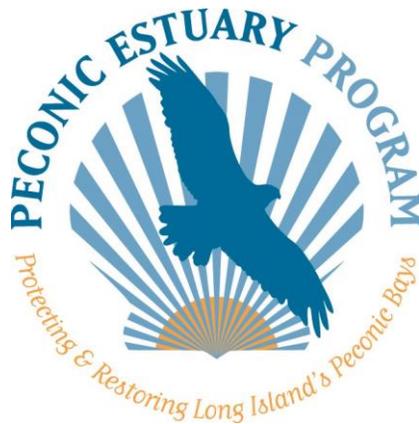


2017 PECONIC ESTUARY PROGRAM HABITAT RESTORATION PLAN



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The Peconic Estuary Program (PEP) is a unique partnership of governments, environmental groups, businesses, industries, academic institutions and citizens. It is the mission of the Peconic Estuary Program to protect and restore the Peconic Estuary system.

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Introduction

The Peconic Estuary lies between the north and south forks of Long Island, eighty miles east of New York City on the eastern end of Suffolk County. The Peconic Estuary Watershed begins at Brookhaven National Lab with the headwaters of the Peconic River, spans the several bays from Flanders to Gardiners, and ends in Block Island Sound between Plum Island and Montauk Point. In 1992, the Peconic Estuary became the 20th estuary in the nation to receive the designation as an “Estuary of National Significance” by the U.S. Environmental Protection Agency (EPA), and the Peconic Estuary Program, a collaborative partnership of local, state, and federal governments, citizens, environmental groups, businesses, industries, and academic institutions, was established.

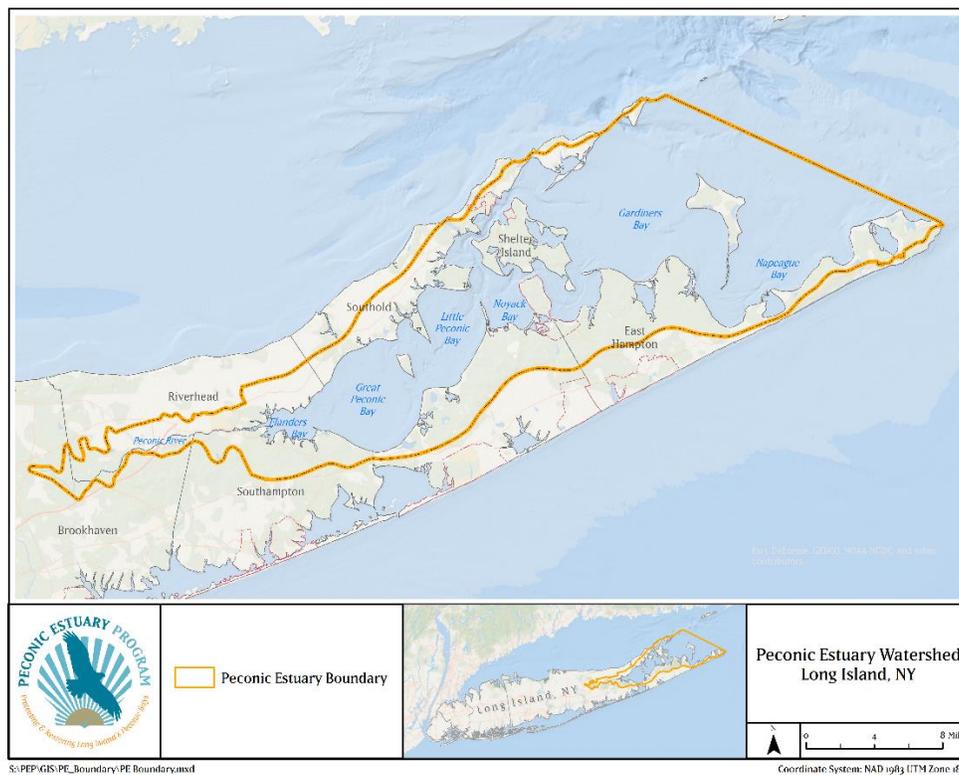


Figure 1: Peconic Estuary Watershed

In 1997 the Peconic Estuary Program Habitat Restoration Workgroup was formed and charged with identifying important Peconic natural habitats with enhancement or restoration potential and identifying and prioritizing restoration projects. The end product was the “Habitat Restoration Plan for the Peconic Estuary” dated December 2000. This Habitat Restoration Plan was subsequently updated in 2009 through a collaborative effort by the Peconic Estuary Program Natural Resources Subcommittee (NRS), the East End Towns and other stakeholders. In 2017, the NRS once again recognized the need to update the Peconic Estuary Program Habitat Restoration Plan. This time, the NRS aimed to identify the primary threats to Peconic Estuary

habitats and reach a consensus on the best strategies to address these threats, in addition to identifying priority habitat restoration projects.

The 2017 Habitat Restoration Plan is a comprehensive plan that is a culmination of numerous stakeholder meetings and communications with the East End Towns and partners. It describes the many valuable and unique habitats that exist within the Peconic Estuary watershed, the major threats to these habitats, and habitat restoration progress to-date. The plan then outlines goals, objectives, actions to guide habitat restoration and protection in the Peconic Estuary watershed over the next 10 years. The 2017 Peconic Estuary Program Habitat Restoration Plan also includes a list of priority habitat restoration projects that align with the defined goals/objectives, potential funding sources, and habitat restoration resources.

The overall goal of the 2017 Peconic Estuary Program Habitat Restoration Plan is to protect and restore Peconic Estuary habitats to support ecosystem function. While all habitats within the Peconic Estuary watershed are important to ecosystem function, the following habitats were identified as current priorities for restoration and protection: submerged aquatic vegetation (SAV), tidal wetlands/shorelines and freshwater diadromous fish habitat. The decline of these habitats is of particular concern, given their value as breeding and nursery areas for various wildlife and their importance for coastal resiliency. Nine overarching objectives and various associated management and research actions are outlined in the Habitat Restoration Goals and Objectives section to address the threats to these priority habitats. Additionally, ten measurable targets were developed to gauge and track the success of restoration and protection efforts.

A total of forty-one (41) priority habitat restoration projects were approved by the NRS for listing in the 2017 Habitat Restoration Plan, including twenty-six (26) projects re-listed from the 2009 Habitat Restoration Plan and fifteen (15) new projects nominated by the East End municipalities or other partners.

Implementation of the 2017 Habitat Restoration Plan will be led by the NRS and will require a collaborative effort among the Peconic Estuary Program's many State, County, Local and non-profit partners. Implementation of this plan will help ensure that Peconic Estuary habitats can continue to provide for wildlife, sustainable fisheries and resilient coastal communities.

Habitats of the Peconic Estuary

Cited as one of the “Last great places in the Western Hemisphere,” the Peconic Estuary contains a rich mosaic of natural communities, all of which are important to the ecology and productivity of this ecosystem. More than 100 distinct bays, harbors, embayments, and tributaries make up the Peconic Estuary. The areas surrounding the Estuary are rich with scenic beaches, tidal and freshwater wetlands, creeks, riverine habitat, and woodlands. In total the Peconic Estuary Watershed includes more than 158,000 surface water acres and 125,000 land acres.

There is a larger percentage of undisturbed habitats and a greater diversity of natural communities within the Peconic Estuary watershed, on a per unit area basis, than anywhere else in the coastal zone of New York State. There are individual habitats in the region that are rarely found elsewhere in New York State or on the east coast of the United States. Additionally, the Estuary is home to over 100 species listed as rare, threatened or endangered globally, nationally, or locally.

Below is a summary of the primary habitats of the Peconic Estuary watershed. Additional information can be found in [*Characterization Report of the Living Resources of the Peconic Estuary.*](#)

Deep Open Water Communities

The deep open waters of the Peconic Estuary include most of Flanders, Great Peconic, Little Peconic, Noyack, Southold, and Gardiners Bays; portions of Northwest and Orient Harbors; and Shelter Island Sound. Depths in these bays range from 4 m to 29 m (14 to 95 ft), with the deepest areas occurring around Shelter Island. Flanders Bay, the most western bay, is the shallowest. The average salinity ranges from 27 to 29 practical salinity units (psu), increasing as you move east.

This area supports a variety of species from small plankton to marine mammals. It serves as an important nursery area for a number of finfish, such as bay anchovy, Atlantic silversides, tautog, weakfish, scup, winter flounder, summer flounder, bluefish, butterfish and northern puffer. Many of these species support commercial and recreational fisheries. Invertebrates that live in the deep water zone, include calico crab, blue crab, spider crab, horseshoe crab, long-finned squid, channeled and knobbed whelks, slipper shells, blood arks, oyster drills, and jingle shells. This area is also used by a variety of birds for feeding, notably sea ducks such as red-breasted mergansers, scoters, and common eiders.

During the spring and summer months, juvenile sea turtles, harbor porpoises, and bottlenose dolphins may enter the estuary to feed. During the winter, harbor seals are found around a number of haul-out areas around the eastern Peconic Estuary and Block Island Sound.

Deep Peconic Mud Basin

At the bottom of the Great Peconic Bay lies a giant mud basin, consisting of fine grained, silty organic mud. This habitat supports a diversity of burrowing organisms, including polychaeta worms, mantis shrimp, and brittlestars. When these animals irrigate their burrows they help to circulate oxygenated water into the oxygen-depleted mud sediments. This community also plays

an important role in nitrogen conversion, helping to buffer against excess nitrogen inputs in the Bay.

Shallow Bays and Embayments

This habitat includes waters in the main bays with a depth of less than three meters (approximately 10 feet) and the portions of tidal creeks, ponds, and large embayments in the Peconic Estuary that remain submerged through the tidal cycle. These shallow-water areas in the estuary are crucial for local populations of breeding fish. Some species of adult finfish move in close to shore to spawn and reproduce (e.g., weakfish, winter flounder, and Atlantic silversides), while others spawn in the ocean and the larvae move inshore, metamorphose, and the juveniles feed in the shallow areas until they are large enough to migrate back offshore (e.g., bluefish, summer flounder). The shallow water zone also supports the majority of commercially harvested shellfish, including the iconic bay scallop and hard clam. Additionally, this habitat is an important feeding area for several birds, including waders, such as herons and egrets, puddle ducks (e.g., black ducks and mallards) and bay ducks (e.g., greater and lesser scaup, canvasbacks and redheads).

Submerged Aquatic Vegetation

The Peconic Estuary Program defines submerged aquatic vegetation as beds of rooted vascular plants or macroalgae, both of which require complete immersion for all or most of the day to survive. Submerged aquatic vegetation, particularly eelgrass (*Zostera marina*), is of great ecological importance in shallow environments. Eelgrass beds provide shelter and food for a variety of juvenile finfish and invertebrates, most notably juvenile bay scallops which attach to the eelgrass blades. These rooted plants also help stabilize the underlying substrate and prevent erosion. Eelgrass is limited to areas of high light penetration and typically only grows to depths of six to ten feet. Current eelgrass beds within the Peconic Estuary are found around Shelter Island, to the east along the fringes of Gardiners Bay and within a few small embayments and harbors.

Macroalgae beds are generally considered poorer habitat compared to eelgrass and do not provide the same level of ecosystem services. Since macroalgae are not rooted, they do not stabilize soft bottoms. Rather, they are easily uprooted and can be carried some distance where they foul eelgrass, beaches, and bare bottoms. The macroalgae species that occur in greatest abundance are green fleece, a non-native species, and sea lettuce.

Tidal Wetlands

Tidal wetlands, also known as salt marshes, are vegetated areas around the edge of the estuary that are inundated by seawater brought in by the tides twice-daily. The low marsh is dominated by salt marsh cordgrass (*Spartina alterniflora*), a plant that is specially adapted to living in this unique environment. The high marsh, which is only inundated by seawater during the highest spring tides or storm surges, is usually dominated by salt meadow grass (*Spartina patens*), but a variety of other plants may be found in this area too.

Salt marshes provide numerous ecosystem services and are some of the most productive habitats on Earth. They are ideal habitats for juvenile fish and shellfish to grow and reproduce. Three-fourths of the fish and shellfish we eat rely on the marsh environment at some point during their

life. They are also important areas for waterfowl and shorebirds and the diamondback terrapin, an exclusively estuarine reptile.

Beyond serving as important habitat for a number of species, salt marshes help to slow shoreline erosion and provide a critical buffer between estuarine waters and the terrestrial environment. These habitats are capable of filtering a large amount of surface runoff from land, buffering estuarine waters from excess nutrients and contaminants that might be contained in surface runoff. Conversely, salt marshes can absorb a large amount of floodwater from the estuary, providing protection to coastal communities during large storms.

Tidal Flats

Tidal flats are unvegetated intertidal areas consisting of mud or sand. These areas are often covered by algae. Animals that live in tidal flats include several commercially important bivalves, such as clams, as well as crabs, snails, and worms. One of the most sighted animals on tidal flats in the Peconic is the fiddler crab. These areas may also be used by finfish for spawning and nursery grounds with the adults, larvae, and juveniles moving on and off these unvegetated areas with the tides. These estuary margins are extremely important to birds. Wading birds and raptors feed over the mud and sand flats at high tide.

Sandy Beaches/Dunes

Sandy beaches are found throughout the Peconic Estuary system. Beaches are dynamic environments that are continuously being accreted and eroded by waves, wind, and currents. Dunes or bluffs form on the landward side of some beaches.

The unstable and harsh environment of beaches limits the number of organisms that can live here. However, beaches are home to a number of rare plants, such as the seabeach knotweed, that are exclusively adapted to these nutrient-poor environments. Many tiny animals live between the sand grains, and a number of species will feed on the beach wrack, the band of dead, washed up vegetation, shells, and other debris found near the high tide line. These environments provide important nesting habitat for two endangered shorebirds, the piping plover and roseate tern. Additionally, horseshoe crabs and diamondback terrapins move onto sandy beaches in the spring and summer, respectively, to breed.

Freshwater Habitats

The freshwater environment is crucial to the Peconic system, because it is the influx of fresh water that makes the system estuarine. A mix of fresh and salt water is vital for the growth and development of many species, some of which cannot survive in highly saline seawater. The largest source of freshwater to the Estuary is the Peconic River, which runs west to east from the town of Brookhaven to Flanders Bay. However, there are a number of other small freshwater streams and creeks within the Peconic Estuary watershed.

Other freshwater habitats found within the Peconic Estuary watershed include freshwater wetlands, coastal plain ponds, vernal pools, bogs, fens, and swamps, including the rare coastal plain poor fen and Atlantic white cedar swamp communities. As with salt marshes, these habitats absorb and filter surface runoff, and are therefore important for enhancing estuarine water quality.

The freshwater habitats of the Peconic support a number of warm-water fishes, such as the largemouth bass, bluegill, sunfish, yellow perch, and white perch. The upper reaches of the Peconic River and connected fresh water ponds provide habitat for two New York State threatened fish, the banded sunfish and swamp darter. Additionally, the Peconic River and a few other streams in the region provide critical habitat for local diadromous fish that move between ocean and freshwaters, namely river herring and American eel. Various salamanders, including the state listed endangered tiger salamander, frogs, turtles, and birds, also live in the freshwater habitats of the Peconic.

Upland Forests and Grasslands

There are a number of characteristic plant communities, which occur in this upland coastal zone around the Peconic Estuary. Soil type, hydrology, and microclimates determine the occurrence of these communities. Forest types include maritime red cedar (found on the long, narrow peninsula of Orient State Park), maritime oak (found on the exposed bluffs of Jessups Neck and Mashomack Preserve), coastal oak-holly (on the Montauk peninsula), and the Long Island Central Pine Barrens. In the Pine Barrens, pitch-pine oak is the dominant plant community. There are also rare dwarf pitch pine plain communities, which include pines and other co-dominant trees no greater than 3 meters in height.

Other significant coastal upland plant communities include remnant maritime grasslands (found in the Peconic Estuary at Conscience Point, Montauk, and the Shinnecock Hills) and maritime heathlands (found at Montauk Mountain). These communities consist of tall grasses and shrubs and are notable for their lack of large trees.

All of these plant communities contain numerous insects, birds, and other organisms, which are specifically adapted to them. Many vascular plants and several birds and insects found in the terrestrial zone have been identified as threatened, endangered, or species of special concern.

Threats to Peconic Estuary Habitats

Increased population density and development over the last century has negatively impacted the natural habitats and diversity of life in the Peconic Estuary watershed. Physical alterations to the environment such as navigational channel dredging, filling of low-lying areas including wetlands, hardening of the shoreline, and clearing of land for roads and buildings has resulted in fragmentation, alteration and, in some cases, complete destruction of valuable habitat. Additionally, nutrient and toxin pollution, invasive species, climate change, and boating and fishing activities have further degraded habitats in the Peconic Estuary watershed and reduced the ecosystem services they provide. In this section, an overview of these threats is provided, followed by a discussion of their impacts on key habitats within the Peconic Estuary.

Major Threats to Peconic Estuary Habitats

1. Development and human activities have resulted in habitat loss, fragmentation, and degradation of habitats within the Peconic watershed, and remaining open space is under increasing development pressure.
2. Dams have been built on a number of the streams emptying into the Peconic, preventing the movement of diadromous fish into freshwater for spawning.
3. Invasive species out-compete with native plants and animals, threatening biodiversity and reducing habitat value. (e.g., *Phragmites*)
4. The interacting effects of rising seas and sediment deficits threaten to drown tidal wetlands and shoreline habitats, especially if they cannot migrate inland due to natural or man-made barriers.
5. Nutrient pollution, increasing water temperatures, and human disturbance are contributing to the loss of eelgrass beds within the Peconic Estuary.

Development

Historically, low-lying marshes and swamps were filled for construction or agriculture, and were ditched and drained for mosquito control. Much of the uplands have also historically been cleared for agriculture and more recently for residential developments. The building of roads has fragmented habitats and cut off the flow of water to a number of tidal wetlands and streams. Although culverts have been installed to reconnect these wetlands, they are often poorly maintained and do not flush properly.

Additionally, in the late 1800's and early 1900's, dams were built on nearly all of Long Island's freshwater tributaries for grist mills, cranberry bogs, other industrial uses, and as property line demarcations. These dams cut off historic migratory routes for diadromous fish, namely river herring and American eel, blocking access to hundreds of acres of critical freshwater habitat.

Today, stronger laws are in place to prevent the destruction of high valued habitats, like wetlands, and much effort has been made by the five East End Towns to preserve open-space. However, ever-increasing development pressure along the coast continues to pose threats to Peconic Estuary habitats. In addition to direct impacts, development has many indirect impacts,

such as the degradation of water quality, changes to the hydrology, and the invasion of nuisance species.

