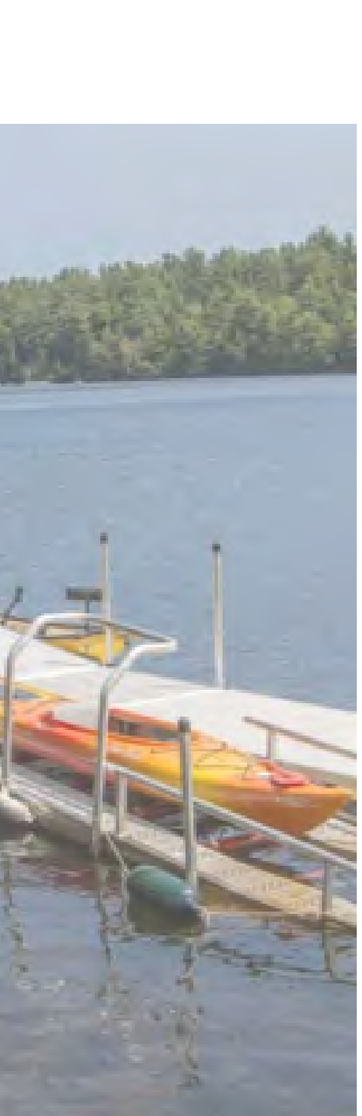
ARAIYS DESIGN, L.A., P.C.
Landscape Architects| Site Planners

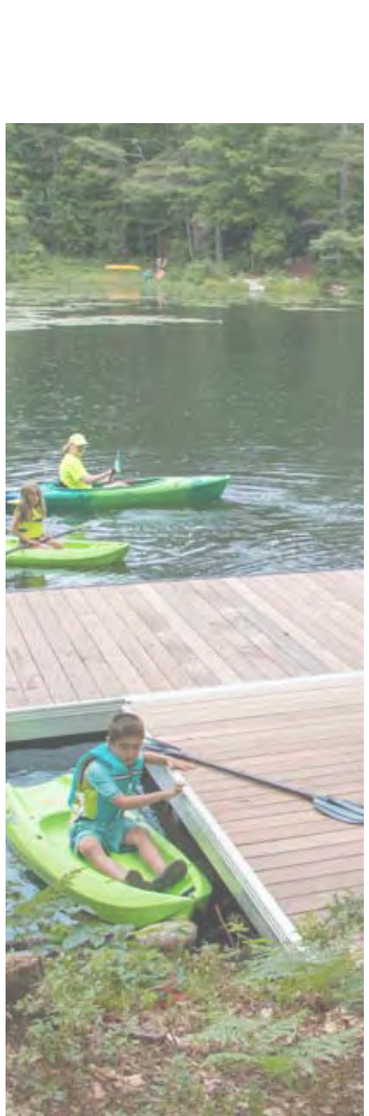
RIVERSIDE PARK

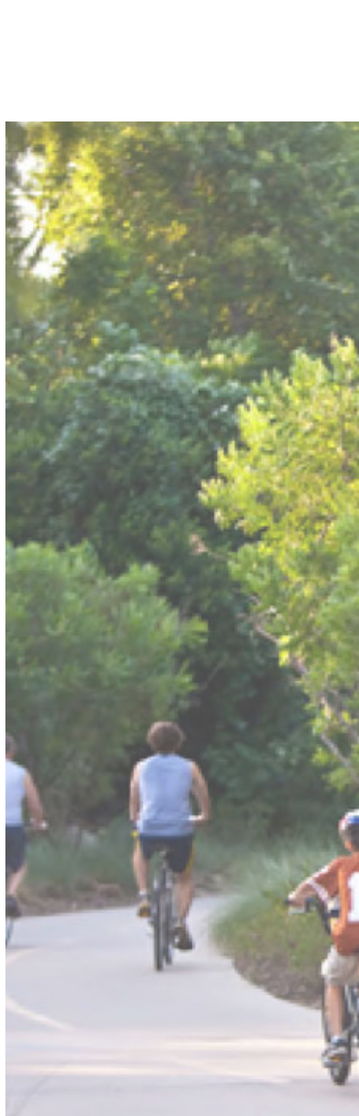
Hamlet of Riverside, Town of Southampton

Conceptual Design

Date: 181219





(Engage) (Embrace) (Revitalize) (Restore) (Protect) (Enjoy)

Goal

To develop a natural, inviting, and safe MARITIME TRAIL PARK accessible to all ages of the community with passive recreational opportunities as well as a revitalized natural environment which respects the unique historical, cultural, and natural character of the site while promoting a more sustainable ecosystem.

"Embrace the Peconic Riverfront"

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PROJECT PROCESS SUMMARY

The Riverside Park Concept Plan was informed by a series of publically advertised meetings to ensure a user driven solution for the park. The public consultation approach provided a key opportunity to facilitate important input, ideas and direction for the concept plan. The first meeting included a design charette where participants were invited to brainstorm, share, ask questions, generate ideas, and communicate concerns. The Charette was structured around a booklet of potential program items where each participant could identify and record what they wanted to have in the park. Following the meeting, Araiys Design summarized the results and ranked the program elements from highest to lowest priority. The results from the Charette directed the design of the park and were presented at the following 50% Site Plan presentation meeting.

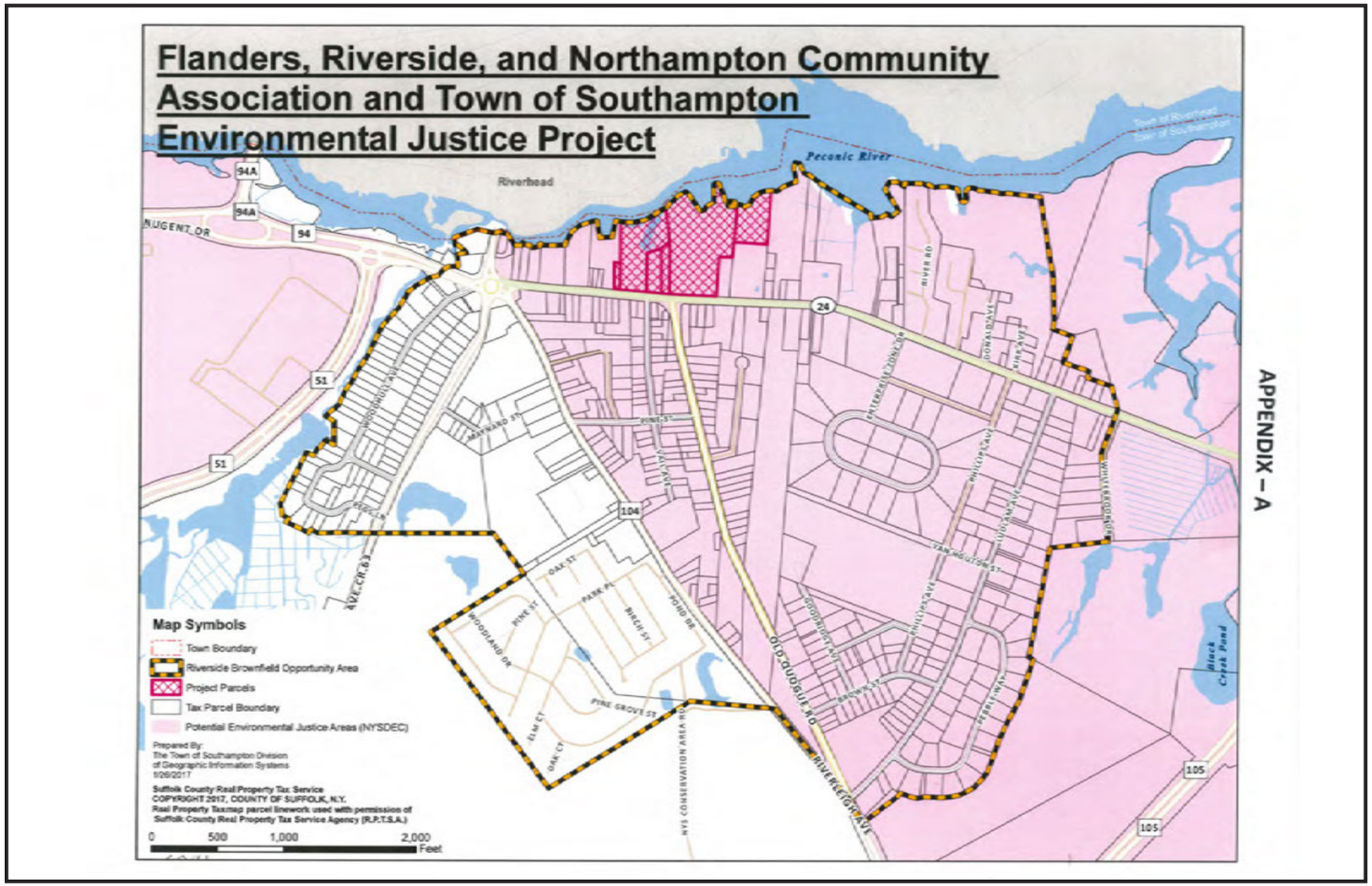
The following stakeholders were invited to the publically advertised meetings:

- **Members of the Flanders, Riverside, & Northampton community and the Town of Southampton**
- **The Flanders, Riverside, & Northampton Community Association (F.R.N.C.A.)**
- **Suffolk County Parks Commissioner and Staff**
- **Town of Southampton Parks Department Director and Staff**
- **NYS Department of Conservation Regional Staff Members**
- **Peconic Estuary Program's State Coordinator and Program Directors**
- **The Waterkeepers Alliance / The Peconic Baykeeper**

Timeline and Community consulation meetings:

- Site Analysis and Research (Mid August - September)
- Initial findings & design charrette (September 10 . 2018)
- Meetings with Project stakeholders:
  - Philip Berdolt, Suffolk County Parks Commissioner and Kristen Duolos, Town of Southampton Director of Parks
  - Robert Marsh, NYSDEC Regional Supervisor
  - Elizabeth Horstein, PEP State Coordinator
  - Joyce Novak, PEP Program Director
  - Sean O'neil - Peconic Baykeeper
- 50% Conceptual site plan community consulation meeting (Octer 16 . 2018)
- 90% Conceptual site plan community consulation meeting & Town Board Work Session (November 15 . 2018)
- 100% Conceptual site plan Town Board Work Session (December 13 . 2018)

