



CHEERS!

Cleveland Harbor Eastern Embayment Resilience Strategy

Lessons from the Great Lake's most
Ambitious Multi-Phase Resiliency Plan



01

BENEFICIAL USE OF DREDGED MATERIAL (BUDM)



BUDM PROGRAM VISION



Fort Pierce Marina

“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).”

**LTG Scott A. Spellman, Chief of
Engineers & Commanding
General, USACE
January 25, 2023**

BUDM PROGRAM VISION (CONT.)

Partner collaboration is key to our success:


- ❑ *Innovative pursuit*, both internally & externally, with *partners & stakeholders*, will:
 - Maximize *available solutions, strategies, & tools*
 - Develop & apply *new approaches & technologies*



Fort Pierce Marina, Breakwater

02 DIKE 14





Federal Breakwall

An aerial photograph of the Lake Erie shoreline. At the top, a long, thin breakwall extends into the dark blue water. Below it, the shoreline features several parks and a power plant. On the left is Edgewater Park with a marina. In the center is the FirstEnergy Power Plant, with I-90 running horizontally through it. To the right of the power plant is Gordon Park, also with a marina. Further right is Dike 14. The water is a deep blue, and the land is green with some industrial structures.

Lake Erie

Edgewater Park

Dike 14

I-90

Gordon Park

FirstEnergy Power Plant



Dike 14: From **Blue** to Brown to Green

- Private Estate turned Public Park in 1892
- Cleveland's premier turn-of-the-century destination
- Famous for fishing, boating, bathing, & picnicking
- Noted migratory bird corridor:
 - Doan Brooks
 - Shaker Lakes



Dike 14: From Blue to **Brown** to Green

- An 8-acre solid waste landfill - “Cleveland Lakefront Dump”
- Operated by the City from about 1930 to 1970
- In 1962, two ships from the U.S. Steel Fleet sunk to create a reef
- Landfill operations continued around & over the boats between 1962-1970



Dike 14: From Blue to **Brown** to Green

- Creation of Dike 14 DMMA
- In 1979, the USACE began dredged material placement at Dike 14
- Sediments from both the Cuyahoga River & Cleveland Harbor shipping channel
- In 1999, the USACE placed the final load of dredged material



Dike 14: From Blue to **Brown** to **Green**



Dike 14: From Blue to Brown to Green

- Left undisturbed for ~15 years, most of the 88-acre site didn't require cleanup
- Mitigated ~5-acre area associated with the former landfill
 - Low levels of PCBs, PAHs, & lead
 - Ongoing seasonal monitoring



Dike 14: From Blue to Brown to Green

- Only significant natural area along the Cleveland Lakefront
- Only accessible natural area between Huron to the west & Mentor Marsh to the east
- Important bird migration stopover site before crossing Lake Erie
- 280+ species of birds
- 29+ species of butterflies
- 26 native plant species
- 16 mammals
- 2 reptiles
- 9 native trees & shrubs



