moderate degree of benefit
5 - positive effect, high degree of benefit

Technical Criteria	Beneficial Use	Emergent HRU - Deep Water	Emergent HRU - Shallow Water	Submerged HRU - Deep Water	Submerged HRU - Shallow Water	Wetland Restoration & Shoreline Protection	Agricultural Field Improvements (5-mile radius)	Agricultural Field Improvements (10-mile radius)	Open-Lake - No Controls	Open-Lake - With Controls	New CDF
Planktonic and Benthic Community/Habitat	3	2	2	4	4	4	3	3	2	2	2
Fish and Aquatic Inverterbrate species/habitat	3	4	4	4	4	4	3	3	2	2	2
Wetlands (tidal, non-tidal)	3	4	4	3	3	4	3	3	3	3	3
Protected Species/Habitat	3	3	4	3	3	4	3	3	3	3	3
Pelagic Birds/Habitat	3	4	4	3	3	4	3	3	3	3	4
Terrestrial Species/Habitat	3	4	4	3	3	4	3	3	3	3	3
Creation of Surface Water Features with Ecologically Beneficial Habitat	3	4	4	3	3	4	3	3	3	3	4
Average Score	**3.0**	**3.6**	**3.7**	**3.3**	**3.3**	**4.0**	**3.0**	**3.0**	**2.7**	**2.7**	**3.0**

Environmental Impacts/Effects

Scale:

1- negative overall effect, high level of effort to overcome
2- negative effect, moderate level of effort to overcome
3 - minimal effect
4 - positive effect, moderate degree of benefit
5 - positive effect, high degree of benefit

Technical Criteria	Beneficial Use	Emergent HRU - Deep Water	Emergent HRU - Shallow Water	Submerged HRU - Deep Water	Submerged HRU - Shallow Water	Wetland Restoration & Shoreline Protection	Agricultural Field Improvements (5-mile radius)	Agricultural Field Improvements (10-mile radius)	Open-Lake - No Controls	Open-Lake - With Controls	New CDF
Hydro-dynamic Effects	5	4	4	4	4	4	4	4	1	3	2
Land Improvements	5	4	4	3	3	4	5	5	3	3	4
Surface Water Quality	3	3	3	3	3	3	4	4	1	4	2
Groundwater Quality	3	3	3	3	3	3	4	4	3	3	3
Average Score	**4**	**3.5**	**3.5**	**3.25**	**3.25**	**3.5**	**4.25**	**4.25**	**2**	**3.25**	**2.75**

Human Benefits/Effects

Scale:

1- negative overall effect, high level of effort to overcome
2- negative effect, moderate level of effort to overcome
3 - minimal effect
4 - positive effect, moderate degree of benefit
5 - positive effect, high degree of benefit

Technical Criteria	Beneficial Use	Emergent HRU - Deep Water	Emergent HRU - Shallow Water	Submerged HRU - Deep Water	Submerged HRU - Shallow Water	Wetland Restoration & Shoreline Protection	Agricultural Field Improvements (5-mile radius)	Agricultural Field Improvements (10-mile radius)	Open-Lake - No Controls	Open-Lake - With Controls	New CDF
Recreation Opportunity	3	4	5	3	4	4	3	3	3	3	3
Flood Protection	3	3	3	3	3	5	5	5	3	3	3
Aesthetics	3	4	5	3	3	4	2	2	3	2	2
Human Health Risk	3	3	3	3	3	3	3	3	2	3	2
Navigational Safety	3	2	2	3	2	3	3	3	3	3	2
Average Score	**3**	**3.2**	**3.6**	**3**	**3**	**3.8**	**3.2**	**3.2**	**2.8**	**2.8**	**2.4**

Economic Benefits

Scale:

1- negative overall effect, high level of effort to overcome
2- negative effect, moderate level of effort to overcome
3 - minimal effect
4 - positive effect, moderate degree of benefit
5 - positive effect, high degree of benefit