1.1 Funding and Stakeholders



FRNCA.org

Flanders, Riverside & Northampton Community Association

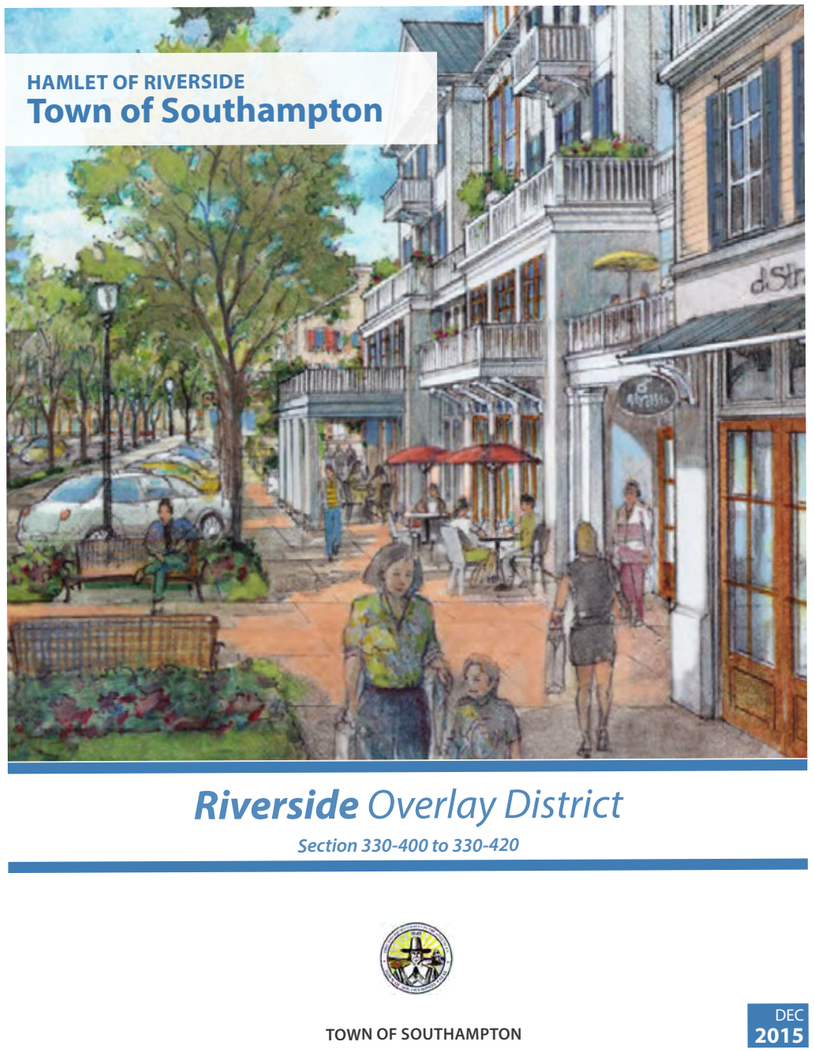
Town of Southampton

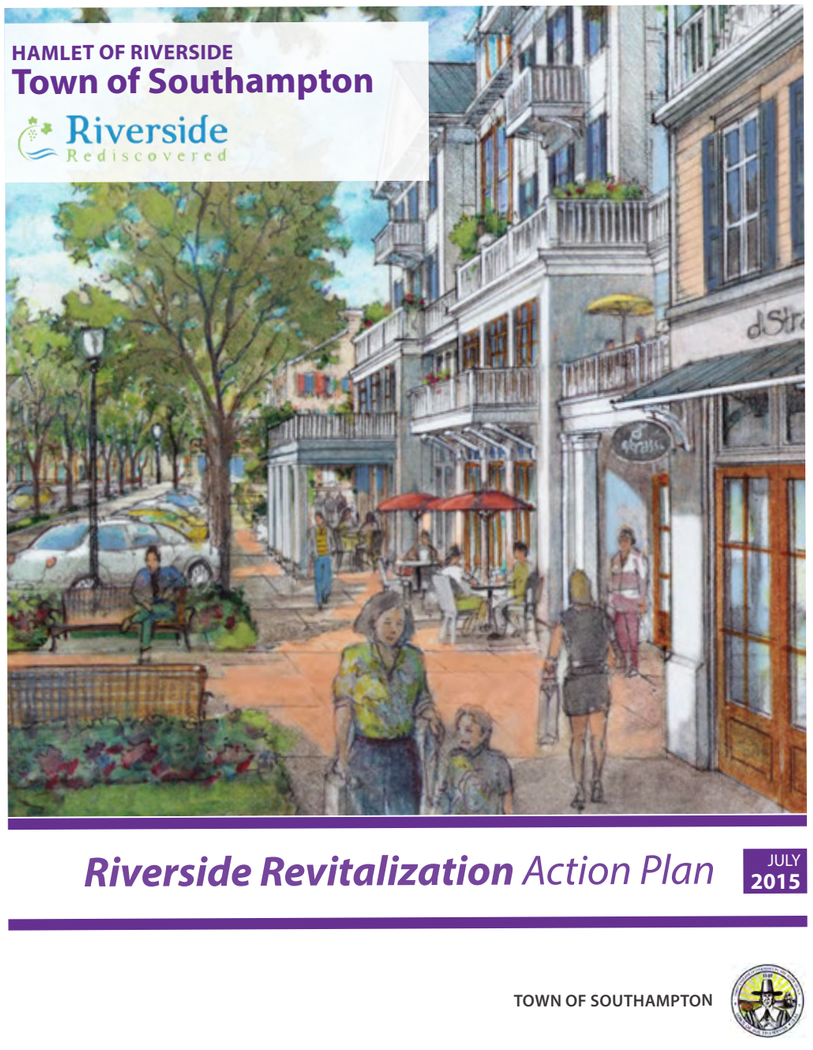
FUNDING AND STAKEHOLDERS

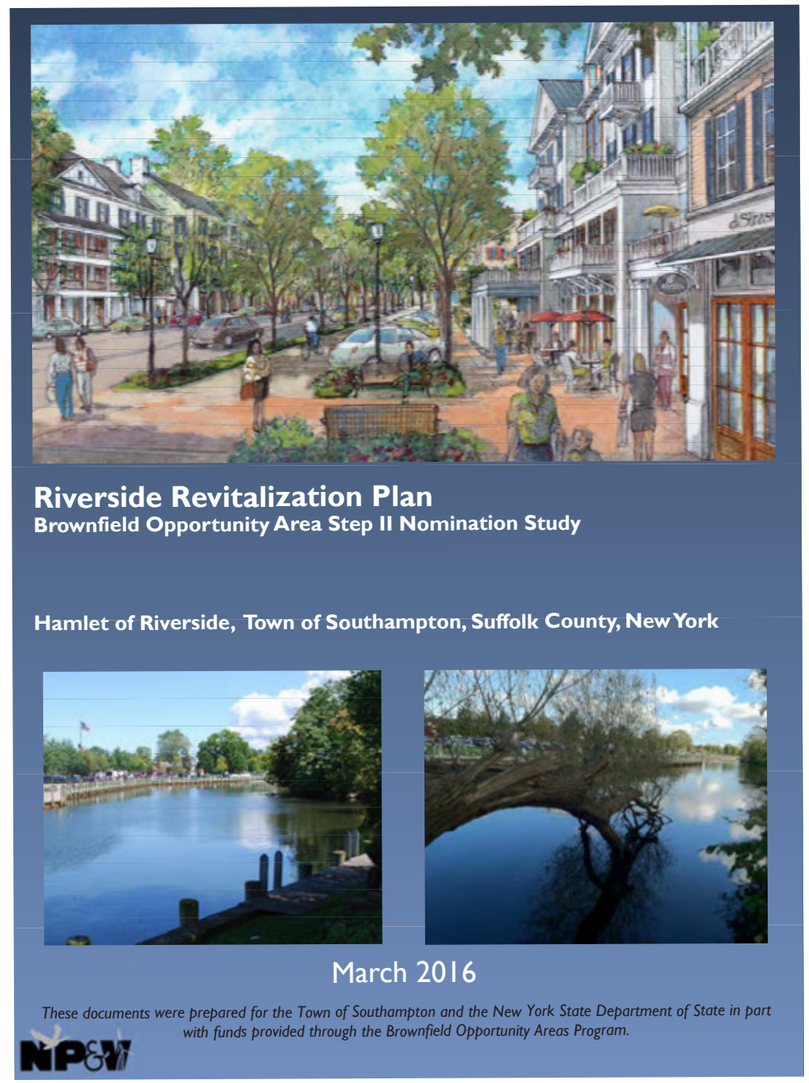
- Funded by the New York Department of Environmental Conservation **(NYDEC)**, **Environmental Justice and Community Impact Grant Program**
- Grant awarded to the **Flanders, Riverside and Northampton Community Association, Inc. (FRNCA)**
- **Town of Southampton** (TOS) is subcontractor to FRNCA
- **Araiys Design** Landscape Architecture is the Design Consultant

1.1 Funding and Stakeholders

"The park will provide a linkage between a new downtown Riverside and the River and as such will facilitate the re-orientation of land use and community life toward the River"



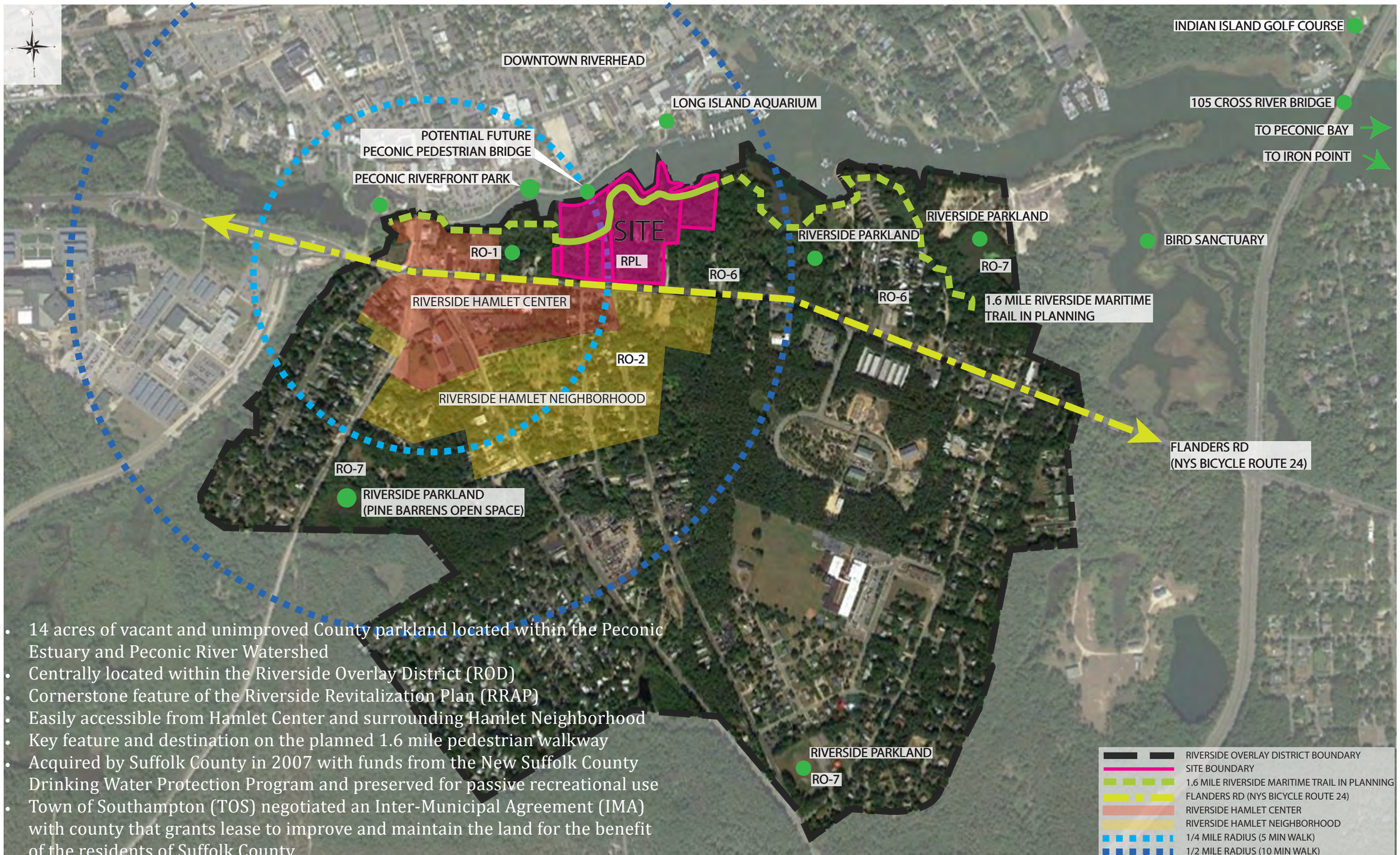




PLACEMAKING & PUBLIC ENGAGEMENT

- **Riverside Revitalization Action Plan (RRAP) and the Riverside Brownfield Opportunity Area (BOA)** Plan adopted by the Town Board in December 2015 to promote the environment and socially responsible redevelopment of the Hamlet of Riverside
- Engage community of Riverside with Crowdsourced, Place Making Approach
- Overwhelming expression for the provision of **public access to the River**

1.2 Site Context



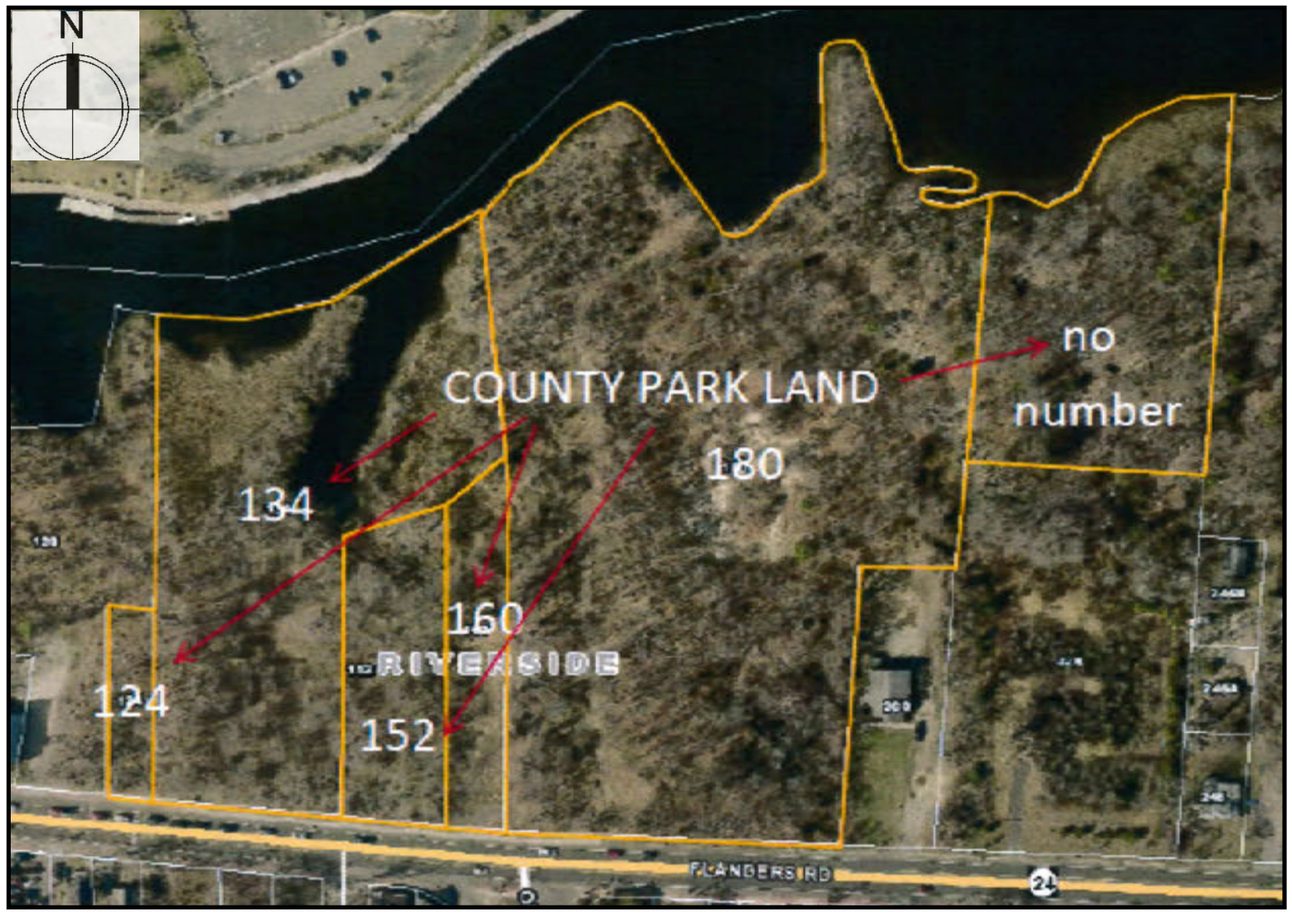
- 14 acres of vacant and unimproved County parkland located within the Peconic Estuary and Peconic River Watershed
- Centrally located within the Riverside Overlay District (ROD)
- Cornerstone feature of the Riverside Revitalization Plan (RRAP)
- Easily accessible from Hamlet Center and surrounding Hamlet Neighborhood
- Key feature and destination on the planned 1.6 mile pedestrian walkway
- Acquired by Suffolk County in 2007 with funds from the New Suffolk County Drinking Water Protection Program and preserved for passive recreational use
- Town of Southampton (TOS) negotiated an Inter-Municipal Agreement (IMA) with county that grants lease to improve and maintain the land for the benefit of the residents of Suffolk County

1.3 Environmental Context

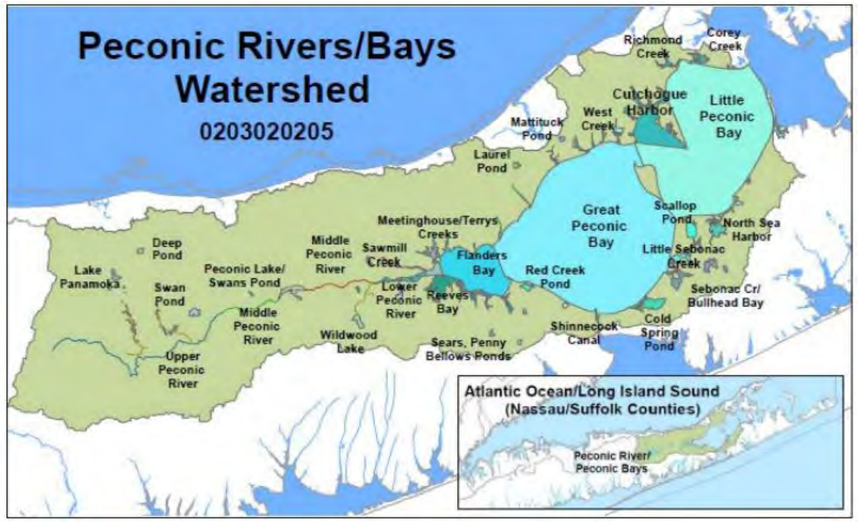
Rivserside Maritime Trail Park is located on the Lower Peconic River

Includes reach and tributaries from Peconic Avenue east to the mouth of the river

- 6 contiguous tax parcels
- 2,200 linear feet of river frontage
- 1.3 acres of tidal and freshwater wetlands
- Tidal and freshwater wetlands
- Dredging of River and Nutrient laden fill for development
- Adverse impact on water quality
- Reclamation opportunities



Peconic River Watershed Map



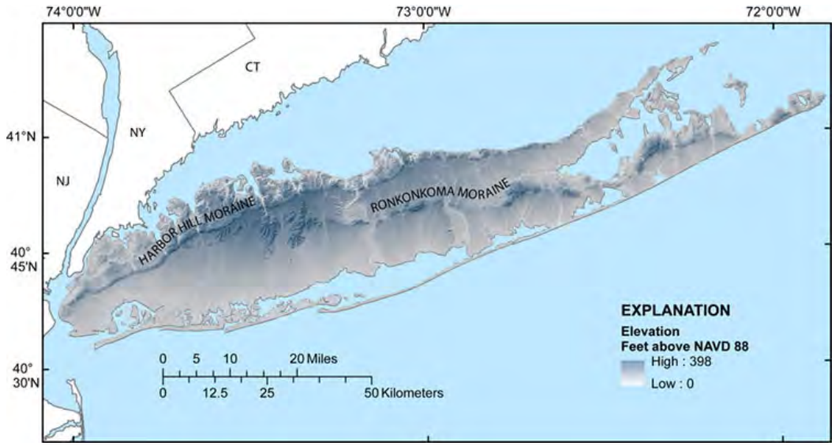
Peconic River/Bays Watershed
(0203020205)

Image Source: NY Department of Conservation, www.dec.ny.gov

Watershed awareness promotes an expanded sense of community and stewardship of precious resources

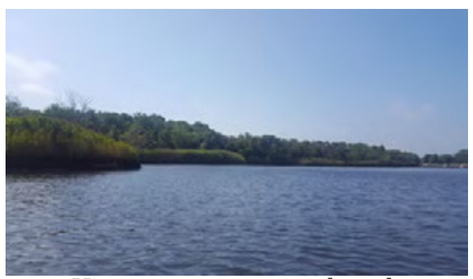
- Water Type: Estuary Waters
- Class SC - suitable for general recreational use and support of aquatic life, but not as shellfishing water or public bathing
- Recreational uses are also known to be stressed by nutrients, algal blooms, and pathogens
- Type of Pollutants:
  - -Known: Low D.O./Oxygen Demand, Nutrients (nitrogen), Algal plant growth (brown tide, rust tide)
- Source(s) of Pollutants:
  - -Known: Urban Storm Runoff, On Site / Septic Systems
  - -Suspected: Municipal Discharges (Riverhead STP), Other sources (Waterfowl)

The proposed park is situated between the Peconic Estuary and the Central Pine Barrens Area. Two unique ecosystems with a rich diversity of plant and animal life



