

SUSTAINABLE, COMBINED REMEDIES AND RESTORATION OF THE ONONDAGA LAKE SHORELINE SYRACUSE, NY

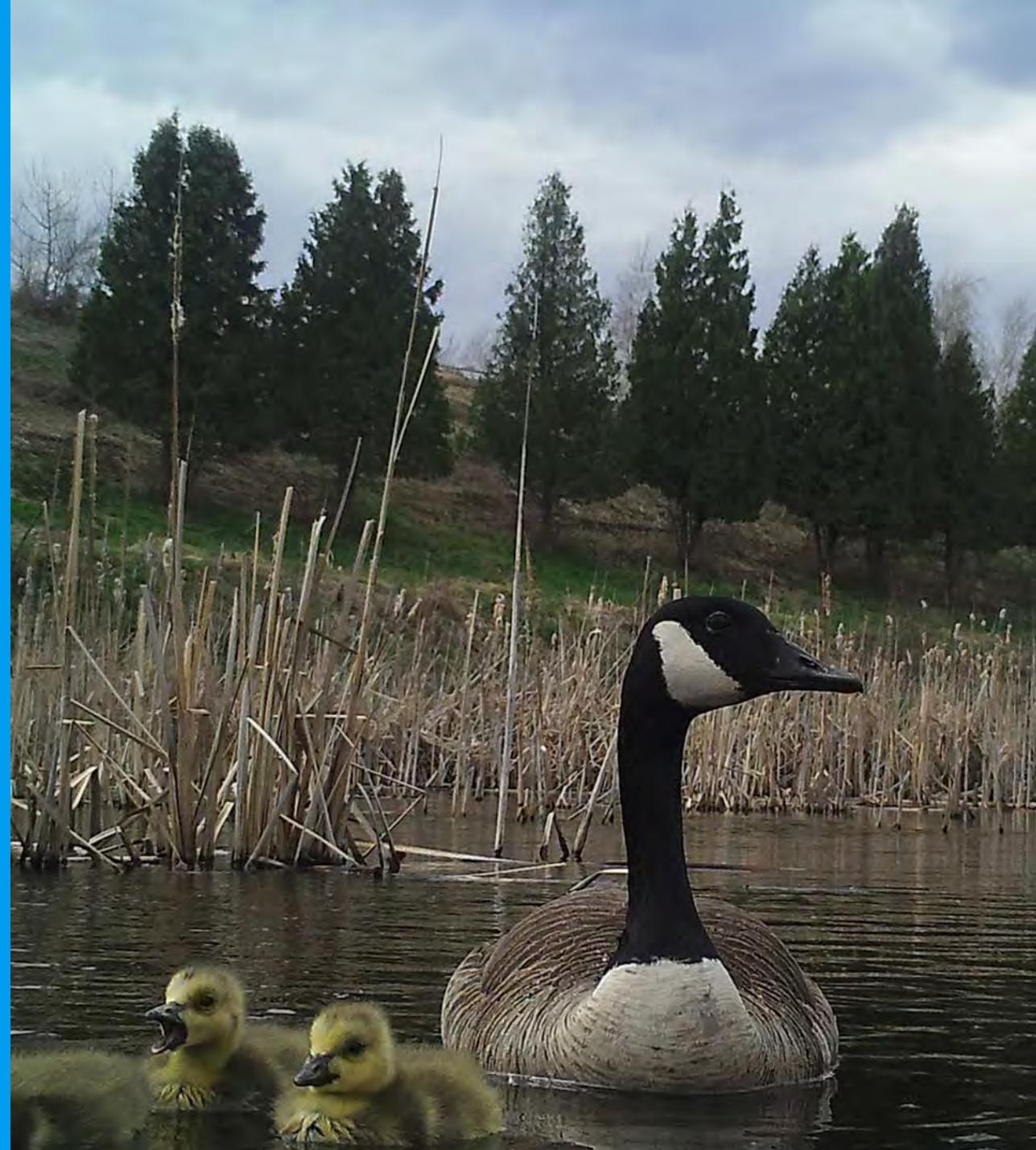
WEDA Dredging Summit and Expo '19
Dan Rockefeller - June 2019

AGENDA

1. HISTORY AND CONTEXT
 2. GOALS AND OBJECTIVES
 3. SITE TOUR
-

MAJOR THEME: A *HOLISTIC APPROACH* IS VITAL TO COMBINING REMEDIES:

- *VISIBILITY AND A VENUE FOR COLLABORATION* ACROSS ALL PROJECT SCOPE AND SCHEDULES
- *WILLINGNESS TO MANAGE SCOPE, SCHEDULE, AND DESIGN* WITHIN AND AMONG CONSULTANTS, CONTRACTORS, AND VARIOUS OWNERS
- *INSTITUTIONAL LEGACY* IS AN IMPORTANT VALUE



ONONDAGA LAKE



4.6 mi. long x
1 mi. wide

Average depth:
35 ft (maximum
depth: 63 ft)

Urbanized
drainage basin of
285 square mi.

Municipal
WTP second largest
water input

Dredging completed
in 2014; capping
completed in 2016

Significant
municipal upgrades
to WTP and
CSOs ongoing:
\$1B+ in municipal
and remedial
investments

Habitat restoration
ongoing: 90 acres of
wetland restored to
date, 100s of acres
of benthic habitat
enhanced, 1000+
acres subject to
sustainable
remediation efforts,
~800,000 plants
installed to date

At the center of
Syracuse and
first nations



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Solvay Works.

TABLE 1

CHEMICAL CHARACTERISTICS
OF SOLVAY PROCESS WASTE

Representative Chemical Analysis (from Kulhawy, et al., 1977)

CaCO ₃	20%	NaCl	6%
2 CaO·SiO ₂	17%	CaCl ₂	6%
H ₂ O of hydration	12%	R ₂ O ₃	6%
Mg(OH) ₂	10%	Ca(OH) ₂	4%
CaO·CaCl ₂	8%	CaSO ₄	4%
SiO ₂	7%		

Where R = Aluminum, Iron

ABOUT ONE TON OF SOLVAY WASTE WAS GENERATED FOR EVERY TON OF SODA ASH PRODUCT



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WASTEBEDS 1-8 OVERALL SITE PLAN



Onondaga
County Boat
Dock

GRASSLAND
SEEP APRON (3,000 LF)

DREDGING AND CAPPING
PROGRAM

SHORELINE
WETLAND
COMPLEX (30 AC)

GW COLLECTION
10,000 LF

VEGETATED
COVER SYSTEM (170 AC)

Amphitheater
and NYS Fair
Parking

Onondaga County
Lakeview
Amphitheater

VEGETATED
REVTMENT (1,600 LF)

Onondaga County
West Shore Bike Trail



SHORELINE (2015, ONE YEAR POST PLANTING)



GROUNDWATER COLLECTION SYSTEM

- Adjacent to wetlands
- Eliminated need for low permeability cover
- Groundwater eliminated from wetland functioning (accounted for in wetland design)



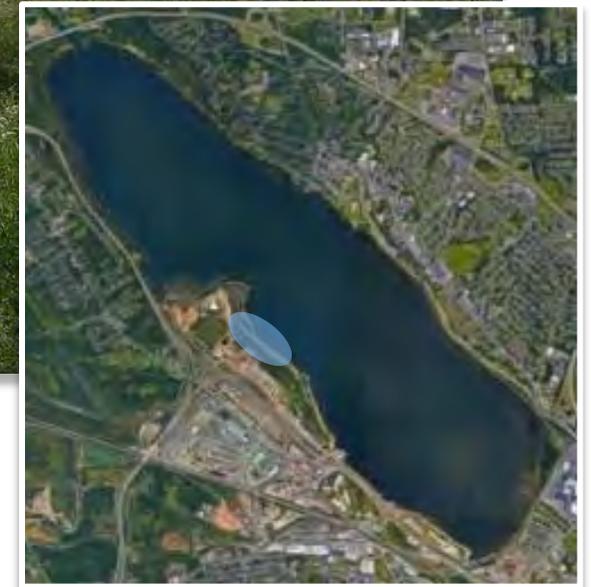
2013

PERCHED WETLANDS

- Dovetailing of wetland and seep collection liner systems
- Surface water management and timing requirements
- “Sterile” topsoil used on seep apron – grassland quality
- Construction and planting schedule management – irrigation plan



