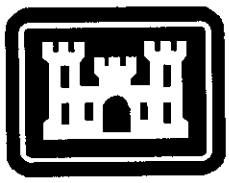
Section 1135 Program
Integrated Ecological Restoration Report/Environmental Assessment

FINAL REPORT

Allin's Cove Wetland Restoration
Barrington, Rhode Island

September 2003



US Army Corps
of Engineers

New England District

ALLIN'S COVE WETLAND RESTORATION
BARRINGTON, RHODE ISLAND

Final

Section 1135, Continuing Authority Program
Integrated Ecological Restoration Report/Environmental Assessment

Department of the Army
Corps of Engineers, New England District
Concord, Massachusetts

September 2003

FINDING OF NO SIGNIFICANT IMPACT

The proposed Allin's Cove Restoration Project will restore and protect approximately 4.3 acres of *Spartina* salt marsh to Rhode Island's coastal ecosystem. Additionally, the inlet channel to the cove will be realigned and the existing sand spit will be relocated to alleviate the erosion of the western portion of the cove and its associated roads and infrastructure.

Four alternatives were considered for the project. Alternative 1, the no action alternative would make no improvements to the project area, and therefore, the marsh areas of Allin's Cove will continue to be dominated by *Phragmites australis* and continue to be poor quality habitat. Erosion of the western bank will continue and undercut the existing banks. This will eventually result in a loss of the road and infrastructure, and the loss of the salt marsh along this edge. Alternative 2 proposed realigning the existing sand spit and channel to control erosion. Alternative 3 proposed excavation of *Phragmites* marsh on the eastern portion of the cove to restore elevations appropriate for growth of high quality marsh. Alternative 4 was a combination of Alternatives 2 and 3. Alternative 4 was selected as the proposed project. The proposed project design will include grading of the disposal area and sandy material from the area will be used to re-configure the south sand spit to provide for a sandy beach area.

This Environmental Assessment has been prepared in accordance with the National Environmental Policy Act of 1969 and all applicable environmental statutes and executive orders. My determination that an Environmental Impact Statement is not required is based upon the following information contained in the Environmental Assessment and the following considerations:

1. Based on physical analyses, the material in the project area will have no significant adverse effect upon existing water quality at the excavation, dredging, or disposal areas.

2. The project will not affect any State or Federally threatened, endangered, or rare species, pursuant to the Endangered Species Act.

3. As a result of coordination with the Rhode Island State Historic Preservation Office and the Narragansett and the Wampanoag Indian Tribes, it has been determined that no cultural resources will likely be impacted by the proposed dredging or restoration effort. However, both Tribes will be given the opportunity to review the design plans and comment further if so desired.

4. Impacts to biological resources will be minimized by not allowing dredging associated with the project to occur between June 1 and August 31 in order to avoid spawning seasons for shellfish and various marine fish species. Impacts to winter flounder that may use open water areas of the cove for reproduction (about February 15 through April 15) will be minimized by avoiding the winter flounder spawning period. Impacts to species that utilize the marsh will be minimized by avoiding to the extent practical excavation activities in the marsh from April 1 to August 31.

5. The project will have no long-term impacts on air quality. To minimize potential air pollution, construction vehicles and equipment will be required to comply with applicable Rhode Island Air Pollution Control Regulations and any applicable local ordinances.

Based on my review and evaluation of the environmental effects as presented in the Environmental Assessment, I have determined that implementation of the proposed Allin's Cove Restoration project will have no significant direct, indirect, or cumulative impacts on the quality of the human or natural environment. Because no significant environmental impacts will result, an Environmental Impact Statement is not required and will not need to be prepared.

12 SEP 03

Date

Thomas L. Koning
Colonel, Corps of Engineers
District Engineer

EXECUTIVE SUMMARY

This report documents the feasibility of restoring coastal habitat at Allin's Cove in Barrington, Rhode Island. Salt marsh and intertidal areas were impacted in 1959 by the disposal of dredged material from the Bullock Cove Navigation project. The restoration study was requested by the Rhode Island Coastal Resources Management Council (RI CRMC) and the Town of Barrington, Rhode Island. The RI CRMC is the non-federal sponsor for the project in partnership with the town of Barrington, RI.

This report also serves as the Environmental Assessment for the proposed project. Preparation of the EA complies with the Council of Environmental Quality and U.S. Army Corps of Engineers (Corps) regulations for implementing the National Environmental Policy Act of 1969.

This project is authorized under Section 1135 of WRDA 1986 (P.L. 99-662) as amended. This provides authority to implement restoration measures at locations where projects built by the Corps, can be modified to improve the quality of the environment, when it is determined that such modifications are feasible and that measures do not conflict with authorized project purpose. Project cost sharing under this authority is 25 percent non-federal and 75 percent federal.

The purpose of the study was to develop a plan to: 1) restore salt marsh to Allin's Cove in the area impacted by the disposal of dredged material in 1959; and 2) to address the erosion along the western edge of the cove at Byway Road and adjacent marsh land.

Allin's Cove is a small embayment of Narragansett Bay estuary about 21 acres in size. Mean tidal range at the site is from - 1.5 feet to 2.9 feet NGVD with mean spring high tide of about 3.5 feet NGVD. About 8 acres at the southern end of the cove were used as a dredged material disposal site during the dredging of nearby Bullock Point Cove in 1959. The filling elevated the marsh and sub-tidal areas above the normal range of the tide. *Phragmites* has colonized the filled area. Also overtime the sand spit at the south of the filled area has migrated north-northwest due to wave action. Migration of the barrier spit northward has displaced the tidal inlet northward toward the Byway Road upland. The Byway Road upland is eroding and eventually Byway Road and adjacent salt marsh will be lost.

Plan formulation considered both marsh restoration and protection of the roadway and marsh area along Byway Road. Alternative plans were analyzed using incremental analysis of project costs and habitat benefits to determine the best buy plans. The selected alternative is a combination of excavating the filled area, realigning the tidal inlet, constructing a north sand spit along Byway Road, and re-grading the proposed disposal area to re-form the south sand spit at the toe of the disposal area.

The proposed project will result in the restoration of about 3.6 acres of salt marsh and the protection of 0.7 acres of salt marsh along the Byway Road area. The proposed project will also prevent the eventual erosion of Byway Road. The annual economic benefit to protecting the road is estimated at about $82,000.

No significant adverse impacts are expected as a result of the project. During marsh excavation runoff will be prevented using a low containment berm and silt fencing. Impacts to fisheries and marsh species will be avoided by sequencing construction work to avoid ecologically sensitive periods. It is expected the restoration construction will take about five months to complete. A refined estimate of the construction time line will be determined during the final design (plans and specifications phase).

Total project costs include construction costs, monitoring, real estate costs and study and design costs and are estimated at about $820,000. The non-Federal share of the total project cost (25 percent) is estimated to be about $205,000.

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II Compliance with Environmental Federal Statutes and Executive Orders

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E GEOTECHNICAL REPORT
F MCACES COST ESTIMATE
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1. INTRODUCTION

1.1 General

Project: Allin's Cove Coastal Wetland Ecosystem Restoration
Rhode Island Congressional District: 1
Name of Project Contributing to Degradation - Bullock Point Cove, RI
Date Constructed - 1959
Authorized Purpose - Navigation

Location: Allin's Cove (also known as Drown Cove) Barrington, Rhode Island
Figure 1 - General Site Location Map
Figure 2 - General Site Map

The proposed project is located at Allin's Cove in the town of Barrington, Rhode Island on the east side of Providence River just south of Bullock Cove. The project location is about 10 miles southeast from Providence, Rhode Island.

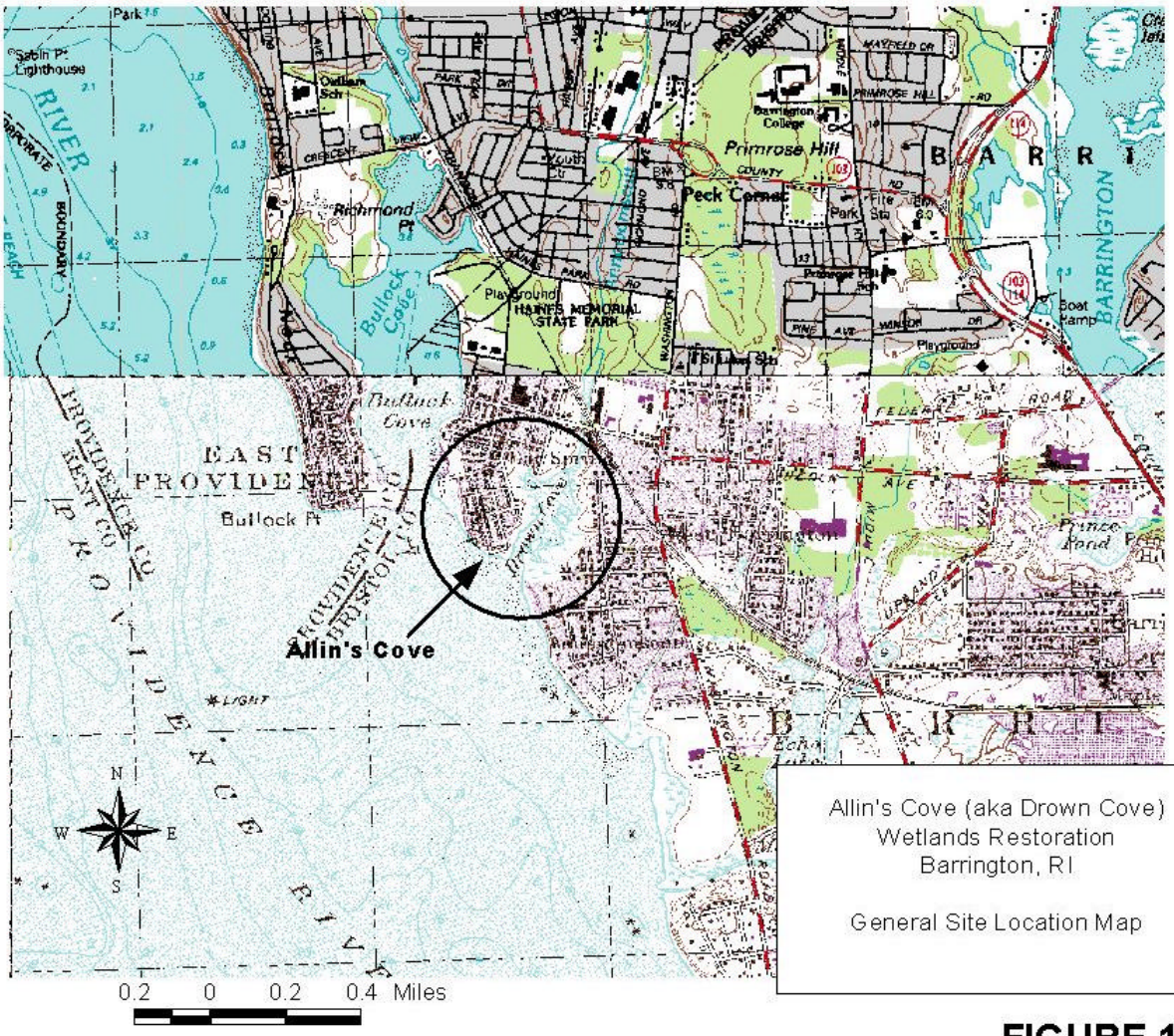
Local Sponsor: The local sponsor for the Allin's Cove Restoration project is the Rhode Island Coastal Resources Management Council (RI CRMC). The Town of Barrington will be partnering with RI CRMC.

1.2 Authority

This project is authorized under Section 1135 of WRDA 1986 (P.L. 99-662) as amended. This provides authority to implement restoration measures at locations where projects built by the U.S. Army Corps of Engineers (Corps), can be modified to improve the quality of the environment, when it is determined that such modifications are feasible and that measures do not conflict with authorized project purpose.

1.3 Study Purpose

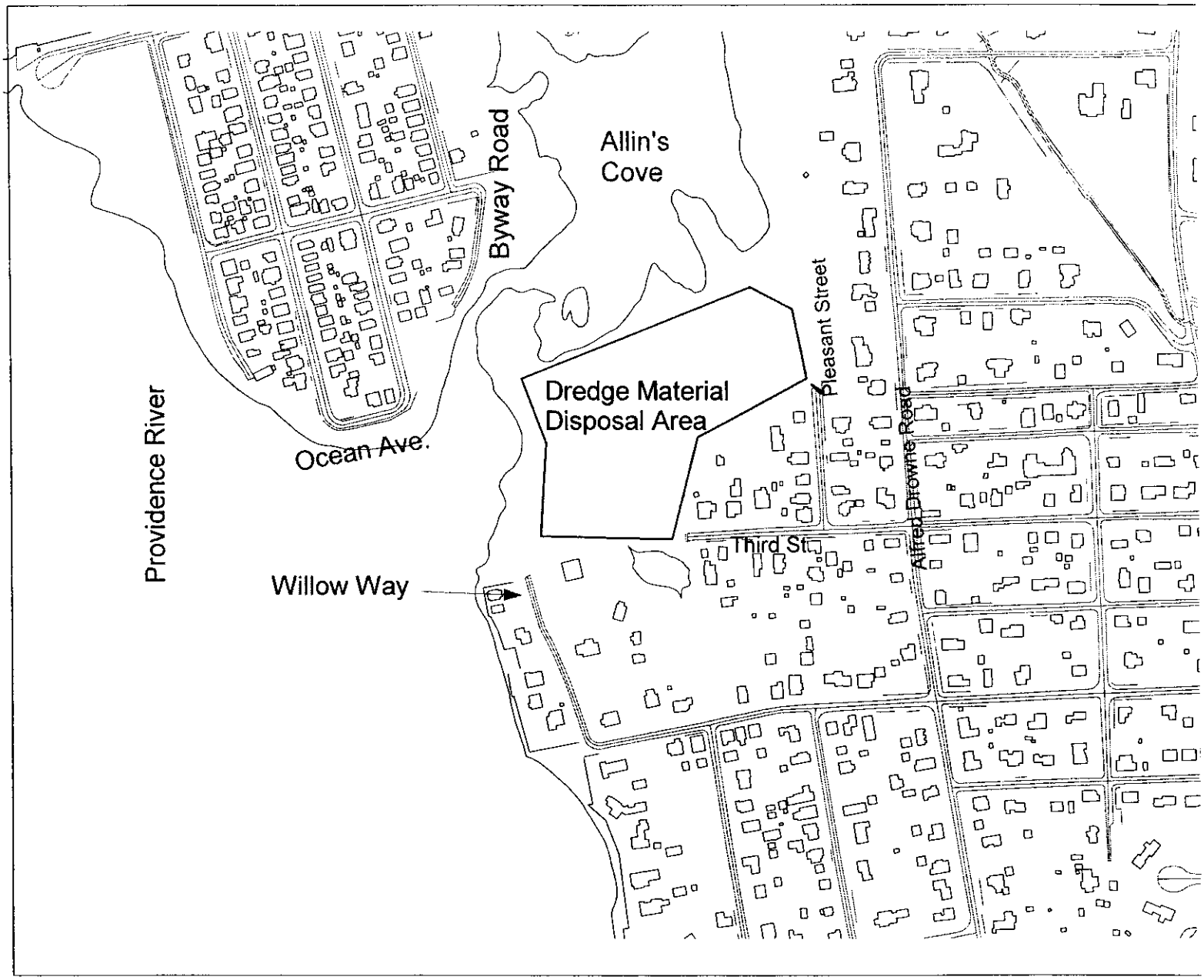
The purpose of this combined Environmental Restoration Report and Environmental Assessment is to 1) assess the feasibility of restoring aquatic habitat at Allin's Cove impacted by dredged material disposal from the Bullock Cove navigation project in 1959 and 2) to provide an environmental assessment for the proposed restoration project in

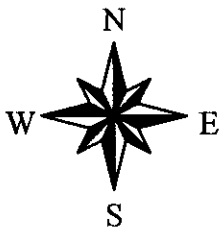


Allin's Cove (aka Drown Cove)
Wetlands Restoration
Barrington, RI

General Site Location Map

FIGURE 1





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Allin's Cove
Wetlands Restoration
Barrington, RI

General Site Map

FIGURE 2

compliance with the National Environmental Policy Act of 1969 (NEPA) and all appropriate Federal and State environmental regulations, laws, and executive orders. An Environmental Restoration Report (ERR) serves as a Corps decisions document as to project feasibility. The Environmental Assessment (EA) serves as a disclosure document that describes the proposed action and alternatives, environmental resources in the affected area, and the environmental affects of the proposed project. The EA also provides the District Engineer with information for determining whether a Finding of No Significant Impact (FONSI) or an Environmental Impact Statement (EIS) should be prepared for the proposed action. Also provided is an assessment of environmental impacts and alternatives considered along with other data applicable to the Clean Water Act Section 404 (b) 1 Evaluation requirements.

1.4 Project Purpose and Need

The purpose of this project is to: 1) restore salt marsh and its associated values to fish and wildlife to Allin's Cove; and 2) reposition the existing inlet channel and sand spit to control the erosion of the western shoreline near Byway Road.

Spartina salt marsh was once dominant in Allin's Cove. In 1959, the Corps diked and filled a wetland area at the entrance to the cove with dredged material from Bullock Cove

The filling activities raised elevations of the marsh to levels that were unsuitable for *Spartina* sp. growth. As a result, the marsh has become dominated by common reedgrass (*Phragmites australis*). *Phragmites* habitat is documented to be of lesser quality than *Spartina* habitat. Therefore, this project is needed to reestablish elevations favorable for *Spartina* marsh growth to increase the habitat value of the marsh.

The realignment of the channel and the repositioning of the sand spit are needed to control the erosion of the existing marsh and upland areas of the western bank. The channel is currently undercutting the banks of the upland area along the western portion of the cove at Byway Road.

The purpose of the Environmental Assessment (EA) is to present information on the environmental features of the project area and to review design information to determine the potential impacts of the proposed aquatic habitat restoration project. This Environmental Assessment describes project compliance with the National Environmental Policy Act of

1969 (NEPA) and all appropriate Federal and State environmental regulations, laws, and executive orders. Methods used to evaluate the environmental resources of the area include biological sampling, sediment analysis, review of available information, and coordination with environmental agencies and knowledgeable persons. This report provides an assessment of environmental impacts and alternatives considered along with other data applicable to the Clean Water Act Section 404 (b) 1 Evaluation requirements.

1.5 Project History

Allin's Cove, also known as Drown Cove, lies on the eastern shore of the Providence River. The cove is located in the town of Barrington, Rhode Island. It is situated approximately 1.5 miles above the head of Narragansett Bay, 4 miles northwest of the entrance to Warren River, and 4.5 miles south of Providence Harbor, Rhode Island.

The Cove is enclosed behind a small, 700 ft long, 50-70 ft wide barrier sand spit that is anchored to a low, glacial headland to the south. A narrow inlet, approximately 60 ft wide at MHW, separates the barrier spit from another low glacial headland to the north (Byway Road area). The inlet exhibits well-formed, though small, flood and ebb-tidal deltas. The Cove is mostly intertidal, with extensive sandy mudflats exposed at low tide. A single, small tidal creek connects the inlet with Annawomscutt River at the north side of the cove. Numerous islands of salt marsh exist within the tidal-flat area.

According to Bullock Cove Navigation Improvement project project plans dated September 1958, dredged material was to be deposited on approximately 8 acres of salt marsh and intertidal flat located at the mouth of Allin's Cove. Figure 3 shows the dredge disposal area used for the Bullock Cove channel dredging project

Initially, burial of the salt marsh macrophytes on the eastern portion of Allin's Cove dramatically altered the function of the cove's salt marsh ecosystem. However, over time a small amount of recolonization occurred. *Spartina alterniflora* and *Spartina patens* (here to referred as *Spartina*) and other native salt marsh species colonized low elevation areas that were periodically inundated with tidal water. Areas of high elevation that were not subjected to tidal flooding were colonized by typical upland species as well as by common reedgrass (*Phragmites australis*). Currently, the eastern portion of the marsh is dominated by *Phragmites*. *Spartina* spp. does exist along the fringe of the open water and in isolated islands surrounded by open water. However, it is not the dominant flora in the marsh. Refer to Appendix G (Real Estate Report) for photographs of the area.

Aerial photography analysis (1938 compared to 1997) has documented that the spit has migrated to the north considerably (about 250 feet) in the past 60 years. The spit has also retreated eastward into the Cove about 50 to 70 feet in the same time frame. The migration of the spit to the north has caused the inlet channel to the cove to move to the north as well. The migration of the inlet channel has resulted in the erosion of the western portion of the marsh and the shoreline at Byway Road. Aerial analysis of the area indicates the average erosion rate of 1 foot per year.

1.6 Previous Studies

Previous studies of restoring Allin's Cove salt marsh have not been prepared.

Allin’s Cove 1938

Allin’s Cove 1997

Figure 3

2. EXISTING CONDITIONS

2.1 General

To characterize existing conditions at the site, and to provide information for alternatives development, several efforts were conducted. Efforts included elevation survey of the area, sediment sampling, salinity sampling, tidal monitoring and hydraulic computer modeling, benthic sampling, cultural resources review, and historic aerial photograph analysis. These efforts are discussed in the following sections and detailed information is contained in the appendices.

The existing elevations in the filled area from the 1959 dredging of Bullock Cove range from about 3.5 NGVD on the north side to about 6.6 feet NGVD on the south side. Figure 4 shows existing site features. There is about a 12,000 square foot area of existing *Spartina* marsh that is flooded through a hand-dug channel to the area. There is also an existing ditch through the *Phragmites* at the northeast end of the site. Existing sand spit elevation is about 5 feet NGVD. Mean High Water at the site is estimated at 2.9 feet NGVD, mean tide level at 0.7 feet NGVD and mean low water at -1.5 feet NGVD.

There is a walking path that runs from the end of Willow Way to Third Street. There is a culvert that provides for drainage from the pond located to the east of the restoration area.

2.2 Historical Aerial Analysis

The Corps contracted with Jon Boothroyd, PhD, University of Rhode Island and State Geologist. He performed an analysis of historic aerial photographs available for the study area to determine erosion rates and provide an analysis of on-going geologic processes at the site, develop the proposed channel relocation, and predict the life expectancy of the project.

This analysis involved scanning vertical historic aerial photographs, and using GIS computer techniques to align the photographs to the 1983 RI State Plane Feet Coordinate System using NAD 83 as reference datum. Coastal features were delineated on the 1938 and 1997 geo-referenced aerial photographs in order to overlay and compare changes over time. Other documents examined included 1975 vertical aerial photographs, a 1958 elevation survey of the Allins Cove proposed dredge disposal area, and 1959 oblique aerial photographs taken immediately after the placement of dredged

material on the Allins Cove salt marsh. This analysis indicated that in 1938, prior to filling of the back-barrier tidal area of Allins Cove, a sand spit extended from the south side of the cove near Willow Way with tidal flats, salt marsh and open water areas located behind the spit to the north. The channel in 1938 was located further south than it is today. Over the last 60 years the sand spit has migrated north, pinching the inlet channel against Byway Road.

Historical data show that the sand spit has grown about 300 feet over the 60-year time period (Boothroyd, unpublished data). The Byway Road upland area has eroded over time due to wave action during severe storms. Additionally, as a result of the channel's movement and constriction, portions of the northwestern marshes and uplands (including the Byway Road area) are being eroded and undercut by the tide flow in and out of the Cove. Historical aerial analyses provided an estimate of the annual erosion rate along Byway Road at about one-foot per year. Aerials also showed that the filling in 1959 resulted in a loss of the pre-existing tidal flats, salt marsh, and open water areas behind the sand spit.

2.3 General Ecological Description of Site

The existing natural wild area of Allin's Cove is approximately 21 acres. These 21 acres consist of approximately 7 acres of open water, 2 acres of *Spartina* marsh, 5 acres of *Phragmites* marsh, 2 acres of sandy beach (beach strand habitat), and 5 acres of upland coastal plain habitat.

Based on photo-interpretation (1938 data), Allin's Cove's marshes were historically dominated by *Spartina alterniflora* and *Spartina patens*. Following the deposition of dredged material on the marsh in 1959, the *Spartina* species were unable to establish themselves as the dominant flora because marsh elevations were above the normal spring tide range. The higher elevations in the marsh precluded the tidal flooding frequency required to keep soil conditions appropriate for Spartina growth. As a result, common reedgrass (*Phragmites australis*) established itself as the dominant flora in the marsh.

The effects of *P. australis* expansion are generally believed to be negative. Recent scientific literature has suggested that: 1) Phragmites detritus may be of poor quality and low availability to consumers; 2) Phragmites alters the normal hydrology and hydroperiod of the marsh; 3) reduced tidal exchange may allow Phragmites to extend its

range into lower elevations and replace other macrophytes; and 4) the expansion of Phragmites results in isolated islands of Spartina and other native species with diminished functions (Able and Hagan 2000, Angradi et al. 2001). Additionally, dense stands of Phragmites appear to restrict free movement of aquatic organisms into the marsh so that some portions of the marsh surface become virtual expansions of the uplands.

2.4 Wetlands Vegetation and Cover Types

Allin's Cove vegetation is represented by typical New England salt marsh species. The dominant vegetation type in the cove's marsh is currently *Phragmites australis*. Spartina alterniflora fringes the open water in most areas of the cove, while small patches of *S. patens* and *Distichlis spicata* exist in low elevation areas. No submerged aquatic vegetation (SAV) (i.e., eelgrass (*Zostera marina*) or widgeon grass (*Ruppia maritima*)) is present in the cove. Upland areas surrounding the cove's marshes are dominated by grasses and shrubs.

2.5 Benthos Invertebrates and Shellfish

Benthic Invertebrates

A survey of the benthic invertebrates in the existing channel area and the high and low intertidal areas of the adjacent beach was completed in 2000 (Pellegrino, 2001). A single sampling transect was established along the breachway into Allin's Cove to assess the benthic community structure of the channel. A total of three (3) stations were sampled along the channel. Additionally, two sampling transects were established along the intertidal area that runs parallel to the large sand spit that is encroaching into the channel. A high intertidal transect and a low intertidal transect were established with two (2) sampling stations located in each zone. A map detailing the sampling locations can be found in Appendix C (Benthic Report). All benthic samples were collected on November 8, 2000 during low tide.

Benthic samples in the channel (Stations 1-3) were taken using a standard 0.04 m^2 VanVeen grab with one replicate taken at each station. Benthic samples along the intertidal transect (Stations A-D) were taken using a 32 cm^2 plexiglass corer. Core stations A and C were located in the low intertidal zone while core stations B and D were located in the high intertidal zone.

The benthic communities recovered from all of the sampling stations are summarized in Appendix C. A total of 13 species were reported from the sampling stations. 10 species were reported from the channel, while 8 species were reported from the intertidal flats. Based on the analysis of a single replicate from each station, it is apparent that the channel community is dominated by a typical sandy shore assemblage of benthic species that is accustomed to moderate levels of environmental stress associated with shifting sands. The dominant species in the channel were the polychaete Mediomastus ambiseta and the bivalve Mya arenaria. The polychaete Mediomastus ambiseta was the dominant species in the low intertidal samples while the high intertidal samples contained only 1 and 2 species. The intertidal cores again showed a typical low diversity sandy shore assemblage of benthic organisms.

Shellfish and Lobster

Shellfish resources in the project area are minimal. A small population of soft-shell clams was identified on the western side of the sand spit (see Benthic Report - Appendix C), however, the majority of the subtidal and intertidal areas of the channel and the spit contained no commercially viable shellfish beds. A RIDEM shellfish survey conducted in November of 2001 (Ganz, personal communication) confirmed that the soft-shelled clam populations in the cove were low in numbers and small in size. Clumps of ribbed mussels were present in the low marsh areas of the cove. No suitable habitat for lobsters was observed in the cove.

2.6 Fish

Allin's Cove salt marsh and its associated open water habitat support typical near coastal New England fish assemblages. Killifish (*Fundulus spp.*), silversides (*Menidia spp.*), and sheepshead minnows (*Cyprinodon variegatus*) are prevalent throughout the cove. Fish species of note for their commercial and recreational fishery value that may be present in the cove include winter flounder (*Pseudopleuronectes americanus*), white perch (*Morone americana*), and American eel (*Anguilla rostrata*).

The most commercially important finfish resource, which is likely to use the cove, is the winter flounder (*Pseudopleuronectes americanus*). The winter flounder is an estuarine dependent species that inhabits brackish estuaries and near-shore waters along the Atlantic coast of North America (Labrador to Georgia). Migration into coastal ponds

and coves occurs as offshore waters cool during the fall and emigration from the ponds and coves occurs in the spring as the ponds warm. The greatest concentrations of winter flounder in these nearshore habitats occurs between December and March.

Male and female winter flounder generally reach sexual maturity at 3 years of age and fecundity (number of eggs produced each year) increases with body size. Small females produce about 500,000 eggs per year while larger females can produce around 1,500,000. In New England, reproduction occurs in estuaries from January to May with peak activity during February and March. Winter flounder eggs are demersal (unlike the floating eggs of all other local flatfish, eggs of the winter flounder clump together in masses on the bottom).

Additionally, anadromous and catadromous fish may use the cove as a pathway to and from the Annawomscutt Brook that flows through the upland areas north of the cove. Both river herring, alewife *(Alosa pseudoharengus)* and blueback herring (*Alosa aestivates* and), and the American eel (*Anguilla rostrata*) have the potential to use the cove as access to upland streams. However, there are no historical accounts of anadromous fish runs in the Cove.

2.7 Wildlife

Mammals

Mammals with historical accounts in the area and appropriate geographical ranges that are likely to occur adjacent to the project area include red fox (*Vulpes fulva*), mink (*Mustela vison*), raccoon (*Procyon lotor),* skunk (*Mephitis sp.),* chipmunk (*Tamias striatus*), coyote (*Canis latrans*), red and grey squirrels (*Tamiasciurus Hudsonicus*), and white-tailed deer (*Odocoileus virginianus*).

Birds

The bird population of Allin's Cove is represented by typical coastal resident and migrant species found in New England. Common coastal species include herring gulls, common terns, great black-backed gulls, semipalmated sandpipers, double-crested cormorants, laughing gulls, and sanderlings. The presence of ospreys has also been noted in the adjacent coastal areas of Rumstick, Adam's Point, and Hundred Acre Cove (RI CRMC, pers. comm.).

Amphibians and Reptiles

Amphibians do not occur within the tidal portion of the coastal environment as salt water has detrimental effects upon their highly permeable skin. Reptiles, including turtles and snakes, are common inhabitants of the salt marsh areas. Snapping, spotted, and eastern painted turtles generally inhabit the upland freshwater areas of the watershed, but have been documented to range into the brackish water and saltmarsh habitats of the Rhode Island coast. The northern diamond back terrapin (*Malaclemys terrapin*) is an estuarine turtle that has historically been found in the coastal ponds of Rhode Island. However, the historical records most likely represent wandering turtles and not viable populations of this species. Only the northern water snake is known to exist in the semi-aquatic fresh and/or saltwater habitats in the area.

2.8 Threatened and Endangered Species

Allin's Cove and its surrounding areas do not support any Federal or State threatened or endangered species. National Marine Fisheries Service, the U.S. Fish and Wildlife Service (USFWS), and the Rhode Island Department of Environmental Management concur with this assessment of threatened and endangered species. These agencies were consulted at meetings and by letter. See Appendix A for reply correspondence received from USFWS that verifies this determination.

2.9 Recreation and Aesthetics

Allin's Cove is a valuable ecological resource that is utilized by the public for recreational fishing, bird watching, canoeing, kayaking, beach combing, hiking, and public swimming. The aesthetic coastal scenery of Rhode Island (similar to that provided by Allin's Cove) not only benefits the residents of the coastal communities, but attracts tourists from around the world. The cove is used by the local residential community as a walking and beach-combing area. Residents from near Third Avenue and Willow Way use the existing south sand spit beach area for recreation. There is a walking path from Third Avenue to Willow Way.

Currently the Phragmites dominated marsh area of the cove is interfering with the aesthetic value of the cove. The 10 to 12 foot high plants block the scenic view of the

cove for most area residents on the eastern portion of the cove and the dense nature of the Phragmites stand precludes any enjoyment of this area.

2.10 Water Quality

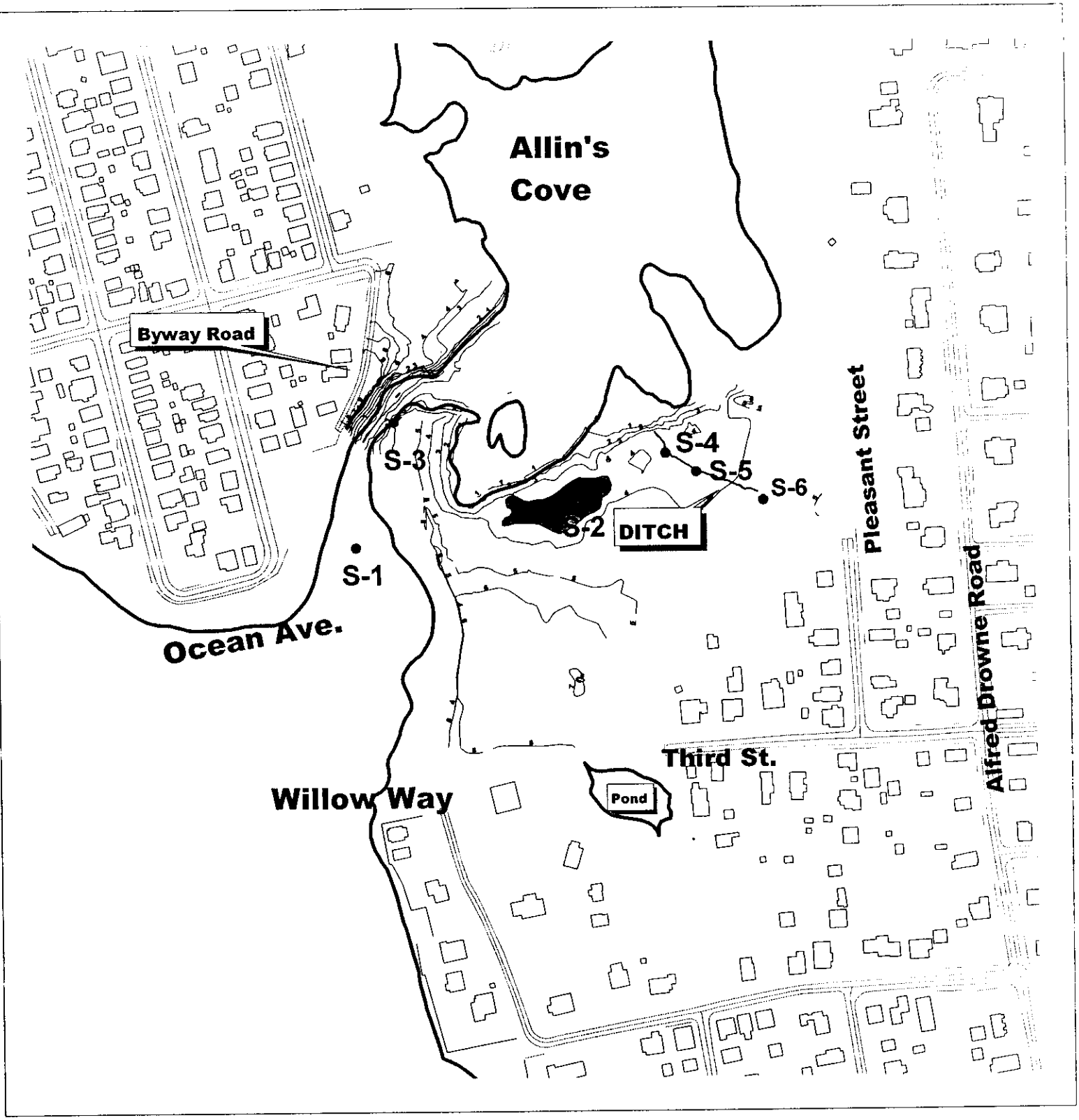
Currently, the waters of Allin's cove ponds are classified as Class SB {a} water according to State of Rhode Island water quality standards for coastal waters. Class SB waters are designated for primary and secondary contact recreational activities, shellfish harvesting for controlled relay and depuration; and fish and wildlife habitat. They are suitable for aquaculture uses, navigation and industrial cooling, and have good aesthetic value. The designation {a} is a partial use subcategory that applies to those waters that will likely be impacted by combined sewer overflows. There are no combined sewer overflows in Barrington. However, the East Providence wastewater treatment facility may be a concern. Recreational activities, shellfish harvesting, and fish and wildlife habitat may be restricted because of possible impacts by wastewater overflows.

2.11 Salinity

RI CRMC collected salinity measurements on 1 August, 7 August, and 21 August 2001. Since the existing channel was determined not to be restricted and salt marsh grasses are currently growing in low lying areas of the marsh, salinity concentrations within the cove were expected to be representative of the Providence River.

The intent of the data collection was to verify the salinity concentrations, evaluate the existing boundary of the salt marsh and to locate areas of freshwater influence. Samples were collected at six stations within the cove and salt marsh. See Figure 4 for the approximate salinity station locations and Table 1 for results of salinity measurements.

Salinity concentrations recorded at station S-1, S-2, and S-3 are above the recommended salinity concentration of 25 ppt, which discourages *Phragmites* growth and encourages salt grass growth. Stations S-4, S-5 and S-6 are located along a ditch that extends between the salt marsh and uplands. Decreased salinity concentrations at these stations is a result of tide levels not penetrating the elevated, upland area.



