

# Public Review Draft

## Flax Pond Unit Management Plan



Prepared by

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## SECTION I. MANAGEMENT UNIT DESCRIPTION

### A. Location

Flax Pond Tidal Wetland consists of 146.2 acres (59.2 hectares) of tidal pond, marsh, surrounding beach and uplands located in the Incorporated Village of Old Field, Town of Brookhaven, Suffolk County. It lies on the southern shore of Long Island Sound between two rocky headlands, Crane Neck Point to the west and Old Field Point to the east (Figure 1). Both headlands are part of the Harbor Hill glacial moraine. Flax Pond is bordered on the west by Crane Neck Road and the private residences or properties thereon, on the south by Shore Drive and private residences thereon and on the east by Flax Pond Woods Road and private residences thereon. The northern border of the property consists of a narrow gravel and sand spit that separates the marsh from Long Island Sound. A 100-foot (30.5 m) wide man-made inlet (kept open by stone jetties) allows for tidal exchange of waters between the pond and Long Island Sound. The supratidal portions of the beach are owned, furthest west, by the Crane Neck Association. To the east of the Crane Neck Association property stretch a series of privately held parcels. Beyond these parcels to the east the land is state-owned down to the inlet and for approximately 100 yards (91.4 m) east of the inlet (Figure 2).

When the above property was jointly purchased by The New York State Conservation Department, predecessor of today's New York State Department of Environmental Conservation (DEC), and State University of New York (SUNY) in the mid-1960's, SUNY also purchased approximately 15 acres (6.1 hectares) of upland property along the northwest perimeter of Flax Pond, comprising the now-abandoned Crane Neck Lane and 6 privately-owned parcels. For planning purposes, this land is encompassed within the Flax Pond Unit Management Plan.

### B. Resources Inventory

#### 1. Geology and Soils

The Soil Survey of Suffolk County shows that Flax Pond Tidal Wetland consists mainly of Tm (tidal marsh). Bc (beach) soils are found along Long Island Sound, with Du (dune land) on the south side of the beach, between it and the salt marsh. Along the south border of Flax Pond, a narrow strip of Wd (Walpole sandy loam) is found. This type of soil commonly occurs along the sides of tidal marshes between poorly-drained marsh soils and the well-drained soils of upland areas. The beach east of the inlet is composed of Fd (filled land), a result of dredging the inlet. It is mainly sand.

Stratigraphic studies reveal a thin layer of freshwater marsh peat below the surficial salt marsh peat in the vegetated areas of the marsh, indicating that Flax Pond was in the past a freshwater or brackish environment. Beneath the freshwater peat is a band of well-sorted sand and gravel that lies atop a layer of Pleistocene outwash sands. Based on the estimated accumulation rate of salt

marsh peat in the pond, the transition from a predominantly freshwater environment to a salt marsh occurred early in the 19th Century (see below).

## 2. Hydrology

New York State Department of Environmental Conservation's (DEC's) tidal wetland maps 654-536 and 656-536 indicate that Flax Pond Tidal Wetland is mostly intertidal marsh (IM), with winding creeks and mud flats (SM) at low tide. These areas are completely covered at high tide, leaving relatively small islands of high marsh (HM). Areas of upland include a small island in the middle of the pond, the beach and dunes along the shore, and a thin fringe of mixed deciduous forest along the southern and southwestern borders of the marsh.

About 85% of the property is salt marsh, including 15.2 acres (6.2 hectares) of high marsh, 89.6 acres (36.3 hectares) of intertidal marsh and 23.4 acres (9.5 hectares) of shoals and mudflats in and around the pond. The marsh is flushed twice daily as the pond fills and drains with the diurnal tide. The volume of water in the pond at high tide is approximately 880,000 m<sup>3</sup> (31,076,906 ft<sup>3</sup>). The mean tidal range in the pond was about 1.8 meters (6.2 feet) in the 1970's (Woodwell and Pecan, 1973). Salinity in the pond averages 26 ppt - basically, that of the adjacent Long Island Sound - and has a range of 25-34 ppt. The temperature of the pond varies throughout the year from 29-86°F (-1.6-30°C). The tidal cycle of the pond is of approximately 12 hours duration but is asymmetrical; the pond fills more quickly (5 hours) than it empties (7 hours) due to a shallow sill just inside the inlet that retards the ebb flow. Comparison of water levels in the pond over the past 20 years indicates that low water elevation has increased significantly over this period, i.e. the pond is not draining of water through the ebb part of the tidal cycle as much as it once did. This appears to be directly correlated with the evident shoaling of the inlet, which has not been dredged since 1947 (see discussion, below).

## 3. Vegetation

Flax Pond Tidal Wetland consists of a biologically diverse community and is considered a highly productive tidal wetland. Vegetation in the intertidal marsh consists mostly of salt marsh cordgrass (*Spartina alterniflora*), growing tallest at water's edge. Extensive mud flats with no vegetation are visible at low tide, along with deep tidal channels. Glasswort (*Salicornia virginica*) mixed with *S. alterniflora* grows at the edges of the mudflats. The scattered patches of high marsh are dominated by saltmeadow hay (*Spartina patens*) and spike grass (*Distichlis spicata*). In the transition zone between the intertidal marsh and upland areas, sea lavender (*Limonium carolinianum*), marsh elder (*Iva frutescens*), and groundsel (*Baccharis halimifolia*) are found. Poison ivy (*Toxicodendron radicans*) and rugose rose (*Rosa rugosa*) grow at slightly higher elevations, along with red cedar (*Juniperus virginiana*) and other woody shrubs. Stands of common reed (*Phragmites australis*) occur in the high marsh on the

south side of Flax Pond, near the Flax Pond Laboratory next to a site of emerging fresh groundwater, and in the southwestern corner of the marsh.

A hummock of upland habitat exists slightly west of the middle of the pond. It is surrounded by water at high tide, but partly connected to land by mud flats at low tide. It is covered with marsh elder, groundsel, black cherry (*Prunus serotina*), oaks (*Quercus sp.*), and large, old red cedars. The island is connected by a footbridge to an unmarked trail across the south side of the marsh. The trail passes through a shrubby area to an opening in a fence along Crane Neck Road.

The SUNY-owned upland property along the northwest border of the marsh is largely an overgrown field. At some time in the past, a portion of this property ( $\cong$  2 acres; 0.8 hectares) was re-cleared of trees and today is an open field.

The gently sloping beach on the Sound side of the marsh rises to form sandy dunes between the Sound and the marsh, on which is found upland vegetation including oak trees, red cedar, poison ivy, beach grass (*Ammophila breviligulata*), rugose rose, beach pea (*Lathyrus japonicus*), goldenrod (*Solidago spp.*), woolly mullein (*Verbascum thapsus*), garden phlox (*Phlox paniculata*) and Virginia creeper (*Parthenocissus quinquefolia*).

A list of plants commonly occurring in Flax Pond Tidal Wetland is found as Appendix A to this document.

#### 4. Wildlife

The waters of Flax Pond are rich with marine invertebrates, including fiddler crabs (*Uca pugnax* and *U. pugilator*), grass shrimp (*Palaemonetes spp.*), blue mussel (*Mytilus edulis*), ribbed mussel (*Geukensia demissa*), razor clam (*Ensis directus*), hardshell clam (*Mercenaria mercenaria*), Eastern oyster (*Crassostrea virginica*), blue crab (*Callinectes sapidus*), Asian shore crab (*Hemigrapsus sanguineus*), mud crabs (*Panopeus herbstii* and *Dyspanopeus sayi*), horseshoe crab (*Limulus polyphemus*), softshell clam (*Mya arenaria*), and Eastern mudsnail (*Ilyanassa obsoleta*).

Fish species commonly encountered in Flax Pond include American eel (*Anguilla rostrata*), bay anchovy (*Anchoa mitchilli*), Atlantic menhaden (*Brevoortia tyrannus*), Atlantic silversides (*Menidia menidia*), winter flounder (*Pleuronectes americanus*), bluefish (*Pomatomus saltatrix*), cunner (*Tautoglabrus adspersus*), fourspine stickleback (*Apeltes quadracus*), mummichog (*Fundulus heteroclitus*), northern pipefish (*Syngnathus fuscus*), sheepshead minnow (*Cyprinodon variegatus*), striped killifish (*Fundulus majalis*) and windowpane flounder (*Scophthalmus aquosus*). Some of these species, such as winter flounder, bluefish, and Atlantic menhaden are only seasonally present.

Bird life is abundant in and around Flax Pond, especially on the mud flats at low tide. Among the more commonly encountered species are black duck (*Anas*

*rubripes*), great egret (*Casmerodius albus*), snowy egret (*Egretta thula*), double-crested cormorant (*Phalacrocorax auritus*), great blue heron (*Ardea herodias*), belted kingfisher (*Megasceryle alcyon*), yellowlegs (*Tringa spp.*), herring gull (*Larus argentatus*), ring-billed gull (*Larus delawarensis*), and black-crowned night heron (*Nycticorax nycticorax*). Two osprey (*Pandion haliaetus*) nest platforms are located in the marsh, one between the footbridge and the laboratory on the southern edge of the marsh and the other in the northeast corner behind the beach, which have attracted breeding pairs of birds. The beach is a former nesting colony site of the least tern (*Sterna antillarum*) and common tern (*Sterna hirundo*) and the federally threatened piping plover (*Charadrius melodus*). The last recorded nesting of any of these three species at Flax Pond was in 1995. Birds routinely seen in the upland habitat that fringes the southern edge of the pond include northern mockingbird (*Mimus polyglottos*), robin (*Turdus migratorius*), red-winged blackbird (*Agelaius phoeniceus*), common grackle (*Quiscalus quiscula*), eastern kingbird (*Tyrannus tyrannus*), barn swallow (*Hirundo rustica*), song sparrow (*Melospiza melodia*), American goldfinch (*Carduelis tristis*), common crow (*Corvus brachyrhynchos*), northern catbird (*Dumetella carolinensis*), northern cardinal (*Cardinalis cardinalis*), black-capped chickadee (*Parus atricapillus*) and blue jay (*Cyanocitta cristata*).

A list of birds and other wildlife that can be seen in Flax Pond Tidal Wetland is found as Appendix B to this document.

## 5. Important flora and fauna

Flax Pond Tidal Wetland has in the past been a nesting site for the federally-threatened piping plover (*Charadrius melodus*), documented on the beach on state land during the 1980's and 1990's. The northern diamondback terrapin (*Malaclemys terrapin terrapin*), which is listed as a regional species of concern, is also found in and around Flax Pond. New York State maintains a list of endangered, threatened and species of special concern list, of which animals found in the Flax Pond system are included. A few of the bird species found in the Flax Pond system are listed by New York State as being endangered. These include the short-eared owl (*Asio flammeus*) and the pied-billed grebe (*Podilymbus podiceps*). Birds listed as threatened by New York State include the least tern, common tern, and the red-shouldered hawk (*Buteo lineatus*). The osprey is listed as a species of special concern.

Many of the species found in Flax Pond's tidal wetland environments have also recently been listed as species of greatest conservation need by DEC, including but not limited to horseshoe crab, American eel, eastern oyster, black-bellied plover, fiddler crabs and blue crabs. The designation as a species of greatest conservation need is part of an effort to provide funding to protect and conserve species of plants and animals that have traditionally not been eligible for other sources of conservation funding, and to prevent the listing of additional species as endangered or threatened.

## 6. Roads and structures

Crane Neck Road and Shore Drive bound the Flax Pond property along its southwestern and southern margins, respectively. Both roads are private and owned by the Crane Neck Association. DEC and Stony Brook University (SBU) have access to a 50 foot-wide (15.2 m) right of way along Shore Drive to allow ingress and egress to the Childs Mansion and Flax Pond Marine Laboratory.

