NIAGARA POWER PROJECT

RELICENSING IMPLEMENTATION

Ecological Standing Committee Meeting

July 21, 2009

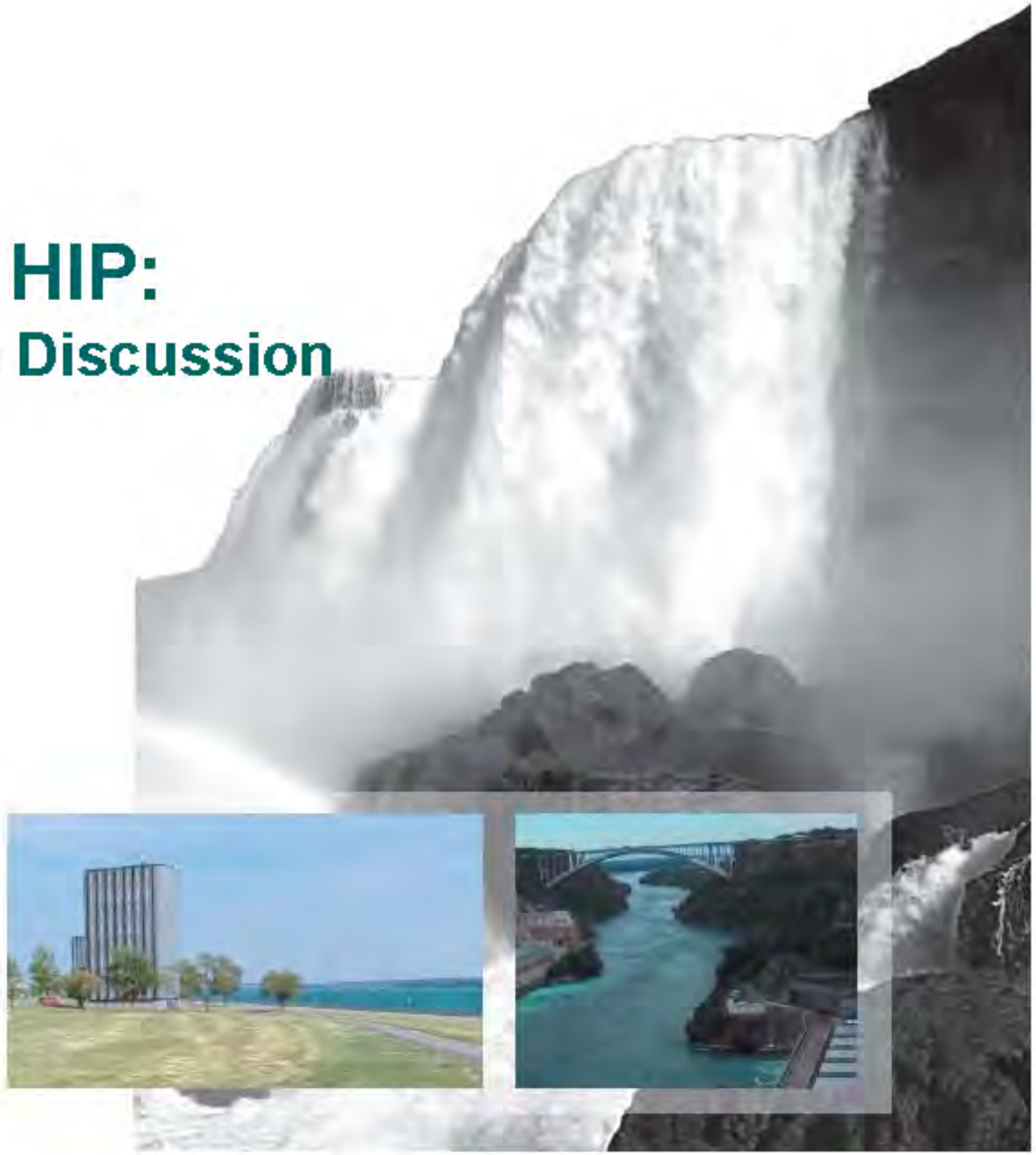
Agenda

- Habitat Improvement Project Progress
  - Frog Is Wetland Creation
  - Little Beaver Island Wetland Restoration
  - Invasive Species Control
  - Common Tern Nesting
  - Osprey Nesting
- HIP and HERF Cost Updates
- HERF Project Selection Criteria
- Meeting Wrap Up / Action Items

NIAGARA POWER PROJECT

RELICENSING IMPLEMENTATION

Frog Island HIP:
Design Criteria Discussion



July 21, 2009

Frog Island – HIP Concept

Project Description – restore Frog Island to a complex of functionally valuable wetlands and areas of submerged coarse substrate for foraging, nesting/spawning, and cover habitat for fish and wildlife **(i.e. create emergent marsh and SAV habitat)**

Primary Target Species – warmwater and coolwater fish; waterfowl and wading birds, and native wetland plant community

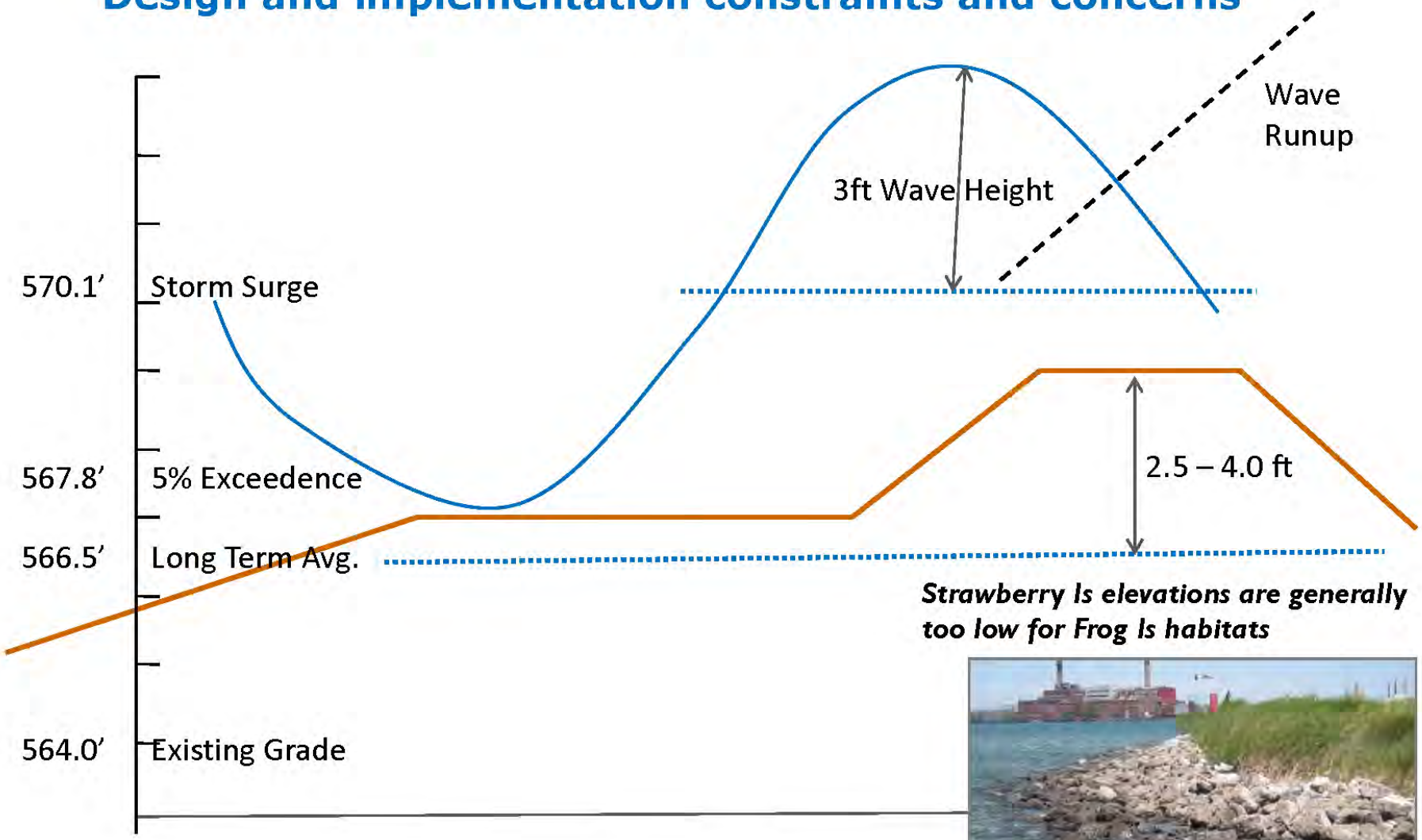
Secondary Target Species – muskrat; passerines; green frog and bullfrog

