

Innovative Habitat Reconstruction on the Upper Hudson River

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Background/Objectives

Hudson River Dredging

Project

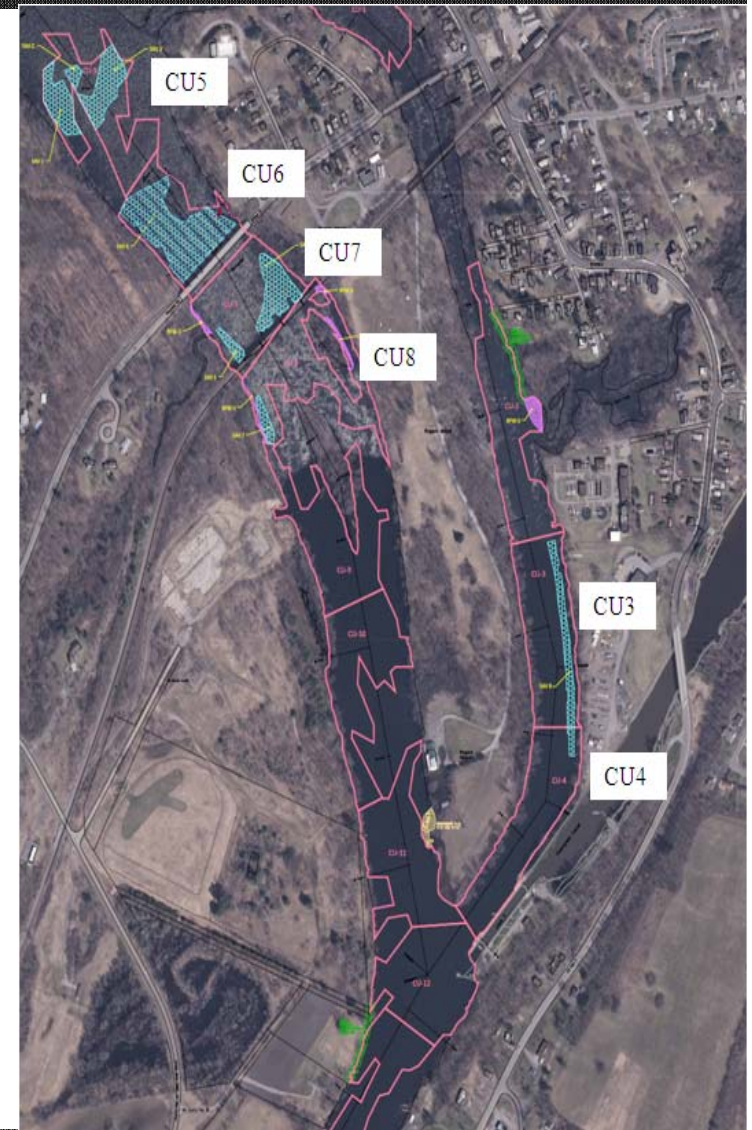
- 40-mile Stretch (Fort Edward to Troy)
- Precedent Setting Action by EPA
- Key Stakeholders; GE, EPA, NYS
- Largest Inland Environmental Dredging Project
- 2nd Largest Superfund Site
- Controversial = High Visibility & Public Involvement
- 60+ Agencies / Interests

Habitat Reconstruction

- One of Largest Inland SAV (Submerged Aquatic Vegetation) Restoration Projects in US
- High-level of Safety & QC
- Highly Complex Planning / Coordination
- 2011 Planting, CU's 2-8 (Certification Units)
 - 8.8 Acres
 - 134,416 Plants
 - 50lbs of Seed

Background/Objectives

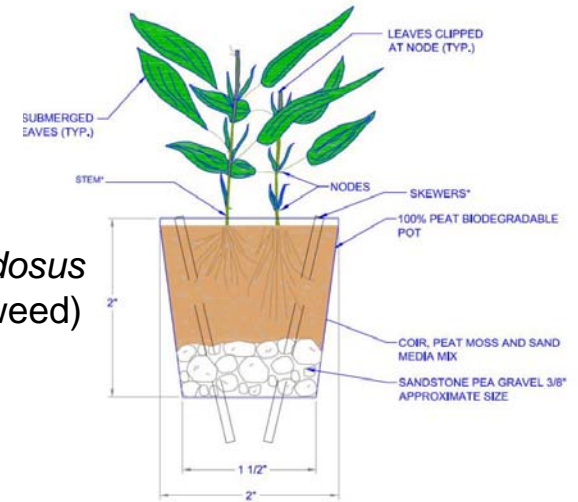
- Deliver project accident-free
- Large-scale habitat restoration
- Apply innovative planting techniques
- GPS precision-level planting
- Regulatory approval of CU
- Determine optimal production rates