The Childs Mansion is a wooden, three-story building that was the main house of Crane Neck Farm when the entire peninsula on which Flax Pond is located was under single ownership. The original section of the house dates from the mid-18th Century and has been added to several times over the past 200 years. By the early 1990's, the structure had deteriorated badly, but it has been refurbished over the past decade. The Mansion now serves as a guest house and day conference facility for SBU.

The Flax Pond Marine Laboratory, built by DEC and now operated and managed by SBU under an agreement with DEC, lies on State property on the south side of the pond, off Shore Drive. A paved parking lot is located on the east side of the building, large enough to hold about 12 vehicles. The laboratory is the site of experiments requiring a constant flow of salt water, which is provided by pumping surface water from the pond or from a saltwater well. Excess water from the laboratory flows back to the pond through a 10" pipe that discharges the water at the approximate Mean High Water line behind the building.

In 1968, SBU constructed a narrow wooden footbridge over a constricted portion of the Pond, directly north of the Childs Mansion. This was the site of an earlier tramway bridge built during the 1920's by Mr. Eversley Childs, who owned the mansion and Crane Neck Farm from 1901 until just after the Second World War, when he began to sell off parcels on the peninsula. That structure did not survive the great hurricane of 1938. The footbridge connects the upland hummock (surrounded by water at high tide) with the marsh at the south side of the pond. A rustic trail leads from that point to an opening in the perimeter property fence on Crane Neck Road. There are no other formal trails on the property.

Historical records suggest that an inlet was first dug between the pond and Long Island Sound in 1803. A rough map of the area dated 1797 shows no sign of an inlet or channel between Flax Pond and Long Island Sound. It is likely that, over time, the location of this un-hardened inlet meandered along the face of the beach in response to littoral drift and periodic coastal storms. Local residents would use horse-drawn ploughs to occasionally deepen the connection between the pond and the Sound. In 1947, two stone jetties were constructed on either side of the inlet to stabilize the opening at its present location.

## 7. Cultural resources

The term, "cultural resources," encompasses a number of categories of human-created resources including structures, archaeological sites and related resources. The New York State Museum and New York State Office of Parks and Recreation and Historic Preservation list Flax Pond as a prehistoric Native American site. In 1977, a shell midden was reported at the northwest corner of the Pond. No additional information is available at this time on the archaeological significance of Flax Pond.

## 8. History

Originally Flax Pond was a fresh water pond and marsh, formed 20,000 years ago when the Wisconsinian glacier laid down the huge accumulation of soil, sand, and boulders that shapes the North Shore of Long Island and the Harbor Hill Moraine.

The town of Old Field was purchased from the Setalcott Indian tribe by a deed of confirmation bearing no date by Wyandanch, chief of the Montauketts, sometime before 1659 (Bayles, 1882). Historical records maintained by the Village of Old Field and the Town of Brookhaven indicate that Flax Pond (then called Fresh Pond) was used in the 18th Century as a commons for watering cattle and for "retting" flax. In the retting process, flax stalks are immersed in fresh water for a period of up to two weeks. At the end of this time, the cellular tissues encasing the fibers and other unwanted substances had rotted away and the cleansed fibers were removed from the water, dried and eventually processed into linen. It is from this early use of the pond that its present name derives. The earliest colonial inhabitants of the Setauket-Stony Brook area did not choose the peninsula now occupied by the Village of Old Field as a place to build homes. The area's projection north into Long Island Sound left it too exposed to Native American raiding parties from across the Sound. In the late 1700's, the domestic flax market was no longer profitable due to competition from Russia. It was decided to make the marsh profitable as a shellfishing area. In 1803, an inlet was dug connecting the marsh to Long Island Sound, creating the necessary conditions for the formation of a salt marsh. Oysters and clams soon colonized the marsh, and a profitable shellfishing industry began. The establishment of the inlet led to an increase in the amount and rate of sediment deposition within the new salt water pond, thus creating more marsh habitat.

In 1803, the Town of Brookhaven sold the western portion of the pond to a trio of private landowners, but retained for the town's citizens the rights to fishing, clamming, and oystering in the pond. In 1819, the Town sold its remaining property in the eastern portion of the pond to a private landowner, with the rights to fishing and shellfishing again retained in perpetuity for the citizens of the Town. Flessa et al. (1975) assessed evidence in the form of historical maps, charts, and aerial photographs of the location and permanence of a water connection between Flax Pond and Long Island Sound, post-1803. They conclude that the



inlet/channel connection since 1803 has been a relatively permanent but wandering feature whose location, dimensions, and orientation have changed as a result of coastal storms, longshore sediment transport/inlet migration, and, more recently, human interference with these natural forces. In the mid-19th Century, Town of Brookhaven records first mention "salt meadows" at Flax Pond, implying a substantial and established growth of salt marsh vegetation in the pond by this era and suggesting a relatively persistent connection and exchange of salt water between the pond and Long Island Sound.

In 1942, the Town of Brookhaven considered an application to dredge the present channel, which application it denied. The present channel/inlet was artificially widened and deepened immediately after the Second World War and concrete/stone jetties were installed flanking the inlet. No records of the application to the Village of Old Field or the Town of Brookhaven for this inlet stabilization project have been found.

Sometime before 1874, large amounts of sand and gravel began to be removed by hand from the beach separating Flax Pond from Long Island Sound (Bone, 1998). The hand (and, perhaps, horse-assisted) digging typically extended from May through October. Material dug from the beach was loaded onto vessels beached on the shore. When fully loaded, the vessels were re-floated by the tide and left for New York City, where the sand and gravel were used in furnaces for melting iron, construction of gravel roofs, and the manufacture of sandpaper and glass. How long this activity persisted is not known. In 1944, the McCormack Sand and Gravel Company began sand and gravel dredging operations from submerged deposits in Long Island Sound off Flax Pond inlet and, at times, within in the inlet itself and just inside the inlet. This dredging was performed by a floating dredge that was moored at the dredging site using anchors and piles driven into the seafloor. Evidence of these dredging activities can be still be seen today at low tide, when the deep hole excavated just inside the inlet is readily visible, as are the remains of one or two of the pilings used to hold the dredge in place.

From the early 17th Century until the beginning of the 20th Century, the land surrounding Flax Pond, Crane Neck, was farming country. A dwelling on the present site of the Childs Mansion adjacent to Flax Pond is noted in Town of Brookhaven records dated 1725. In 1786, one Benjamin Jones purchased Crane Neck. A 1797 map of Crane Neck shows the Jones house and several barns in the approximate location of today's mansion. Subsequently, the Spinola family bought Crane's Neck, which eventually passed to one Louisa Spinola McKeige in 1891. Ms. McKeige's son sold the property to Eversley Childs in 1901, who named it, "Crane Neck Farm." Childs was heir to a family fortune derived from its involvement with Bon Ami cleansing products. He substantially enlarged the main house at Flax Pond and numerous out-buildings. Between the main house and Crane Neck Road were several barns, a large barnyard, extensive gardens, chicken coop, tool sheds, a laundry, a greenhouse, and a dog kennel. Atop the hill lying west of intersection of Crane Neck and Shore Roads were found a

caretaker's cottage, several garages, and a water tower. A windmill was located on the hill lying directly south of Shore Road; a bit east of the windmill, a gardener's cottage. At some point, Childs had a miniature replica of the Brooklyn Bridge built immediately to the west of the current footbridge that crosses a narrow channel in Flax Pond. The bridge supported the rails of a tramway used by the Childs family and house guests to get from the mansion to the beach. This bridge was destroyed by the 1938 Hurricane, but its concrete footings remain. Before installing the jetties that flank the current inlet between Flax Pond and Long Island Sound, Childs would have a local farmer dredge the inlet with a horse-drawn plow (W. Fidao, personal communication).

In the mid-1940's, Childs began to sell off much of Crane Neck Farm for private residences. The multi-page offering of sale, complete with photographs and line drawings of the environs of the Crane Neck of that era, depicts the fields, woodlands, winding dirt roads, and coastal bluffs and cobbled beaches that together comprised the bucolic beauty of the area. Eversley Childs died in 1953. By 1956, Flax Pond and the immediately surrounding property north of Shore Drive and east of Crane Neck Road and Crane Neck Lane, once owned by Childs, had come into the possession of the Flax Pond Improvement and Realty Corporation (FPIRC). This corporation's plans to develop the Flax Pond property created a local controversy that eventually resulted in the purchase of the property by the State of New York a decade later.

The Flax Pond property was purchased by the State of New York in the mid-1960's in the face of a proposal by the then-owner, Flax Pond Realty Corporation, to develop the property for luxury homes. In 1965, the State University of New York (SUNY) and the New York State Conservation Department, predecessor of today's DEC, signed a Memorandum of Understanding to jointly acquire the Flax Pond property for, "...the perpetual use of the State University of New York (SUNY) and the Conservation Department."

Ownership of the Flax Pond property was vested in the State on 15 March 1966 and covered the 146.162 acres, along with the Childs Mansion and its several outbuildings that existed on the property at that time. SUNY acquired a broad and permanent easement to use the Flax Pond property for its research and educational purposes. The Conservation Department acquired the underlying fee simple, using funds from the Recreational Bond Act of 1960. DEC owns the land and all of the buildings and structures on it, while, under its easement, the University can use the property for research, study and teaching of marine sciences and other, legitimate purposes of the University. A small parcel in the eastern extremity of the marsh ( $\cong$  5 acres) was not purchased by the State and remains today the property of the Flax Pond Woods Association, a local property owners association.

In 1969, DEC constructed the Flax Pond Marine Laboratory along the southern margin of Flax Pond, to the east of the Childs Mansion.

In 2005, DEC and SBU signed separate, 25-year agreements (Memoranda of Agreement) to explicate their joint interest in the use and management of, respectively, the Flax Pond property, the Childs Mansion and the Flax Pond Marine Laboratory. The agreement covering the property established the Flax Pond Management Committee (DEC Region One Regional Director, DEC Director of Marine Resources, and Dean & Director of MSRC) to oversee and guide the use of the property, including the development of this unit management plan. These Memoranda of Agreement are found as Appendices C, D, & E to this document.

## **SECTION II. PUBLIC USE AND CURRENT MANAGEMENT**

Although Flax Pond Tidal Wetland is open to the public, there is little opportunity for the public to access the property due to its location in an exclusive residential community and street-side no-parking rules. A Village of Old Field permit is necessary to park in the Crane Neck Association parking lot on the west side of the property where one has access to the beach. The parking lot adjacent to the laboratory is open to the public, but is mainly used by SBU personnel stationed or working at the laboratory. A valid DEC managed lands access permit is required for all public users parking in this lot.

The regulations that govern public use of the Flax Pond property are those contained in 6 NYCRR Part 46, Public Use of State-owned Tidal Wetlands (see Appendix F). Under these regulations, prohibited activities at Flax Pond include:

1. Operation or use of motorized, wheeled or tracked vehicles
2. Overnight camping
3. Fire (any type)
4. Unleashed dogs, except those used in permitted hunting
5. Removal or damage to trees or other vegetation
6. Construction or maintenance of permanent blinds or other structures
7. Littering or dumping of waste materials, including garden clippings

In addition, upland hunting at Flax Pond is not permitted because of the property's small size and the proximity of residences.

Other public uses and activities at Flax Pond are subject to the permitting authority conveyed to DEC by 6 NYCRR Part 46. Waterfowl hunting is permitted in season on the state property in accordance with current regulations. Boating is allowed, but its intensity is limited by the impassability of the inlet at most stages of the tide and the lack of small boat launching facilities anywhere along the shoreline of the pond. Commercial and recreational fishing and shellfishing are done in and around Flax Pond. The limited trails are used for hiking and wildlife viewing.