Approach: Create perimeter breakwater with internal wetland beds interspersed with flow-though channels

Frog Island – Conceptual Design (2008)

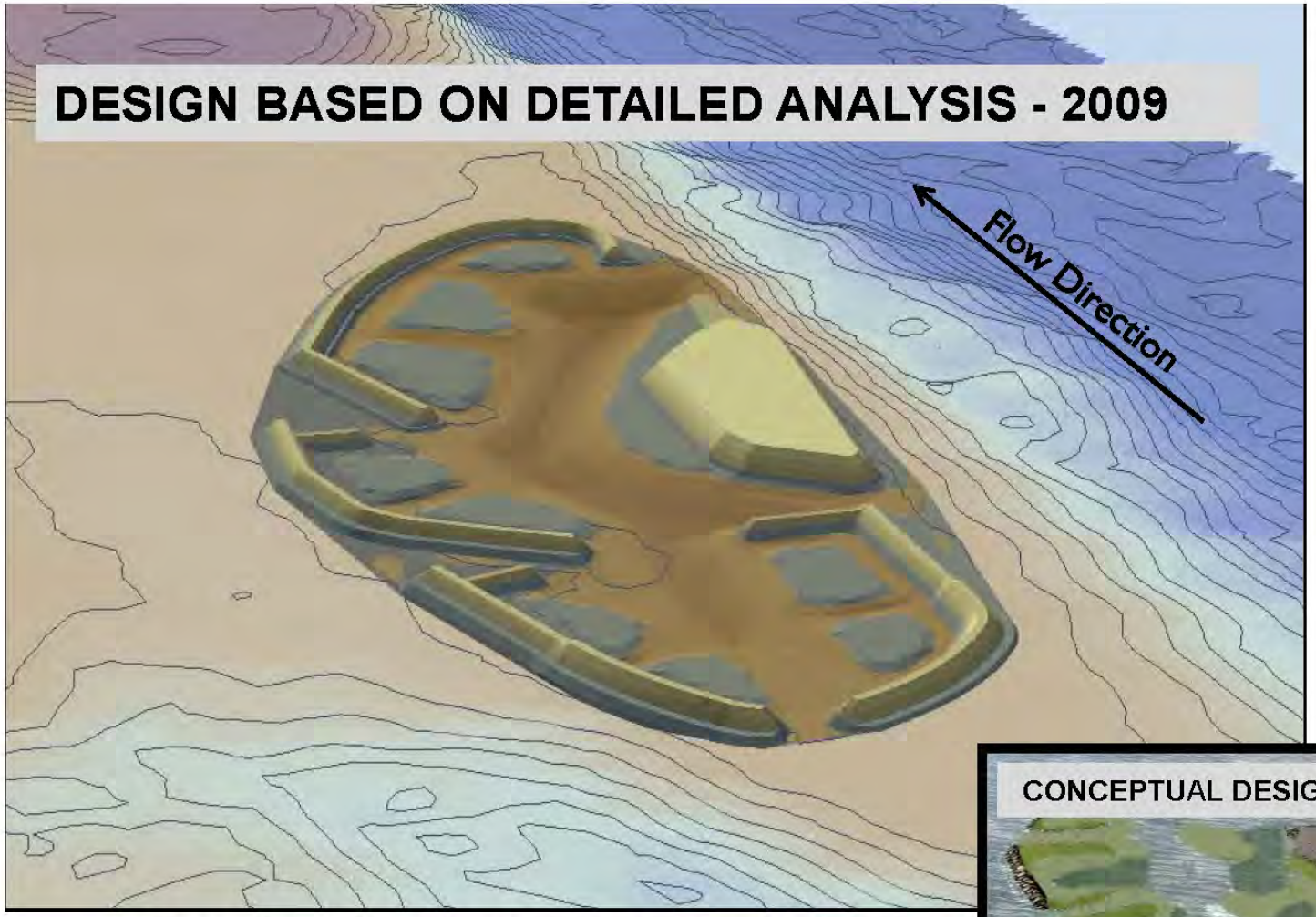
Hydrology & Wave Environment

Design and implementation constraints and concerns



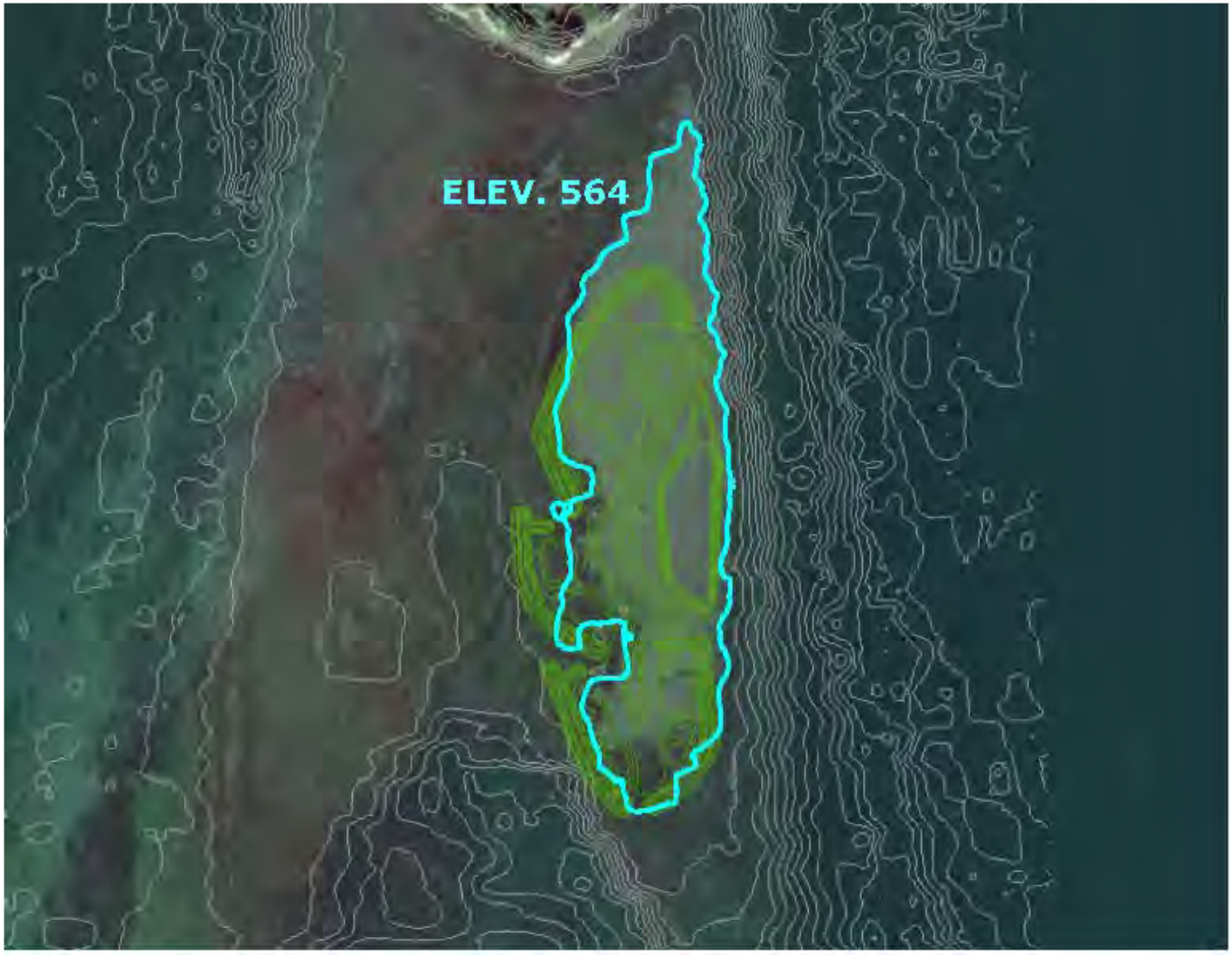
Strawberry Is elevations are generally too low for Frog Is habitats

Addressing Design Challenges



- Breakwalls are larger - footprint and height
- Breakwalls overlap
- "Transition zone" needed inside breakwalls to dissipate energy