03

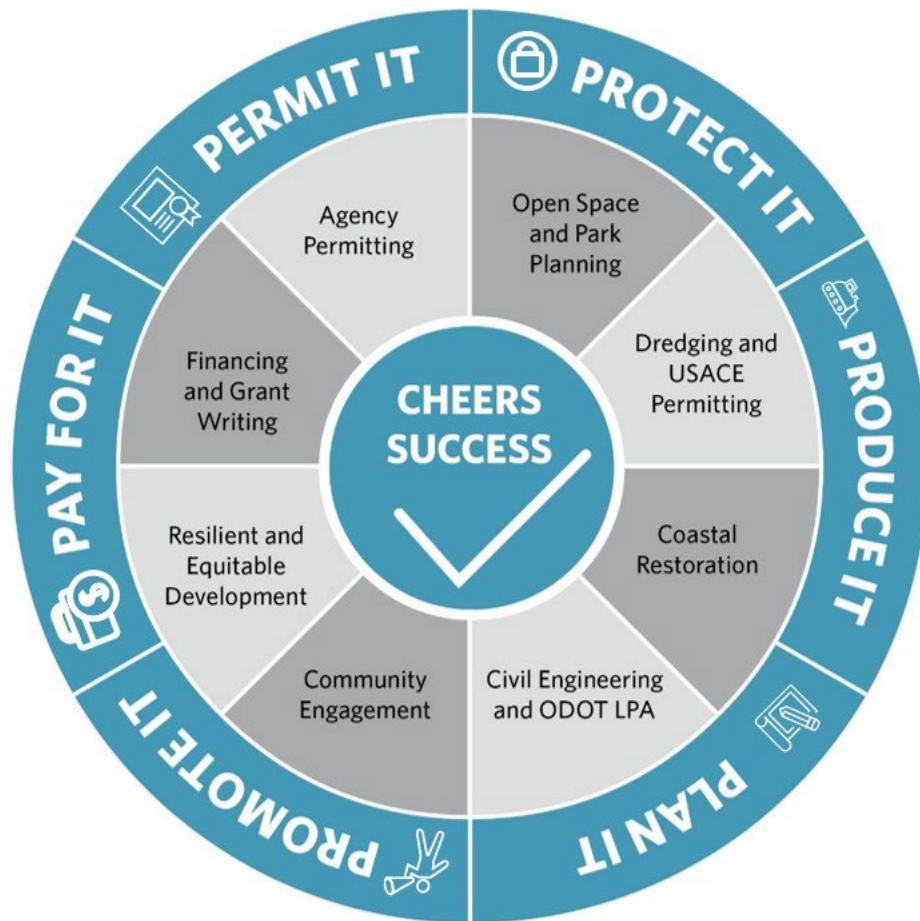
CHEERS!




CLEVELAND'S COMEBACK



CHEERS DESIGN





Federal Breakwall

An aerial photograph of the Lake Erie shoreline. At the top, a long, thin breakwall extends into the dark blue water. Below it, the shoreline is marked by several key locations. On the left, a large marina with many boat slips is situated within a park area. A multi-lane highway runs horizontally across the middle of the image. Below the highway, a large industrial facility with several large rectangular basins is visible. To the right of the highway, there is a park area with a small body of water and a marina. Further right, a dike forms a triangular peninsula. The water is a deep blue, and the land is green with some developed areas.

Lake Erie

Cleveland Metroparks

Dike 14

Gordon Park

I-90

FirstEnergy Power Plant

Federal Breakwall

PHASE B: The Isle
36 acres

Lake Erie

Edgewater Park

The Cove

The Isle

The Lakeshore

PHASE A: The Lakeshore
64 acres (43 new acres)