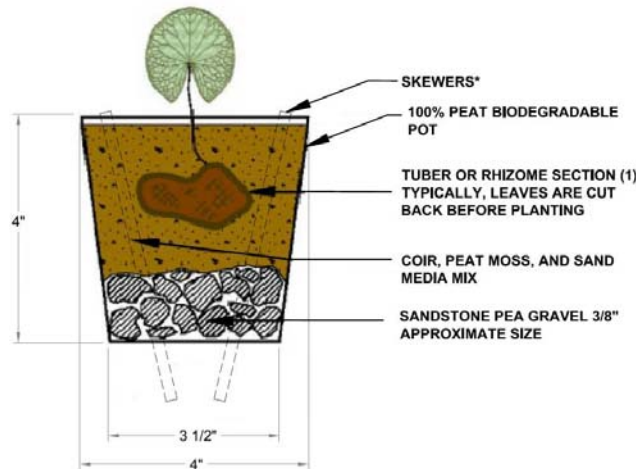
Approach - AECOM's Scope of Work

- Operations
- Commercial Plant Supply
- Local Harvesting
- Plant Processing & Nursery
- Riverine Fringe Wetland
- Submerged Aquatic Vegetation

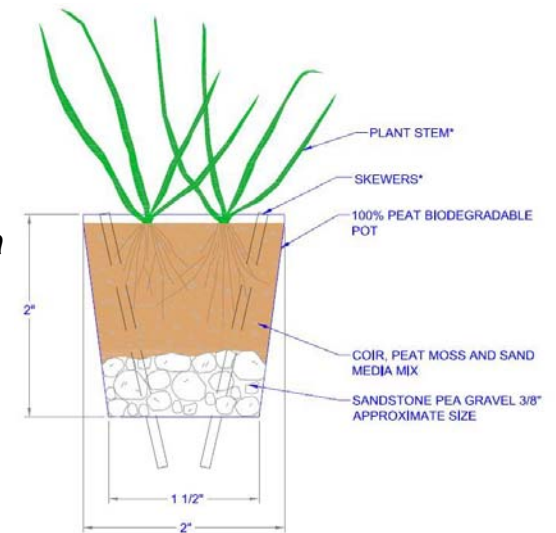
Potamogeton nodosus
(American Pondweed)



Nymphaea odorata
(Water Lily)



Vallisneria americana
(Wild Celery)



Commercial Plant Supply

- Advance planning critical to sourcing
- Multiple regional sourcing locations
- Rigorous stakeholder auditing



Nymphaea odorata
(Water Lily)

Vallisneria americana
(Wild Celery)



Potamogeton nodosus
(American Pondweed)