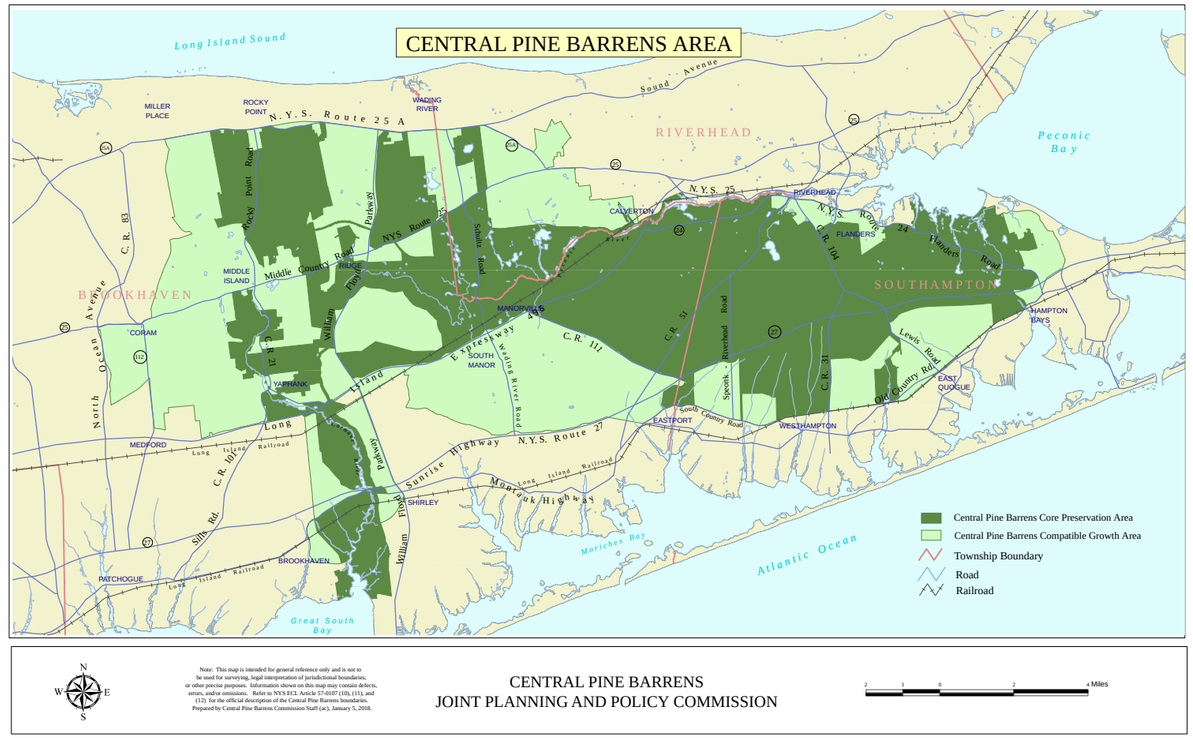
Natural History - Land shaped by Glaciers

- The Peconic River watershed was formed by stream erosion and retreat of the Wisconsin glacier approximately 21,000 years ago
- The glacier left two prominent end moraines that separate to form the Peconic Estuary



View to west toward park

View to east toward park



Central Pine Barrens

- Occupying the central and eastern end of Long Island
- Contains more than 900 square miles of terrestrial and aquatic environments.
- The Peconic River headwaters and tributaries located within the CentralPine Barrens

The Peconic Estuary - one of the "last great places in the Western Hemisphere." -The Nature Conservancy

An estuary is a grouping of bays, sounds, harbors, and other semi-enclosed coastal waters that are connected to the sea and where fresh water from rivers, streams, creeks, or ground water mixes with salt water.
They provide critical habitat for numerous birds, mammals, fish, shellfish, & other wildlife. They provide nursery & spawning areas for many marine organisms including commercially and recreationally important fish and shellfish. And they are natural buffers that filter sediment and nutrients out of water draining from land, absorb flood waters, and dissipate waves during storms protecting human property.
(Bortman & Niedowski, Characterization of The Living Resources of the Peconic Estuary, 1998)

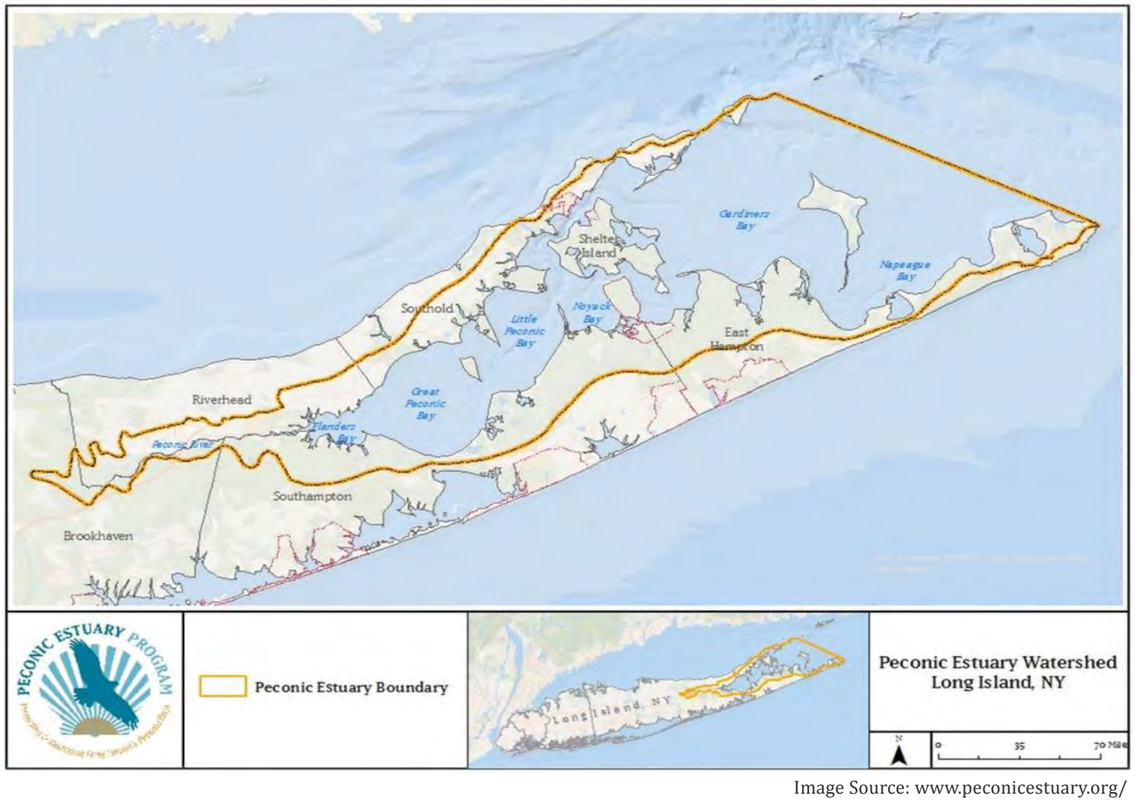


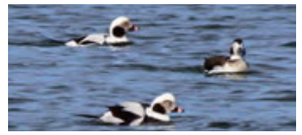
Image Source: www.peconicestuary.org/

- "Estuary of National Significance" - U.S. EPA in 1992
- One of 28 estuaries in the National Estuary Program (NEP)
- Includes the Peconic River and the land areas that contribute groundwater and stormwater runoff to the Estuary
- Reach from headwaters of the Peconic River west of the William Floyd Parkway to the tips of the north and south forks
- The Peconic Estuary Program (PEP) is responsible for creating and implementing a comprehensive management plan to protect the estuary
- For more information please visit www.peconicestuary

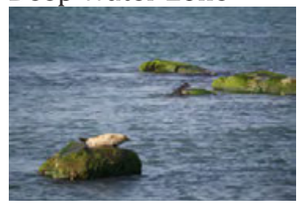
PEP Initiatives for the western estuary include:

- Adoption of a nitrogen guideline and a point source nitrogen freeze for the western estuary
- Development of a Nitrogen Total Maximum Daily Load (TMDL) for selected water bodies
- "Living Shoreline" restoration projects

Shallow Water Zone



Deep Water Zone



Submerged Aquatic Zone

Terrestial Zone

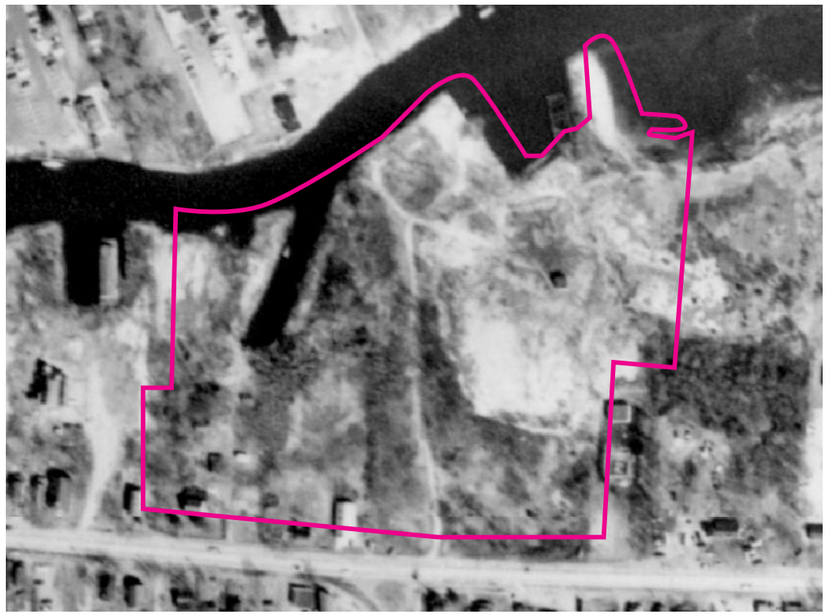
Peconic River

Wetland

Tidal Flat

Salt Marsh

Sandy Beach

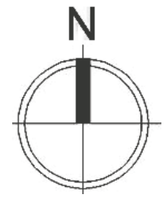


1962

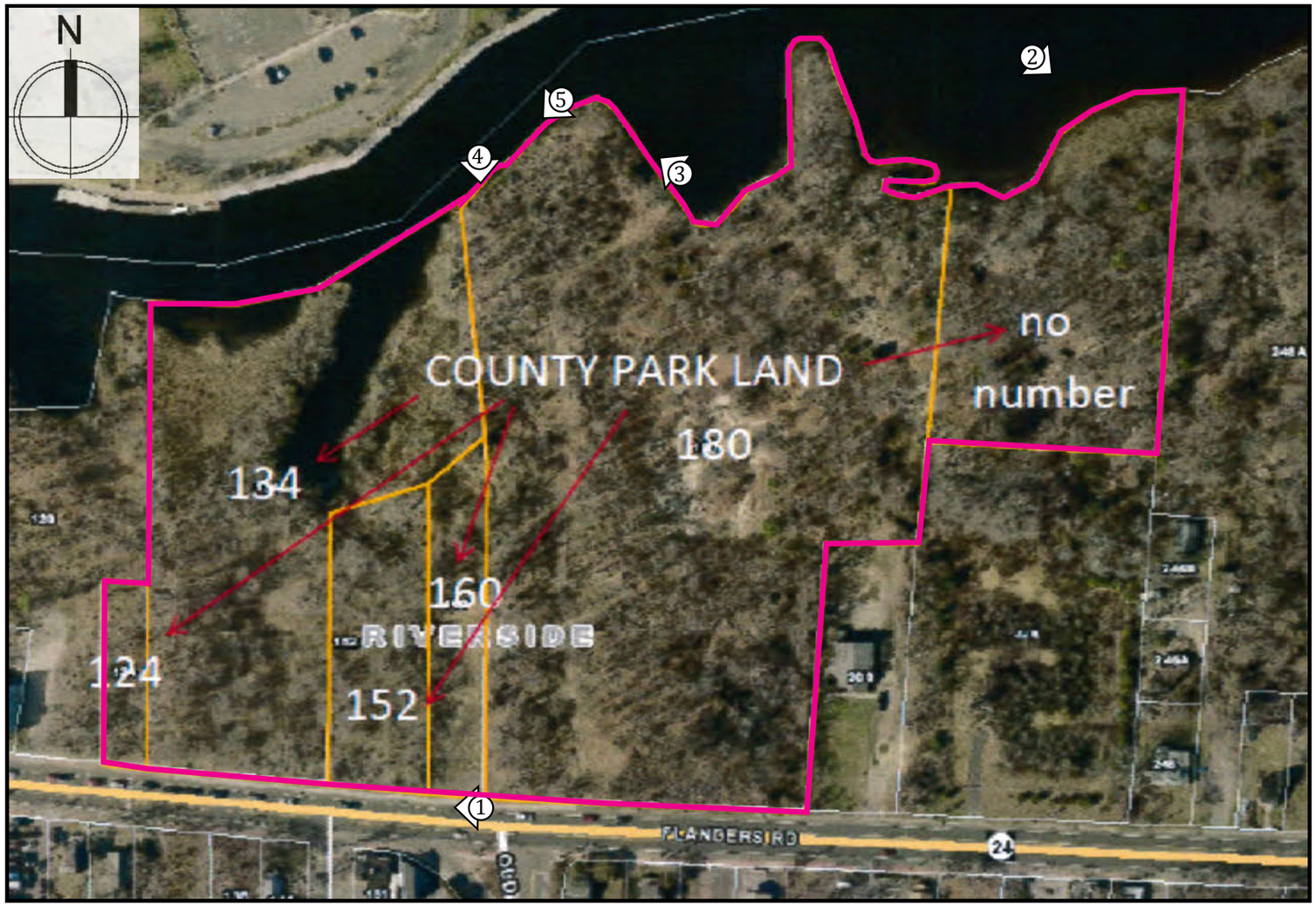
1976

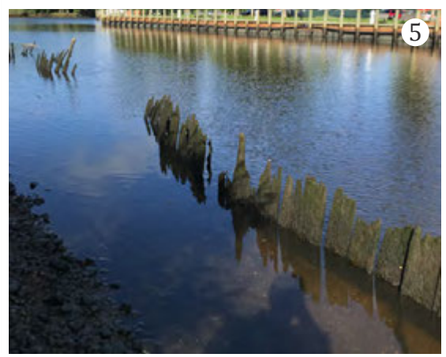
1984

1996



2.2 Site Aerial





Egrets

Heron

Osprey

Osprey Nest

Eastern Box Turtle

Cormorant


1


2


3


4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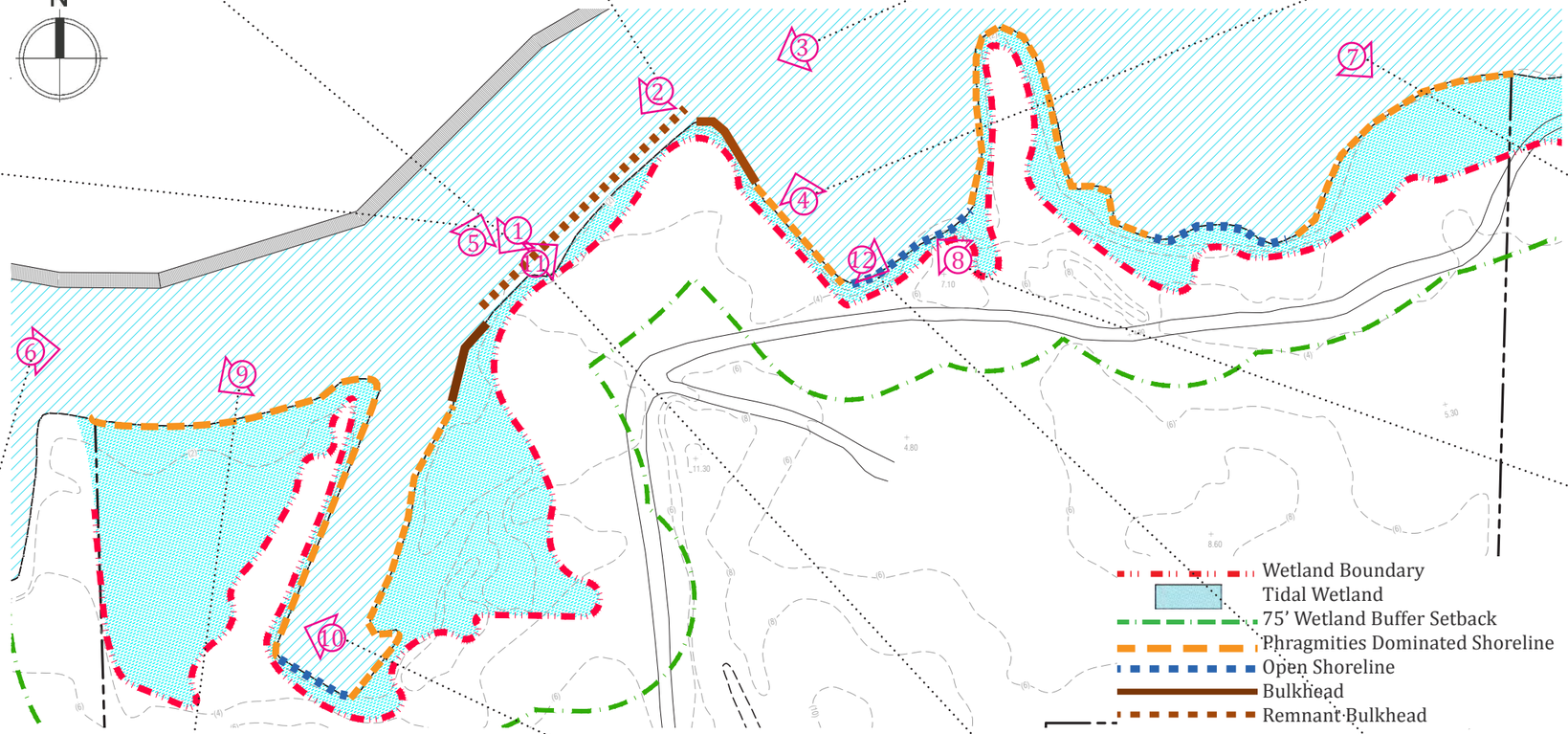
N
1
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8
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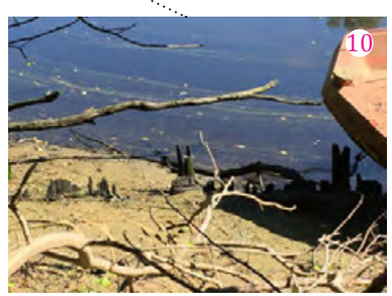
10
11
12
Wetland Boundary
Tidal Wetland
75' Wetland Buffer Setback
Phragmities Dominated Shoreline
Open Shoreline
Bulkhead
Remnant Bulkhead