04

LESSONS LEARNED - CLEVELAND



LESSONS LEARNED



Plan It



Promote It



Pay for It



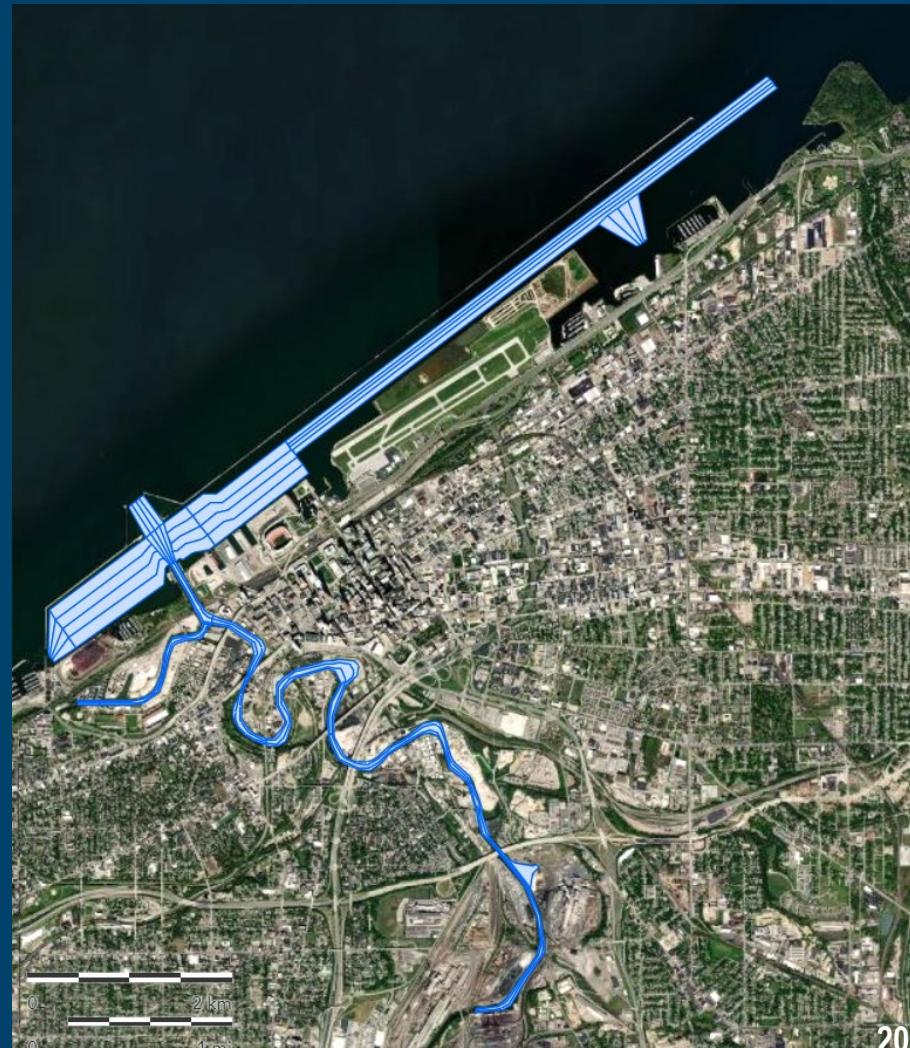
Permit It



Protect It



Produce It



05 LESSONS LEARNED - PTB



LESSONS LEARNED



Plan It



Promote It



Pay for It



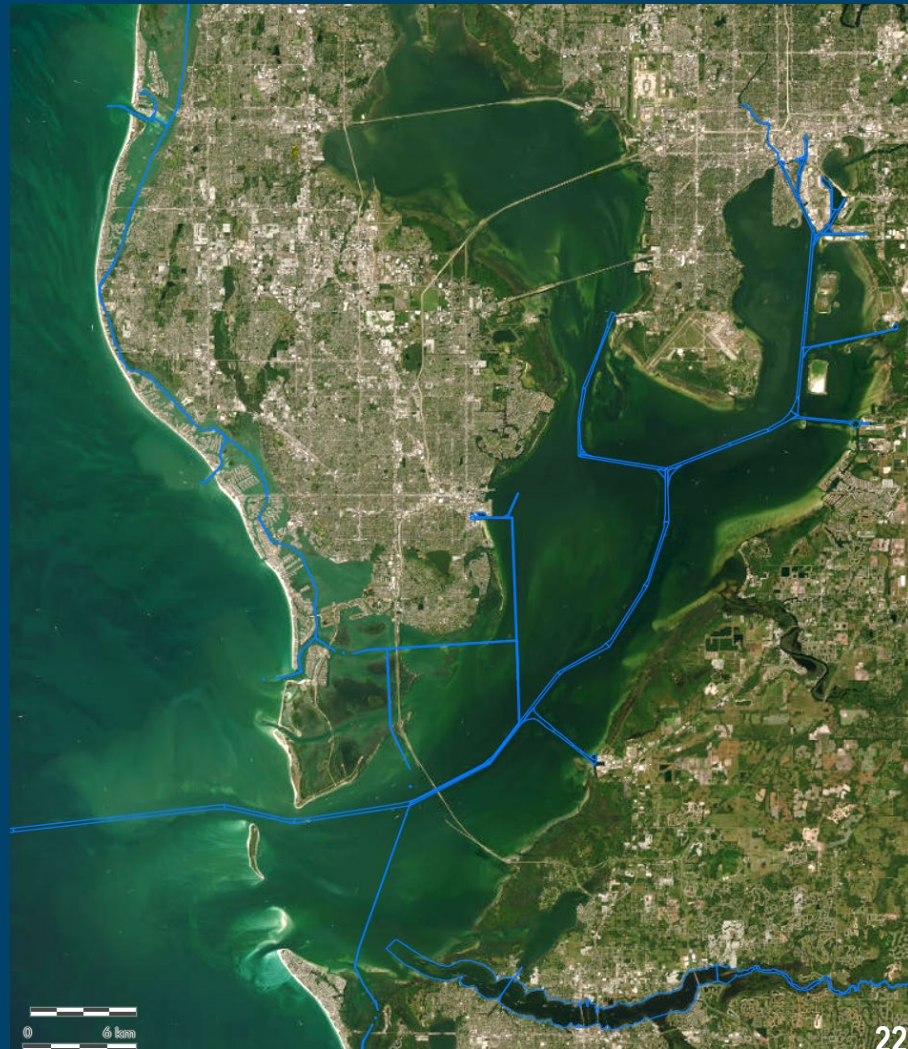
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Produce It