Frog Island
Existing SAV vs. Design Footprint



Summary of Findings from Engineering Analysis

- **Conflicting design parameters** (open for habitat benefits vs. closed for protection)
- **Risk of failure** (long term maintenance)
- **Armoring to habitat benefit ratio low** (1.4 acres of habitat vs. 1.2 acres rock)
- **Current design impacts existing SAV beds** (about 2 acres)

Meeting HIP Objectives

Project Description – restore Frog Island to a complex of functionally valuable wetlands and areas of submerged coarse substrate for foraging, nesting/spawning, and cover habitat for fish and wildlife **(i.e. create emergent marsh and SAV habitat)**

Primary Target Species – warmwater and coolwater fish; waterfowl and wading birds, and native wetland plant community

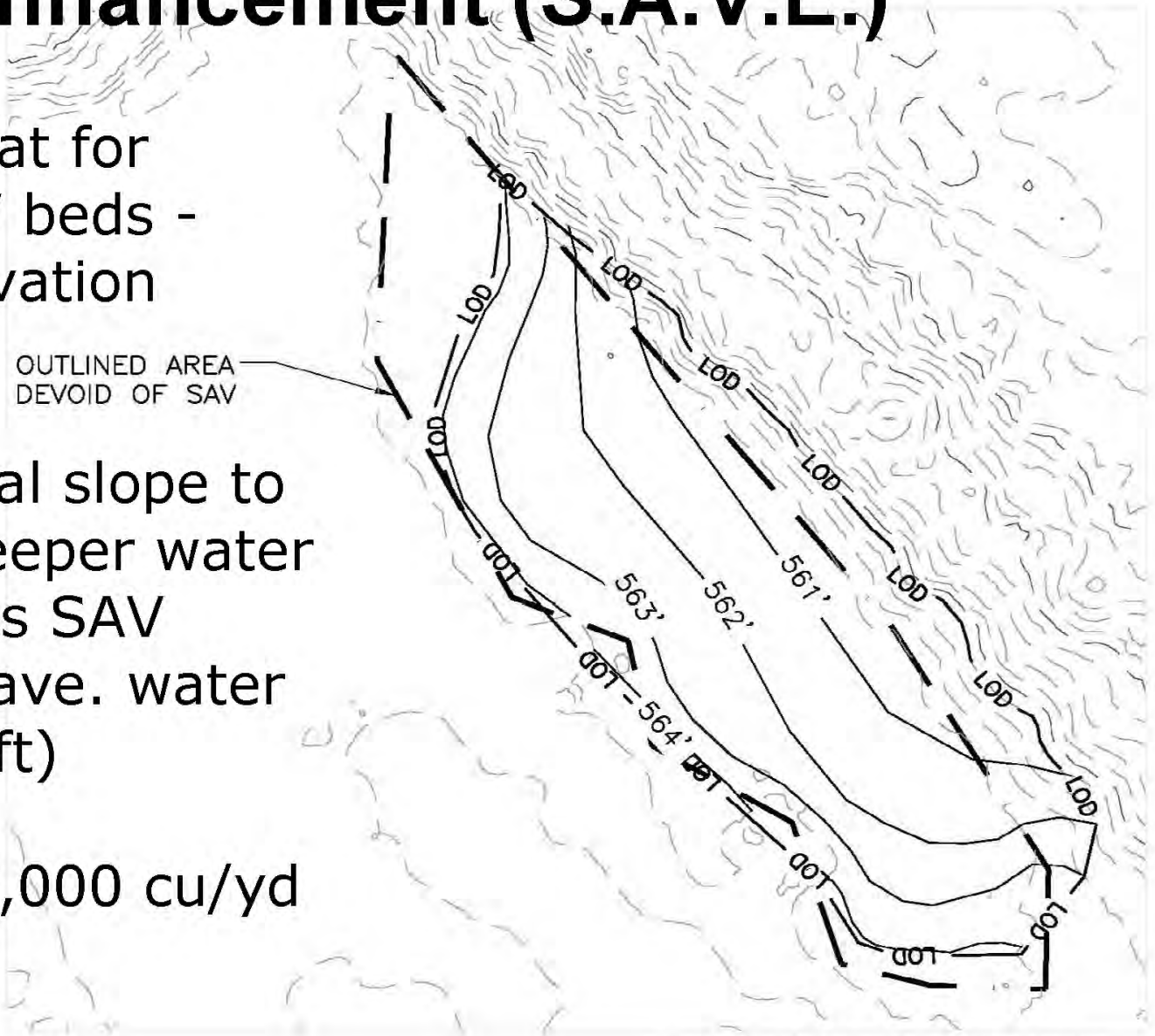
Secondary Target Species – muskrat; passerines; green frog and bullfrog

Potential Approach for Improving Both Aquatic and Emergent Marsh Habitat

- Improve bathymetry to enhance wild celery beds at **Frog Island site**
- Implement unexecuted portion Park's project at **East River Marsh**

SAV Enhancement (S.A.V.E.)

- Expand habitat for adjacent SAV beds - shallow excavation (about 2 ft)
- Create gradual slope to connect to deeper water for contiguous SAV beds (attain ave. water depth of 3.5 ft)
- Excavate~13,000 cu/yd



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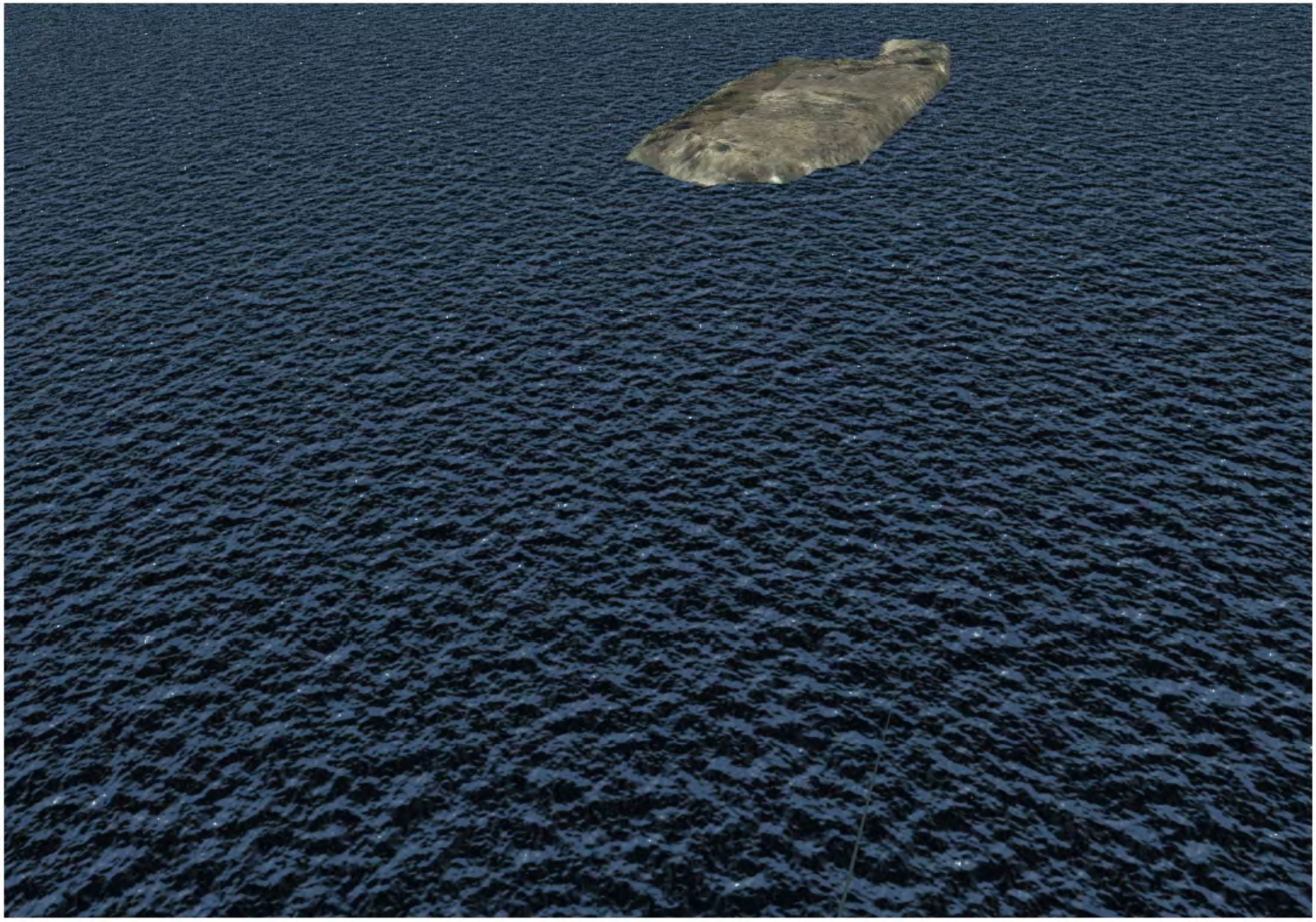