## SECTION III. THREATS AND TRENDS

### A. Potential threats to the environment and ecosystem

#### 1. shellfish harvesting

Ribbed mussels (*Geukensia demissa*) play an important role in enhancing the productivity of *Spartina alterniflora* by increasing the amount of nitrogenous waste, mineral nutrients, and oxygen in the sediments. Ribbed mussel density correlates positively with biomass per area, percent of stems flowering, number of stems per area, and mean stem length of *S. alterniflora*. The mussel's byssus threads bind the root mat together and may play a significant role in fortifying *S. alterniflora* from physical disturbance and erosion. Protected marshes in southern New England and Maryland commonly have mussel densities of over 1000 individuals per square meter on the seaward edge of the marsh. Marshes or portions of marshes with high *G. demissa* densities may be more productive and less prone to erosion and physical disturbance than marshes harboring smaller mussel populations (Bertness, 1984). Unregulated harvesting of ribbed mussels for use as bait may pose a threat to Flax Pond.

In 2004, DEC designated a portion of the eastern part of Flax Pond as "uncertified" for shellfish harvests, Pond waters in this area failed to meet fecal coliform standards for certified shellfish lands. All harvests of molluscan shellfish, whether for sale, consumption, or use as bait, a prohibited in uncertified waters.

#### 2. loss of vegetated wetlands

Photo-interpretation and GIS trends analysis indicate that vegetated tidal wetlands in Flax Pond have been lost since 1974. Comparison of 1974 aerial infrared photography with 2004 true color aerial photography reveals a loss of approximately 14 acres (5.6 hectares) of vegetated tidal wetlands over this 30-year period, an average of 0.47 acres (0.19 hectare) per year. The loss has been primarily of *S. alterniflora* in two areas: along the marsh/water interface throughout the pond and among the marsh tussocks in the portion of the pond west of the footbridge (Figures 3 and 4). Potential causes of these observed losses may be ecogeomorphological, associated with a growing flood tide delta in the pond (see below), a resultant rise in low tide elevation, and a negative vegetative response, as indicated by two preliminary studies conducted in 2005.

The results of a tidal prism study conducted by Lorne Brousseau of Cornell Cooperative Extension of Suffolk County (Brousseau, 2005) were compared to the findings of Woodwell and Pecan in 1973. This comparison corroborated Baer's (Baer, 2005) conclusions that, at least qualitatively, the elevation of Mean Low Water (MLW) in Flax Pond is apparently higher now than in 1973 (Figures 10 -13). One possible explanation for this rise in MLW level is that the flood tide delta is affecting low tide elevations in the pond by creating a sill that prevents

drainage of tidal waters at low tide. The higher MLW elevation could be causing water-logging of the roots of *S. alterniflora* located along the marsh/water interface within the pond, eventually killing the plants (DeLaune et al., 1994).

### 3. Inlet shoaling

Recent trends and photo-interpretation reveal that sediments are accreting and forming a flood tide delta in Flax Pond at the southern end of the inlet and in the inlet throat. (Figures 5-8). The existing jetties at the Flax Pond inlet were constructed in 1947 and, at that time, dredging was carried out in and near the inlet to maintain tidal flow to the pond and prevent the migration and filling of the inlet. This condition was short-lived, however. Review and GIS analysis of aerial photos indicates that, by 1954, over-wash lobes were beginning to infiltrate the inlet and pond from the east, the direction of prevailing winds and littoral drift (Baer, 2005), Figure 5. The growth of the flood tide delta in the inlet can be seen in Figure 6. By 1961, sediment deposits had filled a significant portion of the inlet throat and the delta covered 3/4 of an acre (0.3 hectare) at the southern end of the inlet. By 1966, the delta had grown to 1.41 acres (0.57 hectare). GIS analysis of the tidal wetland inventory infrared photos indicate a further 10% growth in delta size by 1989, to 1.55 acre (0.63 hectare). Additional GIS photo-analysis using aerial photos taken by the New York State Police indicates that the delta had enlarged to 3.33 acres (1.35 hectare) by 2004, a 114.8 % increase since 1989 (Figure 7). The growth of the flood tide delta can also be easily seen graphically in Figure 8. A correlation between flood tide delta size and vegetated tidal wetlands loss is shown in Figure 9 (Baer, 2005).

Shoaling within the inlet and the progressive enlargement of the flood tide delta immediately south of the inlet will affect the tidal exchange of water between Flax Pond and Long Island Sound. As pointed out above, one possible consequence is a raising of the MLW elevation within the pond, as these constrictions limit the amount of water that can drain from the pond during the ebb tide.

### 4. Wash-over events

As stated earlier, under natural conditions, Flax Pond would only be connected to Long Island Sound, if at all, by a very shallow inlet, easily waded at all stages of the tide. The inlet's location would, over decades, meander back and forth across the beach that separates the pond from Long Island Sound in response to the vagaries of the longshore transport of sand along the beach between Crane Neck Point and Old Field Point. For example, an aerial photograph taken in 1928 shows the natural inlet bent and displaced along the beach approximately 2,000 ft. west of its present location.

This natural situation was first altered with the dredging of an inlet to Flax Pond in 1803 and more substantially and permanently altered in the late 1940's, when rock jetties were installed to maintain and stabilize the inlet at its present location. The inlet jetties intercept sand drifting from the west off Crane Neck Point,

producing a significantly widened beach to the west of the inlet and a thinner beach to the east. The beach west of the inlet was eventually colonized by beach grass and salt cedars; in one, more protected, location, a small grove of post oak (*Quercus stellata*) developed. In the 1980's, the beach at Flax Pond, both west and east of the oak grove, was periodically over-washed by storm waves. The vegetative cover gradually diminished and sand was carried over the beach into the north side of the marsh. Several severe storms in the early 1990's, notably the nor'easter of 12 December 1992, accelerated this process of lowering the elevation of the beach and stripping away its vegetation. By 1995, the vegetative cover on the Flax Pond beach was about half of what was present in 1976 (H. Bokuniewicz, personal communication). The loss of vegetation destabilized the beach, leaving it more susceptible to over-washes, which became more frequent and extensive. During 1995 alone, more than 70% of the beach suffered over-washing. Layers of sand, in places in excess of five feet thick, were deposited in the marsh.

In 1997, MSRC was approached by local residents who were concerned that the stretch of beach north of the westernmost portion of Flax Pond (immediately to the east of the Crane Neck Association beach parking lot) had been lowered to the point that a new inlet in this location might result from future storms. As the Flax Pond beach had become more susceptible to storm wave over-wash, the associated flooding around the margins of the Pond had worsened, particularly along one stretch of the low-lying Crane Neck Road, on the southwestern margin of the Pond. At times, flooding in this location made the road impassable to most vehicles, isolating the houses located on the Crane Neck peninsula north of this spot. It was feared that the more substantial exchange between the Pond and the Sound that a new inlet would allow would greatly increase this flooding problem. Since the 1938 hurricane that struck Long Island, this particular stretch of Crane Neck Road had been protected from inundation by Flax Pond flood waters by a 5' earthen berm. Over the years, the berm had deteriorated; by the late 1990's, it offered relatively little protection. A one-way drain (into Flax Pond) that penetrated the berm had not been maintained and was of little effect in draining the road once it flooded.

With MSRC providing technical guidance, the Crane Neck Association wrote DEC regarding its concerns. The Association indicated that it would like to see the following accomplished: 1) restore the height of the Flax Pond beach; 2) rebuild the Crane Neck Road berm to its original 5' height; and 3) replace the defunct road drain. After site visits by DEC tidal wetlands staff, Crane Neck Association members, and MSRC in fall, 1997, DEC decided to conduct a restoration project to address the beach lowering/flooding problems. In April, 1998, DEC stripped approximately 11,000 cubic yard of overwashed sand from the marsh surface at Flax Pond and redeposited it along several hundred linear feet of beach. A dune approximately 3' high was created and replanted with beach grass. The height of the berm along Crane Neck Road was also increased.

In the years since the above dune replenishment project was conducted, storms have been fewer and generally not as severe as in the mid-1990's. However, given the predicted rise in eustatic (world-wide) sea level from global warming, the potential for more frequent storm-related over-washes of sand into the northern margins of Flax Pond is real.

## 5. Non-native or invasive species

### a. Asian shore crab increase

In recent years, increasing numbers of the Asian shore crab, *Hemigrapsus sanguineus*, have been found within the confines of Flax Pond. This species, endemic to the western Pacific Ocean from Russia south to Hong Kong, was first documented along the East Coast of North America in 1988, at Townsend's Inlet in southern coastal New Jersey. How this species reached North America is not known, but its introduction via the release of ballast water from transoceanic cargo ships is strongly suspected. From its point of introduction, this species has spread southward as far as North Carolina and northward as far as the central coast of Maine. It is now the most abundant intertidal crab along the southern New England coast, including Long Island Sound. In its original range, this species is found primarily on rocky intertidal shorelines, but this is a versatile animal and it may have the ability to colonize other habitats.

*H. sanguineus* is an opportunistic omnivore, feeding on macroalgae, salt marsh grass, larval and juvenile fish, and small benthic marine invertebrates. Its ability to out-compete native intertidal crabs in waters where, like Long Island Sound, it has been introduced, is the result of a number of factors. The Asian shore crab is fecund, with females capable of producing 3-4 clutches of eggs in a breeding season, each clutch numbering up to 50,000 eggs. This species can successfully breed at cooler water temperatures than most native crabs, producing a breeding season that extends from May to September. The larvae are planktonic for roughly a month, allowing for their wide and ready dispersal.

The broad diet of *H. sanguineus* makes it potentially capable of significantly disrupting coastal marine food webs through habitat domination over rival crabs, direct predation on other marine invertebrates (including native crabs), and through food competition with other crabs. Little is known of the presence, activity, and impact of Asian shore crabs in Flax Pond. It is possible that the crabs found in the pond have been brought in from the Sound on the flood tide and subsequently perish in this new habitat. Alternatively, this omnivorous crab may be capable of taking advantage of the abundant food sources within Flax Pond and effectively occupy this new habitat, with unknown and potentially significant impacts to the ecology and food web of the pond.

#### b. *Phragmites* infestation

The common reed, *Phragmites sp.*, is present along the upland border of the Flax Pond marsh at several locations. This species is a universal invasive species and has been documented as a threat to Long Island tidal marshes. As less and less tidal exchange occurs with the adjacent waters of Long Island Sound as a result of the growth of the aforementioned flood tide delta, the salinity of the pond's waters may decline. A drop in salinity might cause an expansion of *Phragmites sp.* along the edges of the pond.

No comprehensive assessment of non-native and/or invasive plant species has been completed for the Flax Pond Tidal Wetland. However, a variety of non-natives and invasives *are* present on the state-owned property. Appendix G lists the results of an informal survey conducted in 2006 by a member of the Flax Pond Unit Management Plan Development Group (G. Richard) and his wife.

### SECTION IV. MANAGEMENT GOALS, OBJECTIVES AND ACTIONS

"It will be the goal of the Department to manage State lands for multiple benefits to serve the needs of the people of New York State. This management will be considered on a landscape level, not only to ensure the biological diversity and protection of the ecosystem, but also to optimize the many benefits to the public that these lands provide."

Flax Pond Tidal Wetland is a large, beautiful wetland property containing tidal pond, marsh, beach and upland habitats. It offers multiple resources to wildlife and many opportunities for people to use and enjoy its natural resources. Associated with and used by an educational institution, SBU, the property provides a research and educational site for MSRC and other University units and is also available for education and research conducted by other institutions and organizations. Flax Pond is also available for the traditional, public uses of tidal wetlands permitted by Part 46, Public Use of State-owned Tidal Wetlands of the New York Code of Rules and Regulations.

The management goals and objectives for Flax Pond Tidal Wetland include stewardship, education and research, recreation and management plan review.