2010, PRE-CONSTRUCTION



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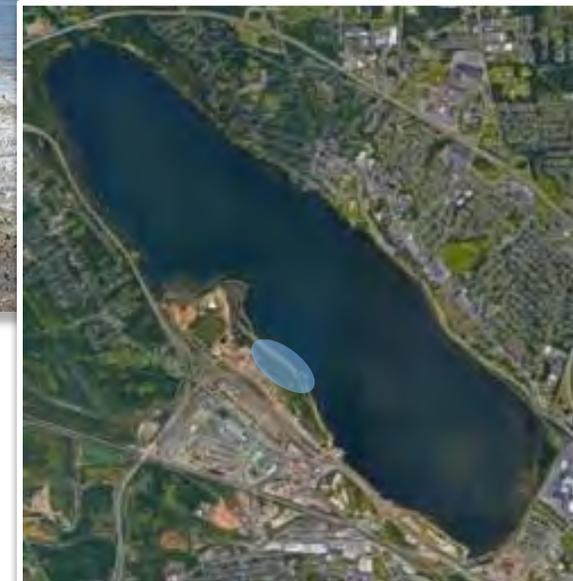
2014, DURING CONSTRUCTION

CONNECTED WETLAND

- Schedule management
- Coordinated dredging/grading plan and approach
- Dredge cut for segmented breakwater
- Alignment of groundwater collection system



2014, DURING ONONDAGA LAKE DREDGING



CONNECTED WETLAND

- Smooth shoreline transition
- Dredge cut and final grading of wetland to meet mitigation requirements



2015, DURING ONONDAGA LAKE CAPPING



2018, CONNECTED WETLAND AND SHORELINE

MITIGATION WETLANDS

- 2017, one year post planting of connected wetland; two to three years post planting of perched wetlands
- Native grassland on seep apron (background/right)
- Vegetated cover system (foreground)



2017



2019

SHORELINE STABILIZATION AND RESTORATION

- Transitional habitats
- Biodiversity
- Volunteer species



2018

REVETMENT

- Nature-based approach to provide habitat value
- Stinger approach to meet schedule and improve safety
- Shoreline access road repurposed as in-lake cap material



UPLANDS



SUSTAINABLE COVER SYSTEM

- Nature-based approach to provide habitat value
- Variable depths to meet remedial vs. recreational requirements throughout the site
- Application of locally-sourced compost to provide protection, establish desired vegetation, and suppress invasive species





CONCLUSIONS



Major theme: a ***holistic approach*** is vital to combining remedies:

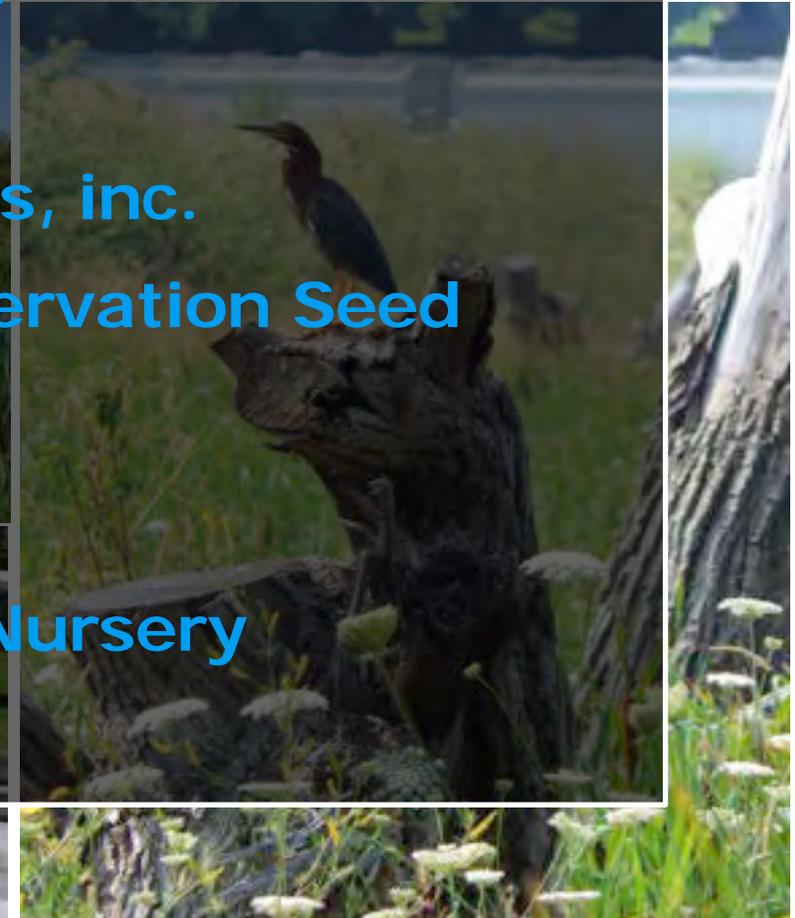
- ***Visibility*** and a ***venue for collaboration*** across all project scope and schedules
- ***Willingness*** to manage scope, schedule, and design within and among consultants, contractors, and various owners
- ***Institutional legacy*** is an important value