Technical Criteria	Beneficial Use	Emergent HRU - Deep Water	Emergent HRU - Shallow Water	Submerged HRU - Deep Water	Submerged HRU - Shallow Water	Wetland Restoration & Shoreline Protection	Agricultural Field Improvements (5-mile radius)	Agricultural Field Improvements (10-mile radius)	Open-Lake - No Controls	Open-Lake - With Controls	New CDF
Revenue Generation - During Operation	5	3	3	3	3	3	4	4	3	3	5
Revenue Generation - Post-Operation	4	4	4	3	3	3	5	5	3	3	4
Public Need	5	4	4	4	4	4	4	4	3	3	3
Job Creation	5	4	4	4	4	4	4	4	3	3	4
Tourism	3	5	5	4	4	4	4	4	4	3	3
Local Commerce	4	5	5	4	4	4	5	5	3	3	3
Average Score	**4.3**	**4.2**	**4.2**	**3.7**	**3.7**	**3.7**	**4.3**	**4.3**	**3.2**	**3.0**	**3.7**

Implementation Costs

Scale:

1 - Highest relative cost
5 – Lowest relative cost
Intermediate score values relatively based on range of costs per CY

Technical Criteria	Beneficial Use	Emergent HRU - Deep Water	Emergent HRU - Shallow Water	Submerged HRU - Deep Water	Submerged HRU - Shallow Water	Wetland Restoration & Shoreline Protection	Agricultural Field Improvements (5-mile radius)	Agricultural Field Improvements (10-mile radius)	Open-Lake - No Controls	Open-Lake - With Controls	New CDF
Score (Based on Estimated Cost per CY)	3.45	3.27	3.87	2.48	1.00	4.95	5.00	4.92	4.98	4.93	3.67

Average Technical Criteria Scores	Beneficial Use	Emergent HRU - Deep Water	Emergent HRU - Shallow Water	Submerged HRU - Deep Water	Submerged HRU - Shallow Water	Wetland Restoration & Shoreline Protection	Agricultural Field Improvements (5-mile radius)	Agricultural Field Improvements (10-mile radius)	Open-Lake - No Controls	Open-Lake - With Controls	New CDF
Feasibility Avg. Score	3.5	3.3	3.2	3.3	2.7	2.8	3.7	3.5	4.2	4.2	3.5
Ecological Benefits Avg. Score	3.0	3.6	3.7	3.3	3.3	4.0	3.0	3.0	2.7	2.7	3.0
Environmental Impacts Avg. Score	4	3.5	3.5	3.25	3.25	3.5	4.25	4.25	2	3.25	2.75
Human Benefits Avg. Score	3	3.2	3.6	3	3	3.8	3.2	3.2	2.8	2.8	2.4
Economic Benefits Avg. Score	4.3	4.2	4.2	3.7	3.7	3.7	4.3	4.3	3.2	3.0	3.7
Implementation Cost Score	3.45	3.27	3.87	2.48	1.00	4.95	5.00	4.92	4.98	4.93	3.67
Total Score	**21.3**	**21.0**	**22.0**	**19.0**	**16.9**	**22.8**	**23.5**	**23.2**	**19.8**	**20.9**	**19.0**

Ranking of Options Based on Average Technical Scores

Rank	Option	Average Score
1	Agricultural Fields (5-mile Radius)	23.5
2	Agricultural Fields (10-mile Radius)	23.2
3	Wetland Restoration & Shoreline Protection	22.8
4	Emergent HRU - Shallow Water	22.0
5	Beneficial Use	21.3
6	Emergent HRU - Deep Water	21.0
7	Open-Lake - With Controls	20.9
8	Open-Lake - No Controls	19.8
9	Submerged HRU - Deep Water	19.0
9	New CDF	19.0
11	Submerged HRU - Shallow Water	16.9

Weighting Factors

Category of Technical Criteria	Public Forum #1 Rank (n=100)	Task Force Rank (n=12)	Task Force Assigned Weighting Factors
Feasibility	4	3	17
Ecological Benefits	2	1	22
Environmental Impacts	1	2	20
Human Benefits	6	6	10
Economic Benefits	5	5	14
Implementation Costs	3	3	17

