John McAuliffe
January 24, 2019

ONONDAGA LAKE RESTORATION

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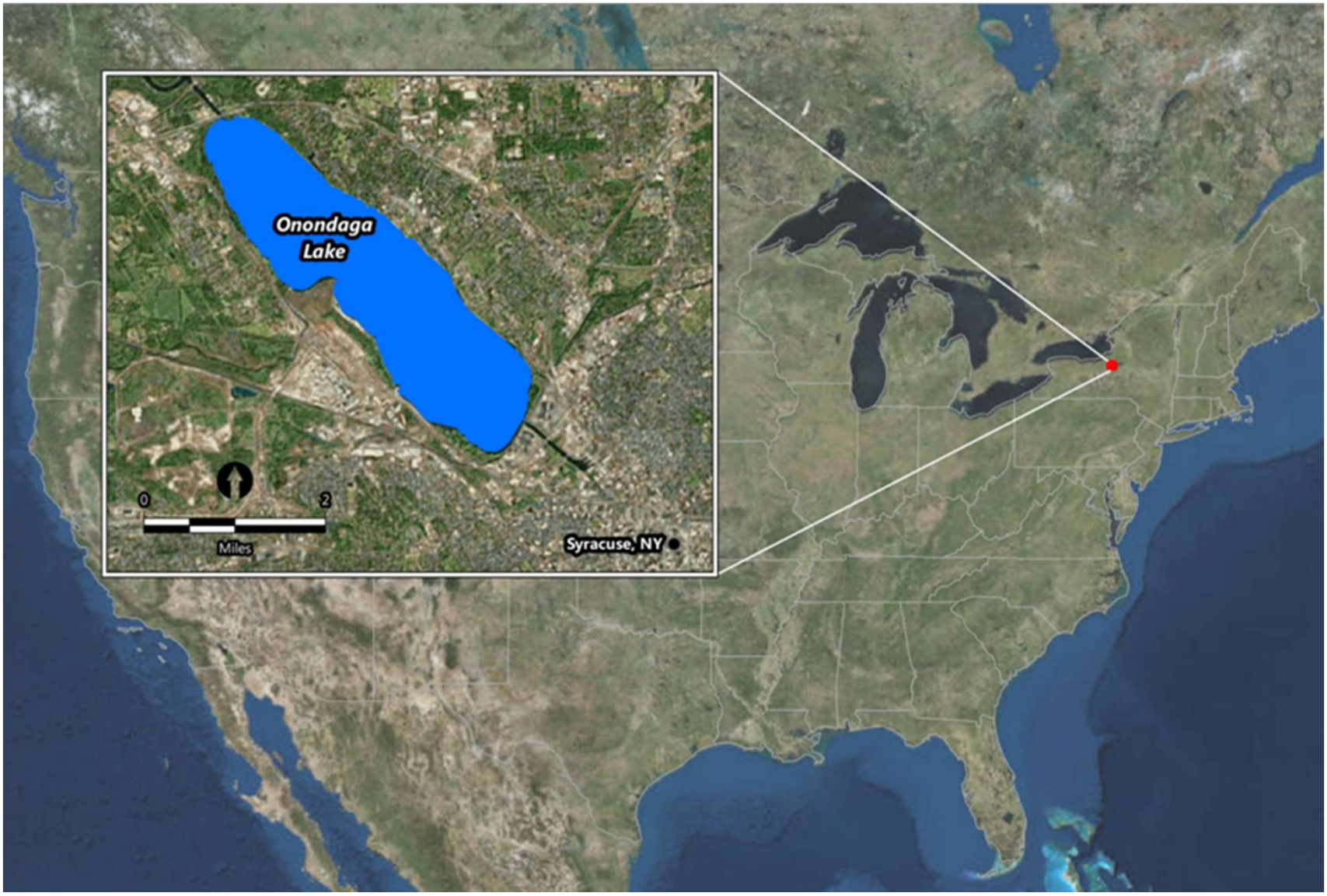

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The Onondaga Lake Cleanup is Complete

- 20+ year Superfund process completed in November 2017
- Millions of worker hours; 90% local labor, 80% supplies purchased locally
- 2.2M cy sediment removed; 475 acres lake bottom capped
- 90 acres of wetlands created or enhanced
- 260 wildlife species returned to restored areas
- Monitoring and maintenance has begun
- 19 Natural Resource Damages projects underway

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Community Benefits

Back with a splash

July 12, 2016

Boat races return to Onondaga Lake on Saturday, and a giant duck will be among the spectators

Marnie Eisenstadt

A giant rubber duck is coming to Onondaga Lake this weekend. "Casey" is the largest rubber duck in the nation, measuring 61 feet high. She is headlining the Onondaga Lake Fest on Saturday, a revival for the boat races that had been held at the lake decades ago. Casey is just to look at, but there will be plenty of other activities, from races to bounce houses. **Will people be able to watch the duck be inflated?** Unfortunately, it is a lengthy process involving heavy equipment, so it isn't something the public can attend. **Will anyone ride on the duck?** The duck is a "look but don't touch"