7

8


9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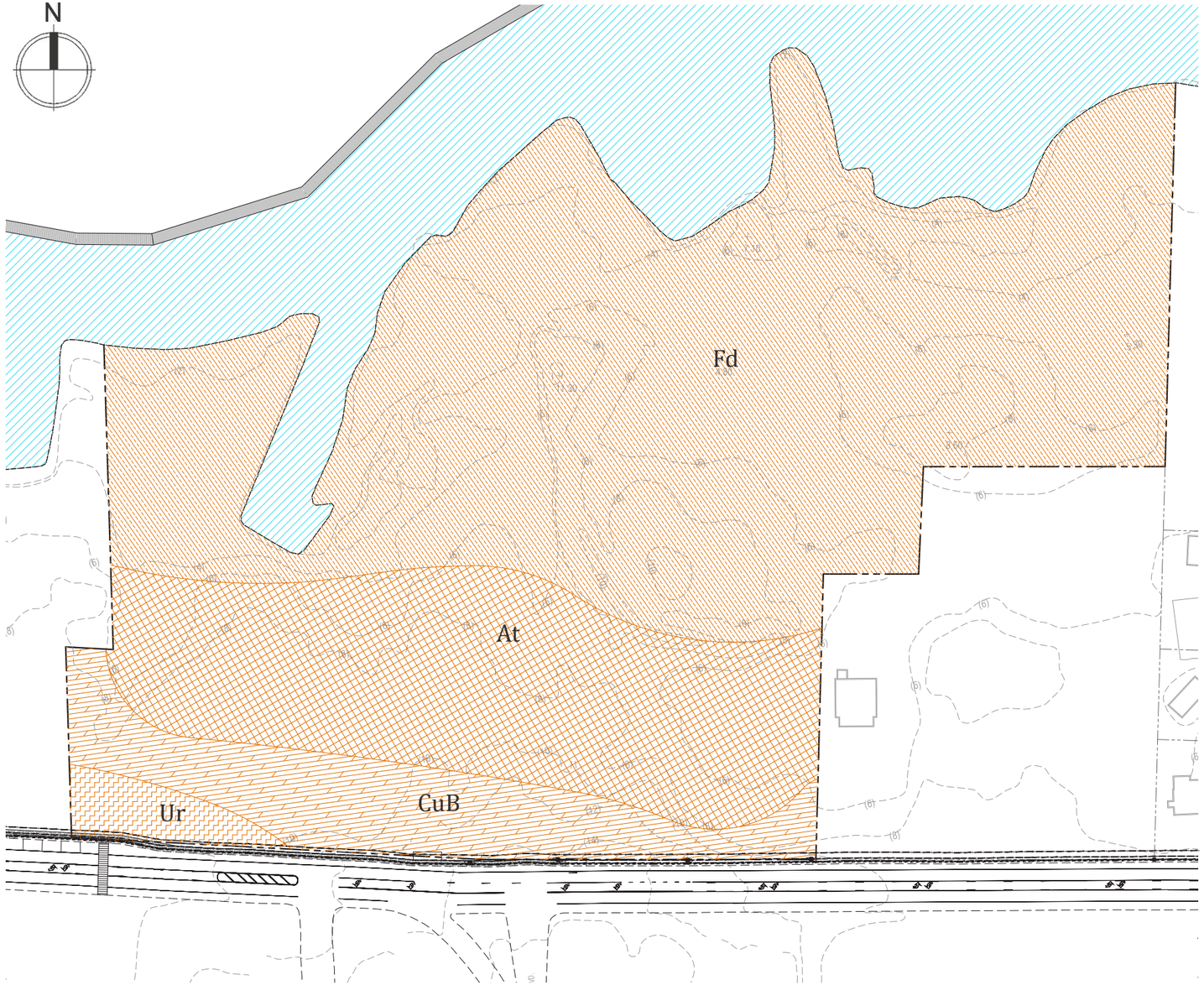
11


12

2.4 Soil Analysis



Soil Description:

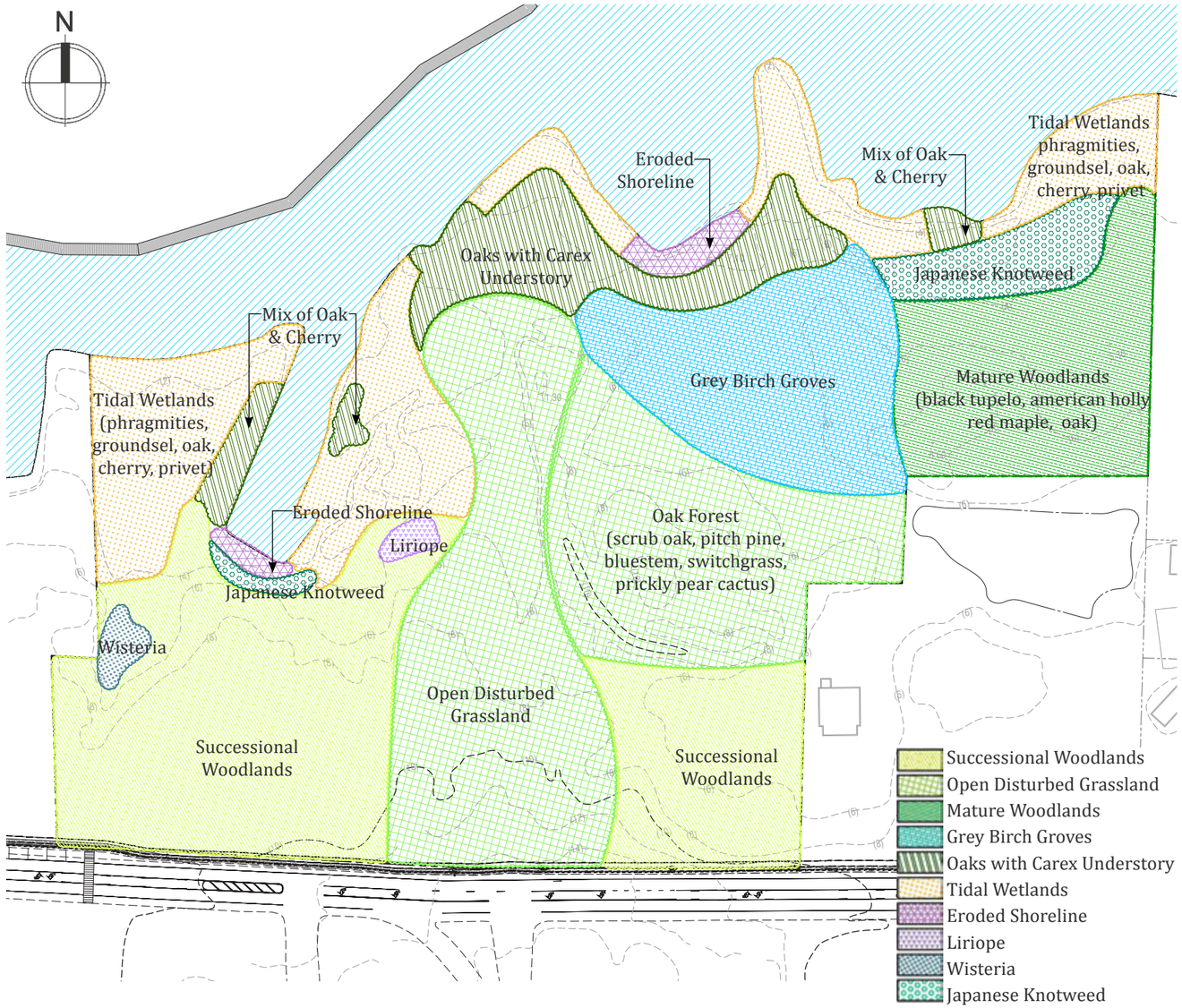
Fd - Fill land, dredged material
Fd is made up of areas that have been filled with material from hydraulic or mechanical dredging operations. Drought, low fertility, and high salt content severely limit the establishment of lawns and other landscape plantings.

At - Atsion sand
At is somewhat poorly drained to poorly drained soil is near ponds and creeks and along the bottoms of deeply cut meltwater channels. This soil has a high water table, and drained areas have very low available moisture capacity. Scarcity of good outlets makes this soil difficult drain. The soil is better suited to woodland.

CuB - Cut and fill land, gently sloping
This unit is made up of level to gently sloping areas that have been cut and filled for nonfarm uses. Texture is dominantly loamy fine sand or coarser textured material throughout.

Ur - Urban land
Urban land consist of areas that are more than 80% covered by buildings and pavements. Examination and identification of the soils in these areas are impractical.