LEGEND

- *Approximate Salinity Sampling Points*
- *Existing Spartina marsh*
- *one foot contours NGVD (1929)*

100 0 100 200 Feet

N W E S

Allin's Cove
Wetlands Restoration
Barrington, RI

Salinity Sampling Locations

FIGURE 4

TABLE 1
Salinity Concentrations
Allin's Cove, Barrington, Rhode Island

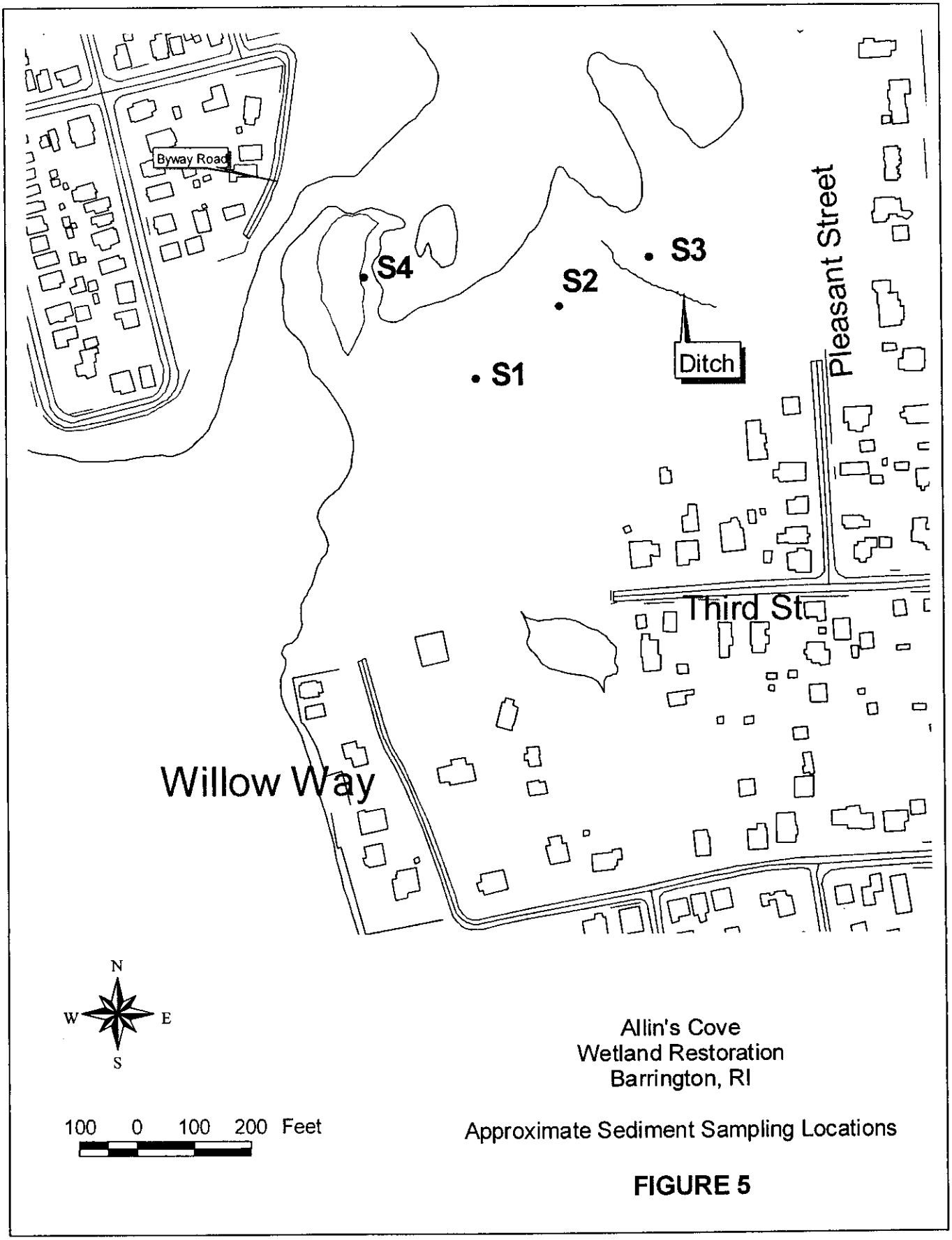
Station	Salinity (ppt)		
	1 August 2001 (11:15 am)	7 August 2001 (11:35 am)	21 August 2001 (10:25 am)
S-1	27	25	23
S-2	26	26	25
S-3	29	28	23
S-4	15	15	24
S-5	No Reading	6	23
S-6	No Reading	No Reading	0

2.12 Sediment Composition and Chemistry

Sediment sampling of the project area was conducted on May 29, 2001. Sediments were analyzed for grain size, water content, and bulk chemical analysis. (Detailed Lab results from this analysis are presented in a report published under separate cover entitled "Report for Sediment Testing for the Allin's Cove Marsh Restoration project", dated July 6, 2001. This report was prepared by Battelle under contract to the Corps. Additionally, where appropriate, samples were analyzed for Atterberg limits to assess the plasticity of the material. A composite sample of material from all sampling stations was also made for Toxicity Characteristic Leaching Procedure (TCLP) testing.

Four sediment samples (S1, S2, S3, and S4) from Allin's Cove were collected to a depth of approximately 15 feet each and composites of each individual core were analyzed for grain size and contaminants of concern. See Figure 5 for approximate Sediment Sample locations. Depth of the composite for testing was determined by identifying pre-disposal 1958 peat layers (material above the peat layers was tested). Samples that contained no obvious layering were composited by anticipated project depths. The material composited for stations S1, S2, S3, and S4 was 4.1', 5.0', 2.0', and 8.8' respectively.

Stations 1 to 3 were located in the existing *Phragmites* marsh area. Station S-1 was composed of predominately fine-grained material (61% silt-clay). Station S-2 was also composed of predominately fine-grained material (63% silt-clay). Sediments at Station S-3 were mainly silt-clay (90%).



Allin's Cove
Wetland Restoration
Barrington, RI

Approximate Sediment Sampling Locations

FIGURE 5

Comparisons of bulk chemistry results (Table 2A) to residential direct exposure criteria (Table 2B) indicated the measured arsenic values of 3.9, 3.7 and 7.5 kg/mg (or ppm) for stations 1,2,and 3 respectively exceed the arsenic criteria of 1.7 mg/kg. However, the TCLP test for the composited samples was 0.0159 ppm which is well below the TCLP criteria of 5.0 mg/l. In addition, it is planned that this material when excavated will be disposed of on-site and covered with a layer of sand and other less fine grained excavated site material. Thus, the observed levels of arsenic are not considered to be a restriction to project implementation.

Additionally, 4,4'-DDD was identified in the S-3 composite at levels of approximately 4.5 ppb dry wt. This chemical may be a breakdown product of DDT. DDD and DDT are present in the environment as a result of widespread use as insecticides prior to the ban on their use in the 1970's. The concentration of 4.5 ppb is very low and does not pose any regulatory concerns.

Station S-4 was predominantly sand (90%) and contained no contaminants of concern above sediment class level 1. Total organic carbon was low at all four stations.

Top layers of the sediment cores were sub-sampled at 1-foot intervals when appropriate for grain size analysis, water content, and Atterberg limits. Station S-1 was sectioned into three intervals: 0-1 foot (which was approximately 61% silt-clay); 1-2 feet (which was approximately 62% silt-clay); and 2-3 feet (which was approximately 46% silt clay). Station S-2 was also sectioned into three intervals: 0-1 foot (which was approximately 18% silt-clay); 1-2 feet (which was approximately 85% silt-clay); and 2-3 feet (which was approximately 85% silt clay). Station S-3 was sectioned into 2 intervals: 0-1 feet (which was approximately 68% silt-clay) and 1-2 feet (which was approximately 98% silt-clay). Station S-4 was not sectioned into intervals because the entire core was sandy material. Geotechnical analysis revealed that the sediments from the marsh (S-1, S-2, and S-3) were soft with a high void ratio and water content and may be somewhat difficult to work with when excavating and spreading. Sediments from the sand spit (S-4) were sand with a small amount of silt and clay. This material will dewater fairly quickly. If the material is consistent, it should provide a good source of sand for placement along the eroded western shoreline.

A Toxicity Characteristic Leaching Procedure (TCLP) test was performed on a composite sample of material from all sampling stations. The TCLP test is an analysis of

the mobility (or leaching) of various contaminants from solid, liquid, and multiphasic wastes such as the dredged material to be removed. TCLP testing results are summarized in Table 3 along with Rhode Island's TCLP regulatory levels. Procedure, control data, and other information pertaining to the TCLP test can be found in the sediment testing report prepared by Battelle dated July 6, 2001. All parameters tested for were below Rhode Island's regulatory levels for leachate.

TABLE 2A
Summary of Bulk Chemistry Results from Allin's Cove Sediments
Collected on May 29, 2001 (ND = non-detect)

	S-1	S-2	S-3	S-4
Antimony (ppm)	ND	ND	ND	ND
Arsenic (ppm)	3.9	3.7	7.5	1.1
Barium (ppm)	15.3	15.3	22.5	4.8
Beryllium (ppm)	0.56	0.53	0.65	0.12
Cadmium (ppm)	ND	0.12	0.59	ND
Chromium (ppm)	20.9	23.2	41.0	6.7
Copper (ppm)	15.1	18.8	28.9	6.9
Lead (ppm)	13.1	15.5	26.2	14.7
Manganese (ppm)	131	130	193	57.7
Mercury (ppm)	0.17	0.09	0.08	0.01
Nickel (ppm)	9.3	9.3	17.0	4.2
Selenium (ppm)	0.41	0.58	0.61	0.23
Silver (ppm)	ND	ND	ND	ND
Thallium (ppm)	ND	0.43	0.48	ND
Vanadium (ppm)	17.6	17.3	33.8	5.0
Zinc (ppm)	43.6	46.2	55.0	24.9
PCBs (ug/kg)	ND	ND	ND	ND

	S-1	S-2	S-3	S-4
PAHs (ug/kg)	Minimal*	Minimal*	Minimal*	Minimal*
Pesticides	Minimal*	Minimal*	Minimal*	Minimal*
Sediment Type	61% silt-clay	63% silt-clay	90% silt-clay	10% silt-clay
	39% sands	37% sands	10% sands	90% sands
TOC (%)	1.29	1.49	3.22	0.25

* Data contained in report prepared by Battelle dated July 2001.

TABLE 2B

Rhode Island DEM Classification of Dredged Material

PARAMETER	Beach Nourishment Criteria	Residential Direct Exposure Criteria	Commercial Industrial Direct Exposure Criteria	TCLP Critria for Hazardous Waste Determinatio n	GA leachability Criteria
% Solids	75	NA	NA	NA	NA
Total Petroleum HC (TPH)	NA	500 ppm	2500 ppm	NA	500 ppm
PCB's	NA	10 ppm	10 ppm	NA	10 mg/kg
TOTAL METALS	mg/kg	mg/kg	mg/kg	mg/l	
Arsenic (As)	1.7	1.7	3.8	5	NA
Cadmium (Cd)	1	39	1000	1	0.3 mg/l
Chromium (Cr)	10	390	10000	5	1.1 mg/l
Copper (Cu)	10	3100	10000		
Lead (Pb)	25	150	500	5	0.04 mg/l
Mercury (Hg)	0.5	23	610	.2	0.02 mg/l
Nickel (Ni)	5	1000	10000	NA	1 mg/l
Vanadium (V)	25	550	10000	NA	NA
Zinc (Zn)	25	6000	10000	NA	NA

Constituent	TCLP Criteria for Hazardous Waste Determination
Barium (Ba)	100.0 mg/l
Selenium (Se)	1.0 mg/l
Silver (Ag)	5.0 mg/l

TABLE 3

Results of Allin's Cove Sediment TCLP analysis and Rhode Island TCLP regulatory levels. (ND = non-detect).

	Allin's Cove TCLP Sample Concentration (ppm)	Rhode Island TCLP Regulatory Levels (ppm)
Mercury	.0001	0.2
Arsenic	.0159	5.0
Barium	.0269	100
Cadmium	.0027	1.0
Chromium	.0024	5.0
Lead	.0270	5.0
Selenium	.0040	1.0
Silver	ND	5.0
Herbicides	All ND	Varies with contaminant
Pesticides	All ND	Varies with contaminant
Semivolatile Organics	All ND	Varies with contaminant
Volatile Organics	All ND	Varies with contaminant

2.13 Air Quality

The entire state of Rhode Island is designated a non-attainment zone of ozone (O_3) and is part of the Northeast Ozone Transport Region which extends northeast from Maryland and includes all six New England states. Non-attainment zones are areas where the National Ambient Air Quality Standards (NAAQS) have not been met. Nitric oxide (NO), hydrocarbons, oxygen (O_2), and sunlight combine to form ozone in the atmosphere. Nitrogen oxides are released during the combustion of fossil fuels.

2.14 Essential Fish Habitat

A preliminary assessment of Essential Fish Habitat (EFH) in the cove was completed to comply with the Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996. "Essential fish habitat" is broadly defined to include "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity."

As stated in NMFS EFH source documents (NMFS 2001), fourteen federally managed species have the potential to occur within the project area. These include:

haddock (*Melanogrammus aeglefinus*); red hake (*Urophycis chuss*); winter flounder (*Pleuronectes americanus*); windowpane flounder (*Scopthalmus aquosus*); American plaice (Hippoglossoides platessoides); Atlantic sea herring (*Clupea harengus*); bluefish (*Pomatomus saltatrix*); Atlantic mackeral (*Scomber scombrus*); summer flounder (*Paralicthys dentatus*); scup (*Stenotomus chrysops*); black sea bass (*Centropristes striata*) king mackeral (*Scomberomorus cavalla*); Spanish mackeral (*Scomberomorus maculatus*); and cobia (*Rachycentron canadum*).

2.15 Hydrology and Hydraulics

In the study area, tides are semi-diurnal, with two high and low waters occurring during each lunar day (approximately 24 hours and 50 minutes). The resulting astronomic tide range varies constantly in response to relative positions of the earth, moon, and sun, with the moon having primary tide producing effect. Maximum tide ranges occur when orbital cycles of these bodies are in phase. A complete sequence of astronomic tide ranges is approximately repeated over an interval of 19 years, known as a tidal epoch. Coastal storms and hurricanes can cause tides to be much higher than astronomically predicted.

Tidal flood profiles, developed by the Corps for the open ocean along the New England coastline were used to estimate tidal flood frequencies at Allin's Cove. (See Appendix D.) A summary of estimated tidal datums at the subject site can be found in Table 4.

From the latest flood insurance study completed for Bristol County, dated 5 March 1996, the 100-yr flood stillwater and wave crest elevations are 14.8 feet NGVD and 19.8 feet NGVD, respectively, at Allin's Cove. Based on the examination of existing 2-foot contour mapping, the 15-foot contour on the eastern side of the cove runs across Appian Way to the intersection of Middle Street and Annawamscutt Road. This elevation then runs along Pleasant Street before following a northerly path alongside the cove. The highest known elevation on the western side of the cove is 14.4 feet NGVD.

The total drainage area of the Allin's Cove watershed is approximately 0.81 square miles. The northern watershed upstream of Allin's Cove discharges to two culverts located at the north end of the cove. The western and eastern watershed primarily flow overland discharging directly into Allin's Cove. Approximate freshwater runoff flow rates and volumes for 2-year, 5-year, 10-year, and 100-year storms were calculated. Results of the hydrologic analysis can be found in Appendix D.

TABLE 4.

Estimated Tide Levels at Allins' Cove. Estimated from Corps of Engineers Tidal Flood Profiles, New England Coastline, September 1988

	TIDE LEVEL AND REPORT DATUM (ft NGVD 29)
100-year Frequency Flood Event	14.8/19.8[1]
50-year Frequency Flood Event	13.8
10-year Frequency Flood Event	8.3
2-yr Frequency Flood Event	6.5
1-yr Frequency Flood Event	5.5
Maximum Predicted Astronomical High Water	5.0
8 Times Monthly High Water	3.8
Mean High Water Spring (MHWS)	3.5
Mean High Water (MHW)	2.9
Mean Tide Level (MTL)	0.7
National Geodetic Vertical Datum (NGVD)	0.0
Mean Low Water (MLW)	-1.5
Mean Lower Low Water (MLLW)	-1.9

Note: [1]Surge stillwater elevation/maximum wave crest elevation.

2.16 Historic and Archaeological Resources

The following narrative is taken from the City of Barrington's website under History at the following link: http://www.ci.barrington.ri.us/town/history.html.

Before European settlement, Barrington was occupied by the Wampanoag Indians. Archaeological evidence of Indians living in Rhode Island goes back as far as 8,000 years ago, although earlier sites may exist that have simply not been found as yet. During the initial English colonization, Massasoit was the chief sachem of the Wampanoags and the area now known as Barrington was called by its Indian names of Sowams and Pokanoket.

In 1717 Barrington was incorporated. It was probably named after Barrington parish in England [which was in Somerset County, from which most of Barrington's early settlers came]. Relations with the Indians grew tense in the area as more settlers arrived. In 1674, some young Indian braves started looting empty homes. Troops arrived from Plymouth to help defend the settlers. The Indians later attacked a group of churchgoers and killed one man. King Phillip, Massasoit's son and then the Wampanoag leader, fled from Rhode Island and continued his looting. In Dec. 1675, Captain Benjamin Church led Massachusetts and Connecticut troops in a battle with the Indians in southern Rhode Island. A number of Wampanoags and Narragansetts were killed there; this became known as the Great Swamp Fight. Sporadic raids continued until King Phillip was slain the following summer in Bristol. Peace then returned to Barrington.

When Barrington separated from Swansea, it was still part of the Massachusetts Bay Colony. It had a town meeting form of government, but only landholders could vote. In 1747 Bristol County, including Barrington, became part of the Rhode Island Colony; however, Barrington was made part of Warren. In 1770 the Rhode Island General Assembly decreed it to be an independent town (separate from Warren). During this period Barrington had a primarily agricultural economy, with some fishing and shipbuilding as well. In fact, Barrington remained largely agricultural into the early 20th century. In the 1700's the town had several shipyards. Nathaniel Brown had a shipyard on the south side of Bullock's Cove. Martin's shipyard was located at the foot of what is now called Ferry Lane.

In 1848, Nathaniel Potter of Providence with a few others founded the Nayatt Brick Company, there being extensive clay deposits in that area. [Note that bricks had been made by hand in Barrington in the 1600's.] The clay pits were located at what is now Brickyard Pond. The company converted Mouscochock Creek into a canal for ease of transporting the bricks. The company was re-incorporated as the Narragansett Brick Company in 1864. This activity was a stimulant for road-building, steamship visits and other signs of prosperity in the town. Early employees at the brickyard were of French Canadian extraction.

The building of the railroad to Providence in 1855 made commuting to work in Providence practical, and Barrington began to take on a suburban character. In 1898, electric trolley service was started between Providence and Bristol, with stops in Barrington.

Subsequent to the coming railroad, several manufacturing facilities were established in West Barrington. The most noted of these is the R. I. Laceworks, founded by Charles Shephard who learned the lace business in France; its Barrington facility opened in 1904. It was large enough to have its own fire -fighting apparatus, which was used to fight fires in other parts of town for a fee. In 1897 the Annawamscutt mill was built; it specialized in coloring and finishing cotton goods. In 1908, Frost Finishing was established; it was a dyer, bleacher and finisher of leather goods for the Ford Motor Company. International Rubber also made leather goods for the auto industry. The O'Bannon Corporation bought out both Frost and International Rubber in 1914.

Barrington, being on the water, was becoming a summer "resort" for the well to-do in the late 1800's. The Barrington Yacht Club was established in 1908. In 1911, an 18 hole golf course was laid out at Nayatt and became the present Rhode Island Country Club. Land for the club was purchased from the brick company. [The clay deposits at the brickyard began to run out in 1900, and by 1930 operations there had essentially ceased. The clay pits gradually filled with water to form Brickyard Pond.]

The Bay Spring section of West Barrington continued to be the center of manufacturing in the town in the early part of the century. The O'Bannon Corporation went bankrupt in 1930 but was bought out by Cranston Worsted Mills. A company named Pilling Chain, a manufacturer of imitation leather and zippers, occupied its facility in 1974. The building was vacated some years later and is presently being converted into elderly housing. The R. I. Laceworks expanded in 1920 and again in the '30's. It employed up to three hundred persons, mostly of Italian and English descent. Toward the latter half of the century a significant number of employees were of Portuguese extraction, commuting from Warren and Bristol. The Laceworks continued operating until 1990 when its owners claimed it was losing money. Its forty-two lace-making machines were then sold off and dispersed around the world. The future of the laceworks buildings is at present uncertain. In the '30's, the Neweth Rubber Company, makers of retread tires, built a facility at the site of the present Barrington Shopping Center. The building burned to the ground in the '40's and was not rebuilt. At present there are essentially no manufacturing establishments in Barrington.

2.17 Socio-Economic Setting

Barrington is nine miles southeast of Providence. Bounded by East Providence on the north and west; by Massachusetts on the northeast; by the Warren River on the east;

by Narragansett Bay on the west and south. No point in Barrington is more than two miles from salt water.

Population Census Data in Barrington, RI

1950	8246
1960	13826
1970	17554
1980	16174
1990	15849
2000	16,819

The population count for The Town of Barrington as of April 1, 2000, was 16,819. This represented a 6.12% increase (970 persons) from the 1990 population of 15,849. Population in Barrington has doubled since 1950. (See table above) Racial minorities make up about four percent of the population in Barrington. In 2000 the median age of the population in Barrington was 40.2 (Source: http://www.riedc.com/mcds/Barrington.html#population).

In Barrington, 53 percent of adults have at least a bachelor's degree, and 24 percent have a graduate or professional degree. Barrington's median income is $74,591. (Source: Providence Journal May 22,2002, http://www.projo.com/news/census/) Housing in town is primarily single-family dwellings in a suburban area.

2.18 Traffic

Existing traffic surrounding the site is neighborhood residential traffic. No major roads or significant thoroughfares are present.

3. ALTERNATIVES

3.1 Introduction

The purpose of this project, as stated previously, is to 1) restore salt marsh to the area of Allin's Cove impacted by the disposal of dredged material in 1959 from the Bullock Cove project; and 2) develop a plan to address the erosion along the western edge of the cove at Byway Road.

3.2 Project Constraints

Initial discussion with the project sponsor indicated that the sponsor was willing to support a marsh restoration effort on the order of about a $500,000 total project construction cost plus necessary studies and design efforts. Also the sponsor expressed the desire to develop a solution that would provide for both marsh restoration and address erosion concerns along Byway Road. A constraint on plan formulation is that Allins Cove is designated by the State of Rhode Island as a Type 1 waterway and structural shoreline protection is prohibited by RI CRMC regulation in Type 1 waters.

3.3 Formulation

Marsh Restoration

Review of aerial photography and topographic data gathered for this study showed that prior to the fill the area consisted of tidal channels and marsh islands. Filling was not uniform over the site. It appears more fill was deposited just behind the barrier spit with less fill as one moves away from the spit. The existing topography in the filled areas ranges from about 6.6 feet NGVD on the north side (near the spit) to about 3.5 feet NGVD on the south side. In order to restore the area to marsh two criteria needed to be established one was the target elevations and the second was the ratio of high to low marsh to include at the site. The target elevations for fill excavation were determined from elevation surveys of existing *Spartina* near the site and estimates of the tide elevations and flooding frequency. Target elevations for restoring low and high marsh were determined to be about 3.1 feet and 1.4 feet NGVD respectively. US Fish and Wildlife Service recommended that a 2 to1 ratio of high marsh to low marsh be recreated at the site. (See Appendix A, correspondence July 27,2002.)

Disposal of Excavated Material

In designing the marsh restoration plan it was also necessary to consider different options for the excavated material. At first it was proposed that the excavated material be used for proposed sand spit along Byway Road. However, testing of the material (S1, S2, and S3) determined it was not suitable for this use. Silts and clay are considered fine grain materials and thus are unsuitable to place on the eroding shoreline. This finding led to the review of other placement options discussed below.

Next both off-site and on-site placement were considered. Meetings and discussions were held with the town regarding locations in town where the material might be used. The town may in the future pursue official closing procedures of three old landfills in town with RIDEM and it was suggested that this material could be used in this closing procedures as a cap. However, at this time the schedule for the town's studies and permanent closure action on these sites is undecided. Because an off-site disposal location could not be identified this was dropped from further consideration and it was decided to investigate whether the material could be placed on-site.

Review of the site indicated that the present higher sections of the filled area behind the sand spit (the existing upland vegetated area) might be used for material placement. The existing elevations in this area are at about 6.6 feet NGVD creating an area that is only flooded during higher storm tides. Analysis indicated that the amount of material to be excavated from the *Phragmite*s marsh to create salt marsh would be about 8,200 cubic yards and elevate the ground surface in this section from 6.6 feet NGVD to about 10 feet NGVD.

Placing material on-site has the advantage of being less expensive as material does not need to be trucked offsite. Also there will be less truck traffic on neighborhood roads. However, there is a concern that the *Phragmites* roots in the excavated material might take hold on the disposal area. This concern was addressed by a team of experts at a meeting on March 26, 2002. (Meeting attendees included representatives of RI CRMC, RIDEM, NOAA, and Frank Golet, PhD., University of Rhode Island.) The plan is to seed and/or vegetate the disposal area with suitable native coastal species and then monitor the disposal area and spot treat with herbicide if *Phragmites* begins to grow.

Channel and North Sand Spit

Formulation for the north sand spit and channel realignment locations were provided by Jon Boothroyd, PhD. University of Rhode Island (URI). The movement of the existing channel to the south in effect restores the channel location to a pre-1938 condition. It is expected that the new channel will move to the north over time, but the life expectancy is probably on the order of 50 years. (Jon Boothroyd, personal communication) A detailed analysis and figures representing the existing conditions versus the proposed conditions are included in Appendix H.

3.4 Description of Alternatives

After consideration of all factors at the site including the ecology of the area, hydrology and hydraulics, geology, geotechnical considerations, real estate, and costs and with input from RICRMC, Dr. Jon Boothroyd, the Town of Barrington, Save the Bay, the Allin's Cove Neighborhood Coalition, and US Fish and Wildlife Service the following alternatives were identified and evaluated. Figure 6 provides the layout of the alternatives concept.

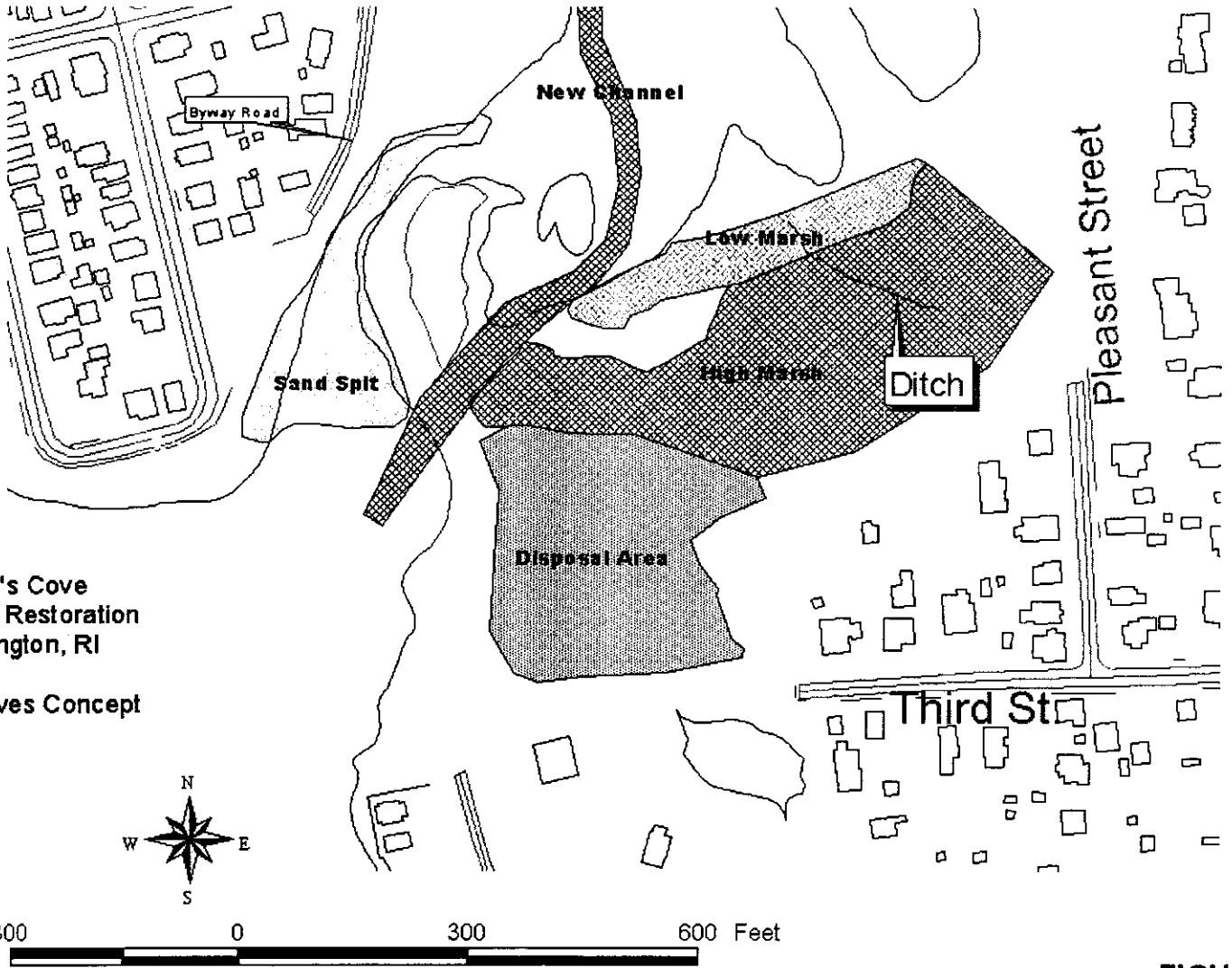
Alternative 1. No Action Alternative/Future Without Project Conditions

Evaluation of a No Action Alternative is a requirement of the National Environmental Policy Act (NEPA) and Corps of Engineers (Corps) policy. It allows the project team to make its decisions considering likely future conditions without the project. The No Action Alternative involves no improvements to the site.

Under the No Action Alternative, the salt marsh areas of Allin's Cove would remain dominated by *Phragmites australis* and continue to be poor quality habitat. Additionally, the erosion of the western bank of the inlet channel along Byway Road would continue. This erosion will eventually undercut the existing banks and degrade the roads and infrastructure located along the western portion of the cove and result in continued erosion of the salt marsh on this western bank

Alternative 2. Channel and Sand Spit Realignment

This Alternative addresses the erosion along the western portion of the cove. This alternative proposes the inlet channel be realigned to the southeast and 1 acre of beach strand habitat (i.e., sand spit) would be relocated to the northwest to alleviate erosion



Allin's Cove
Wetland Restoration
Barrington, RI

Alternatives Concept

FIGURE 6

conditions along the western portion of the cove. This would also protect approximately 0.7 acres of existing salt marsh on the western side near Byway Road.

This alternative involves construction of a sand spit about 5 feet NGVD in height along the western shoreline near Byway Road. Sand to create the spit would be taken from the end of the existing sand spit. The sand source area would be excavated to 1.0 NGVD. The quantity of material for the sand spit construction is estimated at 3,400 cyds. The proposed spit is about 500 feet long and varies in width from about 50 feet wide to 200 feet wide. The existing channel would be moved to the south and would be excavated to a bottom elevation of -1.5 feet NGVD. The proposed width of the bottom of the channel is 30 feet.

Alternative 3. Marsh Restoration

Alternative 3 involves excavating and grading the Phragmites dominated marsh along the eastern portion of Allin's Cove to elevations appropriate for *Spartina* spp. marsh and leaving a 50-foot buffer of Phragmites along the border of the project. Approximately 3.6 acres of Spartina marsh (2.6 acres of high marsh and 1 acre of low marsh) would be created and approximately 8,200 cubic yards of material would be placed upon 2 acres of on-site area for disposal.

This alternative involves excavating about 8,200 cyds of material from the area that currently supports Phragmites growth to create conditions suitable for *Spartina* growth. The criteria are to provide target elevations of 3.1 NGVD for the high marsh area and 1.4 NGVD for the low marsh area.

Alternative 4. Marsh Restoration with Channel and Sand Spit Realignment

Alternative 4 involves excavating and grading the Phragmites dominated marsh along the eastern portion of Allin's Cove to elevations appropriate for Spartina spp. marsh and leaving a 50-foot buffer of Phragmites along the border of the project. Approximately 3.6 acres of Spartina marsh (2.6 acres of high marsh and 1 acres of low marsh) would be created and approximately 8,200 cubic yards of material would be placed upon 2 acres of onsite area for disposal. Additionally, the inlet channel would be realigned to the southeast and 1 acre of beach strand habitat (i.e., sand spit) would be relocated to the northwest to alleviate erosion conditions along the western portion of the cove. This would also protect approximately 0.7 acres of existing salt marsh on the

western side. This alternative is a combination of alternatives 2 and 3 as described above.

3.5 Cost Analysis

Feasibility level construction cost estimates were developed for the alternatives in order to conduct the required incremental analysis of project costs and benefits and to provide a preliminary estimate for project construction. Detailed construction cost estimates are presented in Appendix F. In addition real estate requirements for each alternative were assessed and a preliminary cost estimate for obtaining the necessary easement identified. The Real Estate report is provided in Appendix G. The estimated project costs (not including study costs) are summarized in Table 5.

TABLE 5

Allin's Cove Estimated Alternatives Costs ($)

	No Action (Alt. 1)	Alternative 2 Channel and Sand Spit realignment	Alternative 3 Restore Salt Marsh	Alternative 4 Restore Salt Marsh and Channel and Sand Spit realignment
Basic Construction Cost	0	170,600	248,700	378,100
Real Estate Cost	0	8,200	51,500	51,500
Engineering and Design Cost (8%)	0	13,700	19,900	30,200
Construction Management Costs (6%)	0	10,200	14,900	22,700
TOTAL	0	202,700	335,000	482,500

Basic construction cost assumes 20 percent contingencies.
Engineering and design costs are estimated at 8 percent of basic construction cost.
Construction management costs are estimated at 6 percent of basic construction cost.

3.6 Cost Effectiveness and Incremental Analysis

In this section, the costs of the alternative restoration plans are compared with the environmental benefits within the framework of an incremental cost analysis, to display the most cost effective alternatives. An incremental cost analysis examines how the costs of additional units of environmental output increase as the level of environmental output increases. For this analysis, the environmental outputs are measured in habitat units. The analysis was conducted in accordance with IWR Report 95-R-1, Evaluation of Environmental Investments Procedures Manual-Interim: Cost Effectiveness and Incremental Cost Analyses, May 1995; and ER 1105-2-100, Planning Guidance Notebook, Section 3-5, Ecosystem Restoration, April 2000.

Cost effective analysis and incremental cost analysis are two analyses that are conducted for Corps environmental restoration projects to evaluate alternative plans. First, it must be shown through cost effectiveness analysis that an alternative restoration plan output could not be produced more cost effectively by another alternative. Secondly, incremental cost analysis of the cost-effective alternatives is performed to arrive at the "best" level of output within the limits of both the sponsor's and the Corps capabilities. The incremental analysis by itself does not point to the selection of any single plan and is used with other decision-making criteria to select and recommend a particular plan.

The three alternative plans and no action alternative described above were examined for the Allin's Cove restoration project. The cost and acres of habitat created by each alternative plan are summarized in Table 6. For this incremental analysis, acres of salt marsh were used as the Habitat Units (HU). Costs shown reflect total project costs. The economic value of preventing erosion along Byway Road and protecting the road, houses and land in that area are estimated separately.

In conducting the evaluation, the first step was to identify cost-effective plans, and eliminate any plans that are not cost effective. An alternative is considered cost effective if no other plans provide the same or greater number of habitat units for less cost. All of the alternatives considered are cost effective plans.

TABLE 6
Costs and Benefits of Alternative Plans
Allin's Cove

	Cost	HU	Avg. Cost (cost/HU)
Alt. 1 - No Action	$0	0	-
Alt. 2 - Channel/Sand Spit	$202,700	0.7	$289,600
Alt. 3 - Marsh	$335,000	3.6	$ 93,100
Alt. 4 - Channel/Sand Spit & Marsh	$482,500	4.3	$112,200

The second step of the incremental analysis is to identify the best buy plans. Best buy plans are a subset of cost effective plans. In determining the "best buy" plans, a process called curve smoothing is used. This process is detailed in the Incremental Cost Analysis manual cited above, IWR Report 95-R-1. In this process, the incremental cost and incremental output for each alternative are compared to the no action alternative. A plan is considered a best buy plan if there are no other plans that will give the same level of output at a lower incremental cost when compared to the no action alternative. In this process, it was determined that Alternative 2 was not a best buy plan, because Alternative 3 has a lower average cost than alternative 2 and a greater output than alternative 2. This analysis identifies the three best buy plans as, Alternatives 1, 3 and 4.

The best buy plans, Alternatives 1, 3 and 4, make up the incremental cost curve. Table 7 shows incremental cost for each best buy plan.

TABLE 7
Incremental Cost Curve Allin's Cove

Alternative	Cost	HU	Incr. Cost/Incr. HU
1	$0	0	----------
3	$335,000	3.6	$ 93,100
4	$482,500	4.3	$210,700

In the incremental cost curve, incremental cost per unit increases with output, or habitat units. Development of the incremental cost curve facilitates the selection of the best alternative. The question that is asked at each increment is: is the additional gain in

environmental benefit worth the additional cost? In this study, the incremental cost curve consists of three points represented by Alternatives 1, 3 and 4. Alternative 3 provides 3.6 acres of salt marsh habitat, with an incremental cost of $93,100. Alternative 4 provides 4.3 acres of habitat, with an incremental cost of $210,700.

With Alternative 4 realignment of the sand spit will prevent erosion along Byway Road in Barrington. The economic value of the resource that would be protected was estimated based on current Corps guidelines for conducting analyses for Section 14 projects, which are emergency erosion protection projects. The value of the resource that would be protected consists of the land and houses along Byway Road that are currently threatened by erosion. The value of the land and houses was obtained from the Barrington Tax Assessors Office. The total market value of the parcels is estimated at $1,035,800. Annualizing this figure over a 25-year project life, using the current Federal interest rate for water resources projects of 6 1/8 %, yields annual benefits to preventing the erosion of $82,000. In the context of this incremental analysis, the erosion prevention benefits are viewed as incidental to the primary goal of environmental restoration. These benefits would be achieved with Alternative 4, but not with Alternative 3. The erosion prevention benefits provide support for choosing Alternative 4 over Alternative 3, since Alternative 4 yields the highest amount of habitat created and provides significant erosion prevention benefits.

In conclusion, the incremental analysis determined that Alternatives 1, 3 and 4 are best buy plans. In comparing those alternatives, Alternative 4 yields the most total habitat, and also provides significant erosion protection benefits. As a result, the cost effective/incremental analysis of the environmental restoration benefits and associated erosion prevention benefits results in Alternative 4 being identified as the preferred alternative.