Weighted Technical Criteria Scores	Beneficial Use	Emergent HRU - Deep Water	Emergent HRU - Shallow Water	Submerged HRU - Deep Water	Submerged HRU - Shallow Water	Wetland Restoration & Shoreline Protection	Agricultural Field Improvements (5-mile radius)	Agricultural Field Improvements (10-mile radius)	Open-Lake - No Controls	Open-Lake - With Controls	New CDF
Feasibility Weighted Score (17)	59.5	56.7	53.8	56.7	45.3	48.2	62.3	59.5	**70.8**	**70.8**	59.5
Ecological Benefits Weighted Score (22)	66.0	78.6	81.7	72.3	72.3	**88.0**	66.0	66.0	59.7	59.7	66.0
Environmental Impacts Weighted Score (20)	80	70	70	65	65	70	**85**	**85**	40	65	55
Human Benefits Weighted Score (10)	30	32	36	30	30	**38**	32	32	28	28	24
Economic Benefits Weighted Score (14)	**60.7**	58.3	58.3	51.3	51.3	51.3	**60.7**	**60.7**	44.3	42.0	51.3
Implementation Cost Weighted Score (17)	58.7	55.6	65.8	42.2	17.0	84.2	**85.0**	83.6	84.7	83.8	62.4
Total Weighted Score	**354.8**	**351.2**	**365.7**	**317.4**	**281.0**	**379.7**	**391.0**	**386.8**	**327.5**	**349.4**	**318.2**

Ranking of Options Based on Weighted Technical Score

Rank	Option	Weighted Technical Score
1	Agricultural Fields (5-mile Radius)	391.0
2	Agricultural Fields (10-mile Radius)	386.8
3	Wetland Restoration & Shoreline Protection	379.7
4	Emergent HRU - Shallow Water	365.7
5	Beneficial Use	354.8
6	Emergent HRU - Deep Water	351.2
7	Open-Lake - With Controls	349.4
8	Open-Lake – No Controls	327.5
9	New CDF	318.2
10	Submerged HRU - Deep Water	317.4
11	Submerged HRU - Shallow Water	281.0

Single-Option Challenges

- Challenges of using only one alternative:
  - Practicality/Logistics (low flexibility, seasonal limitations)
  - Costs (high initial capital investment, balance between capital and O&M)
  - Location (large overall footprint)
  - Optimization of alternative (compromise/tradeoff between technical categories)
  - Size (large structural requirements/site-specific impacts)
- Both short-term and long-term plans will likely consist of a combination of approaches due to the challenges of single-option

Combination Option

- Use a combination of options to minimize challenges
- Criteria for combination option:
  - Weighted scores
  - Estimated costs
  - Practicality/feasibility
  - Shorter implementation time
  - Improved short-term benefits

Selection of Combination Option

Rank	Single Option (30M CY)	Feasibility Weighted Score	Weighted Technical Score	Relative Total Cost
1	Agricultural Fields (5-mile Radius)	62.3	391.0	$305M
2	Agricultural Fields (10-mile Radius)	59.5	386.8	$336M
3	Wetland Restoration & Shoreline Protection	48.2	379.7	$326M
4	Emergent HRU - Shallow Water	53.8	365.7	$741M
5	Beneficial Use	59.5	354.8	$906M
6	Emergent HRU - Deep Water	56.7	351.2	$972M
7	Open-Lake - With Controls	70.8	349.4	$334M
8	Open-Lake – No Controls	70.8	327.5	$314M
9	New CDF	59.5	318.2	$820M
10	Submerged HRU - Deep Water	56.7	317.4	$1,280M
11	Submerged HRU - Shallow Water	45.3	281.0	$1,850M