2.5 Vegetative Analysis



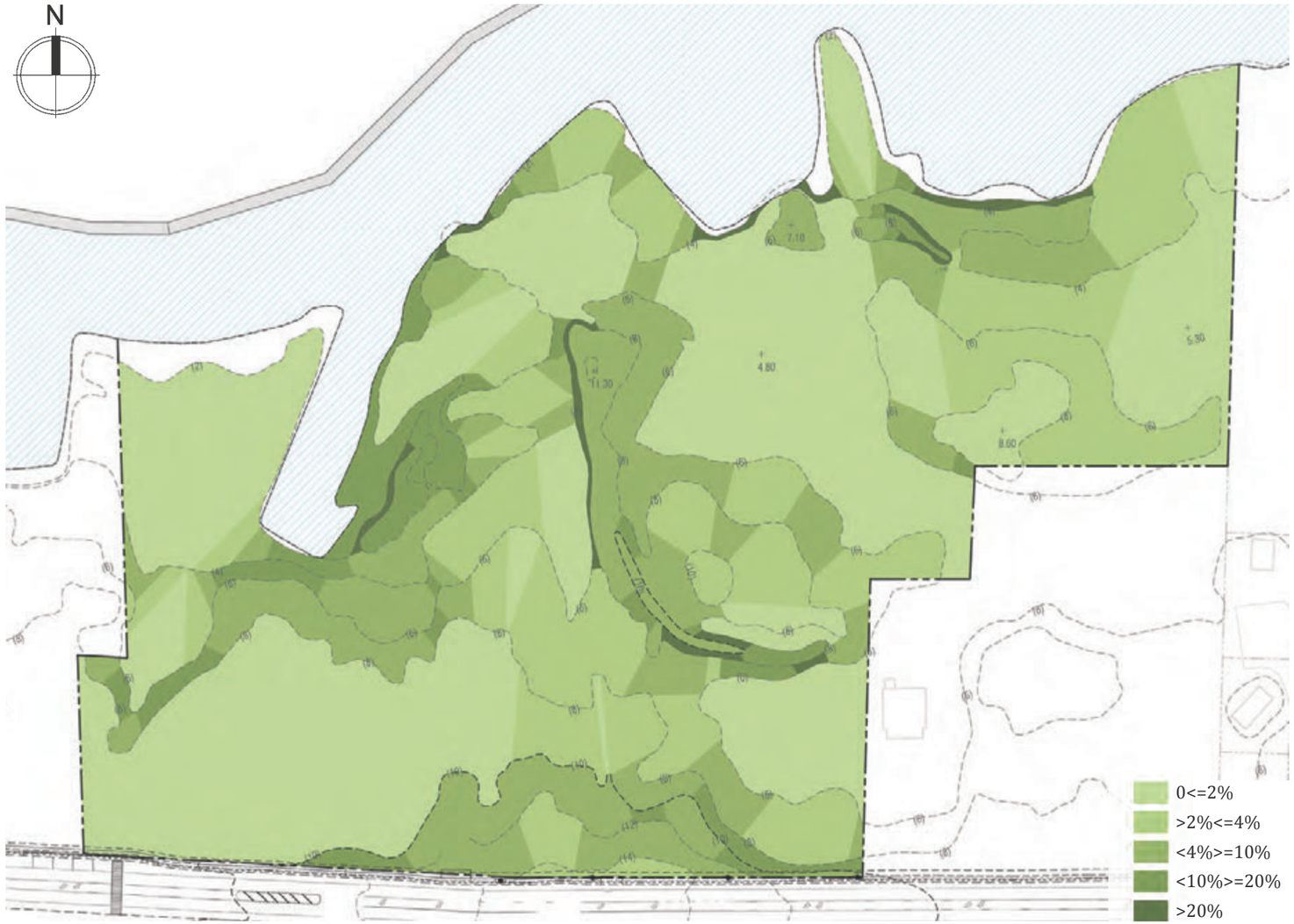
Oak

Birch Grove

Phragmites

Switchgrass

Pitch Pine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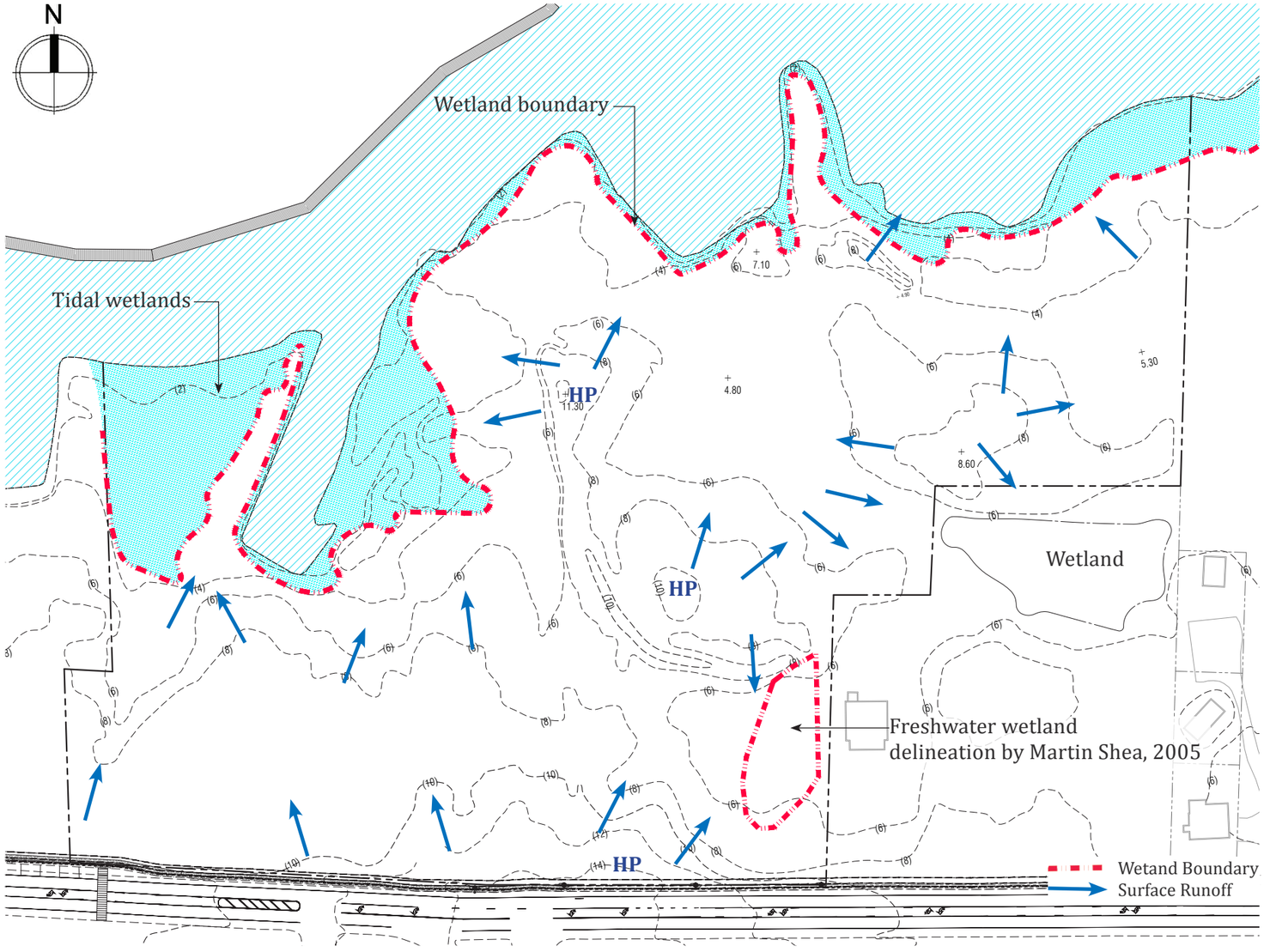
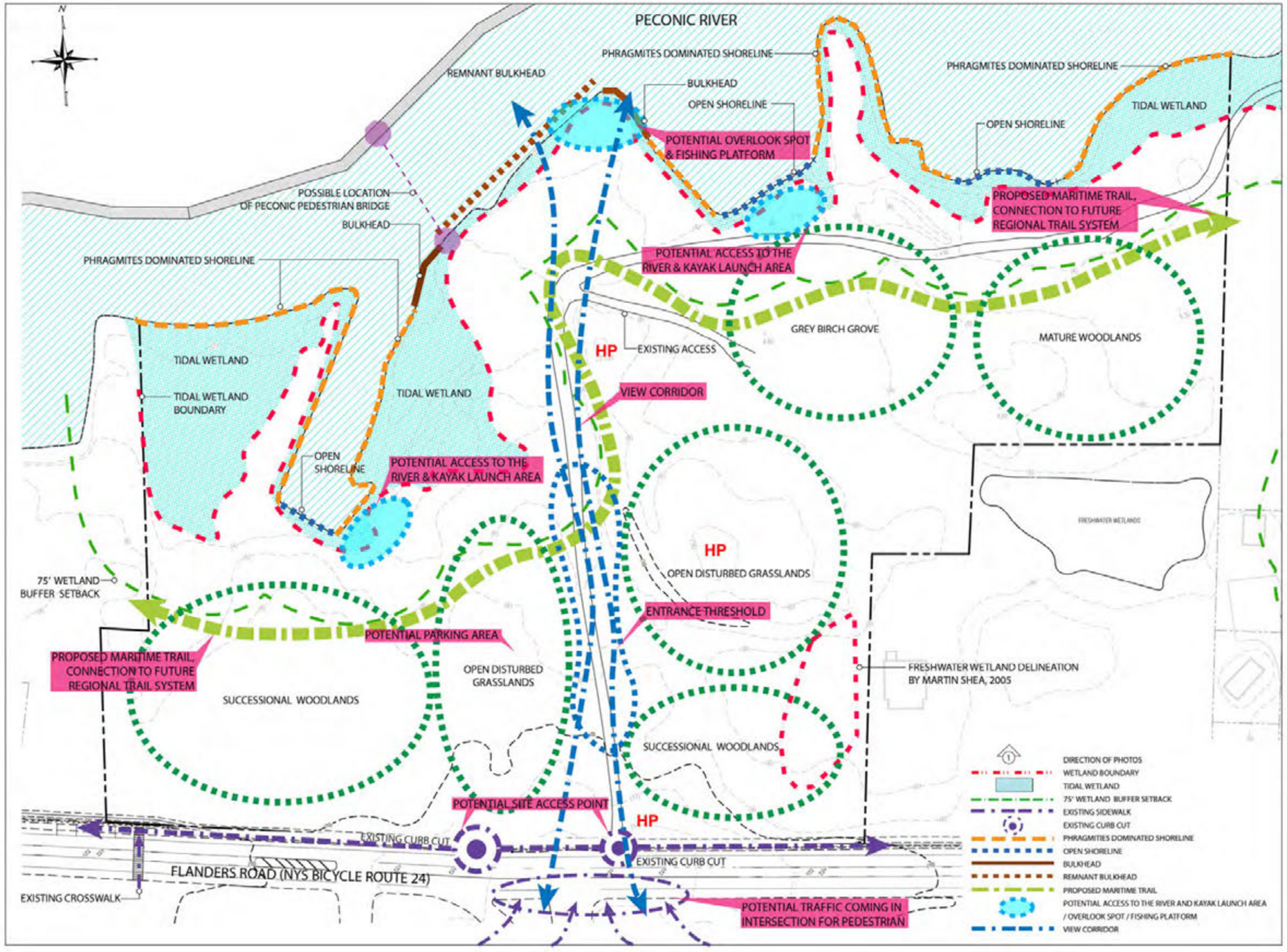
0<=2%
>2%<=4%
<4%>=10%
<10%>=20%
>20%

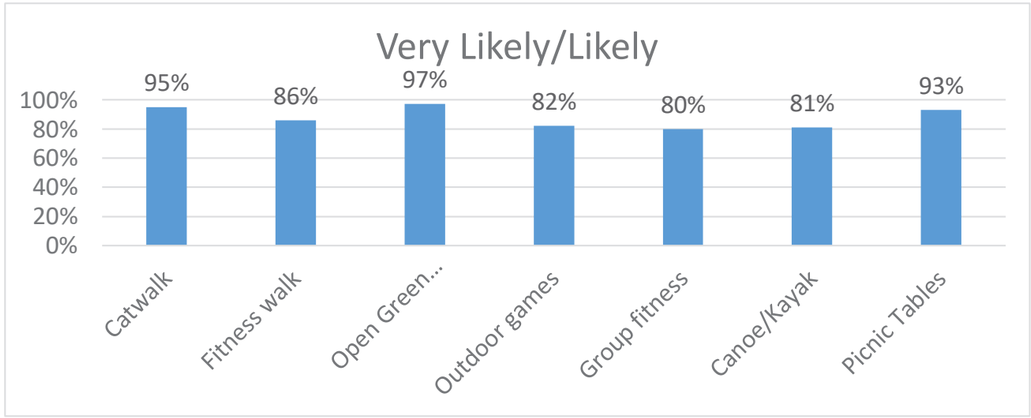

N
Wetland boundary
Tidal wetlands
HP
11.30
7.10
4.80
5.30
8.60
HP
HP
Wetland
Freshwater wetland
delineation by Martin Shea, 2005
Wetand Boundary
Surface Runoff

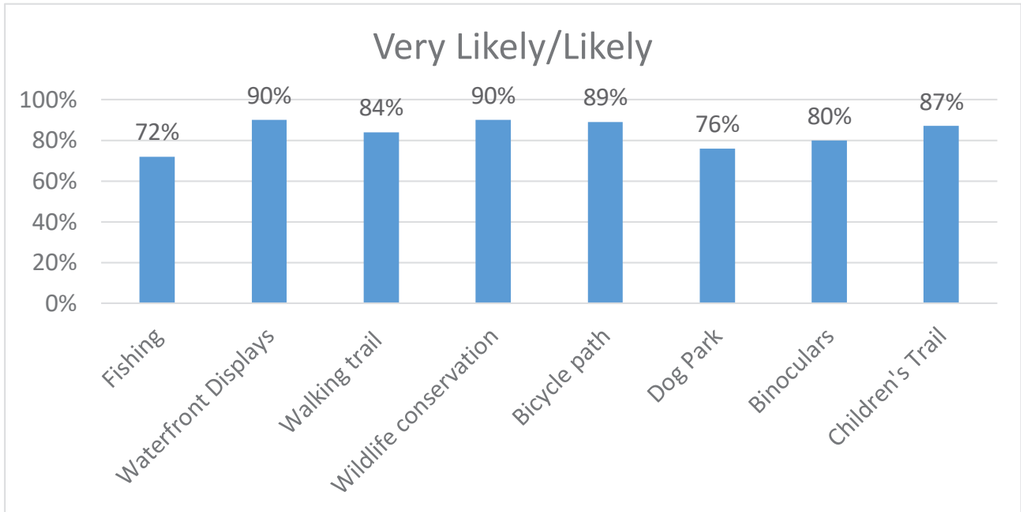

N
PECONIC RIVER
REMNANT BULKHEAD
PHRAGMITES DOMINATED SHORELINE
BULKHEAD
OPEN SHORELINE
POTENTIAL OVERLOOK SPOT & FISHING PLATFORM
PHRAGMITES DOMINATED SHORELINE
TIDAL WETLAND
OPEN SHORELINE
POSSIBLE LOCATION OF PECONIC PEDESTRIAN BRIDGE
BULKHEAD
PROPOSED MARITIME TRAIL, CONNECTION TO FUTURE REGIONAL TRAIL SYSTEM
POTENTIAL ACCESS TO THE RIVER & KAYAK LAUNCH AREA
PHRAGMITES DOMINATED SHORELINE
TIDAL WETLAND
TIDAL WETLAND BOUNDARY
TIDAL WETLAND
OPEN SHORELINE
POTENTIAL ACCESS TO THE RIVER & KAYAK LAUNCH AREA
GREY BIRCH GROVE
MATURE WOODLANDS
HP
EXISTING ACCESS
VIEW CORRIDOR
HP
OPEN DISTURBED GRASSLANDS
75' WETLAND BUFFER SETBACK
ENTRANCE THRESHOLD
POTENTIAL PARKING AREA
PROPOSED MARITIME TRAIL, CONNECTION TO FUTURE REGIONAL TRAIL SYSTEM
OPEN DISTURBED GRASSLANDS
SUCCESSIONAL WOODLANDS
FRESHWATER WETLAND DELINEATION BY MARTIN SHEA, 2005
SUCCESSIONAL WOODLANDS
POTENTIAL SITE ACCESS POINT
HP
EXISTING CURB CUT
EXISTING CURB CUT
FLANDERS ROAD (NYS BICYCLE ROUTE 24)
EXISTING CROSSWALK
POTENTIAL TRAFFIC COMING IN INTERSECTION FOR PEDESTRIAN
DIRECTION OF PHOTOS
WETLAND BOUNDARY
TIDAL WETLAND
75' WETLAND BUFFER SETBACK
EXISTING SIDEWALK
EXISTING CURB CUT
PHRAGMITIES DOMINATED SHORELINE
OPEN SHORELINE
BULKHEAD
REMNANT BULKHEAD
PROPOSED MARITIME TRAIL
POTENTIAL ACCESS TO THE RIVER AND KAYAK LAUNCH AREA / OVERLOOK SPOT / FISHING PLATFORM
VIEW CORRIDOR

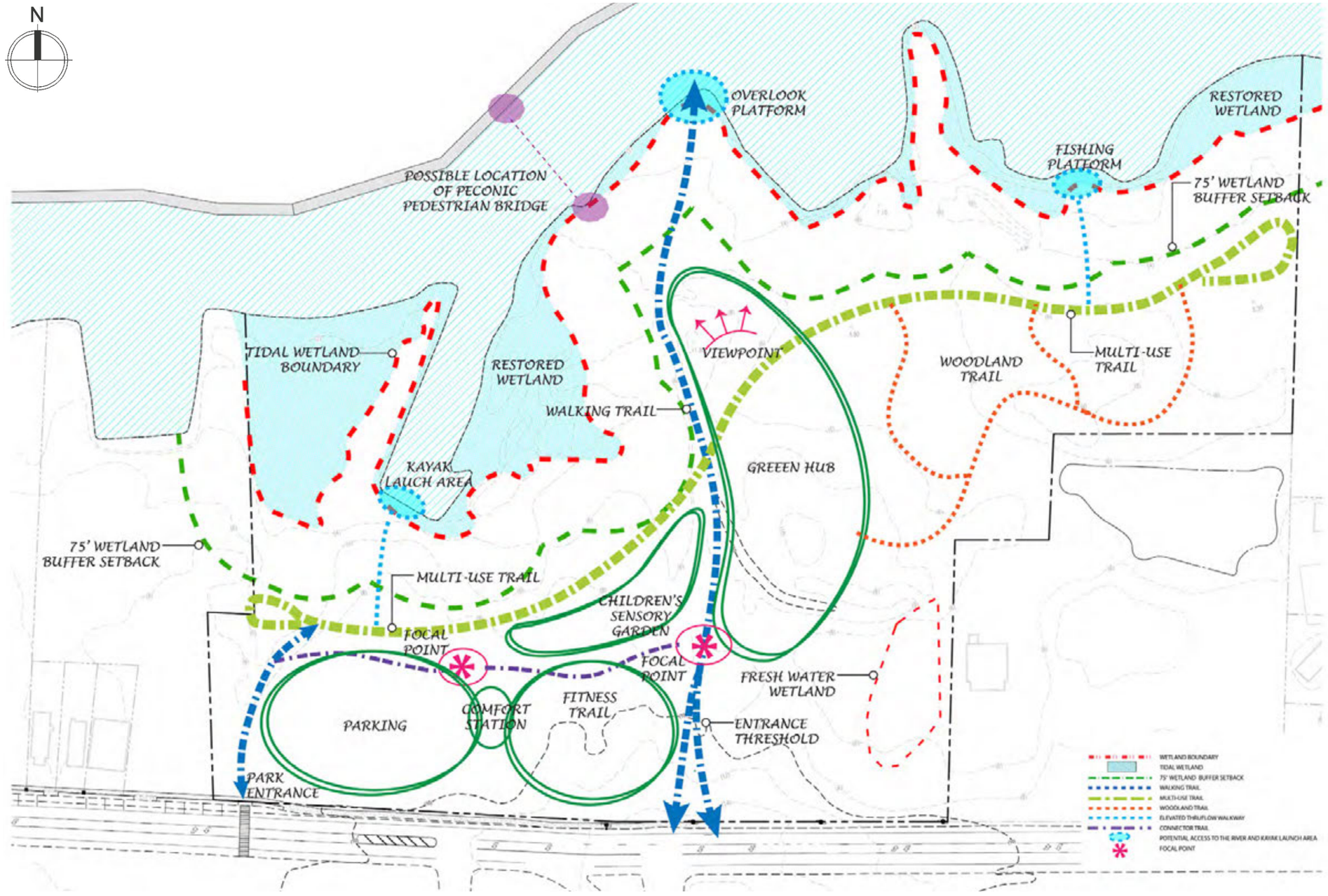
Program development from community design charrette

Program	Ranking
Walking trail	39
At grade/ elevated boardwalk	36
Rest stations, park amenities	35
Kayak launch area	34
Bike path	33
Displays and information accessible to people with cognitive, visual and hearing impairments/ handicapped accessible trails	33
Safety features (lighting & railing)	32
Art displays	30
Children's trail, sensory experience	30
Habitat garden	29
Water platform, overlooks, fishing platform	29
Fitness trail	28
On site parking	28
Open green space, meet-up group activities	28
Organized wildlife education/Wildlife observation	28
Educational displays	27
Rain gardens, bioswale, native planting, permeable paver	24
Game tables	23
Group fitness	23
Fenced-in dog space	12