3.7 Recommended Alternative

Cost effective/incremental analysis was used to evaluate the alternatives proposed for the Allin's Cove project. Based on this analysis and the desire to restore salt marsh habitat either alternatives 3 or 4 reasonably maximize ecosystem restoration benefits compared to costs. Alternative 4 has the added benefit of providing significant erosion protection benefits along Byway Road and providing a greater amount of habitat benefits. Alternative 4 is selected as the recommended alternative and is the NER plan. This is also the plan preferred by the local sponsor.

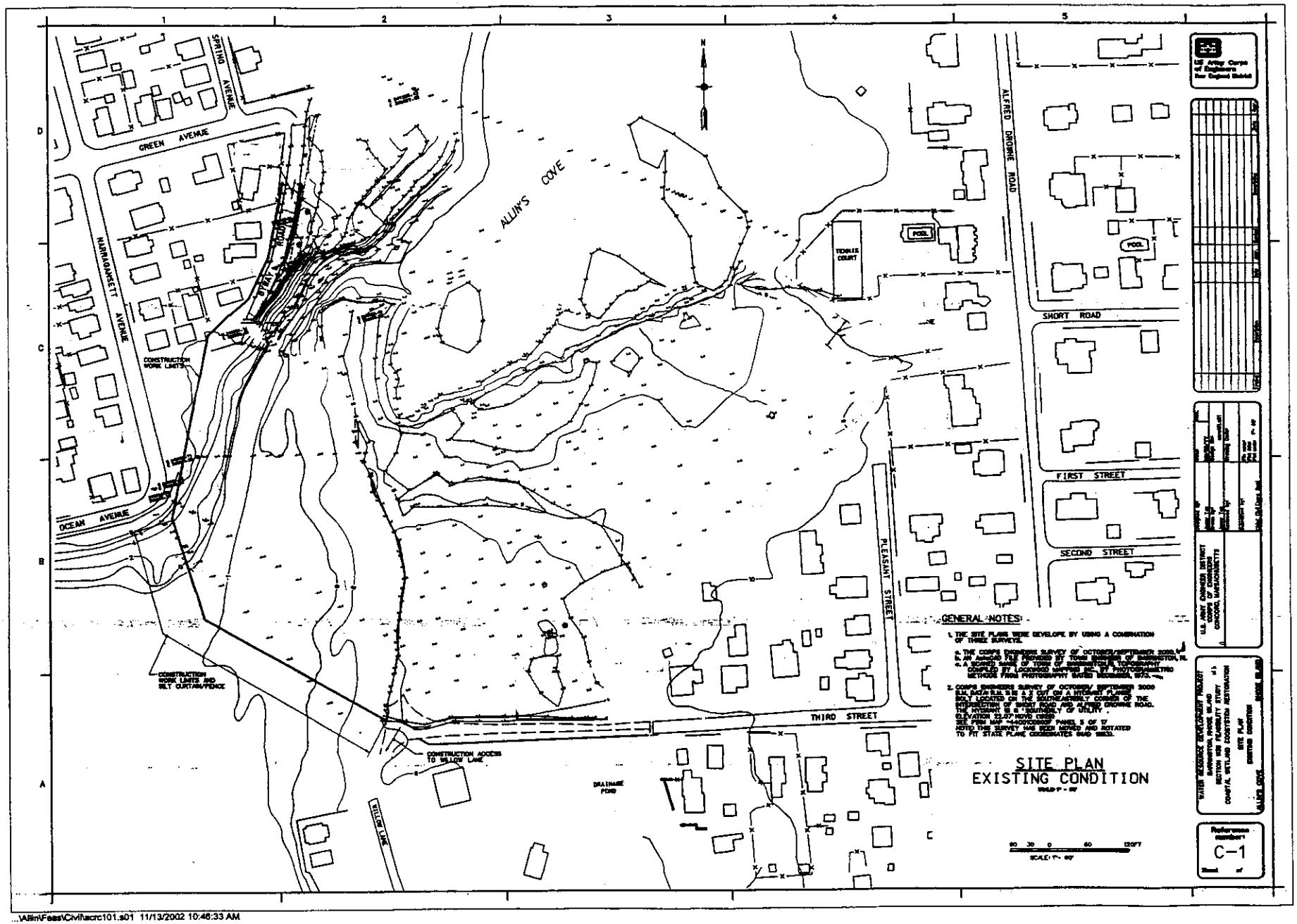
4. PROPOSED PROJECT

4.1 Plan Description

The proposed project will involve excavating and grading the *Phragmites* dominated marsh along the eastern portion of Allin's Cove, realigning the inlet channel to the southeast, and relocating one acre of beach strand habitat to the northwest. The project will also include grading the disposal area to re-configure the south sand spit in front of the disposal area. The Engineering layout of the existing conditions and the proposed project are included in Plates C-1 through C-4 and Figure 7. The final project design will consider a possible low-cost walking path to enhance enjoyment of the area. The walking path alignment will be discussed with RICRMC and local stakeholders. Final design will include development of a vegetation plan for the disposal area and consideration of some limited planting of *Spartina* on the restored marsh.

Marsh Restoration

The existing *Phragmites* marsh will be excavated to a target elevation of approximately 3.1 feet NGVD for high marsh and approximately 1.4 feet NGVD for low marsh to allow appropriate conditions for *Spartina* to prosper. Target elevations were based upon hydrologic modeling (Appendix D) and elevation surveys of existing saltmarsh vegetation. The removal of *Phragmites*, excavation of material, and material disposal will be preformed by standard construction equipment (possibly low pressure construction vehicles) following appropriate management procedures for erosion control (See Appendix E – Geotechnical Report). Approximately 3.6 acres of Spartina marsh (3.0 acres of high marsh and .6 acre of low marsh) will be created. This added to the existing low marsh fringing the site will create the desired 2:1 ratio of high to low marsh in the area. Approximately 8,200 cubic yards of silty material from the proposed excavation will be placed on-site. A 2.13 acre area within the footprint of the original 1959 disposal site will be used for on-site disposal. In addition a small tidal creek of about 100 feet in length will created at the site of the existing ditch to aid with salt water flow into the interior of the restored marsh.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SPRING AVENUE
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OCEAN AVENUE
ALLIN'S COVE
ALFRED DRIVE ROAD
SHORT ROAD
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SECOND STREET
THIRD STREET
PLEASANT STREET
TENNIS COURT
POOL
CONSTRUCTION WORK LIMITS
CONSTRUCTION WORK LIMITS AND SILT CURTAIN/FENCE
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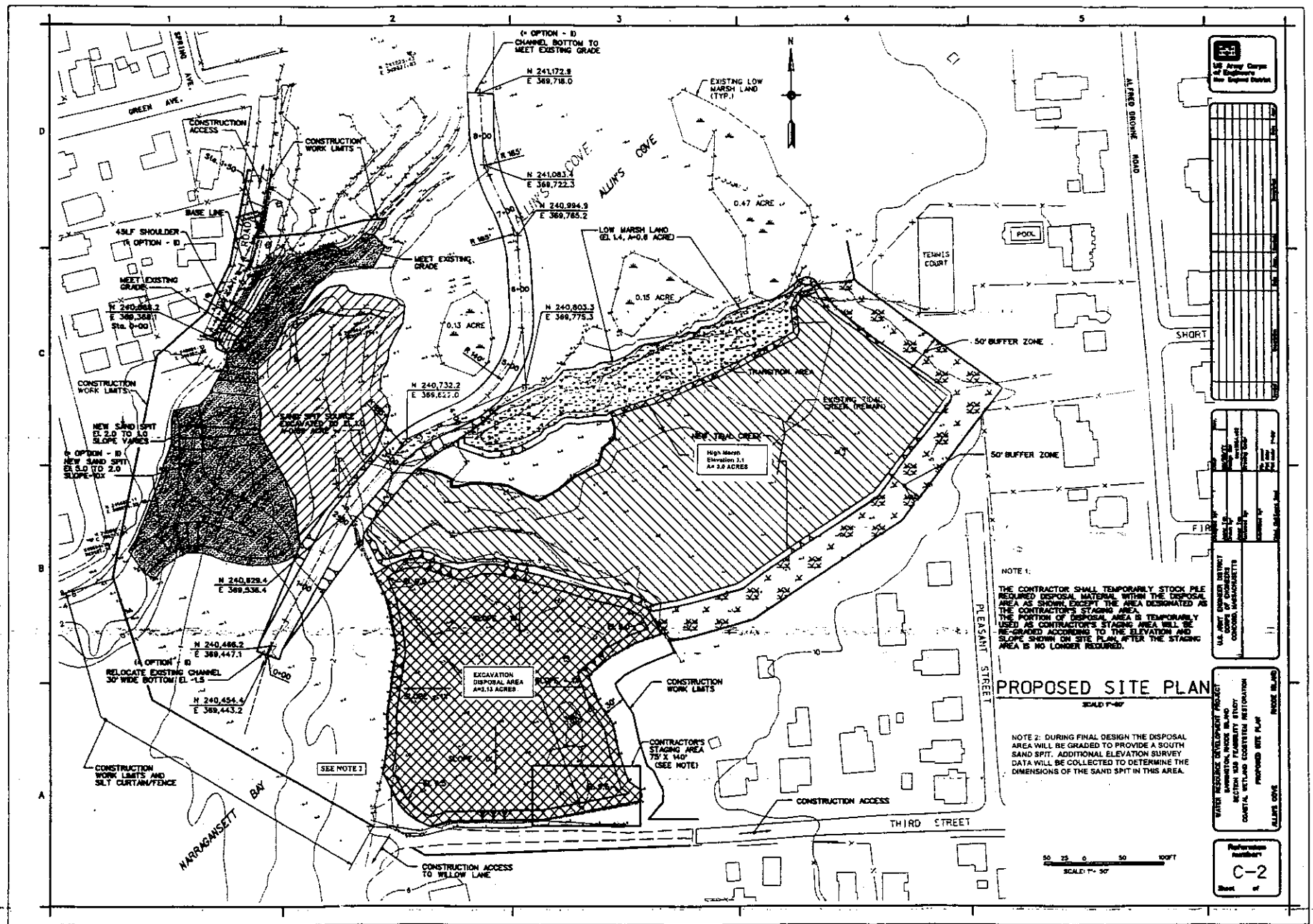
DRAINAGE POND
YELLOW LINE
GENERAL NOTES:
SITE PLAN
EXISTING CONDITION
C-1



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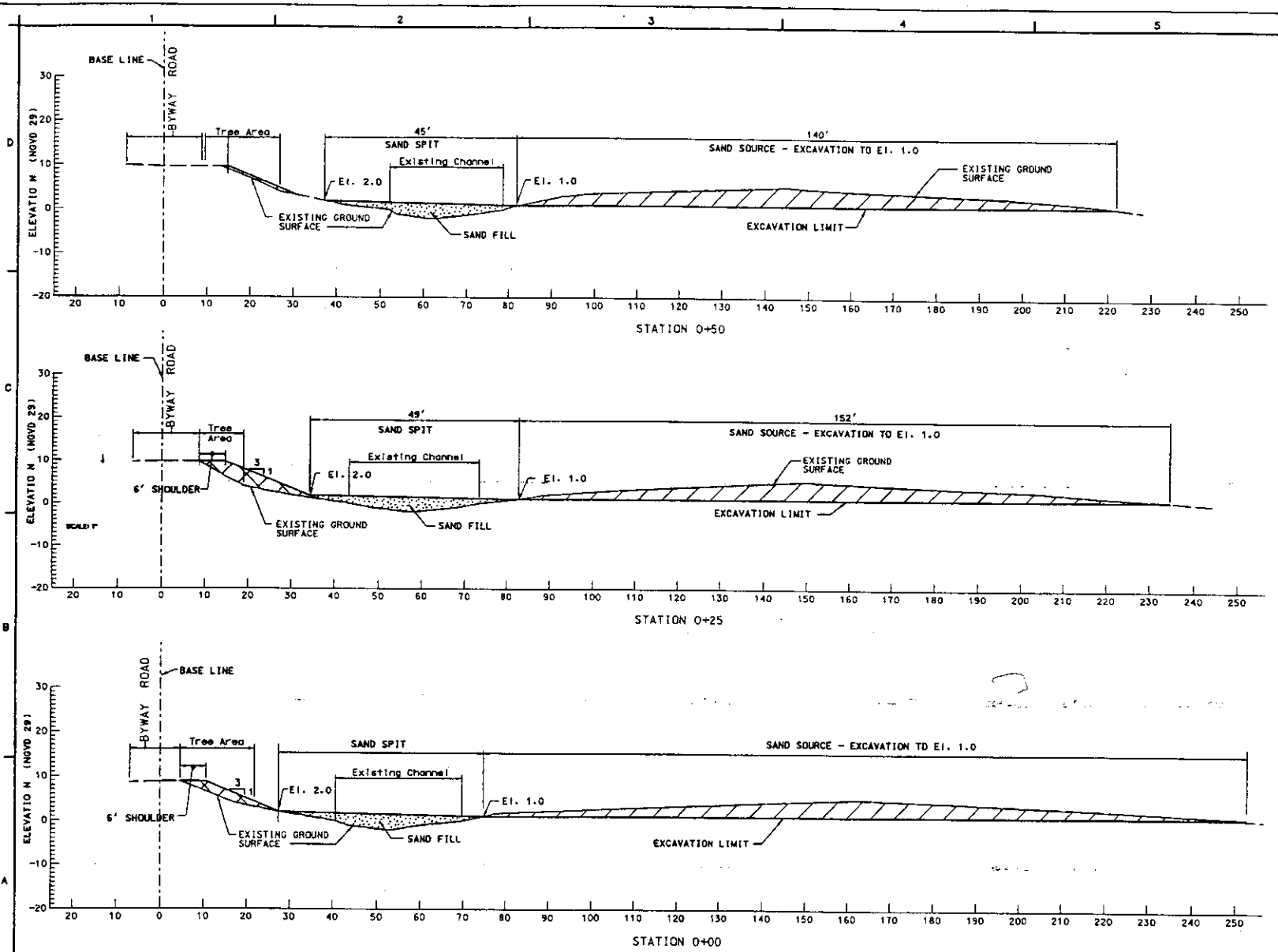

SECTIONS - BYWAY ROAD

SCALE: 1" = 10'

US Army Corps of Engineers New England District

U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS CONCORD, MASSACHUSETTS

WATER RESOURCE DEVELOPMENT PROJECT
BARRINGTON, RHODE ISLAND
SECTION 103 FEASIBILITY STUDY
COASTAL WETLAND ECOSYSTEM RESTORATION
SECTIONS - BYWAY ROAD
ALLEN'S COVE RHODE ISLAND

Reference number: C-3

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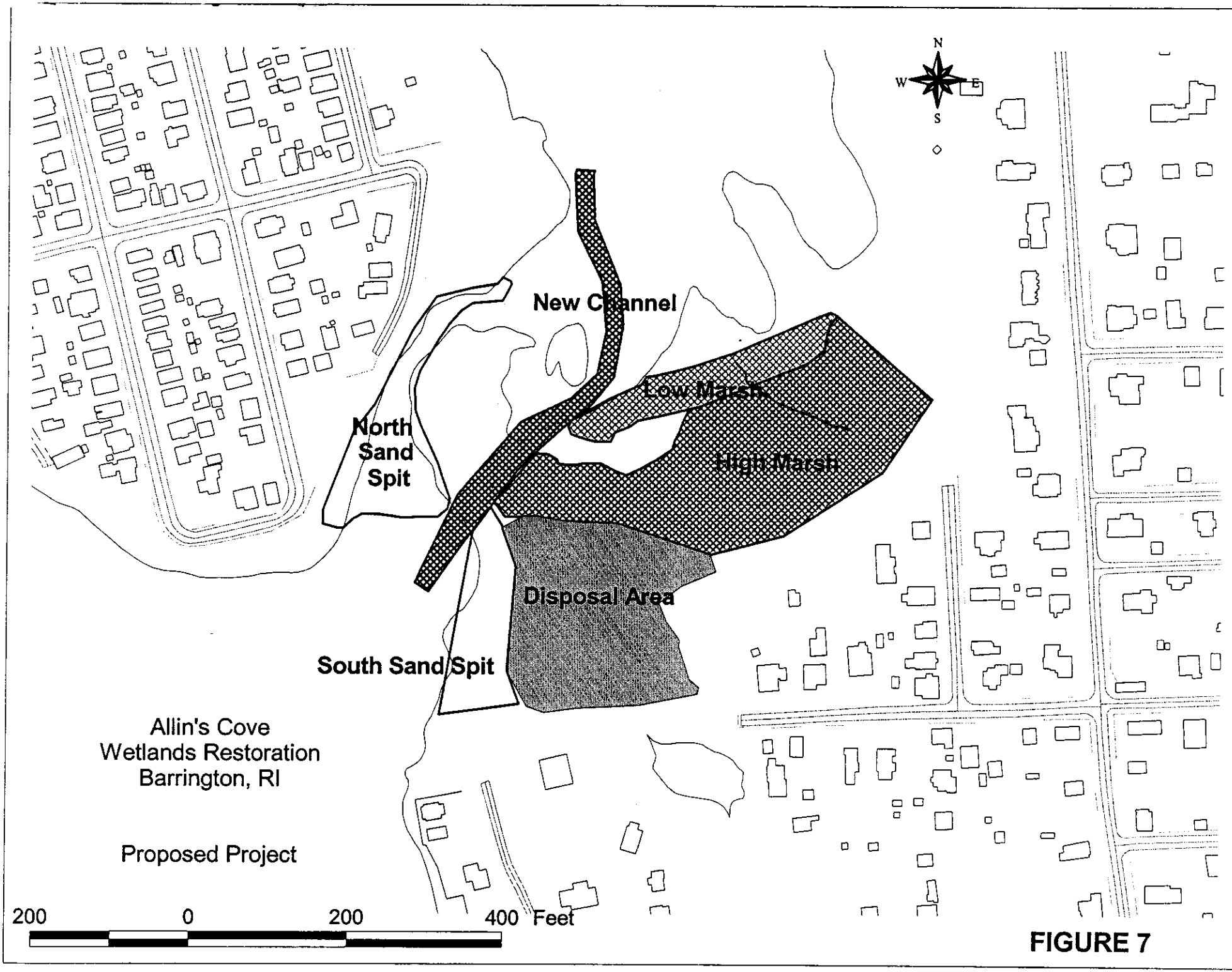
N
W
E
S
New Channel
Low Marsh
High Marsh
North Sand Spit
Disposal Area
South Sand Spit
Allin's Cove
Wetlands Restoration
Barrington, RI
Proposed Project
200
0
200
400 Feet

FIGURE 7

Osprey Platforms

The final design will also include construction of two osprey platforms to increase nesting habitat.

South Sand Spit and Disposal Area

Public comment on the draft report in March 2003 resulted in the modification of the initially proposed plan to decrease the height of the disposal area and re-configure the south sand spit to create a wider sand spit than currently exists. The proposed plan would excavate the sandy material from the disposal area and place it on the south sand spit. This would result in a wider beach area at the toe of the disposal area and also reduce the height of the disposal area. This would re-configure the barrier more closely to the 1938 position. The re-configuration of the south sand spit was proposed by Jon Boothroyd, State Geologist, RI in his report on the site. However, we initially dropped this from consideration due to lack of sandy material. Subsequent, testing of the material at the disposal area has indicated that this is sandy material. Testing of material from the disposal area is included in Appendix I.

Tidal Inlet Channel and North Sand Spit

The inlet channel that connects Allin's Cove to the Providence River will be realigned to the southeast to alleviate erosion conditions along the western portion of the cove. The realignment of the channel will protect approximately 0.7 acres of existing salt marsh as well as the upland areas (including Byway Road and its associated infrastructure) that are currently being eroded. To realign the channel, 1 acre of beach strand habitat (i.e., sand spit) will be relocated to the northwest. The relocated beach strand habitat will also aid in alleviation of erosion.

Walking Path

During the public information meeting in January 2002 in Barrington, RI and at a meeting on May 28, 2002 and in comment letters local stakeholders have expressed a very strong desire to include a simple low-cost walking trail in the proposed project. A low cost walking path will be considered in final design of area.

Initial Site Vegetation following Construction.

The disposal area will be seeded with suitable native coastal grasses. Instructions will be included in design documents to ensure this area is revegetated and stabilized as quickly as possible following construction.

Save the Bay staff has suggested that there may be some advantage to planting Spartina in a portion of the excavated marsh areas to hasten the salt marsh growth and restoration. Normal restoration procedures on these types of projects are to allow the marsh to revegetate naturally. Because of the expense and affinity of marsh grasses to colonize the site without plantings, planting would be limited to areas most susceptible to erosion. If planting is included in the project, this would add on the order of about $10,000 (three-foot centers) to $40,000 (one-foot centers) per acre to be planted to the cost of the project. (Cost estimate provided by Save the Bay and assumes volunteers are used to assist with planting.)

4.2 Permits

The following permits are required for project construction:

- ξ Water quality certification from RI DEM pursuant to Section 401 of the Clean Water Act
- ξ CZM consistency determination from RI CRMC pursuant to the Coastal Zone Management Act
- ξ RIDEM Stormwater permit
- ξ Section 404(b)(1) evaluation provided as Attachment to this report.

4.3 Project Construction and Real Estate Costs

TABLE 8.

Allin's Cove Estimated Project Construction Cost ($) and Real Estate Cost ($)

Basic Construction Cost (See appendix F) *(Assumes 20 % contingencies)*	*$378,100*
Engineering and Design Cost (8%)	$30,200
Construction Management Cost (6%)	$22,700
Total Construction Cost	$431,000
Real Estate Cost (see appendix G)	$51,500
Total Construction and Real Estate Cost	$482,500

Note: Above estimate does not include study costs, plans and specifications costs, or monitoring and maintenance costs. These are discussed in Section 6.0 of this report. The construction cost estimate includes an estimate of project construction costs including cost growth through project completion. These feasibility level cost estimates will be recalculated in final design.

4.4 Construction Window

Impacts to biological resources will be minimized by not allowing dredging associated with the project to occur between June 1 and August 31 in order to avoid spawning seasons for shellfish and various marine fish species. Impacts to winter flounder that may use open water areas of the cove for reproduction (about February 15 through April 15) will be minimized by avoiding the winter flounder spawning period. Impacts to species that utilize the marsh will be minimized by avoiding to the extent practical excavation activities in the marsh from April 1 to August 31.

Based on the above criteria possible construction windows are:
Work in marsh (excavation of marsh area): September 1 to March 30 (7 months)
Work in water: September 1 to January 31 (5 months)

4.5 Monitoring and Maintenance at Project Site

Monitoring

Following project construction the local sponsor will be responsible for ensuring the monitoring plan is performed. The pre and post restoration monitoring will consist of vegetation monitoring, pore-water salinity monitoring and groundwater level monitoring at three established transects. The monitoring will occur for a minimum of three years post restoration. The monitoring protocol being followed was developed for US Fish and Wildlife Service by USGS and the University of Rhode Island (Roman, James-Pirri, Erwin 2002). RI CRMC and Save the Bay have already begun to collect data at established baseline stations.

Maintenance

The disposal area will be monitored on a regular basis for *Phragmites* growth and will be mowed on a regular basis (twice during the growing season) to prevent *Phragmites* growth. If *Phargmites* starts to grow then the plants will be spot treated with

herbicide (rodeo). Maintenance of the project is the responsibility of the local sponsor and it is envisioned that RI CRMC in conjunction with the town and interested stakeholders such as the Barrington Land Trust and the Allin's Cove Neighborhood Coalition will perform the monitoring and maintenance.

5. ENVIRONMENTAL CONSEQUENCES

5.1 General

The purpose of this project is to restore high quality *Spartina* marsh to an estuarine area (Allin's Cove) that is currently dominated by Phragmites. Additionally, the inlet channel to the cove and existing sand spit will be realigned and relocated to abate the erosion of the western portion of the cove.

Restoring *Spartina* marsh to this estuarine system will have positive effects on the environment. *Spartina* marshes function ecologically as sources of high nutrient and biological productivity, nursery grounds for many species of marine and estuarine organisms, and habitat for many estuarine dependent species. These functions are believed to be diminished when marshes become dominated by common reed *Phragmites*. The targeted effect of this restoration project is to restore previously existing ecological functions to the Allin's Cove estuarine system to increase the habitat quality for fish and wildlife. From a national perspective, salt marsh restoration is very important because of the high ecological value of the marsh and the relatively limited zone within which they can occur. Detailed effects of the project are described in the following sections.

5.2 Wetlands, Vegetation, and Cover Types

This project will vastly improve the vegetation resources in the project area. The goal of the restoration project is to increase the amount of high-quality marsh in the cove and to reduce the amount of low-quality Phragmites dominated marsh. Approximately 3.6 acres of marsh are proposed to be restored and 0.7 acres of marsh preserved at Allin's Cove. The benefits of restoring/preserving high quality marsh include: 1) increased biological productivity; 2) creating critical habitat and breeding ground for a variety of marine and estuarine species; 3) increasing the recreational fishing potential of the cove by providing habitat for a number of important fishery species (e.g., blue crab, summer flounder, winter flounder, and mussels); 4) increasing the natural nursery potential of the area for a variety of marine species; 5) increasing storm and shoreline protection through the marshes ability to reduce wave energy; and 6) increasing the filtering systems of the cove by using the marsh's ability to trap and filter sediments and pollutants from the water.

There will be temporary impacts to wetland, beach, and upland vegetation during the construction period. Vegetation removal in the staging and access areas will disturb approximately 2 acres of upland vegetation. Upland vegetation that will be disturbed currently consists of shrubs and grasses. The size and disturbance of the staging area and access roads will be limited to the minimum necessary for construction access and a line of erosion control devices will be established along the perimeter. The staging area will serve as a portion of the disposal area, and will be seeded and/or planted (as determined during final design) with suitable native coastal sandplain vegetation following disposal. Access areas will be allowed to revegetate following construction.

A small area of salt marsh (*Spartina sp.)*, approximately 1,000 square feet, (10 feet wide by 100 feet long) will be impacted to deepen and widen an existing tidal creek within the marsh to bring salt water in to back areas. Additionally, approximately 0.3 acres of beach strand habitat vegetation located on the sand spit will be impacted during the realignment of the inlet channel and the relocation of the sand spit. Both of these areas are expected to recolonize in the future.

The most direct effect of the project will be the removal of approximately 3.6 acres of *Phragmites* as the restoration area is excavated and graded. Colonization of the area by marsh vegetation will begin once elevations have been created that are favorable for *Spartina*. Elevations that allow frequent flooding of the marsh by brackish water and in turn, maintain the soil pore water salinity of the marsh at or above 20 ppt (Mitsch and Gosselink 1986, Sinicrope et al. 1990) will permit (*Spartina)* to flourish. The salinity of the water which floods Allin's Cove will be sufficient to maintain the pore water at or above 20 ppt (RI CRMC, unpublished data).

No submerged aquatic vegetation (SAV) is present in the cove. Therefore, no impacts to SAV are anticipated.

5.3 Benthic Invertebrates and Shellfish

The project will have temporary minor adverse effects on shellfish and other benthic invertebrates in the cove during construction. The benthic communities in Allin's Cove in the areas to be dredged for the channel realignment are typical sandy beach assemblages (Appendix C, Benthic Report). These organisms are adapted to living in dynamic shifting sands and therefore are accustomed to periodic disturbance. However, immobile benthic

organisms in the direct footprint of construction activities (channel realignment, sand spit realignment, and marsh grading) will be impacted (removed) during construction. Larval and adult recruitment are expected to quickly recolonize the disturbed substrates to a community that is similar in species composition, population density, and biomass to that previously present.

The benthic communities and shellfish resources not directly impacted by construction would experience minor effects due to a small increase in turbidity and suspended solids. The deposit feeding benthos should be relatively unaffected by the short-term increases in turbidity. Suspension feeders, which feed on materials suspended in the water column, will be slightly affected by changes in turbidity. However, most suspension feeders (including shellfish) are able to adjust to short term increases in suspended sediments by temporarily closing their feeding apparatus and resuming feeding when turbidity levels return to normal.

A small population of soft shelled clams located on the intertidal areas of the sand flat will be destroyed during the sand spit realignment, but natural recruitment from the adjacent intertidal areas will provide a seed source for clam recruitment. No impacts to commercial shellfish beds are anticipated, as there are none in the project area. Shellfish spawning will not be impacted as no dredging will occur during the peak spawning season (June 1 – August 31). There is no suitable habitat for lobster within the project area. Therefore, construction impacts to benthic invertebrates and shellfish are expected to be minimal.

5.4 Fish

The potential impacts of the project to fish resources is expected to be limited to physical effects, as dredging operations are not likely to have a long term effects on water chemistry. The physical effect of the construction effort will be the moving of the sandy material during the channel realignment and spit relocation. The associated increases in turbidity levels around the dredging areas are expected to be minimal, as the material is predominately sand. Turbidity associated with runoff from the marsh excavation and grading areas will be contained by silt fences and is expected to be minimal. Since juvenile and adult fish are mobile, they can avoid the relatively small areas of increased turbidity that may result from construction. Additionally, fish would be able to avoid areas where removal of sediment is occurring. Some larval and egg stages of fish species present during

construction may be destroyed (see Section 5.11 for various species accounts). No impacts or benefits to anadromous fish are anticipated.

5.5 Wildlife

Mammals

Mammals inhabiting the areas surrounding the restoration site may experience minor disturbances from the construction activities associated with grading the marsh surface and the channel realignment. These impacts are expected to be minimal as most mammal species are highly mobile and would be able to avoid construction areas. Following restoration activities, raccoons, skunks, and mink may experience increases in the quality of available food resources associated with the higher quality Spartina salt marsh.

Birds

Impacts to the avian communities associated with Allin's Cove will be short-term and minimal, while the long-term benefits are expected to be positive. The impact for all types of wildlife, including bird species, will be the temporary disturbance of habitat during the field construction period. Wildlife can temporarily leave the project area and retreat to the adjacent surrounding habitats. Additionally, the realignment of the channel (by dredging) will temporarily destroy portions of the benthic communities (which serve as partial food sources) associated with the channel bottom and adjacent intertidal sand flats. Sand flats that are dredged will be restored in different locations. Therefore, it is anticipated that recolonization of the flats by benthic organisms will be rapid and that no more than minimal impacts are expected as a result of the channel realignment. Construction operations in the marsh associated with this project will avoid to the extent practical the time of year the marsh and intertidal areas are used by migrating shorebirds. Any threat to local bird species, continued existence, or decline in populations is not anticipated.

The benefits associated with this project for bird species include the increased productivity of the ecosystem, which should increase the foraging potential of the habitat. Additionally, two osprey platforms will be constructed as part of the project to increase the nesting potential of the habitat.

Amphibians and Reptiles

No impacts to amphibians are expected as a result of this project as they do not occur in coastal areas. The impacts to reptile populations in the area will be limited to temporary displacement during marsh construction. Therefore, no more than minimal impacts to reptiles are expected as a result of this project.

5.6 Threatened And Endangered Species

No Federal or state threatened or endangered species are expected to be impacted by this project as none have been identified at the project site. (see Section 2.8)

5.7 Recreation and Aesthetics

The restoration of high quality salt marsh to Allin's Cove should greatly enhance the recreational value of the cove. *Spartina* marshes and their associated open water habitats will attract recreationally important fish species to the area as well as a more diverse bird fauna for passive recreational use such as bird watching.

Dense monotypic stands of 10 to 12 foot high *Phragmites* are visually unappealing, block the scenic view of the cove and have a much higher fire risk than salt marsh. The restoration of low growing Spartina marsh to the cove will be visually appealing and allow for a better view of the entire cove. Removal of *Phragmites* will reduce fire risk at the site.

The project may temporarily close the walking path from the end of Third Avenue to Willow Way Excavation of the marsh and the disposal of the material may require the path to be closed to public access for safety reasons. These areas wouldl be reopened once construction is complete.

The project to move the inlet channel to the south will also make the existing south sand spit extending from Willow Way shorter by about 200 feet. Local residents are very concerned about the loss of the end of the sand spit as this area provides a sandy beach for recreation. During the public comment period in March 2003 this issue was raised by many residents. See public comment letters in Appendix J.

The final proposed plan includes re-configuring the south sand spit and this will provide an improved beach area along the remaining spit. The proposed plan will excavate the sandy material from the disposal area and place it on the south sand spit. This will result in a wider beach area at the toe of the disposal area and also reduce the height of the disposal area. This will re-configure the barrier more closely to the 1938 position. The re-configuration of the south sand spit was proposed by Jon Boothroyd, State Geologist, RI in his report on the site. However, we initially dropped this from consideration due to lack of sandy material. Subsequent, testing of the material at the disposal area has indicated that this is sandy material.

5.8 Water Quality

Dredging and excavation operations to create the new tidal channel and sand spits will not have significant long-term impacts on the turbidity levels or water column chemistry. The amount of turbidity generated during a dredging operation depends upon the physical characteristics of the sediments to be removed, ambient currents, and the type of dredging equipment. A bucket dredge would likely be used to relocate the sand spit and realign the channel. Bohlen et. al (1979) reported that during dredging of fine grained material with a large volume bucket dredge, material concentrations within the dredge induced plume decreased rapidly and approached background levels within approximately 2,000 feet of the dredging activity. The removal and relocation of sandy material from the existing sand spit and the channel realignment will temporarily resuspend sediments into the water column. However, these sediments are expected to settle in a short period of time because of the coarseness (90% sand) of the material in this area.

Turbidity impacts due to marsh excavation and re-grading will be short-term. Construction areas will be located behind temporary berms of existing material. These berms will be removed after excavation and grading has been completed. Additionally, to minimize construction phase water quality impacts, appropriate controls of erosion and sedimentation will be employed to isolate areas of disturbance. No changes in salinity are expected. As noted above during construction runoff from the excavated material will be controlled by the construction of a containment berm around the perimeter of the disposal area. See Geotechnical Appendix (E).

5.9 Sediment Composition and Chemistry

The realignment of the inlet channel and the relocation of the sand spit should have no more than minimal effects on sediment composition and chemistry. The material in this area is predominantly clean coarse sand. The only effect anticipated from this phase of the project is a short-term increase in turbidity associated with the dredging activities.

The excavation and grading of the marsh should also have no more than minimal effects on sediment composition and chemistry. The fine material excavated from the marsh will be placed on site and planted with coastal plain grasses. Material from the eastern portion of the marsh will be excavated first and then covered with material from the central and western portions of the marsh. The sediment has been deemed acceptable for on-site disposal by the Rhode Island Department of Environmental Protection criteria.

5.10 Air Quality

The project will have no long-term impacts on air quality. During construction, equipment operating on the site will emit pollutants including nitrogen oxides that can lead to the formation of ozone. Rhode Island has no permit requirements for construction projects. In order to minimize air quality effects during construction, construction activities will comply with applicable provisions of the Rhode Island Air Quality Control Regulations pertaining to dust, odors, construction, noise, and motor vehicle emissions.

5.11 Essential Fish Habitat (EFH)

Potential impacts to essential fish habitat from this restoration project include temporary increases in turbidity from dredging and grading activities and the temporary loss of benthic organisms associated with the dredged material. The following paragraphs summarize the potential impacts to EFH for fourteen federally managed species which have the potential to occur within the project area. These include: haddock (*Melanogrammus aeglefinus*); red hake (*Urophycis chuss*); winter flounder (*Pleuronectes americanus*); windowpane flounder (*Scopthalmus aquosus*); American plaice (Hippoglossoides platessoides); Atlantic sea herring (Clupea harengus); bluefish (Pomatomus saltatrix); Atlantic mackeral (*Scomber scombrus*); summer flounder (*Paralicthys dentatus*); scup (*Stenotomus chrysops*); black sea bass (*Centropristes striata*) king mackeral (*Scomberomorus cavalla*); Spanish mackeral (*Scomberomorus maculatus*); and cobia (*Rachycentron canadum*).

EFH for larval haddock is designated in this area. However, larval haddock are generally found in deeper waters than those found in Allin's Cove. Therefore, no impacts to haddock EFH are anticipated

EFH is designated within the project area for red hake larvae, juveniles and adults. Larval red hake are found in surface waters from May through December in depths of less than 200 m (656 ft) and salinities greater than 0.5 ppt. Juvenile red hake are most often observed in low temperature ($<16^{oC}$), high salinity waters (31-33 ppt), while adult red hake are generally observed in waters between 10 and 130 meters (32 to 426 ft) deep. This project is expected to have no more than minimal effects on EFH for red hake.

EFH is designated within the project area for all life stages of the winter flounder. The eggs of winter flounder, which are demersal, are typically found at depths of less than 5 meters (16 ft) in bottom waters in a broad range of salinities (10-30 ppt). Spawning, and therefore the presence of eggs, occurs from February to June. EFH for larvae, juveniles, and adults includes bottom habitats of mud and fine-grained sandy substrate in waters ranging from 0.1 to 100 meters (0.3 to 328 ft) in depth. Spawning adults are typically associated with similar substrates in less than 6 meters of water. Although winter flounder EFH is located within the project area, juveniles and adults are very mobile and would be able to flee from the construction area once activities commence. Flounder adults and juveniles will have ample opportunity to avoid any potential impact. No significant impacts to flounder food resources (macrobenthic invertebrates) are expected from this project as benthic recolonization is rapid. Minimal amounts of eggs and larvae may be affected by sediment relocation and the associated turbidity during construction activities. However, any impacts that occur will be localized and short term. Additionally, the dredging of the new channel and the relocation of the sand spit will be sequenced to avoid peak flounder spawning (February-April). Therefore, no more than minimal impacts on all life stages of the winter flounder EFH is anticipated as a result of this project.

EFH is designated within the project area for all life stages of the windowpane flounder. Eggs are buoyant and typically found in the water column in water depths of 1 meter to 70 meters (3 to 130 ft). Larvae are found in pelagic waters. Juveniles and adults prefer bottom habitats of mud or fine-grained sand and can be found in salinities ranging from 5.5 ppt to 36 ppt. Seasonal occurrences in the project area are generally from

February to November, with peaks occurring in May and October. Although EFH for the windowpane is within the project area, this species is broadly distributed in north and mid-Atlantic waters from the Gulf of Maine to Cape Hatteras. Any disruption of EFH will be associated with the construction activities and therefore will not be long-term. As was the case with the winter flounder, windowpane flounder adults and juveniles should be able to avoid any potential impacts because of their mobility. Eggs and larvae will only have the potential to be impacted by localized, short-term turbidity associated with the construction activities. Therefore, no more than minimal impact on all life stages of windowpane flounder EFH is anticipated as a result of this project.