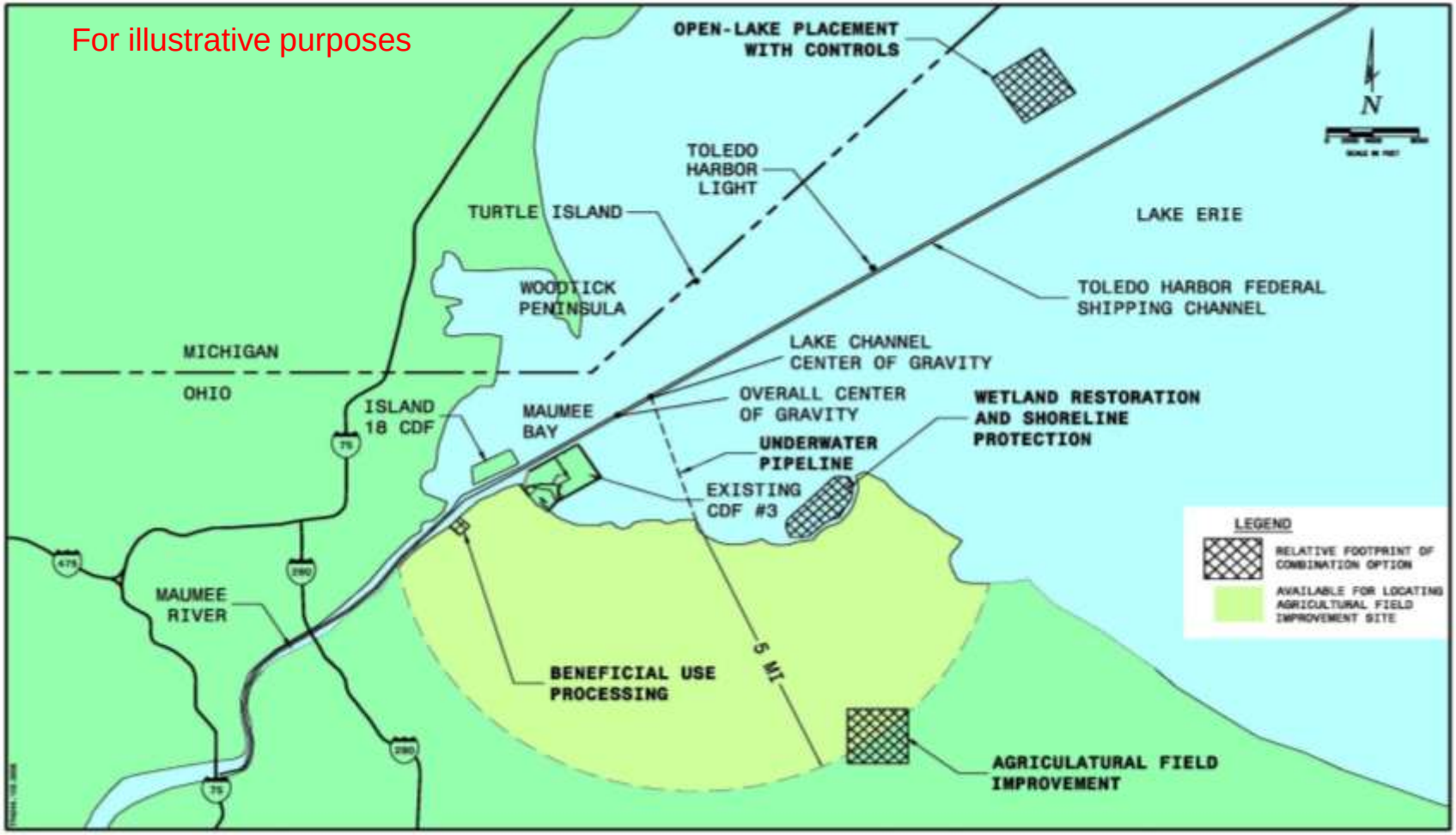
Selection of Combination Option

- Options selected generally have a lower unit cost increase when a smaller footprint / feasible quantity was analyzed
- More feasible options
- Options selected ranked the highest in at least one technical category
- Arbitrary selection of volumes for purposes of discussion
- Will need a detailed design analysis completed

Combination Option

- Wetland Restoration and Shoreline Protection (7M CY)
- Agricultural fields (7M CY)
- Beneficial Use (3M CY)
- Open-lake with controls (13M CY)

Conceptual Locations of Combination Option



Single and Combination Option Weighted Score Evaluation

Technical Criteria	Beneficial Use	Emergent HRU - Deep Water	Emergent HRU - Shallow Water	Submerged HRU - Deep Water	Submerged HRU - Shallow Water	Wetland Restoration & Shoreline Protection	Agricultural Field Improvements (5-mile radius)	Agricultural Field Improvements (10-mile radius)	Open-Lake - No Controls	Open-Lake - With Controls	New CDF	Combination
Feasibility Weighted Score (17)	59.5	56.7	53.8	56.7	45.3	48.2	62.3	59.5	70.8	70.8	59.5	79.3
Ecological Benefits Weighted Score (22)	66.0	78.6	81.7	72.3	72.3	88.0	66.0	66.0	59.7	59.7	66.0	75.4
Environmental Impacts Weighted Score (20)	80	70	70	65	65	70	85	85	40	65	55	75
Human Benefits Weighted Score (10)	30	32	36	30	30	38	32	32	28	28	24	32
Economic Benefits Weighted Score (14)	60.7	58.3	58.3	51.3	51.3	51.3	60.7	60.7	44.3	42.0	51.3	56
Implementation Cost Weighted Score (17)	58.7	55.6	65.8	42.2	17.0	84.2	85.0	83.6	84.7	83.8	62.4	79.9
Total Weighted Score	**354.8**	**351.2**	**365.7**	**317.4**	**281.0**	**379.7**	**391.0**	**386.8**	**327.5**	**349.4**	**318.2**	**397.7**