#### A. Stewardship

Goal: Manage New York State tidal wetland properties to protect, enhance and restore environmentally sensitive wetland habitats with special concern for protecting open space and rare and endangered plants, animals and natural communities. Management is directed towards enhancing the functional elements of the salt marsh, namely provision of habitat, primary production, support of food web dynamics, cycling of nutrients, export of organic matter, removal of contaminants, attenuation of wave energy, storage of flood water, and



sediment accretion. Management practices may include efforts to restore tidal flow, enhance habitat for waterfowl and migrating shorebirds, and remove invasive and non-indigenous species.

Objective A.1. Manage Flax Pond Tidal Wetland to protect and enhance its environmentally sensitive habitat and the plants and animals that live there.

Action A.1.1. Conduct surveys on a regular basis of plants and animals in the tidal marsh, pond, beach and upland areas. Priority should be given to floral and faunal species mentioned under "Important Flora and Fauna" (Section I.B.5., above) and in Section III "Threats and Trends".

Action A.1.2. Continue to monitor tern and piping plover nesting areas on the property and take measures to protect these areas, as necessary.

Action A.1.3. Identify strategies to manage (where necessary or practical) invasive species within pond, beach, upland and tidal marsh areas. (Consider the common reed, *Phragmites australis*, where it is increasing at south side of Flax Pond).

Action A.1.4. Periodically, mow the 2-acre open grassland found on the SUNY Property adjacent to the northwest perimeter of the marsh to retain its value as nesting habitat for grassland songbirds.

Action A.1.5. Continue the Department's policy of "pack it in and pack it out" with respect to controlling trash and litter on the property.

Action A.1.6. Periodically clean area of and set up a maintenance schedule for trash and other litter.

Action A.1.7. Periodically resurvey and inspect property boundaries for possible encroachment.

Action A.1.8. Post property on an annual basis.

Objective A.2. Maintain or enhance tidal flow throughout intertidal and high marsh to insure healthy salt marsh habitat.

Action A.2.1. Conduct surveys on a regular basis of the boundaries and hydrology of intertidal marsh and high marsh.

Action A.2.2. Monitor and evaluate tidal characteristics of the Flax Pond system.

Action A.2.3. Monitor and evaluate sediment build-up in the pond and marsh areas.

Action A.2.4. Evaluate the findings of the above actions (A.2.1 - A.2.3) to verify degree of threat to the Flax Pond system from changing hydrology. If, after two years' further study, additional loss of intertidal marsh or shoaling at the inlet is documented, the elevation of the Mean Low Water Line in the pond continues rise, and/or other evidence suggests that the inlet has not reached a quasi-equilibrium state and is still involving, with the potential danger of closing entirely, identify potential remedial actions to abate these threats.

### Objective A.3. Enhance habitat for wildlife

Action A.3.1. Monitor nesting success at the two existing osprey nest platforms.

Action A.3.2. Encourage and seek funding for habitat restoration projects that will enhance the habitat for flora and fauna.

### B. Education and research

Goal: Promote the use of Flax Pond for outdoor education and research on sensitive habitats and their associated natural resources.

#### Objective B.1. Work cooperatively with SBU to achieve this goal.

Action B.1.1. Develop a protocol for coordinating SBU/MSRC research and educational activities at Flax Pond with other, DEC-permitted activities on the property.

Action B.1.2. Communicate with SBU/MSRC regarding their knowledge of the quality of populations of plant and animal species on the property.

#### Objective B.2. Provide opportunities for educational institutions and researchers to use the Flax Pond tidal wetland for education and research.

Action B.2.1. Provide appropriate access permits to the property, in the form of Temporary Revocable Permits, for non-SBU/MSRC researchers and educators.

#### Objective B.3. Enhance and maintain nature trail(s).

Action B.3.1. Identify existing trail between Crane Neck Road and footbridge with trail markers.

Action B.3.2. Create and install entrance signs at gate (opening in the fence) on Crane Neck Road and at a visible place in parking lot next to the laboratory, and appropriate informational signage.

Action B.3.3. Evaluate the need and desirability of installing low-profile, low-impact plastic decking in selected areas so as to minimize the impact of foot traffic on selected marsh areas, such as that immediately south of the footbridge and between the laboratory and the mud flat north of the Childs Mansion.

#### Objective B.4. Enhance conditions that enable research at Flax Pond

Action B.4.1. When requested by SBU/MSRC researchers, establish areas within Flax Pond where commercial and recreational harvesting and other activities are prohibited so that they do not impede the ability of researchers to conduct research under controlled and documented conditions. The size and location of any such areas will be determined by joint agreement of DEC and SBU/MSRC.

Objective B.5. Promote Flax Pond as a locus for research, education and outreach activities, recognizing the value of the site as an index location for examples of largely undisturbed marine habitats (e.g., intertidal marsh, mudflat) and the floral and faunal communities associated with them. The juxtaposition of the marsh and the Flax Pond Marine Laboratory offers great and unique potential for combined lab-field programs of this type.

Action B.5.1. Collaborate with SBU/MSRC to develop and implement a proactive research and education plan for Flax Pond that outlines the activities and programs that will be undertaken and the resources needed to do so.

### C. Recreation

Goal: Provide a range of passive recreational opportunities that are compatible with the preservation of the natural resources of tidal wetlands. Preference will be given to natural resource-related activities, especially the traditional pursuits of hunting, trapping, fishing, and nature study, and activities that will provide the public with greater opportunities to use, enjoy, and increase their knowledge and appreciation of the value of tidal wetlands.

Objective C.1. Provide opportunities for waterfowl hunting, fishing, shellfishing, trapping and passive recreation, including wildlife viewing and hiking.

Action C.1.1. Provide the appropriate access permits for specified human activities on the property. Consider establishing subcategories of permits

for resource extractive uses. Require mandatory harvest reporting requirements for those holding such permits.

Action C.1.2. Minimize the potential damage done to natural resources in Flax Pond by motorized boats by establishing the waters of Flax Pond as a "no vessel wake" zone and/or instituting a maximum allowable horsepower for boats operating on the Pond.

#### D. Parking

Goal. Provide parking access to the Flax Pond property sufficient to accommodate the reasonable needs of SBU/MSRC users of the Flax Pond Marine Laboratory and the property as well as those wishing to access the property for other research, educational or permissible activities.

Objective D.1. Develop a parking/public access plan for the Flax Pond property. This plan will address the following issues:

- a. providing sufficient parking to allow general public with reasonable access to property
- b. separating, to the extent possible, parking for those using the Flax Pond Marine Laboratory from parking for public access to the marsh itself.
- c. locating any new parking area(s), other than that adjacent to the Laboratory, so as to provide the most direct access to the signed trails on the property
- d. delineating the appropriate parking regulations at Flax Pond and delegating the responsibility for enforcing these regulations to the appropriate agency/agencies

#### E. Management plan review

Goal: Provide a means to assess implementation and effectiveness of the management plan for one and five year periods. Monitor conditions in existing and restored tidal wetlands. Conduct annual reviews as necessary by the Unit Management Plan team to assess the implementation process, effectiveness of actions taken, and to revise or modify the plan as needed.

Objective E.1. Periodically assess the effectiveness of the management plan for stewardship.

Action E.1.1. Compare inventories of plants and animals over five-year periods, especially those species noted under Section I.B.5. (Important Flora and Fauna) and Section III (Threats and Trends).

Action E.1.2. Monitor any programs established to manage and control invasive species.

Action E.1.3. Monitor amount and types of trash collected, and time of year when collection is most effective.

Action E.1.4. Evaluate boundary encroachments.

Action E.1.5. Monitor property boundary postings and replace worn-out signs.

Objective E.2. Assess the effectiveness of the management plan in maintaining and/or enhancing tidal flow throughout the marsh over one- and five-year periods.

Action E.2.1. Compare surveys of boundaries and hydrology of intertidal marsh and high marsh, and evaluate changes over five years.

Action E.2.2. Evaluate the effectiveness of any actions taken to maintain/enhance tidal flow through the inlet and/or to otherwise affect the hydrological characteristics of the pond/marsh complex.

Action E.2.3. Monitor and evaluate changes in sediment build-up in the marsh.

Objective E.3. Assess the effectiveness of the management plan for enhancing wildlife habitat over one and five year periods.

Action E.3.1. Monitor osprey nest platform success.

Action E.3.2. Evaluate information and reports concerning the status of floral and faunal communities on the property prepared by SBU/MSRC and/or other institutions or organizations and take appropriate action for management.

Objective E.4. Assess the effectiveness of the management plan for education and research over five-year periods.

Action E.4.1. Review the effectiveness of the protocol instituted to coordinate SBU/MSRC's use of the property for research and educational purposes with use of the property by others.

Action E.4.2. Document number of permits issued to non-SBU/MSRC researchers and educators, and kind of education/research activities being done.

Action E.4.3. Monitor impact of recreational and other activities on research in the marsh.

Objective E.5. Assess the effectiveness of the management plan for maintenance of nature trail a five-year period.

Action E.5.1. Monitor condition and use of nature trail(s).

Action E.5.2. Monitor signage and replace signs as needed.

Action E.5.3. Monitor condition of footbridge and any walkway decking used along sections of the nature trail; repair as needed.

Objective E.6. Assess the effectiveness of the management plan for recreation over a five year period.

Action E.6.1. Document use of the property by hunters, trappers, and fishermen in terms of the number of access permits issued for these activities.

Action E.6.2. Document number of access permits issued for passive recreational use, such as hiking, wildlife viewing, and boating.

Action E.6.3. Monitor boating activities on Flax Pond, including compliance with any posted speed restrictions, etc.

Action E.6.4 Monitor Flax Pond for unpermitted access and activities.

Objective E.7. Evaluate the adequacy and effectiveness of the parking plan for Flax Pond.

Action E.7.1. Consult with SBU/MSRC on any problems regarding use of laboratory parking lot between University users of the laboratory and those parking for other purposes.

Action E.7.2. Document the use of any additional parking area(s) developed on the property and determine whether any changes are needed to the parking arrangements, regulations, etc. Consult with appropriate parking enforcement agency(ies) in this evaluation.

## F. Partnerships

Goal: Encourage partnerships with SBU/MSRC and other government agencies and private organizations, where appropriate, to accomplish these goals.

## SECTION V. STAFFING AND BUDGET

### A. Staffing

Present DEC staff exists but is not adequate for boundary inspection and posting, and removal of litter and garden waste from Flax Pond. Additional seasonal technicians may be required to adequately carry out these duties (see below). Additional professional staff (i.e. biologist) is needed for invasive species control, surveys of hydrology, plants and animals (see below).

The use of summer interns, volunteers and community organizations to carry out some of these tasks, under appropriate supervision by DEC, should be explored, as should implementing the management actions of this plan in partnership with SBU/MSRC.

### B. Budgeting

#### B.1. Personnel

Some of this plan's management recommendations can be executed by DEC staff. However, successful implementation of the plan would be substantially aided by adding the following positions:

1. Biologist (0.2 FTE)
2. Seasonal technician (9 months 24 hrs/week)

#### B.2. Non-personnel

Significant funds will be required to implement the recommendations of this report. Some implementation expenses will recur on an annual basis; some will be one-time or very periodic.