SEE DUCK, A4

That is one big duck, top, shown on a visit to another city. Above, a rowing team from Parsons Engineering competes during an event with the Syracuse Chargers. Onondaga Lake Fest will feature rowing, kayak and paddleboard races. *Ellen M. Bialack / ebialack@syracuse.com*

NEIGHBORS NORTHWEST

PAGE 2 THE POST-STANDARD THURSDAY, JULY 30, 2015

TALK OF THE TOWN

GO JUMP IN THE LAKE

50 dignitaries, 2 children, a dog and a goofball did just that — into Onondaga Lake, that is

About 50 people took the plunge into Onondaga Lake to highlight the ruling the lake is safe for swimming.

JOIN THE CONVERSATION AT SYRACUSE.COM

Good for the folks who stepped up to the challenge. We still have a lot of summer left. Plenty of time for the CE to go for a swim. How about it Ms. Mahoney? Perhaps your belated participation will quiet down the loud naysayers. Perhaps a fundraiser. "If Joanie jumps, send your checks to...the 2nd chance dog sanctuary." Suggested donation of $100 for every minute Ms. Mahoney spends in the lake. I like it!

— regalbeagle

'The lake is back'

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Proactive Community Engagement

- 11 DEC public meetings
- 22 Fact Sheets
- 100+ e-newsletters
- 400+ Presentations
- 16,000+ Onondaga Lake Visitors Center visitors
- 6,200+ community contacts
- 50+ Community Participation Working Group meetings

Community engagement key element of remediation program

Onondaga Lake Remedy

- National Priorities List
- Oversight by NYSDEC, US EPA and NYS DOH
- Combination of dredging and capping with habitat enhancement
- PAHs, VOCs, and mercury contaminants of concern
- Multiple source areas requiring remediation before lake cleanup could begin

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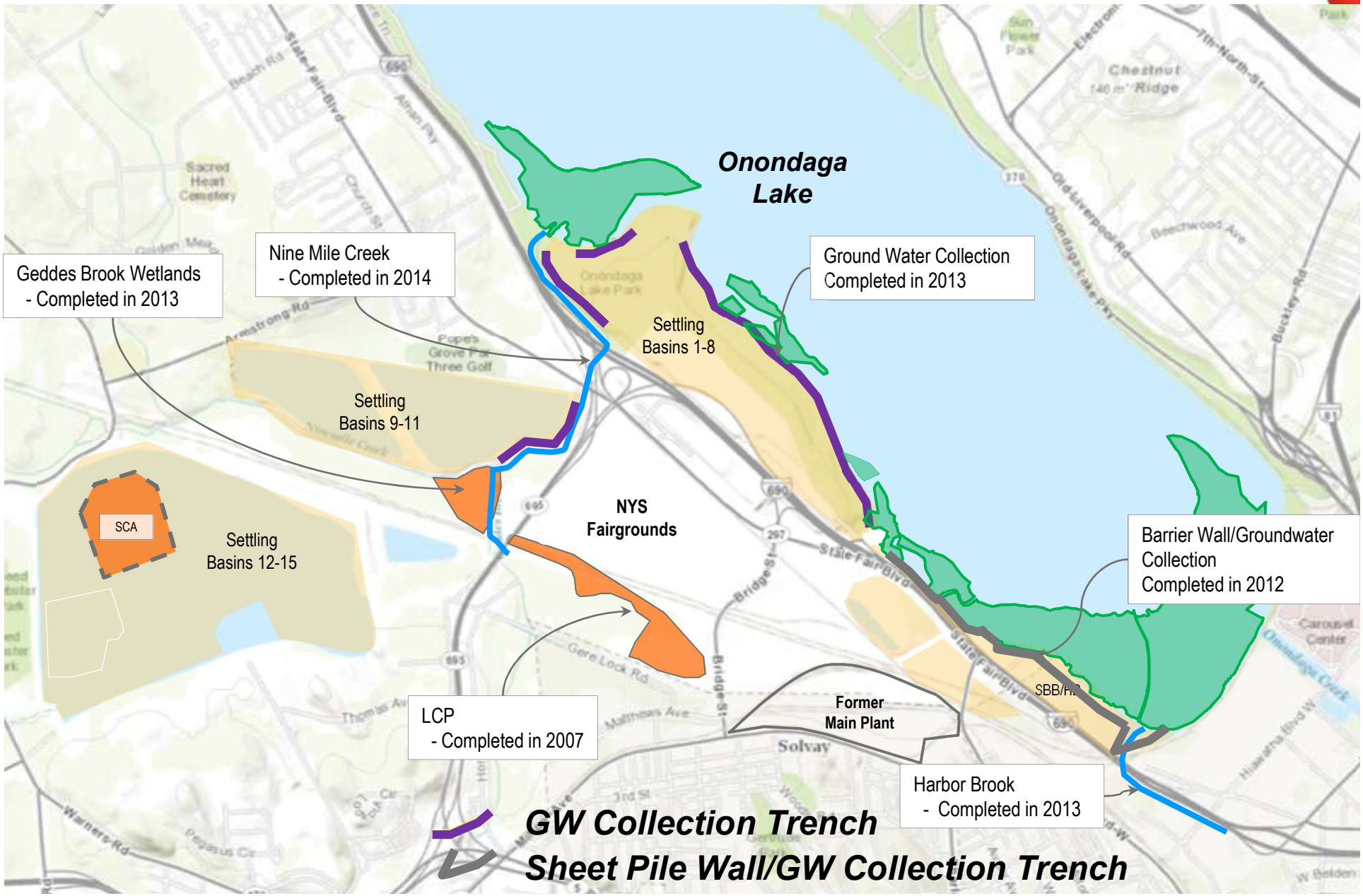
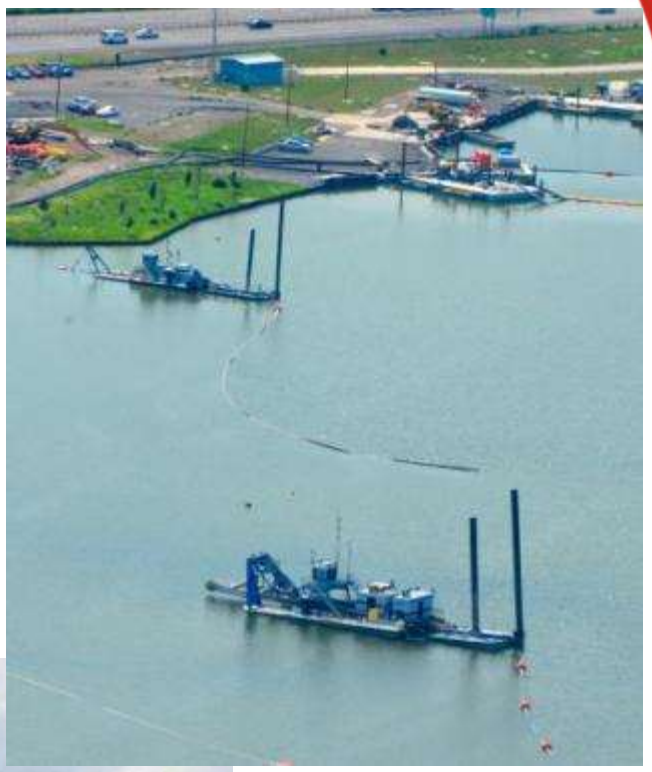
Upland Areas Addressed First