Navigational Dredging

In the Peconic dredging has been carried out on most of the inlets and navigation channels in the embayments and surrounding creeks. Dredging is usually done because of the accumulation of sediment that fills in channels and basins, effectively reducing vessel and boat use in these areas, or for other public-use benefits, like the building of marinas. Dredging can have a variety of negative impacts on natural communities. Concerns include direct disturbance to the habitat and living organisms, changes to current patterns, re-suspension of toxic chemicals, and the creation of high turbidity water quality conditions.

However, not all dredging is bad. Under certain conditions, dredging may increase tidal flushing and improve water quality. Additionally, dredge material is recognized as a resource material that can be recycled or reused to implement a variety of projects, including ecological restoration.

Shoreline Hardening

Bulkheads, rip-rap and other structures have been widely used to stabilize waterfront property throughout the estuary. In 2003, almost 29 miles of hardened shorelines and nearly 9 miles of docks were mapped in the Peconic Estuary. While a recent estimate of miles of hardened shoreline is not available, the amount of hardened shoreline has undoubtedly increased.

These hard structures alter the physical environment of coastal areas by reflecting wave energy and changing shoreline erosion and accretion patterns. They can result in erosion or deposition of sediments up or downstream of the structure, which may result in the destabilization of the shoreline. This may in turn encourage adjacent landowners to install hardening structures along their property. This “domino effect” of replacing natural shoreline with human-made structures can lead to widespread cumulative damage, including the loss of wetlands and beaches as well as the scouring of shallow areas with impacts to eelgrass beds and shallow water benthic communities. The loss of these intertidal and nearshore habitats negatively impacts shellfish, forage and juvenile fish and other species that use these areas for spawning, feeding, or mating (e.g., horseshoe crabs and birds). Hardened shoreline structures may also leach toxins such as copper, chromium and arsenic that are used to treat lumber, into the surrounding water, further impacting nearshore living resources. Moreover, hardened shorelines will prevent the landward migration of salt marshes and eelgrass beds, necessitated by rising seas.

Boating and Fishing Activities

Utilization of certain boating and fishing activities can negatively affect Peconic Estuary habitats. Shellfishing for scallops, clams or oysters often occurs in close proximity to eelgrass meadows. The use of rakes, tongs, dredges (including mechanical dredges) to harvest these shellfish can cause direct removal or structural damage to eelgrass, stir up bottom sediments and bury eelgrass or result in increased water turbidity, thereby decreasing light penetration to eelgrass. Finfish trawls and nets that are dragged along the bottom habitat also have the potential to cause structural damage.

Boats, jet skis and wave runners used in shallow waters where eelgrass occurs can damage existing eelgrass or create conditions unsuitable for healthy growth. Mooring blocks, anchors, and the associated chain tackle can also create scour, removing eelgrass, fragmenting the meadow and degrading habitat quality. Additionally, boat wakes contribute to the erosion of the shoreline and tidal wetland habitat.

Water Pollution

Nutrients and toxic substances enter the Peconic Estuary through a variety of sources, such as sewage treatment plants, on-site waste systems, fertilizers, and stormwater runoff. This can result in the further degradation of Peconic Estuary habitats.

Excess nitrogen or eutrophication has been identified as the most serious threat facing the Peconic Estuary due to its numerous impacts. Excess nitrogen can lead to excessive and harmful algal growth and create hypoxic conditions that kill living organisms. Excess nitrogen also leads to enhanced epiphytic growth on eelgrass blades. Excessive algal and epiphytic growth reduces light penetration to eelgrass and can greatly affect the areas where eelgrass can grow. Further, excess nitrogen can negatively affect the growth of salt marsh plants, leading to the destabilization and erosion of marshes.

Toxic substances such as heavy metals, pesticides, herbicides, chemicals and solvents are known to affect survivorship and reproductive capabilities of aquatic plants and other living organisms. The Peconic Estuary generally has low levels of toxic substances, but the effect of toxic substances on vulnerable natural communities, like eelgrass, requires further investigation.

Invasive Species

Invasive species are non-native species that cause harm to the environment, the economy or human health. They come from all around the world and can be introduced into the environment through a variety of ways. The most common way is through the ballast water of boats. Invasive species can impact native plant and animal communities around the estuary and are one of the top causes of biodiversity loss. For example, *Phragmites australis* is an invasive species that forms monotypic stands in disturbed tidal wetland areas. While recent evidence suggests that *Phragmites australis* has some habitat value (e.g., fish and bird habitat), these stands have generally decreased the overall habitat value for native species, altered nutrient cycling regimes, and are a fire hazard.

Climate Change

Global climate change is expected to exacerbate the already existing threats to the natural communities of the Peconic Estuary. Rising seas threaten to drown tidal wetlands and eelgrass beds if they cannot migrate landward. Changes in air and water temperatures may lead to species composition shifts, and alter the structure of food webs and ecosystems. There is already evidence of a shift in the Peconic Estuary fish populations from cold-water adapted species to more warm-water adapted species. Additionally, rising water temperatures are contributing to the decline of eelgrass in the region. Increasingly acidic oceanic waters could limit the ability of shellfish and other calcifying organisms to build their shells or skeletons. It will be important to reduce the other stressors described above to increase the resiliency of Peconic Estuary natural communities to these climate impacts.

Summary of Climate Factors for the Peconic Estuary Region

	Baseline	2020s	2050s	2080s
Average Temperature	55° F	+ 1.5° to 3° F	+ 3° to 5° F	+ 4° to 7.5° F
Average Precipitation	46.5 in	+ 0 to 5%	+ 0 to 10%	+ 5 to 10%
Projected Sea Level Rise	NA	2 to 5 in	7 to 12 in	12 to 23 in
Projected Sea Level Rise (Rapid Ice-Melt Scenario)	NA	5 to 10 in	19 to 29 in	41 to 55 in

Impacts on Key Peconic Estuary Habitats

While the stressors described above have negatively impacted all Peconic Estuary habitats, the loss and degradation of critical breeding and nursery habitats, specifically eelgrass beds, tidal wetlands, and freshwater diadromous fish habitat is of particular concern.

Impacts on Eelgrass

Once bountiful throughout the Peconic Estuary, eelgrass abundance has significantly declined over the last century. In 1930 it was estimated that there were over 8,700 acres of eelgrass. By 2000, the Peconic eelgrass population had declined by over 80% to only 1,550 acres. As of 2014, less than 1,000 acres of eelgrass remain.

It has been reported that the onset of a wasting disease (caused by the slime mold *Labyrinthula zosterae*) in the early 1930’s took out approximately 90% of all eelgrass meadows along the entire Atlantic seaboard. In the following decades, there was likely some rebound of eelgrass, but in the 1980’s extensive and prolonged brown tide blooms further decimated the eelgrass populations in the Peconic Estuary. Today, nutrient enrichment, algal blooms, water quality, boating and fishing practices, and shoreline stabilization structures are all collectively affecting the health and extent of eelgrass. In addition, rising water temperatures pose a significant threat to eelgrass in our region, as it is already growing near the upper limits of its temperature range. Other climate change impacts, including rising seas and more intense storms further threaten extant eelgrass meadows. With the exception of the Bullhead Bay eelgrass meadow, there are no eelgrass meadows growing west of Shelter Island in the Peconic. Long term monitoring indicates water temperature and light availability are no longer within the optimal range for eelgrass in this section of the estuary.

Impacts on Tidal Wetlands

The most recent tidal wetland trends analysis for the Peconic Estuary indicates native marsh loss of 10.5%, or 363 acres, between 1974 and 2005. In addition, of the 159 marshes identified in the Peconic Estuary, 86 were categorized as “at risk” (defined as marsh loss >10%). Of particular concern is the rapid decline of high marsh habitat (-25% between 1974 and 2005), which is

utilized by several bird species for nesting, supports a number of rare plants, and provides numerous ecosystem services.

These trends suggest significant marsh drowning is occurring. Marsh drowning is related to the interacting effect of the failure of marsh accretion processes (such as deposition of organic sediments and accumulation of plant biomass) to keep pace with sea-level rise. Hardening of the shoreline, excess nutrients, tidal restrictions, and other land and human-use activities all affect marsh accretion and erosion processes, and contribute to the degradation of these habitats. Marshes can migrate inshore gradually with rising water levels, but the rate at which the sea-level is rising is making it difficult for them to migrate inshore fast enough. Additionally, in some cases, natural or man-made barriers (e.g. hardened shoreline structures) will prevent marshes for migrating inland.

Another significant reason for the loss of native high marsh communities in the Peconic is the invasion of *Phragmites australis*. An 88.5% increase in *Phragmites australis* was recorded in the Peconic between 1974 and 2005.

Impacts on Diadromous Fish Habitat

The construction of dams on freshwater tributaries back in the late 1800's and early 1990's cut off historic migratory routes for diadromous fish, which migrate between fresh and ocean waters. Until recently, the Peconic River had six dams along its length that prevented diadromous fish from migrating up and downstream, blocking access to hundreds of acres of important freshwater habitat. Fish passage structures have recently been constructed at two of these dams, but four barriers remain. Poorly designed road culverts or other physical structures, also block access to freshwater habitats for diadromous fish in other areas around the Peconic Estuary.

This loss of freshwater habitat has contributed to the decline of local diadromous fish species, namely river herring and American eel. River herring, the collective name for two species of fish (Alewife, *Alosa pseudoharengus* and blueback herring, *Alosa aestivalis*), rely on freshwater areas for spawning, with mature adults usually entering freshwater rivers and streams in early spring. The juveniles then grow through the summer in the freshwater environment before heading back out to the estuary and eventually the ocean. American eel has the opposite life cycle. They begin their life in the middle of the Atlantic Ocean and are transported by ocean currents to coastal habitats, eventually making their way into freshwater rivers and streams. They spend many years (up to 40) in the freshwater environment, growing and maturing, before eventually heading back to the ocean to reproduce and die. The decline of these diadromous fish has negative impacts on the health of the Peconic Estuary ecosystem. The movement of diadromous fish from salt to fresh water is especially important in transferring ocean-derived energy into estuarine, freshwater and upland habitats. River herring and American eel also provide prey for countless species during their annual migration.

References and Further Information

Bortman, Marci L. and Nancy Niedowski. 1998. Characterization Report of the Living Resources of the Peconic Estuary: <https://www.peconicestuary.org/characterization-report-of-the-living-resources-of-the-peconic-estuary-1998/>

Cameron Engineering and Associates, LLP. 2015. Long Island Tidal Wetlands Trends Analysis: <http://www.dec.ny.gov/lands/5113.html>

Cerrato, Robert M. and Nicole P. Maher. 2007. Benthic Mapping for Habitat Classification in the Peconic Estuary: Phase I Groundtruth Studies: <https://www.peconicestuary.org/benthic-mapping-report-phase-i-2007/>

Cerrato, Robert M, Roger D. Flood, and Lee C. Holt. 2009. Benthic Mapping for Habitat Classification in the Peconic Estuary: Phase II Ground Truth Studies: <https://www.peconicestuary.org/benthic-mapping-report-phase-ii-2009/>

Cerrato, Robert M, Roger D. Flood, and Lee C. Holt. 2010. Benthic Mapping for Habitat Classification in the Peconic Estuary: Phase III Ground Truth Studies: <https://www.peconicestuary.org/benthic-mapping-report-phase-iii-2010/>

Cerrato, Robert Roger Flood, Michael Frisk, Adrian Jordaan, Tyler Abruzzo, Alison Flanagan, and Michael White. 2017. Integrating Fish Trawl, Water Quality, and Benthic Mapping Data in the Peconic Estuary: <https://www.peconicestuary.org/integrating-fish-trawl-water-quality-and-benthic-mapping-data-in-the-peconic-estuary/>

NYSDEC. 2014. Nitrogen Pollution and Adverse Impacts on Resilient Tidal Marshes: http://www.dec.ny.gov/docs/water_pdf/impairmarshland.pdf

NYS Seagrass Task Force. 2009. Final Report of the New York State Seagrass Task Force – Recommendation to the New York State Governor and Legislator: http://www.dec.ny.gov/docs/fish_marine_pdf/finalseagrassreport.pdf

Peconic Estuary Program. 2015. Peconic Estuary Program Ecosystem Status Report: <https://www.peconicestuary.org/2015-pep-ecosystem-status-report/>

Pickerell, Chris. and Steve Schott. 2017. Peconic Estuary Program 2016 Long Term Eelgrass Monitoring Program: <https://www.peconicestuary.org/2016-pepltemp-report-final-report/>

Stephenson, Laura B. 2010. Eelgrass Management Plan for the Peconic Estuary: <https://www.peconicestuary.org/protect-the-peconic/priority-issues-in-the-peconic-estuary/eelgrass-management-plan-for-the-peconic-estuary-2009/>

Tiner, Ralph W., Herbert C. Bergquist, Denise Siraco, and Bobbi Jo McClain. 2003. An Inventory of Submerged Aquatic Vegetation and Hardened Shorelines for the Peconic Estuary,

New York: <https://www.peconicestuary.org/peconic-estuary-an-inventory-of-submerged-aquatic-vegetation-and-hardened-shore-lines-for-the-peconic-estuary-ny-2003/>

Wiowode, Nathan and Wayne Grothe. 2012. Climate Change Adaptation and the Peconic Estuary: <https://www.peconicestuary.org/climate-change-update-july-2012/>

Young, Byron. 2018. Long Island Alewife Restoration Efforts with Emphasis on the Peconic River – 2010 to 2017: <https://www.peconicestuary.org/2017-alewife-spawning-report/>

Habitat Restoration and Protection Progress To Date

The first iteration of the [PEP Habitat Restoration Plan in 2000](#) included seventy-two (72) habitat restoration sites. By the 2009 update of the Habitat Restoration Plan, fifteen (15) of these habitat restoration projects had been completed. Completed projects included two (2) beach restoration projects, two (2) shorebird habitat restoration projects, seven (7) wetland restoration projects, one (1) *Phragmites* control project, one (1) grassland restoration project, and two (2) water-quality improvement projects.

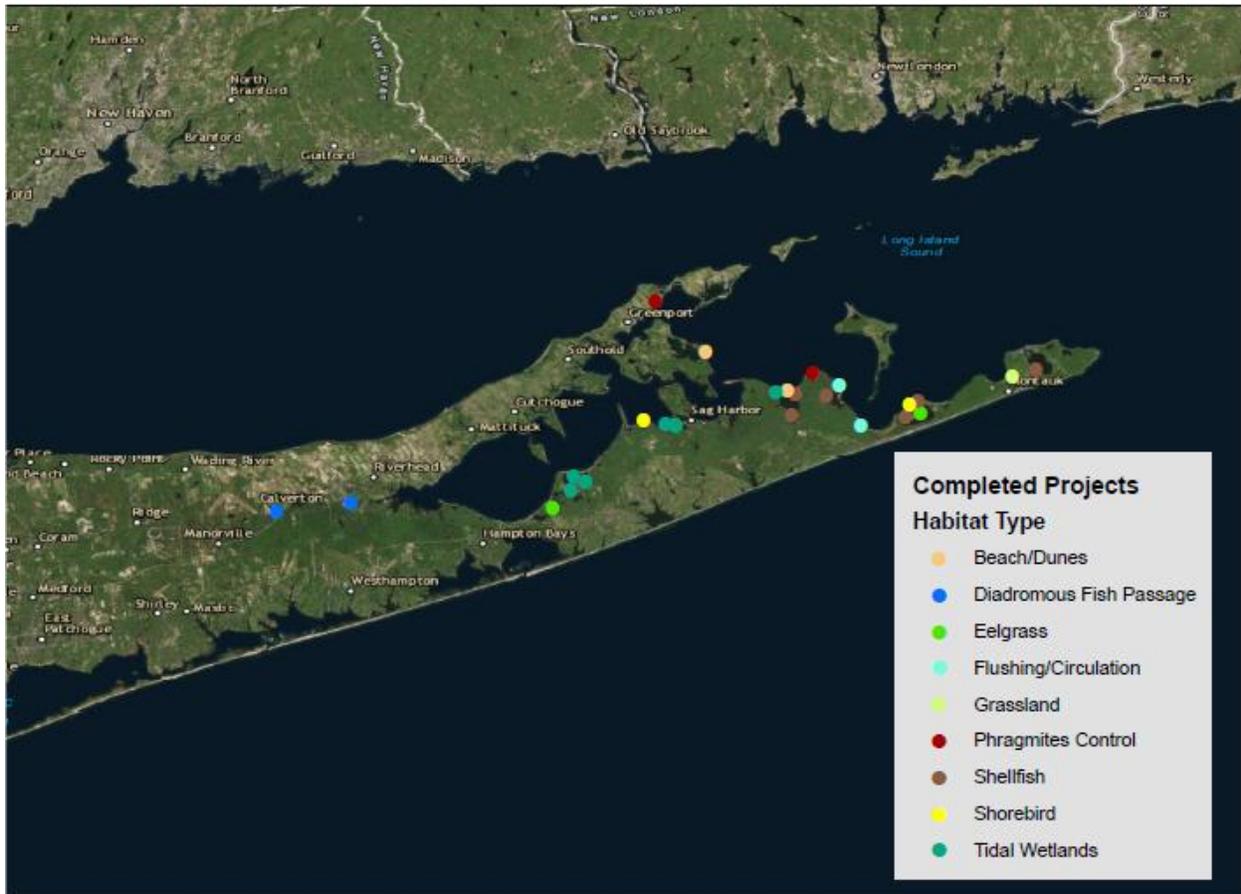


Figure 2: Map of Completed Habitat Restoration Projects in the Peconic Estuary since 2000

The [2009 Habitat Restoration Plan](#) re-listed forty-two (42) of the habitat restoration sites from the 2000 plan and included twenty-nine (29) new habitat restoration site nominations, for a total of seventy-one (71) sites. Since 2009, five (5) additional habitat restoration projects have been added to the list. Of these seventy-six (76) projects, twelve (12) were completed, including two (2) diadromous fish habitat restoration projects, six (6) shellfish restoration projects, two (2) eelgrass restoration/protection projects, one (1) *Phragmites* control project, and one (1) water quality improvement project. Another four projects (4) have been partially completed, six (6) projects are in the engineering design or permitting phase, and seven (7) projects are in the planning/conceptual design phase. Thirty (30) projects have not been initiated, and another seventeen (17) projects were initiated but are no longer in progress, due to a lack of resources, a change in priorities, or because restoration was deemed not feasible. A status tracking table for

the projects listed in the 2009 Habitat Restoration Plan can be found in Appendix A and a Completed Habitat Restoration Project Inventory can be found in Appendix C.