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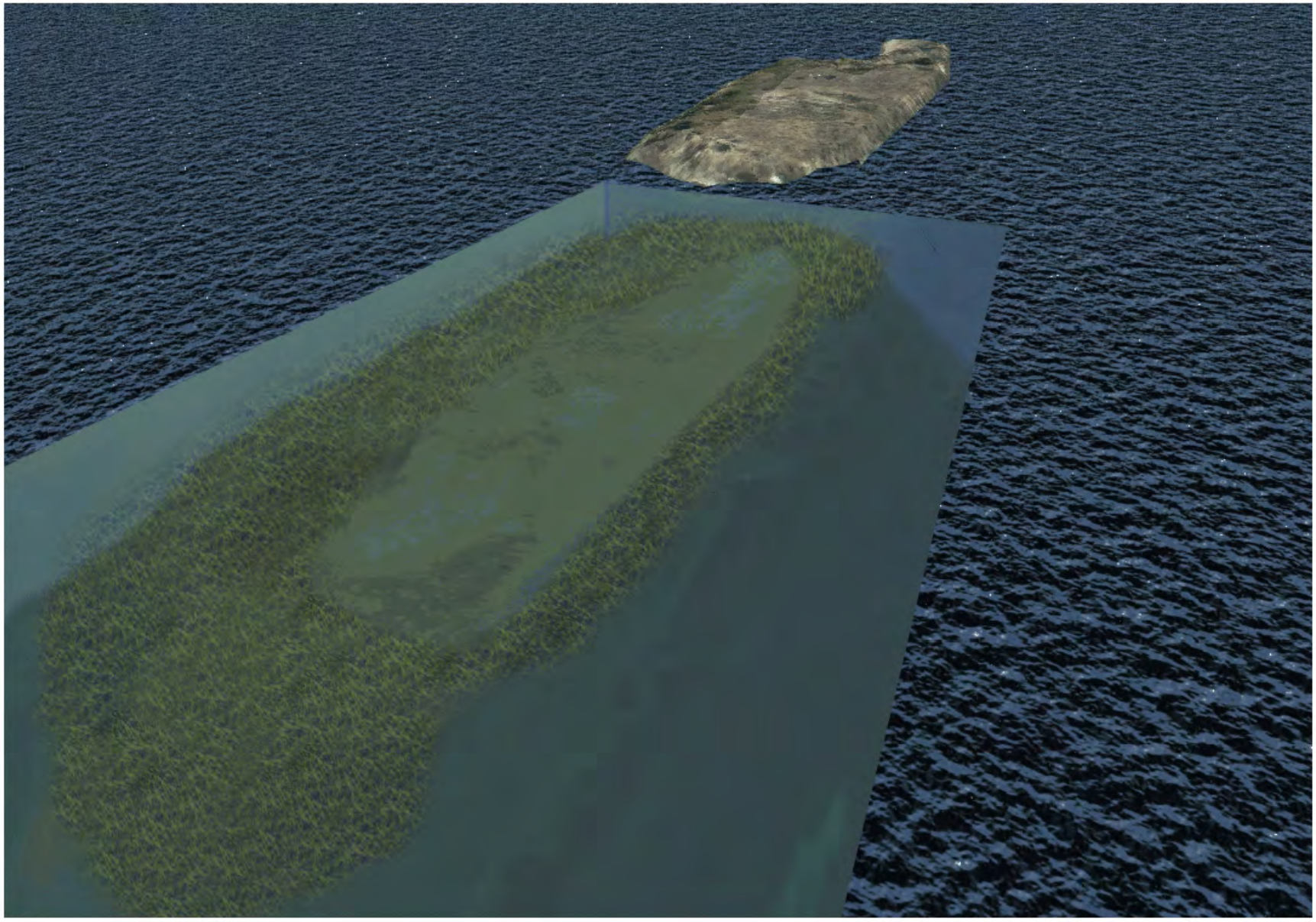

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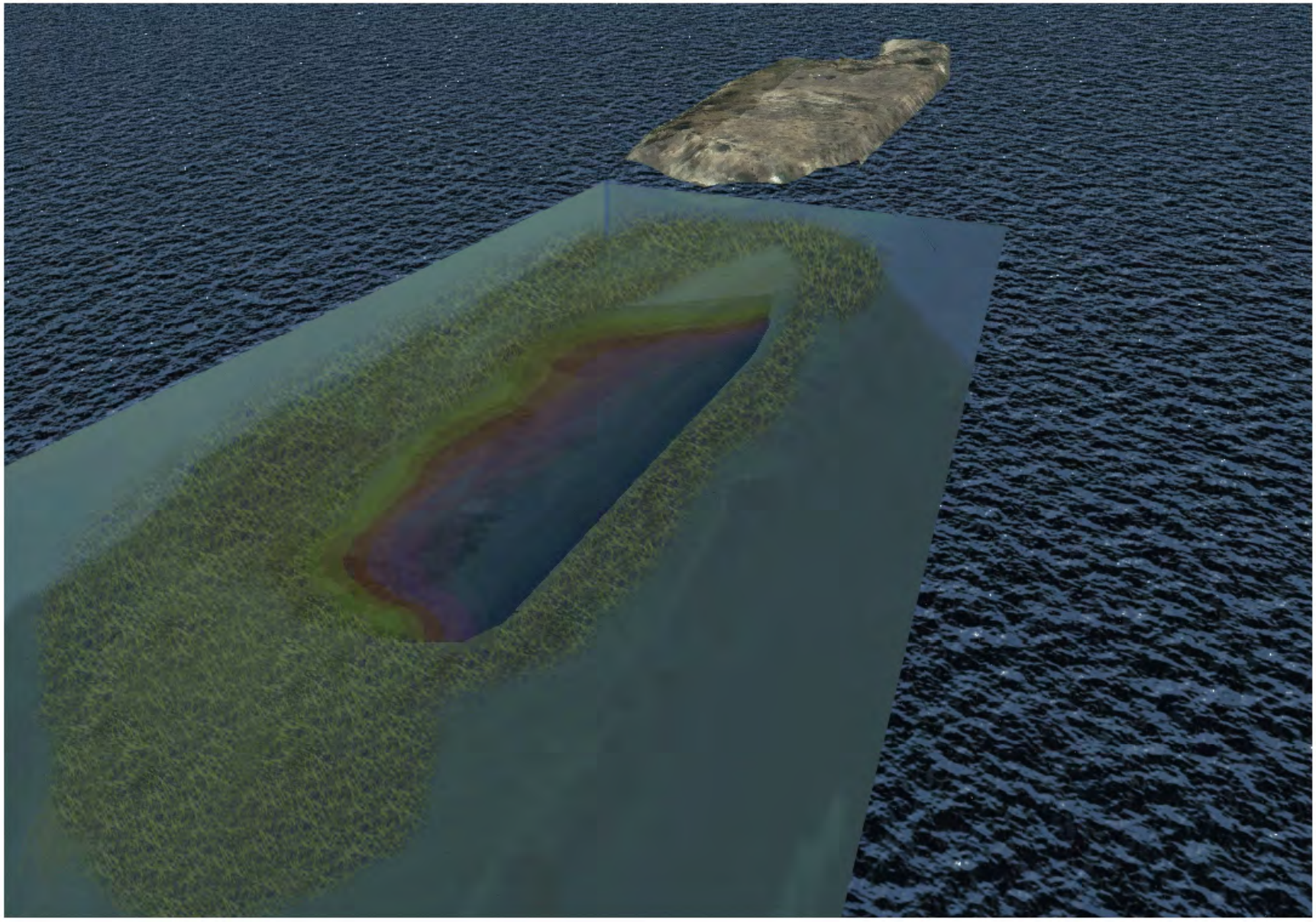
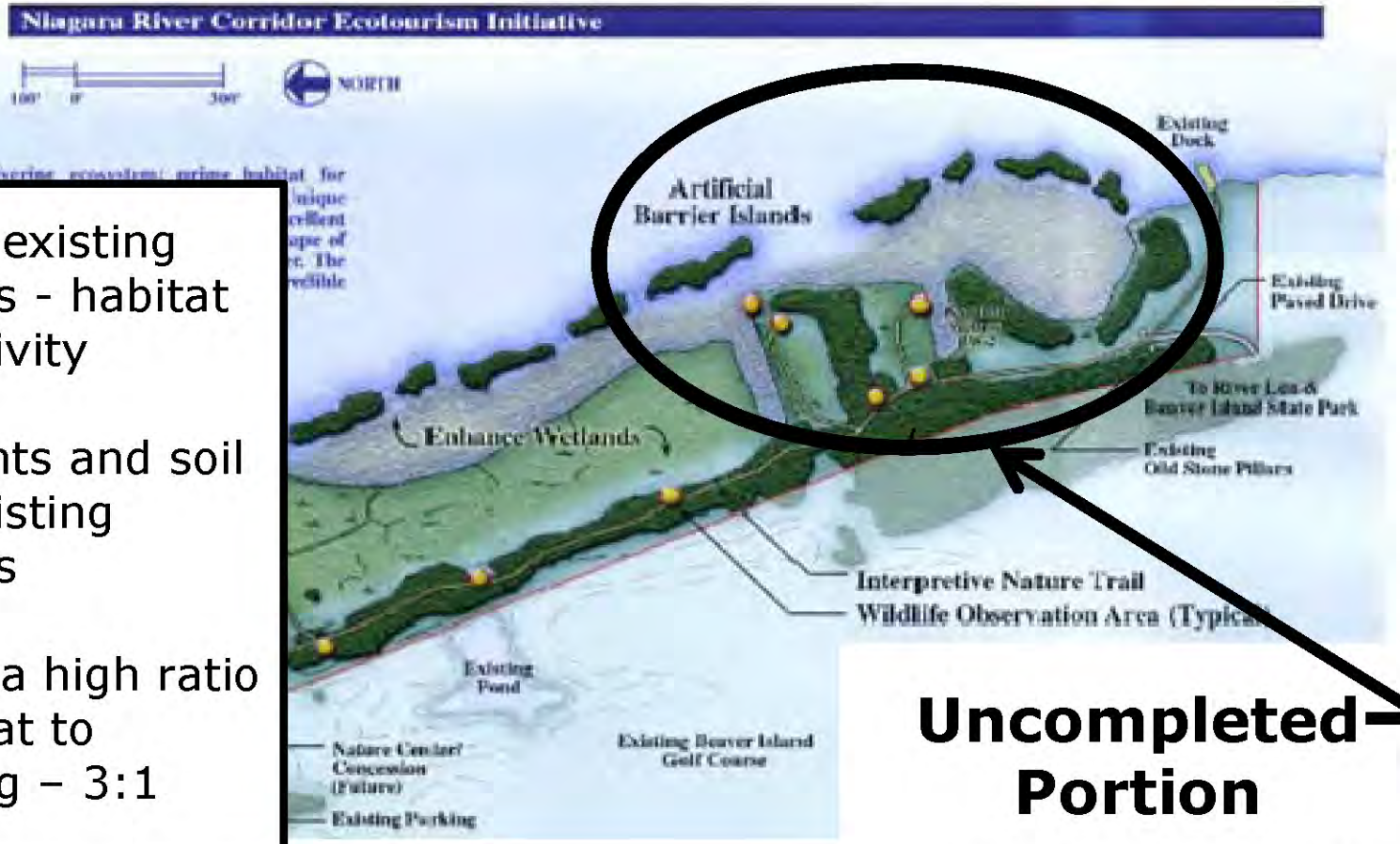