Hydraulic Dredging

- Hydraulic Dredge and Transport
  - Reduced truck traffic, odor, noise, and visual impacts
  - Enclosed system from lake to consolidation area
  - Silt curtains
- Three Dredges
  - 16”, 14” and 8”
  - ~ 10% solids



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Hydraulic Dredges

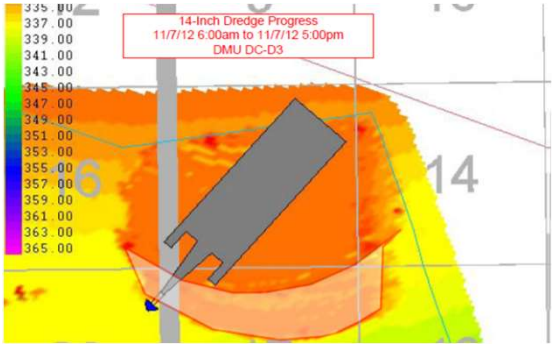
- Two production dredges and one specialty dredge

16” Marlin Dredge
40’ Wide x 104’ Long/5,500 gpm

14” Shark Dredge
20’ Wide x 68’ Long/5,500 gpm

8” Moray Dredge
11’ Wide x 42’ Long/1,500 gpm

Trimble 461 GPS RTK System
with Dredgepack Software



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Dredged Material Transport & Dewatering

- **Slurry Pipeline System**
  - Four mile long above ground pipeline
  - Design Rate: 5,500 GPM
- **Slurry Processing**
  - Three 20,000 gallon thickeners
  - Polymer system
- **Sediment Dewatering**
  - 55-acre lined sediment consolidation area
  - Geotube® dewatering
- **Water Treatment Plant**
  - 6.5 million gallons per day

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Full-scale Capping Equipment

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EPA Onondaga Lake 5-Year Review Conclusions

- EPA conclusions:
  - Dissolved mercury significantly lower in surface water samples collected between ‘08 and ‘14
  - Methylmercury in lake water and zooplankton declined dramatically
  - Natural recovery progressing faster than predicted
  - Premature to determine goals achieved for fish tissue