EFH is designated within the project area for American plaice larvae, juveniles, and adults. All life stages of American plaice are generally found in waters with depths of over 30 meters (98 ft). Since Allin's Cove is a shallow embayment, no impacts to American plaice EFH are anticipated.

EFH is designated within the project area for Atlantic sea herring larvae, juveniles, and adults. Larvae, juvenile and adults typically prefer depths of 15 to 130 meters (49 to 426 ft), depths that are considerably deeper than those found within the project area. No more than minimal impact is expected to occur to Atlantic sea herring EFH.

EFH is designated within the project area for bluefish juveniles and adults. Although juveniles and adults are found in the surface waters of mid-Atlantic estuaries from May through October, EFH for this species is mostly pelagic waters over the Continental Shelf. Bluefish adults are highly migratory and are generally found in salinities greater than 25 ppt. No more than minimal impact on bluefish EFH is anticipated as a result of the proposed project.

EFH is designated within the project area for all life stages of Atlantic mackerel. Since all life stages of Atlantic mackerel are generally found offshore, no impacts to Atlantic mackerel EFH are expected.

EFH is designated within the project area for juvenile and adult summer flounder. Eggs and larvae of summer flounder are generally found offshore and should not be found in the project area. Juvenile summer flounder utilize estuarine areas for nurseries and can be found in very shallow waters with salinities ranging from 1 – 30 ppt and temperatures greater than 22°C. Adults migrate into shallow coastal and estuarine

systems during the warm summer months and then move offshore during colder months. Although summer flounder may occur in the project area, adults and juveniles should be able to avoid any potential impacts because of their mobility. Additionally, construction will not occur between the months of June and September, months when the summer flounder are nearshore. Therefore, no more than minimal impacts to summer flounder EFH is anticipated as a result of this project.

EFH is designated in the project area for all life stages of scup. Scup eggs, larvae, juveniles, and adults have the potential to occur in estuarine systems during the spring and summer months. All life stages prefer salinities greater than 15 ppt. Eggs and larvae are found in water temperatures between 12-23°C and juveniles and adults can be found in waters with temperatures grater than 7°C. Eggs and larvae are pelagic with a gradual transition to the demersal adult stage. Adults will also use structured areas for foraging and refuge. No more than minimal impacts to scup EFH is anticipated as a result of this project as no construction will occur between June and September.

EFH is designated for black sea bass adults and juveniles within the project area. EFH for the juveniles and adults of this species is predominantly within estuarine systems with oceanic salinities. Juveniles and adults are found in estuaries during spring and summer months in water temperatures above 6°C and salinities greater than 18 ppt. Black sea bass prefer rough, shell substrates and can be found in natural and man-made structured habitats. Although sea bass may occur in the project area adults and juveniles should be able to avoid any potential impacts because of their mobility and because no dredging will occur between June and September. Therefore, no more than minimal impacts to black sea bass EFH is anticipated as a result of this project.

EFH is designated in the project area for all life stages of the following coastal migratory species: king mackeral (*Scomberomorus cavalla*); Spanish mackeral (*Scomberomorus maculatus*); and cobia (*Rachycentron canadum*). EFH for coastal migratory pelagic species includes sandy shoals of capes and offshore bars, high profile rocky bottom and barrier island ocean-side waters from the surf to the shelf break zone, all coastal inlets, and all state-designated nursery habitats of particular importance to coastal migratory pelagics. For cobia, essential fish habitat also includes high salinity bays, estuaries, and seagrass habitat. No more than minimal impacts to coastal migratory species EFH are anticipated as a result of this project.

5.12 Hydrology and Hydraulics

Hydrodynamic modeling (Appendix D) was used to simulate water surface elevations within Allin's Cove under proposed conditions during 8 times monthly tide cycles and the 1-, 2- and 100-yr storm events. The model determined the proposed channel dimensions and sand spit (height ranging between 2 feet and 5 feet) provides adequate flow volume to restore the marsh, does not impose a tidal restriction, and will not increase flood levels to surrounding residential neighborhood during both low and high frequency flood events.

5.13 Historic and Archaeological Resources

Project alternatives include the restoration of salt marsh in the eastern portion of the cove by removing former dredged material spoil to elevation appropriate for high quality marsh, realignment of the inlet channel and sand spit to slow erosion processes. As the eastern portion of Allins Cove consists of dredged material deposition from the 1959 dredging of nearby Bullock Cove, removal of sediments to pre-disposal levels is unlikely to impact significant cultural resources. Likewise, realignment of the inlet channel and sand spit are unlikely to disturb cultural resources, due to the high-energy nature of the project area.

An archaeological site likely existed at one time on the shores and abutting lands in the cove. In the area along Byway Road, numerous artifacts have been found including a Brewerton Notched projectile point dating to 5,000 years ago, a Crescent Knife dating from approximately 3,000 years ago, and clay marbles. More recent material including jewelry, old coins, bottles, and pieces of china are still found by local residents along the shore. A walkover of the Byway Road location confirmed this statement as numerous objects were seen eroded from the road or lying on the shore nearby. Portions of this site extend beyond the limits of the Federal project and are not considered in this assessment. Upland areas north of Byway Road may contain intact areas of archaeological resources having good integrity.

The Narragansett Indian Tribe and the Wampanoag Tribe of Gay Head (Aquinnah) have both visited the site and commented informally about the project. Based upon these observations, severe erosion of the Byway Road embankment has resulted in a loss of integrity of archaeological deposits in this area. Any artifacts

remaining in the bank or found along the shore are no longer in their original context. Continued erosion of this area during future storm events is expected to further contribute to this situation. Realignment of the existing channel and sand spit will serve to protect the road from further erosion and in effect preserve any remaining cultural resources. Excavation of former dredged material sediment in the remainder of the study area will have no impact upon archaeological resources.

In a letter dated May 31, 2001, the Rhode Island Historical Preservation and Heritage Commission agreed with this conclusion that this project will have no effect upon significant cultural resources. They will be given an opportunity to review this Environmental Assessment and to confirm this conclusion. Both the Narragansett and Wampanoag Tribes have visited the site and expressed no concerns at this time. As above, both Tribes will be given the opportunity to review the final document and design plans, and comment further if so desired.

Therefore, the ecological restoration measures proposed for Allins Cove in Barrington, Rhode Island will have no effect upon any structure or site of historic, architectural, or archaeological significance as defined by the National Historic Preservation Act of 1966, as amended, and implementing regulations 36 CFR 800. The Rhode Island State Historic Preservation Officer, and Narragansett and Wampanoag Tribal Historic Preservation Officers are expected to concur with this determination.

5.14 Flooding

The project will have no impacts on flooding or floodplains, as the project will not effect the water surface elevations in the cove area. (See Appendix D for detailed modeling.)

5.15 Traffic

The project would have minor temporary effects on traffic during the construction period due to laborers arriving at and leaving site each day. However this is expected to be less than 10 individuals. Cars will be parked so as not to block or affect local traffic. In addition there will be a few trucks and construction equipment that will need to access the site, but this should not have a significant impact on the neighborhood traffic.

5.16 Cumulative Effects

Cumulative impacts are those resulting from the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions. Past and current activities in Allin's Cove include a wide variety of uses. However, the main use of the cove is passive recreation. Reasonably foreseeable future actions include the continuation of current activities.

The primary cumulative impact of the proposed action when considered with other activities in Allin's Cove is the positive impact of improving the habitat quality of Rhode Island's coastal ecosystems. Habitat restoration will foster numerous ecological benefits such as increases in prime fish and shellfish habitat as well as providing an additional primary production source to the ecosystem.

Impacts to salt marshes in coastal Rhode Island in the future are not likely to be significant as salt marshes have been identified as areas of critical concern, leading to the conservation of salt marsh habitat.

The cumulative effects of the sand spit relocation and channel realignment will be positive. The roads along the western banks of the cove and their associated infrastructure will be protected and numerous long-term problems such as sewer and utility line relocation will be avoided.

No other on-going wetland restoration projects in the vicinity have been identified so cumulative impacts and/or benefits are not anticipated.

5.17 Other Considerations/Sustainable Development

No significant adverse impacts to children, minority or low-income populations are anticipated as this is an environmental restoration project of coastal features impacted during a previous (circa 1959) navigation infrastructure development project. There are no schools or playgrounds near the project site. There are no health risks or safety risks associated with the project that will disproportionately affect children.

6. NON-FEDERAL RESPONSIBILITES

6.1 Cost Sharing and LERRD

The non-Federal sponsor is required to provide 25 percent of the implementation cost of a Section 1135 project. Implementation costs include preparation of this decision document known as an Environmental Restoration Report and Environmental Assessment, final design, preparation of plans and specifications, and construction of project. At the time of project construction the non-federal sponsor will be required to obtain any lands, easements, right-of-ways, relocations or disposal sites (LERRD) required for the project. The fair market value of the real estate at the time of acquisition and any other acquisitions costs will be credited towards the non-federal share. The balance of the non-federal share will be made up by cash contributions.

At this time the costs for the studies, plans and specifications and construction for the proposed Allin's Cove restoration project are estimated as shown in Table 9. The non-federal sponsor has acknowledged their cost share requirements and has pursued budgetary actions to ensure funding is available to support construction.

The non-federal sponsor is responsible for three-year monitoring at site and long-term maintenance. (See Section 4.5 Monitoring and Maintenance.)

TABLE 9

Allin's Cove

Total Project Costs and Non-Federal Share

All Implementation Costs	
Preparation of this report (ERR/EA)	$ 225,000
Plans and Specifications	$ 104,000
Construction and Real Estate	$ 483,000*
Monitoring Costs (3 years)	$ 8,000
Total	$ 820,000
Non-Federal Responsibilities (25 percent share)	
LERRD	$ 51,500
Cash	$153,500
Total Non-Federal	***$205,000***

*Rounded to nearest $1,000

7. PROJECT IMPLEMENTATION SCHEDULE

The following tentative schedule has been developed for the project.

PLANS AND SPECIFICATIONS *July 2003 to January 2004*

Corps prepares plans and specifications

Sponsor obtains local permits

Sponsor provides letter to Corps indicating they will be able to obtain LERRD for project in timely manner

CONSTRUCTION PHASE *June 2004 to June 2005*

Corps Division Office approves project and commits construction funds

RI CRMC obtains LERRD for project

RI CRMC provides non-federal funds

Corps issues bid documents

Corps awards construction contract

Corps contractor performs construction

Corps provides notice of physical completion to RI CRMC

POST PROJECT MONITORING PHASE (3years) *Spring 2005 to Spring 2007*

Local Sponsor: conducts monitoring to document salt marsh restoration success.

LONG-TERM MONITORING AND MAINTENANCE

Local Sponsor: periodic monitoring and management as necessary of disposal area to prevent *Phragmites* growth.

8. STATEMENT OF FINDINGS

8.1 Conclusions

The Allin's Cove wetland restoration project in Barrington, Rhode Island is an opportunity to restore coastal wetlands and protect an eroding embankment and wetland. The proposed plan will restore and protect about 4.3 acres of valuable salt marsh located at the mouth of Allin's Cove. In addition, the project will provide the added benefit of controlling erosion along Byway Road

Incremental and cost effectiveness analysis shows the proposed alternative is cost effective and a best buy plan and is the selected NER plan. The proposed project is supported by the non-federal sponsors, RI CRMC and the Town of Barrington, RI.

8.2 Recommendation

I recommend that the project described in this report be approved and implemented. In my judgment, the proposed action is a justifiable expenditure of federal funds and appropriate for implementation under authority provided by Section 1135 of WRDA 1986 (P.L. 99-662) as amended.

12 SEP 03

Date

Thomas L. Koning
Colonel, Corps of Engineers
District Engineer

ATTACHMENT I

STUDY COORDINATION

Many coordination meetings have been held between Federal and state agencies to discuss various aspects of this project. In addition the project was coordinated with representatives of the Town of Barrington, Allin's Cove Neighborhood Association, local residents. the Barrington Conservation Land Trust, Save the Bay, the Narragansett and the Wampanoag Indian Tribes and experts on coastal processes and marsh restoration from the University of Rhode Island. Coordination and public information meetings included:

June 7, 2000	Project initiation meeting, Barrington RI
November 9, 2000	Allin's Cove Neighborhood Coalition meeting presentation, Barrington, RI
January 26, 2001	Federal, state, stakeholder meeting to discuss sediment sampling plan, Providence, RI
June 5, 2001	Federal, State, local coordinated site visit for identification of permit requirements and agency input to planning process, Allin's Cove, Barrington, RI
July 9, 2001	Coordination meeting with RI CRMC, Concord, MA
July 13, 2001	Site visit with Narragansett Tribal representative
July 18, 2001	Site visit with Wampanoag Tribal representative
September 18, 2001	Coordination meeting with RI CRMC, Providence RI
January 23, 2002	Allin's Cove Public Informational meeting, Barrington, RI
March 26, 2002	Allin's Cove Advisory committee meeting, Wakefield. RI
May 28, 2002	Coordination meeting with Town, RICRMC, and local residents
March 26, 2003	Public Information meeting on draft report, Barrington, RI.

Agencies that have been contacted for information and input to this project include:

Federal Agencies
U.S. Environmental Protection Agency
Region 1
J.F.K. Federal Building
Boston, MA

U.S. Fish and Wildlife Service
70 Commercial Street
Suite 300
Concord, NH

U.S. Fish and Wildlife Service
RO field Office
Route 1A, Shoreline Plaza
Charlestown, RI

National Marine Fisheries Service
One Blackburn Drive
Gloucester, MA

State Agencies
Water Resources
Rhode Island Department of Environmental Management
235 Promenade Street
Providence, RI

Rhode Island Natural Heritage Program
Rhode Island Department of Environmental Management
235 Promenade Street
Providence, RI

RIDEM/Fish and Wildlife
1231 Succotash Road
Wakefield, RI

RIDEM/Marine Fisheries
150 Fowler Street
Wickford, RI

Rhode Island Coastal Resources Management Council
4808 Tower Hill road
Wakefield, RI

State Historic Preservation Office
150 Benefit Street
Providence, RI

RI state wide Planning Program
0ne Capitol Hill
Providence, RI

University of Rhode Island
Kingston, RI

Local Stakeholders
Town of Barrington
Allin's Cove Neighborhood Coalition
The Barrington Conservation Land Trust
Save the Bay

Native American Interests
The Narragansett Indian Tribe, Historic Preservation Officer
The Wampanoag Indian Tribe, Historic Preservation Officer

ATTACHMENT II

COMPLIANCE WITH ENVIRONMENTAL FEDERAL STATUTES AND EXECUTIVE ORDERS

Federal Statutes

1. Archaeological Resources Protection Act of 1979, as amended, 16 USC 470 et seq.

Compliance: Issuance of a permit from the Federal land manager to excavate or remove archaeological resources located on public or Indian lands signifies compliance. Not applicable to this project.

2. Preservation of Historic and Archeological Data Act of 1974, as amended, 16 U.S.C. 469 et seq.

Compliance: Project has been coordinated with the State Historic Preservation officer. No impacts to archaeological resources identified.

3. American Indian Religious Freedom Act of 1978, 42 U.S.C. 1996.

Compliance: Must ensure access by native Americans to sacred sites, possession of sacred objects, and the freedom to worship through ceremonials and traditional rites. Not applicable to this project.

4. Clean Air Act, as amended, 42 U.S.C. 7401 et seq.

Compliance: Public notice of the availability of this report to the Environmental Protection Agency is required for compliance pursuant to Sections 176(c) and 309 of the Clean Air Act. The impacts on air quality associated with the proposed project have been considered and will not exceed emissions criteria. No later indirect emission are expected. A conformity determination is not required.

5. Clean Water Act of 1977 (Federal Water Pollution Control Act Amendments of 1972) 33 U.S.C. 1251 et seq.

Compliance: A Section 404(b)(1) Evaluation and Compliance Review will been incorporated into the project report. An application shall be filed for State Water Quality Certification pursuant to Section 401 of the Clean Water Act.

6. Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1451 et seq.

Compliance: A CZM consistency determination shall be provided to the State for review and concurrence that the proposed project is consistent with the approved State CZM program.

7. Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq.

Compliance: Coordination with the U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) determined that no formal consultation requirements pursuant to Section 7 of the Endangered Species Act were required.

8. Estuarine Areas Act, 16 U.S.C. 1221 et seq.

Compliance: This report is not being submitted to Congress.

9. Federal Water Project Recreation Act, as amended, 16 U.S.C. 4601-12 et seq.

Compliance: Public notice of availability to the project report to the National Park Service (NPS) and Office of Statewide Planning relative to the Federal and State comprehensive outdoor recreation plans signifies compliance with this Act.

10. Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661 et seq.

Compliance: Coordination with the USFWS, NMFS, and State fish and wildlife agencies signifies compliance with the Fish and Wildlife Coordination Act.

11. Land and Water Conservation Fund Act of 1965, as amended, 16 U.S.C. 4601-4 et seq.

Compliance: Public notice of the availability of this report to the National Park Service (NPS) and the Office of Statewide Planning relative to the Federal and State comprehensive outdoor recreation plans signifies compliance with this Act.

12. Marine Protection, Research, and Sanctuaries Act of 1971, as amended, 33 U.S.C. 1401 et seq.

Compliance: Applicable if the project does involves the transportation or disposal of dredged material in ocean waters pursuant to Sections 102 and 103 of the Act, respectively. Disposal of dredge material in ocean waters will not occur.

13. National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 et seq.

Compliance: Coordination with the State Historic Preservation Office signifies compliance.

14. Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3000-3013, 18 U.S.C. 1170

Compliance: Regulations implementing NAGPRA will be followed if discovery of human remains and/or funerary items occur during implementation of this project.

15. National Environmental Policy Act of 1969, as amended, 42 U.S.C 4321 et seq.

Compliance: Preparation of an Environmental Assessment signifies partial compliance with NEPA. Full compliance shall be noted at the time the Finding of No Significant Impact is issued.

16. Rivers and Harbors Act of 1899, as amended, 33 U.S.C. 401 et seq.

Compliance: No requirements for projects or programs authorized by Congress. The proposed aquatic ecosystem restoration project is being conducted pursuant to the congressionally approved authority.

17. Watershed Protection and Flood Prevention Act as amended, 16 U.S.C 1001 et seq.

Compliance: Floodplain impacts must be considered in project planning. No floodplain impacts will occur.

18. Wild and Scenic Rivers Act, as amended, 16 U.S.C 1271 et seq.

Compliance: Not applicable because there are no Wild and Scenic Rivers in project area.

19. Magnuson-Stevens Act, as amended, 16 U.S.C. 1801 et seq.

Compliance: Coordination with the National Marine Fisheries Service and preparation of an Essential Fish Habitat (EFH) Assessment signifies compliance with the EFH provisions of the Magnuson-Stevens Act.

Executive Orders

1. Executive Order 11593, Protection and Enhancement of the Cultural Environment, 13 May 1971

Compliance: Coordination with the State Historic Preservation Officer signifies compliance.

2. Executive Order 11988, Floodplain Management, 24 May 1977 amended by Executive Order 12148, 20 July 1979.

Compliance: Public notice of the availability of this report or public review fulfills the requirements of Executive Order 11988, Section 2(a) (2). The project will have no floodplain impacts.

3. Executive Order 11990, Protection of Wetlands, 24 May 1977.

Compliance: Public notice of the availability if this report for public review fulfills the requirements of Executive Order 11990, Section 2 (b).

4. Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, 4 January 1979.

Compliance: Not applicable to projects located within the United States.

5. Executive Order 12898, Environmental Justice, 11 February 1994.

Compliance: The proposed project is not anticipated to have a disproportionate impact on minority or low-income populations.

6. Executive 13007, Accommodation of Sacred Sites, 24 May 1996

Compliance: Not applicable unless on Federal lands, then agencies must accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and avoid adversely affecting the physical integrity of such sacred sites.

7. Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks. 21 April, 1997.

Compliance: The project would not create a disproportionate environmental health or safety risk for children.

8. Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, 6 November 2000.

Compliance: Consultation with Indian Tribal Governments, where applicable, and consistent with executive memoranda, DoD Indian policy, and USACE Tribal Policy Principles signifies compliance.

Executive Memorandum

Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing NEPA, 11 August 1980.

Compliance: Not applicable because the proposed project does not contain prime or unique farmlands.

White House Memorandum, Government-to-Government Relations with Indian Tribes, 29 April 1994.

Compliance: Consultation with Federally Recognized Indian Tribes, where appropriate, signifies compliance.

ATTACHMENT III

NEW ENGLAND DISTRICT
US ARMY CORPS OF ENGINEERS, CONCORD, MA
CLEAN WATER ACT
SECTION 404(b)(1) EVALUATION

PROJECT: Allin's Cove Restoration Project.
Atlantic Ocean, Narragansett Bay, RI, Allin's Cove Barrington, RI

PROJECT MANAGER: Ms. Barbara Blumeris EXT. 7-8737

FORM COMPLETED BY: Mr. Todd Randall EXT. 7-8518

DESCRIPTION: The proposed project is located in an area known as Allin's Cove in Barrington, Rhode Island. The cove is located adjacent to Narraganset Bay and the Atlantic Ocean. The proposed Allin's Cove Restoration Project would restore approximately 3.6 acres of *Spartina* marsh to Allin's Cove and preserve an additional 0.7 acres. The dominant flora in the marsh is currently the common reed (*Phragmites australis*). This is a result of the placement of dredged material upon the marsh in 1958 from a nearby cove. Marsh areas will be excavated and graded to elevations appropriate for *Spartina* growth.

Approximately 3.6 acres of *Phragmites* marsh will be excavated and approximately 8,200 cubic yards of material will be disposed of on-site in a 2-acre area that was also filled in 1959. Sandy material from this 2-acre fill area will be used to re-configure the existing south sand spit at the toe of the disposal area, resulting in a wider beach area.

The inlet channel to the cove will be realigned and a north sand spit will be relocated along the western edge of the marsh near Byway Road. Approximately 1 acre of sand spit, consisting of about 3,400 cubic yards of sand, will be excavated and relocated to the west to fill the existing channel and to create a north sand spit to alleviate erosion conditions along the western portion of the cove.

NEW ENGLAND DISTRICT

U.S. ARMY CORPS OF ENGINEERS, CONCORD, MA

EVALUATION OF SECTION 404(b)(1) GUIDELINES

PROJECT: Allin's Cove Habitat Restoration Project

1. Review of Compliance (Section 230.10(a)-(d)).

a. The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose;

X YES ____ NO

b. The activity does not appear to: 1) violate applicable state water quality standards or effluent standards prohibited under Section 307 of the CWA; 2) jeopardize the existence of Federally listed threatened and endangered species or their critical habitat; and 3) violate requirements of any Federally designated marine sanctuary (if no, see section 2b and check responses from resource and water quality certifying agencies);

X YES ____ NO

c. The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values (if no, see section 2);

X YES ____ NO

d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem (if no, see section 5).

X YES ____ NO

2. Technical Evaluation Factors (Subparts C-F).

	N/A	Not Significant	Significant
a. Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C).			
1) Substrate		X	
2) Suspended particulates/turbidity		X	
3) Water		X	
4) Current patterns and water circulation		X	
5) Normal water fluctuations		X	
6) Salinity gradients		X	
b. Potential Impacts on Biological Characteristics of the Aquatic Ecosystem (Subpart D).			
1) Threatened/ endangered species		X	
2) Fish, crustaceans, mollusks and other aquatic organisms in the food web		X	
3) Other wildlife		X	
c. Potential Impacts on Special Aquatic Sites (Subpart E).			
1) Sanctuaries and refuges		X	
2) Wetlands		X	
3) Mud flats		X	
4) Vegetated shallows		X	
5) Coral reefs	X		
6) Riffle and pool complexes	X		
d. Potential Effects on Human Use Characteristics (Subpart F).			
1) Municipal and private water supplies	X		
2) Recreational and commercial fisheries		X	
3) Water-related recreation		X	
4) Aesthetics		X	
5) Parks, national and historic monuments, national seashores, wilderness areas, research sites, and similar preserves	X		

3. Evaluation and Testing (Subpart G).

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (Check only those appropriate.)

1) Physical characteristics..... X
2) Hydrography in relation to known or anticipated sources of contaminants..... X
3) Results from previous testing of the material or similar material in the vicinity of the project..... _____
4) Known, significant sources of persistent pesticides from land runoff or percolation..... _____
5) Spill records for petroleum products or designated hazardous substances (Section 311 of CWA)..... _____
6) Public records of significant introduction of contaminants from industries, municipalities, or other sources..... _____
7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities.. _____
8) Other sources (specify)..... _____

List appropriate references.

The Environmental Assessment of the Allin's Cove Restoration Feasibility Study, Barrington, Rhode Island.

b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and disposal sites and not likely to require constraints. The material meets the testing exclusion criteria.

X _____
YES NO

4. Disposal Site Delineation (Section 230.11(f)).

a. The following factors, as appropriate, have been considered in evaluating the disposal site.

1) Depth of water at disposal site.....X
2) Current velocity, direction, and variability at disposal site.....X
3) Degree of turbulence.....X
4) Water column stratification.....X
5) Discharge vessel speed and direction.....
6) Rate of discharge.....
7) Dredged material characteristics (constituents, amount, and type of material, settling velocities).....X
8) Number of discharges per unit of time.....
9) Other factors affecting rates and patterns of mixing (specify).....

List appropriate references.

The Environmental Assessment of the Allin's Cove Restoration Feasibility Study, Barrington, Rhode Island.

b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable.

X	
YES	NO

5. Actions To Minimize Adverse Effects (Subpart H).

All appropriate and practicable steps have been taken, through application of recommendation of Section 230.70-230.77 to ensure minimal adverse effects of the proposed discharge.

X	
YES	NO

6. Factual Determination (Section 230.11).

A review of appropriate information as identified in items 2 - 5 above indicates that there is minimal potential for short or long term environmental effects of the proposed discharge as related to:

a. Physical substrate (review sections 2a, 3, 4, and 5 above). X ____

	YES	NO
b. Water circulation, fluctuation and salinity (review sections 2a, 3, 4, and 5).	X	
	YES	NO
c. Suspended particulates/turbidity (review sections 2a, 3, 4, and 5).	X	
	YES	NO
d. Contaminant availability (review sections 2a, 3, and 4).	X	
	YES	NO
e. Aquatic ecosystem structure, function and organisms(review sections 2b and c, 3, and 5)	X	
	YES	NO
f. Proposed disposal site (review sections 2, 4, and 5).	X	
	YES	NO
g. Cumulative effects on the aquatic ecosystem.	X	
	YES	NO
h. Secondary effects on the aquatic ecosystem.	X	
	YES	NO

7. Findings of Compliance or Noncompliance.

a. The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines and represents the least environmentally damaging practical alternative.

X	
YES	NO

12 SEP 03

Date

Thomas L. Koning
Colonel, Corps of Engineers
District Engineer

ATTACHMENT IV

SELECTED REFERENCES

Able, K. W., and S. M. Hagan. 2000. Effects of common reed (*Phragmites australis*) invasion on marsh surface macrofauna: response of fish and decapod crustaceans. Estuaries 23: 633-646.

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Battelle. 2000. Sediment testing for the Allin's Cove marsh restoration project. Report submitted to US Army Corps of Engineers. Battele, Duxbury, MA.

Chambers, R.M., T. J. Mozdzer, and J. C. Ambrose. 1998. Effects of salinity and sulfide on the distribution of *Phragmites australis* and *Spartina alterniflora* in a tidal saltmarsh. Aquat. Bot. 62: 161-169.

Lissner, J., and H. Schierup. 1997. Effects of salinity on the growth of *Phragmites australis*. Aquat. Bot. 55: 247-260.

Mitsch, W. J. and J. G. Gosselink. 1986. Wetlands. Van Nostrand Reinhold Company, Inc. New York 539 pp.

NMFS. 2001. Essential Fish Habitat Designations.
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Pellegrino, P. E. 2000. Macrobenthic survey of Allin's Cove. Report submitted to US Army Corps of Engineers. Coastal Resource Analysts, Waterford, CT.

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APPENDIX A

PERTINENT CORRESPONDENCE 2002

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

COASTAL RESOURCES MANAGEMENT COUNCIL
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
Wakefield, R.I. 02879-1900

(401) 783-3370
FAX: (401) 783-3767

July 3, 2002

Mr. John R. Kennelly
Chief, Planning Branch
U.S. Army Corps of Engineers
New England Division
696 Virginia Road
Concord, Ma 01742-2751

Dear Mr. Kennelly:

The Rhode Island Coastal Resources Management Council staff responsible for this project has reviewed the internal draft Allin's Cove Wetland Restoration Environmental Restoration Report and Environmental Assessment (ERR/EA). The Corps has addressed comments from Rhode Island Coastal Resource Management Council (RICRMC) on the draft and we are prepared to move forward to project implementation. The study documents the feasibility of restoring an area impacted by dredge material disposal from the Bullock Cove navigation project in 1959. The proposed project will: 1) restore the salt marsh and its associated values to fish and wildlife at Allin's Cove; and 2) reposition the existing inlet channel and sand spit to control the erosion of the western shoreline near Byway Road.

According to the ERR/EA, the cost of the project, including the feasibility study, preparation of plans and specifications, construction, and lands, easements, rights-of-way, relocations, and disposal areas (LERRD) totals $789,500.00. These costs include an estimated $482,500.00 for construction and $52,000.00 for LERRD.

We understand that the non-Federal sponsor is responsible for 25 percent of the total project cost and for 100 percent of any operations and maintenance cost. We also understand that the local sponsor is required to obtain any state of local permits and LERRD required for the project. It is our understanding that we will be credited at fair market value for any LERRD obtained by RICRMC and that this amount will be applied toward the 25 percent cost share as appropriate.

The RICRMC hereby concurs with the recommendation of the Draft ERR and supports the proposed project recommend in the Report. The RICRMC also acknowledges our intention to sign the draft Project Cooperation Agreement (PCA) as the non-federal sponsor for the project.

Please direct any questions you may have on this letter to Megan Higgins, mhiggins@crmc.state.ri.us.

Sincerely,

Grover J. Fugate, Executive Director
Coastal Resources Management Council

/pjc

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, New Hampshire 03301-5087

June 5, 2002

John R. Kennelly, Chief
Planning Branch
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Mr. Kennelly:

This responds to your May 7, 2002 letter requesting information on the presence of federally-listed and proposed endangered or threatened species in relation to the Corps' Section 1135 Project - Allin's Cove Wetland Restoration, Barrington, Rhode Island. The following comments are also provided in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and constitutes our Final Fish and Wildlife Coordination Act Report on the project.

Coordination Act Report

On July 27, 2001, the Service provided the Corps with a Fish and Wildlife Coordination Act Report on this project. The report discussed the natural resources of the project area and the impacts of the alternatives presented in the feasibility report.

Endangered Species

Our report of July 27, 2001 stated that there were no federally-listed endangered or threatened species associated with the proposed project. Alternatives have not changed substantially from the previous report; therefore, no further consultation with the Service under Section 7 of the Endangered Species Act is currently needed. Should project plans change, or additional information on listed or proposed species become available, this determination may be reconsidered.

Alternatives

Of the studied alternatives, Alternative 4 provides the best restoration potential for fish and wildlife habitat in Allin's Cove. We support the Corps' preferred Alternative 4. Option 3, which

recommends removing existing phragmites in the 50-foot buffer and replacing it with vegetation of greater habitat value, is preferred.

Recommendations

Within the newly-graded high marsh, small panes and ponds should be created for habitat diversity. Tidal channels need to be dug to some of the ponds. The sides of the tidal channels should be sloped back at an angle instead of being straight. This will allow more plant diversity between the channels and the high and low salt marsh. These salt marsh features are important because much wildlife activity takes place in and around the panes, ponds and tidal channels.

Tidal channels, including a possible perimeter ditch, should be cut into the remaining acres of phragmites. This will allow increased tidal flow to reduce the height and dominance of phragmites, and favor other salt marsh vegetation.

Thank you for your cooperation and please contact Greg Mannesto of our Rhode Island Office at (401) 364-9124 if we can be of further assistance.

Sincerely yours,

William J. Neidermyer

William J. Neidermyer
Assistant Supervisor, Federal Projects
New England Field Office

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
HISTORICAL PRESERVATION & HERITAGE COMMISSION
Old State House • 150 Benefit Street • Providence, R.I. 02903-1209
Preservation (401) 222-2678 FAX (401) 222-2968
Heritage (401) 222-2669 TDD (401) 222-3700

January 24, 2002

Mr. David L Dulong
Chief, Engineering/Planning Division
Evaluation Branch
U. S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Re: Proposed Section 206 Ecosystem Restoration
Allins Cove, Barrington

Dear Mr. Dulong:

The Rhode Island Historical Preservation and Heritage Commission staff has received your letter of January 4, 2002 described the above-referenced undertaking. Based upon our review of the information you have provided and our inspection of the project area, we have concluded that the project will not disturb areas sensitive for cultural resources. In fact, the project may well protect archaeological resources by correcting the erosion of the bank on the north side of the channel. Therefore, we concur with your finding that the proposed ecological restoration have no effect on significant cultural resources.

These comments are provided in accordance with Section 106 of the National Historic Preservation Act. If you have any questions, please contact Richard E. Greenwood, Project Review Coordinator of this office.

Very truly yours,

fr Richard E. Greenwood

Edward F. Sanderson
Executive Director
Deputy State Historic
Preservation Officer

{020124.02}

APPENDIX B

PERTINENT CORRESPONDENCE 2001

Blumenis

Paiva/78796/ja

August 30, 2001

Engineering/Planning Division
Evaluation Branch

Mr. Mark Harding, Deputy Tribal Historic Preservation Officer
Wampanoag Tribe of Gay Head (Aquinnah)
20 Blackbrook Road
Gay Head, Massachusetts 02535

Dear Mr. Harding:

The U.S. Army Corps of Engineers, New England District, is conducting a Section 1135 Coastal Wetland Ecosystem Restoration study at Allins Cove in Barrington, Rhode Island. Ms. Ramona Peters and you participated in a site visit with Mr. Marc Paiva of my staff on Wednesday, July 18th. Project maps and aerial photographs of the study area were provided. A site location map is enclosed here to familiarize you with the study. At this time, we would like to initiate formal consultation with your office concerning the proposed project.

The purpose of the project is to restore a degraded tidal wetland and coastal shoreline along Byway Road in Barrington. The wetland at the mouth of the cove was used as a Corps dredge material disposal site in 1959 during dredging of the Bullocks Cove navigation channel and basins. About an 11-acre fill area is delineated on the Corps plan dated September 1958 and labeled Spoil Area 5. As a result of filling the wetland area, the existing coastal wetland habitat was lost and replaced with a combination of upland areas and *Phragmites* marsh. The filling also resulted in narrowing of the existing tidal inlet and an increase in velocities through the narrowed inlet. This has caused erosion of the shoreline and embankment along Byway Road. Approximately 150 linear feet of the embankment is in need of stabilization to prevent the eventual failure of Byway Road and the public utilities that follow the road alignment.

The proposed project contains three elements:

First, to restore the coastal wetland habitat by re-grading the fill area to an elevation suitable to encourage and maintain the growth of salt marsh vegetation;

Second, to use a combination of excavated material from the fill area and new material to widen and stabilize the eroding coastal shoreline along Byway Road; and

Third, to re-align the inlet to the east and away from Byway Road.

As you requested during the site visit, we are enclosing a copy of the 1938 aerial photograph of Allins Cove prior to the disposal of dredge material from Bullocks Cove. A copy of the map was also provided to Ms. Peters and you by electronic mail. We look forward to working with your office throughout the course of this study.

If you have any questions, require additional information, or wish to comment upon any aspect of this project, feel free to contact Mr. Paiva of the Evaluation Branch at (978) 318-8796.

Sincerely,

John R. Kennelly
Deputy Chief, Engineering/Planning Division

Enclosures

CF:
Mr. Paiva
Mr. Ring
Mr. Randall
Ms. Blumeris
Reading File
Eng/Plng Division File
(Paiva/Allinscove-Wampletter)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Field Office
70 Commercial Street, Suite 300
Concord, New Hampshire 03301-5087

July 27, 2001

John R. Kennelly, Deputy Chief
Engineering/Planning Division
Planning Branch
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Mr. Kennelly:

This responds to your May 17, 2001 letter requesting information on the presence of federally-listed and proposed endangered or threatened species in relation to the Corps Section 1135 Program "Project Modification for Improvement of the Environment" restoration project in Allin's Cove, Barrington, Rhode Island. The following comments are also provided in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

Based on information currently available to us, there are no federally-listed endangered or threatened species under the jurisdiction of the U.S. Fish and Wildlife Service known to occur in the project area. Therefore, unless project plans change, no further consultation with us pursuant to Section 7(a)2 of the Endangered Species Act is required. We suggest that you contact Rick Enser of the Rhode Island Natural Heritage Program, 235 Promenade Avenue, Rhode Island 02903, at 401-277-2776, for information on state-listed species that may be present. A list of federally-designated endangered species in Rhode Island is enclosed for your information.

The total natural area of Allin's Cove is approximately 30 acres. In 1959, dredge material was placed on approximately 8 acres. This impacted area has excellent restoration potential for fish and wildlife habitat. Allin's Cove salt marsh should be used as a reference site as it currently is functioning as valuable nursery grounds for fishes, shrimps, and crabs, and feeding and nesting areas for birds and mammals. It is important to understand the tidal flow and hydrology of the site before we develop final plans and elevations for different types of salt marsh features. Restoration can be accomplished by removing the dredged material to elevations of the low and high salt marsh found in Allin's Cove. If possible, at least a 2 to 1 ratio of high marsh to low marsh should be recreated. Nixon (1982) found that Rhode Island salt marshes had a 2 to 1 ratio, while Maine had an 11 to 1 ratio, and New Hampshire, a 14 to 1 ratio. Within the newly-graded high marsh, small panes and ponds should be created for habitat diversity. Tidal channels need to be dug to some ponds but not all of the ponds. Tidal channels should be sloped back at an angle instead of the sides being straight. This will allow more plant diversity between the

References

Nixon, S.W. 1982. The Ecology of New England High Salt Marshes: A Community Profile. USFWS, Div. Biol. Serv., Washington D.C., FWS/OBS-81/55. 70pp.

FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES IN RHODE ISLAND

Common Name	Scientific Name	Status	Distribution
FISHES:			
Sturgeon, shortnose*	Acipenser brevirostrum	E	Atlantic coastal waters and rivers
REPTILES:			
Turtle, green*	Chelonia mydas	T	Oceanic straggler in southern New England
Turtle, hawksbill*	Eretmochelys imbricata	E	Oceanic straggler in southern New England
Turtle, leatherback*	Dermochelys coriacea	E	Oceanic summer resident
Turtle, loggerhead*	Caretta caretta	T	Oceanic summer resident
Turtle, Atlantic ridley*	Lepidochelys kempii	E	Oceanic summer resident
BIRDS:			
Eagle, bald	Haliaeetus leucocephalus	T	Entire state, occasional
Falcon, American peregrine	Falco peregrinus anatum	E	No current nesting; entire state-migratory
Plover, Piping	Charadrius melodus	T	Atlantic coast, Washington and Newport Counties
Roseate Tern	Sterna dougallii dougallii	E	Atlantic coast
MAMMALS:			
Whale, blue*	Balaenoptera musculus	E	Oceanic
Whale, finback*	Balaenoptera physalus	E	Oceanic
Whale, humpback*	Megaptera novaeangliae	E	Oceanic
Whale, right*	Eubalaena spp. (all species)	E	Oceanic
Whale, sei*	Balaenoptera borealis	E	Oceanic
Whale, sperm*	Physeter catodon	E	Oceanic
MOLLUSKS:			
NONE			
INSECTS:			
Beetle, American burying	Nicrophorus americanus	E	Washington
Beetle, northeastern beach tiger	Cicindela dorsalis dorsalis	T	Washington, extirpated
PLANTS:			
Small Whorled Pogonia	Isotria medeoloides	T	Providence, Kent Counties
Gerardia, Sandplain	Agalinus acuta	E	Washington

* Except for sea turtle nesting habitat, principal responsibility for these species is vested with the National Marine Fisheries Service

Rev. 6-15-98

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
HISTORICAL PRESERVATION & HERITAGE COMMISSION
Old State House • 150 Benefit Street • Providence, R.I. 02903-1209
TEL (401) 222-2678 FAX (401) 222-2968
TTY (401) 222-3700 Website www.rihphc.state.ri.us

31 May, 2001

John Kennelly
Deputy Chief-Engineering/Planning Division
N.E. District, Army Corps of Engineers
696 Virginia Road
Concord, MA 01742

RE: Allin's Cove Restoration Project
Barrington, RI

Dear Mr. Kennelly:

The Rhode Island Historical Preservation and Heritage Commission has reviewed the above-referenced project, and has determined that it will have no effect on significant cultural resources (those listed on or eligible for listing on the National Register of Historic Places). We therefore will not be attending the June 5 site visit, as we have no concerns about this project.

These comments are provided in accordance with the Procedures of the RIHP&HC and the Rhode Island Historic Preservation Act. If you have any questions please contact Richard Greenwood, Project Review Coordinator of this office.

Very truly yours,

Edward F. Sanderson
Executive Director
Deputy State Historic
Preservation Officer

010531.04

APPENDIX C

BENTHIC REPORT

MACROBENTHIC SURVEY OF ALLIN'S COVE (BARRINGTON, RI)

May, 2001

Submitted to:

US ARMY CORPS OF EINGINEERS
696 VIRGINIA ROAD
CONCORD, MA 01742

Prepared By:

Peter E. Pellegrino, Ph. D.
Coastal Resource Analysts
27 Shore Drive
Waterford, CT 06385

I. Introduction

Benthic infaunal communities are composed of a variety of small organisms including worms, clams, snails, and crustaceans. The major ecological functions of the benthos include the production of biomass as food resources for higher trophic levels and the bioturbating (mixing) of sand and mud.

Benthic organisms are very sensitive to habitat disturbances, including organic enrichment and contamination of sediments by toxic substances. Benthic communities can therefore provide a useful environmental monitoring tool to evaluate estuarine systems.

II. Objectives

The objective of this study was to document the benthic community structure in the vicinity of the Allin's Cove breachway channel and along the intertidal flats located in the anticipated dredging area.

III. Methods

A single sampling transect was established along the breachway into Allin's Cove (Figure 1) to asses the benthic community structure of the channel. A total of three (3) stations were sampled along the channel. Additionally, two sampling transects were established along the intertidal area that runs parallel to the large sand spit that is encroaching into the channel. A high intertidal transect and a low intertidal transect were established with two (2) sampling stations located in each zone. All benthic samples were collected on November 8, 2000 during low tide.

Benthic samples in the channel (Stations 1-3) were taken using a standard 0.04 m^2 VanVeen grab with one replicate taken at each station. Benthic samples along the intertidal transect (Stations A-D) were taken using a 32 cm^2 plexiglass corer. Stations A and C were located in the low intertidal zone while stations B and D were located in the high intertidal zone. Sediment samples were washed through a 0.5 mm mesh screen, stained with a biological dye (rose bengal) and fixed in 10% buffered formalin. Specimens were then transferred and stored in 70% ethanol. All organisms were identified to the lowest possible taxonomic category and counted.

IV. Results

The benthic communities recovered from all of the sampling stations are summarized in Table 1. A total of 13 species were reported from the sampling stations. 10 species were reported from the channel, while 8 species were reported from the intertidal flats. Based on the analysis of a single replicate from each station, it is apparent that the channel community is dominated by a typical sandy shore assemblage of benthic species that is accustomed to moderate levels of environmental stress associated with shifting sands. The dominant species in the channel were the polychaete *Mediomastus ambiseta* and the bivalve *Mya arenaria*.

The polychaete *Mediomastus ambiseta* was the dominant species in the low intertidal samples (Stations A and C) while the high intertidal samples (Stations B and D) contained only 1 and 2 species respectively. The intertidal cores again showed a typical low diversity sandy shore assemblage of benthic organisms.

Station Summary

Station #1 (channel – subtidal)

A total of three species was reported from station #1 represented by 17 individuals. The sediment type was brownish-gray sandy-silt. The dominant species was the mud snail, *Illyanassa obsoleta.*

Station #2 (channel – subtidal)

A total of six species was reported from station #2 represented by 190 individuals. The sediment type was a mix of coarse brown sand, shell hash, and gravel. The dominant species was the capitellid polychaete, *Mediomastus ambiseta.*

Station #3 (channel – subtidal)

A total of eight species was reported from station #3 represented by 116 individuals. The sediment type was coarse sand and shell hash. The dominant benthic species were the capitellid polychaete, *Mediomastus ambiseta* and the soft-shelled clam, *Mya arenaria.*

Station #A (low intertidal)

A total of four species was reported from station #A represented by 71 individuals. The sediment type was gray to black sandy-silt. The dominant species was the capitellid polychaete, *Mediomastus ambiseta.*

Station #B (high intertidal)

A total of one species was reported from station #B represented by 9 individuals. The sediment type was grayish-black sandy silt with shell hash. The dominant species was the soft-shelled clam, *Mya arenaria.*

Station #C (low intertidal)

A total of four species was reported from station #C represented by 97 individuals. The sediment type was grayish-black sandy silt with shell hash. The dominant species was the capitellid polychaete, *Mediomastus ambiseta.*

Station #D (high intertidal)

A total of one species was reported from station #B represented by 9 individuals. The sediment type was grayish sand with shell hash. The species reported was the polychaete *Nereis succinea.*

Table 1. Benthos collected in Allin's Cove on November 8, 2000.

	Sta. 1 (grab)	**Sta. 2 (grab)**	**Sta. 3 (grab)**	**Sta. A (core)**	**Sta. B (core)**	**Sta. C (core)**	**Sta. D (core)**
Species							
POLYCHAETES							
Capitella capitata	5	-	5	-	-	-	-
Leitoscoloplos robustus	-	11	2	7	-	-	-
Mediomastus ambiseta	-	168	31	62	-	84	-
Nereis succinea	-	-	-	1	-	2	5
Nereis virens	-	1	-	-	-	-	-
Polydora ligni	-	-	-	-	-	1	-
Spio setoa	-	-	2	-	-	-	-
BIVALVES							
Gemma gemma	1	-	3	-	-	10	-
Mya arenaria	-	4	67	-	9	-	-
GASTROPODS							
Crepidula fornicata	-	-	2	1	-	-	-
Illyanassa obsoleta	11	5	4	-	-	-	-
CRUSTACEANS							
Amphitoe valida	-	1	-	-	-	-	-
Crangon septemspinosa	-	-	-	-	-	-	1
TOTALS							
# of Species	**3***	**6***	**8***	**4#**	**1#**	**4#**	**2#**
# of Individuals	**17***	**190***	**116***	**71#**	**9#**	**97#**	**6#**

* = per 0.04 m^2
# = per 32 cm^2

N
W E
S

300 0 300 Feet

Allin's Cove
Wetlands Restoration
Barrington, RI

Benthic Sampling Locations

APPENDIX D

HYDROLOGY AND HYDRAULICS REPORT

ALLINS COVE COASTAL WETLAND ECOSYSTEM RESTORATION
BARRINGTON, RHODE ISLAND

I. INTRODUCTION

Allin's Cove, also known as Drowne Cove, is a salt marsh located in Barrington, Rhode Island on the eastside of the Providence River, just south of Bullock Cove. Allin's Cove has an area of about 30 acres. Approximately 8 acres of the south central area of the cove was filled with dredged material excavated from Bullock Cove in 1959. This area now has elevations ranging from 3 to 7 feet NGVD. During recent years, approximately 150 feet of the embankment adjacent to Byway Road, at the northwest section of the cove, has been subject to erosion. Town of Barrington officials stated that the erosion rate has been approximately one foot per year for the last few years. See Plate 1 and Plate 2. The proposed restoration includes excavation of dredge material and channel relocation to reintroduce tidal flow into the south central area of the cove.

The purpose of this appendix was to analyze the tidal exchange between the proposed channel and marsh restoration area and evaluate any potential flood stage increases resulting from dredge material removal. This was accomplished using a one-dimensional hydrodynamic computer model. The optimum channel location and sedimentation analysis was conducted by the University of Rhode Island (URI) geology department and coordinated with the Rhode Island Coastal Resources Management Council (RI CRMC).

II. BACKGROUND

Prior to 1959, Allin's Cove was an open tidal bay surrounded by salt marsh. Historical photos dated 1938, 1958 and 1972 show the physical characteristics of the cove are continually effected by normal tide cycles and severe weather conditions, such as noreasters and hurricanes. In 1959, the cove was used as a Corps dredge material disposal site destroying approximately 8 acres of wetland. As a result, the existing coastal wetland was lost and replaced with a combination of upland areas overgrown with common reed (*Phragmites australis*). The disposal area also resulted in narrowing of the tidal inlet with increased velocities, which has caused erosion of the embankment along Byway Road.

This Section 1135 restoration study investigates the feasibility of reintroducing saltwater into the former marsh by removing deposited dredge material. The proposed restoration of Allin's Cove includes excavation of new channels from the Providence River through the south side of the wetland. In addition, excavated dredge material will be used as fill to stabilize the slope along Byway Road. The purpose of this appendix was to determine optimum channel configurations to allow tidal exchange to restore as much of the wetland as possible. This was accomplished using a one-dimensional hydrologic computer model.

III. SITE HYDROLOGY

A. Tidal Regime. In the study area, tides are semi-diurnal, with two high and low waters occurring during each lunar day (approximately 24 hours and 50 minutes). The resulting astronomic tide range varies constantly in response to relative positions of the earth, moon, and sun, with the moon having primary tide producing effect. Maximum tide ranges occur when orbital cycles of these bodies are in phase. A complete sequence of astronomic tide ranges is approximately repeated over an interval of 19 years, known as a tidal epoch. Coastal storms and hurricanes can cause tides to be much higher than astronomically predicted.

Tidal flood profiles, developed by the Corps for the open ocean along the New England coastline were used to estimate tidal flood frequencies at Allin's Cove (see Plate 3 and Plate 4). A summary of estimated tidal datums at the subject site is shown in Table 2.

From the latest flood insurance study completed for Bristol County, dated 5 March 1996, the 100-yr flood stillwater and wave crest elevations are 14.8 feet NGVD and 19.8 feet NGVD, respectively, at Allin's Cove. Based on the examination of existing 2-foot contour mapping, the 15-foot contour on the eastern side of the cove runs across Appian Way to the intersection of Middle Street and Annawamscutt Road. This elevation then runs along Pleasant Street before following a northerly path alongside the cove. The highest known elevation on the western side of the cove is 14.4 feet NGVD.

B. Freshwater Drainage Area. A cursory hydrologic analysis was conducted for the Allin's Cove watershed to determine the expected freshwater runoff rates and volumes for the 2-, 5-, 10- and 100-yr storm events. Peak runoff rates were computed using the SCS method and 1-hour rainfall totals from the Weather Bureau's Technical Paper 40. The watershed boundaries were determined using the 1:25,000 U.S. Geological Survey (USGS) quadrangle sheets (revised 1985) and information provided by local residents. Flooding in the Allin's Cove watershed is primarily a result of tidal surge, not stormwater runoff. The results of this analysis were used to analyze the salinity concentrations within the cove during various rain events. The results of the salinity analysis are presented in Section VI.B.

The total drainage area of the Allin's Cove watershed is approximately 0.81 square miles. The northern watershed upstream of Allin's Cove discharges to two culverts located at the north end of the cove. The western and eastern watershed primarily flow overland discharging directly into Allin's Cove. Table 1 presents the results of the hydrologic analysis.

TABLE 1
Freshwater Runoff Flow Rates and Volumes
Allin's Cove, Barrington, Rhode Island

Storm Event	Flow Rate (cfs)	Runoff Volume (acre-feet)
2-yr	140	54
5-yr	234	76
10-yr	290	89
100-yr	492	154

IV. CLIMATOLOGY

The Barrington, Rhode Island area has a temperate climate. In the winter, coastal storms frequently bring rainfall instead of snow due to the moderating influence of the Atlantic Ocean. Prevailing winds are northwesternly in winter and southwesternly in summer. Climatological records are available approximately 4 miles west of Barrington, at the Providence WSO Airport dating back to 1948. These records are considered representative of the Barrington climate. The average annual precipitation at Providence is 44.7 inches.

V. METHODOLOGY

A. Data Collection. Bathymetric, topographic, historical aerial photos, tidal monitoring and salinity data were collected to describe the existing salt marsh tidal regime and to obtain information to develop a one-dimensional model for Allin's Cove.

Bathymetric and topographic survey of the area was completed during September 2000 to provide adequate information of Allin's Cove. This was necessary since the only mapping that was available was 2-ft contour mapping based on aerial photos taken in December 1973 and the Barrington, RI U.S. Geological Survey quadrangle, which has a 10-ft contour interval. As part of the September 2000 survey effort, 4 cross-sections and random spot elevations were obtained throughout the salt marsh and adjacent uplands. Elevations along the existing channel and erosion adjacent to Byway Road were also collected.

Historic aerial photos dating from 1938, 1958, 1972 and 1997 were used to analyze sand movement in the cove and salt marsh. URI and CRMC utilized the historical photos to develop the proposed channel relocation and predict the life expectancy of the project. Plate 2 presents the 1938 waterline of Allin's Cove. As can be seen, much of the area that currently exists as uplands, was an open tidal marsh. See the URI report Appendix H for a detailed discussion of the URI sedimentation and channel relocation analysis.

TABLE 2
ESTIMATED TIDE LEVELS AT ALLIN'S COVE

Estimated from Corps of Engineers Tidal Flood Profiles,
New England Coastline,
September 1988

	Tide Level and report datum (ft, NGVD29)
100-year Frequency Flood Event	14.8/19.8[1]
50-year Frequency Flood Event	13.8
10-year Frequency Flood Event	8.3
2-yr Frequency Flood Event	6.5
1-yr Frequency Flood Event	5.5
Maximum Predicted Astronomical High Water	5.0
8 Times Monthly High Water	3.8
Mean High Water Spring (MHWS)	3.5
Mean High Water (MHW)	2.9
Mean Tide Level (MTL)	0.7
National Geodetic Vertical Datum (NGVD)	0.0
Mean Low Water (MLW)	-1.5
Mean Lower Low Water (MLLW)	-1.9

Note: [1]Surge stillwater elevation/maximum wave crest elevation.

For tidal monitoring purposes, two staff gages were installed and tied to the National Geodetic Vertical Datum (NGVD) to monitor tidal movement within the marsh. Gage 1 was installed at the confluence of the existing channel with the Providence River. For interior marsh measurements, a second gage was installed at the northern section of the existing channel, adjacent to the Byway Road embankment. See Plate 6 for gage locations.

NAE personnel collected tide data for 9 hours at the two staff gages on 21 September 2000. The intent of the data collection was to monitor the water level at both tide gages to determine if the existing channel and fill material pose a restriction. This data was then used to develop a mathematical model to predict interior tidal conditions under proposed conditions. The data showed that the existing topography does not pose a tidal restriction within the cove and surrounding marsh. The tide elevations at gage 1 varied from a low tide elevation of –0.80 ft NGVD to a high tide elevation of 3.15 ft NGVD. The elevations within the marsh (gage 2) remained nearly constant. At gage 2, the water surface elevations varied from a low elevation of –0.55 ft NGVD to a maximum elevation of 3.05 ft NGVD. As shown on Plate 5, the recorded water surface elevation (WSE) of both gage 1 and gage 2 were uniform indicating the existing channel is not restricted.

RI CRMC collected salinity measurements on the 1 August, 7 August, and 21 August, 2001. Since the existing channel was determined not to be restricted and salt marsh grasses are currently growing in low lying areas of the marsh, salinity concentrations within the cove were expected to be representative of the Providence River. The intent of the data collection was to verify the salinity concentrations, evaluate the existing boundary of the salt marsh and to locate areas of freshwater influence. Samples were collected at six stations within the cove and salt marsh. See Plate 6 for salinity station locations and Table 2 for results of salinity measurements.

TABLE 3
SALINITY CONCENTRATIONS
Allin's Cove, Barrington, Rhode Island

Station	Salinity (ppt)		
	1 August 2001 (11:15 am)	7 August 2001 (11:35 am)	21 August 2001 (10:25 am)
S-1	27	25	23
S-2	26	26	25
S-3	29	28	23
S-4	15	15	24
S-5	No Reading	6	23
S-6	No Reading	No Reading	0

Salinity concentrations recorded at station S-1, S-2, and S-3 are above the recommended salinity concentration of 20 ppt, which discourages phragmites growth and encourages salt grass growth. Stations S-4, S-5 and S-6 are located along a ditch that extends between the salt marsh and uplands. Decreased salinity concentrations at these

stations is a result of tide levels not penetrating the elevated, upland area. Currently, the presence of freshwater vegetation found in the upland area is a result of stormwater discharging to this area from adjacent residential neighborhoods during rain events. Although stormwater will continue to discharge into the cove, dredging the elevated uplands will allow the tide levels to penetrate the marsh, therefore increasing the salinity within this area.

B. Sedimentation and Channel Relocation Analysis. Relocation of the existing channel was evaluated by the University of Rhode Island (URI) and coordinated with RI RI CRMC. As stated previously, URI and RI CRMC analyzed historic aerial photos dating from 1938, 1958, 1972 and 1997 to develop the proposed channel relocation and predict the life expectancy of the project.

Currently the existing channel extends from the Providence River to the upper reaches of Allin's Cove. Hurricanes and natural tidal influences have resulted in the channel migrating to the western edge of the salt marsh, adjacent to Byway Road. Due to the existing channel's proximity to the Byway Road embankment, flow velocities are increased during storm events, which erodes the embankment.

The proposed alternative relocates the existing channel to significantly reduce the threat of erosion of the Byway Road embankment and to restore the cove to represent 1938 conditions. This alternative involves relocating the existing channel from the western side of the cove to the south central area of the cove and placing sand material along the Byway Road embankment. Plate 7 presents the proposed layout. This alternative also includes construction of a sand spit that extends perpendicular between Ocean Avenue and the proposed channel. This sand spit will assist in stabilizing the proposed channel from tidal influences produced both daily and during various storm events. This stabilization will reduce the sedimentation (migration) rate of the proposed channel. A layout and profile defining the characteristics of the sand spit was provided to the COE from RICRMC and URI. See Appendix H for a detailed discussion of the URI sedimentation and channel relocation analysis.

C. Tidal Frequency Analysis. A tidal frequency analysis was conducted to determine design tidal elevations for flood risk analysis and for marsh restoration. As stated previously, tidal flood profiles, developed by the Corps for the open ocean along the New England coastline were used to estimate tidal flood frequencies at Allin's Cove (see Plate 3 and Plate 4). This study utilized the flood profiles to determine the maximum stage for the 1-, 2-, and 100-yr storm events. Stage hydrographs were then calculated from tidal elevations, recorded by the National Oceanic and Atmospheric Adminstration (NOAA), on the 10 December 2000, 5 March 2001, and the 21 September 1938. These events were used to model the 1-, 2-, and 100-yr storm events, respectively.

To ensure a successful marsh restoration of desired salt marsh species, a minimum flooding of 8 times per month was determined favorable to prevent establishment of a phragmites monoculture and allow revegetation of the salt marsh. An 8 times per month high water elevation equal to 4.88 ft NGVD was calculated for Newport,

Rhode Island from the Department of the Army, Coastal Engineering Research Center Special Report #7 – "Tides and Tidal Datums", Table no. 23. This correlates to an elevation of approximately 3.83 ft NGVD at Warren, Rhode Island. The tide elevations recorded at the Newport gage on 31 August 2000 were used to model the 8 times monthly tide cycle.

D. HEC-RAS Development. The hydraulic analysis of Allin's Cove was performed using a one-dimensional, unsteady hydrodynamic model, HEC-RAS. The HEC-RAS model calculates the water surface elevations (WSE) along a river channel using the standard step method and can simulate one-dimensional, unsteady flow through a full network of open channels. This model was used to simulate water surface elevations within Allin's Cove under proposed conditions during 8 times monthly tide cycles and the 1-, 2- and 100-yr storm events. The model was calibrated using tide data collected at Allin's Cove on the 21 September 2000. Input needed to develop and run the HEC-RAS model includes topographic information and tide data.

The HEC-RAS analysis of Allin's Cove started at the confluence of the cove with the Providence River. As presented on Plate 6, the existing salt marsh was divided into three separate reaches. Reach 1 comprises the northeastern tributary and surrounding wetland and reach 2 comprises the northwestern tributary and wetland. Reach 3 comprises the primary channel of interest and central area of the cove. Approximately ten cross sections were utilized to develop the existing condition model. Topographic survey conducted by NAE in August 2000 provided the cross-section information. The tidal survey, the 1986 Flood Insurance Study (FIS) for Bristol County and the 1988 Tidal Flood Profiles for the New England Coastline were used as a guide in calibrating the WSE for various storm events. Calibration of the model is discussed in Section VI.B.1.of this appendix.

VI. STUDY RESULTS

A. General. Allin's Cove, located in Barrington, Rhode Island was filled with dredged material in 1959 increasing the marsh elevation by 3 to 7 feet in this area. This Section 1135 includes removal of approximately 7 acres of the fill material, relocation of the existing channel and marsh restoration. This appendix conducted a hydraulic analysis of Allin's Cove, which evaluated the proposed channel relocation with sand spit, freshwater runoff, tidal regime, and salinity concentrations within the marsh.

B. HEC-RAS Development and Analysis. The Corps one-dimensional, unsteady flow hydrodynamic model HEC-RAS was used to predict estimated WSE caused by tidal flooding of Allin's Cove. The proposed channel relocation and sand spit profile provided by URI and RI CRMC were used to develop the COE HEC-RAS model. The intent of the modeling was to 1) determine the optimum channel size required to provide sufficient flooding within the marsh during an 8 times monthly tide cycle, 2) ensure construction of the sand spit would not impose a tidal restriction, 3) compute the flow velocity under various conditions to ensure stabilization of the proposed channel and sand spit and 4) compute the WSE of the cove under proposed conditions for the 8 times monthly, 1-yr, 2-

yr and 100-yr storm events to ensure removal of dredge material would not increase flood elevations to adjacent residential properties.

1. Model Calibration. First, water surface elevations, measured on 21 September 2000, were used to calibrate the HEC-RAS model. Measured and estimated cross-sectional information was used to run the model. Manning's frictional "n" values (ranged between 0.035 in the channel and 0.07 on the overbanks) were adjusted so results more closely matched the observed tide level measurements.

In addition, it was necessary to input tidal water surface elevations for the preceding two days leading up to the measurement to remove some of the instability in the calculations. Observed tidal conditions at the Conimicut, Rhode Island gage were used to estimate levels in the Providence River at Barrington during the previous two days.

Results of the calibrated run for 21 September 2000 is shown on Plate 5 where the tide measurements were collected in the salt marsh. As can be seen, the computed results match very closely to the observed data. The model was also calibrated by comparing the computed 100-yr flood elevations with that given in the 1983 Flood Insurance Study (FIS) for Bristol County and the 1988 Tide Profiles. The model computed a 100-yr flood elevation of 15.0 feet NGVD at station 0+21, which compares well with the 100-yr flood elevation of 14.8 ft NGVD given in the FIS and the tide profiles. No verification of the model was conducted due to time and budget constraints.

2. Hydraulic Analysis. The proposed salt marsh includes excavation of approximately 7 acres of dredge material, relocation of the inlet channel and construction of a sand spit. The excavated material will be placed at various locations within the cove including, the existing channel adjacent to Byway Road to stabilize the eroded embankment and the area perpendicular to Ocean Avenue and the proposed channel to form a sand spit. This study evaluated the hydraulics of the proposed channel with a sand spit height ranging between 2 feet and 5 feet. See Plate 7 for a layout of the proposed conditions.

The tidal regime for Allin's Cove will naturally define the channel configuration, including, location, width and shape over time. Therefore, the existing channel parameters were used to define basic channel design features for the proposed channel. The proposed channel design mirrors the existing channels shallow depth and triangular shape. The proposed channel has a top width of approximately 60 feet at the inlet entrance and tapers to a top width of approximately 40 feet at Sta 0.05. The proposed top width remains approximately 40 feet until the proposed channel converges with the existing channel at cross-section 0.21. The proposed channel alternative includes smaller feeder channels stemming off the main channel within the proposed marsh. Daily tidal flooding will naturally define both the primary and feeder channels. Table 3 presents the proposed channel parameters at various cross-sections through the marsh.

TABLE 4
EXISTING AND PROPOSED CHANNEL PARAMETERS
Allin's Cove, Barrington, Rhode Island

Existing Channel Parameters				Proposed Channel Parameters			
Cross-Section	Channel Invert Elevation (ft NGVD)	Top Width (feet)	Channel Depth (feet)[1]	Cross-Section	Channel Invert Elevation (ft. NGVD)	Top Width (feet)	Channel Depth (feet)
0.03	-1.7	50	0.1	0.03	-1.5	100	0.1
0.05	-1.5	45	0.2	0.05	-1.5	40	0.5
0.08	-1.5	35	0.4	0.08	-1.5	40	0.5
0.10[2]	-2.0	30	1.7	0.10	-1.5	40	0.5
0.13[2]	-2.7	34	2.3	0.13	-1.5	40	0.5
0.21[3]	-0.5	30	0.1	0.21[3]	-0.5	30	0.1

[1] Channel depth at time of survey.
[2] Location of existing channel erosion adjacent to Byway Road.
[3] Existing and proposed channels merge at cross-section 0.21.

To model the various storm events, the COE tidal flood profiles were used to determine the maximum stage for each tidal event. Stage hydrographs were then calculated from tidal elevations, recorded by the National Oceanic and Atmospheric Adminstration (NOAA), on the 10 December 2000, 5 March 2001, and the 21 September 1938. These events were used to model the 1-, 2-, and 100-yr storm events, respectively. The tide elevations recorded at the Newport gage on 31 August 2000 were used to model the 8 times monthly tide cycle.

The HEC-RAS model was utilized to compute the WSE of the cove under proposed conditions for the 8 times monthly, 1-yr, 2-yr and 100-yr storm events to ensure construction of the sand spit does not impose a restriction and removal of dredge material will not increase flood elevations to adjacent residential properties.

The WSE computed by HEC-RAS for the proposed channel and sand spit (height ranging between 2 feet and 5 feet) were uniform between the Providence River (Sta 0+03) and the upper reaches of Allin's Cove. Therefore, construction of a sand spit with a height ranging between 2 feet and 5 feet does not impose a restriction and provides adequate flow volume during the 8 times monthly tide cycle to restore the marsh. Maximum computed WSE during the 100-yr storm event was 15.0 feet NGVD, which is equivalent to the 100-yr elevation reached under existing conditions. The highest known elevation on the western side of the cove is 14.4 feet NGVD. Therefore, the residential neighborhood adjacent to Allin's Cove is currently expected to flood during a 100-yr storm event, particularly due to wave crest elevations. Therefore, excavation of the dredge material, relocation of the channel and construction of the sand spit will not increase flooding to residential neighborhood surrounding Allin's Cove during both low or high frequency storm events.

Erosion of the existing channel adjacent to Byway Road was evaluated using the HEC-RAS model. According to the American Society of Civil Engineers

publication, Sedimentation Engineering, published in 1977, the critical water velocity for a median grain size of 0.4 mm ranges between 0.45 ft/s and 0.84 ft/s. The critical water velocity represents the point at which the grain is suspended. As shown on Table 4, the velocities of the existing channel, computed by the model, ranged between 0.26 ft/s and 1.64 ft/s during the 8 times per month tide cycle and 0.46 ft/s to 1.79 ft/s during the 1-yr storm event. The model computed lower velocities for the 100-yr storm event because the WSE will inundate the channel and marsh.

Existing velocities computed by the model at Sta 0+13, the Byway Road embankment, are not considerably greater than those computed at stations along the channel as expected. This is because HEC-RAS does not take into effect the centrifugal force, which increases the erosion rate (velocity) around a bend, such as the channel bend located at the Byway Road embankment.

The flow velocity of the proposed channel was evaluated for sand spit heights ranging between 2 feet and 5 feet. As determined previously, construction of a sand spit between 2 feet and 5 feet high does not impose a restriction on the channel. Therefore, as expected, the flow velocities did not increase as a result of increasing the sand spit from a height of 2 feet to a height of 5 feet. As shown in Table 4, the proposed channel velocities range between 0.46 ft/s and 1.39 ft/s during the 8 times per month tide cycle and 0.17 ft/s to 0.84 ft/s during the 100-yr storm event. During various conditions, these velocities are greater than the 0.84 ft/s critical water velocity, indicating a small amount of movement, or sedimentation, of the channel will occur. As stated previously, channel configuration is continually shaped and defined by the natural tidal regime. To discourage rapid sedimentation and migration of the proposed channel to the northwestern area of the cove, a sand spit has been proposed. A detailed analysis of the sedimentation, channel relocation and project life expectancy analysis is presented in the Environmental Assessment Report.

TABLE 5
HEC-RAS PROPOSED CHANNEL VELOCITY (FT/S)
Allin's Cove, Barrington, Rhode Island

Average Channel Velocity (ft/s)				
Tide Cycle	Existing Conditions			
	Sta 0+05	Sta 0+08	Sta 0+13 (Byway Road)	Sta 0+21
8x monthly	1.64	0.68	0.81	0.26
1-yr event	1.79	0.74	0.87	0.46
2-yr event	0.36	0.69	0.90	0.37
100-yr event	0.83	1.03	0.94	0.34
Proposed Conditions w/ 2' to 5' High Sand Spit				
8x monthly	1.39	0.67	0.64	0.46
1-yr event	1.07	0.66	0.70	0.21
2-yr event	0.57	0.27	0.29	0.06
100-yr event	0.84	0.51	0.62	0.17

C. Freshwater Runoff, Tidal Analysis, and Salinity Evaluation. As stated previously in Section III.B., the total drainage area of the Allin's Cove watershed is approximately 0.81 square miles. The northern watershed upstream of Allin's Cove discharges to two culverts located at the north end of the cove. The western and eastern watersheds primarily flow overland discharging directly into Allin's Cove.

During normal tide cycles, minimal stormwater runoff discharges to the cove, therefore the volume of tidal flushing maintains adequate salinity concentrations within the salt marsh. The presence of salt marsh grasses currently growing in the low-lying areas of the salt marsh and salinity sampling conducted by RI CRMC reinforce this conclusion.

Rainfall runoff and tidal surge are independent factors, therefore, the volume of freshwater runoff contributing to the cove during a 2-yr rain event will not necessarily be accompanied by tidal inflow of a 2-yr tidal event. This study compared the volume of freshwater runoff discharging to the cove during a 2-yr storm event with the volume of tidal flow entering the cove during a spring tide event to determine if the freshwater discharging to the cove will compromise the salinity concentration within the marsh. The computed volume of freshwater runoff was very minor compared to the volume of tidal inflow during the spring tide event. Therefore salinity concentrations will not be compromised during flow frequency rainfall events and the tidal regime will revert to normal conditions after the storm event subsides.

VII. SUMMARY

This Section 1135 restoration study investigated the feasibility of reintroducing saltwater into the former marsh by removing approximately 7 acres of dredge material placed in the cove during 1959. Two alternatives have been proposed through the coordination between the Corps of Engineers (COE), Rhode Island Coastal Resources Management Council (RI CRMC) and the University of Rhode Island (URI) Geology Department. The two alternatives are 1) no action and 2) channel relocation to the central area of the cove with a sand spit.

Bathymetric, topographic, historical aerial photos, tidal monitoring and salinity data were collected to describe the existing salt marsh tidal regime and to obtain information to develop a one-dimensional model for Allin's Cove. Bathymetric and topographic survey of the area was completed during September 2000 to provide adequate information of Allin's Cove. Historic aerial photos dating from 1938, 1958, 1972 and 1997 were used to analyze sand movement in the cove and salt marsh. URI and RI CRMC utilized the historical photos to develop the proposed channel relocation and predict the life expectancy of the project. For tidal monitoring purposes, two staff gages were installed and tied to the National Geodetic Vertical Datum (NGVD) to monitor tidal movement within the marsh. The intent of the data collection was to monitor the water level at both tide gages to determine if the existing channel and fill material pose a restriction. This data was then used to develop a mathematical model to predict interior

tidal conditions under proposed conditions. The data showed that the existing topography does not pose a tidal restriction within the cove and surrounding marsh. RI CRMC collected salinity measurements on the 1 August, 7 August, and 21 August, 2001. The intent of the data collection was to verify the salinity concentrations, evaluate the existing boundary of the salt marsh and to locate areas of freshwater influence.

Relocation of the existing channel was evaluated by the University of Rhode Island (URI) and coordinated with RI CRMC. As stated previously, URI and RI CRMC analyzed historic aerial photos dating from 1938, 1958, 1972 and 1997 to develop the proposed channel relocation and predict the life expectancy of the project. The proposed alternative relocates the existing channel to greatly reduce erosion of the Byway Road embankment and to restore the cove to represent 1938 conditions. This alternative also includes construction of a sand spit that extends perpendicular between Ocean Avenue and the proposed channel to assist in stabilizing the proposed channel from tidal influences produced both daily and during various storm events. See Appendix H for a detailed discussion of the URI sedimentation and channel relocation analysis.

The Corps one-dimensional, unsteady flow hydrodynamic model HEC-RAS was used to predict estimated WSE caused by tidal flooding of Allin's Cove. This model was used to simulate water surface elevations within Allin's Cove under proposed conditions during 8 times monthly tide cycles and the 1-, 2- and 100-yr storm events. The model determined the proposed channel dimensions and sand spit (height ranging between 2 feet and 5 feet) provides adequate flow volume to restore the marsh, does not impose a tidal restriction and will not increase flood levels to surrounding residential neighborhood during both low and high frequency flood events.

The 1996 FIS determined the 100-yr flood stillwater and maximum wave crest elevations to be 14.8 feet NGVD and 19.8 feet NGVD, respectively, at Allin's Cove. Existing 2-foot contour mapping of adjacent residential properties shows the 15-foot contour on the eastern side of the cove runs across Appian Way to the interesection of Middle Street and Annawamscutt Road. This elevation then runs along Pleasant Street before following a northerly path alongside the cove. The highest known elevation on the western side of the cove is 14.4 feet NGVD. Therefore, the residential neighborhood adjacent to Allin's Cove is currently expected to flood during a 100-yr storm event, particularly due to wave crest elevations. Removing dredge material from the cove and relocating the channel will not increase flood levels to residential neighborhoods above the flood elevations determined in the 1996 FIS.