East River Marsh Addition (E.R.M.A.) Wetlands Enhancement Project

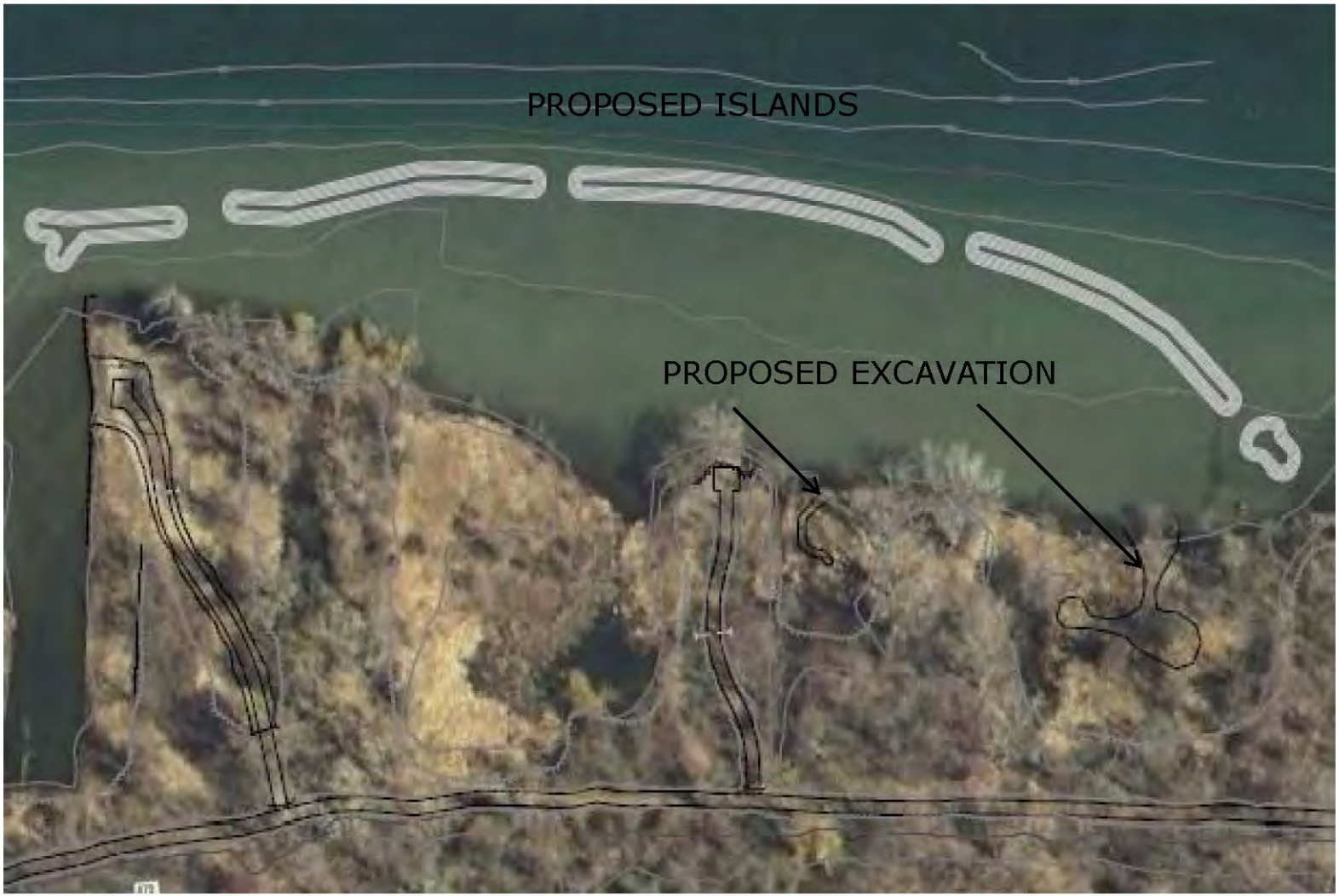
At Beaver Island State Park



- Tie into existing wetlands - habitat connectivity
- Use plants and soil from existing wetlands
- Provide a high ratio of habitat to armoring – 3:1

Uncompleted Portion

East River Marsh Addition (E.R.M.A.)