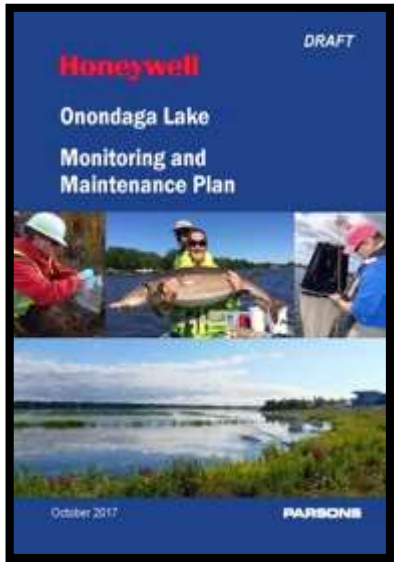
“Implementation of the remedy progressing as expected ”
U.S. EPA

Onondaga Lake Monitoring & Maintenance Plan

- Assess remedy effectiveness stated in the Record of Decision Remedial Action Objectives and Remedial Goals
- Verify the long-term effectiveness of the cap
- Evaluate restored habitats and any associated biological responses

Status

- Fish tissue monitoring is ongoing
- Preliminary long-term monitoring began in 2017
- Monitoring in SMU 8 (deep water areas) is ongoing



Plan outlines first 10 years; monitoring may continue longer

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Mass of Methylmercury Significantly Declining

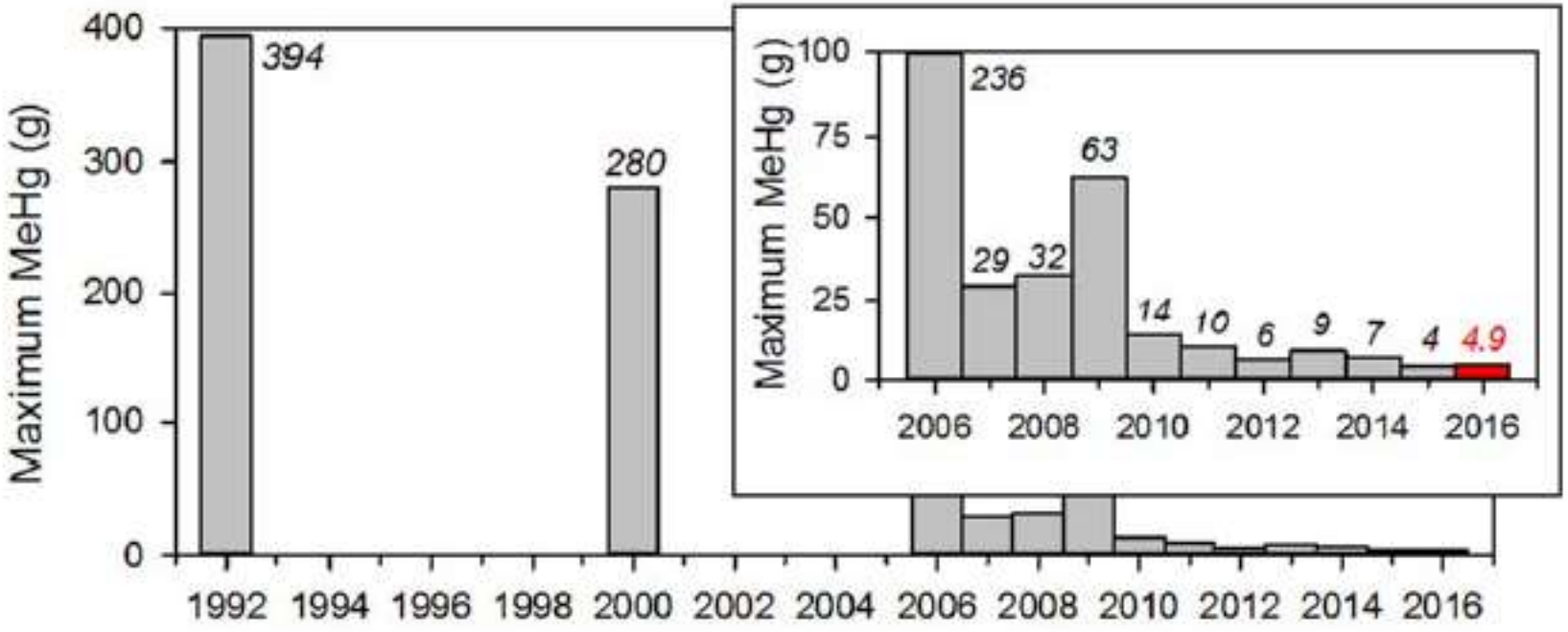

Figure 16. Annual Maximum Mass of Methylmercury in the Hypolimnion of Onondaga Lake from 1992 through 2016