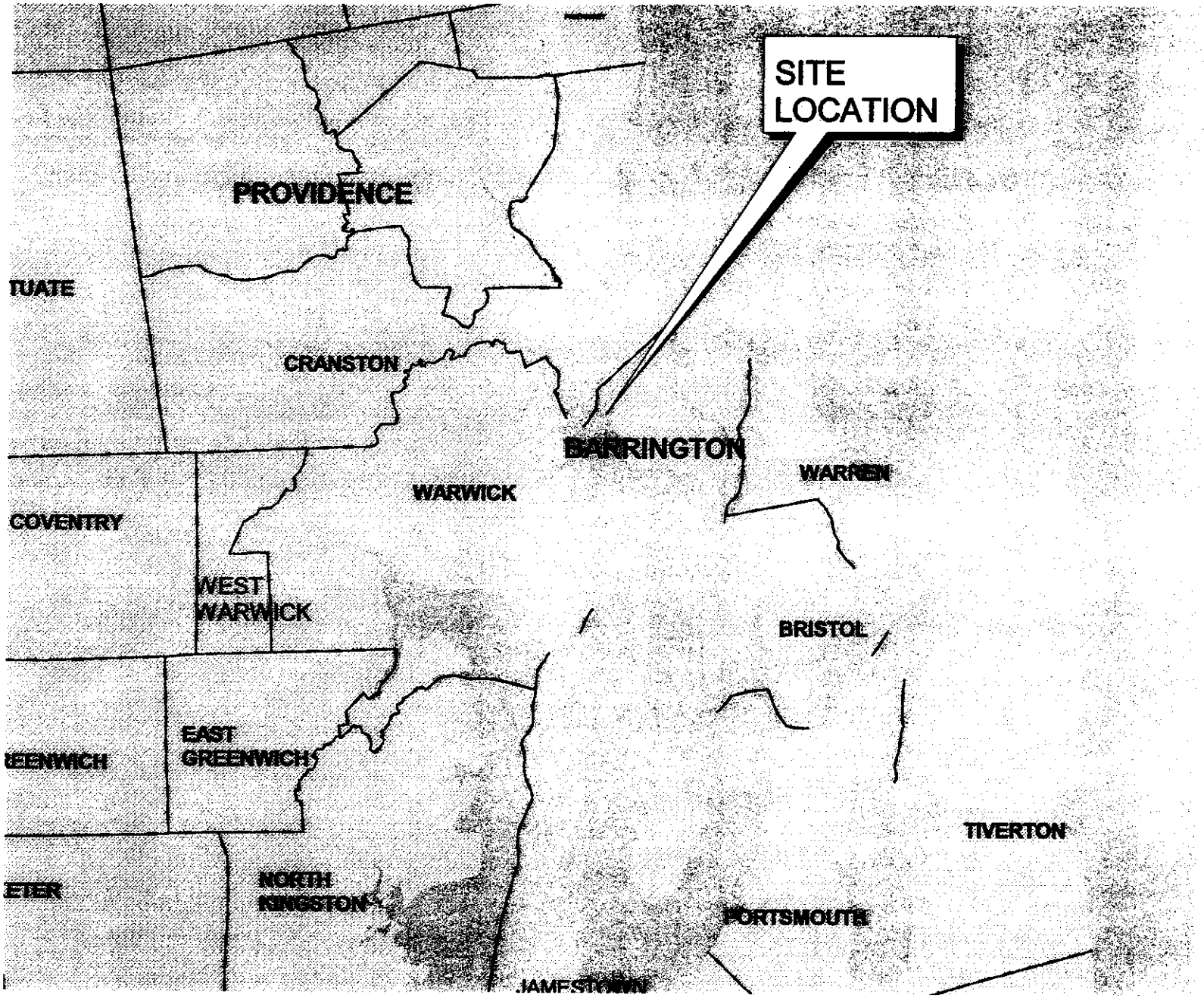
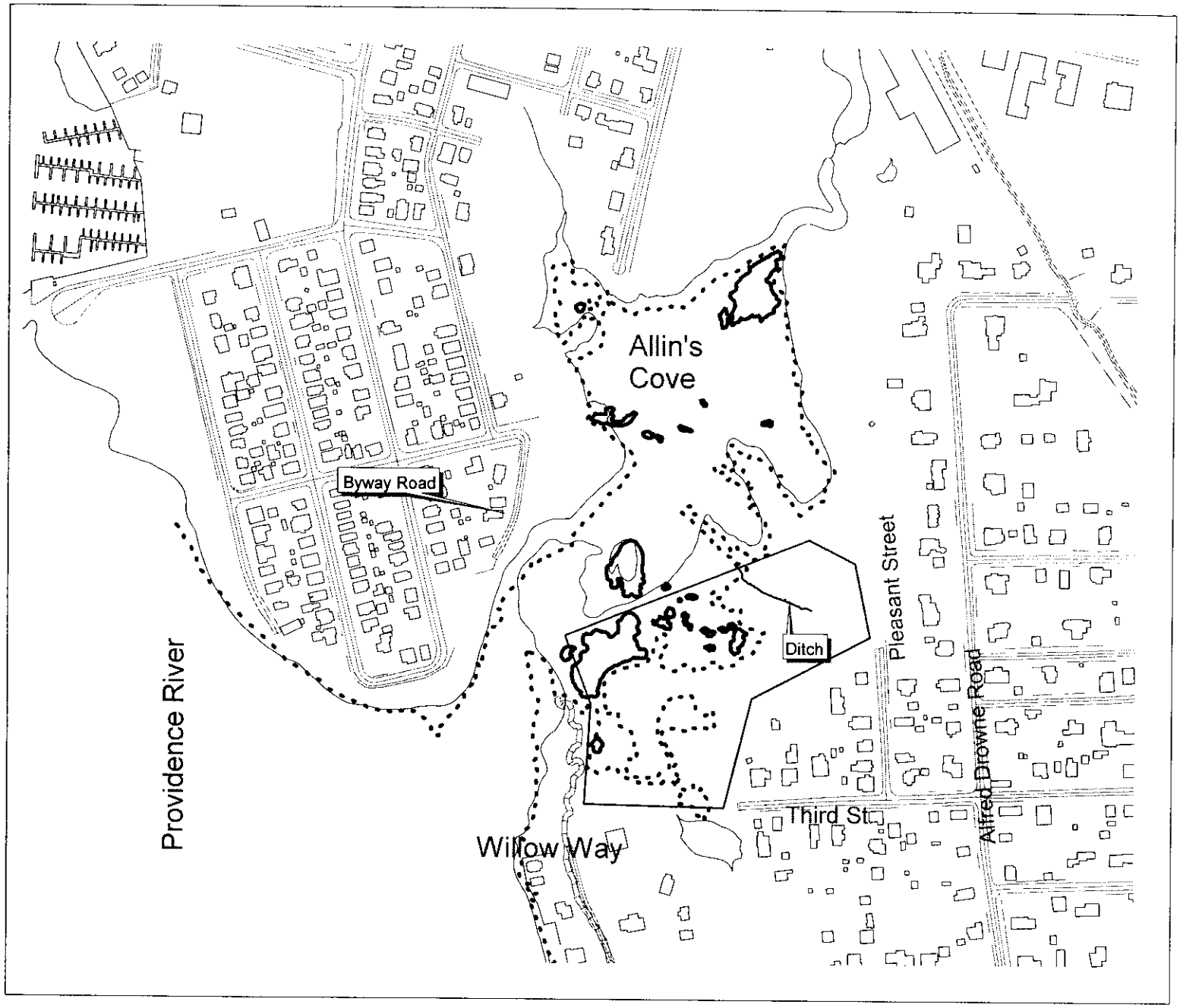


Plate 1
Location Map
Allin's Cove
Barrington, Rhode Island



N
W E
S

1938 Marsh Islands
1938 Washover Fan
1938 Water Line

1958 Dredge Disposal Area

0.07 0 0.07 0.14 Miles

Plate 2
Existing Conditions and
1938 Waterline
Barrington, Rhode Island

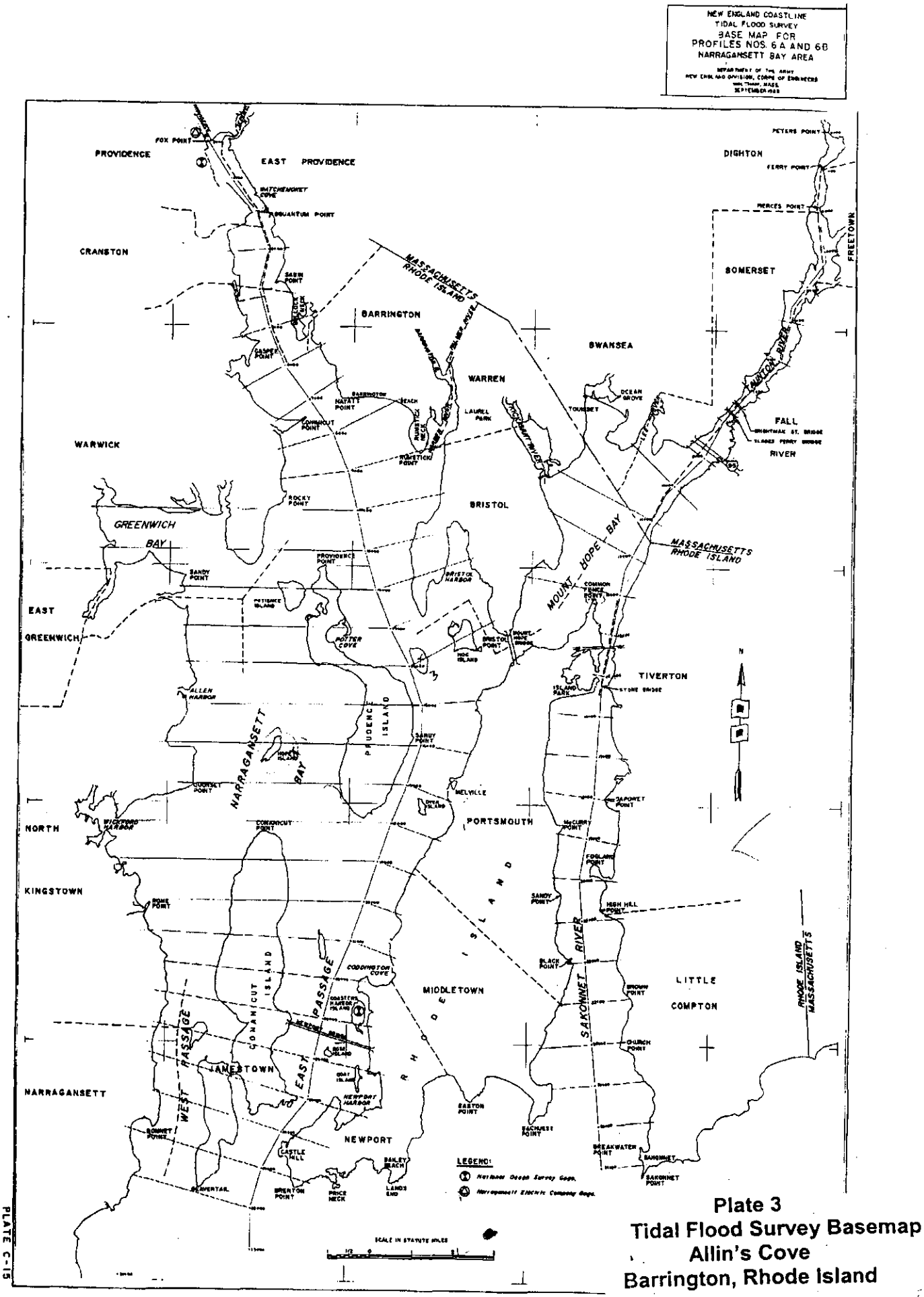
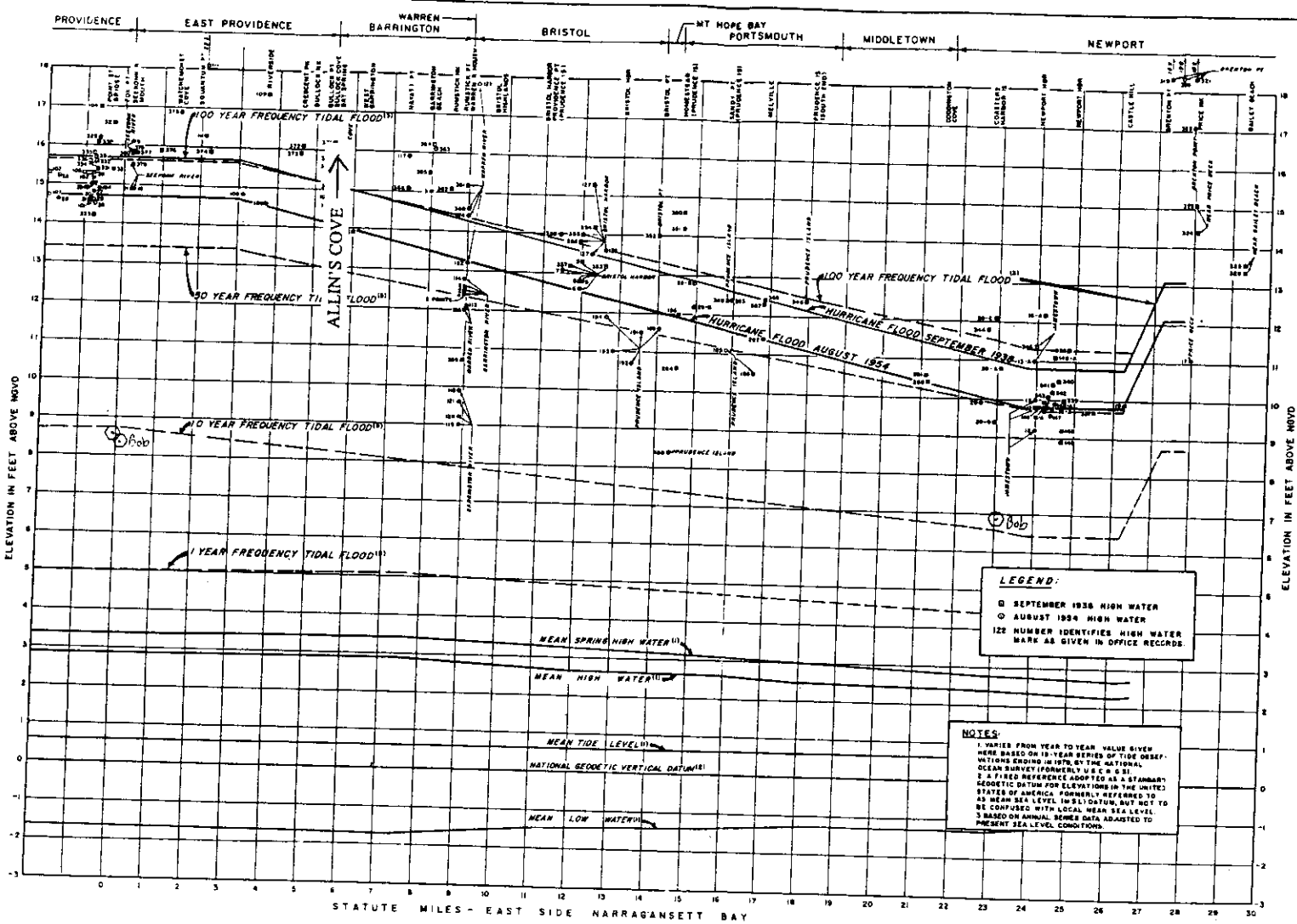


PLATE C-15

Plate 3
Tidal Flood Survey Basemap
Allin's Cove
Barrington, Rhode Island

CORPS OF ENGINEERS

U. S. ARMY



NEW ENGLAND COASTLINE
TIDAL FLOOD SURVEY
TIDAL FLOOD PROFILE NO. 6A
EAST SHORE OF NARRAGANSETT BAY

Plate 4
1988 Tidal Flood Profiles
Allin's Cove
Barrington, Rhode Island

PLATE 5
Tide Survey Data and Calibrated HEC-RAS Data
Allins Cove, Barrington, Rhode Island

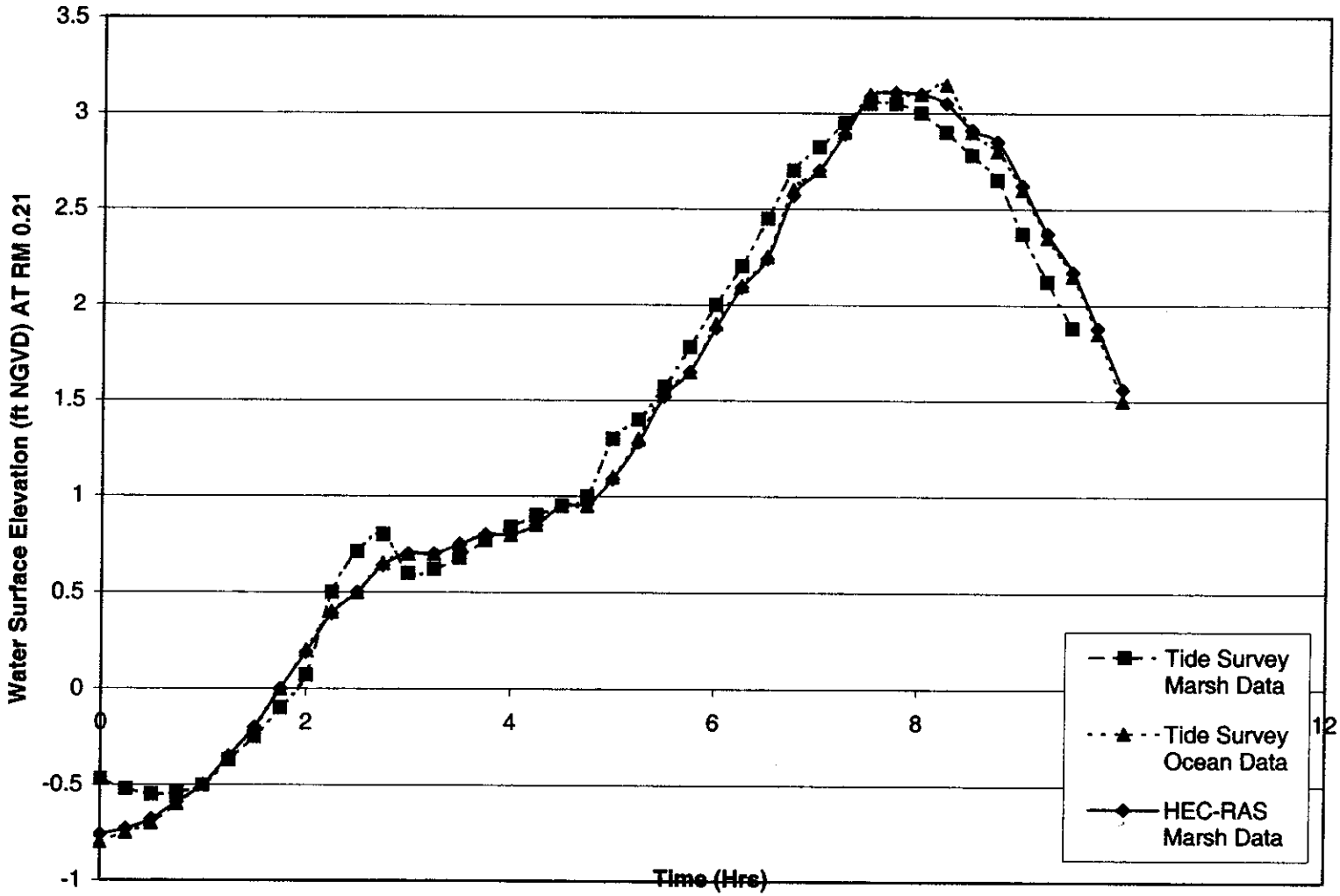
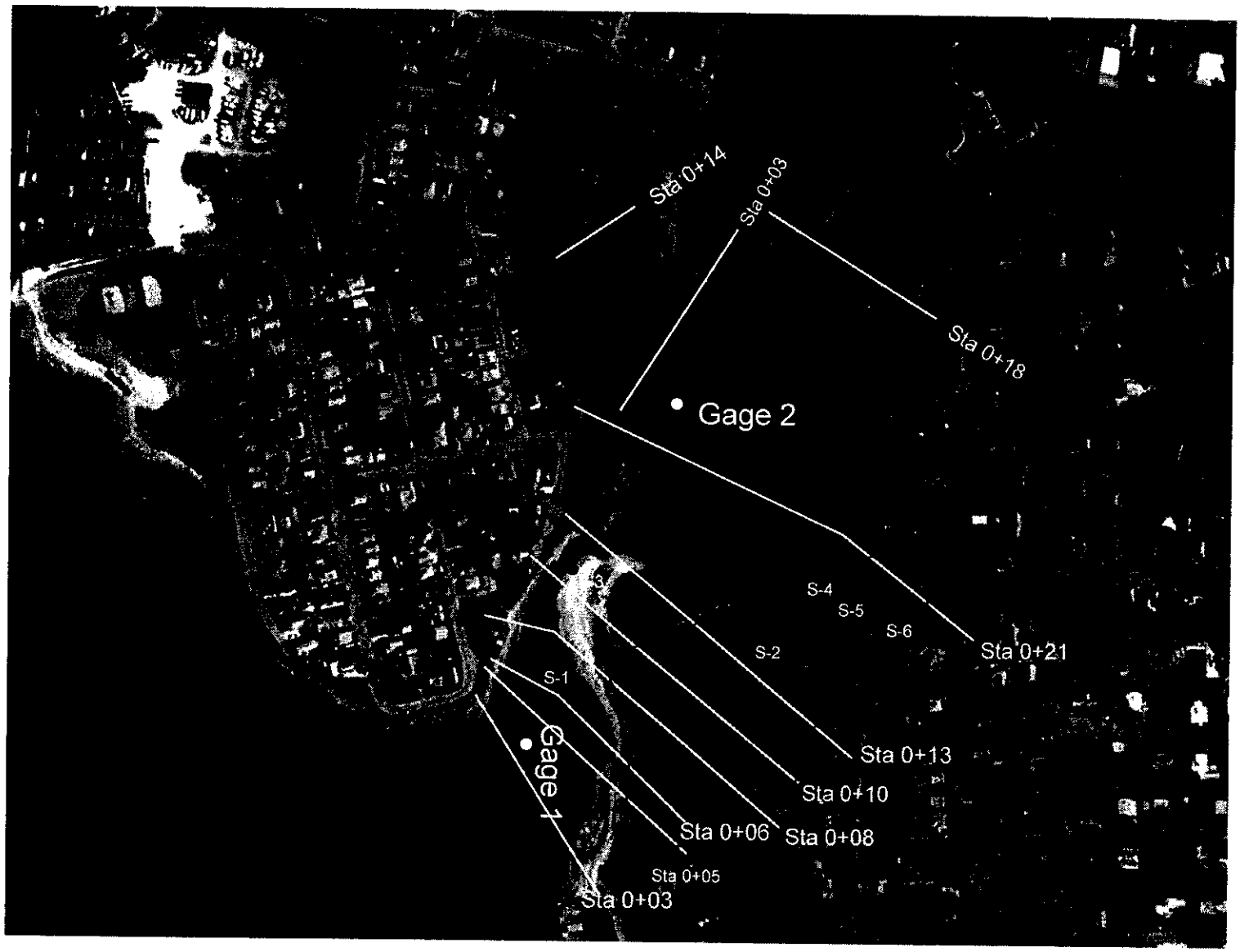


Plate 5
Tide Survey Data and Calibrated HEC-RAS Data
Allin's Cove
Barrington, Rhode Island



N
W E
S

1959 Dredge Disposal Area
Tide gage
Salinity sampling point

Sta 0+3 H and H Cross-Section

300 0 300 600 Feet

Plate 6
HEC-RAS Cross-Sections & Reaches, Salinity Stations, and Tide Gage Locations
Barrington, Rhode Island

N
W E
S

LEGEND

- High Marsh
- Low Marsh
- Sand Spit
- New Channel
- Disposal Area

0.06 0 0.06 0.12 Miles

Plate 7
HEC-RAS Cross-Sections and Proposed Conditions
Barrington, Rhode Island

APPENDIX E

GEOTECHNICAL REPORT

ALLIN'S COVE ENVIRONMENTAL RESTORATION

APPENDIX E - GEOTECHNICAL DESIGN

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1. GENERAL

A geotechnical study was performed for the Feasibility Study of the Salt Marsh Restoration of Allin's Cove in Barrington, Rhode Island. The project site encompasses the east and west sides of the channel that flows northeast from the Providence River into Allin's Cove (shown on the site map as Drown Cove, Figure 1). The east side is an upland area that was created in 1958 when approximately 11 acres of intertidal flats of Allin's Cove was filled with dredged material from the Bullocks Cove Navigation Improvement Project. The west side is an eroding shoreline adjacent to Byway Road.

The proposed project includes excavation of the in-situ dredged material on the east side of the existing marsh area to re-create a salt marsh, excavation / dredging of a new channel closer to it's original alignment, and the creation of a sand spit along Byway Road to provide shoreline protection. The excavated material from the existing marsh shall be disposed of on site at the south east edge of the project area, and suitable dredged material from the new channel shall be placed along the shoreline of the west side to help reduce the erosion occurring along Byway Road.

Geotechnical studies were performed to assess the nature of the materials to be excavated, dredged and disposed of within the limits of the project area. The scope of the investigation included:

a. Field Reconnaissance
b. Subsurface soil sampling.
c. Physical and chemical testing of the soil samples.

The chemical testing and analysis of the soil samples is not addressed in this report.

2. LOCATION AND DESCRIPTION OF THE SITE

Allin's Cove is located on the eastern side of the Providence River in the town of Barrington, Rhode Island. The area is marked on the Bristol Quadrangle USGS map as Drown Cove (Figure 1). Allin's Cove historically was a tidal marsh. The eastern side of the cove was filled with material dredged from Bullock Cove during improvement dredging in 1958/59. The disposal

of the dredge material resulted in a ground elevation above normal tidal flushing and has subsequently become overgrown with common reed and shrubs. The proposed restoration of the salt marsh would include the excavation of about 4 acres of the marsh at an average depth of about two feet. Disposal of the material is anticipated to be on-site, with the top of fill placed an average of 3 to 4 feet above ground level. Additionally, the tidal channel has migrated to the north towards the western side of the cove. Adjacent to the existing channel is a section of eroded shoreline just below Byway Road. Restoration work would include the dredging of a new channel to the south closer to it's historic alignment, and placement of suitable dredged/excavated sand from the new channel along the eroded shoreline.

3. SUBSURFACE CONDITIONS

a. Subsurface Sampling. Subsurface explorations were conducted to determine the physical and chemical nature of the material to be excavated from the marsh and the dredged material from the channel. This was done by contract to Battelle Duxbury Operations in 2001. Sampling was performed using vibratory core sampling at 4 locations, which were predetermined and flagged by New England District (NAE) personnel. Three locations were in the existing marsh area and one was near the location of the proposed channel alignment and sand source area. (See Figure 2 for sample station locations and proposed project layout). Core samples were retained for grain size analyses, Atterberg Limits, and chemical testing. Visual classification of each core was done at the site, and completed logs were prepared. All sampling and field classification was performed by Battelle personnel. Physical testing of the samples was performed by Applied Marine Sciences and the chemical testing was performed by Severn Trent Laboratories for Battelle (Reference Report 1).

The field core logs are included in Reference Report 1 and in Attachment 1 of this Appendix. Three of the sampling locations were located in the existing marsh area and logged as S-1, S-2, and S-3. The fourth location was near the proposed channel alignment and logged as S-4. All cores were penetrated to 16 feet below the ground surface; although the length of sample retained varied for each core. The samples collected for physical testing were between 0 and 5 feet for S-1, 2 and 3; the sample collected from S-4 was a composite sample from 0 to 8.8 feet. The samples were taken from the strata of anticipated excavation. A summary of the physical test results is shown in Table 1 on the following page.

TABLE 1
ALLIN'S COVE MARSH RESTORATION
SOIL SAMPLE PHYSICAL TEST RESULTS

Sample Location (Depth)	Grain Size				Atterberg Limits			Water Content	Total % Solids	USCS Classification
	% Gravel	% Sand	% Silt	% Clay	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)			
S-1										
0-1'	0	39	51	10	42	28	14	49	67	ML
1-2'	1	36	46	17	53	27	26	45	69	MH
2-3'	3	51	32	14	39	22	17	44	69	ML
0-4.1'	1	38	41	20	---	NA	---	55	65	ML
S-2										
0-1'	3	79	11	7	---	NP	---	31	76	SM
1-2'	0	14	46	40	108	48	60	96	51	MH
2-3'	0	14	51	35	89	36	53	84	54	MH
0-5'	3	33	43	21	---	NA	---	58	63	MH
S-3										
0-1'	3	29	35	33	87	46	41	108	48	MH
1-2'	0	2	44	54	119	49	70	116	46	MH
0-2'	0	10	42	48	---	NA	---	110	48	MH
S-4										
0-8.8'	1	89	6	4	---	NP	---	18	84	SP-SM

Notes:
All Samples were collected on 29 May 2001 by Battelle Operations, Duxbury.
All Samples were tested in June 2001 by Applied Marine Sciences, Inc.

b. Existing Marsh Area – S-1, S-2, and S-3. The core logs and physical testing indicate that samples from S-1, 2, and 3 are primarily sandy, clayey, SILTS with a trace of gravel (USCS classification MH or ML). Results of the subsurface investigation indicate the upper stratum of the three cores consist of a top layer of organic root mat (about 0.5 to 1-foot thick) underlain with sandy clay and silty clay layers approximately 3 to 4 feet thick. Near the 4 to 5-foot depth, the logs indicate a transition to vegetative roots and organic fragments, which appears to be the ground surface of the marsh prior to filling in 1958. From the 5-foot depth to the bottom of the core (14 to 16 feet) the material is a gray uniform clay deposit.

Sieve and hydrometer tests were performed on individual and composite samples from each core to determine grain size. The samples consisted of an average of clay (27%), sand (31%), and silt (40%), with minor amounts of gravel (<3%). The average percent solids of the samples is 60% with average water content of 72%. The Atterberg Limits (AL) were also determined for each sample. Out of the nine samples where the AL was determined, two samples were non-plastic. The others had Liquid Limits (LL) ranging from 39 to 119 and Plastic Limits ranging from 22 to 49 (Table 1).

c. Proposed New Channel Area – S-4. Core S-4 was located in the area of the proposed re-alignment of the channel. The core log shows primarily sand from the ground surface to about a 10-foot depth. From 10 to 13.2 feet the material is a gray uniform clay. One composite sample of material between 0 and 8.8 feet was taken. As shown in Table 1, physical testing indicates the sample is a non-plastic, poorly graded SAND with silty fines (SP-SM).

4. GEOTECHNICAL ANALYSIS

a. Existing Marsh Area. The depth of excavation in the existing marsh area will be about 2 to 3 feet. The top 6 inches (average) is a mixture of sand, clay and roots. Below that is clayey, sandy, silt material that will be excavated to create the salt marsh. As shown by the physical soil testing and the core logs of S-1, 2, and 3, the material to be excavated from the marsh appears to be somewhat uniform across the site. The upper stratum to be excavated consists of a clayey, sandy, SILT (MH) with an average water content of 72% and solids 60%. This material is considered soft with a high void ratio and water content and may be somewhat difficult to work with when excavating and spreading. As the material will be disposed of on site, and will not be used for structural purposes, specified design compaction of the material is not required. Also, the subsurface materials where the excavated material will be placed, is considered similar to that which is being excavated. The additional loading with the excess material will cause the subsurface material to consolidate. But, as pedestrian traffic will be limited and vehicular traffic will not be permitted, the amount of consolidation and differential settlement is not considered pertinent to the design. Therefore, bearing capacities and settlement calculations were not performed.

b. New Channel Excavation. Based on core S-4, the material to be excavated/dredged to create the new channel is primarily sand. If this material is dredged, it will have a low percent solids (10-20%) and be mixed primarily with water. If the material is excavated from a dry area, the percent solids could be over 50%. The dredged/excavated material is proposed to be placed along the eroding shoreline adjacent to Byway Road, creating a sand spit adjacent to the new channel. If the material is consistent, it should provide a good source of sand for placement in this area. The method of placement of the sand onto the shoreline will be determined by the contractor's chosen excavation/dredging operations. The excess water from

the sand should drain fairly quickly, allowing for grading of the top elevation and side slopes of the sand spit.

5. CONSTRUCTION CONSIDERATIONS

a. Excavation and Spreading of the Material.

1) Marsh Area. The sandy clayey silt material within the marsh is considered very soft and may not be able to withstand the weight of heavy construction equipment. Therefore, in order to excavate material to create the salt marsh, either a temporary access road would need to be built or specialized low-pressure construction vehicles would need to be utilized. Because the material is so fine and the water content is high, the material may be difficult to work with. Also, water contents could change as soil is excavated, hauled, and stockpiled, changing the workability. Silt curtains and other erosion control methods will need to be utilized to minimize turbidity generated from excavation operations.

2) Disposal Area. The excavated material is to be disposed of on-site at the southern side of the marsh area adjacent to Narragansett Bay. Due to the potentially fluid nature of the excavated material, it is proposed that a containment berm be constructed around the perimeter of the disposal area to contain the material and any associated runoff until it naturally dewaters and consolidates. The berm would be created by first clearing and grubbing the disposal area, and then scraping off the top layer of material that currently exists in the disposal area. This material would be placed and compacted along the perimeter of the disposal area to approximately 3 ft height, with side slopes no steeper than 1V:3H in order to prevent sloughing of the slopes. It is estimated that about 1-2 feet of material would be scraped from the disposal area to create the berm. The presence of the containment berm should not reduce the capacity of the disposal area to hold the excavated material from the marsh areas. It is expected that as the disposal area is above the normal tidal fluctuations at the site, that the material excavated to create the berm will be drier than the material from the marsh areas, and should consequently be easier to handle, spread and compact. The excavated material will be placed within the containment berm and spread and placed in lifts; semi-compaction will be accomplished as the material is being spread with construction equipment. The material will not need to be dried other than what naturally occurs as the material is excavated and placed. The

containment berm will be graded at the end of the project to become part of the final grading of the disposal area.

There are no existing or proposed structures or utilities in the immediate vicinity of the disposal area. Therefore, compaction and density field testing would not be required, although the material would need to be placed in lifts of consistent thickness so as to eliminate the potential for large voids or holes below final grade.

The final grading of the disposal area will be determined during the design phase. Additionally, a biodegradable turf reinforcement mat and select seed should be used to stabilize and protect the finished area from erosion.

b. Potential Future Uses for the Excavated Material. There is a potential that the material excavated from the existing marsh area could be used offsite as a daily landfill cover. US Environmental Protection Agency (EPA) and Rhode Island Department of Environmental Management (RIDEM) references (References 2 and 3) were reviewed to determine the physical properties of material both agencies require for material to be used as landfill daily cover. The EPA document indicates the earthen material could be a coarse, permeable soil (sand) or a fine-grained, low-permeability soil (silty clay). The RIDEM document indicates the initial cover material shall be earthen material (other materials need to be approved by the Director). The physical tests show the material that is to be excavated and disposed of on-site may be a potential source of landfill cover in the future.

For the excavated material to be used as structural fill, either on or off-site, further physical testing would be required to determine the shear strength of the compacted material. Most likely, if the strengths of the compacted material were adequate for a specific use, the material would need to be dried out substantially so that proper compaction could be achieved. As stated above the material to be excavated has a very high water content. Drying out the material would require time as well as an area large enough to spread the material and re-work it to reduce the moisture content. Also, additives such as lime stabilizer or sand could be used to dry the material.

6. CONCLUSIONS AND RECOMMENDATIONS

a. Marsh Area Excavation and Disposal. Based on the core logs and soil samples collected to date, the material to be excavated from the eastern side of Allin's Cove appears to be consistent across the site. There may be some variations in the material gradation between the sand and clay sizes, but these variations should not pose a problem with excavation and disposal. Excavation and placement may be somewhat difficult due to the general nature of silt and clay materials, but could be accomplished with the appropriate construction equipment. It is expected that as the disposal area is above the normal tidal fluctuations at the site, that the material excavated to create the berm will be drier than the material from the marsh areas, and should consequently be easier to handle, spread and compact. However, it is suggested that coring and soil sampling be performed in the disposal area during the design phase to characterize the material to be scraped from the surface. This work would be combined with the coring to be performed along the selected channel alignment as discussed below.

b. Channel Dredge Material. The core and soil sample indicates the material to be dredged is primarily sand with some silt. Although the material to be dredged may be mostly sand, if the channel alignment is close to it's original alignment, there may be some changes in the material gradation along the channel length due to the gravel/sand/silt movements of the natural coastal and tidal process. Consequently, the one sample already tested may not be indicative of the material along the entire channel alignment. Therefore, once the final channel alignment is determined, additional coring and soil sampling should be performed, along with physical testing, to determine if there are any changes in the material gradations that could impact the final design of the proposed sand spit.

c. Potential Future Use Offsite. There are currently no identified sites in the project vicinity that would be ready to accept the excavated material in the expected time that the project would be constructed. It is therefore assumed that the material will need to be disposed of onsite. However, should a potential site willing to take the material be identified during the final design phase, the onsite disposal area may not be needed.

7. REFERENCES

1) Battelle-Duxbury Operations, Sediment Testing for the Allin's Cove Marsh Restoration Project, July 2001, Delivery Order No. 64 under Contract No. DACW33-96-0005.

2) U.S. Environmental Protection Agency, EPA/625/R-94/008, September 1994, Design, Operation, and Closure of Municipal Solid Waste Landfills, Seminar Publication.