Single and Combination Option Final Ranking and Relative Costs

Rank	Option	Weighted Score	Relative Unit Costs ($/CY)
1	Combination	397.7	$13.50
2	Agricultural Fields (5-mile Radius)	391.0	$10.20
3	Agricultural Fields (10-mile Radius)	386.8	$11.20
4	Wetland Restoration & Shoreline Protection	379.7	$10.90
5	Emergent HRU - Shallow Water	365.7	$24.70
6	Beneficial Use	354.8	$30.20
7	Emergent HRU - Deep Water	351.2	$32.40
8	Open-Lake - With Controls	349.4	$11.10
9	Open-Lake – No Controls	327.5	$10.50
10	New CDF	318.2	$27.30
11	Submerged HRU - Deep Water	317.4	$42.60
12	Submerged HRU - Shallow Water	281.0	$61.70

Enhanced Environmental Dredging Techniques

- Hydraulic Dredging with permanent discharge lines
- Enhanced open-lake placement techniques

Short-term vs. Long-term Options

- Short-term options have minimal delays resulting from permitting, design, etc.
  - Beneficial use of sediment from the river at upland locations
  - Enhanced open-lake placement
- Long-term options promote activities with lower habitat impacts and lower cost
  - Agricultural use
  - Nearshore options

Acknowledgements

- Hull & Associates, Inc.
- Moffat & Nichol
- Proudfoot
- Great Lakes Marketing
- ARCADIS

Toledo Harbor Sediment Management and Use Planning

Questions and Answer Session

Next Steps

- Survey – We would like your feedback!

- For additional information or to provide follow up input, please email lakeeriecommission@lakeerie.ohio.gov or call 419-621-2040.

Next Steps

- Technical Team will:
  - Incorporate feedback from stakeholders and the Toledo Harbor Task Force
  - Complete Final Plan in Summer 2012

- Updates, forum results, and this presentation will soon be available at www.lakeerie.ohio.gov

Thank You for Your Participation!

Ohio | Lake Erie Commission

lakeerie.ohio.gov

Great Lakes Commission
des Grands Lacs

glc.org/dredging

Great Lakes RESTORATION

greatlakesrestoration.us

TOLEDO | LUCAS COUNTY
PORT AUTHORITY

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APPENDIX G

Second Public Forum Minutes from Question & Answer Session

TOLEDO HARBOR SEDIMENT MANAGEMENT AND USE SOLUTIONS
SECOND PUBLIC FORUM

APPENDIX G

QUESTION AND ANSWER SESSION MINUTES AND RESPONSES

These minutes were prepared based on questions and comments received during the second public forum. While questions and answers are not verbatim, they reflect the major themes that were discussed during the question and answer session, as well as follow-up questions and discussion, where noted. To provide clarification, more detailed responses, or to provide information regarding how public feedback was incorporated into the plan or will be considered by the team members during subsequent project phases, the Project Team added post-forum responses to certain questions and comments. Those post-form responses are italicized. .

1. Attendee Comment:
Has there been any field testing for agricultural use in terms of nutrients?

Forum Organizer Response:
Yes, there has been quite a bit of work done by the Ohio State University. The Toledo Metropolitan Area Council of Governments also worked with OSU with some turf studies. Also, there is a dredge placement area in Port Clinton, which is about 30 acres. Placement of dredged material there is just underway and the fill can remain in agricultural use or could be converted for development. The nutrient value of the dredged sediment has been evaluated and there are micronutrients as well as phosphorus and nitrates. There may be some blending of the material required. The addition of nutrients or amendments to the soil may add some extra cost, but it is not expected to be a significant factor.

[Project Team Response: Recent studies related to the use of dredged material for agricultural uses and more details of the Port Clinton-area project are included in the final Toledo Harbor Sediment Management and Use Plan.]

2. Attendee Comment:
Regarding nutrients and water quality, could the U.S. Army Corps of Engineers (USACE) change their criteria for establishing the cost of dredging and what happens to it based on nutrients and not just contaminants?

Forum Organizer Response:
There is some evaluation of the federal standards currently underway. New information should be coming in the next few months. The status of incorporating nutrients into the Section 404/401 process and the status of revisions to the federal standard will be included in the final Toledo Harbor Sediment Management and Use Plan.