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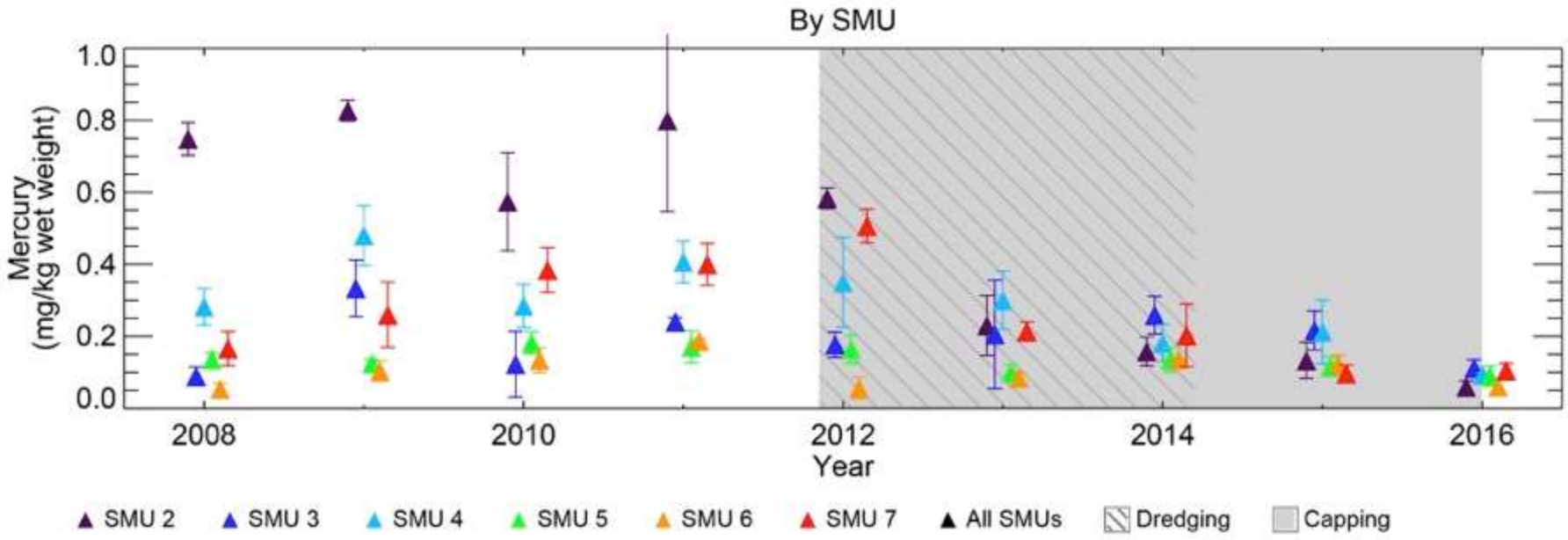
Mercury in Prey Fish Declining



Notes: Non-detects set to half the method detection limit. Error bars represent 2 standard errors of the mean. Samples are whole-body composites.
In-lake remediation began in late July 2012; fish were sampled in early August 2012.

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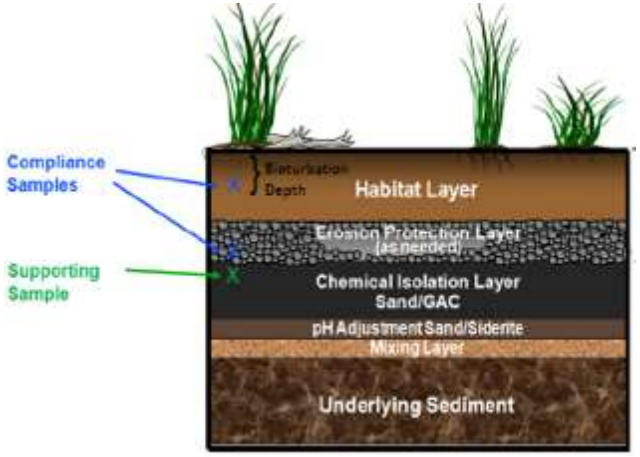
Cap Monitoring & Maintenance Overview

Routine scheduled monitoring

- Physical and chemical
- Greater frequency and sampling density in modified protective cap areas
- Monitoring to ensure long-term protection



Lake bottom cap cross-section

Additional Inspections

- Significant wind, flow, or seismic events or ice-scour periods
- Additional testing, cap repair or enhancements as necessary

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Fish/Biota Tissue

- Continuation of baseline monitoring initiated in 2008
- Annual analysis of sport fish and prey fish for:
  - Mercury and organic chemicals
- Sport and prey fish:
  - Walleye
  - Smallmouth Bass
  - Pumpkinseed
  - Carp
  - White Sucker
  - Killifish

Prey fish sampling with seine net

- Also includes zooplankton sampling
- Monitored species includes representation across food chain

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Onondaga Lake Conservation Corps