1. Annual expenses (cleaning equipment, supplies, trail maintenance & sign repair or replacement).....\$5,000
2. Capital and periodic expenses
  - a. dedicated public access parking area.....\$20,000 (Year One)
  - b. extension of bridge catwalk.....\$50,000 (Year One)
  - c. interpretive trail signage.....\$10,000 (Year Two)
  - d. portable toilets for public parking area.....\$10,000 (Year Three)
  - e. building to house portable toilets.....\$50,000 (Year Four)
  - f. property survey.....\$50,000 (Year Five)

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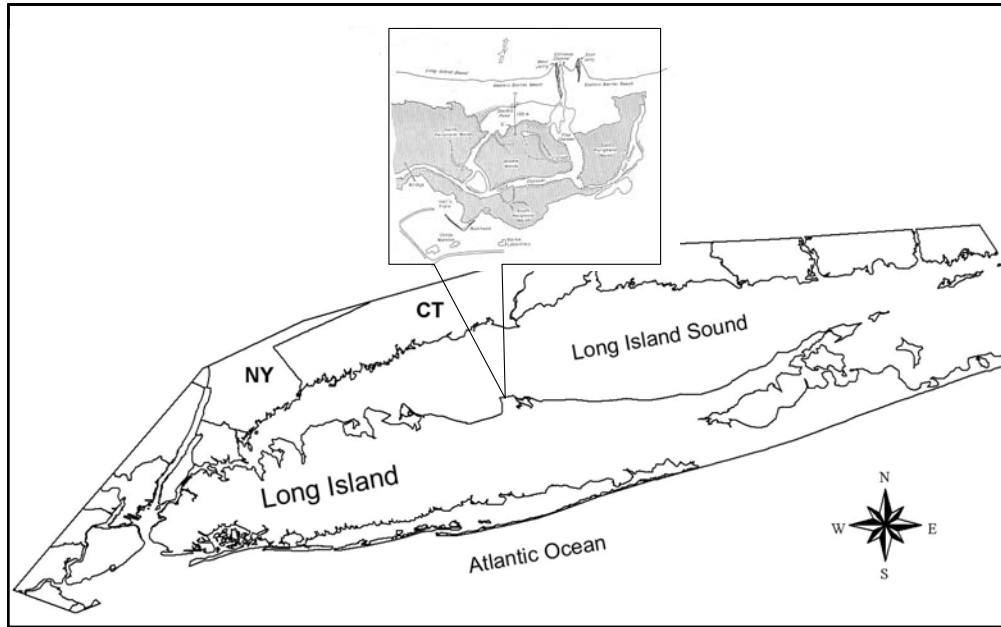
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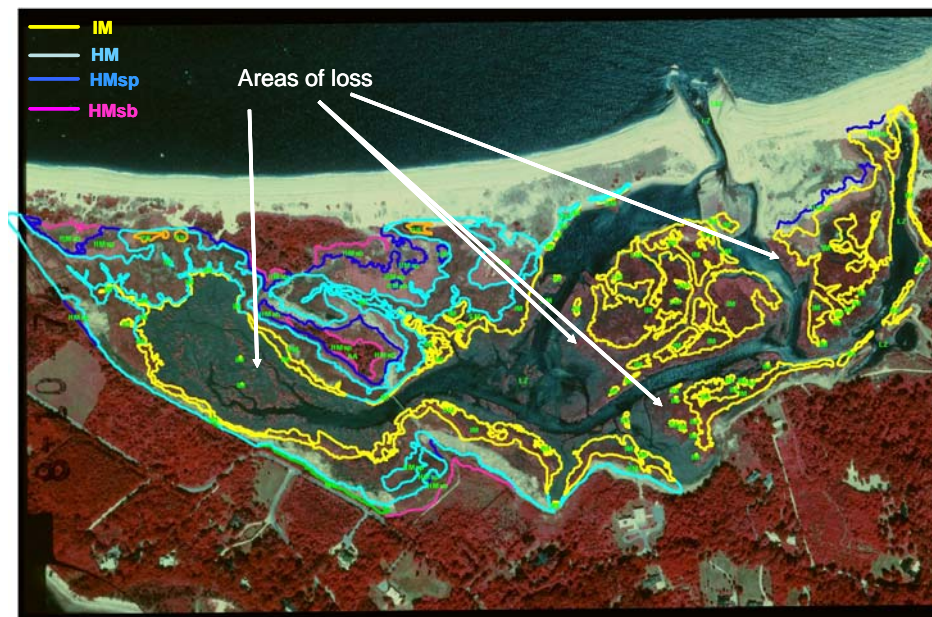
**Figure 1.** Location of Flax Pond.



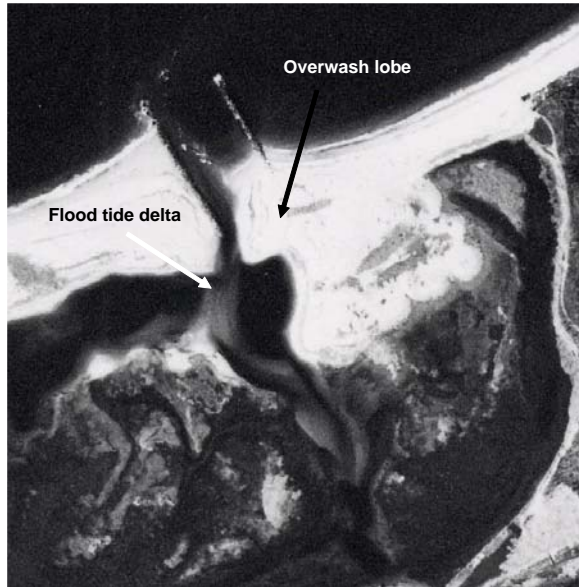
**Figure 2.** Flax Pond marsh with DEC owned property survey overlay.



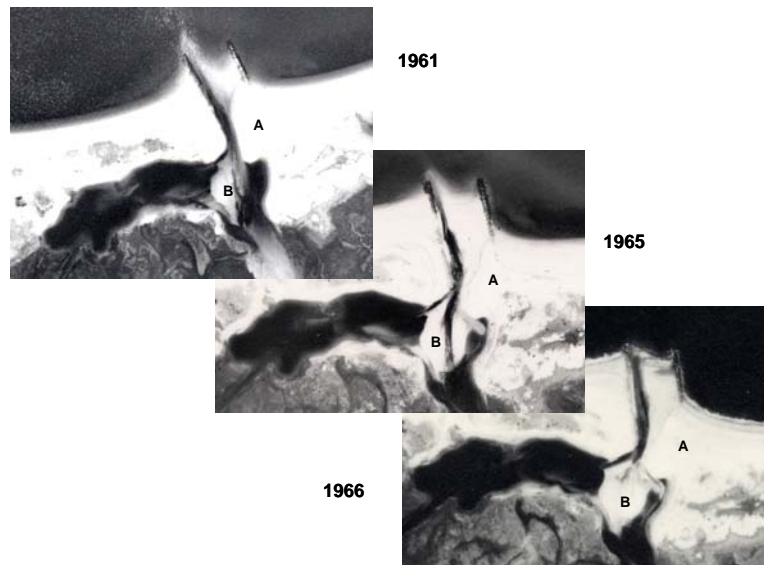
**Figure 3.** 2004 true color aerial with GIS tidal wetlands polygons (IM, yellow, HM lt. blue short form *S. alterniflora*, Hmsp, dk. Blue, *S. patens*, Hmsb, pink, *Baccharis halimifolia* and *Iva fruteceans*).



**Figure 4.** Overlay of 2004 GIS tidal wetland polygons on 1974 tidal wetland inventory infrared, areas not covered by polygon extent represents tidal wetlands loss. Loss equals 14 acres, 18.4% between 1974 - 2004.



**Figure 5.** 1954 aerial of Flax Pond Showing the beginning of an over-wash lobe and flood tide delta



**Figure 6.** Photo series 1961-1966 showing growth of over-wash lobe (A) and flood tide delta (B).

GIS rendition showing increase in sediment deposition from 1974 - 2004 of over-wash lobe and flood tide delta

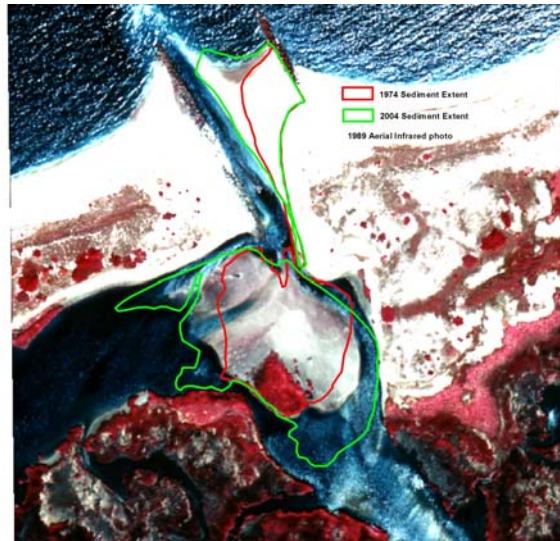


Figure 7. GIS comparison of 1974 (red line), 1989 (background photo) and 2004 (green line) aerial photos and flood tide delta and over-wash lobe growth.

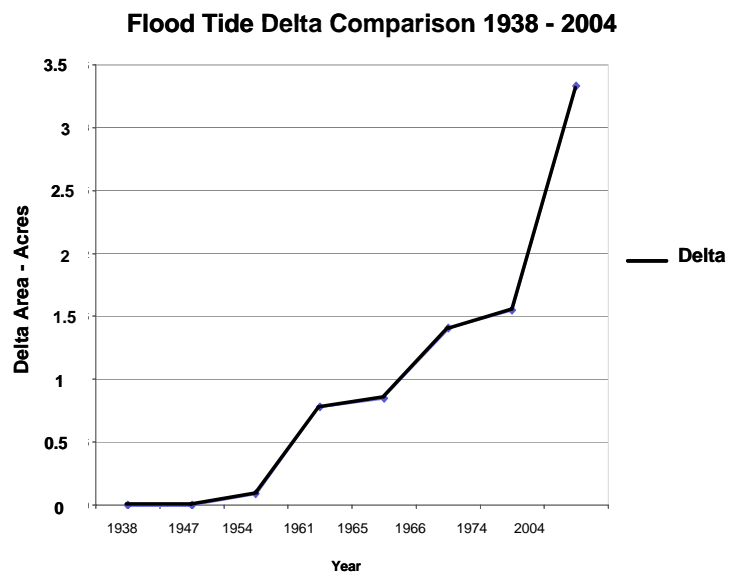
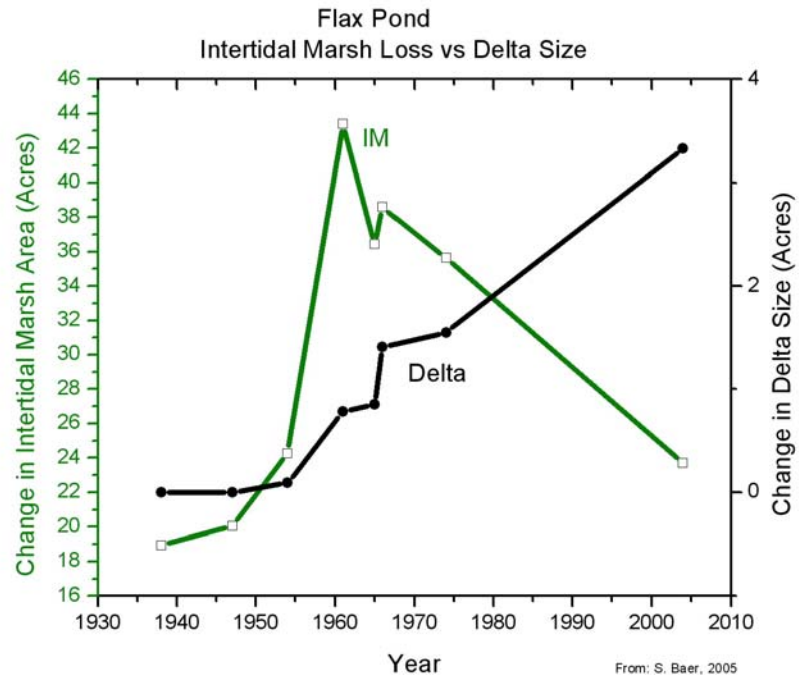
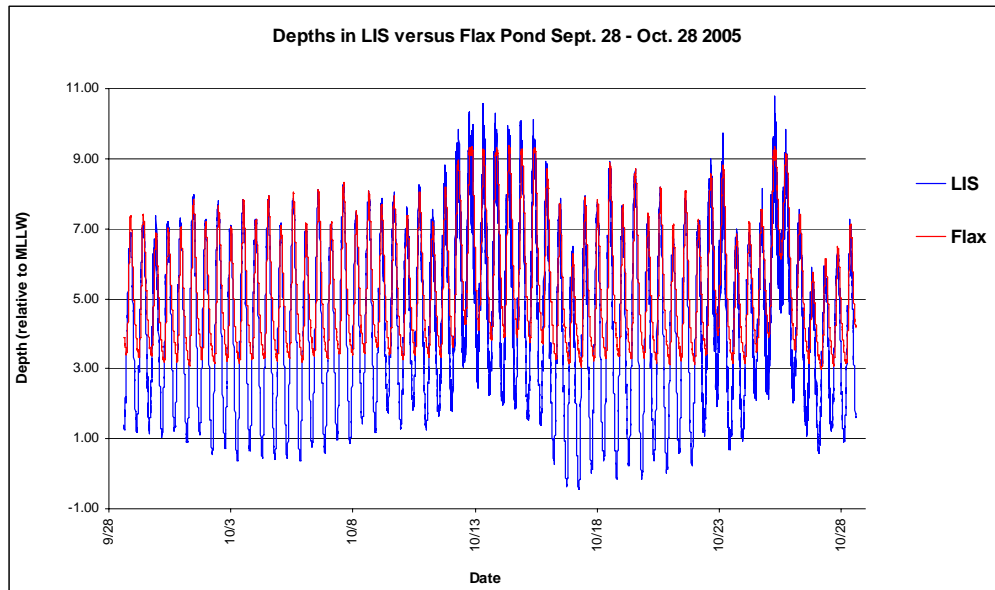