3) State of Rhode Island and Providence Plantations Department of Environmental Management – Office of Waste Management, Solid Waste Regulation No. 2 – Landfills, January 1997

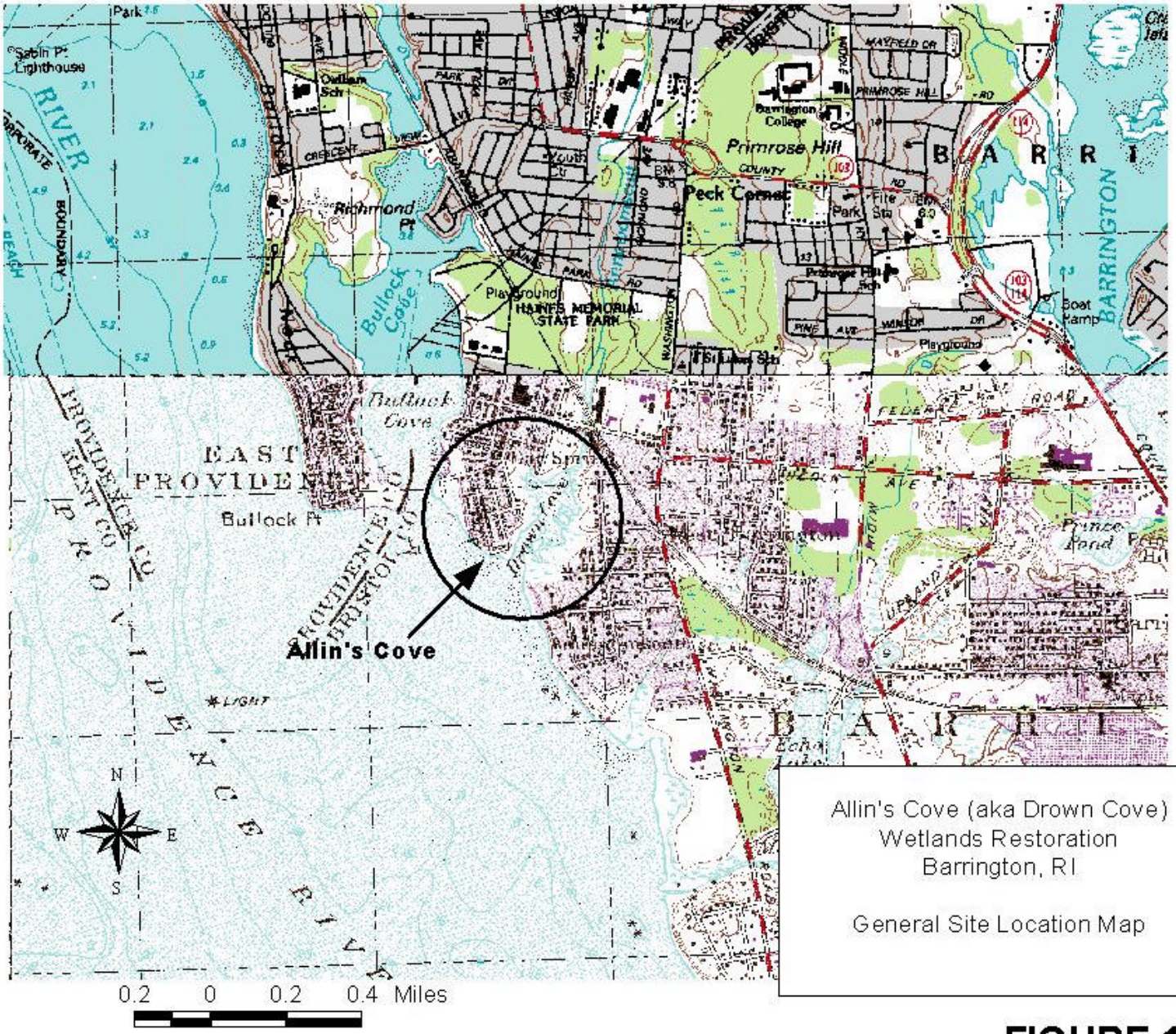
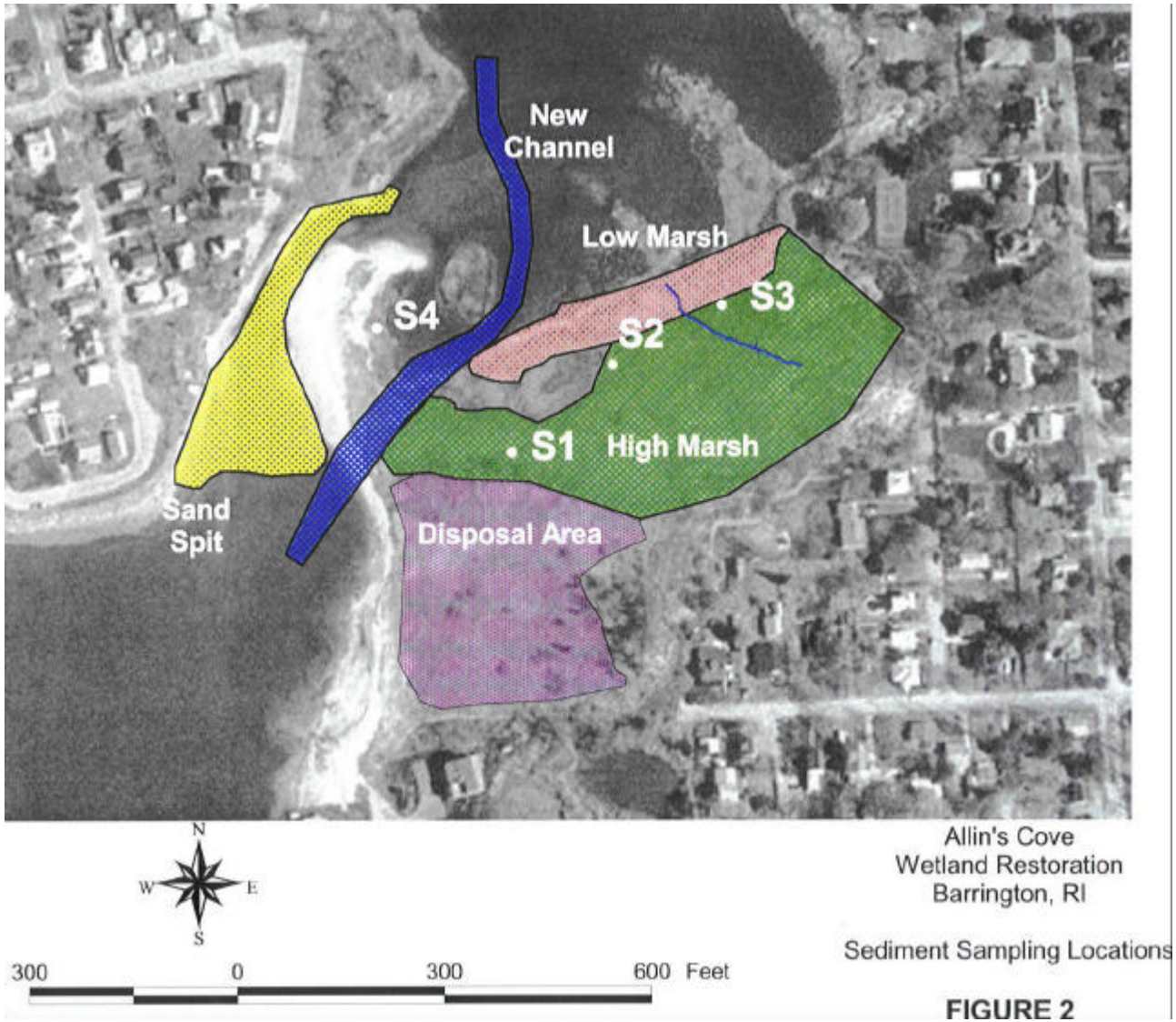

Allin's Cove
Allin's Cove (aka Drown Cove)
Wetlands Restoration
Barrington, RI
General Site Location Map
0.2 0 0.2 0.4 Miles
N
S
E
W
EAST PROVIDENCE
Bullock Pt
Bullock Cove
Richmond Pt
Primrose Hill
Peck Corner
Barrington College
HAINES MEMORIAL STATE PARK
Playground
Boat Ramp
Prince Pond
BARRINGTON
RIVER
PROVIDENCE RIVER

FIGURE 1



Allin's Cove
Wetland Restoration
Barrington, RI

Sediment Sampling Locations

FIGURE 2

Allin’s Cove 1938

Allin’s Cove 1997

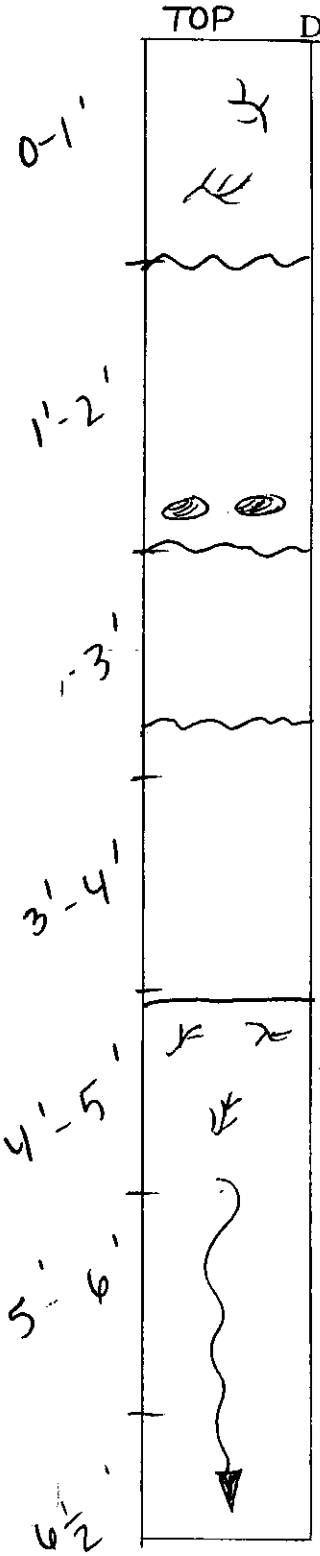
Figure 3

APPENDIX E

ATTACHMENT 1

CORE LOGS

Sediment Core Log
Project Name: USACE NAE – Allin's Cove
Project # G339663



Description:

0-1': top inch organic matter; sand, roots, some clay

1'-2': clay; silt; sand; shell hash interval ~ 1' 10"

3': sandy clay

3'-4': silty clay (uniform gray)

4' 1" – CONTACT BETWEEN FILL & NATIVE

4'-5': vegetation returns; roots

5'-6': strong H_2S smell; brown-to-grey clayey silt

CORE INFO:

Location: S-1
Allin's Cove

Sampling Site:

Core ID: S-1 (TOP)

Sampler Type: Vibra Core

Date/Time Collected: ① ~~5/30~~ 5/29/01 11:00

Of Core Secs:

Length of Core(s): ② ~~13.5 ft~~
surface to mid 0-6.5ft

Penetration: 16'

Recovery: 12' 11 3/4"

SAMPLE INFO:

Date Evaluated/Tech:

Sample ID/Length:
S-1: 0-1', 1-2', 2-3' - GS/TVS/Atterberg

S-1: 0-4.1' - bulk chem

Final Deposition: - GS/TOC - ARCHIVE

BATTELLE
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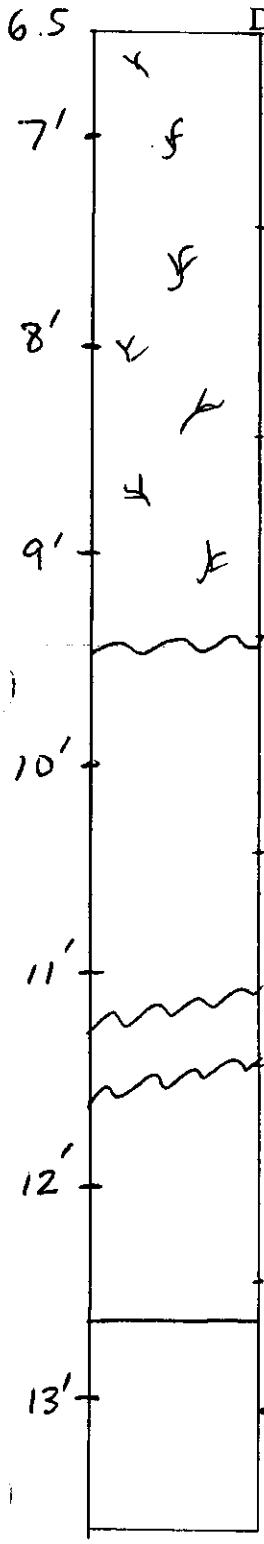
Sediment Core Log
Project Name: USACE NAE – Allin's Cove
Project # G339663



CORE INFO:

Location: S-1 ALLINS COVE

Sampling Site:

Core ID: S-1 (BOTTOM)

Sampler Type: Vibra Core

Date/Time Collected:

Of Core Secs:

Length of Core(s):

Penetration:

Recovery:

SAMPLE INFO:

Date Evaluated/Tech:

Sample ID/Length:

Final Deposition:

BATTELLE
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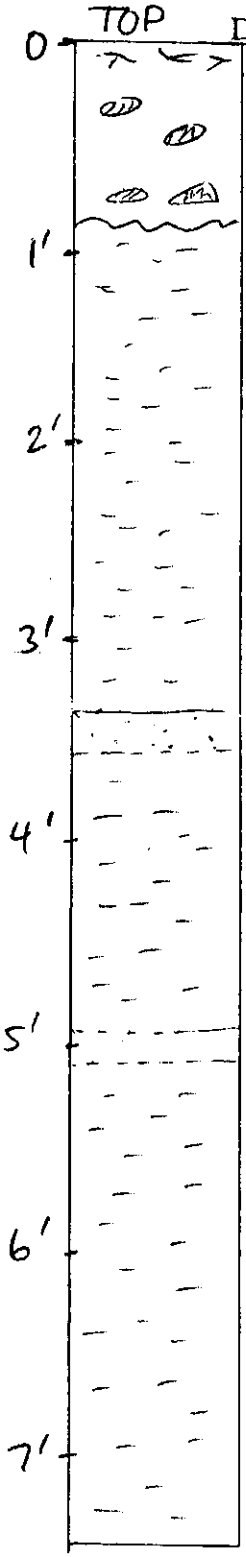
Sediment Core Log

Project Name: USACE NAE – Allin's Cove

Project # G339663



Description:

roots

sand - gray, shell frags
medium-to-coarse

0.8'

clay - gray, uniform texture

sandy interbed (3.5-3.65')

clay - gray, uniform texture

organic frag/brownish clay

clay - gray, uniform texture

7.3' END OF SEGMENT

CORE INFO:

Location: S-2
ALLIN'S COVE

Sampling Site:

Core ID: S-2 (TUP)

Sampler Type:

Date/Time Collected:

Of Core Secs: 2

Length of Core(s): (1) 7.3'
(2) 7.4'

Penetration:

Recovery:

SAMPLE INFO:

Date Evaluated/Tech:

Sample ID/Length:

S2 ~~S3~~ 0'-1', 1'-2', 2'-3' GS/TNS/Attebergs

S2 ~~S3~~ 0-5' - bulk chem

Final Deposition: - GS/TOC
- Archive

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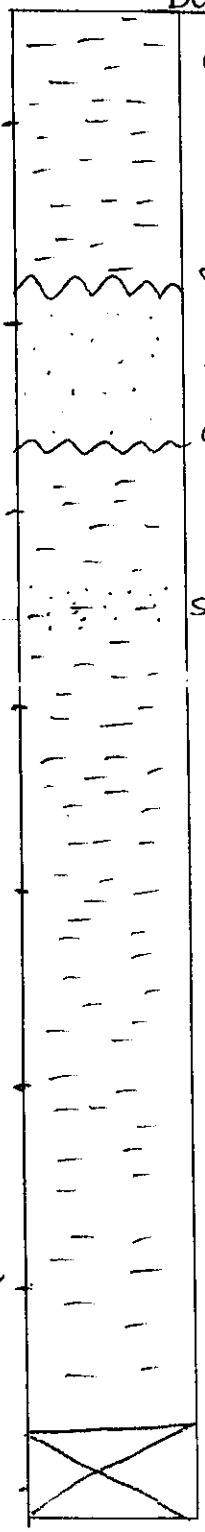
Sediment Core Log
Project Name: USACE NAE – Allin's Cove
Project # G339663



Description:

clay - gray, uniform texture

8.9' transitional

silty sand - gray, medium

9.6'

clay - gray, uniform texture

sandy - interbed (10.3 - 10.5')

clay - gray, uniform texture

14.7' - BOTTOM OF CORE

CORE INFO:

Location: S-2
ALLIN'S COVE

Sampling Site:

Core ID: S-2 (BOTTOM)

Sampler Type:

Date/Time Collected:

Of Core Secs: 2

Length of Core(s): (1) 7.3'
(2) 7.4'

Penetration:

Recovery:

SAMPLE INFO:

Date Evaluated/Tech:

Sample ID/Length:

Final Deposition:

BATTELLE
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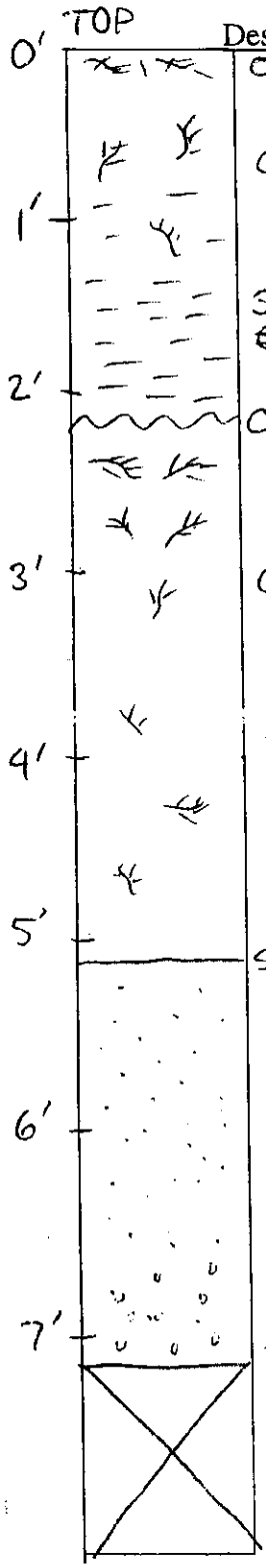
Sediment Core Log

Project Name: USACE NAE – Allin's Cove

Project # G339663



Description:

organic soil (0.0-0.2')

clayey silt - grey, abundant plant roots near top

silty clay ~~clayey silt~~ - grey (uniform text.)

CONTACT BETWEEN FILL AND NATIVE SEDIMENTS

clayey-silt - brown-to-grey, abundant plant fragments

strong H_2S smell

5.1'

sand - medium, grey, moderately sorted

increasing grain size w/ depth, transitional to coarse sand around 6.8'

7.1' BOTTOM OF SEGMENT 1

CORE INFO:

Location: S-3 Allin's Cove

Sampling Site:

Core ID: S-3 (TOP)

Sampler Type:

Date/Time Collected:

Of Core Secs: 2

Length of Core(s): (1) 7.1'
(2) 6.7'

Penetration:

Recovery:

SAMPLE INFO:

Date Evaluated/Tech:

Sample ID/Length:

S3 0'-1', 1'-2' GS/TVS/Atterberg

S3 0'-2' - bulk Chem.
- GS/TOC
- Archive
- GS/TOC QC

Final Deposition:

BATTELLE

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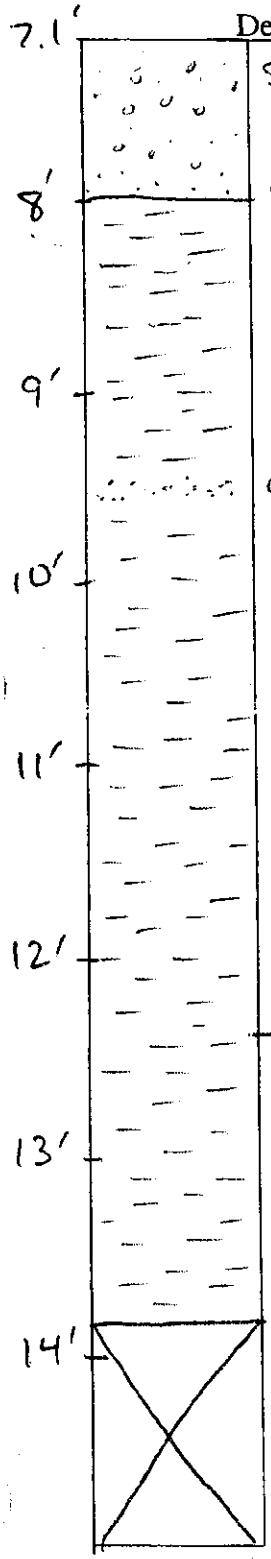
Sediment Core Log
Project Name: USACE NAE – Allin's Cove
Project # G339663



Description:

sand - course, gray, moderately sorted

8.0'

clay - gray, uniform texture very consistent

9.6' - sand stringer

12.4'

13.8' END OF CORE

CORE INFO:

Location: S-3
ALLIN'S COVE

Sampling Site:

Core ID: S-3 (BOTTOM)

Sampler Type:

Date/Time Collected:

Of Core Secs:

Length of Core(s):

Penetration:

Recovery:

SAMPLE INFO:

Date Evaluated/Tech:

Sample ID/Length:

Final Deposition:

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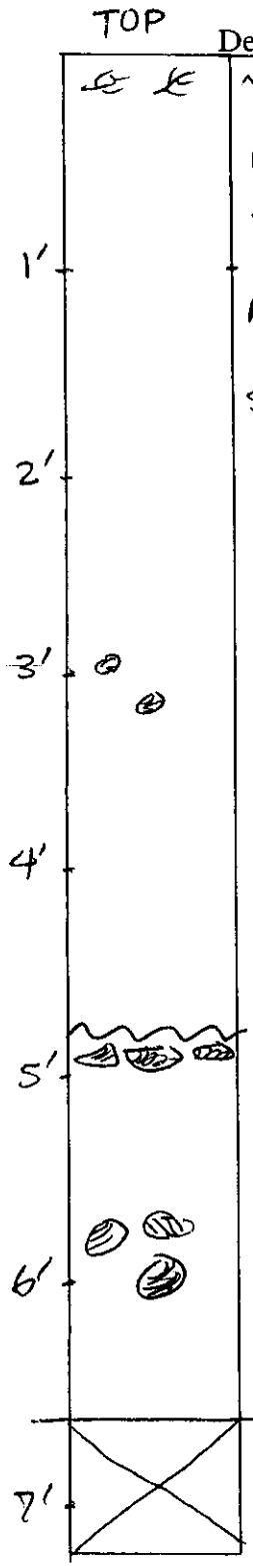
Sediment Core Log
Project Name: USACE NAE – Allin's Cove
Project # G339663



Description:

~4" plant debris/sand

brown, medium sand,

moderately sorted, rounded

shell fragments throughout

4.9'

dk. brown/black silty sand w/ shell frags.

decrease in black (organic) toward base

END OF CORE SEGMENT @ 6.64'

CORE INFO:

Location: _____

Sampling Site: _____

Core ID: S-4 (TOP)

Sampler Type: _____

Date/Time Collected: _____

Of Core Secs: _____

Length of Core(s): _____

Penetration: _____

Recovery: _____

SAMPLE INFO:

Date Evaluated/Tech: _____

Sample ID/Length:
S-4 0'-8.8' composite fr
GS/TVS/ Atterberg/
GS/TOC/ Bulk Chemistry

Final Deposition: - Duplicate QC

BATTELLE
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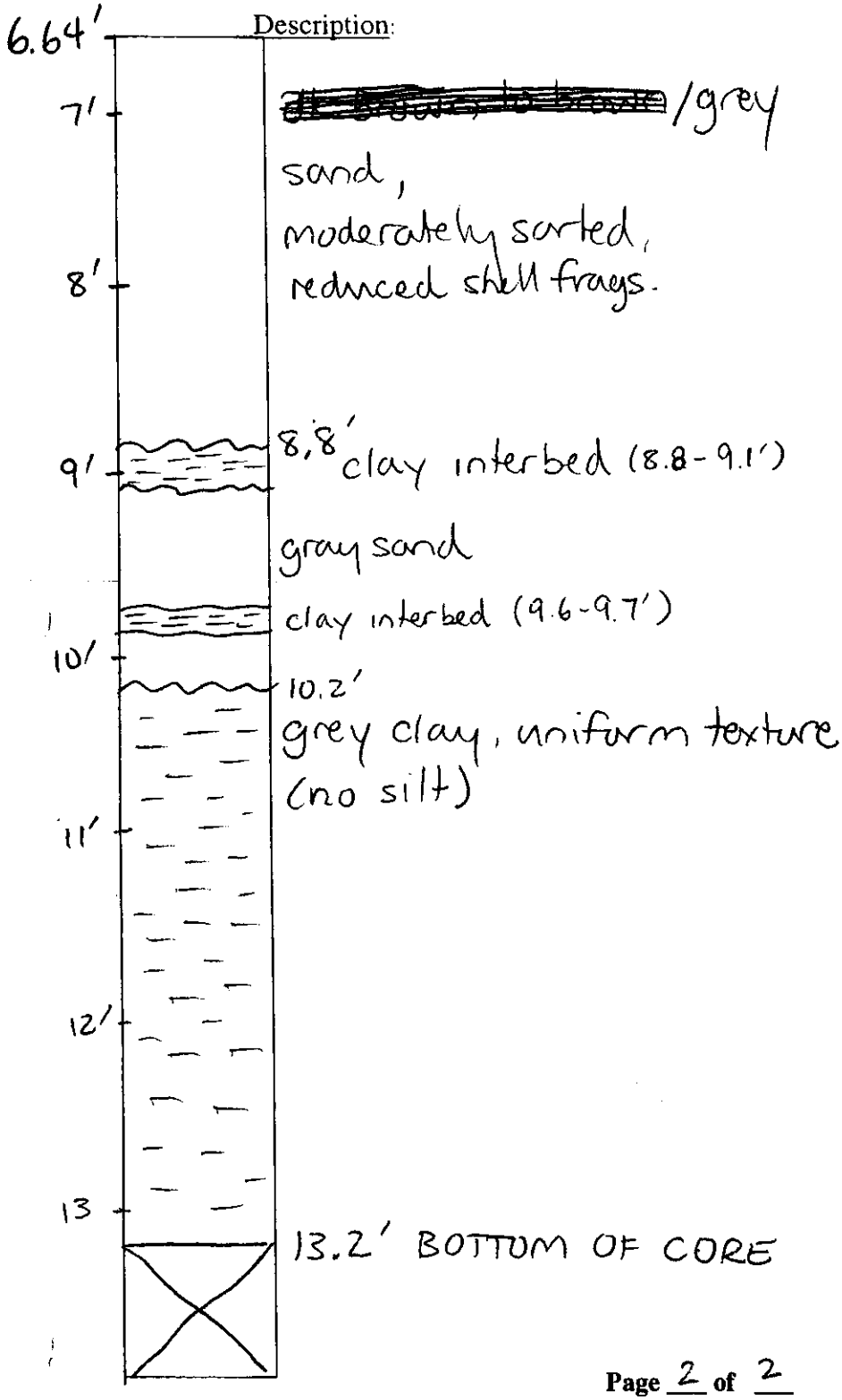
Sediment Core Log
Project Name: USACE NAE – Allin's Cove
Project # G339663



CORE INFO:

Location: S-4
ALLIN'S COVE

Sampling Site:

Core ID: S-4 (BOTTOM)

Sampler Type:

Date/Time Collected:

Of Core Secs: 2

Length of Core(s): TOP - 6.64'
BOTTOM -

Penetration:

Recovery:

SAMPLE INFO:

Date Evaluated/Tech:

Sample ID/Length:

Final Deposition:

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Coring Field Log
USACE NAE Project: Allin's Cove
Project # G339663-0001

ALLIN'S COVE

Sample ID:	Sampled by: RE
Site: S1	Date: 5-29-01 Time: 1100
Coordinates Latitude: 240609.3 Northing Longitude: 369749.4 Eastng	Location Method ✓ dGPS ___ Loran ___ Depth ___ Ranges/Bearing
Sea State: NA	Sampler Type: ✓ Vibra Core ___ Gravity Corer ___ Push Tube
Weather: Partly Cloudy	___ Water Sampler ___ Other (specify)
Sounding: NA	Reduced Sounding (MLW from chart):
No. of Attempts: 1	Penetration Depth: 16' Recovery Depth: 12' 11 3/4"
Material Description: Sand/Mud	Notes: Dry Area difficult Penetration

ALLIN'S COVE

Sample ID: ~~S2~~ Wet 5-29-01	Sampled by: RE
Site: S2	Date: 5-29-01 Time: 1245
Coordinates Latitude: 240667.7 N Longitude: 369671.2 E	Location Method ✓ dGPS ___ Loran ___ Depth ___ Ranges/Bearing
Sea State: NA	Sampler Type: ✓ Vibra Core ___ Gravity Corer ___ Push Tube
Weather: Partly Sunny	___ Water Sampler ___ Other (specify)
Sounding: NA	Reduced Sounding (MLW from chart):
No. of Attempts: 1	Penetration Depth: 16 Feet Recovery Depth: 14' 6.5
Material Description: Sand / Fine Sand	Notes: Closer to Water

Coring Field Log
USACE NAE Project: Allin's Cove
Project # G339663-0001

ALLIN'S COVE

Sample ID:	Sampled by: AR
Site: S3	Date: 5-29-01 Time: 1515
Coordinates Latitude: 240819.8 N Longitude: 370057.4 E	Location Method ✓ dGPS ___ Loran ___ Depth ___ Ranges/Bearing
Sea State: NA	Sampler Type: ✓ Vibra Core ___ Gravity Corer ___ Push Tube
Weather: Overcast	___ Water Sampler ___ Other (specify)
Sounding:	Reduced Sounding (MLW from chart):
No. of Attempts: 1	Penetration Depth: 16' Recovery Depth: 14' 7.5"
Material Description: Fragmites mat, Sand, Clay	Notes: deep in Fragmites Forest; Slow, difficult penetration through Root Mat; U-Bolt snapped on Vibracore

ALLIN'S COVE

Sample ID:	Sampled by: RM
Site: S4	Date: 5-29-01 Time: 1730
Coordinates Latitude: 240748.1 N Longitude: 369533.1 E	Location Method ✓ dGPS ___ Loran ___ Depth ___ Ranges/Bearing
Sea State:	Sampler Type: ✓ Vibra Core ___ Gravity Corer ___ Push Tube
Weather: Windy / overcast	___ Water Sampler ___ Other (specify)
Sounding:	Reduced Sounding (MLW from chart):
No. of Attempts: 1	Penetration Depth: 16 Ft. Recovery Depth: 13' 7"
Material Description: Sand / mud	Notes: difficult penetration through Sand difficult to Extract core from Sand

APPENDIX F

MCACES COST ESTIMATE

Allin's Cove Section 1135 Construction Costs			MCASES ESTIMATE March 2002 (see attached)	Alternative 1 No Action	Alternative 2 Channel and Sand Spit Realignment	Alternative 3 Restore Salt Marsh	Alternative 4 Restore Salt Marsh and Channel and Sand Spit Realignment
ITEM							
Sedimentation/erosion	1	LS	6,315	NA	6,315	6,315	6,315
Mob/demob	1	LS	34,860	NA	34,860	34,860	34,860
Excavate Marshland	8200	cyds	147,604	NA	-	147,604	147,604
Excavate Sand Source	3400	cyds	61,202	NA	61,202	-	61,202
Channel Dredging	2000	cyds	45,001	NA	45,001	-	45,001
Backfilling Marsh Land	8200	cyds	25,558	NA	-	25,558	25,558
Back filling Sand Spit	3400	cyds	16,956	NA	16,956	-	16,956
Backfilling other	890	cyds	6,234	NA	6,234	-	6,234
Vegetation - planting		LS	23,548	NA	-	23,548	23,548
Vegetation - removal		LS	10,799	NA	-	10,799	10,799
Basic Construction Cost			**378,077**	NA	**170,568**	**248,684**	**378,077**

Note: Basic construction Costs assumes 20 percent contingencies

ALLINS COVE RESTORATION
BARRINGTON, RI

Designed By: NAE-EP-D
Estimated By: NAW-EP-D-E

Prepared By: JOHN YEN

Preparation Date: 03/05/02
Effective Date of Pricing: 02/10/02

Sales Tax: 0.00%

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	QUANTY	UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT
5 MARSH RESTORATION PROJECT							
5.01 Erosion and Sedimentation							
5.01.01 Bale hay			1,071	214	44	1,330	
5.01.02 Silt fence			1,339	268	55	1,662	
5.01.07 Misc			2,678	536	110	3,324	
TOTAL Erosion and Sedimentation			5,089	1,018	209	6,315	
5.02 Vegetation							
5.02.01 Top Soil			11,607	2,321	477	14,405	
5.02.02 Seeding			173	35	7	215	
5.02.03 Bushes			7,194	1,439	296	8,929	
TOTAL Vegetation			18,974	3,795	779	23,548	
5.03 Demolition							
5.03.01 Vegetation Removal			4,669	934	192	5,795	
5.03.02 Disposal			2,189	438	90	2,717	
5.03.03 Herbicide			1,843	369	76	2,288	
TOTAL Demolition			8,701	1,740	357	10,799	
5.04 Excavation							
5.04.01 Marshland	8200.00	CY	118,932	23,786	4,886	147,604	18.00
5.04.02 Sand Source	3400.00	CY	49,313	9,863	2,026	61,202	18.00
5.04.03 Channel Dredging	2000.00	CY	36,260	7,252	1,490	45,001	22.50
TOTAL Excavation			204,505	40,901	8,401	253,807	
5.08 Backfill							
5.08.01 Marshland	8200.00	CY	20,594	4,119	846	25,558	3.12
5.08.02 Sand Pit	3400.00	CY	13,662	2,732	561	16,956	4.99
5.08.03 Beach Area	890.00	CY	5,023	1,005	206	6,234	7.00
TOTAL Backfill			39,278	7,856	1,614	48,748	
5.10 Mob/Demob							
5.10.01 Equipment			13,219	2,644	543	16,406	

		QUANTY	UOM	CONTRACT	CONTINGN	ESCALATN	TOTAL COST	UNIT
5.10.02	Personnel			13,167	2,633	541	16,341	
5.10.03	Facility			1,702	340	70	2,113	
	TOTAL Mob/Demob			28,088	5,618	1,154	34,860	
	TOTAL MARSH RESTORATION PROJECT			304,636	60,927	12,515	378,078	
	TOTAL ALLINS COVE RESTORATION	1.00	EA	304,636	60,927	12,515	378,078	378078

	QUANTY UOM	DIRECT	FIELD OH	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT
5 MARSH RESTORATION PROJECT								
5.01 Erosion and Sedimentation								
5.01.01 Bale hay		800	80	88	82	21	1,071	
5.01.02 Silt fence		1,000	100	110	103	26	1,339	
5.01.07 Misc		2,000	200	220	206	53	2,678	
TOTAL Erosion and Sedimentation		3,800	380	418	391	100	5,089	
5.02 Vegetation								
5.02.01 Top Soil		8,668	867	953	891	228	11,607	
5.02.02 Seeding		129	13	14	13	3	173	
5.02.03 Bushes		5,372	537	591	553	141	7,194	
TOTAL Vegetation		14,169	1,417	1,559	1,457	372	18,974	
5.03 Demolition								
5.03.01 Vegetation Removal		3,487	349	384	359	92	4,669	
5.03.02 Disposal		1,635	163	180	168	43	2,189	
5.03.03 Herbicide		1,376	138	151	142	36	1,843	
TOTAL Demolition		6,498	650	715	668	171	8,701	
5.04 Excavation								
5.04.01 Marshland	8200.00 CY	88,814	8,881	9,770	9,135	2,332	118,932	14.50
5.04.02 Sand Source	3400.00 CY	36,826	3,683	4,051	3,788	967	49,313	14.50
5.04.03 Channel Dredging	2000.00 CY	27,078	2,708	2,979	2,785	711	36,260	18.13
TOTAL Excavation		152,718	15,272	16,799	15,707	4,010	204,505	
5.08 Backfill								
5.08.01 Marshland	8200.00 CY	15,379	1,538	1,692	1,582	404	20,594	2.51
5.08.02 Sand Pit	3400.00 CY	10,202	1,020	1,122	1,049	268	13,662	4.02
5.08.03 Beach Area	890.00 CY	3,751	375	413	386	98	5,023	5.64
TOTAL Backfill		29,332	2,933	3,227	3,017	770	39,278	
5.10 Mob/Demob								
5.10.01 Equipment		9,871	987	1,086	1,015	259	13,219	

		QUANTY	UOM	DIRECT	FIELD OH	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT
5.10.02	Personnel			9,832	983	1,082	1,011	258	13,167	
5.10.03	Facility			1,271	127	140	131	33	1,702	
	TOTAL Mob/Demob			20,975	2,098	2,307	2,157	551	28,088	
	TOTAL MARSH RESTORATION PROJECT			227,492	22,749	25,024	23,398	5,973	304,636	
	TOTAL ALLINS COVE RESTORATION	1.00	EA	227,492	22,749	25,024	23,398	5,973	304,636	304636
	Contingency								60,927	
	SUBTOTAL								365,563	
	Escalation								12,515	
	TOTAL INCL OWNER COSTS								378,078	

	QUANTY UOM	LABOR	EQUIPMNT	MATERIAL	OTHER	TOTAL COST	UNIT
5 MARSH RESTORATION PROJECT							
5.01 Erosion and Sedimentation							
5.01.01 Bale hay		0	0	800	0	800	
5.01.02 Silt fence		0	0	1,000	0	1,000	
5.01.07 Misc		0	0	2,000	0	2,000	
TOTAL Erosion and Sedimentation		0	0	3,800	0	3,800	
5.02 Vegetation							
5.02.01 Top Soil		1,054	613	7,000	0	8,668	
5.02.02 Seeding		5	3	121	0	129	
5.02.03 Bushes		2,175	197	3,000	0	5,372	
TOTAL Vegetation		3,235	813	10,121	0	14,169	
5.03 Demolition							
5.03.01 Vegetation Removal		2,599	888	0	0	3,487	
5.03.02 Disposal		1,154	481	0	0	1,635	
5.03.03 Herbicide		1,279	97	0	0	1,376	
TOTAL Demolition		5,032	1,466	0	0	6,498	
5.04 Excavation							
5.04.01 Marshland	8200.00 CY	46,992	41,822	0	0	88,814	10.83
5.04.02 Sand Source	3400.00 CY	19,485	17,341	0	0	36,826	10.83
5.04.03 Channel Dredging	2000.00 CY	14,327	12,751	0	0	27,078	13.54
TOTAL Excavation		80,804	71,914	0	0	152,718	
5.08 Backfill							
5.08.01 Marshland	8200.00 CY	8,646	6,733	0	0	15,379	1.88
5.08.02 Sand Pit	3400.00 CY	5,736	4,467	0	0	10,202	3.00
5.08.03 Beach Area	890.00 CY	2,109	1,642	0	0	3,751	4.21
TOTAL Backfill		16,490	12,842	0	0	29,332	
5.10 Mob/Demob							
5.10.01 Equipment		0	9,871	0	0	9,871	

		QUANTY	UOM	LABOR	EQUIPMNT	MATERIAL	OTHER	TOTAL COST	UNIT
5.10.02	Personnel			9,832	0	0	0	9,832	
5.10.03	Facility			0	0	1,271	0	1,271	
	TOTAL Mob/Demob			9,832	9,871	1,271	0	20,975	
	TOTAL MARSH RESTORATION PROJECT			115,394	96,906	15,192	0	227,492	
	TOTAL ALLINS COVE RESTORATION	1.00	EA	115,394	96,906	15,192	0	227,492	227492
	Prime Contractor's Field Overhead							22,749	
	SUBTOTAL							250,241	
	Prime's Home Office Expense							25,024	
	SUBTOTAL							275,265	
	Prime Contractor's Profit							23,398	
	SUBTOTAL							298,663	
	Prime Contractor's Bond							5,973	
	TOTAL INCL INDIRECTS							304,636	
	Contingency							60,927	
	SUBTOTAL							365,563	
	Escalation							12,515	
	TOTAL INCL OWNER COSTS							378,078	

5.01. Erosion and Sedimentation			QUANTY	UOM	LABOR	EQUIPMNT	MATERIAL	OTHER	TOTAL COST
5.01.01. Bale hay									
	USR AA <	> Bale hay	100.00	EA	0.00 0	0.00 0	8.00 800	0.00 0	8.00 800
		TOTAL Bale hay			0	0	800	0	800
5.01.02. Silt fence									
	USR AA <	> Silt fence	200.00	LF	0.00 0	0.00 0	5.00 1,000	0.00 0	5.00 1,000
		TOTAL Silt fence			0	0	1,000	0	1,000
5.01.07. Misc									
	USR AA <	> Misc	1.00	LS	0.00 0	0.00 0	2000.00 2,000	0.00 0	2000.00 2,000
		TOTAL Misc			0	0	2,000	0	2,000
		TOTAL Erosion and Sedimentation			0	0	3,800	0	3,800