2015 EPA Environmental Champion Award

Onondaga Lake
CONSERVATION CORPS

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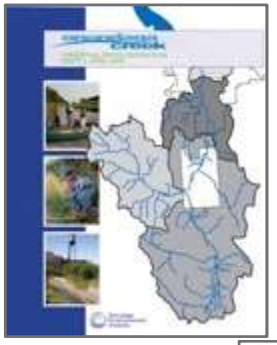
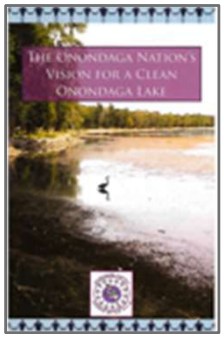
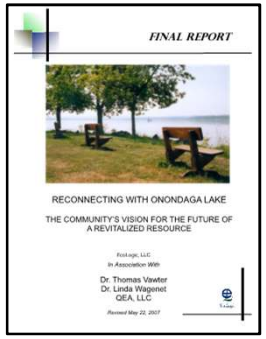
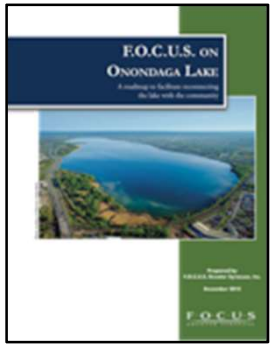
Public Input into Restoration Plan

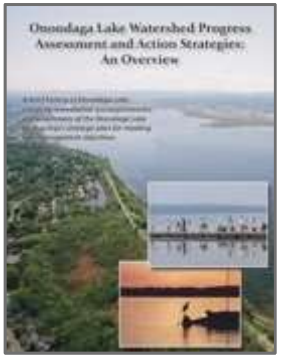
Public Meetings, Suggestion Form, and Reports











Community Ideas

Fish habitat

Near shore deep water fishing

Fishing piers

Invasive species control

Fishing access

West shore habitat

Biopreserve

Aquatic native vegetation

Gere Lock

Wetland restoration

Boat launches

Shoreline restoration

Shoreline parking

Nine Mile Creek public access

Public access

Educational facilities

Loop the Lake Trail

Native plant restoration

Connect bikeways

Public access to Honeywell property

Tully Valley access

Stream restoration

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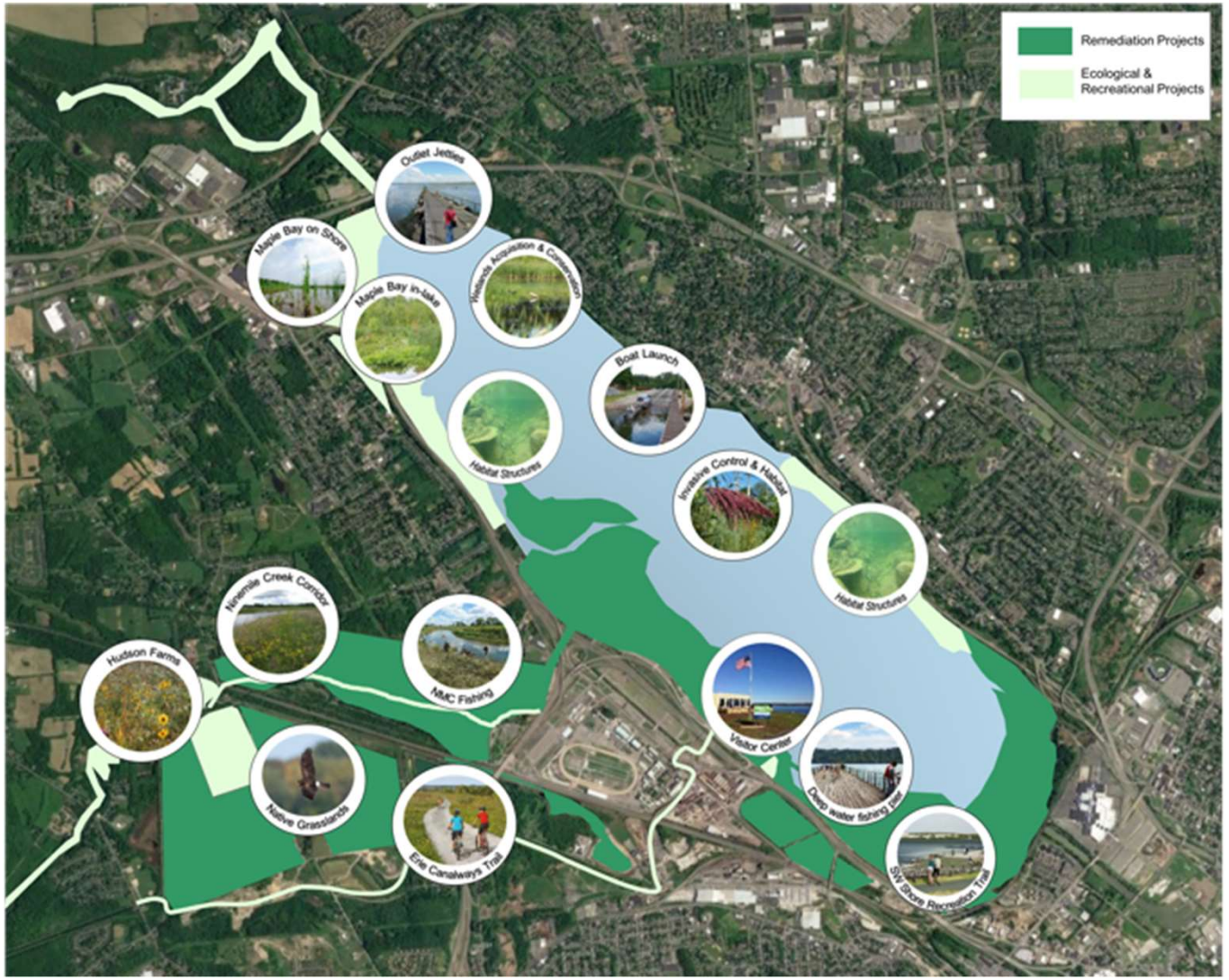
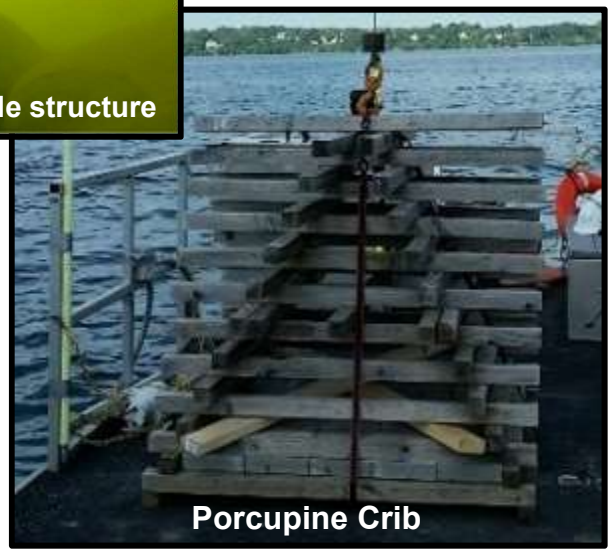
NRD Recreational and Ecological Projects