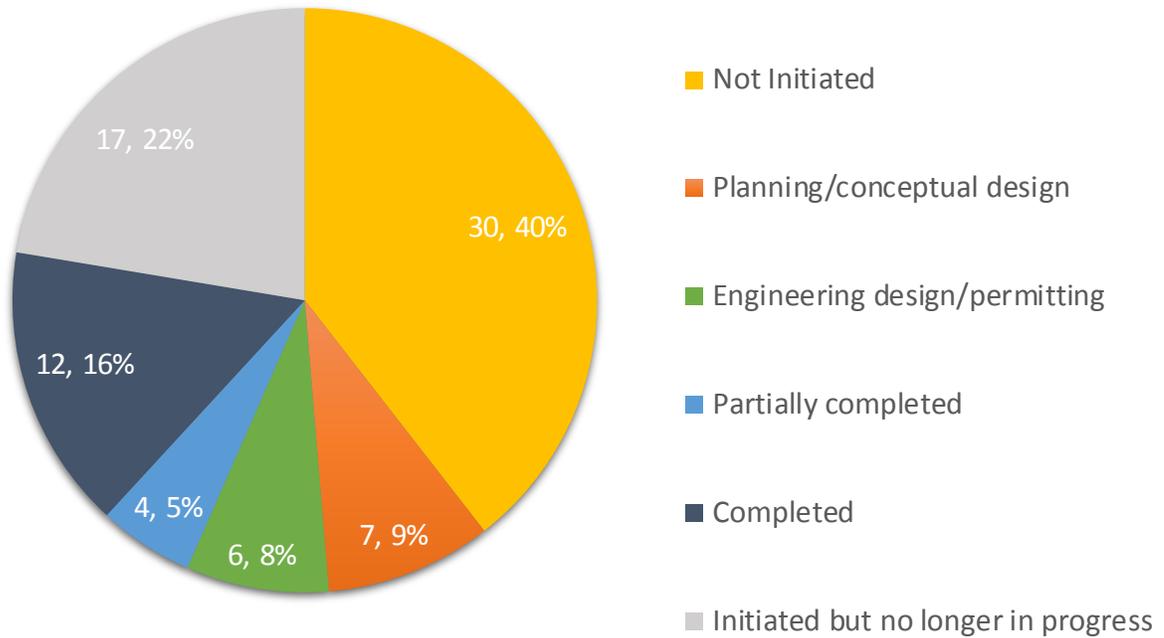


Figure 3: Status of projects listed in the 2009 PEP Habitat Restoration Plan

Status Definitions

- **Not Initiated:** Project planning, design, or permitting services have not yet been initiated.
- **Planning/Conceptual Design:** A conceptual design is being developed or other planning services (e.g., baseline surveys or monitoring) are underway.
- **Engineering Design/Permitting:** Engineering design is being developed or project permits are awaiting approval.
- **Construction:** Physical on-the-ground construction/restoration is currently occurring.
- **Partially Completed:** Physical on-the-ground construction/restoration has been partially, but not entirely completed.
- **Completed:** Physical on-the-ground construction/restoration is complete.
- **Initiated, No Longer in Progress:** Project planning, design, or permitting services were once initiated, but work is no longer occurring. This may be due to a lack of resources, a change in priorities, or because full-scale restoration was determined not to be feasible.

Since 2009, the Peconic Estuary Program has made the most progress on diadromous fish habitat restoration. In addition to the two (2) completed projects, which together restore 60 acres of freshwater diadromous fish habitat, another two (2) projects have been partially completed, and three (3) are in the engineering design/permitting phase.

In contrast, eelgrass restoration has been the least successful. Eelgrass restoration has been attempted at multiple sites within the Peconic Estuary with limited success and the resource has continued to decline, indicating that a new strategy is required.

No wetland restoration projects from the 2009 plan have been completed yet, but two (2) projects are currently in the permitting phase and several others are in the planning/conceptual design phase. Of the 33 *Phragmites* control projects listed in the 2009 Plan, one (1) project was completed, one (1) was partially completed, and four (4) are in the conceptual design/planning phase. However, twenty-two (22) projects were never initiated and another five (5) were initiated but are no longer in progress. This likely reflects the fact that *Phragmites* is hard to eradicate and that these projects are labor intensive, expensive, and often require continued maintenance.

The largest barrier to completing habitat restoration projects has been a lack of funding and resources. Habitat restoration projects take a significant amount of time and money to complete; many steps are required, from planning to engineering design to permitting to actual implementation. Many municipalities do not have funds to undertake habitat restoration projects, yet, most habitat restoration grant programs require anywhere from 25-50% of local match. The high cost of habitat restoration projects and the time and effort needed to apply for funding sources and attain permits highlighted the need for the PEP to provide assistance in advance to local governments to scope out site specific habitat restoration project plans. PEP has committed to funding conceptual habitat designs for priority projects. These conceptual plans have been used to successfully apply for grants for engineering design and implementation funds. However, a long-term sustainable funding source is needed.

In addition to pursuing habitat restoration projects, preserving land from future development has been a high priority in the Peconic watershed. The Peconic Estuary Program has developed a [Critical Lands Protection Strategy](#) (CLPS) that outlines land still available for development and land protection priorities. PEP is currently updating this Critical Lands Protection strategy to account for climate change and rising seas. Benefits to land protection include preserving unique species and natural communities, controlling nutrient and pollution loads to the Estuary, and increasing recreational opportunities within the watershed. Lands may also be targeted for public preservation to advance habitat restoration opportunities and to allow for the natural inland migration of wetland habitats. Since 2006, approximately 2,540 acres of land has been protected in the Peconic Estuary watershed. The most significant source of funding for land protection is the Community Preservation Fund (CPF), administered by the five East End towns. This funding is supplemented by County and State governments, and not-for-profit organizations.

Habitat Restoration Goals and Objectives 2017-2027

The overall goal of the 2017 Peconic Estuary Program Habitat Restoration Plan is to protect and restore Peconic Estuary habitats to support ecosystem function. While all habitats within the Peconic Estuary watershed are important to ecosystem function, submerged aquatic vegetation (SAV), tidal wetlands/shorelines and freshwater diadromous fish habitat have been identified as current priorities for restoration and protection. As noted in the Threats Section, the decline of these habitats is of particular concern, given their value as important breeding and nursery areas for various wildlife. Additionally, in the face of climate change, it will become increasingly important to maintain resilient and high-valued shoreline and nearshore habitats.

There is a recognized need to be more strategic and focused in habitat restoration efforts within the Peconic Estuary moving forward, particularly given limited resources. Habitat restoration efforts in the Peconic Estuary are expected to focus on restoring or recreating priority habitats types that have declined. Projects should be well thought out and should address the underlying cause of decline to ensure a high likelihood of success. Additionally, it will be important to consider the life expectancy of projects under future conditions (e.g. climate change and sea level rise).

GOAL:

Protect and restore Peconic Estuary habitats to support ecosystem function

Priority Habitats:

SAV, Diadromous Fish Habitat, Tidal Wetlands

Guiding Principles for Habitat Restoration:

- Restore/recreate habitat types that have declined (not necessarily restoring to a particular moment in history)
- Understand and address underlying cause of decline
- Restore “restoration ready” habitats where likelihood of success is high
- Take into account climate change and sea level rise

Nine overarching objectives and various associated management and research actions have been developed to address the threats to priority Peconic Estuary habitats. These objectives and actions are meant to guide restoration and protection efforts within the Peconic Estuary watershed over the next decade.

Objective 1: Protect and maintain existing eelgrass beds

Eelgrass in the Peconic Estuary faces numerous threats and has continued to decline in recent decades. Every effort should be made to protect the eelgrass beds that remain in the Peconic Estuary and reduce human disturbances.

Action 1: Promote the use of best management practices for eelgrass conservation (e.g., low impact boating and shellfishing, conservation moorings)

Objective 2: Support research and understanding of eelgrass needs (e.g. light and temperature) and use research to determine potential restoration and enhancement opportunities.

To date, eelgrass restoration attempts in the Peconic Estuary have had limited success. Before additional eelgrass restoration projects are undertaken in the Peconic Estuary, it is important to increase our understanding of the causal factors of eelgrass decline and eelgrass needs.

Action 1: Determine the causal factors of eelgrass decline through development of bio-optical and temperature tolerance model

Action 2: Use bio-optical modeling project results, long-term eelgrass monitoring, and other relevant research to determine restoration potential of eelgrass and suitable restoration/enhancement sites.

Objective 3: Support water quality goals that will increase habitat suitability for eelgrass.

Reducing nutrient loads to the Peconic Estuary and improving water clarity is necessary to support healthy eelgrass growth. Improving water quality in the Estuary should increase the habitat available for eelgrass.

Action 1: Support monitoring and research that will aid in the development of robust water quality goals/standards.

Action 2: Support habitat restoration and protection efforts that will have positive impacts on water quality

Objective 4: Maintain existing high value wetland areas, restore degraded areas, and improve wetland habitat using best management practices and adaptive management.

Protecting and restoring tidal wetland habitat will help to combat the loss of this critical habitat in the Peconic Estuary over the last several decades, and will have numerous benefits for wildlife and people.

Action 1: Complete design and construction of ongoing tidal wetland projects.

Action 2: Support new tidal wetland projects that aim to restore/recreate lost marsh habitat, remove barriers to tidal flow and sediment supply, and control invasive species and increase native wetland plant communities.

Action 3: Support the development and use of tools to prioritize wetland restoration projects based on the potential for climate change/sea level rise adaptation, ecosystem benefits, and other relevant research (e.g. Long Island Tidal Wetland Trend Analysis)

Objective 5: Enhance the resiliency and value of coastal habitats by encouraging living shorelines over hardened shorelines

With the threat of rising seas and climate change, increased need/demand for the construction of hardened shoreline structures is expected. The construction of living shorelines as an alternative to hardened shorelines will have numerous positive impacts, including habitat creation, erosion control, and resiliency to sea level rise.

Action 1: Identify and support pilot living shoreline projects

Action 2: Use pilot projects to refine approach/methods and to educate the public on the benefits of living shorelines

Objective 6: Continue to restore and enhance viable diadromous fish habitat in the Peconic Estuary watershed

Restoring diadromous fish habitat and river/stream connectivity in the Peconic Estuary watershed will promote the recovery of local diadromous fish species and improve biodiversity in the Peconic Estuary.

Action 1: Complete design and construction of ongoing habitat connectivity projects on the Peconic River

Action 2: Identify and support the design and construction of fish passage/habitat connectivity projects in other areas of the Peconic Watershed

Objective 7: Preserve remaining high-value undeveloped lands and areas that will allow for the natural inland migration of critical wetland habitats as sea level rises.

Continuing to preserve open space will help protect Peconic Estuary habitats from additional development impacts. Additionally, preserving upland areas adjacent to wetlands will help prevent the loss of wetland habitats to rising seas.

Action 1: Complete update of the PEP Critical Lands Protection Strategy to take into account sea level rise, and disseminate to State, County, Town and Non-Profit Partners for implementation.

Action 2: Work with partners to identify developed shoreline areas that should be targeted for protection and conversion back to a natural state.

Objective 8: Develop and support projects that engage the public in the restoration and stewardship of Peconic Estuary habitats.

Engaging the public in habitat restoration projects is necessary to increase the public's understanding of the importance of Peconic Estuary habitats, and to bolster support for habitat restoration and protection efforts.

Action 1: Use habitat restoration projects for outreach events

Action 2: Involve citizen scientists in pre and post-project monitoring

Objective 9: Support research and monitoring that will help guide and evaluate the success of habitat restoration projects.

Research and monitoring of Peconic Estuary habitats is necessary to increase our understanding of the causes of habitat decline. Post-restoration monitoring is needed to ensure habitat restoration efforts have the intended benefits and to allow for adaptive management.

Action 1: Conduct aerial surveys to track changes in eelgrass extent every 3-5 years, continue to support the Long-term Eelgrass Monitoring Program and explore additional monitoring technologies to evaluate the health of eelgrass habitat.

Action 2: Support studies that will continue to enhance our understanding of SAV habitat in the Peconic Estuary, including studies of the groundwater influence on the health of eelgrass meadows, both negative (nitrogen, pesticide and herbicide input) and positive (modifying water temperatures) impacts, studies on eelgrass traits/population genetics and resiliency to environmental stressors, and studies on the value and restoration potential of SAV habitats other than eelgrass.

Action 3: Quantify the amount of hardened vs. living shoreline in the Peconic Estuary within the next 2 years and track thereafter every 3-5 years.

Action 4: Develop a wetland monitoring program to track changes in marsh extent and condition overtime, and monitor the success of wetland restoration projects.

Action 5: Develop an alewife monitoring plan for the Peconic to track success of fish passage projects and population status.

Ten measurable targets have also been developed to gauge and track the success of restoration and protection efforts. These targets were developed through stakeholder input and represent the expected outcomes from the implementation of the above objectives and actions. Restored acreage goals for tidal wetlands/shorelines and diadromous fish habitat are based on the approximate number of acres that would be restored if all ongoing and current identified priority projects listed in this plan (*see next section*) were completed. Progress toward these goals will be tracked by the PEP State Coordinator and Natural Resources Subcommittee.

Measurable targets (10-year targets)

SAV Targets:

- Increase in eelgrass shoot density and extent in existing beds
- Overall net increase in extent of Peconic eelgrass beds

Wetland/Shoreline Targets

- Restore 250 acres of tidal wetland habitat
- Net increase in native high marsh habitat and total native marsh habitat from 2005 level
- Net decrease in acres of invasive Phragmites from 2005 level
- No net increase in hardened shorelines (includes breakwaters, bulkheads/seawalls, groins, jettys, piers, and revetments) from next measurement

Diadromous Fish Habitat Targets:

- Restore 242 acres of diadromous fish habitat on the Peconic River
- Restore an additional 60 acres of diadromous fish habitat within other areas of the Peconic watershed
- Increase in the alewife population in the Peconic River from current level

Land Protection Targets:

- Acres of Protected Land (*specific target to be determined after CLPS reprioritization*)

Priority Habitat Restoration Projects

The Peconic Estuary Program has worked with the East End municipalities, non-profit partners, and other stakeholders to identify priority habitat restoration sites/projects for the 2017 Habitat Restoration Plan that align with the above Habitat Restoration Goals and Objectives. The Peconic Estuary Program solicited input on the projects from the 2009 Habitat Restoration Plan and new potential projects. Twenty-six (26) projects have been re-listed from the 2009 Habitat Restoration Plan, that are either in-progress or remain priorities. Additionally, fifteen (15) new habitat restoration site nominations are included in the 2017 Plan, for a total of forty-one (41) projects.

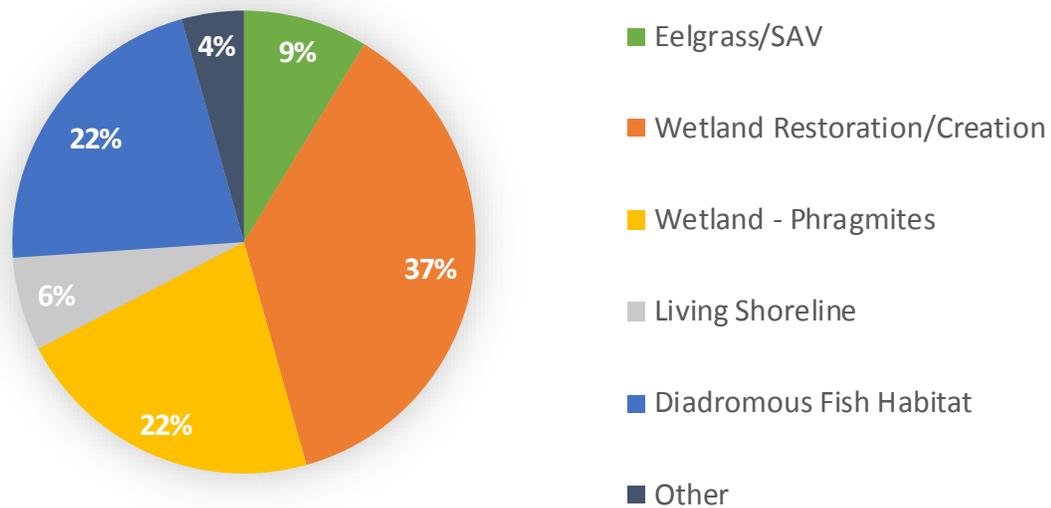


Figure 4: Habitat Restoration Projects listed in 2017 Plan by Habitat Type

Projects were classified as either “high priority (HP)” or “secondary priority (SP).” High priority projects seek to restore the identified priority habitat types (SAV, Tidal Wetland/ Shoreline, Diadromous Fish Habitat) and have well thought-out plans and methods. PEP plans to actively work with its partners to obtain design and implementation funding for these high-priority projects. Secondary priority projects seek to restore habitats other than the identified priority habitats, but still align with overall goals and objectives of this plan, *OR* require further information before they can be considered a high priority. *Phragmites* control projects that do not include a wetland restoration component were also listed as secondary priorities. PEP will assist with secondary priority projects in the forms of letter of support and expertise. Twenty-two (22) projects were classified as HP and nineteen (19) as SP.

This Habitat Restoration Plan Project list is meant to be adaptable. The priority project list will be reviewed annually, and projects may be added, modified, or removed as appropriate. Project priorities may be adjusted based on funding opportunities that become available.

A brief description of the high priority and secondary priority projects included in the 2017 Habitat Restoration Plan is provided below. For a complete list of habitat restoration projects from the 2009 Plan, see Appendix A. For a complete list of the 2017 habitat restoration site nominations, see Appendix B.

Southold

Re-Listed from 2009 Plan

Arshamomaque Preserve Phragmites Control (SP)

This project involves the removal of 20 acres of invasive *Phragmites* and restoration of the habitat to its natural state within the Arshamomaque Preserve using accepted best management practices. The Town plans to use funding from a 2016 NYS DOS LWRP Grant to map and assess the *Phragmites* infestation and potentially implement some control measures.

Budds Pond Wetland Restoration (SP)

Suffolk County owns an open space parcel on Route 25 and Budd's Pond in Southold adjacent to the Willow Point subdivision off Bay Home Road and an open space parcel within the Willow Point subdivision where the Town has drainage issues. A portion of the County parcel on Route 25 was filled with dredge materials in the past. This project would be to restore the elevations and marsh areas to historic or surrounding marsh elevations. Further information is needed on project plans and benefits.