[Project Team Response: U.S. EPA and USACE are currently updating guidance related to evaluation of dredged sediment. The goal of this project is to create one guidance document for both inland and ocean testing that incorporates risk management concepts into engineering approaches for dredged material management. The completion date for this project is not known at this time. The status of this project and any revisions to the current federal dredged material evaluation methods will be included in the final Toledo Harbor Sediment Management and Use Plan.]

3. Attendee Comment:
Why is Woodtick Peninsula not included as an option?

Forum Organizer Response:
Given feedback from the Task Force and based on the constraints of the grant parameters, the potential options and their feasibility analyses were limited to the state of Ohio. However, understanding that some stakeholders were interested in better understanding the viability of this option, the project team estimated that approximately 1.8M CY would be required to fill the old channel at Woodtick Peninsula, or approximately two to three years capacity. The logistics of pumping the material to Woodtick Peninsula would need to be evaluated.

4. Attendee Comment:
What about an option in front of Woodtick Peninsula?

Forum Organizer Response:
There is a sand bar in front of Woodtick Peninsula that should not be covered up.

[Project Team Response to Comments #3 & #4: The Task Force agreed to keep all placement options to be evaluated within the State of Ohio borders. Therefore, this project did not evaluate any options in Michigan or Canada. However, understanding that some stakeholders were interested in better understanding the viability of this option, the project team estimated that there is approximately 1.8M CY capacity at Woodtick Peninsula, or approximately two to three years capacity. While Woodtick Peninsula is not being proposed as an option as part of this project, it is a viable option should there be community support. For the purposes of this project, discussion on why this option was not considered, including some of the factors above will be included in the final Toledo Harbor Sediment Management and Use Plan.]

5. Attendee Comment:
Comment that options along Oregon shoreline will be politically difficult and filling in the Bay is ill-advised.

Forum Organizer Response:
We acknowledge this comment.

6. Attendee Comment:
An attendee stated that they disagree with this concern.

[Project Team Response to Comments #5 & #6: We understand there are concerns related to placing material in Maumee Bay. Should such options be carried forward, detailed engineering and analysis would be completed to ensure the design does not significantly negatively impact the hydrology and/or environment of the Bay. This option

is one of many being proposed. Ultimately, it is up to the Task Force and stakeholders to incorporate the recommendations from the final Toledo Harbor Sediment and Management Use Plan into an implementable strategy. Such a strategy would require following any appropriate protocols related to environmental reviews, permits, and other processes that consider engineering and science principles as well as community concerns and issues raised by stakeholders.

7. Attendee Comment:
Regarding the need to look at innovative options, the CDF is not being used to a major extent. Grassy Island is only partially filled. We need to think outside the box. Why aren't we looking at using the existing CDF or Grassy Island?

Forum Organizer Response:
The CDF has approximately 2M CY of USACE space available, or the capacity of about two years of dredging materials. It's not a long-term 30 year option. Grassy Island has a component that could take approximately a half years' worth of dredged sediments, but still requires more repair and replacement such as pump out facilities. These could be used as part of the footprint for an option, not to expand but to maximize. However, there is a high capital cost of building a pump out facility and repairing Island 18 for the capacity, which would put it at the upper end of the cost for a new CDF. We are trying to look at manageable, long-term options. Also, the existing CDF capacity is maintained in the event of an emergency in which contaminated material needs to be placed. Further, the USACE only maintains the federal channel. The Toledo-Lucas County Port Authority and terminal operators can't open lake place material that is dredged from the port terminals. This material is placed in the Port Authority's CDF spaces, which are in the process of being filled. There is some work going on to increase the space by reusing the material. However, the cells are almost full.

[Project Team Response: Proposed sediment management and use options focused on short and long-term options that could accept a significant amount of the 30-year dredging amount, or 30M CY. Due to the limited capacity at the existing CDF and Grassy Island, these options were not considered. While using the existing CDF or Grassy Island is not being proposed as an option, an explanation on why it was not considered, including some of the factors described above, is included in the final Toledo Harbor Sediment Management and Use Plan.]

8. Attendee Comment:
Regarding Woodtick Peninsula and the power plant being shut down in 2014, there could be money for long-term restoration in terms of filling the channel. There are other sides of Woodtick where an option could be placed. The USACE can cross state lines, even if there are two districts involved. Pointe Mouillee is a perfect example of what could be done off of Woodtick Peninsula.