Health & Community Survey






N
POSSIBLE LOCATION OF PECONIC PEDESTRIAN BRIDGE
OVERLOOK PLATFORM
RESTORED WETLAND
FISHING PLATFORM
75' WETLAND BUFFER SETBACK
TIDAL WETLAND BOUNDARY
RESTORED WETLAND
VIEWPOINT
WOODLAND TRAIL
MULTI-USE TRAIL
WALKING TRAIL
KAYAK LAUCH AREA
GREEEN HUB
75' WETLAND BUFFER SETBACK
MULTI-USE TRAIL
CHILDREN'S SENSORY GARDEN
FOCAL POINT
FOCAL POINT
FRESH WATER WETLAND
PARKING
COMFORT STATION
FITNESS TRAIL
ENTRANCE THRESHOLD
PARK ENTRANCE
WETLAND BOUNDARY
TIDAL WETLAND
75' WETLAND BUFFER SETBACK
WALKING TRAIL
MULTI-USE TRAIL
WOODLAND TRAIL
ELEVATED THRUFLOW WALKWAY
CONNECTOR TRAIL
POTENTIAL ACCESS TO THE RIVER AND KAYAK LAUNCH AREA
FOCAL POINT

3.3 50 % Conceptual Site Plan

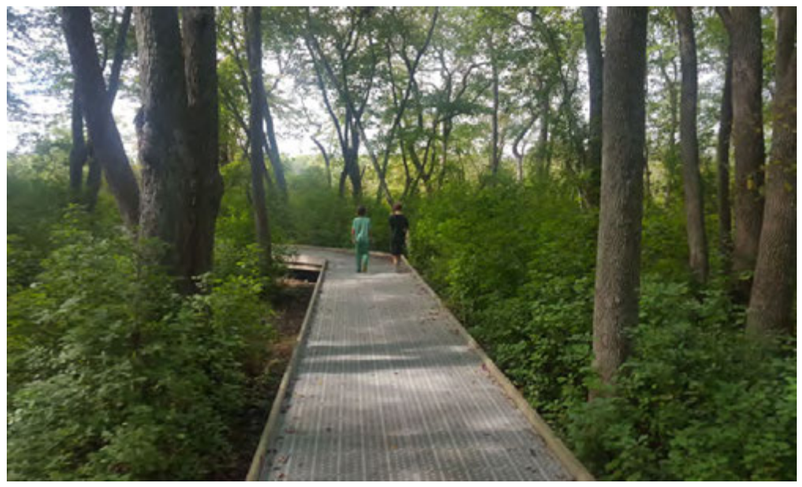
3.4 100% Conceptual Site Plan

MATERIALS TABLE:

DESIGN ELEMENTS	DESCRIPTION
PARKING LOT	PERMEABLE ASPHALT
CURB	CONCRETE
SIDEWALK	CONCRETE PAVING
MULTI-USE TRAIL	BLUESTONE SCREENINGS
NORTH LOOP WALK	BLUESTONE SCREENINGS
ENTRY PLAZA	PERMEABLE PAVERS
THRUFLOW WALKWAY	THRUFLOW DECKING
KAYAK LAUNCH PLATFORM	THRUFLOW DECKING
OVERLOOK/FISHING PIER	THRUFLOW DECKING
SOUTH LOOP WALK	BLUESTONE SCREENINGS
WOODLAND TRAIL	MULCHED PATH
FITNESS TRAIL	ENGINEERED WOOD CHIPS
GROUP FITNESS PLATFORM	ELEVATED PLATFORM
CHILDREN'S DISCOVERY TRAIL	ENGINEERED WOOD CHIPS
DOG PARK	CHAINLINK FENCE
OUTDOOR CLASSROOM/ PERFORMANCE SPACE	DECK PLATFORM
SEATING LEDGES	24" HT. SEATING STONE

100 % Conceptual Site Plan

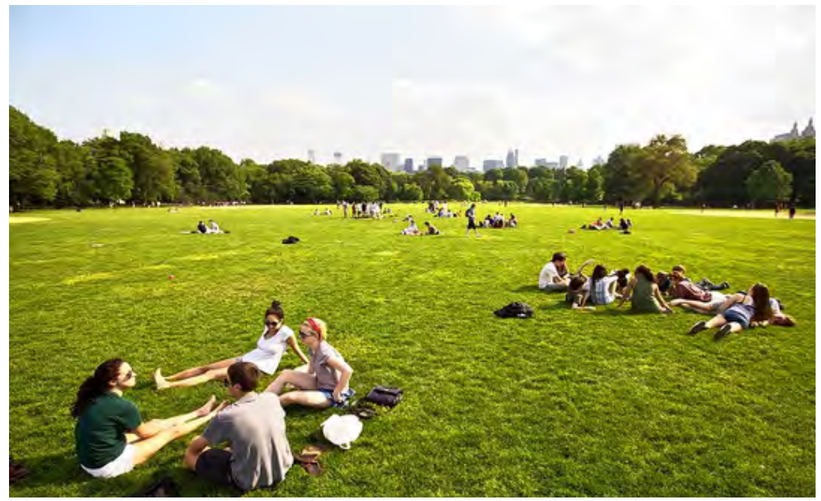
Walking trail & biking path



Thruflow walkway

Group fitness & adult fitness circuit

Children’s discovery garden



Open green space

Performance /presentation space

Overlook

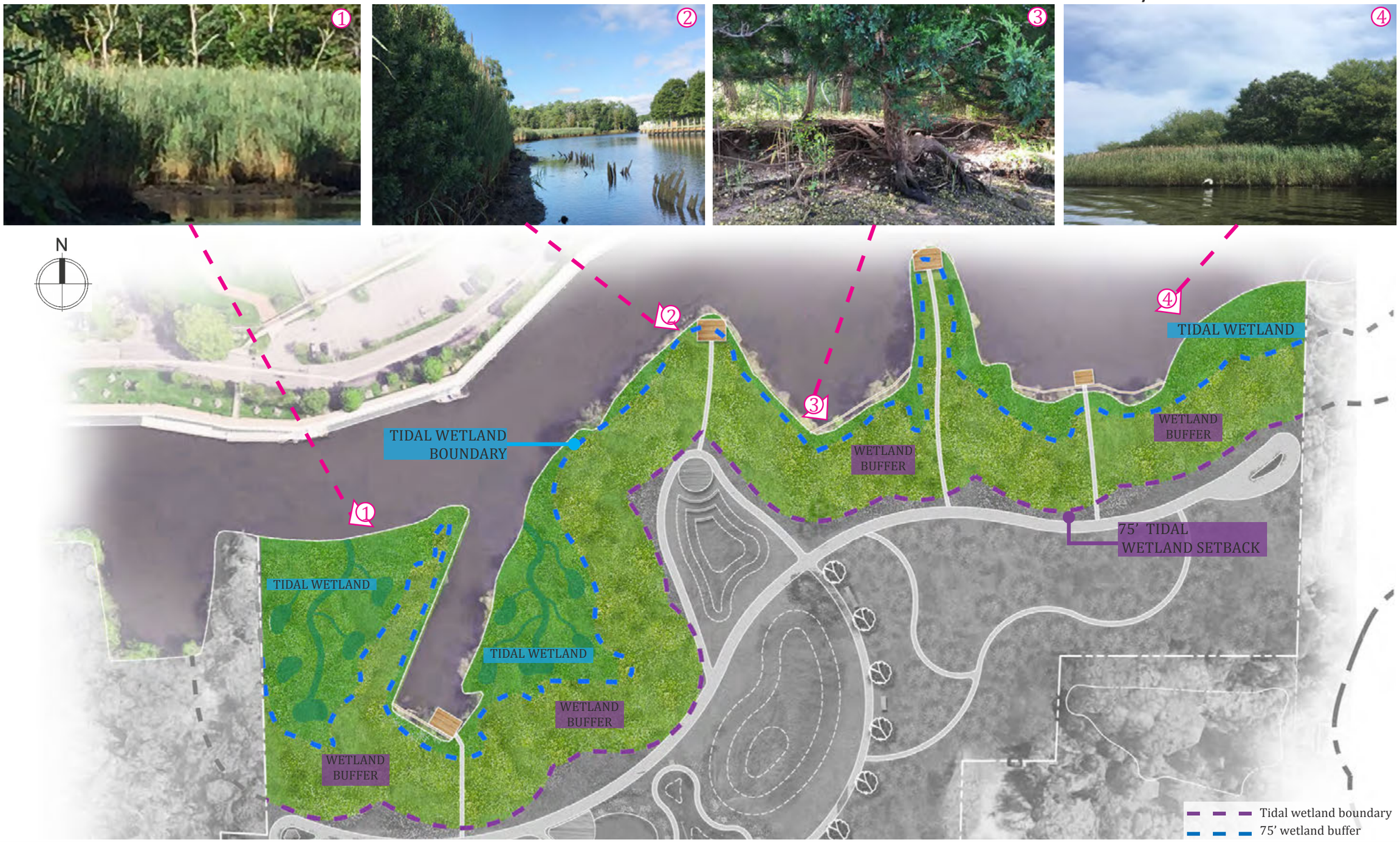
Kayak launch & fishing platform

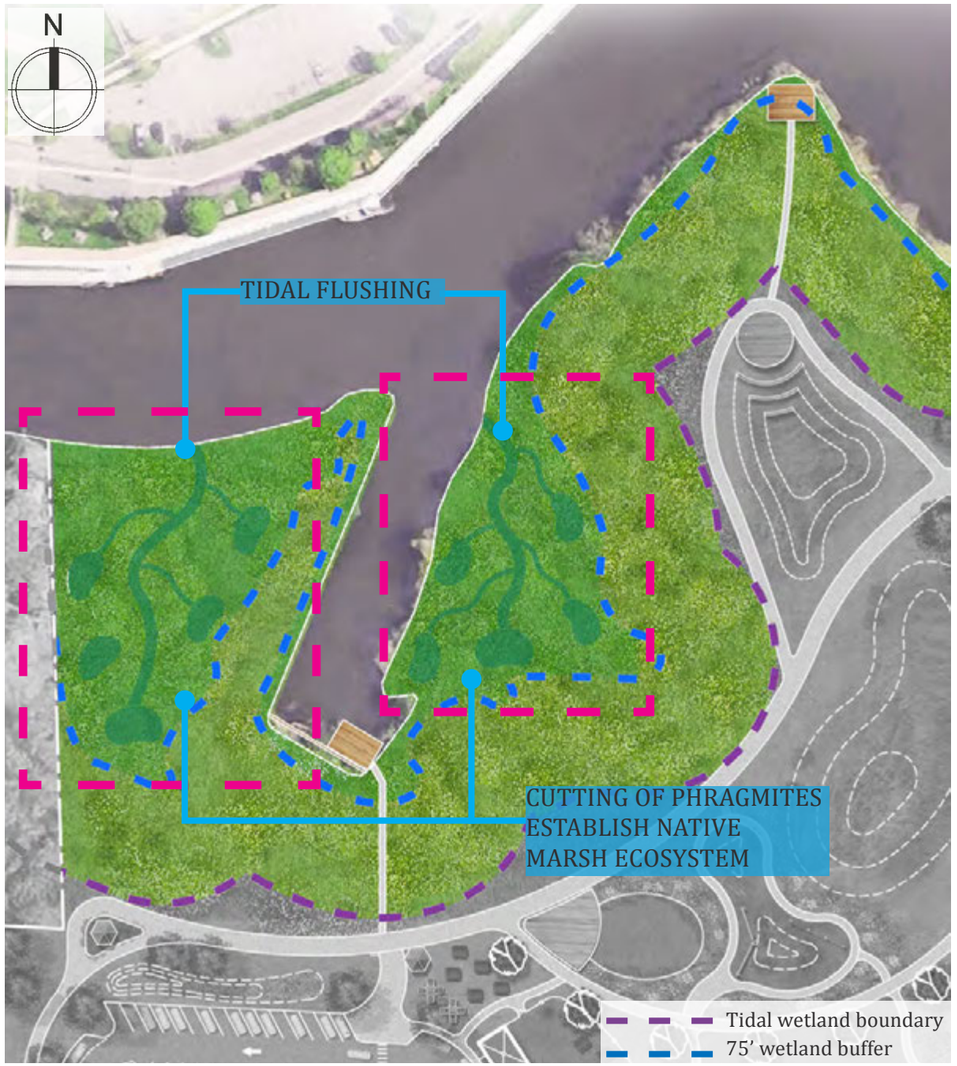
Parking lot & bioswale

Wetland buffer

Site amenities

4.2 Wetland Buffer/Shoreline Restoration



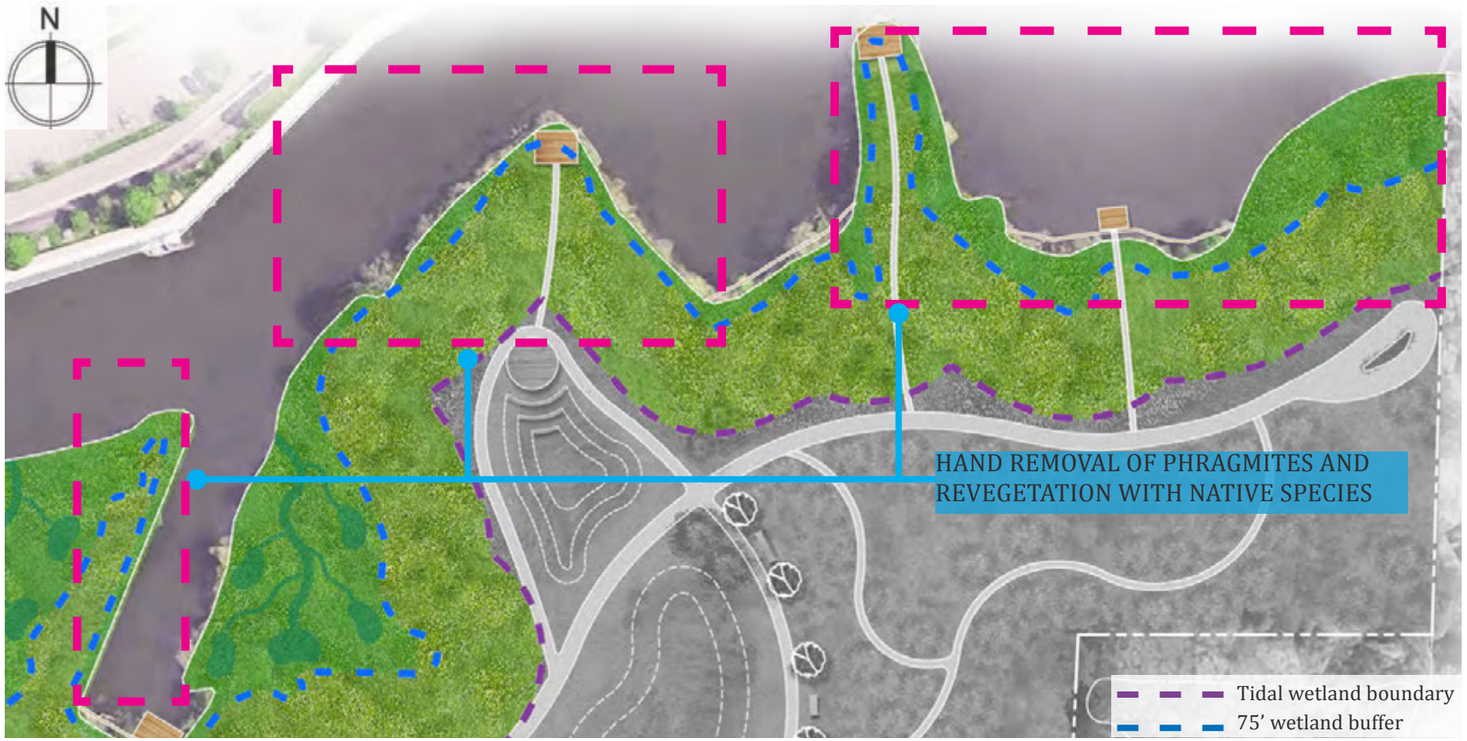


Restoration Method For Phragmites Dominated Marsh

- Common Reed will outcompete other vegetation in shallow, stagnant waters with poorly aerated sediments
- Flushing: Create "tidal channels' to facilitate the transport of water into back marsh areas
- Increase salinity to promote growth of native Spartina alterniflora
- Phragmites can not tolerate salinities greater than 18 ppt (parts per thousand)
- Research from Connecticut College shows that repeated annual cutting of Phragmites along with flow restoration increases results of Phragmites removal