Plan It

LESSONS LEARNED

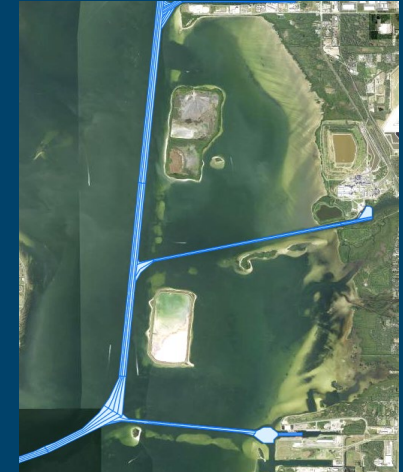
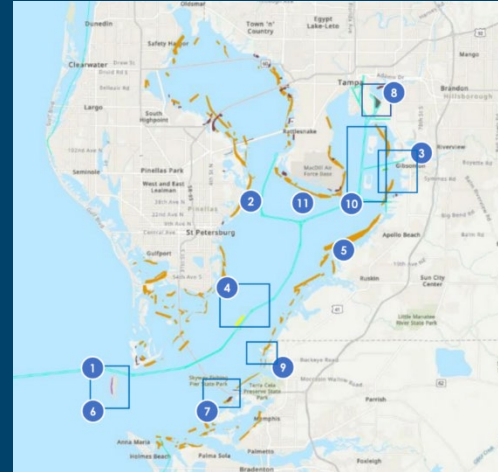
LEGEND

— Tampa Harbor Channels

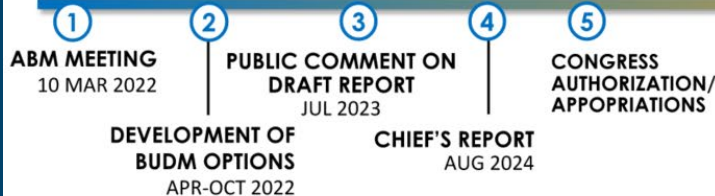
Beneficial Use Opportunities

- 1 Egmont Key Beach Placement (1 MCY)
- 2 Dredged Holes (1.5 MCY) (not all suitable for restoration)
- 3 Alafia Bank Sanctuary Islands (~500 KCY) (Island Creation/Restoration)
- 4 Hardbottom Creation Site (1.7 MCY) (previously permitted)
- 5 Nearshore Breakwaters (~100 KCY) (potential restoration sites)
- 6 Egmont Key Island Restoration (5 MCY)
- 7 Manatee County Boat Ramp (1-2 MCY)
- 8 East Bay Port Expansion (3-4 MCY)
- 9 Manbird Key Island Restoration
- 10 Shoreline Restoration at DMMAs
- 11 Reddish Egret Habitat (bay-wide, location TBD)