Downs Farm Preserve and Downs Creek Phragmites Eradication (SP)

These properties consist of a 50 acre Southold Town nature preserve and an adjacent 18 acre Town owned creek. The northern section of Downs Creek and adjacent areas on Downs Farm Preserve are choked with invasive *Phragmites*. The approximate area of the *Phragmites* infestation on the Town properties is 5 acres. Project would entail removal of the *Phragmites* and restoration to native vegetation. The removal coupled with the long term control of *Phragmites* will promote the re-establishment of native vegetation and important waterfowl and wading bird habitat. There are additional privately owned areas along Downs Creek that also have some *Phragmites* issues. One of these properties is covered by a Peconic Land Trust easement. It may be possible to involve these private land owners in the project.

Fleets Neck Wetland Restoration (SP)

Located at the end of East Road and owned by Southold Town the site is approximately a half acre. The project would remove prior placed dredge material, and require excavation and re-grading to historic or surrounding marsh elevations. Further information is needed on project plans and benefits.

Husing Pond Phragmites Eradication (SP)

Husing Pond Preserve is a 21 acre preserve owned by The Nature Conservancy consisting mostly of a fresh water pond and surrounding marsh area. Most of the perimeter of the pond and a section of the marsh area are choked with invasive *Phragmites*. The approximate area of the *Phragmites* infestation on the preserve is 4 acres. There is an additional 1 acre area of *Phragmites* on adjacent privately owned properties and a small Town of Southold owned property that could also be included in the project. Project would be removal of the *Phragmites* and restoration to native vegetation. The removal coupled with the long term control of

Phragmites will promote the re-establishment of native vegetation and important waterfowl and wading bird habitat.

Narrow River Phragmites Control and Wetland Restoration (HP)

Narrow River is a tributary of the Peconic Bay and flows south from the Town's Whitcom Marsh Preserve under Route 25 and along the eastern side of Narrow River Rd in Orient, NY. NY State owns most of the properties on the east side of Narrow River Rd and the Town and County own farm land development rights on both sides of the road that includes tributaries to Narrow River. An earthen dam was constructed after the 1938 hurricane to prevent tidal flooding of the lands north of the dam. The western-most section of the dam blocked the tidal flow from Narrow River to the large meadow area north of the dam known as Broad Meadows and Whitcom Marsh Preserve north of Route 25. The dam was modified overtime to include culverts, but these culverts are no longer functioning as originally designed and allow very little water to drain to the south. Additionally, the wetlands north of the earthen dam and culvert to Whitcom Marsh Preserve, which were historically used for duck hunting, are currently choked with *Phragmites*. Remediation of the culvert and earthen dam will improve the tidal exchange throughout the extent of the river and increase the salinity of the river. These actions, potentially combined with recommended prescribed burns, will help to eradicate the *Phragmites* and will promote the re-establishment of native vegetation and important waterfowl and wading bird habitat. The potential extent of the restoration area is 80 acres. PEP is currently funding a conceptual habitat restoration design for this site.

Nassau Point Wetland Restoration (HP)

This 13-acre property, owned by the Cutchogue-New Suffolk Park District, is a filled historic wetland. The proposed project would remove prior placed dredge material/fill, excavate, and re-grade to historic/surrounding marsh elevations. Revegetation with salt marsh species will be accomplished with both proactive plantings and natural recruitment. Dredge material will either be removed from the site or redeposited on site along Nassau Point Rd similar to the method used for the Cassidy Preserve marsh restoration project completed in Greenport which proved to be successful and cost effective.

Paul Stoutenburgh Preserve Phragmites Control and Wetland Restoration (HP)

This project involves the removal of 6 acres of invasive *Phragmites* and restoration to native vegetation within the larger Paul Stoutenburgh Preserve (*formerly* Arshamomaque Pond Preserve). The Town repaired a collapsed culvert that was preventing tidal flow into one of the areas infested with *Phragmites*. This area is now tidal again but still in a state of flux so it isn't clear how successful this action was yet. The overall project includes other areas not connected to the area where the culvert was repaired as well as other possible techniques for dealing with the area where the culvert was repaired. Currently accepted removal and restoration practices will be used.

Pipe's Cove Phragmites Control (SP)

This project involves the removal of 12 acres of invasive *Phragmites* and restoration of the habitat to its natural state at Pipe's Cove using accepted best management practices. The Town plans to use funding from a 2016 funding NYS DOS LWRP Grant to map and assess the *Phragmites* infestation and potentially implement some control measures.

Silver Lake/Moore's Drain Aquatic/Wildlife Passage (SP)

This project was originally a diadromous fish passage restoration project. However, a [conceptual design](#) was completed with PEP funds in 2013 and diadromous fish passage was not recommended. Other recommendations were made to manage this unique habitat. Moore's Drain, its surrounding wetlands, and Moore's Woods consist of 300 acres of largely protected land. The new project scope is to improve stream continuity and aquatic and wildlife passage. The Town of Southold is moving forward with the recommendation from the 2013 Conceptual Design to daylight Moore's Drain at Skipper Horton Park. The Town was awarded a NYS DOS LWRP Grant that includes funding for this project.

Widow's Hole Preserve Living Shoreline/Wetland Restoration (HP)

Widow's Hole Preserve in Greenport Village is currently owned by Peconic Land Trust. The property was previously used as a petroleum produced storage facility which resulted in the alternation and degradation of the shoreline at this preserve. Additionally, in recent years, hurricane and winter storms have caused considerable erosion along the upland edge of the shoreline, which has negatively impacted what remains of the marsh that once covered a large section of the Preserve's waterfront. A number of invasive species have been identified at this site. This project would remove the invasive plants, restore areas of lost salt marsh and replant the upland edge of the shore with native coastal grasses to increase the habitat value of the site, and resiliency to natural disturbances. This project will serve as a demonstration living shoreline project and will include post-project monitoring. PEP is funding this project, which is being led by Cornell Cooperative Extension of Suffolk County.

New Projects

Arshamomaque Preserve Diadromous Fish Passage (SP)

Assess connectivity between Pipes Cove/Peconic Bay and Arshamomaque Pond north of Main Road to determine if the pond provides or has the potential to provide spawning habitat for river herring. Fish passage restoration should be pursued if warranted.

Cedar Beach Wetland and SAV Restoration (HP)

The Cedar Beach Creek Habitat Restoration Demonstration Project will restore local essential ecosystem functions in a degraded marsh system. It will create numerous marsh islands from the beneficial reuse of clean dredge material, planting of submerged aquatic vegetation (*Ruppia maritima*), and oysters (*Crassostrea virginica*) into a complex 65 acre marsh, beach, and open water mosaic. Cedar Beach Creek is productive for marine finfish, shellfish, and other wildlife and contributes significantly to the biological productivity of Noyack Bay. Project will be implemented by Cornell Cooperative Extension of Suffolk County. Funding for this project has been secured from the US Army Corps of Engineers.

Corey Creek Wetland Restoration (HP)

There are two areas totaling 17 acres adjacent to Corey Creek that were filled with dredge material from past dredging of the creek. The proposed project will remove prior placed dredge material/fill, excavate, and re-grade to historic/surrounding marsh elevations. Revegetation with salt marsh species will be accomplished with both proactive plantings and natural recruitment. Dredge material will either be removed from the site or redeposited on site in adjacent upland

areas similar to the method used for the Cassidy Preserve marsh restoration project completed in Greenport which proved to be successful and cost effective. Eleven parcels in the project area are included on the Town's CPF list for potential easement or fee title acquisition for open space and/or wetlands protection purposes. Most of these parcels are contiguous with Corey Creek Park which is owned jointly by the Town and County.

Eugenes Creek Wetland Restoration (HP)

The section of Eugenes Creek north of Eugenes Rd includes an 8-acre area of land filled with dredge material from past dredging of the creek. The proposed project will remove prior placed dredge material/fill, excavate, and re-grade to historic/surrounding marsh elevations. Revegetation with salt marsh species will be accomplished with both proactive plantings and natural recruitment. Dredge material will either be removed from the site or redeposited on site in adjacent upland areas similar to the method used for the Cassidy Preserve marsh restoration project completed in Greenport which proved to be successful and cost effective. Seven parcels in and near the project area are included in the Town's CPF list for potential easement or fee title acquisition for open space and/or wetlands protection purposes.

James Creek Wetland and SAV Restoration (HP)

Marsh islands within James Creek have shown a significant deterioration over the past decade. This project will involve the beneficial reuse of clean dredge material to restore marsh islands as well as planting of submerged aquatic vegetation into a complex marsh and open water mosaic. The project will use methods currently proposed for the Cedar Beach Creek Habitat Restoration Demonstration Project and/or methods used for the restoration of marsh islands in Jamaica Bay over the past decade. The project will lead to meaningful enhancement of the local marine environment through restoration of essential ecosystem functions in a degraded marsh system.

Terry/Edwards Preserve Wetland Restoration (HP)

The Peconic Land Trust is seeking to restore, protect, and enhance the wetlands and woodlands on two adjacent preserves, totaling 30.5 acres, that are owned by the Trust, and located in Orient, New York. This project combines two previous projects from the 2009 Plan (TGA Wetland Restoration and Edwards Preserve Wetland Restoration). The project involves the reconfiguration of an open double dike design to reestablish water flow into the wetland emergent marsh. This will help control the spread of invasive species like *Phragmites australis* and reestablish a healthy wetlands environment for numerous waterfowl, water birds, and other wetland dependent wildlife.

Town and Jockey Creeks Wetland Restoration (HP)

Marsh islands at the mouth of Town and Jockey Creeks have degraded significantly over the past 20 years. This area was formerly a Piping Plover nesting area but with the islands now completely submerged at high tide it no longer provides viable nesting habitat for this species. Interior areas of the creeks are also experiencing erosion due to the loss of the protection from the tidal action of the open bay the islands formerly provided. This project will involve the beneficial reuse of clean dredge material to restore the marsh islands, including creating some viable Piping Plover nesting habitat, as well as planting of appropriate vegetation. The project will use methods currently proposed for the Cedar Beach Creek Habitat Restoration Demonstration Project and/or methods used for the restoration of marsh islands in Jamaica Bay

over the past decade. The project will lead to meaningful enhancement of the local marine environment through restoration of essential ecosystem functions in a degraded marsh system and provide viable Piping Plover nesting habitat. The islands are included on the Town's CPF list for potential easement or fee title acquisition for wetlands habitat protection purposes.

Southampton

Re-Listed from 2009 Plan

Iron Point Wetland Restoration (HP)

The marshes at Iron Point were much larger historically. The western portions of the Iron Point marshes were either completely filled creating upland or were surrounded by earthen berms and used as dredge spoil sites. Currently, the western and northern margin of the existing Iron Point marsh is dominated by invasive *Phragmites australis*. The central portion of the existing marsh features a large marsh pond/panne and the eastern portion of the marsh is comprised of native high and intertidal marsh vegetation. The native marsh is maintained by tidal exchange with the Peconic River through a gap in the earthen berm and ditches that enters the northeastern tip of the marsh and runs along its southern and northern margins nearly to the salt panne. Additional berm gaps and excavated marsh channels are needed to increase tidal flooding and salinity to increase native marsh area within this marsh complex. This project proposes to excavate at least two (2) cuts, within the dike, along the Peconic River, to allow for tidal flow and flooding to the formerly connected interior tidal wetlands. This will restore and enhance habitat for wading birds, finfish, black duck and other waterfowl. PEP is currently funding a conceptual habitat restoration design for this site.

Ligonee Brook Diadromous Fish Passage Restoration (SP)

This project involves the restoration of freshwater flow and freshwater wetlands through culvert remediation/replacement, in order to enhance historic alewife runs and American eel passage within Ligonee Brook, which connects Long Pond to Sag Harbor Cove. PEP funded a [Conceptual Habitat Restoration Design](#), which was completed in 2013. This study determined that Ligonee Brook does not include any barriers that prohibit fish from reaching Long Pond under ideal flow conditions; however, the study noted that several crossings severely limit natural stream continuity and should be improved or replaced once their service life has been exceeded. One of the recommendations from the conceptual design was done by the Friends of Long Pond Greenbelt in 2014. Two culverts under the Old Rail Road Crossing were removed and a small pedestrian bridge was installed. Currently Friends of Long Pond Greenbelt is pursuing Suffolk County funding for culvert remediation at the Bridgehampton-Sag Harbor Turnpike crossing. Culvert remediation will hopefully happen during Suffolk County's planned remediation of CR 79- Bridgehampton-Sag Harbor Turnpike.

North Sea/Alewife Creek Diadromous Fish Passage Enhancement (HP)

Alewife Creek, which runs relatively unobstructed between Big Fresh Pond and North Sea Harbor, boasts Long Island's premier alewife migration run. The size of the run has been estimated at over 100,000 fish. However, this impressive run could potentially be improved, by improvements at both the Noyak Road and North Sea Road crossings. Road shoulder and culvert repairs, as well as sediment and debris removal, are needed at North Sea and Noyac Roads to enhance flows and improve adult alewife fish passage within Alewife Creek. Baffles were placed in North Sea Road box culvert to raise water levels but problems with the culvert remain. The

Noyac Road culvert lies adjacent to an extensive area of town nature preserve that is dominated with non-native and invasive plants. There is an opportunity to design a native plant wetland area to receive and treat road runoff and to create a public educational area. This is an excellent location to witness the alewife run on an incoming tide in spring.

Woodhull Dam/Wildwood Lake Diadromous Fish Passage Restoration (HP)

The Woodhull Dam is the next major barrier to diadromous fish passage on the Little River, a major tributary of the Peconic River. Providing permanent fish passage at Woodhull Dam will create access to 95 acres of prime spawning and maturation habitat within the preserved lands of Wildwood Lake and Cranberry Bog Preserve for American eel and approximately 80,000 river herring. Funding for the construction of the dam was awarded to Suffolk County Parks/PEP through a NYSDEC Water Quality Improvement Project (WQIP) Grant. The project includes the construction and installation of a combination Denil pass and step pool fish passage and eel passage through the dam bypassing the existing culvert. A video monitoring and fish counter system will also be installed.

New Projects

Peconic River Shoreline and Wetland Restoration (HP)

This project seeks to restore the southerly shoreline and wetlands along the Peconic River between Peconic Avenue and Cross River Drive in the Hamlet of Riverside. The Town and County own approximately one-fourth of the shoreline properties in this section, while the rest is privately owned. Historically this area was part of a natural estuarine and riverine system with tidal and freshwater wetlands, but today is degraded as a result of development and land use activities. Much of the shoreline in this area consist of berms, impoundments and dredge spoil fill that create an unnatural embankment along the shoreline, which has adversely impacted the water quality in this area and led to the colonization by invasive plants. The Flanders, Riverside and Northampton Civic Association (FRNCA) in collaboration with the Town and County, have been awarded a \$50,000 New York State Environmental Justice Community Impact Grant that will fund the preparation of a plan for passive recreational use of the County property in addition to a plan for the removal of shoreline dredge spoil and non-indigenous plants and the restoration of the shoreline within 75 feet of the River edge. It is the intent that this plan will serve as a prototype for the restoration of the entire Peconic River shoreline in the Riverside community. In addition to the ultimate restoration of the approximately 4,000 linear feet of County and Town owned shoreline, the Town also proposes to prepare a Wetland and Habitat Restoration Plan for the 15.5-acre Town property. This restoration would be similar to the Iron Point Wetland Restoration project consisting of the re-establishment and enhancement of approximately 12.5 acres of wetland by restoring tidal flow to formerly connected interior wetlands and ponds. The project will restore and enhance habitat for wading birds, finfish, black duck and other waterfowl. It is estimated that \$25,000 are needed for wetland restoration design and planning. The physical construction and restoration of wetlands is expected to be financed through a Fairshare Mitigation Fund, collected and managed by the Town, as properties in the hamlet are developed in accordance with the Riverside Revitalization Action Plan. Other potential sources of funding include the Town's Community Preservation Fund.

Round Pond Shore Restoration (SP)

10 years ago the Town of Southampton developed a plan to remove the bulkhead on Round Pond at Middle Line Highway and restore the shoreline. It received NYSDEC approval but was never implemented. Since then, a parcel to the south of the bulkhead, now known as Kennedy Park, has been purchased by Southampton's Community Preservation Fund and returned to its natural state. On the Sag Harbor side of the road, the property is owned by Oakland Cemetery and remains in a natural state. Friends of the Long Pond Greenbelt is working with stakeholders in an effort to update and revive the bulkhead removal plan. This project would extend the natural shoreline from Kennedy Park to the other side of Middle Line Highway. Round Pond is one of the Long Pond Greenbelt's unique coastal plain ponds.

East Hampton

Re-Listed from 2009 Plan

Alewife Brook Alewife Access and Habitat Enhancement (HP)

Alewife Brook, Alewife Pond and Scoy Pond (freshwater) are linked to Northwest Harbor. The system should be assessed to determine if it could benefit from improved access to Scoy Pond. A new culvert at Alewife Brook Road and clearing and control of *Phragmites* would likely allow substantial growth of the system's river herring run. The potential restoration area is 15 acres.

Lake Montauk Alewife Access and Habitat Enhancement (HP)

The high quality freshwater habitats in Big Reed Pond and Stepping Stones likely provide suitable habitat for the spawning adults and juvenile alewives, but are separated from tidal waters (except during the highest tides resulting from coastal storms) by culverted earthen berms supporting paved or dirt roads. This project aims to restore connectivity between Lake Montauk and the Little Reed Pond/Big Reed Pond system by replacing an undersized impassible culvert and removing *Phragmites*. The project also aims to restore access to Stepping Stones Pond from the southern end of Lake Montauk by replacing an undersized, impassible culverts under Old West Lake Drive and removing debris. PEP is currently funding a conceptual habitat restoration design for this site.

New Projects

Accabonac Harbor Integrated Marsh Management (SP)

The Long Island Tidal Wetlands Trends Analysis indicates Accabonac Harbor experienced high marsh loss (-46.5 acres) between 1974 and 2005. Of particular concern is the conversion of high marsh to intertidal marsh. Additionally, Accabonac Harbor also suffers from water quality issues. Long-term, large scale restoration of this marshland and the natural hydrology should be pursued. Additionally, the need and effectiveness of mosquito control ditches as an alternative to spraying insecticides should be determined. Further assessments at this site are needed to inform restoration efforts. A baseline assessment of water quality, benthic habitats, and aquatic organisms is needed.

Napeague Harbor Eelgrass Restoration (HP)

Napeague Harbor supports some current eelgrass beds. Eelgrass restoration attempts have been conducted over a number of years in this harbor by Cornell Cooperative Extension of Suffolk County, in an attempt to expand the resource. However, only a few very small patches of

eelgrass persisted more than a year. Future restoration work at this site will investigate possible connections between groundwater seepage and the presence of eelgrass in Napeague Harbor.