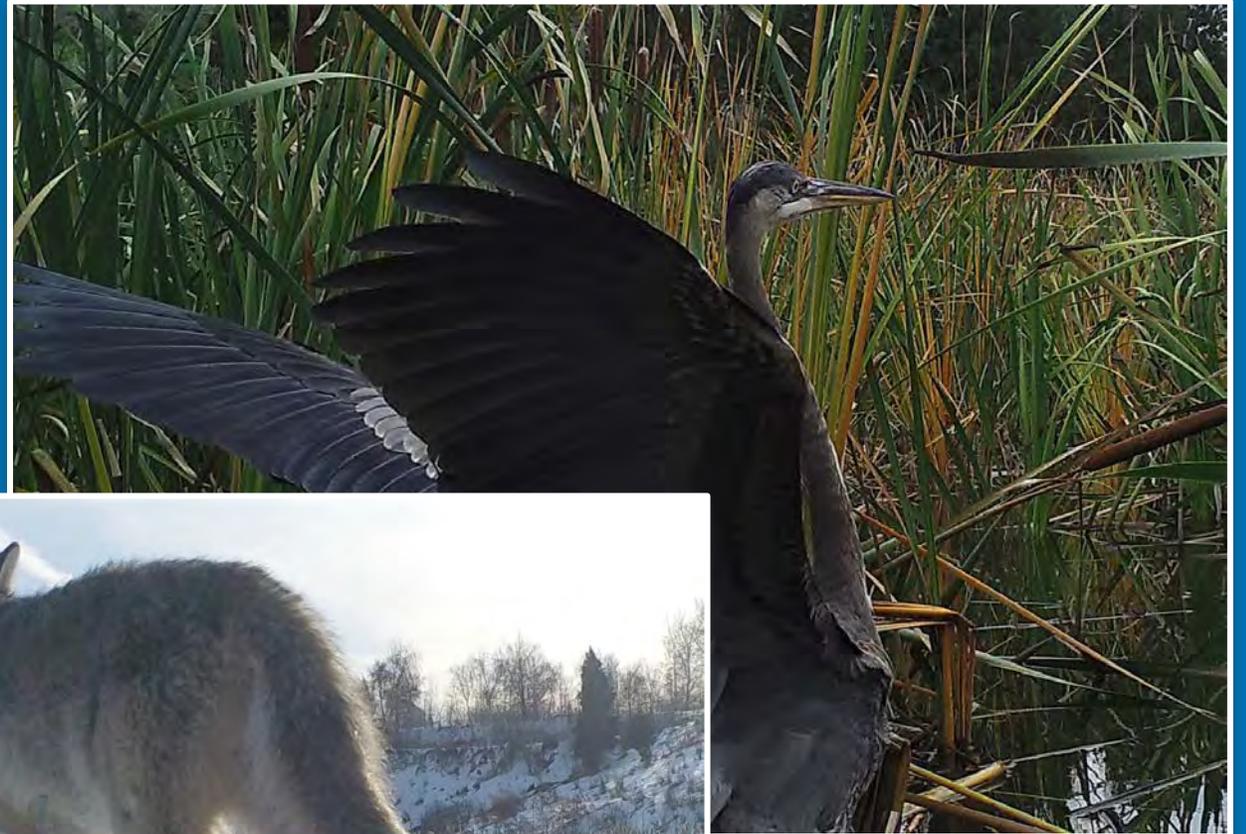
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Special Thanks to:

- Honeywell International Inc
- AnchorQEA
- Cardno
- de maximus, inc.
- Ernst Conservation Seed
- Geosyntec
- Parsons
- Pinelands Nursery
- Severson



THANK YOU



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