In-Lake Fish Structures (Completed Oct. 2018)

- 1,100 Structures Installed for Fish Habitat
  - Rock piles
  - Porcupine cribs
  - Gravel reefs
  - Log cribs
  - 300’ cobble bars
  - Downed trees
  - Boulders
  - Gravel reefs
  - Root wads


Smallmouth Bass utilizing rock pile structure


Porcupine Crib


Log Crib

Wetland Conservation

Scope:

- Acquire 200 acres of wetland habitat
- Conserve 609 acres in 5 areas
- Trustees determine long-term management of property
- Five-year monitoring and maintenance

Planned Schedule:

- Project progressing as planned

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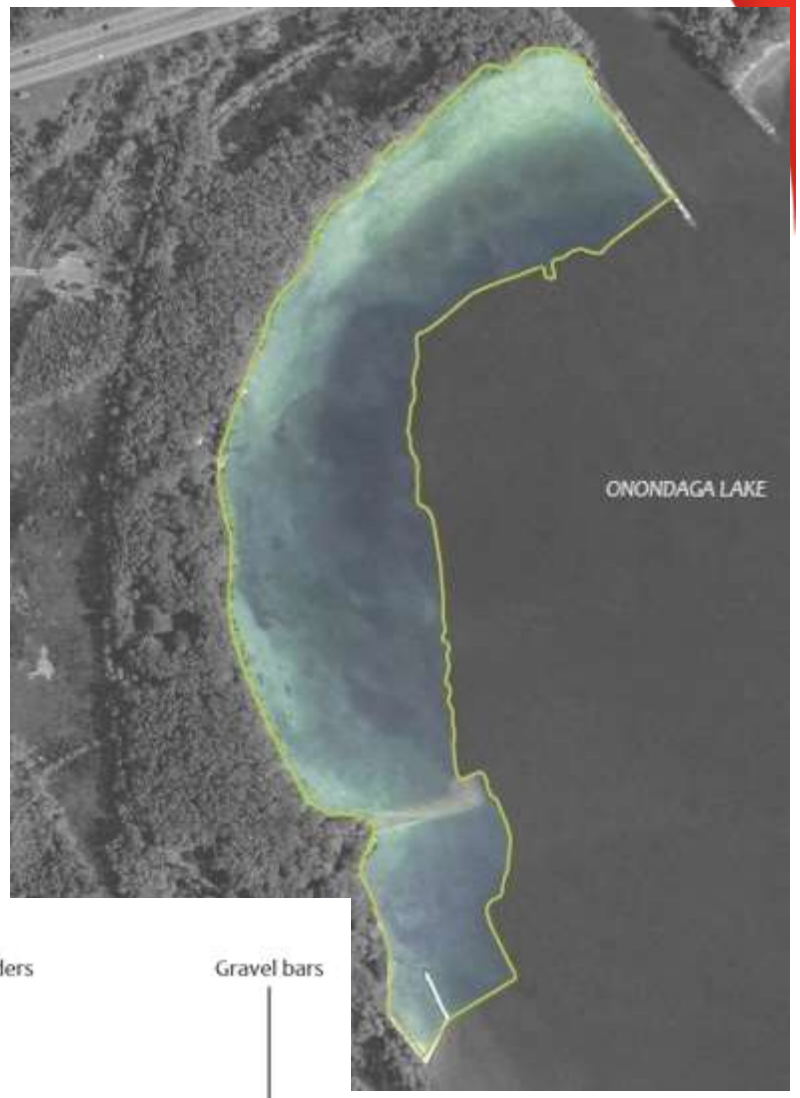
Maple Bay In-Lake Vegetation Enhancements