Pussy's Pond Phragmites Control and Shoreline Restoration (SP)

Pussy's Pond lies at the head of Accabonac Harbor, which is known for its beautiful salt marsh habitat and abundant shellfish, fish and birds. A previous PEP funded subwatershed management plan for Accabonac Harbor documented the Pussy's Pond site as a high priority site threatened by water quality. Additionally, the site has been invaded by *Phragmites* and the eastern bank is vulnerable to erosion and runoff. To address these issues, a *Phragmites* management plan and living shoreline project was designed and implemented on the eastern bank of Pussy's Pond. The project included the installation of coir fascine, native plantings, and the creation of bioswales. On the western bank of Pussy Pond approximately 125 linear feet, or a 2,200 square ft. area of *phragmites australis* shoots, roots, and rhizomes were excavated using a hydraulic excavator and trucked off-site for disposal. The excavated area was replaced with native sand and the natural slope and edge the pond bank was restored. Native plantings on the western bank of Pussy Pond are still needed. Additional project maintenance may also be needed. Benefits include; deterrence of nuisance waterfowl, increase in riparian habitat, filtration of runoff pollutants, and a demonstration of best waterfront practices.

Shelter Island

Re-Listed from 2009 Plan

Coecles Harbor Eelgrass Restoration (HP)

Coecles Harbor is one of the last remaining harbors in eastern Long Island that still has eelgrass. Understanding the health of the eelgrass meadow in Coecles Harbor is important for managing this habitat in the Peconic Estuary and it was recently added to the PEP Long-term Eelgrass Monitoring Program in 2017. Information gathered should help guide strategies to promote the health of eelgrass in Coecles Harbor through conservation and enhancement actions. Recent evidence revealed significant overlap of moorings within the eelgrass meadow and the deteriorating impact it has on this habitat. Practices to reduce the physical impact of activities that occur in Coecles Harbor should be promoted, including best boating practices and investigating the application of conservation moorings.

Shell Beach Revegetation (SP)

Historically, Shell Beach was a narrow sand spit comprised of maritime beaches and shallow tidal flats or sandbars. Oak Tree Lane was constructed in the mid-1960s by importing fill to create a higher elevation area for the roadway. The artificial creation of high elevation areas allowed the colonization of upland plants, particularly woody trees and shrubs, which are not tolerant of the inundation by tides and storms. Currently, Shell Beach features plant assemblages typical of coastal habitats as beaches, dunes and swales, wetlands, maritime grasslands and heathlands, and early successional woodlands. Some areas of Shell Beach are dominated by native plants, while other areas are dominated by invasive plants that have substantially altered ecological conditions. The Town obtained a DEC permit to repair Shell Beach after severe damage in a 2006 storm. In conjunction with the shoreline stabilization, the Town identified a goal of implementing a "Strategic Ecological Restoration Plan" to improve ecological conditions and shorebird nesting habitat by removing invasive plant species from Shell Beach. PEP funded a [conceptual habitat restoration design](#) for invasive species management and native revegetation

at this site, which was completed in 2012 and subsequently updated in 2013 after Hurricane Sandy. Shelter Island is expected to complete the revegetation, which is critical for maintaining the beach and a requirement of a DEC permit.

Turkems Rest (formerly Sposato Property) Invasive Management (SP)

This town-owned property is 6 acres in size. The parcel is bordered by Fresh Pond on the North and by South Midway Road on the South. Approximately 40% of the property is tidal wetland consisting of invasive *Phragmites* with patches of *Spartina* grass. The remaining portion is upland woods and consists mainly of wild cherry, oak and black locust trees. The property provides a diversity of habitat, has fragile salt and brackish water wetlands, frontage on Fresh Pond, presents sensitive archaeological issues and the town plans to keep it undeveloped. However, the property would greatly benefit from removal of the invasive species--both the *Phragmites* and any bittersweet, mile-a-minute or other vines that are encroaching. Culvert replacement work was recently completed at Midway Road to restore/improve flow.

New Projects

Shelter Island Marsh Island Restoration (SP)

There has been a rapid loss of Shelter Island's marsh islands in numerous creeks, including Dickerson Creek, Gardiner Creek and Hay Beach Pond. Additionally, the Long Island Wetlands Trends Analysis indicated Shelter Island has lost 45% of its overall marsh area from 1974 to 2005 and 20 wetland complexes were classified as "at risk" (>10% marsh loss). There is a need to assess the areas with large marsh loss and then develop restoration strategies, where appropriate.

Fresh Pond Diadromous Fish Passage (SP)

The connectivity between West Neck Harbor and Fresh Pond should be assessed to determine if the pond has the potential for spawning habitat for river herring. Culvert replacement work was recently completed at Midway Road to restore/improve flow. Fish passage restoration should be pursued if warranted.

Sanctuary Pond Diadromous Fish Passage (SP)

The connectivity between Sanctuary Pond and Bass Creek should be assessed to determine the potential for river herring spawning habitat. Fish passage restoration should be pursued if warranted.

Riverhead

Re-Listed from 2009 Plan

East Creek Phragmites Control (SP)

This site is located on Peconic Bay Blvd at Town Beach boat ramp area. Entire open space parcel is about 38 acres, 1-2 is freshwater wetlands. Culvert under Peconic Bay Blvd appears to have collapsed. Phragmites has invaded the freshwater areas to the north and some of the tidal areas. Drainage improvement (culverts) would yield considerable flushing capacity.

Peconic River Invasive Species Control (SP)

Riverhead has identified that the following sites could benefit from invasive species removal or control: Peconic Edwards Avenue, Peconic Upper Mills, Peconic Seep, Peconic Upper Sawmill,

and Warner Duck Farm. The primary invasive species of concern are Phragmites and Japanese knotweed.

Indian Island Tidal Wetland Restoration (HP)

This project aims to restore a tidal wetland located within the Indian Island County Park that adjoins with Terry Creek and Flanders Bay. Dredging of nearby creeks in the 1940s-1970s accounted for nearly 1 million cubic yards of dredge material being placed over 54 acres at Indian Island County Park- wiping out an entire tidal wetland ecosystem. This project seeks to excavate approximately 6,400 cubic yards of previously placed dredge materials from the site, install tidal channels and restore the area to a productive salt marsh ecosystem. The main tidal channel will need to pass through an existing active park roadway (Creek Road), requiring the placement of a bridge and road crossing. The restored marsh system will be established based on similar local reference high and low marsh elevations; with particular focus to allow for marsh migration and vegetation shifts in response to sea level rise.

Meeting House Creek (MH-2 Main Road) Wetland Construction/Restoration (HP)

This site is located at a large wetland area that forms the headwaters to Meetinghouse Creek in Riverhead, New York. The property is owned by the Town of Riverhead. The wetland vegetation is dominated by Phragmites. The drainage area consists of 5.6 acres, of which 60 percent (60%) is impervious surface from Main Road, a high traffic highway, and the southern end of Church Lane. A 0.6 acre constructed wetland is proposed to prevent an existing wetland from sedimentation. An existing outlet structure will be retrofitted to direct flow to the proposed wetland. Flows exceeding this rain event will transverse an emergency spillway to the existing wetland. Benefits of the project include having an area to treat the water quality volume, improved wetland biodiversity and an opportunity for public education and educational signage. PEP is currently funding a conceptual habitat restoration design for this site.

Upper Mills Diadromous Fish Passage Restoration (Peconic River, Phase II) (HP)

The Upper Mills Dam is approximately 2.9 miles from the mouth of the Peconic River in Flanders Bay. It is an earthen embankment with an asphalt/concrete road on top and two parallel spillways. The dam is currently owned by PSEG but is maintained by the Town of Riverhead. Additionally, USGS maintains a concrete weir two-hundred and fifty (250) feet downstream of the dam in order to measure the stage and discharge of the Peconic River. Both the dam and weir impede diadromous fish passage to critical freshwater spawning and maturation habitat. Dam removal should be considered at Upper Mills. If this is not feasible, a permanent fish passage structure is needed at the Upper Mills Dam. PEP is also working with USGS on a fish passage solution at the USGS weir. This project will restore 40 acres of critical diadromous fish habitat on the Peconic River, and is part of an overall effort to restore over 300 acres of diadromous fish habitat on the Peconic River.

Brookhaven

Re-Listed from 2009 Plan

Forge Rd/Peconic Lake Diadromous Fish Passage Restoration (Peconic River, Phase III) (HP)

Forge Road Dam is approximately 4.3 miles from the mouth of the Peconic River in Flanders Bay. Peconic Lake is the impoundment on the upstream side of the Forge Road Dam. The dam

and spillway is owned and operated by the Town of Brookhaven. A permanent fish passage structure is needed at the Forge Road Dam to provide access for diadromous fish to their critical freshwater spawning and maturation habitat. This project will re-open the expansive Peconic Lake to diadromous fish species, restoring 107 acres of critical habitat, and is part of an overall effort to restore over 300 acres of diadromous fish habitat on the Peconic River. Plans are underway to replace the structurally damaged Forge Road Dam and to construct a fish passage based on the [Conceptual Habitat Restoration Design for Forge Road Dam](#) completed with PEP funding in 2013.

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

- Water Quality Improvement Project Program <http://www.dec.ny.gov/pubs/4774.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>

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>
- East Hampton <https://www.easthamptonconservators.com/community-preservation-fund.shtml>

Habitat Restoration and Protection Resources

New York Seagrass Management <https://www.dec.ny.gov/lands/110813.html>

Long Island Tidal Wetlands Trends Analysis <http://www.dec.ny.gov/lands/5113.html>

SLAMM: Sea Level Affecting Marshes Model <http://warrenpinnacle.com/prof/SLAMM/>

MAPTITE: Marsh Analysis and Planning Tool Incorporating Tides and Elevations
<https://tidesandcurrents.noaa.gov/maptite.html>

Tidal Wetlands Guidance Document: Living Shoreline Techniques in the Marine District of New York State http://www.dec.ny.gov/docs/fish_marine_pdf/dmrlivingshoreguide.pdf

NOAA Habitat Blueprint Living Shorelines
<https://www.habitatblueprint.noaa.gov/living-shorelines/>

New York State Natural Heritage Program Rare Species <http://www.dec.ny.gov/animals/29338.html>

iMapInvasives, New York's Online Invasive Species Database and Mapping System
<http://www.nyimapinvasives.org/>

The Nature Conservancy Long Island Road, Stream and Tidal Crossing Improvement Project –
Interactive web map (draft) of road-stream and tidal crossings in Suffolk County <http://arcg.is/1rS181>

Seatuck River Revival Project and Diadromous Fish Habitat Strategy
<https://www.seatuck.org/index.php/river-revival-project>

North American Aquatic Connectivity Collaborative <https://streamcontinuity.org> and
Climate-Friendly Stream Crossings Toolkit
https://streamcontinuity.org/resources/crossings_toolkit/index.htm

NYSDEC Stream Crossing Guidance <https://www.dec.ny.gov/permits/49060.html> and Best Management
Practices <https://www.dec.ny.gov/permits/49066.html>

U.S. Fish and Wildlife Service Fish Passage Engineering Design Criteria, 2017
https://www.fws.gov/northeast/fisheries/pdf/USFWS_R5_2017_Fish_Passage_Engineering_Design_Criteria.pdf

PEP Critical Lands Protection Strategy <https://www.peconicestuary.org/wp-content/uploads/2017/06/CriticalLandsProtectionPlan.pdf>

Peconic Estuary Program Monitoring Programs <https://www.peconicestuary.org/protect-the-peconic/monitoring-programs/>

Peconic Estuary Informational Maps <https://www.peconicestuary.org/news-and-blogs/maps-gis/>

Appendix A- Peconic Estuary Program 2009 Habitat Restoration Plan: Implementation Tracking Table (Dec 2017)

HABITAT TYPE	SITE NAME	STATUS						Re-Listed in 2017 Plan	DETAILS
		Not Initiated	Planning Stage	In-Progress	Partially Completed	Completed	No Longer In Progress		
Southold									
Diadromous Fish Passage	Silver Lake/Moore's Drain Alewife Access			x				Yes	PEP funded a conceptual design with 2009 NEP funds. The Conceptual Habitat Restoration Design was completed in 2013. No diadromous fish passage project was recommended; however, the scope of the project changed to pursue the other general wildlife recommendations of the Conceptual Habitat Design, one on Southold Town property and one on Village of Greenport property. The Town is moving forward with the recommendation on its property, which was to day light Moore's Drain at Skipper Horton Park. Southold Town received a NYS DOS LWRP grant in 2016 that includes funding for this project. The permit for this project has been secured. Construction is expected to take place in 2019.
Eelgrass	Hallock's Bay Eelgrass Sanctuary						x	No	This project is no longer in progress. There is no longer eelgrass here.
Phragmites Control	Arshamomaque Pond Preserve (Paul Stoutenburgh Preserve) Phragmites Eradication				x			Yes	This site is now called Paul Stoutenburgh Preserve. The Town repaired a collapsed culvert that was preventing tidal flow into one of the areas infested with Phragmites. This area is now tidal again but still in a state of flux so it isn't clear how successful this action was yet. The overall project includes other areas not connected to the area where the culvert was repaired as well as other possible techniques for dealing with the area where the culvert was repaired. Currently accepted removal and restoration practices will be used. PEP has requested 2017 SC Capital funding for design (\$20,000) and construction (\$80,000).
Phragmites Control	Arshamomaque Preserve Phragmites Eradication		x					Yes	Southold Town plans to use funding from a 2016 NYS DOS LWRP Grant to map and assess the Phragmites infestation and potentially implement some control measures at this site.
Phragmites Control	Cedar Beach Phragmites Eradication	x						No	
Phragmites Control	Downs Farm Preserve and Downs Creek Phragmites Eradication	x						Yes	
Phragmites Control	Husing Pond Phragmites Eradication	x						Yes	
Phragmites Control	Lake Marion Phragmites Eradication					x		No	Project completed in 2014-added to PEP Completed Habitat Restoration Project Inventory.
Phragmites Control	Narrow River Phragmites Eradication		x					Yes	PEP is currently funding a conceptual habitat restoration design for this site with 2010 NEP funds. An RFP was released in 2016 and the contractor has been selected.
Phragmites Control	Pipes Cove Phragmites Eradication		x					Yes	Southold Town plans to use funding from a 2016 NYS DOS LWRP Grant to map and assess the Phragmites infestation and potentially implement some control measures at this site.
Shellfish	Southold Shellfish Spawner Sanctuary Network	x						No	
Wetland	Budds Pond Wetland Restoration	x						Yes	
Wetland	Fleet's Neck Wetland Restoration	x						Yes	
Wetland	Nassau Point Wetland Restoration	x						Yes	Although this project has not been initiated it remains a priority for Southold Town.
Wetland	TGA Easement Wetland Restoration	x						No	This project has been combined with a similar restoration project at the adjacent Edwards Preserve in a new habitat site nomination.
Southampton									
Diadromous Fish Passage	Ligonee Brook Diadromous Fish Passage Restoration				x			Yes	PEP funded a conceptual design with 2009 NEP funds. The Conceptual Habitat Restoration Design was completed in 2013. One of the Conceptual Design recommendations was completed by the Friends of Long Pond Greenbelt in 2014. Two culverts under the Old Rail Road Crossing were removed and a small pedestrian bridge was installed. Currently Friends of Long Pond Greenbelt is pursuing Suffolk County funding for culvert remediation at the Bridgehampton-Sag Harbor Turnpike crossing. Culvert remediation will hopefully happen during Suffolk County's planned remediation of CR 79- Bridgehampton-Sag Harbor Turnpike.
Diadromous Fish Passage	North Sea/Alewife Creek Diadromous Fish Passage Enhancement				x			Yes	Baffles were placed in North Sea Road box culvert to raise water levels but problem still exist with this culvert. There are also issues with the culvert under Noyac Road. Estimated cost for planning and construction is \$1.5 Million
Diadromous Fish Passage	Woodhulls Pond/Wildwood Lake Diadromous Fish Passage Restoration			x				Yes	Funding for the construction of the dam (\$278,964) was awarded to Suffolk County Parks/PEP through a NYSDEC Water Quality Improvement Project (WQIP) Grant. Permits for the project have been submitted and are awaiting approval.
Grassland	Shinnecock Grassland Restoration				x			No	No restoration has occurred since 2009.
Wetland	Davis Creek Wetland Restoration						x	No	Conceptual design for this project was outlined in "Ecological Restoration and Enhancement Potential of Southampton Town-Owned Tidal Wetlands", Pickrell 1995, completed for the Town of Southampton. However, the project site is no longer viewed as a conservation priority, due to potential for adverse impacts to prime diamond backed terrapin terrestrial nesting habitat.
Wetland	Iron Point Wetland Restoration		x					Yes	PEP is currently funding a conceptual habitat restoration design for this site with 2010 NEP funds. An RFP was released in 2016 and the contractor has been selected.
East Hampton									
Diadromous Fish Passage	Alewife Brook Alewife Access and Habitat Enhancement						x	Yes	In 2013 a box culvert modification was purchased and meant to be installed at Alewife Brook Road to allow fish passage into Scoy Pond but was never installed because it was deemed too large. Although this project is not currently in progress, restoration at this site remains a priority.
Diadromous Fish Passage	Lake Montauk Alewife Access and Habitat Enhancement		x					Yes	PEP is currently funding a conceptual habitat restoration design for this site with 2010 NEP funds. An RFP was released in 2016 and the contractor has been selected.
Eelgrass	Lake Montauk Eelgrass Restoration						x	No	Restoration was attempted at this site, but full-scale restoration was determined not to be feasible.
Eelgrass	Napeague Eelgrass Restoration					x		No	Added to the PEP Completed Habitat Restoration Project Inventory.
Eelgrass	Three Mile Harbor Eelgrass Restoration						x	No	Restoration was attempted at this site, but full-scale restoration was determined not to be feasible.
Flushing/Circulation	Fresh Pond Circulation Enhancement					x		No	Completed January 2010- added to the PEP Completed Habitat Restoration Project Inventory.
Flushing/Circulation	Napeague Harbor Circulation Enhancement						x	No	PEP funded conceptual design with 2008 NEP funds. The Conceptual Habitat Restoration Design was completed in 2013. Conceptual design recommendations were not pursued.
Grassland	Culloden Grassland Restoration						x	No	Partial restoration was completed in 2000, but project is not longer in progress or a priority.
Phragmites Control	Accabonac Harbor Phragmites Eradication						x	No	Project is no longer a priority.
Phragmites Control	Barnes Meadow Phragmites Eradication	x						No	Project is no longer a priority
Phragmites Control	Fort Pond Phragmites Eradication						x	No	Project is no longer a priority
Phragmites Control	Fresh Pond Phragmites Eradication	x						No	Project is no longer a priority

