OBG PRESENTS:

Onondaga Lake Southwest Shoreline Restoration, NY

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OVERVIEW

History and Context
Summary of In-lake Restoration Projects
Focus on One Project
Community Support
Primary location: Onondaga Lake, Syracuse, NY – aerial view looking North

4.6 miles long x 1 mile wide
Average depth = 35 feet; Max = 63 feet
1881 to 1986 – Solvay Process, then Allied Chemical, then Allied Signal operates near constantly
- 500 tons/day of soda ash production (equal amount of waste)
- 25 pounds per day of mercury dumped into the lake

Significant municipal impacts to Onondaga Lake as Syracuse grew

Declared the most polluted lake in US

1986 – Major operations ceased, 1400 jobs lost

1994 – Lake bottom declared a Superfund Site (with numerous subsites surrounding)

1999 – Allied and Honeywell Merge

2006 – Consent Order for cleanup to begin
About one ton of Solvay waste was generated for every ton of soda ash product.
Historic Pact To Clean Lake

By Mark Weiner and Delen Goldberg
Staff writers

Honeywell International will agree today to spend $451 million to clean up toxic waste from Onondaga Lake, marking the largest legal settlement against a polluter in state history.

State and Honeywell officials will sign a legal order committing the company to a nine-year cleanup that will help restore one of the most polluted lakes in the nation, according to state Assemblyman Jeff Brown.

The consent order, to be filed in federal court today, settles a 1989 lawsuit the state filed against Allied-Signal Inc., which operated the defunct Allied Chemical complex in Solvay and merged with Honeywell in 1999.

Brown, R-Manlius, said Gov. George Pataki asked him to serve as his representative at the announcement planned for 3:30 p.m. at the Willow Bay Pavilion at Onondaga Lake Park.

No other state officials, nor Honeywell representatives, would confirm the deal Wednesday night.

The agreement means that more than $1 billion will be invested in the cleanup of Onondaga Lake, one of only three lakes originally listed on the federal Superfund list of toxic waste sites.

Onondaga County is in the middle of its own $500 million, 15-year project to stop polluting the lake with sewage by 2012. The county work is to comply with a federal court order to make the lake safe for swimming and fishing as required by the federal...
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, 100’s acres of benthic habitat enhanced, 1000+ acres subject to sustainable remediation efforts, ~800,000 plants installed to date

Sacred land for the Onondaga Nation

Regulatory oversight by NYS DEC, EPA and NYS DOH
Major Watershed Projects

Settling Basins 9-11 - Ongoing

Settling Basins 12-15 - Ongoing

Western shoreline
- Wetlands completed in 2016

Southwest shoreline
- Restoration ongoing
- Conservation of bald eagle habitat
Major In-lake and Tributary Projects

Mouth of Ninemile Creek Wetland Restoration
19 acres

2+ miles of stream restoration

Southwest Shore Wetland Restoration
18 acres

Lake Wetland Plantings
Inland Wetland Restoration
Stream Restoration

Dredging and Capping (200 acres)
Capping (420 acres)
Implementation Strategies – Southwest Shore
Implementation Strategies – Southwest Shore

- Pike spawning
- Bald eagle trees
INTEGRATED IRM AND CLOSURE SYSTEM
Focus Project
Project Location: Aerial View
Looking North at Onondaga Lake
- Control groundwater discharge to Lake
- Mitigate offsite wetland impacts
- Stabilize eroding waste banks
- Cover upland waste areas
- Facilitate site recreational uses
- Administrative Consent Order with NYSDEC for closure
### Major Restoration Components

#### Vegetative Cover
- On-shore Revetment (cliff/steep slopes along shoreline)

#### Wetlands
- Compensatory mitigation
- Connected (to lake)
- Inland (‘perched’ habitats)

#### Shoreline
- Stabilization and Enhancement zones
Groundwater Collection System

Adjacent to wetlands

Groundwater eliminated from wetland functioning (accounted for in wetland design)

Engineered soil profile integrated with wetland design
Mitigation Wetlands – Pre-Construction Conditions
Mitigation Wetlands Construction – Dovetailing of Remedial and Wetland Facilities
Mitigation Wetlands – Structural Design Components

- Liner and habitat layer (substrate) installation
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<th><strong>Mitigation Wetlands: Habitat Design Components</strong></th>
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<td><strong>Inland wetlands have vegetative zones with varying water depths:</strong></td>
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<td>- 0 to 6”, 6-18” and 18 to 36”</td>
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<td><strong>Turtle nesting zones</strong></td>
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<td>- Multiple locations on south facing berms</td>
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<tr>
<td>- Sand component specified for nesting</td>
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<td>- Ample coarse woody debris</td>
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<td><strong>Adjacent upland shrub and forest communities specified</strong></td>
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<td>- Brush piles for cover</td>
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<td>- Accommodate amphibian terrestrial life stages</td>
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Habitat Restoration as Added Conservation and Recreation Value
Mitigation Wetlands Completed (1-year post planting)
10-acre Native Grassland on Seep Apron (background/right)
Revetment – Pre-Construction Conditions
Revetment – Post-Construction Conditions
Additional Restoration Areas – Revetment
Incorporating Green Technology (Vegetated Structural Fill) into Amphitheater Parking and Stormwater Management
The OLCC is an expanding organization of community volunteers who are contributing to restoration projects in the Onondaga Lake watershed.

The OLCC offers citizens and organizations the opportunity to become STEWARDS of Onondaga Lake.

OLCC = Local Community Involvement!!
OLCC = Community Volunteer Restoration Assistance!!

Founding partners of the OLCC include Montezuma Audubon Center, Onondaga Audubon Society, OBG, Parsons, and Honeywell.

For more info: http://www.lakecleanup.com or contact montezuma@audubon.org
During Restoration – Community Outreach

- EPA Environmental Champion Award
- Audubon New York Thomas W. Keesee, Jr. Conservation Award
## Conclusions and Lessons Learned

- Estimated onsite wetlands mitigation savings: $1M
- Estimated vegetated cover system savings: greater than $10M
- Maximum benefit realized when habitat and restoration values are fully integrated and implemented with site-wide design and construction
- Involve stakeholders; Community engagement valuable for client credibility and leadership
- Schedule coordination critical to meet ecological needs (Front-end coordination and Day-to-day coordination)
Project received the American Council Engineering Companies NY State Diamond Award.
Contributors and Colleagues
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- Honeywell
- Don Leopold – SUNY ESF
- Pete Ducey – SUNY Cortland
- Parsons Inc.
- Cardno
- Ernst Conservation Seed
- Pinelands Nursery
Thank you!
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