Forum Organizer Response:
We acknowledge this comment. This option could be a possibility. However, Woodtick Peninsula would receive less than 2M CY of material. There is also a preserve on the other side of the channel. A prospective project involving the City of Toledo and USACE to dredge the lower reach of the Ottawa River for recreational purposes was not carried forward because Michigan did not want the traffic in that area. If there is community acceptance for this option, it could be a possibility.

[Project Team Response: The Task Force agreed to keep all placement options to be evaluated within the State of Ohio borders. Therefore, this study did not include the evaluation of options in Michigan or Canada. When the selected options are chosen, it may be of value to assess locations outside of Ohio if they are available. While Woodtick Peninsula is not being proposed as an option for this plan, an explanation on why it was not considered, including some of the factors above, will be included in the final Toledo Harbor Sediment Management and Use Plan.]

9. Attendee Comment:
Is the constraint for mining the dredged material the market?

Comments and group discussion from the audience: There is currently little market demand to use the material in the area. The fine, silty material would typically need to be amended before it is considered useful. Bottom ash was used as an amendment before but the power plant stopped releasing it. Costs, market demand and regulatory issues are factors. A representative from the USACE noted that there is no market demand at $30/CY.

[Project Team Response: The concept of beneficial use is to use the dredged material for an upland use such as amended soil, brownfield revitalization, non-structural fill, agricultural field enhancer, etc. Selling of the dredged material as a beneficial use would require additional testing and a detailed evaluation of distribution methods that are dependent on the proposed use. The beneficial use option section in the final plan includes a discussion of market demand for material, as well as amendments that might be necessary to create marketable materials.]

10. Attendee Comment:
Isn't the City of Toledo dumping sludge in the CDF?

Forum Organizer Response:
A representative from the Toledo-Lucas County Port Authority explained that no sludge is being dumped. They are processing Nu-Soil at the site. An overview of the process was given.

[Project Team Response: The production of Nu-Soil at the CDF was not specifically evaluated under this project. The beneficial use option in the plan discusses many potential uses, including non-structural fill material. As a result, this comment will not be addressed in the final Toledo Harbor Sediment Management and Use Plan.]

11. Attendee Comment:
Are the agricultural field improvement options to be implemented on private farms?

Forum Organizer Response:
The fields proposed as part of the agricultural improvement options are private farms, with short term arrangements to raise property by building berms and add additional drainage. The land rental payments would compensate for the loss of crop production for a few years before the land can be farmed again. There is potential to purchase the agricultural land as well. Buying the land as opposed to renting it would likely be more economically advantageous. If it were institutionally owned, the property could be cash rented to a farmer. We assumed tiling it at 50 foot centers, and included the costs of berming, pumps, piping, pump stations, etc. Once the pumping system is in place for

placing the dredged material, there would be an irrigation system that could be especially useful for specialty crops.

[Project Team Response: Once the final location is selected, the land would be rented from the land owner(s) for the timeframe required to complete the improvements. In the Final Plan, the land rental cost at private farms was based on $200 per acre per year for three years (one year for placement, one year for consolidation and one year for land cover crop).]

12. Attendee Comment:
As a follow-up to that, raising the ground could create issues between neighbors. It is counter-intuitive to add field tiles when they likely already have them unless there are nutrient collectors.

Forum Organizer Response:
We acknowledge this comment and agree that the nutrient issue is important and must be addressed. This could be a good demonstration area to study how this might work. We acknowledge the concern about impacts on neighbors. The property must have sufficient perimeter drainage so they do not flood the neighbor.

[Project Team Response: An additional detailed study should be completed to determine potential locations for agricultural field improvements that would be the most beneficial and cost-efficient dependent on the projected dredging capacity. A containment structure would be designed and constructed to control and divert the dredged material and associated run-off water. Once the final location is selected, the land would be rented from the land owner(s) for the timeframe required to complete the improvements. The land rental cost at private farms was based on $200 per acre per year for 3 years (one year for placement, one year for consolidation and one year for land cover crop).]

13. Attendee Comment:
The placement of dredged material on agricultural land is being done now at East Harbor?

Forum Organizer Response:
Yes, we do not have all the details, but a similar process is being completed there on a 30-acre site that can remain agricultural or potentially be developed.