Phragmites Control	Lake Montauk Phragmites Eradication							x	No	Project is no longer a priority
Phragmites Control	Little Northwest Creek Phragmites Eradication							x	No	Project is no longer a priority
Phragmites Control	Napeague Phragmites Eradication	x							No	Project is no longer a priority
Phragmites Control	Northwest Creek Phragmites Eradication	x							No	Project is no longer a priority
Phragmites Control	Three Mile Harbor Phragmites Eradication							x	No	Project is no longer a priority
Shellfish	Lake Montauk Hard Clam/American Oyster Enhancement/Restoration							x	No	Restoration work is completed/ongoing. Added to the PEP Completed Habitat Restoration Project Inventory.
Shellfish	Accabonac Creek Hard Clam/American Oyster Enhancement/Restoration							x	No	Restoration work is completed/ongoing. Added to the PEP Completed Habitat Restoration Project Inventory.
Shellfish	Napeague Harbor Bay Scallop Restoration							x	No	This six-year project (2008-2013) was partially funded by Suffolk County 1/4% Fund. The Shellfish Hatchery and Town Trustees have continued the scallop restoration work, expanding into other harbors. Added to PEP Completed Habitat Restoration Project Inventory.
Shellfish	Napeague Harbor Hard Clam/American Oyster Enhancement/Restoration							x	No	Funded by New York State Department of State (NYSDOS) Local Waterfront Revitalization Program and Town Trustees. The restoration work is ongoing, expanding into other harbors. Added to PEP Completed Habitat Restoration Project Inventory.
Shellfish	Three Mile Harbor Bay Scallop Restoration							x	No	This six-year project (2008-2013) was partially funded by Suffolk County 1/4% Fund. The Shellfish Hatchery and Town Trustees have continued the scallop restoration work, expanding into other harbors. Added to PEP Completed Habitat Restoration Project Inventory.
Shellfish	Three Mile Harbor Hard Clam/American Oyster Enhancement/Restoration							x	No	Funded by New York State Department of State (NYSDOS) Local Waterfront Revitalization Program and Town Trustees. The restoration work is ongoing, expanding into other harbors. Added to PEP Completed Habitat Restoration Project Inventory.
Wetland	Accabonac Harbor Wetland Restoration							x	No	Project is no longer a priority.
Wetland	Lake Montauk Wetland Restoration							x	No	Project is no longer a priority
Wetland	Fort Pond Wetland Restoration							x	No	Project is no longer a priority
Shelter Island										
Beach/Dune	Shell Beach Revegetation							x	Yes	PEP funded conceptual design with 2009 NEP funds. The Conceptual Habitat Restoration Design was completed in 2013. Conceptual Design has not been implemented even though restoration project was a requirement of a permit for a different project.
Eelgrass	Coeles Harbor Eelgrass Revegetation	x							Yes	
Phragmites Control	Sposato Property (Turkems Rest) - Phragmites Removal	x							Yes	Culvert replacement work is needed at Midway Road to restore/improve flow, prior to pursuing invasive species removal. Culvert replacement is currently planned for the fall of 2017.
Riverhead										
Diadromous Fish Passage	Edwards Ave Diadromous Fish Passage Restoration (Peconic River, Phase IV)							x	No	Completed June 2016-added to PEP Completed Habitat Restoration Project Inventory.
Diadromous Fish Passage	Forge Rd/Peconic Lake Diadromous Fish Passage Restoration (Peconic River, Phase III)				x				Yes	Town of Brookhaven will be replacing the structurally damaged Forge Road Dam and constructing a fish passage based on the PEP funded Conceptual Habitat Restoration Design for Forge Road Dam completed in 2013. This project is in the engineering design/permitting phase.
Diadromous Fish Passage	Grangebel Park Diadromous Fish Passage Restoration (Peconic River, Phase I)							x	No	Completed Feb 2010- added to PEP Completed Habitat Restoration Project Inventory.
Diadromous Fish Passage	Upper Mills Diadromous Fish Passage Restoration (Peconic River, Phase II)				x				Yes	Suffolk County Capital funding was secured for Engineering Design and Permitting. Contract was selected and services are underway.
Phragmites Control	Bay Woods Phragmites Eradication	x							No	Project is no longer a priority.
Phragmites Control	Broad Cove Phragmites Eradication	x							No	Project is no longer a priority.
Phragmites Control	Browns Point Phragmites Eradication	x							No	Project is no longer a priority.
Phragmites Control	East Creek Phragmites Eradication	x							Yes	
Phragmites Control	Gravel Pit (Dog Ponds) Phragmites Eradication	x							No	Project is no longer a priority.
Phragmites Control	Grumman Phragmites Eradication	x							No	
Phragmites Control	Lanns Pond Phragmites Eradication	x							No	Project is no longer a priority.
Phragmites Control	Peconic Edwards Phragmites Eradication	x							Yes	
Phragmites Control	Peconic Seep Phragmites Eradication	x							Yes	
Phragmites Control	Reeves Creek Phragmites Eradication	x							No	Project is no longer a priority.
Phragmites Control	Terry Creek Phragmites Eradication	x							No	Project is no longer a priority.
Phragmites Control	Tidal Peconic Phragmites Eradication	x							No	Project is no longer a priority.
Phragmites Control	Tidal Sawmill Creek Phragmites Eradication	x							No	Project is no longer a priority.
Phragmites Control	Upper Sawmill Creek Phragmites Eradication	x							Yes	
Phragmites Control	Warner Duck Farm Phragmites Eradication	x							Yes	
Riverine	Peconic Upper Mills Riverine Restoration	x							Yes	
Wetland	Indian Island Tidal Wetland Restoration				x				Yes	\$1,406,666 allocated for this project - Includes \$1,050,666 NYSDEC WQIP AHR (\$788,000 award & \$262,666 match), \$300,000 SC 1/4%, \$56,000 FY00 NYSDEC WQIP/AHR. Final construction drawings are in development.

Other:

Bullhead Bay Eelgrass Sanctuary - Established by Southampton Town Trustees in Dec 2009- added to PEP Completed Habitat Restoration Project Inventory- Completed

Staudinger's Pond Alewife Access/Habitat Enhancement - Included as part of ACFHP \$30,000 grant for Alewife Brook/Scay Pond. A rock weir was installed in Northwest Creek to allow fish passage into Staudinger's Pond but was unsuccessful and removed. Project is no longer in progress.

Edwards Preserve Restoration- The Peconic Land Trust is seeking to restore, protect, and enhance the wetlands and woodlands at this preserve. This project has been combined with a similar restoration effort at Terry Preserve.

Widows Hole Preserve Restoration-Peconic Land Trust, property owner, will perform invasive species management and salt marsh and coastal grass restoration. Project will be funded with 2011 NEP Funds (\$150,000). Project permits have been submitted. Will be re-listed in 2017 Plan.

Meetinghouse Creek Wetland Restoration- In planning stage. PEP is funding conceptual design with 2010 NEP funds. An RFP was released in 2016 and the contractor has been selected. Will be re-listed in 2017 Plan.

Appendix B- Submitted Habitat Restoration Site Nominations for the 2017 Peconic Estuary Program Habitat Restoration Plan

Habitat Type	Site Name & Location	Project Description	Project Site Size	Ownership	Funding/Resources	Additional Info	Contact (Name, Organization, Phone, Email)	Include in 2017 Plan
Southold								
Wetland	Corey Creek (Main Bayview Rd and Corey Creek)	Remove prior placed dredged material, excavate, and re-grade to historic marsh elevations. Dredge material will either be removed from site or redeposited in adjacent upland areas, similar to method used for the Cassidy Preserve marsh restoration project completed in Greenport.	17 acres	Private & Public - Town owns underwater lands of Corey Creek	Town willing to assist with planning and design	Eleven parcels in the project area are included on the Town's CPF list for potential easement or fee title acquisition for open space and/or wetlands protection purposes. Most of these parcels are contiguous with Corey Creek Park which is owned jointly by the Town and County.	John Sepenoski, Town of Southold, 631-765-1800 X 273, johnsep@town.southold.ny.us	Yes
Wetland	Eugenes Creek (Eugenes Rd, Cutchogue)	Remove prior placed dredge material, excavate, and regrade to historic marsh elevations. Dredge material will either be removed from site or redeposited in adjacent upland areas, similar to method used for the Cassidy Preserve marsh restoration project completed in Greenport.	8 acres	Private, including one parcel owned by Mattituck School District	Town willing to assist with planning and design	Seven parcels in and near the project area are included in the Town's CPF list for potential easement or fee title acquisition for open space and/or wetlands protection purposes.	John Sepenoski, Town of Southold, 631-765-1800 X 273, johnsep@town.southold.ny.us	Yes
Wetland	James Creek (Between Ole Jule Ln and Bay Ave, Mattituck)	Beneficial reuse of clean dredge material to restore marsh islands and planting of submerged aquatic vegetation into a complex marsh and open water mosaic. Project will use methods currently proposed for Cedar Beach Creek Habitat Demonstration Project and/or method for the restoration of marsh islands in Jamaica Bay over the past decade.		Public - County underwater lands and marsh of James Creek; Town - underwater lands of James Creek; Private - One parcel almost completely surrounded by dredged channel, adjacent to County property.	Town willing to assist with planning and design		John Sepenoski, Town of Southold, 631-765-1800 X 273, johnsep@town.southold.ny.us	Yes
Wetland	Town & Jockey Creeks (Pine Neck Rd., Southold)	Beneficial reuse of clean dredge material to restore the marsh islands, including creating viable nesting habitat for Piping Plover, and planting of appropriate vegetation. Project will use methods currently proposed for Cedar Beach Creek Habitat Demonstration Project and/or method for the restoration of marsh islands in Jamaica Bay over the past decade.		Public- Town underwater lands of Town & Jockey Creeks; Private- both of the former islands.	Town is willing to assist with work related to planning and design	Islands are included on the Town's CPF list for potential easement or fee acquisition for wetlands habitat protection purposes.	John Sepenoski, Town of Southold, 631-765-1800 X 273, johnsep@town.southold.ny.us	Yes
Wetland	Terry/ Edwards Preserve (3690 Main Road, Orient)	Reconfigure double dike design allowing for water flow into emergent marsh. Reestablish a healthy wetlands environment and control spread of Phragmites.	30.5 acres	Property owned by Peconic Land Trust; Easement- Southold; Dike owned by DEC/Maintained by PLT	Design/Tech. Assistance available through Cornell Cooperative (Chris Pickereil) and Peconic Land Trust is willing to help with on-going fundraising.	Land is protected in perpetuity as a result of Land Trust purchase.	Holly Sanford/Tim Caulfield, Peconic Land Trust, 631-283-3195, hsanford@peconiclandtrust.org	Yes
Wetland	Cedar Beach	The Cedar Beach Creek Habitat Restoration Demonstration Project will restore local essential ecosystem functions in a degraded marsh system. It will create numerous marsh islands from the beneficial reuse of clean dredge material, planting of submerged aquatic vegetation (Ruppia maritima), and oysters (Crassostrea virginica) into a complex 65 acre marsh, beach, and open water mosaic. This project will establish and enhance three critical marine habitats in the Peconic Estuary. Additionally, creating elevations on the islands that are at the upper limit of the current intertidal low marsh range will ensure that the initial marsh elevation is as high as it can be to outpace sea level rise. This project is a cooperative effort between Suffolk County Parks, the Southold Town Trustees, the Peconic Estuary Program and Cornell Cooperative Extension.	24.2 within a 65 acre area (19.5 salt marsh, 1.7 seagrass meadow, and 3 open water)		Funding for this project has been secured from the US Army Corps of Engineers. Cornell Cooperative is the lead on this project. Partners include Suffolk County Parks, the Southold Town Trustees, and the Peconic Estuary Program.	The creek is productive for marine finfish, shellfish, and other wildlife and contributes significantly to the biological productivity of Noyack Bay. The creek serves as a nursery and feeding area for many estuarine fish species including scup, summer flounder, bluefish, and winter flounder. Soft clams, hard clams and razor clams are found most years, supporting a recreational shellfishery of town-level significance. Diamondback terrapin breed in the fringing wetlands. The creek serves as a feeding area for a variety of birds and waterfowl. Beach-nesting birds are found along the barrier beach including piping plover and least tern.	Stephen Schott, CCE, (631) 852-8660 x26, ss337@cornell.edu	Yes
Fish Passage	Arshamomaque Pond, Southold	Assess connectivity between Arshamomaque Pond and Pipes Cove/Peconic Bay to determine if the pond provides or has the potential to provide spawning habitat for river herring.					Enrico Nardone, Seatuck Environmental Association, 631-581-6908, ennardone@seatuck.org	Yes
Southampton								

Wetland	Round Pond Shore Restoration (Middle Line Highway, Sag Harbor)	Remove bulkhead, restore shoreline habitat, and update storm drainage.		Village of Sag Harbor, Town of Southampton	Friends of the Long Pond Greenbelt has commissioned a survey of the site and a wetland delineation map. Can possibly provide volunteer labor and seek contributions of native plants. Some initial plan designs are available.	10 years ago the Town of Southampton developed a plan to remove the bulkhead and restore the shoreline. It received NYSDEC approval but was never implemented. Since then, a parcel to the south of the bulkhead, now known as Kennedy Park, has been purchased by Southampton's Community Preservation Fund and returned to its natural state. On the Sag Harbor side of the road, the property is owned by Oakland Cemetery and remains in a natural state.	David Dayton, President-Friends of Long Pond Greenbelt, 631-745-0689, DaiDayton@aol.com	Yes	
Wetland	Peconic River Shoreline and Wetland Restoration (North side of Flanders Road, South side of Peconic River)	Historically the southerly shoreline along the Peconic River between Peconic Avenue and Cross River Drive was part of a natural estuarine and riverine system with tidal and freshwater wetlands, but today are degraded as a result of development and land use activities, including the deposition of large amounts of river dredge spoil. This project seeks to restore the historic wetlands and shoreline, which will provide habitat for wading birds, fish, ducks, and other waterfowl.	12.5 acres	Public - Suffolk County (6 parcels totaling 14.1 acres); Town of Southampton (3 parcels totaling 22.5 acres). An Inter-Municipal Agreement between the Town and County for the County property is pending.	Shoreline Restoration Plan is being funded through NY Environmental Justice Grant (\$50,000). An additional \$25,000 needed for wetland restoration planning/design. The physical construction and restoration of wetlands will be financed through a Fairshare Mitigation Fund, collected and managed by the Town. Other sources of funding include the Town's Community Preservation Fund.	Shoreline Restoration Plan will serve as a prototype for the restoration of the entire Peconic River shoreline in the Riverside community. The wetland restoration would be similar to the Iron Point Wetland restoration project, consisting of the re-establishment and enhancement of 12.5 acres of wetland, thereby restoring tidal flow to formerly connected interior wetlands and ponds. Design criteria will need to consider the feasibility for the inclusion of a permeable reactive barrier.	David Wilcox, Director of Town Planning, Town of Southampton, 631-702-1801, dwilcox@southamptonny.gov	Yes	
East Hampton									
Phragmites	Accabonac Harbor - Western Pussy's Pond Phragmites Removal	Phragmites Removal- excavated and removed a plot of the invasive species Phragmites australis from the western bank of Pussy's Pond. Approximately 125 linear feet, or a 2,200 square ft. area of Phragmites australis shoots, roots, and rhizomes were excavated using a hydraulic excavator and trucked off-site for disposal. Excavated area was replaced with native sand and the natural slope and edge of the pond bank was restored. Re-vegetation with native plants needed.	<1 acre	Public	\$20,000, Funding being provided by New York State grant. Already in progress.	Requesting help with expansion/maintenance.	Kimberly Shaw, Town of East Hampton Natural Resources, 631-324-0496, naturalresources@ehamptonny.gov, kshaw@ehamptonny.gov	Yes	
Phragmites	Accabonac Harbor - Eastern Pussy's Pond Phragmites Removal	Alternative methods for invasive species management were researched and implemented on the eastern bank of Pussy's Pond. Native plant conditions were inspected at the Site and non-herbicide options for treatment were researched, contractor designed a Phragmites australis management plan, native plants growing in the area were protected using flagging and wrapping, Phragmites australis pilot treatment areas were identified for rock salt and saline spray applications, and treatment was applied to subplots. Need for further treatment or alternative methods will be determined in 2017.	<1 acre	Public	\$10,000, Funding being provided by New York State grant. Already in progress.	Requesting help with expansion/maintenance.	Kimberly Shaw, Town of East Hampton Natural Resources, 631-324-0496, naturalresources@ehamptonny.gov, kshaw@ehamptonny.gov	Yes	
Shellfish	Accabonac Harbor Bay Scallop Restoration	Establish bay scallop spawner sanctuaries in an effort to provide dense concentrations of reproductively mature adult scallops.	300 acres		\$25,000 per year. Project aspects designs, planned and carried out by Shellfish Hatchery in cooperation with East Hampton Town Trustees and Town Board. Grant matching funds may be available from the Town and Trustees.	This is a component of a large, comprehensive town-wide shellfish restoration project encompassing Accabonac Harbor, Hog Creek, Lake Montauk, Napeague Harbor, Northwest Creek, and Three Mile Harbor.	John (Barley) Dunne, East Hampton Shellfish Hatchery, 631-668-4601 ext. 7901, jdunne@ehamptonny.gov	No	
Shellfish	Hog Creek Bay Scallop Restoration	Establish bay scallop spawner sanctuaries in an effort to provide dense concentrations of reproductively mature adult scallops.	36 acres		\$25,000 per year. Project aspects designs, planned and carried out by Shellfish Hatchery in cooperation with East Hampton Town Trustees and Town Board. Grant matching funds may be available from the Town and Trustees.	This is a component of a large, comprehensive town-wide shellfish restoration project encompassing Accabonac Harbor, Hog Creek, Lake Montauk, Napeague Harbor, Northwest Creek, and Three Mile Harbor.	John (Barley) Dunne, East Hampton Shellfish Hatchery, 631-668-4601 ext. 7901, jdunne@ehamptonny.gov	No	
Shellfish	Hog Creek Hard Clam/Eastern Oyster Enhancement/Restoration Project	Several million seed of each species would be grown through a season by staff of the East Hampton Town Shellfish Hatchery. Spawns and larval/early juvenile rearing would begin in late winter in the hatchery, followed by additional grow-out phases in Three Mile Harbor nursery and Napeague Harbor field grow out systems. In the fall, seed would be apportioned by harbor and seeded to natural beds. A portion of the clam crop would be held over the winter and seeded to the wild the following fall after an additional season of growth.	36 acres		\$50,000 per year. Project aspects designs, planned and carried out by Shellfish Hatchery in cooperation with East Hampton Town Trustees and Town Board. Grant matching funds may be available from the Town and Trustees.	This is a component of a large, comprehensive town-wide shellfish restoration project encompassing Accabonac Harbor, Hog Creek, Lake Montauk, Napeague Harbor, Northwest Creek, and Three Mile Harbor.	John (Barley) Dunne, East Hampton Shellfish Hatchery, 631-668-4601 ext. 7901, jdunne@ehamptonny.gov	No	