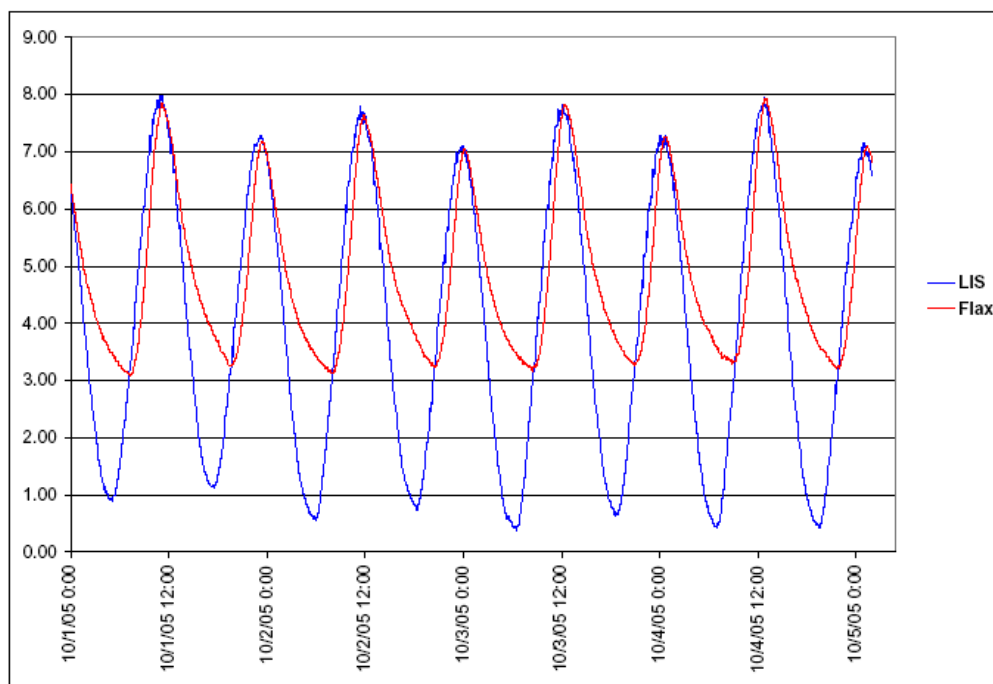
Figure 8. Flood tide delta comparison 1938-2004 in acres



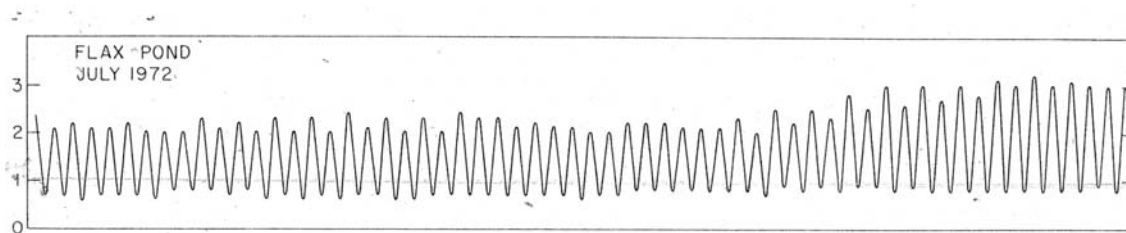
**Figure 9.** Graph showing correlation between flood tide delta growth and intertidal marsh loss in acres.



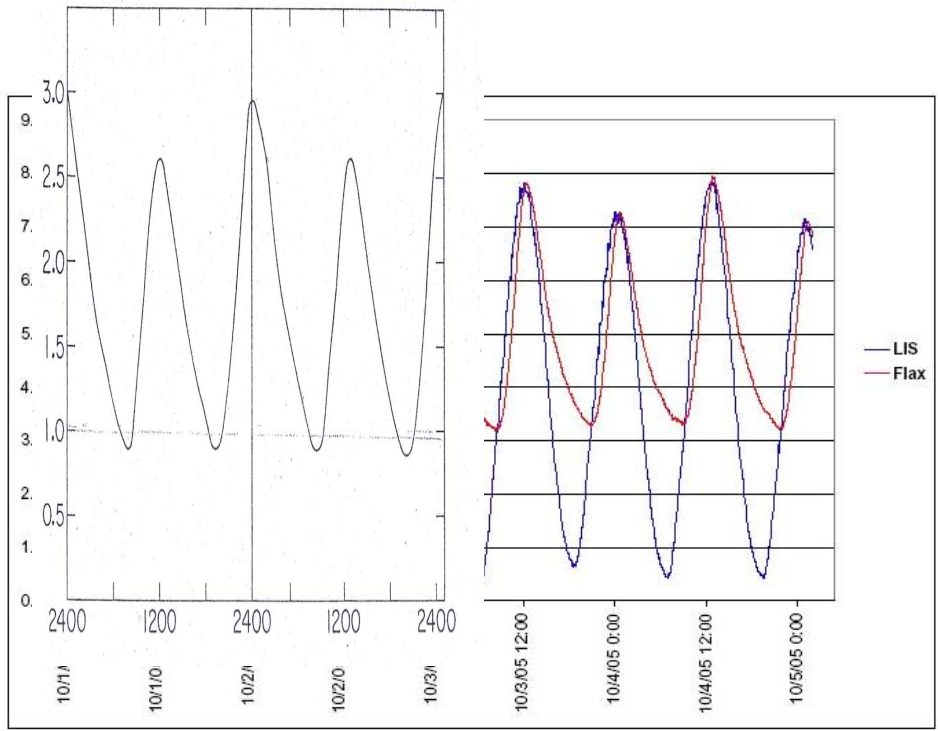
**Figure 10.** Brousseau graph comparing LIS tidal heights and time to Flax pond tidal heights and time.



**Figure 11.** Four day tidal cycle comparing LIS to Flax Pond (height in feet, y-axis).



**Figure 12.** Woodwell and Pecan's (1973) tidal comparison of LIS and Flax Pond from 1973, (height in meters, y axis).



**Figure 13.** Adjusted overlay of Woodwell and Pecan graph (black) with Brousseau graph (red & blue). Both researchers used the same predicted tide tables at Port Jefferson, heights are referenced to MLLW.

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## APPENDIX A. Plants Commonly Found on the Flax Pond Tidal Wetland

### INTERTIDAL AND HIGH MARSH

Saltmarsh cordgrass, *Spartina alterniflora*  
Salt meadow hay, *Spartina patens*  
Spike grass, *Distichlis spicata*  
Black grass, *Juncus gerardi*  
Glasswort, *Salicornia virginica*,  
Marsh orach, *Atriplex patula*  
Sea lavender, *Limonium carolinianum*  
Lesser sea blite, *Suaeda maritima*

### BEACH

Beach grass, *Ammophila breviligulata*  
Poison ivy, *Toxicodendron radicans*  
Goldenrod, *Solidago spp.*  
Rugose rose, *Rosa rugosa*  
Beach pea, *Lathyrus japonicus*  
Switch grass, *Panicum virgatum*  
Beach plum, *Prunus maritima*  
Dusty miller, *Artemisia stelleriana*  
Prickly pear cactus, *Opuntia humifusa*

### FRINGE AND UPLAND

Marsh elder, *Iva frutescens*  
Groundsel, *Baccharis halimifolia*  
Seaside Gerardia, *Agalinis purpurea*  
Virginia creeper, *Parthenocissus quinquefolia*  
Sea rocket, *Cakile edentula*  
Mullein, *Verbascum thapsus*  
Red cedar, *Juniperus virginiana*  
Scrub oak, *Quercus ilicifolia*  
Northern bayberry, *Myrica pennsylvanica*  
Pokeweed, *Phytolacca americana*  
Common reed, *Phragmites australis*  
Poison ivy, *Toxicodendron radicans*

## APPENDIX B. Animals Commonly Encountered at Flax Pond Tidal Wetland

### Birds

Double-crested cormorant, *Phalacrocorax auritus*  
Black-crowned night heron, *Nycticorax nycticorax*  
Great blue heron, *Ardea herodias*  
Green heron, *Butorides striatus*  
Great egret, *Casmerodius albus*  
Snowy egret, *Egretta thula*  
Mallard, *Anas platyrhynchos*  
Black duck, *Anas rubripes*  
Red-tailed hawk, *Buteo lineatus*  
Yellowlegs, *Tringa spp.*  
Herring gull, *Larus argentatus*  
Great black-back gull, *Larus marinus*  
Ring-billed gull, *Larus delawarensis*  
Laughing gull, *Larus atricilla*  
Common tern, *Sterna hirundo*  
Least tern, *Sterna albifrons*  
Belted kingfisher, *Megaceryle alcyon*  
Common crow, *Corvus brachyrhynchos*  
Fish crow, *Corvus ossifragus*  
Eastern kingbird, *Tyrannus tyrannus*  
Blue jay, *Cyanocitta cristata*  
Northern mockingbird, *Mimus polyglottos*  
Gray catbird, *Dumetella carolinensis*  
Mourning dove, *Zenaida macroura*  
Barn swallow, *Hirundo rustica*  
Red-winged blackbird, *Agelaius phoeniceus*  
Northern cardinal, *Cardinalis cardinalis*  
Song sparrow, *Melospiza melodia*  
American goldfinch, *Carduelis tristis*  
Black-throated green warbler, *Dendroica virens*  
Myrtle warbler, *Dendroica coronata*

### MAMMALS

Red fox, *Vulpes fulva*  
Raccoon, *Procyon lotor*  
Northern possum, *Didelphis virginiana*  
Eastern cottontail, *Sylvilagus floridanus*  
Meadow vole, *Microtus pennsylvanicus*  
Grey squirrel, *Sciurus carolinensis*

### FISH (including incidentals)

Alewife, *Alosa pseudoharengus*  
American eel, *Anguilla rostrata*  
American smelt, *Osmerus mordax*  
Bay anchovy, *Anchoa mitchilli*  
Atlantic mackerel, *Scomber scombrus*  
Atlantic silversides, *Menidia menidia*  
Atlantic tomcod, *Microgadus tomcod*