Source: New York State Marsh Restoration and Monitoring Guidelines

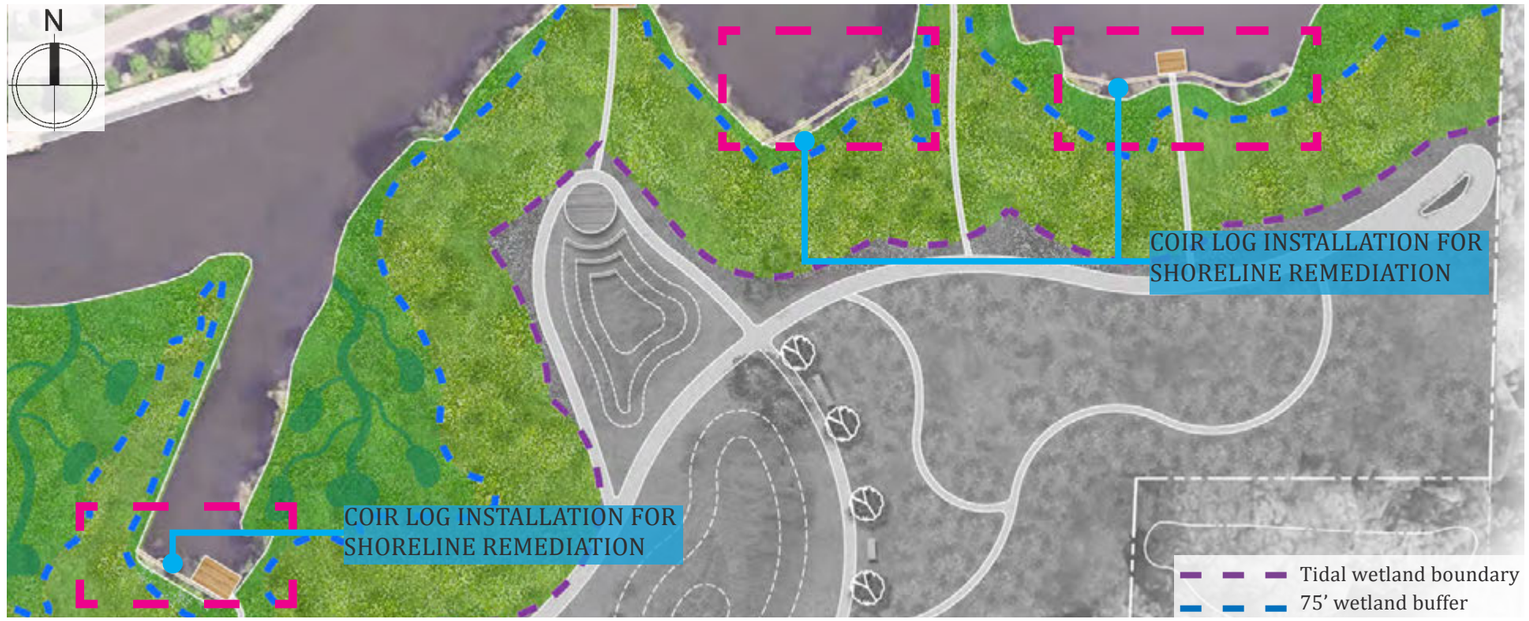
4.2 Wetland Buffer/Shoreline Restoration



Phragmites Dominated Shoreline Edge

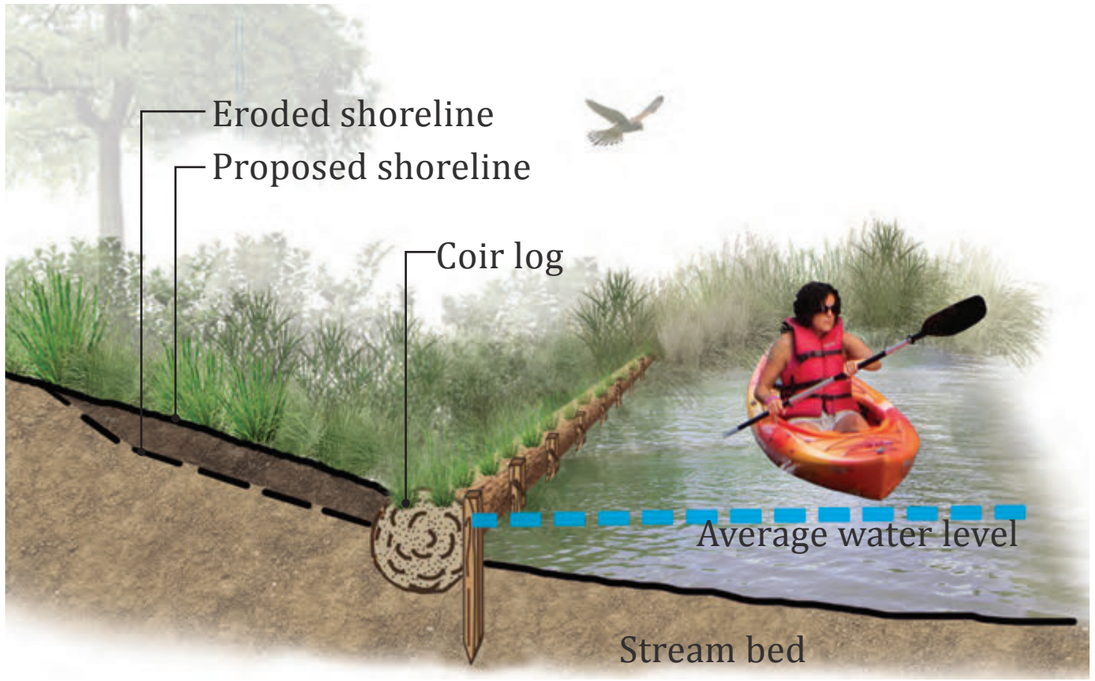
- In areas where Phragmites has not invaded upland due to shading by taller deciduous plant material
- Cut and excavate root zone of Phragmites to a depth sufficient for removal of plant rhizomes
- Removal of infected soils to approved upland location
- Regrade and backfill with clean fill
- Plant with native species

4.2 Wetland Buffer/Shoreline Restoration



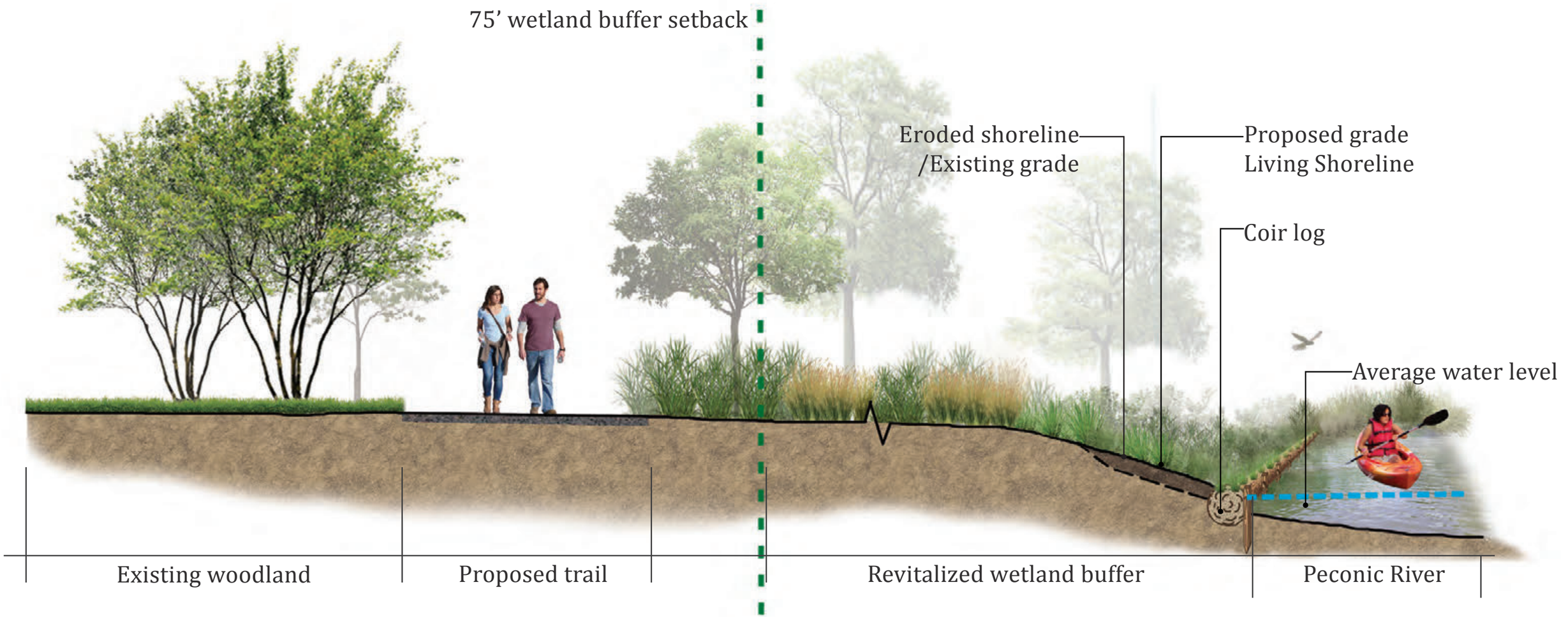
Restoration Of Eroded Shoreline

- Low wave energy shoreline perfect for stabilization by Coir Logs
- Coir Logs installed approximately 6 feet seaward of eroded slope
- Regrade slope and Backfill with clean fill landward of Coir Log
- Plant with native plant species



Benefits

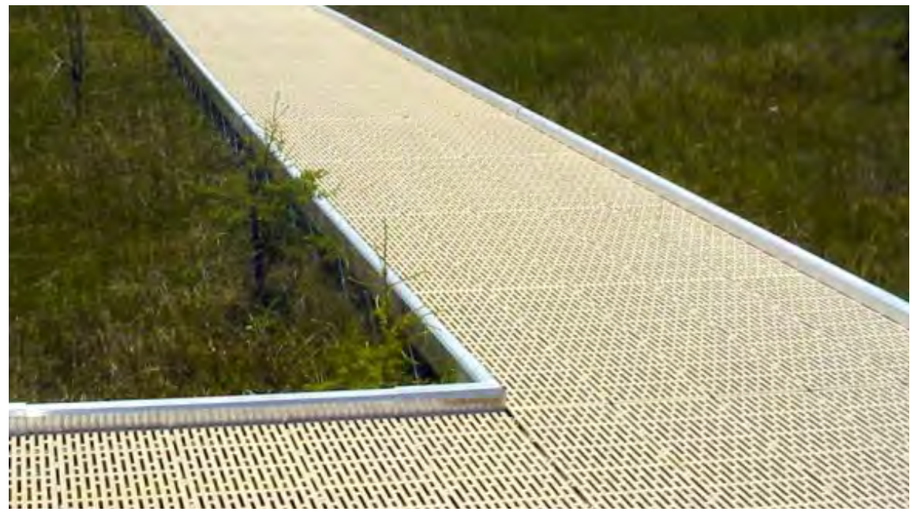
- Reduces construction costs
- Restores marine habitat & spawning areas
- Assists with maintaining water quality
- Prevents further bank erosion & property loss
- Creates a natural & aesthetic appearance
- Establishes a beach where boat launching, sunbathing, and swimming can occur


75’ wetland buffer setback
Eroded shoreline /Existing grade
Proposed grade Living Shoreline
Coir log
Average water level
Existing woodland
Proposed trail
Revitalized wetland buffer
Peconic River

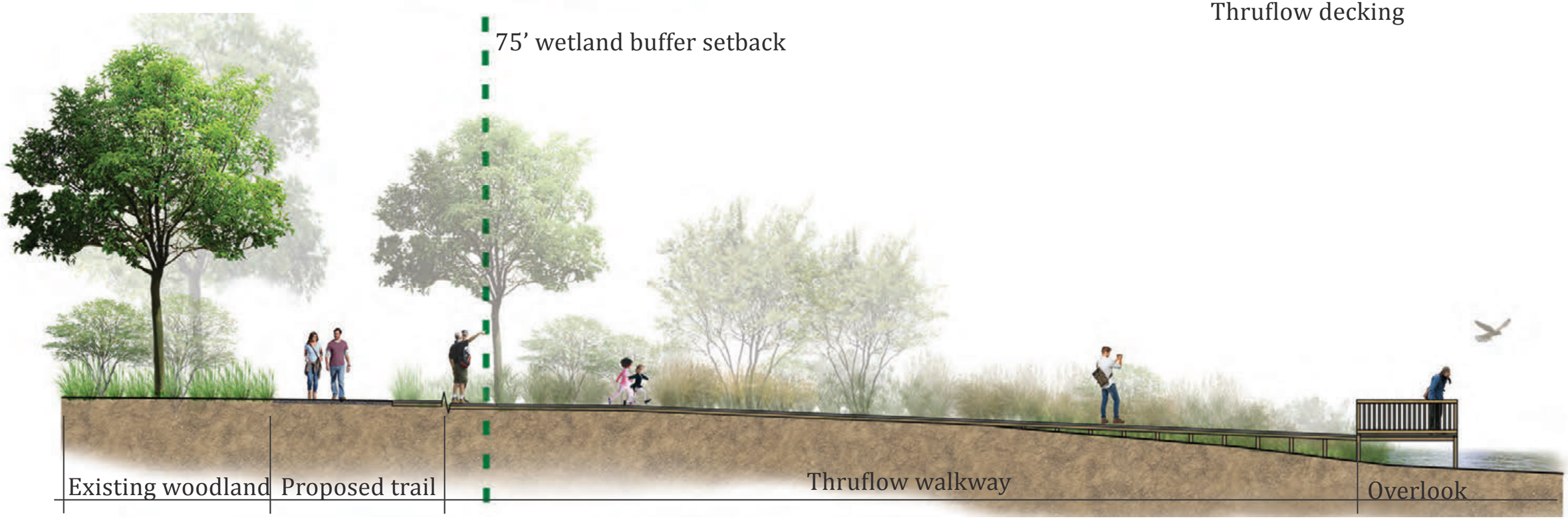




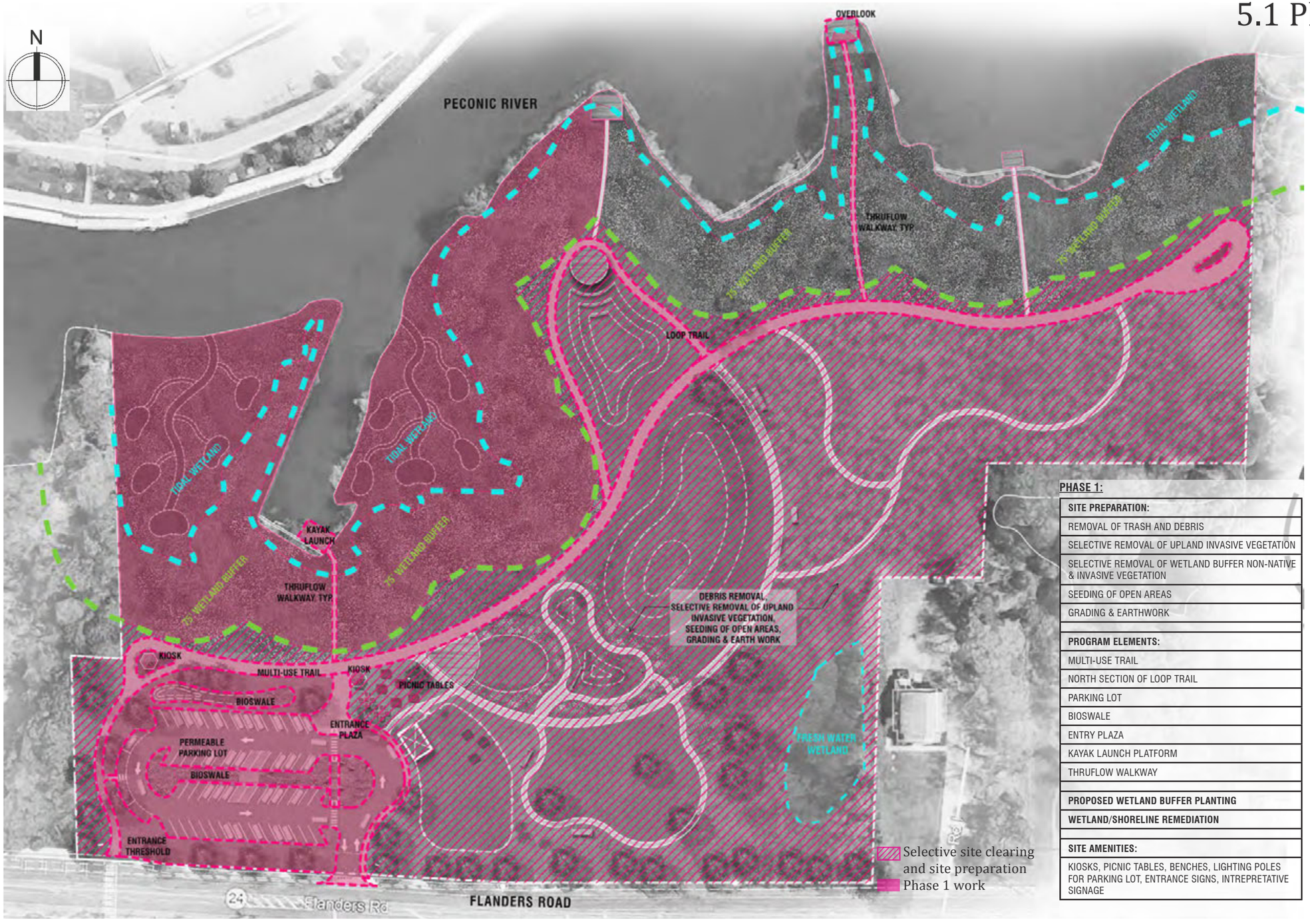
4.2 Wetland Buffer/Shoreline Restoration