LOCATION MAP

Attaining HIP Objectives

	Frog Island	S.A.V.E.	E.R.M.A.
Primary Objective:	Emergent marsh and aquatic habitat	Aquatic habitat	Emergent marsh habitat
Target Species:	Emergent veg., wading & diving birds, SAV, fish, benthos	Diving birds, SAV, fish, benthos	Emergent veg., wading birds, fish, benthos
Footprint:	5.3 ac (total) 1.9 ac rock (Terns) 2.0 ac Transition **0.8 ac wetlands** **0.6 ac SAV**	4.4 ac (total) None No Transition None **4.4 ac SAV**	3.7 ac (total) 0.5 ac rock No Transition **1.8 ac wetlands** **1.4 ac SAV**
Approach:	Complicated	Compatible	Proven

COST PROJECTIONS/COMPARISON

Project	Cost (Year Spent 2013-2014)	
Original Frog Island		$4,176,000
S.A.V.E.	$2,649,300	
E.R.M.A.	$2,589,500	
Combined S.A.V.E. and E.R.M.A.		$5,238,800

Little Beaver Island Wetland Restoration

Little Beaver Island Marsh – pre 1950

Objective of HIP: Enhance/restore wetland structure and function by modifying the topography and planting with native wetland vegetation

Little Beaver Island Wetland Restoration Recent Activities

- Consultation with Parks on Preliminary Design (50%)
- Quantities of Fill to Be Removed
- Investigation of Different Spoil Disposal Alternatives

Tree
Tree
Existing Trail
Trail and Overlook
Tree
Kayak Launch
Shoreline Protection
Legend
Emergent Shallow
Emergent Deep
Submergent
Submergent Deep

Tree
Tree
Existing Trail
Trail and Overlook
Legend
Emergent Shallow
Emergent Deep
Submergent
Submergent Deep

Tree
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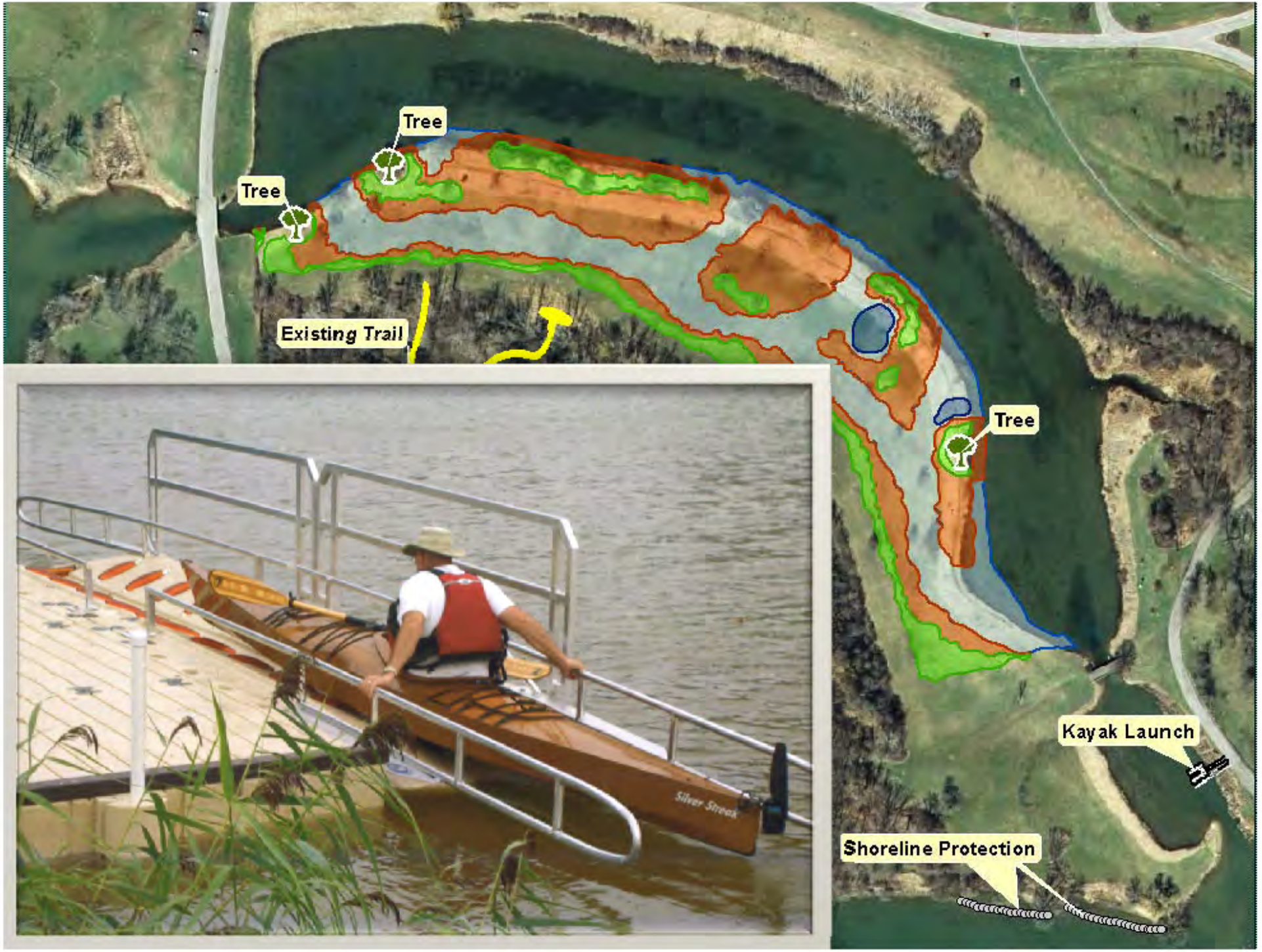

Tree
Tree
Existing Trail
Tree
Kayak Launch
Shoreline Protection

Progress & Schedule

- July 2009: Preliminary Design (50%) Complete
- Summer 2009: Pre-Construction Studies
- Fall and Winter 2009: Final Design & Permitting
- Winter and Spring 2010: Bid Documents and Procure Contractor
- Fall 2010: Excavation & GradingConstruction
- Spring 2011: Wetland Plantings

Invasive Species Control at Buckhorn and Tifft Marshes

Objective of HIP

- "Control invasive wetland species in targeted areas in order to promote the growth of functionally valuable wetlands characterized by a diverse community of native wetland vegetation."

Targets:

- Common Reed (*Phragmites australis*)
- Japanese knotweed (*Polygonum cuspidatum*)

Method of Treatment

- Combination of treatments used to increase the stress on invasive species.
- Mechanical: Mechanical cutting in early summer (late June/early July).
- Herbicide: Application to occur in late Summer or early Fall.

Feedback from Parks, DEC, and Buffalo Museum of Science

Big Picture Comments:

- Parks requested that mechanical pre-treatment be required component of Action Plans
- Parks/DEC requested increased consideration of RTE species
  - pre-treatment surveys for nesting birds and rare plants
  - add rarity data to Action Plans
  - provide Parks/DEC with previous mussel survey
  - Include State and Federal rarity in species tables
- More discussion in Action Plans addressing potential effects of exposure of amphibians and other sensitive aquatic or semi-aquatic species to herbicide
- Detailed review and comment from Tifft Ecologist
- DEC requested that Site 6 be moved to a high priority site (i.e., treated in 2010)

Feedback from Parks, DEC, and Buffalo Museum of Science (continued)

- Parks to determine preferred timing for mechanical treatment and herbicide application.
- Tifft requires City permit to use herbicides – this was obtained (will need to be applied for annually)
- Notification and signage requirements for Tifft and Buckhorn since they are "public" places
- Remove Appendix A, winter survey report, and only reference the report.
- Add acreages for high, moderate, and low priority sites along with total acreage of each.