- Emphasize Existing Resources
- Determine Desired Outcomes
- Project Conditions Data



FEASIBILITY STUDY (2021-2024)



PRECONSTRUCTION ENGINEERING DESIGN (2025-2026)

- Design Data Collection
- Detailed Design

CONSTRUCTION PHASE (2026+)

- Real Estate Acquisition
- Relocations (if needed)
- Plans & Specifications
- Construction



TAMPA BAY
REGIONAL PLANNING COUNCIL

TAMPA BAY
REGIONAL REVENUE COALITION

TBPRC's Mission

To serve our citizens and member governments by providing a forum to foster communication, coordination, and collaboration in identifying and addressing needs regionally.

Member Governments

- 6 Counties
- 21 Municipalities
- 13 gubernatorial appointees
- 3 Ex-Officios

Hillsborough County

Pinellas County

Southwest Florida Water Management District

Summary Report | July 2022



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Pay for It

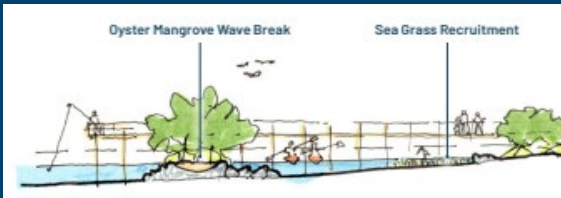
LESSONS LEARNED

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- Planning & construction cannot be implemented without funding
- Can the project itself generate funds
 - Federal funds, grants, tolls, usage fees?
 - Public-private partnerships?
 - Mitigation credits, etc.?
- Unique climate for long-term funding





Permit It

LESSONS LEARNED



Why we need to improve environmental resilience on the eastern lakefront:

- + Impact of Climate Change
- + More Frequent and Intense Storm and Weather Events
- + Impact of Waves, Ice, and Erosion on the Shoreline and Critical Infrastructure
- + Flooding and High Lake Levels
- + Limited Nearshore Habitat
- + Degraded Water Quality and Aquatic Habitat
- + Lack of Natural Shoreline Protection
- + Large Availability of Dredge Material that Needs to be Beneficially Used or Stored
- + Increase in Average Temperatures

- Connecting regulatory reviewers to its potential environmental renewal
- Connecting the public to its possible ecological splendor
- Connecting Port Tampa Bay, FDEP, USACE, counties, & municipalities to its long-term adaptive planning benefits

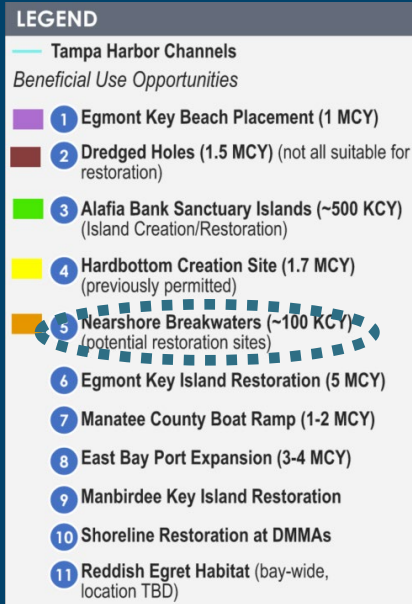


- + Lack of Equity in Availability and Access to Open Spaces and Recreational Amenities
- + Safety and Security Concerns
- + Vulnerable Communities with Limited Ability to Respond to Environmental or Economic Shocks
- + Need for Intergenerational and Community Gathering Spaces



Protect It

LESSONS LEARNED



- Nearshore breakwaters (also known as longshore bars) were historically significant features in Tampa Bay
- Over time they have disappeared