Local Harvesting



Harvesting *Vallisneria americana* from canal

Plant Processing Facility

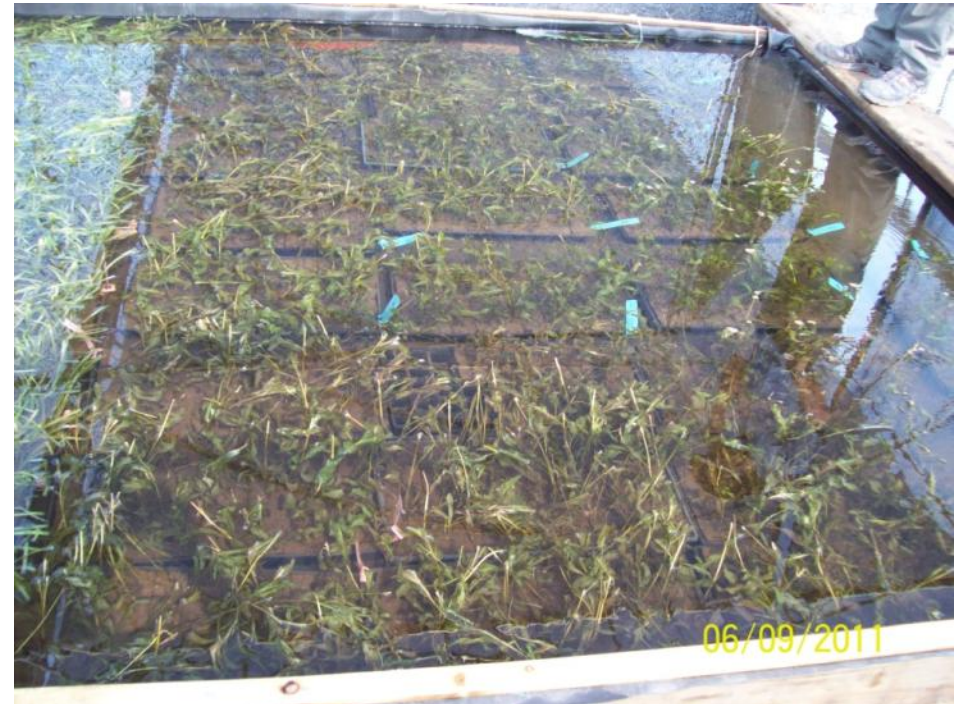
- Sorting
- Trimming
- Potting
- Invasives removal
- Planting unit staging
- Inventory tracking (cradle to grave)
- High level QC



Plant Processing Facility



Vallisneria americana
stored in ponds at facility



Potamogeton nodosus stored
in ponds at facility

Riverine Fringe Wetland Planting

- 5 areas approximately 0.4 acres
- Species
 - *Zizania aquatica* (Wild Rice)
 - *Pontederia cordata* (Pickerelweed)
 - *Sagittaria latifolia* (Broad Leaved Arrowhead)
 - *Sparganium eurycarpum* (Great Burreed)
 - *Nymphaea odorata* (Water Lily)



Seeding



- Wild Rice and Custom Mix
- Hand broadcast
- 5 areas/total 0.4 acres

Zizania aquatica
(Wild Rice)



GPS

- Regulatory/contractual requirement
- Centimeter accuracy
- Shoreline base station
- On board GPS “rover”
- Monitoring documentation



Dive Platform for SAV Planting



Dive Platform Operations



Planting unit delivery to Dive Platform



Temporary storage of plants in circulating tubs

Dive Platform Operations

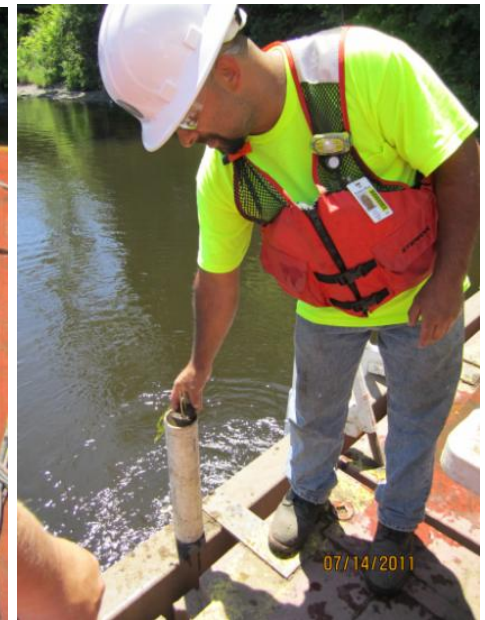


Installing planting unit anchors



Delivering planting units to divers
(*Vallisneria americana* and
Potamogeton nodosus)

Dive Platform Operations



- Live video of dive planting operations
- High level safety
- On-board QC critical
- Routine on-board regulatory inspection

Results

- CU's received regulatory acceptance
- 12,000 hours of safe work
- 134,416 plants installed per specification
- Successful project requires:
 - Balanced sourcing
 - Flexibility to accommodate weather and river conditions
 - Well managed plant processing facility located proximate to the site
 - Teamwork!

Lessons Learned

- Dive Platform allowed for safe, effective Habitat Reconstruction
- Large-scale Habitat Reconstruction requires multiple suppliers and centralized plant processing
- GPS utilization allows for highly repeatable planting process
- Tracking system logging plants through system is critical
- Minimizing plant handling/processing/storage time resulted in improved plant viability and survivability
- Production is highly variable and influenced by many factors

Summary

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