Winter flounder, *Pleuronectes americanus*  
Summer flounder, *Paralichthys dentatus*  
Bluefish, *Pomatomus saltatrix*  
Creville jack, *Caranx hippos*  
Cunner, *Tautogolabrus adspersus*  
Fourspine stickleback, *Apeltes quadracus*  
Grubby, *Myoxocephalus aeneus*  
Goosefish, *Lophius americanus*  
Mummichog, *Fundulus heteroclitus*  
Northern pipefish, *Syngnathus fuscus*  
Northern puffer, *Spherooides maculatus*  
Oyster toadfish, *Opsanus tau*  
Black sea bass, *Centropristis striata*  
Sheepshead minnow, *Cyprinodon variegatus*  
Striped killifish, *Fundulus majalis*  
Striped searobin, *Prionotus evolans*  
Windowpane, *Scophthalmus aquosus*  
Striped bass, *Morone saxatilis*

#### REPTILES & AMPHIBIANS

Eastern box turtle, *Terrapene c. carolina*  
Northern diamondback terrapin, *Malaclemys t. terrapin*  
Eastern ribbon snake, *Thamnophis s. sauritus*  
Eastern garter snake, *Thamnophis s. sirtalis*  
Eastern American toad, *Bufo a. americanus*  
Fowlers toad, *Bufo woodhousi fowleri*  
Northern spring peeper, *Pseudacris c. crucifer*

#### INVERTEBRATES

Asian shore crab, *Hemigrapsus sanguineus*  
Soft-shell Clam, *Mya arenaria*  
Horseshoe Crab, *Limulus polyphemus*  
Blue Crab, *Callinectes sapidus*  
Razor Clam, *Ensis sp.*  
Grass Shrimp, *Palaemonetes spp.*  
Blood Worm, *Glycera spp.*  
Sand Worm, *Nereis spp.*  
Blue Mussel, *Mytilus edulis*  
Ribbed Mussel, *Geukensia demissa*  
Eastern Oyster, *Crassostrea virginica*  
Hardshell Clam, *Mercenaria mercenaria*  
Mud Dog Whelk, *Nassarius obsoletus*  
Mud Fiddler Crab, *Uca pugnax*  
Sand Fiddler Crab, *Uca pugilator*  
Green Crab, *Carcinus maenas*  
Common Periwinkle, *Littorina littorea*  
Salt-marsh Snail, *Melampus bidentatus*

APPENDIX C.

MEMORANDUM OF UNDERSTANDING  
between  
THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
and  
THE STATE UNIVERSITY OF NEW YORK AT THE UNIVERSITY  
**FLAX POND PROPERTY**

THIS AGREEMENT is made this 1st day of April, 2005, by and between the State University of New York, an educational corporation organized and existing under the laws of the State of New York with its principal office located at State University Plaza in Albany, New York 12246, for and on behalf of the Marine Sciences Research Center, State University of New York at Stony Brook, and the New York State Department of Environmental Conservation with offices at 625 Broadway, Albany, New York 12233, for and on behalf of its Bureau of Marine Resources.

WHEREAS, on August 10, 1965, the State University of New York at Stony Brook ("University") and the New York State Conservation Department ("Department") entered into a "Memorandum of Understanding in the Acquisition of the Flax Pond Property, Suffolk County";

WHEREAS, that Memorandum of Understanding states that the Department "will have the right to use the property for the preservation of its natural values, fish and wildlife habitat, and for other uses which the Department may determine will be in the best interests of the State's public outdoor recreational programs";

WHEREAS, on March 9, 1966, the University acquired by appropriation a permanent easement "in, over, under and through" the Flax Pond property "for the purpose of establishing, constructing, reconstructing and maintaining a center for the study, research and teaching of marine science and marine life and for such other related scientific and educational purposes as shall be deemed desirable by the Trustees of the State University of New York, together with such buildings and other structures and facilities necessary in connection therewith";

WHEREAS, on March 10, 1966, the Department acquired by appropriation the fee title to the Flax Pond property, "for the purposes or functions of the Conservation Department", subject to the easement acquired by the University the previous day and the provisions of the aforementioned Memorandum of Understanding;

WHEREAS, the New York State Department of Environmental Conservation ("DEC") is the successor to the Department;

.....

WHEREAS, the Flax Pond property ("Property") consists of some 146.162 acres of real property that includes a tidal salt pond, salt marsh, adjacent upland, beach front on the Long Island Sound, an inlet, and stone jetties on the east and west sides of the inlet, from the Long Island Sound to the tidal salt pond;

.....

WHEREAS, the Property also includes the Flax Pond Marine Laboratory, Childs Mansion, associated driveways, lawns, parking areas and ancillary structural improvements;

.....

WHEREAS, the Flax Pond Marine Laboratory is the subject of a separate agreement between DEC and the University, which agreement is specifically incorporated by reference herein;

.....

WHEREAS, Childs Mansion is the subject of a separate agreement between DEC and the University, which agreement is specifically incorporated by reference herein;

.....

WHEREAS, DEC and the University intend to cooperatively use the Property for purposes consistent with their statutory missions and the purposes for which the fee title and easement were originally acquired; and

.....

WHEREAS, DEC and the University are each interested in working collaboratively towards a greater and more complete understanding of the marine environment of New York State and the more effective protection, conservation, and management of the State's marine environment and its living and non-living resources;

NOW, THEREFORE, the University and DEC do mutually agree as follows:

1. A joint University-DEC committee, the Flax Pond Management Committee is hereby established to oversee the joint cooperative activities of DEC and the University in managing and operating the Flax Pond Property.

a. This Committee shall consist of each member of the Flax Pond Marine Laboratory Coordination Group, as well as one additional member appointed by the Commissioner of DEC.

b. The Committee's Chair shall annually alternate between a University and a DEC member. The Committee shall meet at the call of the Chair at least once each year, with its first meeting occurring on or before June 1, 2005.

2. The Flax Pond Management Committee shall have the following duties and obligations:

a. To annually report on its activities and accomplishments to the Commissioner of DEC and the President of the University.

b. By August 1, 2005, to establish a procedure and schedule for completing a Unit Management Plan for the Flax Pond Property. This Unit Management Plan, on approval by the University President and the Commissioner of DEC, shall guide the individual and collaborative activities of DEC and University with regard to the future use and management of the Property.

3. Pending development and approval of the Unit Management Plan, DEC and the University shall collaborate on ongoing and interim improvements, activities, and the use and development of the Property, through the Flax Pond Management Committee.

4. DEC and the University further agree to coordinate their efforts, through the Flax Pond Management Committee, as necessary and appropriate to enlist the assistance of

other State, federal and local agencies that may fund, contribute services or otherwise participate in any way in the use and development of the Property.

5. The term of this Agreement is twenty-five (25) years, effective 01 April 2005. This Agreement may be modified during its effective period and/or renewed on expiration by mutual written agreement of DEC and the University.

IN WITNESS WHEREOF, the parties hereto have executed this agreement.

THE STATE UNIVERSITY OF NEW YORK  
AT STONY BROOK

NEW YORK STATE DEPT. OF  
ENVIRONMENTAL  
CONSERVATION

By: \_\_\_\_\_  
Shirley Strum Kenny  
President

By: \_\_\_\_\_  
Nancy Lussier  
Director, Budget and Management

APPENDIX D.

MEMORANDUM OF UNDERSTANDING  
between  
THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
and  
THE STATE UNIVERSITY OF NEW YORK AT STONY BROOK  
**THE FLAX POND MARINE LABORATORY**

THIS AGREEMENT is made this 1st day of April, 2005, by and between the State University of New York, an educational corporation organized and existing under the laws of the State of New York with its principal office located at State University Plaza in Albany, New York 12246, for and on behalf of the Marine Sciences Research Center, State University of New York at Stony Brook ("University"), and the New York State Department of Environmental Conservation ("DEC") with offices at 625 Broadway, 14th Floor, Albany, New York 12233, for and on behalf of its Bureau of Marine Resources.

WHEREAS, DEC owns the Flax Pond Marine Laboratory ("Laboratory"), located in the Village of Old Field, Setauket, New York;

WHEREAS, the University conducts and sponsors research and educational programs involving marine organisms and the marine environment;

WHEREAS, DEC and the University are jointly interested in continuing to work collaboratively towards a more complete understanding of the marine environment of New York State and more effective protection, conservation, and management of the state's marine environment and its living and non-living resources;

WHEREAS, pursuant to a permanent easement granted to the University on March 9, 1966, DEC and the University previously entered into a 25-year agreement for the operation and management of the Laboratory, which terminated March 31, 2004;

WHEREAS, by mutual consent, DEC and the University entered into a one-year extension of said 25-year agreement;

WHEREAS, the University is contemplating extensive renovations to or complete reconstruction of the Laboratory as it exists at the date of this Agreement, which work may be completed during the term of this Agreement;

WHEREAS, DEC and the University believe that continuing their collaborative management of the Laboratory serves well their respective interests and the overall interests of the people of the State of New York;

NOW, THEREFORE, DEC and the University mutually agree to manage the Laboratory in accordance with the terms and specifications described below.

1. DEC shall permit the University to continue to use and occupy the Laboratory, including all permanent fixtures and affixed furnishings, for the purposes of conducting research, educational and other activities deemed appropriate by the University.

2. DEC shall permit free ingress and egress to the Laboratory and environs to University faculty, staff and students.

3. The University shall manage and operate the Laboratory and establish written procedures for its use, which procedures shall be consistent with the University's Mission Statement: "To provide comprehensive undergraduate, graduate, and professional education of the highest quality" and "To carry out research and intellectual endeavors of the highest international standards that advance theoretical knowledge and are of immediate and long-range practical significance."

4. The University shall be responsible for routine operation and maintenance of the Laboratory and its grounds, including staffing, utility costs, building maintenance and repair, grounds keeping, and so forth. This responsibility shall include the following obligations:

- a. securing the building from unauthorized or illegal entry;
- b. compliance with all electrical, plumbing, HVAC and other operating system codes and regulations, including the New York State Uniform Building and Fire Codes, ADA regulations and the requirements of the Association for the Assessment and Accreditation of Laboratory Animal Care (AAALAC);
- c. maintenance of building integrity, including the functionality of all scientific support systems;
- d. preservation of a safe and comfortable work environment.

5. Facility Improvements.

a. Within six (6) months of the effective date of this agreement, the University shall commence design work to replace the Laboratory roof and floors, with construction to follow completion of that design.

b. Within twelve (12) months of the effective date of this agreement, the University shall implement any measures required by the most recent AAALAC inspection.

c. The University may expand, improve, remodel, rehabilitate, and/or reconstruct the Laboratory, at its expense.

d. DEC and the University agree to jointly develop plans to improve the Laboratory where appropriate, and to collaborate in obtaining funding and other approvals.

e. Before undertaking any significant improvement, modification or expansion of the Laboratory or any associated facility, the University shall notify DEC in writing and comply with all applicable permit requirements, including Article 25 of the Environmental Conservation Law, if applicable. The University shall give DEC's Division of Operations no less than 60 days to review any engineering or architectural plans prior to commencing any such improvement, modification, or expansion. Significant



disagreements between the University and DEC regarding the planned improvement, modification, or expansion shall be resolved by the Flax Pond Marine Laboratory Coordination Group prior to commencement of construction.

6. The University shall make available to DEC, on an as needed basis, up to 25% of the sea tables in the Laboratory's wet and dry lab spaces, excluding the greenhouse. DEC requests to use or reserve additional space at the Laboratory shall be directed to the University's Flax Pond Marine Laboratory manager.

7. The Flax Pond Marine Laboratory Coordination Group is hereby established to periodically review the performance of DEC and the University in meeting their respective responsibilities under this Agreement. This oversight committee shall consist of the Chief of DEC's Bureau of Marine Resources, the Dean and Director of the University's Marine Sciences Research Center, and the University's Vice-President for Administration. The Coordination Group shall meet at least annually, and shall provide a written report of their evaluation of the needs and desired improvements of the Laboratory.