- When land reclamation fails
 - Generally, because of the extremely energetic environmental conditions
 - Adaptive management, fail & rebuild, & other strategies should be reviewed
 - Plan & budget for inevitable impacts





Produce It

LESSONS LEARNED

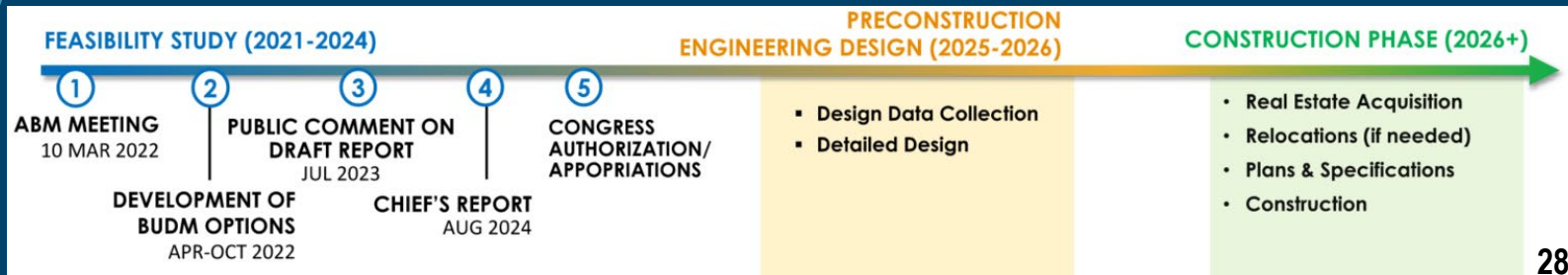
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- Actively managing deliverable quality is essential to minimizing cost & eliminating schedule overruns
- Advance schedule & reduce cost while maintaining quality
- Set industry benchmarks for excellence
- With CHEERS! – focused on providing environmental equity elements first
- With PTB – focus on economics?



06

LESSONS LEARNED - LOUISVILLE



LESSONS LEARNED



Plan It



Promote It



Pay for It



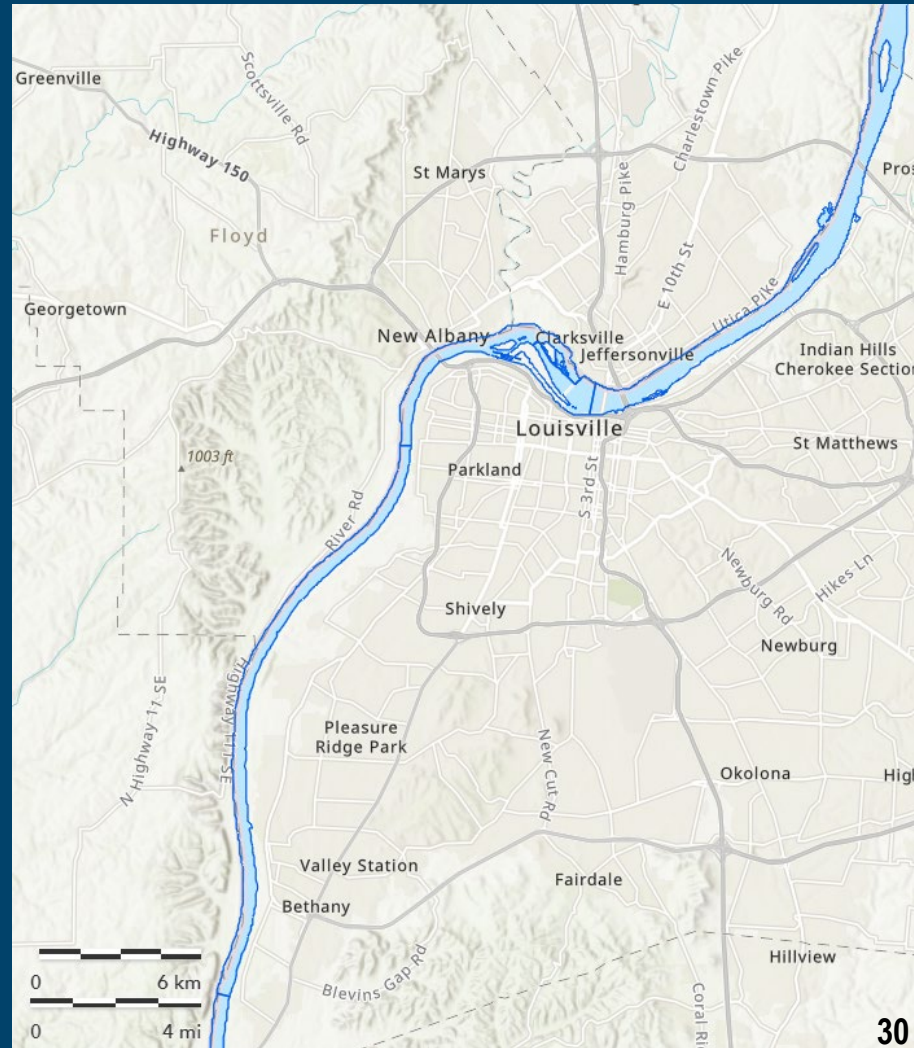
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Produce It