Shellfish	Lake Montauk Bay Scallop Restoration	Establish bay scallop spawner sanctuaries in an effort to provide dense concentrations of reproductively mature adult scallops.	1000 acres		\$25,000 per year. Project aspects designs, planned and carried out by Shellfish Hatchery in cooperation with East Hampton Town Trustees and Town Board. Grant matching funds may be available from the Town and Trustees.	This is a component of a large, comprehensive town-wide shellfish restoration project encompassing Accabonac Harbor, Hog Creek, Lake Montauk, Napeague Harbor, Northwest Creek, and Three Mile Harbor.	John (Barley) Dunne, East Hampton Shellfish Hatchery, 631-668-4601 ext. 7901, jdunne@ehamptonny.gov	No
Shellfish	Napeague Harbor Bay Scallop Restoration	Establish bay scallop spawner sanctuaries in an effort to provide dense concentrations of reproductively mature adult scallops.	1000 acres		\$25,000 per year. Project aspects designs, planned and carried out by Shellfish Hatchery in cooperation with East Hampton Town Trustees and Town Board. Grant matching funds may be available from the Town and Trustees.	This is a component of a large, comprehensive town-wide shellfish restoration project encompassing Accabonac Harbor, Hog Creek, Lake Montauk, Napeague Harbor, Northwest Creek, and Three Mile Harbor.	John (Barley) Dunne, East Hampton Shellfish Hatchery, 631-668-4601 ext. 7901, jdunne@ehamptonny.gov	No
Shellfish	Northwest Creek Bay Scallop Restoration	Establish bay scallop spawner sanctuaries in an effort to provide dense concentrations of reproductively mature adult scallops.	16 acres		\$25,000 per year. Project aspects designs, planned and carried out by Shellfish Hatchery in cooperation with East Hampton Town Trustees and Town Board. Grant matching funds may be available from the Town and Trustees.	This is a component of a large, comprehensive town-wide shellfish restoration project encompassing Accabonac Harbor, Hog Creek, Lake Montauk, Napeague Harbor, Northwest Creek, and Three Mile Harbor.	John (Barley) Dunne, East Hampton Shellfish Hatchery, 631-668-4601 ext. 7901, jdunne@ehamptonny.gov	No
Shellfish	Northwest Creek Hard Clam/Eastern Oyster Enhancement/Restoration Project	Several million seed of each species would be grown through a season by staff of the East Hampton Town Shellfish Hatchery. Spawns and larval/early juvenile rearing would begin in late winter in the hatchery, followed by additional grow-out phases in Three Mile Harbor nursery and Napeague Harbor field grow out systems. In the fall, seed would be apportioned by harbor and seeded to natural beds. A portion of the clam crop would be held over the winter and seeded to the wild the following fall after an additional season of growth.	16 acres		\$50,000 per year. Project aspects designs, planned and carried out by Shellfish Hatchery in cooperation with East Hampton Town Trustees and Town Board. Grant matching funds may be available from the Town and Trustees.	This is a component of a large, comprehensive town-wide shellfish restoration project encompassing Accabonac Harbor, Hog Creek, Lake Montauk, Napeague Harbor, Northwest Creek, and Three Mile Harbor.	John (Barley) Dunne, East Hampton Shellfish Hatchery, 631-668-4601 ext. 7901, jdunne@ehamptonny.gov	No
Shellfish	Three Mile Harbor Bay Scallop Restoration	Establish bay scallop spawner sanctuaries in an effort to provide dense concentrations of reproductively mature adult scallops.	1000 acres		\$25,000 per year. Project aspects designs, planned and carried out by Shellfish Hatchery in cooperation with East Hampton Town Trustees and Town Board. Grant matching funds may be available from the Town and Trustees.	This is a component of a large, comprehensive town-wide shellfish restoration project encompassing Accabonac Harbor, Hog Creek, Lake Montauk, Napeague Harbor, Northwest Creek, and Three Mile Harbor.	John (Barley) Dunne, East Hampton Shellfish Hatchery, 631-668-4601 ext. 7901, jdunne@ehamptonny.gov	No
Kelp	Accabonac Harbor Kelp Grow Out	Proposed kelp grow-out area to enhance water quality.	< 1 acre		\$50,000 - \$100,000	Moderate quantities of seaweed serve as essential food sources for marine animals, and provide nursery habitat for juvenile crabs and fish. Sustainable foraging practice will be conducted by harvesting only a third of each bed of seaweed and leaving spore-producing parts behind to allow continued reproduction. Harvested seaweeds can be used for a variety of purposes such as a food source, cosmetics, crop fertilizer, etc..	Kimberly shaw, Town of East Hampton Natural Resources, 631-324-0496, naturalresources@ehamptonny.gov, kshaw@ehamptonny.gov	No
Kelp	Lake Montauk Kelp Grow Out	Proposed kelp grow-out area to enhance water quality.	< 1 acre		\$50,000 - \$100,000	Moderate quantities of seaweed serve as essential food sources for marine animals, and provide nursery habitat for juvenile crabs and fish. Sustainable foraging practice will be conducted by harvesting only a third of each bed of seaweed and leaving spore-producing parts behind to allow continued reproduction. Harvested seaweeds can be used for a variety of purposes such as a food source, cosmetics, crop fertilizer, etc..	Kimberly shaw, Town of East Hampton Natural Resources, 631-324-0496, naturalresources@ehamptonny.gov, kshaw@ehamptonny.gov	No
Wetland	Accabonac Harbor Open Marsh Management	An alternative to spraying insecticides is using Open Marsh Water Management. These techniques include filling in some of the ditches and creating new tidal creeks and ponds, which allow small fish and other mosquito predators back into the marsh. The goal of this proposed project is to determine the need and effectiveness of mosquito control ditches in Accabonac Harbor, to conduct an assessment of water quality, benthic habitats, and aquatic organisms as a baseline, and determine the effect of plugging mosquito ditches and reducing wide-spread insecticide spraying in the area.	>30 Acres		?		Kimberly shaw, Town of East Hampton Natural Resources, 631-324-0496, naturalresources@ehamptonny.gov, kshaw@ehamptonny.gov	Yes

Wetland	Accabonac Harbor - Eastern Pussy's Pond Shoreline Restoration	A shoreline stabilization design and layout plan was completed in the Spring 2016. A 200 linear foot stretch of coir fascine was installed along the eastern bank of the Pond in July 2016. The wetland area interior of the coir fascine will be planted with native wetland plants in the Spring of 2017 to restore the shoreline to its natural state. Benefits include; deterrence of nuisance waterfowl, increase in riparian habitat, filtration of runoff pollutants, and a demonstration of best waterfront practices.	< 1 acre	Public	~\$50,000, Work is already underway. Being funded by a New York State Grant.		Kimberly shaw, Town of East Hampton Natural Resources, 631-324-0496, naturalresources@ehamptonny.gov, kshaw@ehamptonny.gov	Yes
Wetland	Lake Montauk Wetland Construction (Ditch Plains, Montauk)	Provide wetland restoration and water quality improvements within the Lake by reconstructing the wetlands in Ditch Plains to engineered wetlands planted with native species to provide for vegetative pathogen removal of waters seeping from the Ditch Plains area.	< 6 acres	Public	\$300,000. Conceptual Design/Feasibility Study - completed through the Lake Montauk Watershed Management Plan in 2014	Information provided by Town staff and data reviewed indicates that the Ditch Plains neighborhood is a potential significant source of pathogens to the Lake. This area is known for poorly draining soils, shallow depth to groundwater, and high development density all of which contribute to increased runoff and potential failure of septic systems during storm events. As a result, effective improvements for this area are limited. Additional feasibility analysis should be conducted to determine connectivity of the existing stormwater system and options for stormwater improvements in this area; however, preliminary investigations suggest that a constructed wetland would be beneficial for pathogen treatment. Constructed wetlands have been utilized around the country as effective means of pathogen treatments.	Kimberly shaw, Town of East Hampton Natural Resources, 631-324-0496, naturalresources@ehamptonny.gov, kshaw@ehamptonny.gov	No
Eelgrass	Napeague Harbor Eelgrass Restoration	Assess connections between groundwater seepage and the presence of eelgrass in Napeague Harbor. Determine potential for enhancement of this eelgrass meadow.					Stephen Schott, CCE, (631) 852-8660 x26, ss337@cornell.edu	Yes
Shelter Island								
Beach/Wetland	Second Causeway (Ram Island Road Between Little Ram Island and Big Ram Island)	The northerly side of the Second Causeway (adjacent to Peconic Bay) suffered serious damage during Hurricane Sandy. Much sand and vegetation was lost. Some spoil has been added, but it needs revegetation to avoid further erosion.		Public- Town of Shelter Island	The town is working on increasing the spoil to raise the causeway elevation and has placed rocks to prevent vehicles from causing further erosion.	South side of this causeway was revegetated in 1999, this project will focus on North side.	Jay Card, Town of Shelter Island, 631-749-1090, jcard@shelterislandtown.us	No
Beach/Wetland	Reel Point Preserve, Peconic Land Trust (4 Club Drive, Shelter Island, NY)	First Coastal Consulting (FCC) and Lockwood Kessler & Bartlett, Inc. (LKB) have completed a Comprehensive Shoreline Management Plan for the Peconic Land Trust (PLT) and the Town of Shelter Island (SI) for the Reel Point Preserve (RPP) located at Reel Point within the Town of Shelter Island, NY. The purpose of this Comprehensive Shoreline Management Plan is to provide a preliminary understanding of the dynamics of the region and the threat levels associated with the property's location. This report examines the potential alternatives to provide protection and stabilization to the property, and recommends a living shoreline consisting of segmented emergent breakwaters, inlet backpassing / beach nourishment & dune restoration and planting of native vegetation as the preferred alternative to provide stabilization to the region. As an intermediate, and for the purposes of this nomination, we are looking to implement dune restoration and beach nourishment (as outlined in Section 5.1 of the Plan).		Peconic Land Trust	Design/Technical Assistance: LKB Engineering, First Coastal Corporation, Town of Shelter Island, Peconic Land Trust		Matthew Swain, Peconic Land Trust, 631-283-3195, mswain@peconiclandtrust.org	No
Fish Passage	Sanctuary Pond Fish Passage (41.048865, -72.289385)	Assess connectivity between Sanctuary Pond and Bass Creek to determine potential for river herring spawning habitat.		The Nature Conservancy		This large freshwater pond lies within The Nature Conservancy's Mashomack Preserve.	Enrico Nardone, Seatuck Environmental Association, 631-581-6908, ennardone@seatuck.org	Yes
Fish Passage	Fresh Pond Fish Passage (41.056761, -72.336550)	Assess connectivity between West Neck Harbor and Fresh Pond to determine if the pond has the potential for spawning habitat for river herring.				Shelter Island plans to replace the culvert under Midway Road, that connects Dickerson Creek to the Wetland area south of Fresh Pond in the fall.	Enrico Nardone, Seatuck Environmental Association, 631-581-6908, ennardone@seatuck.org	Yes

Appendix C- Peconic Estuary Program Completed Habitat Restoration Project Inventory

<i>Habitat Type</i>	<i>Site & Location</i>	<i>Action</i>	<i>Maintenance</i>	<i>Size (acres)</i>	<i>Cost/Funding</i>	<i>Year Initiated</i>	<i>Status (end date)</i>	<i>Contact Person</i>
<i>Beach/Dunes</i>								
<i>Beach/Dunes</i>	Gerard Drive, East Hampton	Bare-root beach grass planting into sand adjacent to existing growth on upper beach. Transplants dug from local stock. Success based on plant establishment. Establishment successful.	String fence through first summer	0.25	<\$500 Town	Spring 1996	Prior to 2000	Kim Shaw, EHTNRD (631) 324-0496; Accabonac Harbor Protection Committee (631) 324-3627
<i>Beach/Dunes</i>	Louse Point, East Hampton	Bare-root beach grass planting into sand adjacent to existing growth on upper beach. Transplants dug from local stock. Success based on plant establishment- successful.	String fence through first summer	0.25	<\$500 Town	1996	Prior to 2000	Kim Shaw, EHTNRD, (631) 324-0496
<i>Beach/Dunes</i>	Gin Beach, East Hampton	Bare-root beach grass planting into sand adjacent to existing growth on upper beach. Transplants dug from local stock. Success based on plant establishment- successful.	String fence through first summer	0.1	<\$500 Town	1997	Prior to 2000	Kim Shaw, EHTNRD, (631) 324-0496
<i>Beach/Dunes</i>	New Suffolk, Southold	Bare-root beach grass planting into sand adjacent to existing growth on upper beach. Transplants from nursery stock. Success based on plant establishment- mostly successful.	String fence through first summer	0.1	<\$500 PEP	1997	Prior to 2000	Chris Pickerell, CCE, (631) 852-8660
<i>Beach/Dunes</i>	Mattituck Park District, Southold	Bare-root beach grass planting into sand adjacent to existing growth on upper beach. Transplants from nursery stock. Success based on plant establishment- only partially successful.	None	0.1	<\$500 PEP	Spring 1997	Prior to 2000	Chris Pickerell, CCE, (631) 852-8660
<i>Beach/Dunes</i>	Robins Island Landing, Southold	Bare-root beach grass planting into newly deposited sand on upper beach in and around large stone. Transplants from nursery stock. Success based on plant establishment- mostly successful.	Permanent snow fence	0.5	Private	1997	Prior to 2000	Peter Tresler, Belvedere Property Management (BPM) (631) 734-5134
<i>Beach/Dunes</i>	Second Causeway, Shelter Island	Bare-root beach grass planting into newly deposited sand (over large rocks) on upper beach. Transplants from nursery stock. Success based on plant establishment- successful.	String fence through first summer	1		1999	Prior to 2000	Town of Shelter Island
<i>Beach/Dunes</i>	Sammi's Beach, East Hampton 41.0310, -72.1922	This barrier beach peninsula, previously a dredge material site, was graded down and replanted with beach grasses. Road was removed and replanted. Generally successful as least terns and piping plovers returned.			\$300,000 (State, Town, County)	1999	2003 (planting complete)	Kim Shaw, EHTNRD, (631) 324-0496
<i>Beach/Dunes</i>	Reel Point, Shelter Island	Eroding beach affected by vehicle use was replanted with beach grass. Snow fencing installed. Owned by Peconic Land Trust.		8	Private	2000	Prior to 2009	Peconic Land Trust (631) 283-3195
<i>Diadromous Fish</i>								
<i>Diadromous Fish</i>	Edwards Avenue Dam, Peconic River, Phase IV, Riverhead 40.9051, 72.7432	NYSDEC owned Edwards Avenue Dam. The construction of an Alaska Steep Pass/American eel pass project replaces a failing concrete dam with a new concrete structure and steel sheeting spillway. The new spillway structure, which meets 100-year flood protection requirements, has raised water levels behind the dam to levels not seen for nearly a decade when the former Edwards Avenue Dam and its wooden plank board flood control structure began failing.	Maintenance of Alaska Steep Pass/American Eel Pass	35 acres of river habitat restored	\$967,500 to construct New York Works Program- NYSDEC		June 2016	NYSDEC-Chart Guthrie (631) 444.0281, NYSDEC/PEP State Coordinator-Elizabeth Hornstein (631) 444-0871. Partners include Riverhead, USFWS, NOAA, PEP, NYSDEC, Suffolk County, Peconic River Fish Restoration Commission.
<i>Diadromous Fish</i>	Grangebel Park, Peconic River, Phase I, Riverhead 40.9159, -72.6632	Structural repairs made to the North Spillway. South Spillway channel/stream bed was re-graded and narrowed and a permanent rock ramp/riffle was installed downstream-upstream of spillway. Success (utilization by alewife and American eels) to be determined during Spring 2010 migration.	Rock ramp debris removal may be necessary	24 acres & 1.5 miles of river habitat restored	\$1million (studies, design, repairs, rock ramp). Multiple sources-contacts can provide listing.	Planning initiated in 2000	Feb 2010	NYSDEC/PEP State Coordinator- Elizabeth Hornstein (631)444.0871/PEP-(631) 852-5805, Chart Guthrie, NYSDEC (631)444.0281. Partners include Riverhead, Brookhaven, USFWS, NOAA, PEP, NYSDEC, Suffolk County, American Rivers, Fish America Foundation, CWRP, Peconic River Fish Restoration Commission, Spectra Energy, National Grid.
<i>Eelgrass</i>								
<i>Eelgrass</i>	Accabonac Harbor, East Hampton	Bundled bare-root shoots attached to metal staples and wooden stakes. Transplants collected from Northwest Harbor and Lake Montauk. Planted into unvegetated coarse and fine sediments. Unsuccessful	Regular observation, Marked with PVC tubes	0.1	<\$2,000 PEP	Jun-94	Prior to 2000	Kim Shaw EHTNRD, (631) 324-0496, Chris Pickerell, CCE, (631) 852-8660