#### 8. Termination

a. By the University. If the University elects to terminate its Laboratory programs and activities before expiration of this Agreement, the University shall (i) provide ninety (90) days prior written notice to DEC; (ii) remove any equipment, furniture, supplies, and other material purchased with University funds, and (iii) make the building secure from the elements, vandalism and illegal entry. Thereafter, the University shall be relieved of all responsibility, fiscal or otherwise, to operate and maintain the Laboratory.

b. By DEC. If the University fails to carry out any of its obligations under this Agreement, including timely performance of the activities described in paragraph 5 above, DEC shall give the University written notice requesting a corrective plan and implementation to commence within thirty (30) days. Failure of the University to complete corrective action within its control in a reasonable time frame to the reasonable satisfaction of DEC shall be grounds for summary termination of this agreement.

9. The term of this Agreement is twenty-five (25) years, effective 01 April 2005. This Agreement may be modified during its effective period and/or renewed on expiration by mutual written agreement of DEC and the University.

10. Notice to either party hereunder shall be in writing, signed by the party giving it and served personally or by registered mail, addressed as follows:

To the University: Vice President for Administration  
Stony Brook University  
221 Administration Building  
Stony Brook, New York 11794-1002

and to Director of MSRC  
Stony Brook University  
Marine Sciences Research  
145 Endeavour Hall

Stony Brook, New York 11794-5000

To DEC

Commissioner  
NYS Department of Environmental Conservation  
625 Broadway, 14th Floor  
Albany, New York 12233

and to

Chief, Bureau of Marine Resources  
NYS Department of Environmental Conservation  
205 Belle Mead Rd., Suite 1  
East Setauket, New York 11733

11. This Agreement shall be deemed executory only to the extent of monies available. No obligation or liability shall be incurred by DEC or the University beyond monies available for the purposes thereof.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement.

NEW YORK STATE DEPARTMENT OF  
ENVIRONMENTAL CONSERVATION

STATE UNIVERSITY OF NEW  
YORK AT STONY BROOK

By: \_\_\_\_\_  
Nancy Lussier  
Director, Budget and Management

By: \_\_\_\_\_  
Shirley Strum Kenny  
President

APPENDIX E.

MEMORANDUM OF UNDERSTANDING  
between  
THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
and  
THE STATE UNIVERSITY OF NEW YORK AT THE UNIVERSITY  
**CHILDS MANSION**

THIS AGREEMENT is made this 1st day of April, 2005, by and between the State University of New York, an educational corporation organized and existing under the laws of the State of New York with its principal office located at State University Plaza in Albany, New York 12246, for and on behalf of the Marine Sciences Research Center, State University of New York at Stony Brook, and the New York State Department of Environmental Conservation with offices at 625 Broadway, Albany, New York 12233, for and on behalf of its Bureau of Marine Resources.

WHEREAS, on August 10, 1965, the State University of New York at Stony Brook ("University") and the New York State Conservation Department ("Department") entered into a "Memorandum of Understanding in the Acquisition of the Flax Pond Property, Suffolk County";

WHEREAS, that Memorandum of Understanding states that the Department "will have the right to use the property for the preservation of its natural values, fish and wildlife habitat, and for other uses which the Department may determine will be in the best interests of the State's public outdoor recreational programs";

WHEREAS, on March 9, 1966, the University acquired by appropriation a permanent easement "in, over, under and through" the Flax Pond property "for the purpose of establishing, constructing, reconstructing and maintaining a center for the study, research and teaching of marine science and marine life and for such other related scientific and educational purposes as shall be deemed desirable by the Trustees of the State University of New York, together with such buildings and other structures and facilities necessary in connection therewith";

WHEREAS, on March 10, 1966, the Department acquired by appropriation the fee title to the Flax Pond property, "for the purposes or functions of the Conservation Department", subject to the easement acquired by the University the previous day and the provisions of the aforementioned Memorandum of Understanding;

WHEREAS, the New York State Department of Environmental Conservation ("DEC") is the successor to the Department;

WHEREAS, there is situated on the Flax Pond property a structure owned by DEC known as the Childs Mansion, which existed on the property at the time of the State's acquisition of the easement and fee title cited above;

WHEREAS, the University has occupied, maintained and repaired the Childs Mansion, and desires to continue to occupy and use it for purposes consistent with its easement;

WHEREAS, DEC does not intend to occupy, maintain or repair the Childs Mansion;

NOW, THEREFORE, the University and DEC do hereby mutually agree as follows:

1. The University shall assume full responsibility and liability for the repair, upkeep, maintenance, and operation of the Childs Mansion, the lawn, driveway, landscaping, and associated exterior improvements including water supply, septic and electric systems.
2. The University shall use the Childs Mansion for purposes consistent with the easement it holds over the Flax Pond property and its Mission Statement: "To provide comprehensive undergraduate, graduate, and professional education of the highest quality" and "To carry out research and intellectual endeavors of the highest international standards that advance theoretical knowledge and are of immediate and long-range practical significance."
3. Before undertaking any significant improvement, modification or expansion, the University shall notify DEC in writing and comply with all applicable permit requirements, including Article 25 of the Environmental Conservation Law. The University shall give DEC's Division of Operations no less than 60 days to review any engineering or architectural plans in advance of commencing any such improvement, modification, or expansion. Significant disagreements between the University and DEC regarding the planned improvement, modification, or expansion shall be resolved by the Flax Pond Management Committee prior to commencement of construction.
4. The University shall ensure that the Childs Mansion is maintained in a safe manner and in full conformity with the New York State Environmental Conservation Law, the New York State Uniform Building and Fire Codes and all other applicable safety codes.
5. When the Childs Mansion is not scheduled for use, the University shall provide DEC with access to the facility for conducting meetings or conferences. DEC shall comply with the University's regulations governing meetings, conferences and special events.
6. DEC shall not occupy, use or modify Childs Mansion, or engage in any active construction, management activities or programs that affect the facility, except pursuant to paragraph five (5) above.
7. The term of this Agreement is twenty-five (25) years, effective 01 April 2005. This Agreement may be modified during its effective period and/or renewed on expiration by mutual written agreement of DEC and the University.
8. This Agreement shall remain in full force and effect until modified or superseded by mutual written agreement of the parties hereto.

THE STATE UNIVERSITY OF NEW YORK  
AT STONY BROOK

THE NEW YORK STATE DEPT.  
OF ENVIRONMENTAL  
CONSERVATION

By: \_\_\_\_\_  
Shirley Strum Kenny  
President

By: \_\_\_\_\_  
Nancy Lussier  
Director, Budget and Management

## APPENDIX F.

### NYSDEC Regulations Part 46 Public Use of State-owned Tidal Wetlands

#### **§46.1** Applicability

(a) These regulations apply to tidal wetlands, as defined in section 25-0103 of the Environmental Conservation Law, owned by the State of New York under the jurisdiction of the Department of Environmental Conservation, hereinafter "the Department".

(b) Activities permitted pursuant to temporary revocable permits are not subject to these regulations.

#### **§46.2** Requirement of permit

(a) Entry onto, or use of, any State-owned tidal wetlands under the jurisdiction of or managed by the Department, by any person(s) except authorized agents of the Department, is prohibited unless such person(s) possess a valid tidal wetland access permit.

(b) The tidal wetland access permit is issued by the Chief of the Bureau of Marine Habitat Protection, or a designee, and may be obtained from the bureau at Bldg. 40, SUNY, Stony Brook, New York 11794.

#### **§46.3** Identification and information required for permit

(a) Tidal wetlands access permits may be issued to any person who presents a completed application on a form to be provided by the department.

(b) All applicants for permits or permit renewal must provide any additional information the Department may require, including, in the case of a permit renewal, a report of any use made of the tidal wetland pursuant to any prior tidal wetlands access permit. The Department will provide report forms.

#### **§46.4** Permits

(a) Access permits are:

- (1) issued under terms and conditions deemed appropriate by the Department;
- (2) nontransferable; and
- (3) required to be presented, upon request, to any authorized employee of the Department.

(b) Access permits will be issued by the Department pursuant to the criteria set forth in section 46.5 of this Part for the purpose of engaging in:

- (1) hunting;

- (2) fishing, including the legal taking of finfish, shellfish, or crustaceans;
- (3) legal trapping of fur-bearing mammals;
- (4) nature appreciation;
- (5) educational activities;
- (6) research activities; and
- (7) launching or retrieval of hand-carried small boats such as canoes, car top boats and small sail boats.

**§46.5** Criteria for determining permit issuance

(a) The appropriateness of activities for which permits are sought shall be determined by the following criteria:

- (1) legality of the activity;
- (2) consistency of the activity with the findings of the Commissioner for those sites acquired under the Eminent Domain Procedure Law;
- (3) consistency of the activity with the character and value of the tidal wetlands for which the access permit is sought; and
- (4) consistency of the activity with finding made under Article 8, ECL and Part 617 of this Title.

**§46.6** Revocation

(a) Access permits may be revoked for:

- (1) violation of the Environmental Conservation Law or regulation issued thereunder;
- (2) violation of or exceeding the permit or its conditions;
- (3) conviction of criminal offense on State-owned tidal wetlands; or
- (4) any violation of this Part.

(b) Notice of revocation must be sent to the holder of a permit issued under this Part by certified mail, return receipt requested, and must be signed by the Chief, Bureau of Marine Habitat Protection, or a designee. The notice must advise the permittee of the reason for revocation, the effective date of the revocation and that the revocation may be appealed in writing to the Director, Division of Marine Resources, at the address stated on the notice, within 30 days of receipt of the notice. The Director may, upon request, provide the holder with an opportunity to present the matter to the Director at the earliest convenient time, but not later than 30 days after the receipt of the request and shall render his written decision within 30 days thereafter.

(c) A person whose access permit has been revoked may not again apply for a tidal wetlands access permit until one year after the effective date of the revocation.

#### **§46.7 Prohibited activities**

(a) Prohibitions applicable to all State-owned tidal wetlands managed by the Department include:

- (1) any use of a motor vehicle, including parking, more than one hour before sunrise or more than one hour after sunset except for specifically permitted nature appreciation, educational or research activities;
- (2) overnight camping;
- (3) fires;
- (4) unleashed dogs, except hunting dogs afield with the permittee in the active pursuit of game;
- (5) removal of naturally occurring or introduced flora, whether living or dead, except for specifically permitted research or educational activities;
- (6) operation of motorized, wheeled or tracked vehicles and air boats except as specifically permitted activities;
- (7) construction, erection or maintenance of any structure, except temporary blinds or temporary structures associated with specifically permitted research or educational activities which are permissible under Section 51-0713 of the Environmental Conservation Law; or
- (8) disposal of any solid, liquid or toxic waste material.

Appendix G. Invasive and Non-Indigenous Plant Species at Flax Pond\*

**Non-indigenous, not seriously invasive**

Weeping willow

Pin oak - planted

Mulberry

Salt-spray rose

Autumn olive

Royal paulownia

Euonymus

Marsh mallow (from summer, 2005 observation made in wet area near Childs Mansion)

**Non-indigenous, invasive (\* marks the most serious problems)**

Multiflora rose\*

Oriental bittersweet\*

Norway maple\*

Wineberry

Japanese honeysuckle

Garlic-odored mustard

Black locust

Phragmites

Tamarisk

Deadly nightshade

Mugwort

Ailanthus (next to Shore Road, sw of Childs Mansion)

Devil's walking stick (next to Shore Road, sw of Childs Mansion)

**Indigenous, invasive**

Poison ivy

Virginia creeper

Fox grape

\* Preliminary list from observations made by Glenn and Sandy Richard on June 6, 2006 near the Flax Pond Lab and Childs Mansion