Thruflow decking



5.1 Phasing plan



PHASE 1:

SITE PREPARATION:
REMOVAL OF TRASH AND DEBRIS
SELECTIVE REMOVAL OF UPLAND INVASIVE VEGETATION
SELECTIVE REMOVAL OF WETLAND BUFFER NON-NATIVE & INVASIVE VEGETATION
SEEDING OF OPEN AREAS
GRADING & EARTHWORK
PROGRAM ELEMENTS:
MULTI-USE TRAIL
NORTH SECTION OF LOOP TRAIL
PARKING LOT
BIOSWALE
ENTRY PLAZA
KAYAK LAUNCH PLATFORM
THRUFLOW WALKWAY
PROPOSED WETLAND BUFFER PLANTING
WETLAND/SHORELINE REMEDIATION
SITE AMENITIES:
KIOSKS, PICNIC TABLES, BENCHES, LIGHTING POLES FOR PARKING LOT, ENTRANCE SIGNS, INTREPRETATIVE SIGNAGE

PHASING PLAN-PHASE 1

5.1 Phasing plan

PHASE 2:

PROGRAM ELEMENTS
COMFORT STATION
SOUTH SECTION LOOP TRAIL
GROUP FITNESS PLATFORM
CHILDREN'S DISCOVERY GARDEN
DOG PARK
ADULT FITNESS CIRCUIT
THE GREEN
OUTDOOR CLASSROOM/PERFORMANCE SPACE
WOODLAND TRAIL
THRUFLOW WALKWAY
OVERLOOK/FISHING PIER
FISHING PIER
PROPOSED WETLAND BUFFER PLANTING
WETLAND/SHORELINE REMEDIATION
LAWN, NATIVE GARDEN, & MEADOW PLANTING
PROPOSED UPLAND PLANTING
SITE AMENITIES:
FITNESS STATIONS, EDUCATION DISPLAYS, TABLES

PHASING PLAN-PHASE 2

PHASE 1	
DESCRIPTION	**AMOUNT**
SITE PREPARATION	$219,752
PROPOSED WETLAND BUFFER PLANTING	$156,075
SHORELINE REMEDIATION	$212,361
PROGRAM ELEMENTS	$552,982
SITE AMENITIES	$128,500
SUBTOTAL:	$1,269,670
SOFT COSTS (12%)	$152,360
COST CONTINGENCY (18%)	$228,540
TOTAL CONSTRUCTION COSTS:	$1,650,570

PHASE 2	
DESCRIPTION	**AMOUNT**
PROPOSED WETLAND BUFFER PLANTING	$156,075
SHORELINE REMEDIATION	$206,153
PROGRAM ELEMENTS	$192,842
GARDEN & LAWN PLANTING	$68,324
PROPOSED UPLAND PLANTING	$176,675
SITE AMENITIES	$33,500
SUBTOTAL:	$833,569
SOFT COSTS (12%)	$100,028
COST CONTINGENCY (18%)	$150,042
TOTAL CONSTRUCTION COSTS:	$1,083,639
COMFORT STATION	$300,000

NOTE: This Cost estimate is based on the documents prepared by VJ Associates- Hicksville, NY, dated on December 19, 2018. This is a preliminary cost estimate to be used as a planning tool for budgetary purposes. Actual construction costs will be determined based on construction drawings, details and specifications.

Habitat Restoration Funding Opportunities
- Atlantic Coastal Fish Habitat Partnership http://www.atlanticfishhabitat.org/

Environmental Protection Agency
- Wetland Program Development Grants https://www.epa.gov/wetlands/wetland-program-development-grants

Fish and Wildlife Service
- Coastal Program https://www.fws.gov/coastal/
- National Fish Passage Program https://www.fws.gov/fisheries/whatwedo/nfpp/nfpp.html
- North American Wetlands Conservation Acts Grants Program, https://www.fws.gov/birds/grants/north-american-wetland-conservation-act.php

National Ocean and Atmospheric Administration
- Coastal and Marine Habitat Restoration Grant Program http://www.habitat.noaa.gov/funding/coastalrestoration.html
- Coastal Ecosystem Resiliency Grant Program https://www.coast.noaa.gov/resilience-grant/

National Fish and Wildlife Foundation
- Five Star and Urban Waters Restoration Grant Program http://www.nfwf.org/fivestar/Pages/home.aspx
- Coastal Resilience http://www.nfwf.org/coastalresilience/Pages/home.aspx

New York State
- Environmental Protection Fund - Division of Coastal Resources (NYS DOS)
- Water Quality Improvement Project Program http://www.dec.ny.gov/pubs/4774.html
- Trees for Tribs Grant; http://www.dec.ny.gov/press/press.html
- Local Waterfront Revitalization Program https://www.dos.ny.gov/opd/programs/lwrp.html
- Green Innovation Grant Program https://www.efc.ny.gov/GIGP
- Climate Smart Communities Program http://www.dec.ny.gov/energy/50845.html
- The Recreational Trails Program (RTP) is an assistance program of the U.S. Department of Transportation's Federal Highway Administration (FHWA). In New York, RTP is a program of the New York State Department of Transportation (NYSDOT) administered by the Office of Parks, Recreation and Historic Preservation (OPRHP). https://parks.ny.gov/grants/recreational-trails/default.aspx

Suffolk County
- Suffolk County Water Quality Improvement and Protection Program http://suffolkcountyny.gov/Departments/EconomicDevelopmentandPlanning/PlanningandEnvironment/WaterQualityImprovement.aspx

Community Preservation Funds
- Southampton http://www.southamptontownny.gov/188/Community-Preservation-Fund

7.1 Precedent Projects

Avalon Park Preserve
Stony Brook, NY

- Located in Stony Brook Harbor on Mill Pond
- Park provides walking trails, wildlife observation, community events
- 8 acre park once a residential site abandoned sometime in the early 1900's
- Years of neglect allowed non-native species of vines and shrubs to invade and dominate the landscape choking out large trees
- Park design concept was to create a series of woodland gardens and paths celebrating native flora of Long Island
- Park programming includes walking paths, wildlife observation overlooks, labyrinth, trails
- Community events include star gazing, nature programming, stewardship projects, yoga and meditation

Family's enjoying the labyrinth

7.1 Precedent Projects

Havre de Grace, Maryland

Lower Susquehanna Heritage Greenway Trail

Lower Susquehanna Heritage Greenway Trail is a 4.8 mile moderately trafficked out and back trail located near Havre de Grace, Maryland that features a river and is rated as moderate. The trail offers a number of activity options and is accessible year-round.

Shoreline restoration component of park includes:

- Wetland restoration within 75 feet of the shoreline with an additional 25 foot buffer
- Removal of dredge spoil within 75 feet of the shoreline
- Removal of non-indigenous plants within 75 feet of the shoreline
- Base line natural resources and plant inventory
- Long term vegetation management plan
- Removal and control of invasive vegetation in upland areas
- Environmental remediation in upland areas
- Enhancement of public access and vistas to the River
- Conservation and management measures aimed at restoring water quality

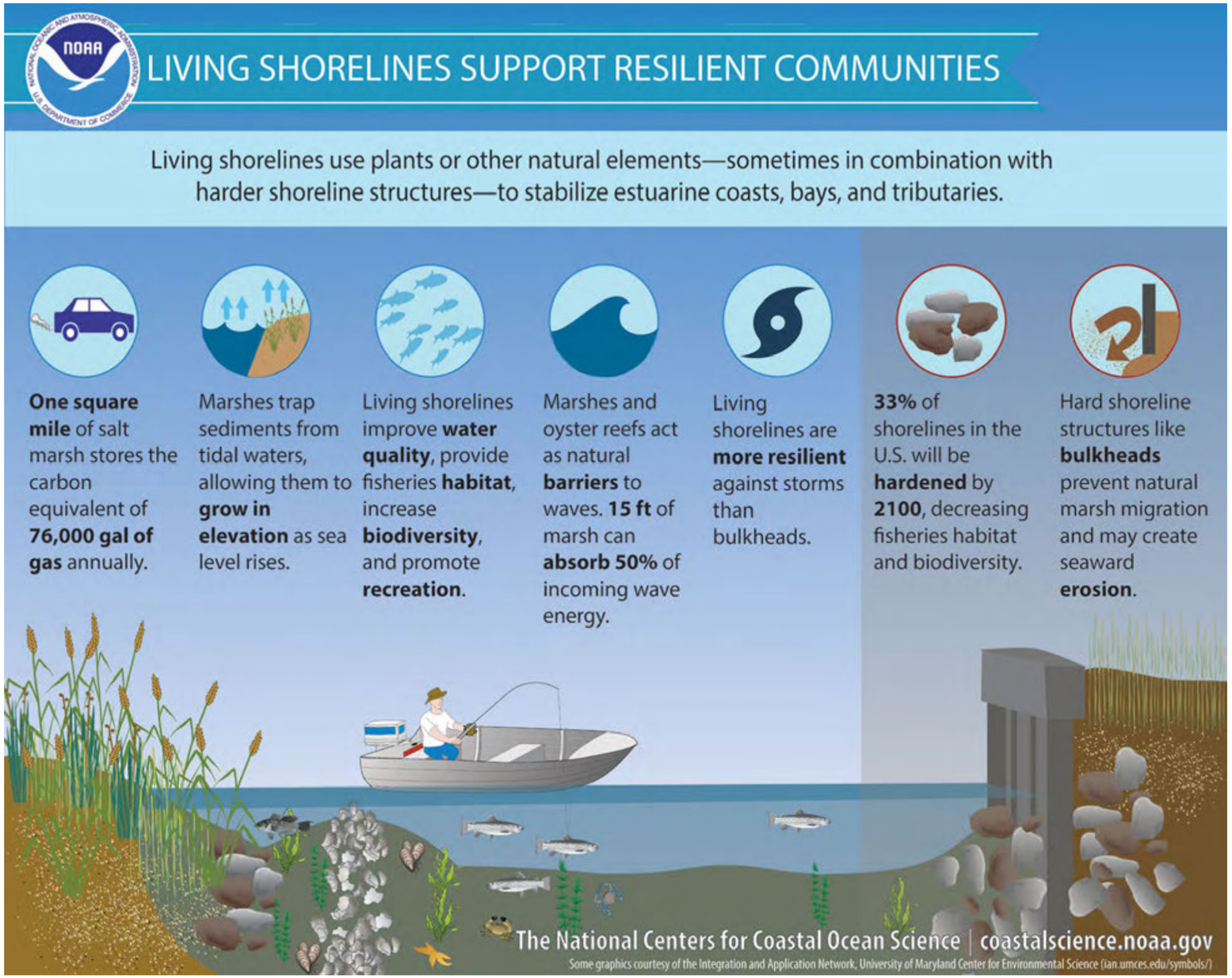
Current restoration efforts within the Peconic Estuary provide solid precedent for scientifically sound, local best management practices

1. Peconic Land Trust's Widows Hole Preserve Proposed Shoreline Restoration Plan
2. Shinnecock Coastal Resiliency and Habitat Restoration Project

Both projects utilizing **"Living Shoreline"** methods for invasive plant removal and shoreline and wetland restoration to be considered for the Riverside Maritime Park

Living Shorelines

Shoreline techniques that incorporate natural living features alone or in combination with structural components such as rock, wood, fiber rolls, bagged shell, and concrete shellfish substrate.

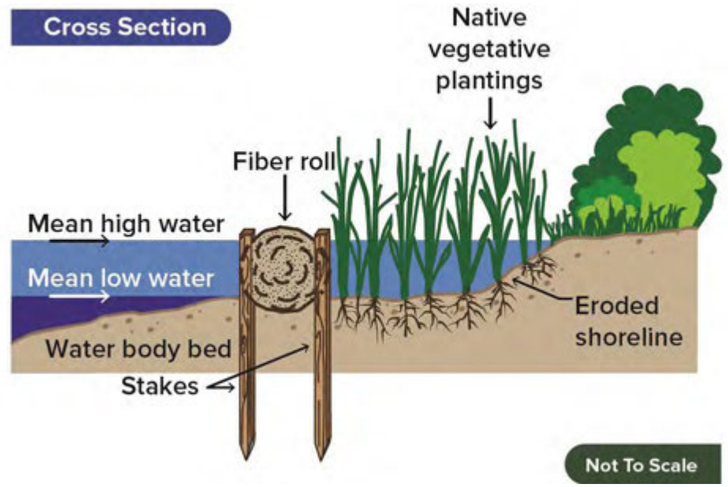


Benefits

- Control or reduce shoreline erosion while maintaining benefits comparable to the natural shoreline such as allowing for natural sediment movement;
- Use the minimum amount of structural components necessary for hybrid techniques to obtain project goals;
- Improve, restore, or maintain the connection between the upland and water habitats; Incorporate habitat enhancement and natural elements ex: native revegetation, establishment of new vegetation;

Source: Tidal Wetlands Document, Living Shoreline Techniques in the Marine District of New York State

Example of Living Shoreline technique for eroded shoreline



Peconic Land Trust's Widows Hole Preserve
Proposed Shoreline Restoration Plan

Project Overview:
- Located at the former Greenport Terminal
- Includes 0.4 acres of shoreline and adjacent upland
- Goal is to increase the resiliency of the shoreline to erosion and the overall habitat value and aesthetics of the property

Shoreline Restoration
- Degraded shoreline due to historic use
- Restoration plan will rebuild the shore with clean sand fill to allow for the planting of smooth cordgrass (Spartina alterniflora)
- Spartina is an intertidal plant that spends approximately half of each day immersed in salt water and ranges from mean sea level (MSL) to mean high water (MHW).
- The MSL became the bottom boundary of the spartina planting
- Addition of fill will restore this section of shoreline to a grade comparable to pre-commercial use of the site
- **Result in a wider intertidal area which will allow for the natural expansion of cordgrass and expanded forage area for shore birds**

Shinnecock Coastal Resiliency and Habitat Restoration Project

Project Goals:

- Beach nourishment and restoration
- Nourish American Oyster Habitat
- Eelgrass meadow restoration
- Salt marsh plantings
- Restore upland plant community
- Restore tidal flow to existing marshes

- 3,000 Linear Feet of shoreline restoration heavily impacted by super storm Sandy
- Restore a natural resilience and ecological diversity
- Increase in the carrying capacity of the local waters for important species of fish and wildlife and there will be greater protection of the reservation through wave attenuation and sediment trapping
- Tidal flushing in two wetland systems that are being invaded by Phragmites and serving as sources of significant nuisance mosquito populations
- Increasing the tidal flow of these marshes there will be an improvement in the ecological carrying capacity, an increase in species diversity, and will reduce, if not eliminate, a significant mosquito issue.

Source: Cornell Cooperative Extension, http://ccesuffolk.org/marine/habitat/coastal-habitat-restoration-project-shinnecock-indian-reservation