<i>Eelgrass</i>	Little Northwest Creek, East Hampton	Bundled bare-root shoots attached to metal staples and wooden stakes. Transplants collected from Northwest Harbor. Planted into unvegetated coarse and fine sediments. Unsuccessful.	Observation, Marked with PVC tubes	0.1	<\$2,000 PEP	Jun-94	Prior to 2000	Kim Shaw, EHTNRD, (631) 324-0496, Chris Pickerell, CCE, (631) 852-8660
<i>Eelgrass</i>	Napeague Harbor, East Hampton	20 cm diameter intact sods transplanted to the perimeter and open areas in the center of an existing bed along the eastern shoreline and an open sandy flat near the south end of the Harbor. All transplants from Napeague. Success based on eelgrass presence the following year. Mostly successful (~75%) (eastern shore). Unsuccessful (sandy flat).	Regular observation, Mapped with GPS, Perimeter of bed and planting sites marked with PVC tubes	0.1	<\$2,000 PEP	June and Sept 1997-1998	Prior to 2000	Kim Shaw, EHTNRD, (631) 324-0496, Chris Pickerell, CCE, (631) 852-8660
<i>Eelgrass</i>	Three Mile Harbor, East Hampton	Bundled bare-root shoots attached to metal staples and wooden stakes. Transplants collected from Northwest Harbor and Lake Montauk. Planted into unvegetated coarse and fine sediments. Partially successful (~30%).	Regular observation, Marked with PVC tubes	0.1	<\$2,000 PEP	Jun-94	Prior to 2000	Kim Shaw, EHTNRD (631) 324-0496; Chris Pickerell, CCE (631) 852-8660
<i>Eelgrass</i>	Three Mile Harbor, East Hampton	20 cm diameter intact sods transferred to the perimeter of an existing bed. Transplants from Napeague.	Observation of sod establishment	0.1	<\$2,000 PEP	Oct-99	2000	Kim Shaw, EHTNRD (516) 324-0496; Chris Pickerell, CCE (516) 852-8660
<i>Eelgrass</i>	Northwest Creek, East Hampton	Unsuccessful.		0.1				Chris Pickerell, CCE, (631) 852-8660
<i>Eelgrass</i>	Noyak Creek, Southampton	Unsuccessful.		0.1				Chris Pickerell, CCE, (631) 852-8660
<i>Eelgrass</i>	Paynes Creek, Southampton	Unsuccessful.		0.1				Chris Pickerell, CCE, (631) 852-8660
<i>Eelgrass</i>	Upper Sag Harbor Cove, Southampton	Unsuccessful.		0.1				Chris Pickerell, CCE, (631) 852-8660
<i>Eelgrass</i>	Bullhead Bay, Southampton	Unsuccessful. Small annual population exists.		0.1				Chris Pickerell, CCE, (631) 852-8660
<i>Eelgrass</i>	Sage Harbor Cove, Southampton	Unsuccessful.		0.1				Chris Pickerell, CCE, (631) 852-8660
<i>Eelgrass</i>	Cutchogue, Southold	Unsuccessful.		0.1				Chris Pickerell, CCE, (631) 852-8660
<i>Eelgrass</i>	Bullhead Bay Eelgrass Sanctuary, Southampton 40.9105, -72.4457	This western most eelgrass bed in the Peconic Estuary is highly stressed and disturbed. Southampton Town Trustees designated it as an eelgrass sanctuary, a type of Shellfish Management Zone, to prohibit shellfishing within its boundaries. Edges marked and delineated.	Monitored under PEP Long Term Eelgrass Monitoring Program. Trustees maintain markings.		No Cost		Established Dec 2009	Southampton Town Trustees 631.287.5717
<i>Eelgrass</i>	Sag Harbor, Havens Beach 41.00178, -72.27835	Healthy eelgrass shoots were harvested from local sites. Volunteers helped "weave" the eelgrass shoots into burlap planting discs. These discs were then planted at three restoration sites. Unsuccessful. At one site there was evidence someone clammed through the restoration plot.		0.02	\$5,000, CCE		2013	Chris Pickerell, CCE, (631) 852-8660 Partners: Town of East Hampton Trustees.
<i>Eelgrass</i>	Greenport Harbor Jetty 41.10342, -72.34752	Healthy eelgrass shoots were harvested from local sites. Volunteers helped "weave" the eelgrass shoots into burlap planting discs. These discs were then planted at the restoration site. Limited success- the Greenport restoration at the jetty was impacted by Hurricane Sandy and most of the transplants were lost. A small test plot using plugs of eelgrass, taken from the existing meadow at the site, survived Sandy and has continued to expand from the initial 1 square meter. It has more than doubled in size and density since being planted.	Site continues to be monitored a few times a year.	0.03	\$10,000, Town of Southold		2012	Chris Pickerell, CCE, (631) 852-8660

<i>Eelgrass</i>	Napeague Eelgrass Restoration 41.0071, -72.0482	Mostly unsuccessful. The Napeague Harbor restorations attempts were conducted over a number of years, with all but a few, very small patches of eelgrass persisting more than a year.							Chris Pickerell, CCE, (631) 852-8660 Partners: Town of East Hampton.
Freshwater Wetlands									
<i>Freshwater Wetlands</i>	Robins Island, Southold	A groundwater-fed freshwater pond completely filled with Phragmites was excavated to original depth and diameter. Fill including Phragmites biomass was buried nearby in a lined pit. Following excavation, native emergent species (nursery stock) were planted throughout the shoreline. Success based on establishment of proper hydrology and shoreline vegetation and elimination of common reed. Successful.	Checked regularly for new Phragmites growth. New growth removed	1		Summer 1996	Fall 1996		Peter Trexler, BPM, (631) 734-5134
Grassland									
<i>Grassland</i>	Orient Point County Park, Southold	Clearing or woody overgrowth in a former farm field using a bulldozer, discing with a tractor, followed by seeding with native warm season grasses. Seed from nursery stock. Success based seeding success of warm season grasses and control of forbes and woody growth. Mostly successful.	Annual mowing plus removal of forbes and new woody growth	50	53700 USEPA + in-kind	Spring & Summer 1998, 1999, 2000	2000		New York State Department of Environmental Conservation (NYSDEC) (631) 444-0469
<i>Grassland</i>	Maratooka Grassland, Mattituck, Southold	Clearing of woody overgrowth with a bulldozer, land preparation including discing and seeding with switchgrass. Hand seeded. Organ grinder. Seed from nursery stock. Success based seeding success of warm season grasses and control of forbes and woody growth. Mostly successful.	first mowing Sept.(high) after July 15 Every 3yrs.	1	\$4720 seed \$450 mowing \$25/yr Wildlife Habitat Incentive Program (WHIP)	Jun-99	2000		USDA, Natural Resources Conservation Service (NRCS) (631) 727-2315
<i>Grassland</i>	Fort Hill Cemetery Grassland, East Hampton 41.0458, -71.9497	Replanting of native grassland grasses in disturbed part of historic cemetery. Re-vegetation successful.	Maintained by East Hampton Parks Dept.		Town	1991	Prior to 2009		Kim Shaw, EHTNRD (631) 324-0496
Phragmites									
<i>Phragmites</i>	Hog Creek Phragmites, East Hampton, 41.0494, -72.1652	Small patches of invasive Phragmites were cut. Native species have returned. Successful.		<1		1998	Prior to 2009		Kim Shaw, EHTNRD (631) 324-0496
<i>Phragmites</i>	Lake Marion Phragmites Eradication Southold 41.1260, -72.3334	The lake was chemically treated. Project was initiated in 2006 with a petition by locals to do something about the phragmites problem. Lori Luscher, a local resident, wrote a grant request to the NY State Department of Environmental Conservation to clean up the lake, and initiated a fundraising campaign to provide matching funds. A pond/lake specialist, Tim Miller Assoc, was hired to help eradicate the phragmites. Native plantings occurred in spring 2012. https://jezbelproductions.org/the-marion-lake-story-store/	Trimming once a season, usually in Spring or Fall. An annual donation (\$200 per household) is collected from the residents for maintenance.	5 acres	\$325,000, (\$100,000 grant from NY State, the rest from community donations)	2006	2014		Lori Luscher, Save Marion Lake Committee, 631-495-8579
Shellfish									
<i>Shellfish</i>	Hard Clam/Oyster Restoration in Accabonac Harbor, Hog Creek, Three Mile Harbor, Northwest Creek, Napeague Harbor and Lake Montauk.	Several million seed of each species are grown each season by staff of the East Hampton Town Shellfish Hatchery. Spawns and larval/early juvenile rearing begin in late winter in the hatchery, followed by additional grow-out phases in Three Mile Harbor nursery and Napeague Harbor field grow-out systems. In the fall, seed is apportioned by harbor and seeded to natural beds. A portion of the clam crop is held over the winter and seeded to the wild the following fall after an additional season of growth.	Ongoing		\$50,000 per year per harbor	2009	Ongoing		John (Barley) Dunne, East Hampton Shellfish Hatchery, 631-668-4601 ext. 7901

<i>Shellfish</i>	Bay Scallop Restoration Napeague Harbor, Three Mile Harbor, and Hog Creek	The Shellfish Hatchery and the Town Trustees completed a Six-Year Bay Scallop Restoration Project (2008-2013) in Napeague Harbor, Three Mile Harbor, and Hog Creek, partially funded by Suffolk County. The goal is to establish bay scallop spawner sanctuaries in an effort to provide dense concentrations of reproductively mature adult scallops with the goal of reestablishing self-sustaining populations.	Ongoing		\$25,000 per year per harbor	2008	2013/Ongoing	John (Barley) Dunne, East Hampton Shellfish Hatchery, 631-668-4601 ext. 7901
Shorebird								
<i>Shorebird</i>	Mill Creek Enhancement Project, Southampton	Located on Pine Neck Lane in Noyac. This relatively small project expanded shorebird breeding habitat by removing vegetation and filling ruts caused by vehicle traffic on the beach. Native beach grasses were planted. Driving on the beach is now prohibited. Considered a successful project.		<1			Prior to 2009	Jon Semlear-President of Southampton Town Trustees (631) 287-5717
<i>Shorebird</i>	Hick's Island, East Hampton 41.0165, -72.0605	Material from dredging the mouth of Napeague Harbor was placed on Hick's Island. Vegetation was as cut and removed. Successful in restoring roseate tern and piping plover breeding habitat.		10	\$20,000 (re-veg) \$600,000 (dredge)		Prior to 2009	Kim Shaw, EHTNRD (631) 324-0496
Tidal Wetlands								
<i>Tidal Wetlands</i>	Pussys Pond, Springs, East Hampton	Phase 1 - Partial excavation of Phragmites-dominated soils on the shore of a brackish tidal pond. The shoreline was re-graded to intertidal elevation and planted with native transplants of Cordgrass and Salt hay grass. Phase II - Complete excavation of Phragmites-dominated soils and backfilled with clean fill. Seeded with local native seeds. Success based on establishment of native vegetation and elimination of common reed. Partially Successful.	Seasonal removal of Phragmites shoots originating from buried rhizome fragments	0.5	\$5,000 Waterfowl USA	1994	Prior to 2000	Bob Miller Waterfowl USA, Chris Pickerell, CCE (631) 852-8660
<i>Tidal Wetlands</i>	Accabonac Harbor, East Hampton	Removal of asphalt and concrete debris from an intertidal shoreline. Success based on establishment of native vegetation- TBA.	None	0.1	<\$500 Town	1997	Prior to 2000	Kim Shaw, EHTNRD (631) 324-0496
<i>Tidal Wetlands</i>	Accabonac Harbor OMWM*, East Hampton	Open marsh water management (OMWM) for restoration of natural hydrology and Coliform bacteria reduction. Selected mosquito ditches were plugged using plywood and sandbags. Ditch selection based size and Coliform levels in repeated water samples. Success based dam stability, reduction in Coliform loading to the Harbor and conditional opening of the area to shellfishing. Successful.	Replace sandbags where necessary	50	Accabonac Harbor Protection Committee, East Hampton Trustees, USFWS	1994	Prior to 2000	Kim Shaw, EHTNRD (631) 324-0496
<i>Tidal Wetlands</i>	Northwest Creek OMWM, East Hampton	OMWM for restoration of natural hydrology and Coliform bacteria reduction. Selected mosquito ditches were plugged using combination of plywood and sandbags. Ditch selection based size and Coliform levels in repeated water samples. Success based dam stability, reduction in Coliform loading to the Harbor and conditional opening of the area to shellfishing. Partially successful.	Replace sandbags where necessary	50	EH Trustees, USFWS	1994	Prior to 2000	Kim Shaw, EHTNRD (631) 324-0496
<i>Tidal Wetlands</i>	Three Mile Harbor Drive, East Hampton	Planting bare-root cordgrass into a highly disturbed roadway cut into the marsh. Transplants gleaned from local stock in Three Mile Harbor. Success based on plant establishment. Very successful.	Permanently fenced to vehicular traffic	0.25	<\$500	Apr-96	Prior to 2000	Kim Shaw, EHTNRD (631) 324-0496
<i>Tidal Wetlands</i>	Gerard Point, East Hampton	Planting nursery propagated cordgrass into open areas in and adjacent to the existing marsh. Success based on plant establishment. Successful.	Fenced	0.25	\$750 East End Institute	Jul-99	Prior to 2000	Kim Shaw, EHTNRD (631) 324-0496
<i>Tidal Wetlands</i>	Cassidy Preserve, Hashamomuck Pond, Southold	Excavation and re-grading of hydraulic dredge spoil, creation of intertidal pools and replacement of common reed with smooth cordgrass. Success based on proper elevations, maintenance of water in pools and elimination of common reed. Successful.	Portions were re-graded to inhibit common reed recolonization	5	\$30,000 USEPA	Jun-99	Prior to 2000	Chris Pickerell, CCE (631) 852-8660, John Halsey, President Peconic Land Trust (631) 283-3195
<i>Tidal Wetlands</i>	Downs Creek, Cutchogue	Removal of concrete and other debris within an intertidal marsh to allow for natural re-vegetation and prevent future dumping. Success based on natural re-vegetation of the site by cordgrass. Successful.	Signage	0.1	Private	1996	Prior to 2000	Russ McCall

<i>Tidal Wetlands</i>	Long Beach Bay, Orient Southold	Culvert replacement and enlargement to increase salinity behind a dike at multiple points. OMWM for water quality improvement. Reductions in storm water inputs to surface waters.	Salinity and tidal elevation monitoring. Repair of leaky dams	200+	\$253,000 USFWS	1999	Prior to 2000	Chris Pickerell, CCE (631) 852-8660
<i>Tidal Wetlands</i>	Fish Cover Bridge, North Sea Harbor, Southampton	Planting of cordgrass to mitigate new bridge construction. Plantings included nursery propagated peat pots. Success based on establishment of cordgrass. Successful.		0.1		1995	Prior to 2000	Gary Gentile, New York State Department of Transportation (631) 952-6219
<i>Tidal Wetlands</i>	Otter Pond, Sag Harbor	Planting of native marsh grasses to prevent erosion and improve aesthetics. Propagules included nursery stock. Success based on establishment of grasses. Partially successful.		0.1	Private	1997	Prior to 2000	Village of Sag Harbor
<i>Tidal Wetlands</i>	Broad Cove, Aquebogue, Riverhead	Restoration of intertidal marsh through cordgrass plantings, restoration of a tidal creek and opening of manmade tidal salt ponds to tidal flow. Success based on establishment of grasses, stability of new creek and increased flushing of tidal ponds. Sandbar plantings mostly unsuccessful, creek restoration successful, flushing successful	Minimal fencing, regular photographs	5	Private	1994	Prior to 2000	Chris Pickerell, CCE (631) 852-8660
<i>Tidal Wetlands</i>	Chase Creek, Shelter Island	Planting of cordgrass to mitigate bridge improvements. Plants included nursery propagated peat pots. Success based on establishment of cordgrass. Successful.		0.1		1996	Prior to 2000	Gary Gentile, New York State Department of Transportation (631) 952-6219
<i>Tidal Wetlands</i>	Sag Harbor Cove/Paynes Creek, Southampton	Located on Long Beach Road in Noyac. A dike was breached at this historic dredged material disposal site to re-introduce tidal flow. Dredged materials were removed off-site and plantings of native wetland vegetation completed. Project is considered a success as a native wetland was re-established and is now actively utilized by shore birds.		>5			Prior to 2009	Marty Shea, Southampton Town (631) 287-5710, Partners: Southampton Town Board, Southampton Town Trustees
<i>Tidal Wetlands</i>	Upper Sag Harbor Cove Wetlands, Southampton	An area of this wetland which was damaged by vehicles was re-vegetated with <i>Spartina</i> . Re-vegetation was successful.		<1			Prior to 2009	President Southampton Town Trustees (631) 287-5717
<i>Tidal Wetlands</i>	Paynes Creek Enhancement Project, Southampton	Re-vegetation occurred naturally and human induced efforts were not necessary.			No Cost		Completed Naturally Prior to 2009	Marty Shea, Southampton Town (631) 287-5710
<i>Tidal Wetlands</i>	North Sea Wetlands, Southampton	An impervious paved walk at the Conscience Point Complex was removed and replaced with crushed shell. Native plants were planted and vehicle access restricted. Signage was installed.		<5			Prior to 2009	Marty Shea, Southampton Town (631) 287-5710, Partners: Southampton Historical Society, Southampton Town Board & Trustees
<i>Tidal Wetlands</i>	Fish Cove Wetland Enhancement, Southampton	Several years of washed up marine debris has accumulated on the marsh. The Southampton Baymen's Association and other volunteers removed an enormous amount of flotsam which was transported by boat to Southampton Town Highway vehicles and trucked to the recycling center. Successful.	Future maintenance/debris removal may be required (every 3 years)		Volunteer Time		Prior to 2009	President Southampton Town Trustees (631) 287-5717 Partners: Southampton Town Board, Southampton Town Trustees
<i>Tidal Wetlands</i>	North Sea/Alewife Creek Wetlands, Southampton	Abutting landowner was required by Southampton Town to undertake restoration and re-planting efforts.					Prior to 2009	Marty Shea, Southampton Town (631) 287-5710
<i>Tidal Wetlands</i>	Three Mile Harbor Wetlands, East Hampton 41.0299, -72.2043	Disturbed/trampled areas were re-planted with native salt marsh vegetation. Success based on establishment of vegetation. Successful.		<2	\$150,000	1997	Prior to 2009	Kim Shaw, EHTNRD (631) 324-0496
Water Quality								
<i>Flushing/Circulation</i>	Accabonac Harbor Flushing, East Hampton, 41.0364, -72.1364	A large box culvert was installed to replace an existing smaller culvert under Gerard Dive at a causeway. The disturbed area was re-planted with native vegetation. The larger culvert is believed to increased tidal circulation which has benefited the nearby tidal wetland vegetation.	Maintenance dredging of the channel is performed	50	Over \$500,000	2004	2005	Kim Shaw, EHTNRD (631) 324-0496

<i>Flushing/ Circulation</i>	Fresh Pond Circulation, East Hampton, 41.9956, - 72.1129	A 650 foot long, 40 foot wide and 2 foot below mean low water channel was dredged. Approximately 2,140 cubic yards of material was removed and placed on the beach southeast of the channel. The new channel is expected to help increase tidal flushing and benefit habitat and resources.	Maintenance dredging of the inlet may be required		\$18,450	2010	2010	East Hampton Trustees (631) 267-8668
<i>Water Quality</i>	Oyster Pond Water Quality, East Hampton 41.0719, - 71.8919	Leaking oil tank was replaced and sewage pump station installed. Both were successful in removing source of contamination			\$100,000+	2000	Prior to 2009	Kim Shaw, EHTNRD (631) 324-0496