[Project Team Response: The ODNR Division of Parks and Recreation is funding the dredging of the East Harbor in Ottawa County and the placement of dredged materials to approximately 30 acres of flat agricultural land. A small hydraulic dredge pumps the material to a booster pump, which then transports the material to the placement site. An agreement is in place to return the land to the owner with a new specified elevation.]

14. Attendee Comment:
Years ago, I attended a meeting regarding Ottawa River dredged material, which they appropriated $65,000 to study dredging the Ottawa River. I've attended meetings like this for years. I've seen businesses come and go in those years. We are studying this issue to death. Yes, we have to dredge the river and yes, we need to find a place to put it. We also need to address the upland issues. We also have to put it somewhere aside from moving it around in the lake. As a citizen, I feel like we're just throwing money at it.

Forum Organizer Response:
We acknowledge this comment.

[Project Team Response: The criticality of finding alternatives to open-lake placement and possible funding will be included in the final Toledo Harbor Sediment Management and Use Plan].

APPENDIX H

Second Public Forum Participant Survey with Number of Responses Received

Toledo Harbor Sediment Management and Use Solutions

Stakeholder Forum #2
Tuesday, June 19, 2012
1:00 p.m. - 4:00 p.m.
Toledo Metropolitan Area Council of Governments Building
300 Dr. Martin Luther King Jr. Drive, Toledo, OH 43604

PARTICIPANT SURVEY

Thank you for taking the time to complete this survey. Your feedback is important and will be incorporated into the Toledo Harbor Sediment Management and Use Final Plan. A copy of your completed survey may be included in the final plan. This survey should only take a few minutes to complete.

1. **Which sector do you represent?**
   - o Local or State Government (9)
   - o Federal Government (2)
   - o Non-Profit (5)
   - o Business (6)
   - o Citizen (5)
   - o Other: _____ (0)

2. **Did you attend the first Toledo Harbor Sediment Management and Use Public Forum on June 16, 2011 at the Toledo Maritime Center?**
   - o Yes (8)
   - o No (14)

If you answered yes, please respond to the following questions:

2a. Did you provide ideas at the first forum through participation in the roundtable?
   - o Yes (8)
   - o No (0)

2b. Topics I discussed at the small group breakout sessions were considered in the sediment management and use options analysis.
   - o Strongly agree (1)
   - o Agree (6)
   - o Neutral (1)
   - o Disagree (0)
   - o Strongly Disagree (0)

Continued on next page

Toledo Harbor Sediment Management and Use Solutions
Stakeholder Forum #2

PARTICIPANT SURVEY

Please answer the following questions based on today's forum presentation using the scale below.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
3. The information shared at today's forum was presented in a clear and understandable manner.	12	10	0	0	0
4. As a result of today's forum, I am better informed about Toledo Harbor dredging issues and potential management options.	6	13	2	0	0
5. A combination of options will be needed to address sediment management needs of Toledo Harbor dredged material.	8	8	2	4	0
6. A combination approach using the four options identified in the presentation (agricultural improvements, wetland restoration, beneficial use, and open-lake placement with controls) is a good starting point to address sediment management needs of Toledo Harbor dredged material.	3	9	5	5	0
7. Programmatic flexibility that permits the modification of the degree of reliance on any one particular option is important, understanding that with implementation of any option knowledge is gained and unintended consequences (both good and bad) become evident.	6	11	4	1	0
8. The initial suggested sediment volumes allocated for each option in the combination approach (wetland restoration – 7M CY; agricultural improvements – 7M CY; beneficial use – 3M CY; open-lake with controls – 13M CY) appears reasonable based on the information provided.	2	6	10	3	1

Continued on next page

Toledo Harbor Sediment Management and Use Solutions
Stakeholder Forum #2

PARTICIPANT SURVEY

9. **Please provide any additional questions or comments (if applicable)**.

_____

_____

_____

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_____

OPTIONAL

Personal information provided below will not be included in the final plan. Your personal information will not be shared with others outside of our project team.

Name: _____

Organization: _____

Phone: _____

Email: _____

☐ Please contact me to discuss my questions or comments. The best way to reach me is

_____.

If you have any questions or would like to discuss any aspect of this project, please contact the Ohio Lake Erie Commission at 419-621-2040.

Ohio | Lake Erie Commission

TOLEDO | LUCAS COUNTY PORT AUTHORITY

Great Lakes Commission des Grands Lacs

Great Lakes RESTORATION