07

LESSONS LEARNED - BUFFALO



LESSONS LEARNED



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Promote It



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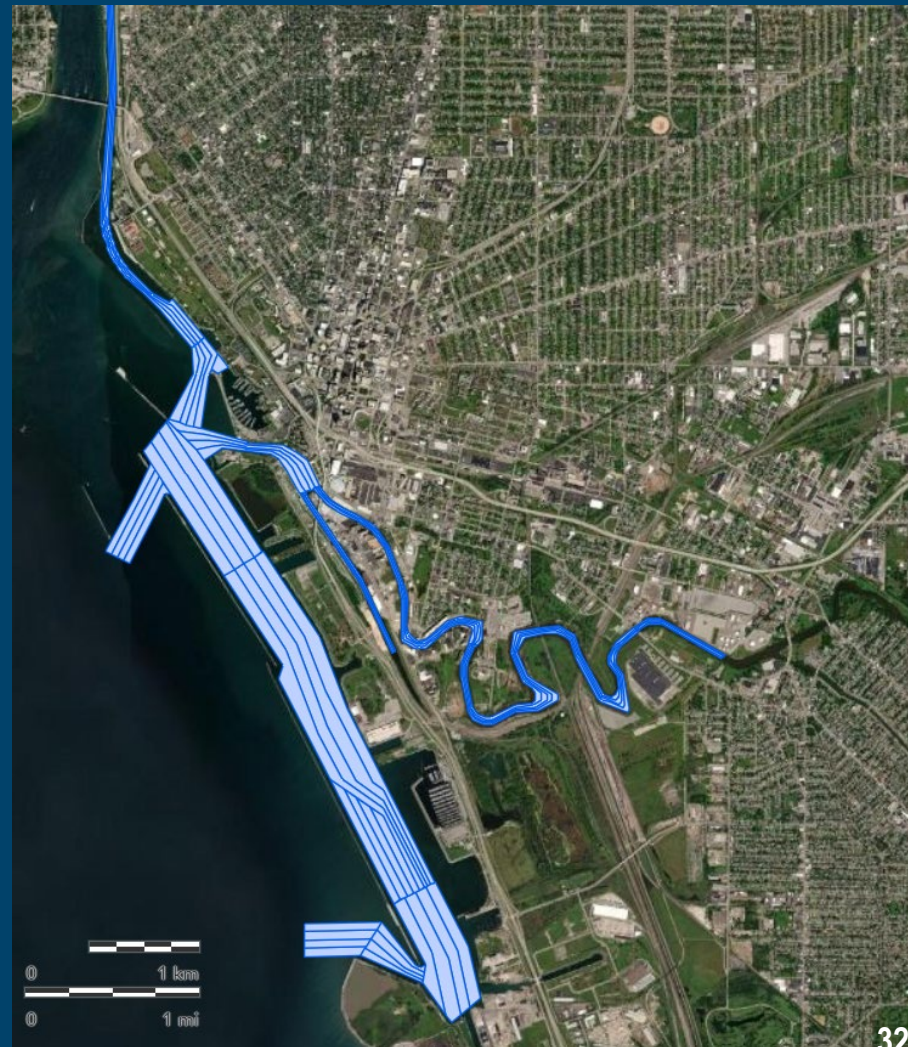
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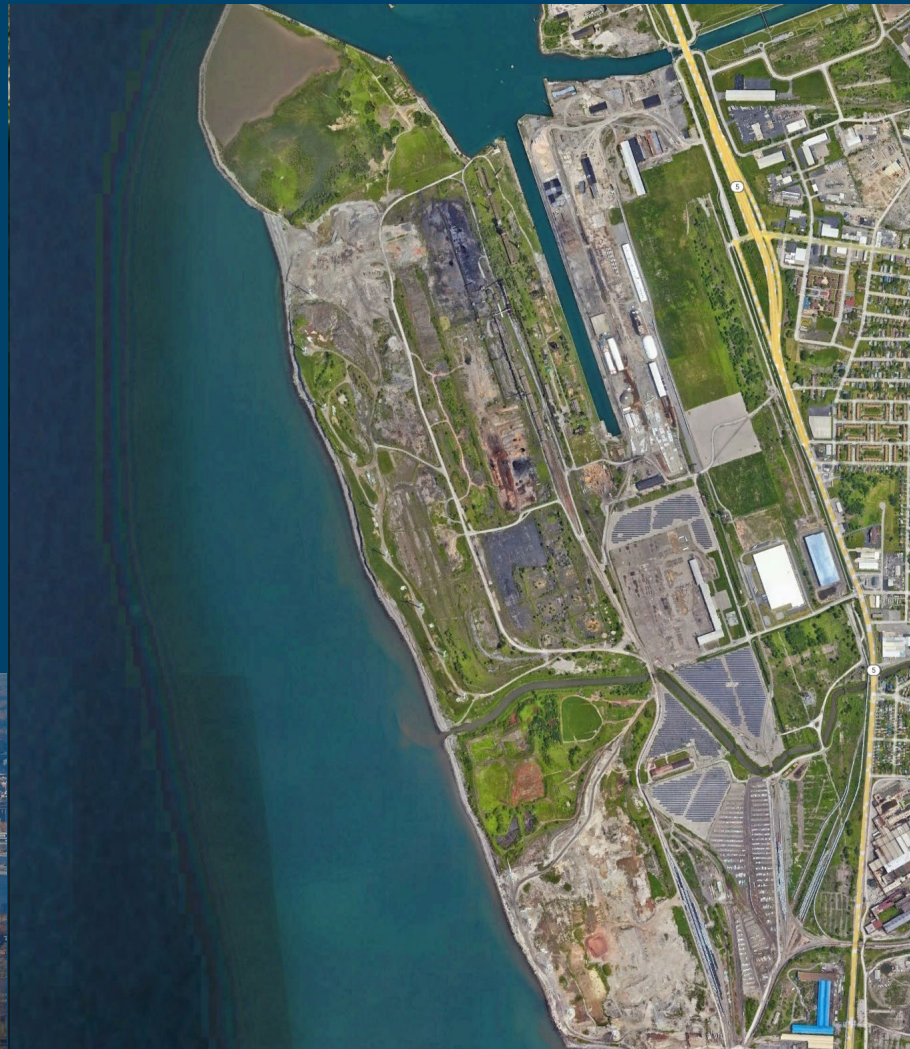


Produce It



LESSONS LEARNED

- Former Bethlehem Steel site
- Terraform Wind Farms
- Protect for Calving Icesheets
- No Wind Interference





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SUGGESTIONS & QUESTIONS?



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