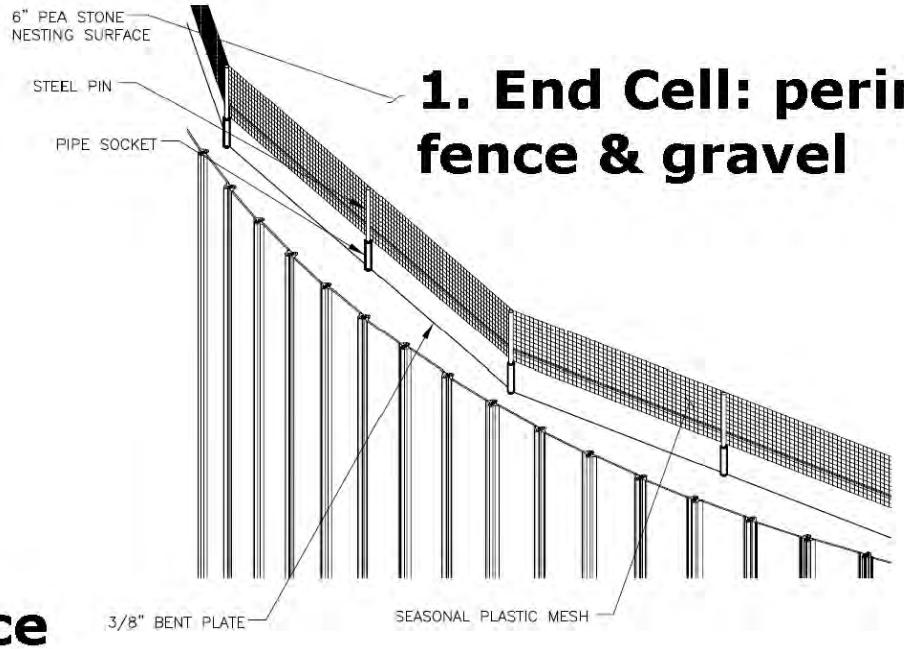
Schedule:

- Late July 2009 - Distribute Final Action Plans to ESC.
- Fall 2009 – Develop Technical Scope and Start Permitting.
- Spring 2010 – Distribute RFP for treatment; receive permits.
- Summer/Fall 2010 – Implementation of first treatment.

Common Tern HIP – 2009

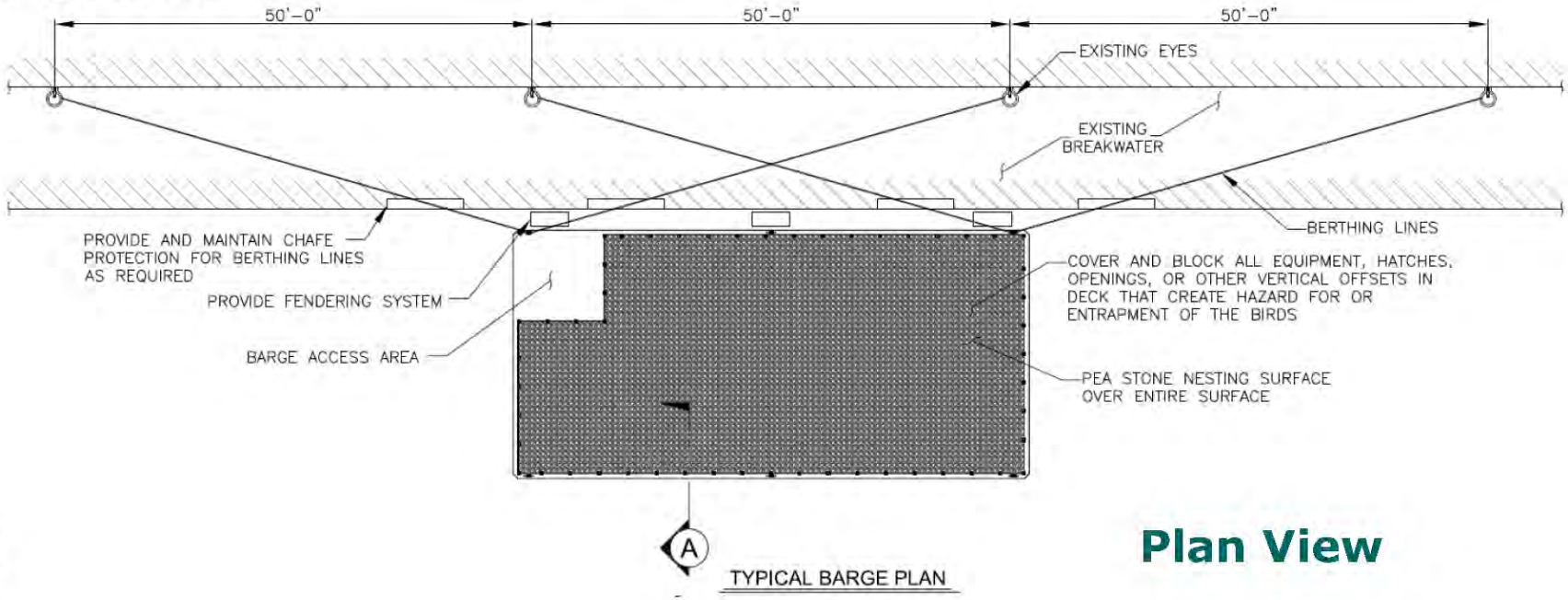
Barge and End Cell Pilot Study: Update on Implementation and Monitoring

Engineering Drawings



1. End Cell: perimeter fence & gravel

2. Barge: moor to breakwater, add fence and gravel



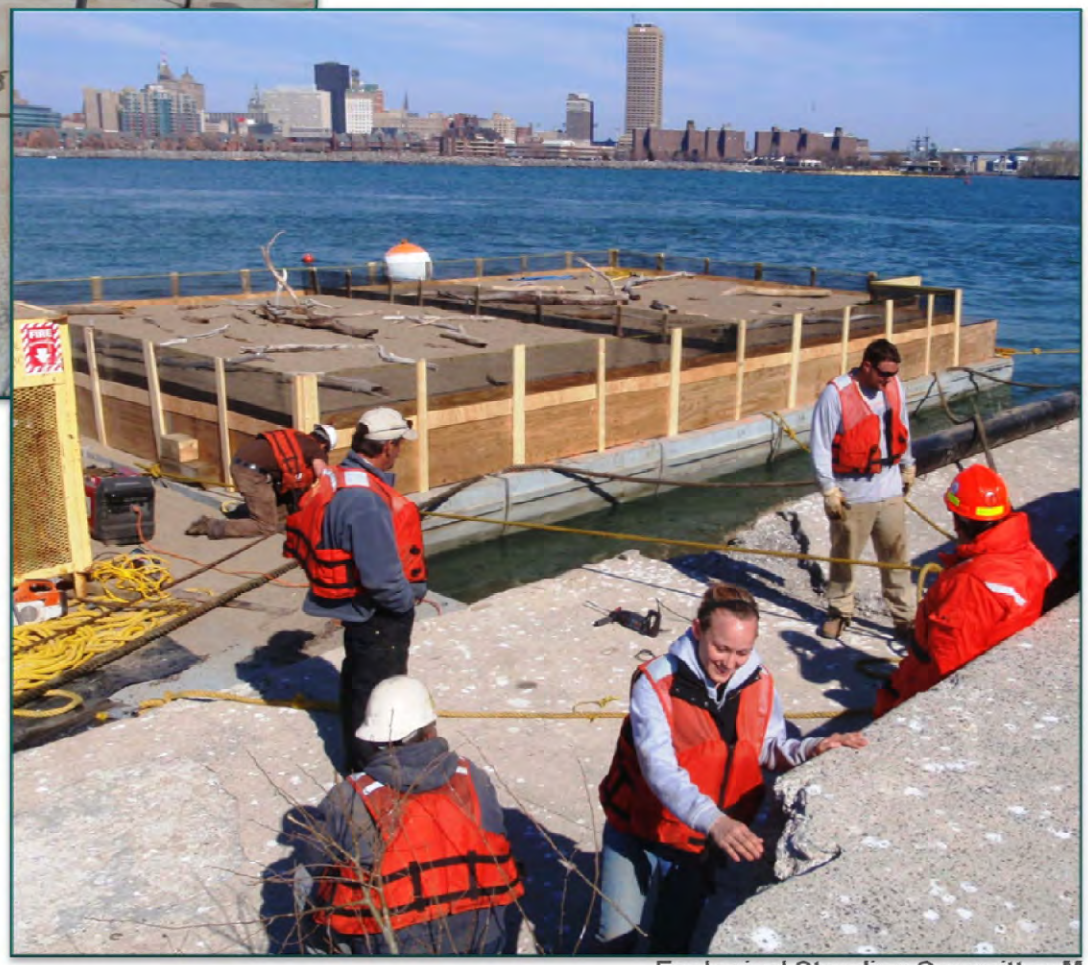
NIA
REL

Plan View

Common Tern HIP – April 2009

April 8, 2009

Barge Construction and Deployment



April 17, 2009

End Cell Construction and Preparation

April 17, 2009

Tern Barge
May 19, 2009

200 nests

End Cell

300 nests

Preliminary Findings

Both Barge and End Cell:

- Density of nests about equal
- Productivity similar to adjacent breakwater
- Mortality occurring in two groups: 1-3 day old chicks, and 18+ day old chicks

Barge:

- Siding popped loose (repaired)
- One pipe lost
- One mooring rope parted

End Cell:

- No issues noted to date

Has it been a success?