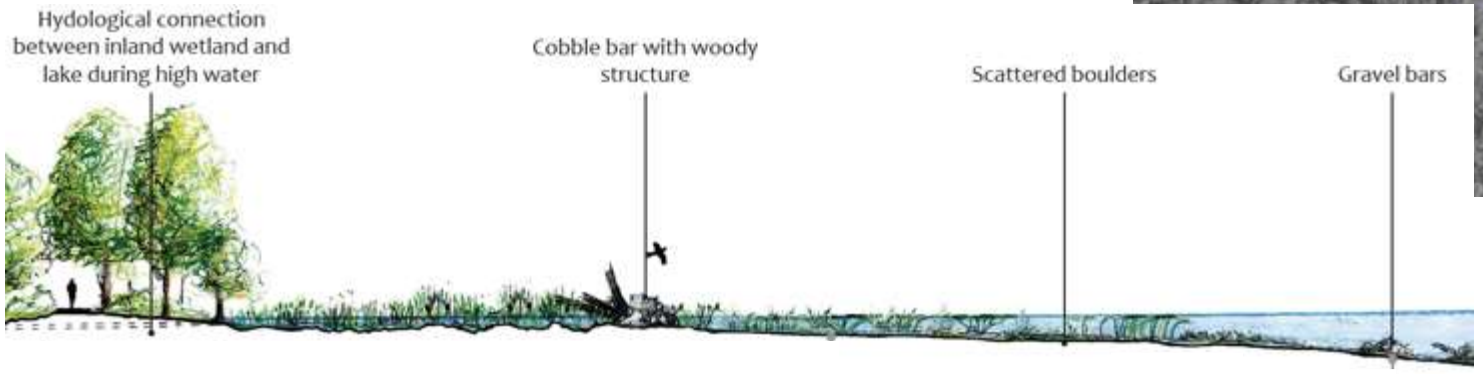
Scope:

- Phragmites control along shore
- Native plant establishment
  - Wild Rice (*Zizania aquatica*)
  - Emergent wetland species
  - Floating aquatic species
- Focus on areas behind cobble bar structures installed in 2018

Planned Schedule:

- June/July 2019





Multi-use Recreation Trails

Integrates Syracuse Metropolitan Transportation Council recommendations with the County trail system and the Empire State Trail

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Native Grassland Restoration

- 50 acres on consolidation area used for lake dredged material
- 50 acres on adjacent town C&D landfill cap

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Seneca River Boat Launch

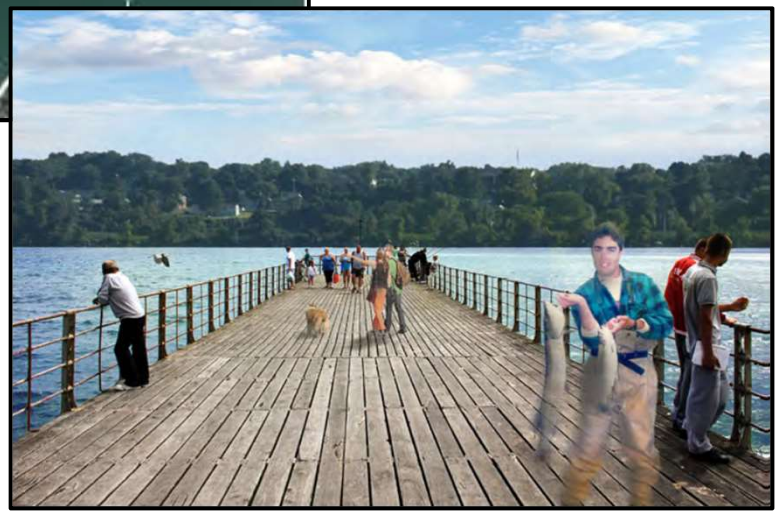
Scope:

- Concrete double boat ramp
- Floating dock/ADA-compliant platform
- Parking

Planned Schedule:

- Construction starting spring 2019
- Completion planned summer 2019

Recreational Fishing Access



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Questions?

1. What were the environmental benefits of transporting the lake bottom sediment via pipe?
2. Why is prey fish monitoring conducted?
3. What is the design life of the cap?
4. How else can New York capitalize on a clean Onondaga Lake?

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