Next step:

Analyze data, calculate productivity, and determine future course of action

Osprey Nesting Platform HIP

Installation, Site Selection, Monitoring

East River Marsh Osprey Nesting Platform Installation – June, 2009

Contractor: Herbert F. Darling, Inc.

- Silt containment
- Pole and platform assembly

Osprey Pole Installation- 2009

- Pole installation

East River Marsh Platform Installation – Complete!

Osprey Nesting Platform HIP: Evaluation of Potential Locations for Additional Platforms in the Niagara River Corridor- 2009

Schedule: Two installations in 2009
1: East River Marsh, and 2: Location TBD

Osprey Platform HIP: New Site Selection

- Identify potential locations along Niagara R. corridor with input from agencies, individuals, and others
- Evaluate each location based on key biological, physical, and social factors, including:
  - distance from water or foraging areas,
  - proximity to forested woodlands,
  - height of nearest adjacent trees,
  - ease of public viewing,
  - potential disturbance by people, industry, or pets,
  - land ownership,
  - condition of soils at the site,
  - potential impacts to sensitive areas from installation.

Site Evaluation and Ranking

- Eighteen sites identifed in Buffalo Harbor, the Buffalo River, the Niagara River, and on Lake Ontario
- Performed field survey of each site
- Potential locations qualitatively ranked
- To integrate the results and prioritize sites, numeric values were assigned (*i.e.*, 5=best, 3=medium, 1=poor; public land=4, private=2)
- Summed all values to get a site ranking score

Potential Sites:

- Buffalo Harbor/River
  - Tifft Nature Preserve
  - Seneca Bluffs
- Upper Niagara River
  - Strawberry Island
  - Beaver Island State Park
  - Tonawanda Coke
  - West River Parkway (Fix Rd)
  - Big Six Mile Creek Marina
  - Spicer Creek
  - Buckhorn Island State Park
  - Gratwick Park
  - 102nd Street Landfill
  - Adams Slip, NYPA landing
- Lower Niagara River
  - Lewiston Reservoir
  - Artpark State Park
  - Stella Niagara shoreline
  - Joseph Davis State Park
  - Fort Niagara State Park, US Coast Guard station
- Lake Ontario
  - Four Mile Creek State Park

Results: Best Potential Sites

- Tifft Nature Preserve
- Little Beaver Island HIP marsh
- 102nd Street Landfill
- Adams Slip

Tifft Nature Preserve

- Owned by City of Buffalo; managed by Buffalo Museum of Science
- New platform on taller pole

- Firm, dry soils
- Easy access roads
- Popular nature preserve
- Some vegetation trimming, all non-native

Little Beaver Island HIP marsh

- Owned by NYSOPRHP
- Extensive wetland restoration

- Easily accessible
- Good viewing opportunities
- Excellent foraging nearby

102nd Street Landfill

- Fenced, remediated, capped landfill
- Low disturbance
- Wide open habitat

- Easily accessible
- Good viewing opportunities
- Tripod design to avoid subsurface excavation

Adams Slip, NYPA boat landing

- Owned by NYPA
- Posted and patrolled
- On Robert Moses Parkway
- Recreational trail

- Easily accessible
- Firm soil
- Excellent viewing
- Excellent foraging nearby

Osprey Nesting Platform HIP:
Four Platform Sites Needed

- Tifft Nature Preserve
- Adams Slip
- Beaver Island HIP marsh
- 102nd Street Landfill

HIPS Capital Cost Expenditure Report

	Estimated Capital Cost	Spent To Date (5/29/2009)
Beaver Island Wetland Restoration	$2,700,000	$194,364
Strawberry Island Wetland Restoration	$2,300,000	$78,122
Area Upstream of Motor Island	$4,200,000	$342,133
Motor Island Shoreline Protection	$1,900,000	$244,299
Invasive Species-Buckhorn and Tifft Marsh	$350,000	$113,086
Osprey Nesting Platforms	$70,000	$104,116
Common Tern Nesting	$560,000	$311,614
Fish Attraction Structures	$310,000	$187,327
Total HIPs:	$12,390,000	$1,575,061

Habitat Enhancement and Restoration Fund (HERF)

- Within ninety (90) days of the effective date of the New License or license issuance, whichever is later, the Power Authority shall establish a Fish and Wildlife Habitat Enhancement and Restoration Fund ("HERF"), in the amount of $16,179,645 (NPV 2007), in an interest-bearing account at an accredited bank in the State of New York

- The ESC must identify and approve select projects and activities to be funded by the HERF

- Proposals for funding shall not replace natural resource management programs funded by the General Fund of the State of New York or DEC Environmental Programs

- Project proponents must consult with the chief elected official or a designated representative of any affected municipal, county, Tribal and appropriate State and Federal agencies and provide written documentation in the form of a letter of such consultation with any application for funding

Habitat Enhancement and Restoration Fund (HERF)

- Envisioned projects include but are not limited to:
  - future HIPs
  - land acquisition
  - habitat improvement
  - habitat research
  - fish, wildlife, and indigenous plant species restoration
  - stewardship activities throughout the Niagara River including within the Niagara Gorge, its headwaters at Lake Erie, the mouth of the river at Lake Ontario, its tributaries between these two points, and their associated watersheds

Habitat Enhancement and Restoration Fund (HERF)

- The following criteria shall be considered when determining whether to fund projects under the HERF:
  - Projects that address a demonstrated Project impact
  - Projects that preserve RTE plant, aquatic, terrestrial species and/or their habitat in the Niagara Basin
  - Projects with a strong scientific foundation
  - Projects that contribute to long-term protection and enhancement of RTE plant, aquatic, and terrestrial species and/or their habitat in the Niagara Basin
  - Projects that achieve multiple ecological goals
  - Projects that preserve and restore Haudenosaunee cultural, religious, and historic features

Habitat Enhancement and Restoration Fund (HERF)

- The following criteria shall be considered when determining whether to fund projects under the HERF: cont,
  - Projects that involve multi-stakeholder collaboration
  - Projects consistent with applicable local, State, and Federal resource management plans
  - Projects that feature matching resources
  - Projects that are time-sensitive
  - Projects that have documented municipal, county and Tribal support
  - Projects that are feasible from a cost/probability of success perspective

Niagara River AOC Habitat Goals and Delisting Criteria

(Adopted by the NYS DEC as part of the Niagara River AOC delisting document, November, 2008, except where alternative wording is indicated)

Goal: Restored Habitat Connectivity

Priority Niagara River AOC habitats (such as the Strawberry Island shallows complex) are protected, with long-term management plans and programs in place.

Measurable targets are defined for habitat types in the AOC—including submerged aquatic vegetation beds, wetlands, riparian forests, natural sand/gravel beaches and grass/shrublands—and programs are in place for reaching them.

Goal: Restored Habitat Quality

All known or suspected AOC sources of contaminants found at unsafe levels in aquatic life and fish-eating species are fully remediated, and a program is in place to address newly discovered sources.

[DEC final wording: "All known or suspected AOC areas of sediment contamination at concentrations exceeding NYS Class A sediment quality thresholds (indicating chronic toxicity to aquatic life) are remediated and a program is in place to address newly discovered sources."]

Niagara River AOC Habitat Goals and Delisting Criteria - cont.

(Adopted by the NYS DEC as part of the Niagara River AOC delisting document, November, 2008, except where alternative wording is indicated)

The *NYS Priority Waterbodies List* and *Stream Biomonitoring Program* list no reach of the Niagara River AOC as "precluded," "impaired," "stressed" or "threatened" for aquatic life or habitat.
[DEC omits "stressed" and "threatened" from this target as these, in the order of descending severity, are considered background conditions.]
[DEC adds this target: "No additional species listed as extirpated from the River since 1994 as a result of habitat loss, or populations of formerly extirpated species are increasing (with 1994 as baseline).]

Goal: Protected and Restored Unique Habitats
Note: See Niagara River Ontario RAP "Technical Review of Impairments and Delisting Criteria" for parallel goals on the Canadian side (EC, 2007)

Niagara Gorge. An ecosystem inventory and long-term conservation management plan is adopted and implemented.
Outer Harbor/Upper River aquatic habitat. State and municipal waterfront, harbor and upper river development policies incorporate protection objectives for submerged aquatic vegetation habitats in the Outer Harbor and Upper Niagara River.

Action Items / Meeting Wrap-Up