5.02. Vegetation			QUANTY UOM	LABOR	EQUIPMNT	MATERIAL	OTHER	TOTAL COST
5.02.01. Top Soil								
	B MIL AA <02241 0705 >	Loam or topsoil, furnish & place, imported, 4" deep		4.22	2.45	28.00	0.00	34.67
			250.00 CY	1,054	613	7,000	0	8,668
	TOTAL	Top Soil		1,054	613	7,000	0	8,668
5.02.02. Seeding								
	MIL AA <02932 0300 >	Seeding, athletic field mix, mechanical seeding, 50#/MSY		2.74	1.52	60.39	0.00	64.65
			2.00 CSY	5	3	121	0	129
	TOTAL	Seeding		5	3	121	0	129
5.02.03. Bushes								
	M MIL AA <02952 0010 >	Planting, moving shrubs on site, 12" ball		21.75	1.97	30.00	0.00	53.72
			100.00 EA	2,175	197	3,000	0	5,372
	TOTAL	Bushes		2,175	197	3,000	0	5,372
	TOTAL	Vegetation		3,235	813	10,121	0	14,169

5.03. Demolition			QUANTY	UOM	LABOR	EQUIPMNT	MATERIAL	OTHER	TOTAL COST
5.03.01. Vegetation Removal									
5.03.01. 5. 4 laborer + Loader 950-E (CODL2)									
	MIL AA <	> LOADER, F/E, WHEEL, 3.25CY (2.5M3), 4WD	20.00	HR	0.00 0	44.38 888	0.00 0	0.00 0	44.38 888
	MIL AA <	> Eq Oper, Light	20.00	HR	28.51 570	0.00 0	0.00 0	0.00 0	28.51 570
	MIL AA <	> Laborer (Semi-Skilled)	80.00	HR	23.81 1,905	0.00 0	0.00 0	0.00 0	23.81 1,905
	MIL AA <	> Laborer (Semi-Skilled)	5.00	HR	24.81 124	0.00 0	0.00 0	0.00 0	24.81 124
		TOTAL 4 laborer + Loader 950-E			2,599	888	0	0	3,487
		TOTAL Vegetation Removal			2,599	888	0	0	3,487
5.03.02. Disposal									
5.03.02. 5. 4 laborer + Loader 950-E (CODL2)									
	MIL AA <	> LOADER, F/E, WHEEL, 3.25CY (2.5M3), 4WD	5.00	HR	0.00 0	44.38 222	0.00 0	0.00 0	44.38 222
	MIL AA <	> Eq Oper, Light	5.00	HR	28.51 143	0.00 0	0.00 0	0.00 0	28.51 143
	MIL AA <	> Laborer (Semi-Skilled)	20.00	HR	23.81 476	0.00 0	0.00 0	0.00 0	23.81 476
	MIL AA <	> Laborer (Semi-Skilled)	1.25	HR	24.81 31	0.00 0	0.00 0	0.00 0	24.81 31
		TOTAL 4 laborer + Loader 950-E			650	222	0	0	872
5.03.02.10. 1 trkdvrhv + 1 truck, dump, 12 C (COEIB17)									
	MIL AA <	> Laborers, (Semi-Skilled)	10.00	HR	23.81 238	0.00 0	0.00 0	0.00 0	23.81 238
	MIL AA <	> Equip. Operators, Light	5.00	HR	28.51 143	0.00 0	0.00 0	0.00 0	28.51 143
	MIL AA <	> Truck Drivers, Heavy	5.00	HR	24.66 123	0.00 0	0.00 0	0.00 0	24.66 123

5.03. Demolition			QUANTY	UOM	LABOR	EQUIPMNT	MATERIAL	OTHER	TOTAL COST
	GEN AA <	> LOADER/BCK-HOE,WH, 0.80CY(0.6M3) F/E BKT, 9.8'(3.0M)DEPTH OF HOE	5.00	HR	0.00 0	12.96 65	0.00 0	0.00 0	12.96 65
	GEN AA <	> TRUCK, HWY 45,000 (20,412KG)GVW 6X4, 3 AXLE, (ADD ACCESSORIES)	5.00	HR	0.00 0	37.22 186	0.00 0	0.00 0	37.22 186
	GEN AA <	> REAR DUMP BODY, 12CY (9.2M3) (ADD 40,000-45,000GVW TRK)	5.00	HR	0.00 0	1.63 8	0.00 0	0.00 0	1.63 8
		TOTAL 1 trkdvrhv + 1 truck, dump, 12 C			504	259	0	0	763
		TOTAL Disposal			1,154	481	0	0	1,635
5.03.03. Herbicide									
5.03.03. 5. 4 laborer + 1 Air Compressor, 1 (CLABB)									
	MIL AA <	> AIR COMPRESSOR, 250CFM, 100 PSI (7CMM, 689 KPA)(W/O HOSES&ATCH)	10.00	HR	0.00 0	9.39 94	0.00 0	0.00 0	9.39 94
	MIL AA <	> Carpenters	10.00	HR	31.68 317	0.00 0	0.00 0	0.00 0	31.68 317
	MIL AA <	> Laborers, (Semi-Skilled)	10.00	HR	24.81 248	0.00 0	0.00 0	0.00 0	24.81 248
	MIL AA <	> Laborers, (Semi-Skilled)	30.00	HR	23.81 714	0.00 0	0.00 0	0.00 0	23.81 714
	MIL AA <	> AIR HOSE,1.0"X 100'L (25MMX 31M) HARDROCK (USE AS DRILLING ACCES)	10.00	HR	0.00 0	0.33 3	0.00 0	0.00 0	0.33 3
		TOTAL 4 laborer + 1 Air Compressor, 1			1,279	97	0	0	1,376
		TOTAL Herbicide			1,279	97	0	0	1,376
		TOTAL Demolition			5,032	1,466	0	0	6,498

5.04. Excavation			QUANTY UOM	LABOR	EQUIPMNT	MATERIAL	OTHER	TOTAL COST
5.04.01. Marshland								
5.04.01.10. 1 eqoprcrn + 1 hydr excavator, c (CODEB12B)								
	MIL AA <	> Equip. Operators, Crane/Shovel		32.62	0.00	0.00	0.00	32.62
			820.00 HR	26,747	0	0	0	26,747
	MIL AA <	> Equip. Operators, Oilers		24.69	0.00	0.00	0.00	24.69
			820.00 HR	20,245	0	0	0	20,245
	GEN AA <	> HYD EXCV, CRAWLER, 55,000LBS,		0.00	51.00	0.00	0.00	51.00
		(24,948KG) 1.50CY, (1.2M3) BKT	820.00 HR	0	41,822	0	0	41,822
		TOTAL 1 eqoprcrn + 1 hydr excavator, c		46,992	41,822	0	0	88,814
		TOTAL Marshland		46,992	41,822	0	0	88,814
5.04.02. Sand Source								
5.04.02. 5. 1 eqoprcrn + 1 hydr excavator, c (CODEB12B)								
	MIL AA <	> Equip. Operators, Crane/Shovel		32.62	0.00	0.00	0.00	32.62
			340.00 HR	11,090	0	0	0	11,090
	MIL AA <	> Equip. Operators, Oilers		24.69	0.00	0.00	0.00	24.69
			340.00 HR	8,394	0	0	0	8,394
	GEN AA <	> HYD EXCV, CRAWLER, 55,000LBS,		0.00	51.00	0.00	0.00	51.00
		(24,948KG) 1.50CY, (1.2M3) BKT	340.00 HR	0	17,341	0	0	17,341
		TOTAL 1 eqoprcrn + 1 hydr excavator, c		19,485	17,341	0	0	36,826
		TOTAL Sand Source		19,485	17,341	0	0	36,826
5.04.03. Channel Dredging								
5.04.03. 5. 1 eqoprcrn + 1 hydr excavator, c (CODEB12B)								
	MIL AA <	> Equip. Operators, Crane/Shovel		32.62	0.00	0.00	0.00	32.62
			250.00 HR	8,155	0	0	0	8,155
	MIL AA <	> Equip. Operators, Oilers		24.69	0.00	0.00	0.00	24.69
			250.00 HR	6,172	0	0	0	6,172
	GEN AA <	> HYD EXCV, CRAWLER, 55,000LBS,		0.00	51.00	0.00	0.00	51.00
		(24,948KG) 1.50CY, (1.2M3) BKT	250.00 HR	0	12,751	0	0	12,751

5.04. Excavation	QUANTY	UOM	LABOR	EQUIPMNT	MATERIAL	OTHER	TOTAL COST
TOTAL 1 eqoprcrn + 1 hydr excavator, c			14,327	12,751	0	0	27,078
TOTAL Channel Dredging			14,327	12,751	0	0	27,078
TOTAL Excavation			80,804	71,914	0	0	152,718

5.08. Backfill			QUANTY UOM	LABOR	EQUIPMNT	MATERIAL	OTHER	TOTAL COST
5.08.01. Marshland								
5.08.01. 5. 1 eqoprmed + 1 loader, F/E, craw (CODFB10N)								
	MIL AA <	> Equip. Operators, Medium		30.27	0.00	0.00	0.00	30.27
			205.00 HR	6,205	0	0	0	6,205
	MIL AA <	> Laborers, (Semi-Skilled)		23.81	0.00	0.00	0.00	23.81
			102.50 HR	2,441	0	0	0	2,441
	GEN AA <	> LOADER, F/E, CRWLR, 1.50CY (1.2M3)		0.00	32.84	0.00	0.00	32.84
			205.00 HR	0	6,733	0	0	6,733
		TOTAL 1 eqoprmed + 1 loader, F/E, craw		8,646	6,733	0	0	15,379
		TOTAL Marshland		8,646	6,733	0	0	15,379
5.08.02. Sand Pit								
5.08.02. 5. 1 eqoprmed + 1 loader, F/E, craw (CODFB10N)								
	MIL AA <	> Equip. Operators, Medium		30.27	0.00	0.00	0.00	30.27
			136.00 HR	4,117	0	0	0	4,117
	MIL AA <	> Laborers, (Semi-Skilled)		23.81	0.00	0.00	0.00	23.81
			68.00 HR	1,619	0	0	0	1,619
	GEN AA <	> LOADER, F/E, CRWLR, 1.50CY (1.2M3)		0.00	32.84	0.00	0.00	32.84
			136.00 HR	0	4,467	0	0	4,467
		TOTAL 1 eqoprmed + 1 loader, F/E, craw		5,736	4,467	0	0	10,202
		TOTAL Sand Pit		5,736	4,467	0	0	10,202
5.08.03. Beach Area								
5.08.03. 5. 1 eqoprmed + 1 loader, F/E, craw (CODFB10N)								
	MIL AA <	> Equip. Operators, Medium		30.27	0.00	0.00	0.00	30.27
			50.00 HR	1,513	0	0	0	1,513
	MIL AA <	> Laborers, (Semi-Skilled)		23.81	0.00	0.00	0.00	23.81
			25.00 HR	595	0	0	0	595
	GEN AA <	> LOADER, F/E, CRWLR, 1.50CY (1.2M3)		0.00	32.84	0.00	0.00	32.84
			50.00 HR	0	1,642	0	0	1,642

5.08. Backfill	QUANTY UOM	LABOR	EQUIPMNT	MATERIAL	OTHER	TOTAL COST
TOTAL 1 eqoprmed + 1 loader, F/E, craw		2,109	1,642	0	0	3,751
TOTAL Beach Area		2,109	1,642	0	0	3,751
TOTAL Backfill		16,490	12,842	0	0	29,332

5.10. Mob/Demob			QUANTY	UOM	LABOR	EQUIPMNT	MATERIAL	OTHER	TOTAL COST
5.10.01. Equipment									
	MAP AA <	> AIR COMPR, 720 CFM, 300 PSI (ADD HOSES & ATTACHMENTS)	40.00	HR	0.00 0	33.34 1,334	0.00 0	0.00 0	33.34 1,334
	MIL AA <	> GENERATOR, 165 KW, 240/480V, 60 HZ, SKID MOUNTED	40.00	HR	0.00 0	17.33 693	0.00 0	0.00 0	17.33 693
	MAP AA <	> BLADE, ANGLE, HYDR, D-4 (ADD D-4 TRACTOR)	40.00	HR	0.00 0	2.56 102	0.00 0	0.00 0	2.56 102
	MAP AA <	> REAR DUMP BODY, 16-23.5 CY (ADD 36,000 GVW TRUCK)	40.00	HR	0.00 0	2.13 85	0.00 0	0.00 0	2.13 85
	UPB AA <	> TRK,HWY, 46,000 GVW, 6X4, 3 AXLE	40.00	HR	0.00 0	35.40 1,416	0.00 0	0.00 0	35.40 1,416
	MIL AA <	> COMPACTOR, VIBROPLATE,14.2"X21.5	40.00	HR	0.00 0	1.45 58	0.00 0	0.00 0	1.45 58
	EP AA <	> DOZER,WH, 824-G,W/STRAIGHT BLADE	40.00	HR	0.00 0	71.22 2,849	0.00 0	0.00 0	71.22 2,849
	EP AA <	> HYD EXCAV,TRK MTD,0.50 CYBKT,4X4	40.00	HR	0.00 0	38.98 1,559	0.00 0	0.00 0	38.98 1,559
	MAP AA <	> LDR,FE, WH, 3.25 CY, ARTIC, 950F	40.00	HR	0.00 0	44.38 1,775	0.00 0	0.00 0	44.38 1,775
		TOTAL Equipment			0	9,871	0	0	9,871
5.10.02. Personnel									
	MIL AA <	> Outside Carpenters	40.00	HR	42.81 1,713	0.00 0	0.00 0	0.00 0	42.81 1,713
	MIL AA <	> Outside Equip. Operators, Heavy	40.00	HR	42.00 1,680	0.00 0	0.00 0	0.00 0	42.00 1,680
	MIL AA <	> Outside Equip. Oilers	40.00	HR	39.53 1,581	0.00 0	0.00 0	0.00 0	39.53 1,581
	MIL AA <	> Outside Truck Drivers, Heavy	40.00	HR	38.44 1,537	0.00 0	0.00 0	0.00 0	38.44 1,537
	MIL AA <	> Outside Laborers, (Semi-Skilled)	80.00	HR	41.51 3,321	0.00 0	0.00 0	0.00 0	41.51 3,321

5.10. Mob/Demob			QUANTY UOM	LABOR	EQUIPMNT	MATERIAL	OTHER	TOTAL COST
		TOTAL Personnel		9,832	0	0	0	9,832
5.10.03. Facility								
M AF	AA <01594 0550 >	Office trailer, rent per month, furnished, no hookups, 50' x 12'	2.00 MO	0.00 0	0.00 0	500.00 1,000	0.00 0	500.00 1,000
AF	AA <01594 0700 >	Office trailer, for AC, rent per month, add	2.00 MO	0.00 0	0.00 0	35.67 71	0.00 0	35.67 71
M AF	AA <01594 1400 >	Toilet, portable chemical, rent per month	2.00 EA	0.00 0	0.00 0	100.00 200	0.00 0	100.00 200
		TOTAL Facility		0	0	1,271	0	1,271
		TOTAL Mob/Demob		9,832	9,871	1,271	0	20,975
		TOTAL MARSH RESTORATION PROJECT		115,394	96,906	15,192	0	227,492
		TOTAL ALLINS COVE RESTORATION		115,394	96,906	15,192	0	227,492

APPENDIX G

REAL ESTATE REPORT

US Army Corps
of Engineers ®

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REAL ESTATE PLANNING REPORT
ALLIN'S COVE
COASTAL WETLAND ECOSYSTEM RESTORATION
BARRINGTON, RHODE ISLAND

PREPARED BY:

A. MARY DUNN
Staff Appraiser

APPROVED BY:

JAMES F. LEARY
Team Leader

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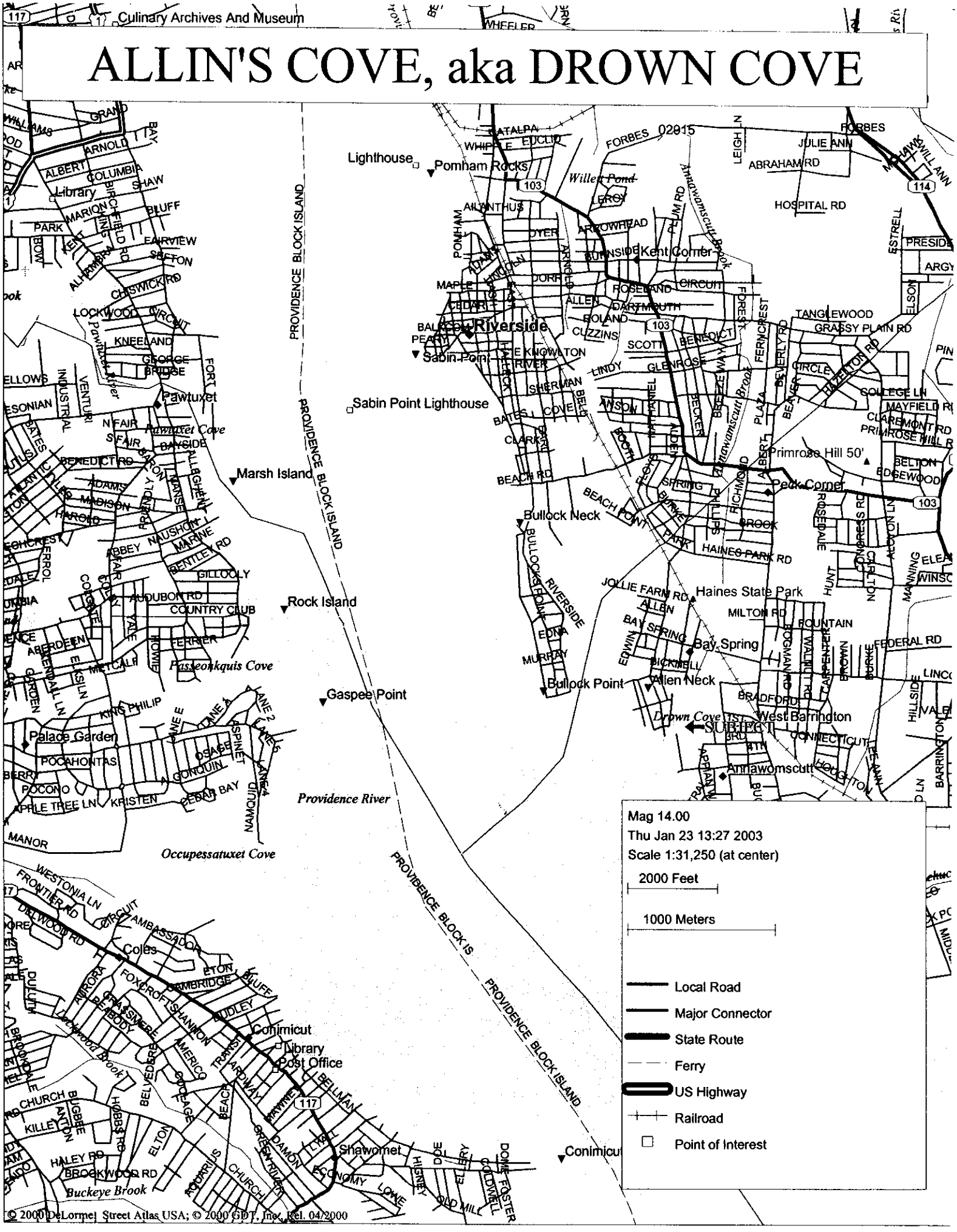
EXHIBITS:

Map of Disposal Area 5 for Bullock's Cove	Exhibit A
Proposed Site Plan	Exhibit B
Assessment of Non-Federal Sponsor's R.E. Acquisition Capability	Exhibit C

ALLIN'S COVE, aka DROWN COVE



REAL ESTATE PLAN
FOR ALLIN'S COVE
COASTAL WETLAND ECOSYSTEM RESTORATION
BARRINGTON, RHODE ISLAND

1. Authority: Authorization for this project is Section 1135 of the Water Resources Development Act of 1996. The objective of Section 1135 projects is restoring degraded ecosystem structure, function, and dynamic processes to a less degraded, more natural condition, which will involve consideration of the ecosystem's natural integrity, productivity, stability and biological diversity.

2. Purpose: The purpose of this report is to provide a preliminary estimate of the real estate costs for restoring the degraded coastal wetland at the mouth of Allin's Cove embayment and stop erosion of the shoreline and wetland along Byway Road.

3. Inspection of the Real Estate: The property was inspected in the field on 26 June 2001 and again on 30 October 2001 by A. Mary Dunn, Staff appraiser, U.S Army Corps of Engineers, New England District, Real Estate Division.

4. Area Data: The Allin's Cove (also known as Drown Cove) Coastal Wetland Ecosystem Restoration project is located in Barrington, Rhode Island, on the eastern shore of Narraganset Bay approximately ten miles southeast of Providence, the State capital. Allin's Cove is on the east side of the Providence River just south of Bullock Cove. It is approximately three-quarters of a mile above the head of Narragansett Bay, 5.5 miles northwest of the entrance to Warren River, and 4.5 miles south of Providence Harbor.

Barrington is located on the Massachusetts state line, bordering the Massachusetts towns of Swansea and Seekonk. Originally a part of the Plymouth Colony, Barrington became part of Rhode Island in the eighteenth century. Prior to World War II, Barrington was mostly a farming community with some seasonal waterfront summer cottages and a few industries such as an artificial leather manufacturing plant, a lace factory (currently being converted into housing for the elderly), and brick works. Today, it is a waterfront bedroom community of approximately 16,000 residents (6,000 households) whose reputation for excellent schools attracts new residents to the community.

5. Site Description: Allin's Cove used to be a wide tidal bay with small islands of salt marsh grasses and channel/ponded areas that were navigable by small boat at high tide. The shore was surrounded by salt marsh grasses providing a rich marshland for plant and marine life. In the late 1950's, during improvement dredging of Bullocks Cove navigation channel and basins, the Corps used the area at the mouth of Allin's Cove as a material disposal site. As a result of the Corps placing the dredge fill on the southeast portion of Allin's Cove, about 8-to-11 acres of

open water and marshland were filled in. The Cove and wetland area no longer function as a high value coastal ecosystem. Existing site elevations in the fill place it above the normal tide range. The filled area has been converted to upland habitat and *Phragmites* marsh (there is a fringing saltmarsh *(Spartina alterniflora)* along the northern end of the fill area where elevations are lower. The presence of the *Spartina* marsh indicates that a successful wetland restoration project is possible with re-grading. A sand spit (about 800 feet in length) runs north from the edge of the existing upland habitat to the current inlet channel. The spit has migrated to the north and caused the inlet channel to the cove to move to the north as well.

The Allin's Cove embayment area encompasses about 21 acres including the 8-to11 acre fill area utilized during the Bullock's Cove Project in 1957, delineated on the September 1958 Corps plan, labeled Spoil Area 5 (copy attached as Exhibit A). Besides the loss of the existing coastal wetland habitat , the filling also resulted in narrowing of the existing tidal inlet to the embayment and an increase in velocities through the narrowed inlet. This has caused erosion of approximately 150 linear feet of the shoreline and wetland and the road embankment along Byway Road (the shoreline is estimated to be eroding at the rate of about one foot per year). The Allin's Cove sand spit will also be excavated to realign the tidal inlet and the material used to create a new sand spit at the edge of the Cove, along Byway Road, see map attached as Exhibit B.

6. Views of Sponsors: The State of Rhode Island Resource Coastal Management Council (RI CRMC) and the town of Barrington strongly support the project. Also, the Allin's Cove Neighborhood Coalition, the Barrington Land Conservation Trust, and the Barrington Conservation Commission, and Save the Bay support this project.

7. Existing Government Interests and Rights: Section III of the Act of Congress approved 8 July 1958 (PL 85-500) authorized the protection, re-alteration, reconstruction, relocation or replacement of municipally-owned facilities. Preliminary inspection of the property area indicated no Federal projects or Federally-owned land is included within the footprint of the project.

8. Protection and Enhancement of Cultural Environment: There are no local and State owned or controlled property of historical significance in the project area.

9. Endangered Species: No Federally listed, threatened or endangered species are known to occur in the project area.

10. Navigational Servitude: Although Navigational Servitude may not apply (the Providence River is a navigable body of water and Allin's Cove is a tidal bay), the State of Rhode Island is the local sponsor and the owner of the lands below normal high water. They will provide all the lands required for project purposes including the land below the normal high water mark.

11. Administration: The local sponsor is required to furnish all lands, easements, rights of way and damages to accommodate construction, operation and maintenance of the project and to provide all necessary relocations. The sponsor will be required to document its ownership of the project real estate requirements and must provide an Authorization of Entry in support of project construction. The local sponsor supports the project and has been advised that the requirements of PL91-646 must be followed in the acquisition of real estate for project purposes and has also been apprised of Corps acquisition policies and procedures, LERRD crediting procedures, and HTRW responsibilities for land acquisition.

An Assessment of Non-Federal sponsor's Capability of Real Estate Acquisition is enclosed as Exhibit C.

12. Alternatives: Several alternatives were considered during the plan formulation.

Alternative 1. No Action Alternative/Future Without Project Conditions: Evaluation of a No Action Alternative is a requirement of the National Environmental Policy Act (NEPA) and Corps of Engineers policy. It allows the project team to make its decisions considering likely future conditions without the project. The No Action Alternative involves no improvements to the site.

Under the No Action Alternative, the salt marsh areas of Allin's Cove would remain dominated by *Phragmites australis* and continue to be poor quality habitat. Additionally, the erosion of the western bank of the inlet channel would continue. This erosion will eventually undercut the existing banks and degrade the roads and infrastructure located along the western portion of the Cove and result in loss of wetland in the area.

Alternative 2. Channel and sand spit realignment: Alternative 2 addresses the erosion along the western portion of the Cove. This alternative proposes the inlet channel be realigned to the southeast and 1 acre of beach strand habitat (i.e., sand spit) would be relocated to the northwest to alleviate erosion conditions along the western portion of the Cove. This would also protect approximately 0.7 acres of existing salt marsh on the western side.

Alternative 3. Marsh Restoration: Alternative 3 involves excavating and grading the *Phragmites* dominated marsh along the eastern portion of Allin's Cove to elevations appropriate for *Spartina* spp. marsh and leaving a 50-foot buffer of *Phragmites* along the border of the project. Approximately 3.6 acres of *Spartina* marsh (2.6 acres of high marsh and 1 acre of low marsh) would be created and approximately 8,200 cubic yards of material would be placed upon 2 acres of onsite upland area for disposal.

Alternative 4. Marsh Restoration and Channel and sand spit alignment: Alternative 4 involves excavating and grading the *Phragmites* dominated marsh along the eastern portion of Allin's Cove to elevations appropriate for *Spartina* spp. marsh and leaving a 50-foot buffer of *Phragmites* along the border of the project. Approximately 3.6 acres of *Spartina* marsh (2.6 acres of high marsh and 1 acres of low marsh) would be created and approximately 8,200 cubic

yards of material would be placed upon 2 acres of onsite upland area for disposal. Additionally, the inlet channel would be realigned to the southeast and 1 acre of beach strand habitat (i.e., sand spit) would be relocated to the northwest to alleviate erosion conditions along the western part of the cove. This would also protect about 0.7 acres of existing salt marsh on the western side.

Preferred alternative - After consideration and evaluation of the alternatives, Alternative 4 was selected as the preferred alternative. This alternative both restores the marsh area and alleviates erosion conditions along the western side of the marsh.

It is believed that the shoreline/embankment erosion problem can be corrected by placing new material and excavated material to widen and stabilize the eroding coastal shoreline along Byway Road. The proposed project would potentially restore some of the area to an elevation suitable to encourage and maintain the growth of salt marsh vegetation;; thus, approximately 4.3 acres of degraded habitat will be returned to a healthy coastal marsh ecosystem.

13. Outstanding Conditions: There are no known mineral deposits or timber in the project area nor is there any known present or anticipated mineral activity in the vicinity of the project which could affect operations. No non-standard estates have been identified. An Environmental Assessment and a Finding of No Significant Impact will be prepared and will be available to the public.

The wetland ecosystem restoration of Allin's Cove will enhance the fish and wildlife value of nearby habitats and increase the quantity and quality of estuarine habitat in the vicinity. Salt marshes and salt ponds provide essential habitat for migratory birds (e.g., sharp-tailed sparrows) and estuarine fish (e.g., winter flounder). About 150 linear feet of the shoreline and road embankment at Byway Road will be stabilized. This will prevent the eventual failure of Byway Road and the public utilities that follow the road alignment (the shoreline is currently eroding at a rate of one foot per year).

The construction or operation and maintenance of the project will have no impacts on flooding or floodplains.

14. Facilities and Utilities Relocations: The proposed project will not require any utility and/or facility relocations.

15. Hazardous, toxic and radioactive waste: There is no known on-site contamination, and the real estate estimates contained in this report do not reflect the presence of contamination.

16. Local Sponsor: If the project is approved for construction, the State of Rhode Island Coastal Management Council and the town of Barrington will provide local cooperation and participation for the project construction work as set forth in the draft Project Cooperation Agreement (PCA). The RI CRMC and the town will furnish all lands, easements, rights-of-way, and suitable spoil-disposal areas for construction and for subsequent maintenance when and as required.

17. Recommended Estates and Acreage: No non-standard estates are anticipated. Estates are stated in "Estates" ER 405-1-12 of the Real Estate Handbook, Chapter 5. The estate that will be utilized for this project is Estate No. 5, Flowage Easement (Permanent Flooding).

The total land area required is 60,108 square feet (SF). The lands required are as follows:

Tract No.	Acreage	Owner	Type of Owner
Lot 130	10,488 SF	Barrington Land Conservation Trust	Private
Lot 146	15,840 SF	Barrington Land Conservation Trust	Private
Lot 149	5,280 SF	Town of Barrington	Public
Lot 168	28,500 SF	Town of Barrington	Public

18. Rights to be Acquired: No zoning changes are proposed in lieu of, or to facilitate, real estate acquisitions.

The project will involve acquisition of permanent easements over lands owned by the town of Barrington and the Barrington Land Conservation Trust. Some of the lands (Lots 23 and 24) to be utilized for this project were previously used for disposal of dredged material or River and Harbor Improvement for Bullock Cove in 1957, thus, no credit can be given for these same lands. The Rhode Island Coastal Resources Management Council in a letter to the Corps dated November 6, 2000 has stated that they are the fee owners of the filled land (lands that were previously tidal). However, credit will be given for the four parcels in private ownership which will also be utilized for this project. A permanent easement will be placed over the 4 parcels (Lots 130, 146, 149, and 168) shown above.

19. Schedule: The following is the estimated acquisition schedule:

a. PCA EXECUTION – September 2003
b. Forward maps to sponsor – January 2004
c. Survey – March 2004
d. Title – March 2004
e. Appraisals – March 2004
f. Closings – April 2004
g. Possession – May 2004
h. LER Certification – May 2004

20. Acquisition Costs: Acquisition costs will include mapping, surveying, legal descriptions, title evidence, appraisals, negotiations, closing and administrative costs for the five areas to be acquired. The acquisition costs, which are primarily administrative, are based upon this office's experience in similar type projects and are estimated at $7,500 per ownership.

21. Contingencies: A contingency is allowed to provide for possible appreciation of property values from the time of this estimate to the time the property is acquired, for possible minor property line adjustments, or for additional hidden ownerships which may be developed by refinement to taking lines, for adverse condemnation awards, and to allow for practical and realistic negotiations. We have estimated a 25 percent contingency for this project.

22. Relocation Costs: Public Law 91-646, Uniform Relocations Assistance Act of 1970, provided for uniform and equitable treatment of persons displaced from their homes, businesses, or farms by a Federally Assisted Program. It also established uniform and equitable land acquisition policies for these projected. Included among the items under PL-91-646 are the following:

A. Moving Expenses
B. Relocation Allowance (Business)
C. Replacement Housing (Homeowners)
D. Replacement Housing (Tenants)
E. Relocation Advisory Services
F. Recording Fees
G. Transfer Taxes
H. Mortgage Prepayment Costs
I. Real Estate Tax Refunds (Pro-Rata)

There are no relocation costs involved with this project.

23. Summary of Real Estate Costs: The following is an estimate of the real estate costs associated with the acquisition of the easements required for the Allin's Cove Coastal Wetland Ecosystem Restoration Project.

Land Costs	
Fee Acquisition	$0
Permanent Easements: 60,108 SF of land	$17,131
Temporary Easements	$0
Total Land Value:	$17,131
Contingency, 25%	$4,283,
Total Land Costs, rounded	**$21,500**
Acquisition Costs	
4 parcels, @ $7,500 per parcel	**$30,000**
Relocation Assistance Costs	**$0**
Total Estimated Real Estate Costs	**$51,500**

Total costs for the Allin's Pond Coastal Wetland Restoration Project is estimated to be FIFTY-ONE THOUSAND FIVE HUNDRED DOLLARS ($51,500.00).

Photos Taken by A. Mary Dunn on June 26, 2001

Proposed Disposal Area, showing the area located at Willow Way, end of Third Street

Edge of new tidal creek, to be excavated to elevation 3.l

Photos Taken by A. Mary Dunn on June 26, 2001

Area where new channel will flow

Low marsh land area

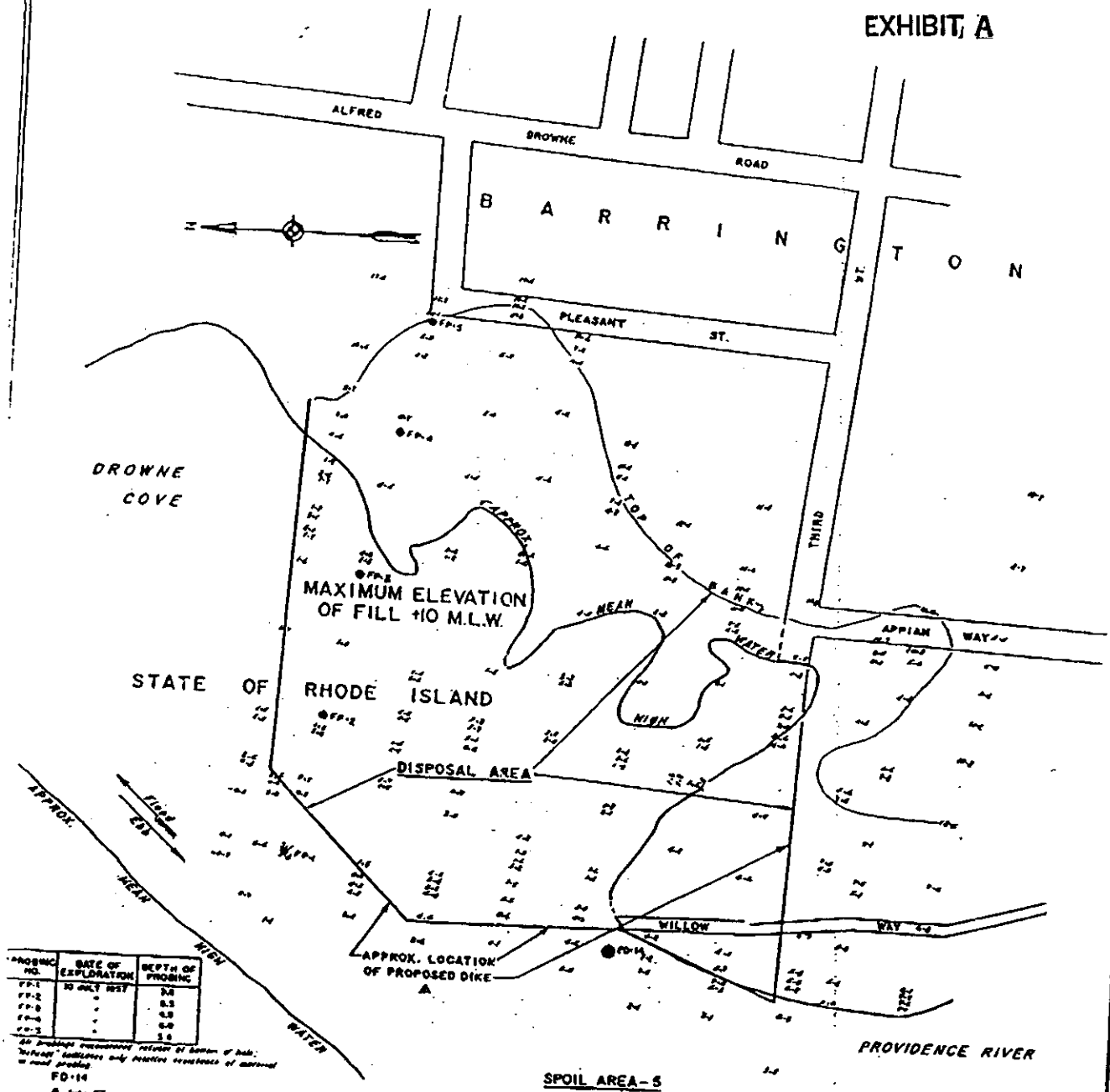
Photos Taken by A. Mary Dunn on June 26, 2001

Looking across Allin's Cove toward Bay Spring Road

Allin's Cove at the end of Byway Road and Narragansett Avenue

U. S. ARM

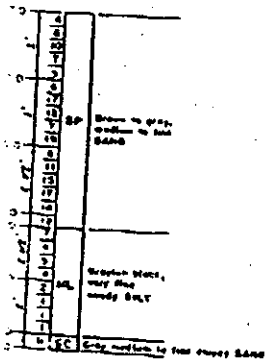
EXHIBIT A



PROBING NO.	DATE OF EXPLORATION	DEPTH OF PROBING
FP-1	10 JULY 1957	3.0
FP-2	"	5.5
FP-3	"	4.0
FP-4	"	6.0
FP-5	"	5.0

All probings encountered refusal at bottom of hole; "Refusal" indicates only relative resistance of material to road probing.

FD-14
8 July 57



SPOIL AREA-5
SCALE 1"=80'

NOTES

Traced from Dept. of Public Works plan, State of Rhode Island. Plan No. 3317.

Elevations from Corps of Engrs. survey of May 2, 1957 by E. J. Colvin.

Field book R. B. H. 1324.

Elevations are in feet and tenths and are referred to the plane of Mean Low Water.

For boring and probing notes, refer to Sheet 2 of 2, Dwg No. Nar. B. 230.

For location of Spoil Areas, see Dwg. No Nar. B. 230, sheet 1 of 2.

CORPS OF ENGINEERS, U.S. ARMY
OFFICE OF THE DIVISION ENGINEER
NEW ENGLAND DIVISION
BOSTON, MASS.

DR. BY A.D.C. | TR. BY A.D.C. | CK. BY

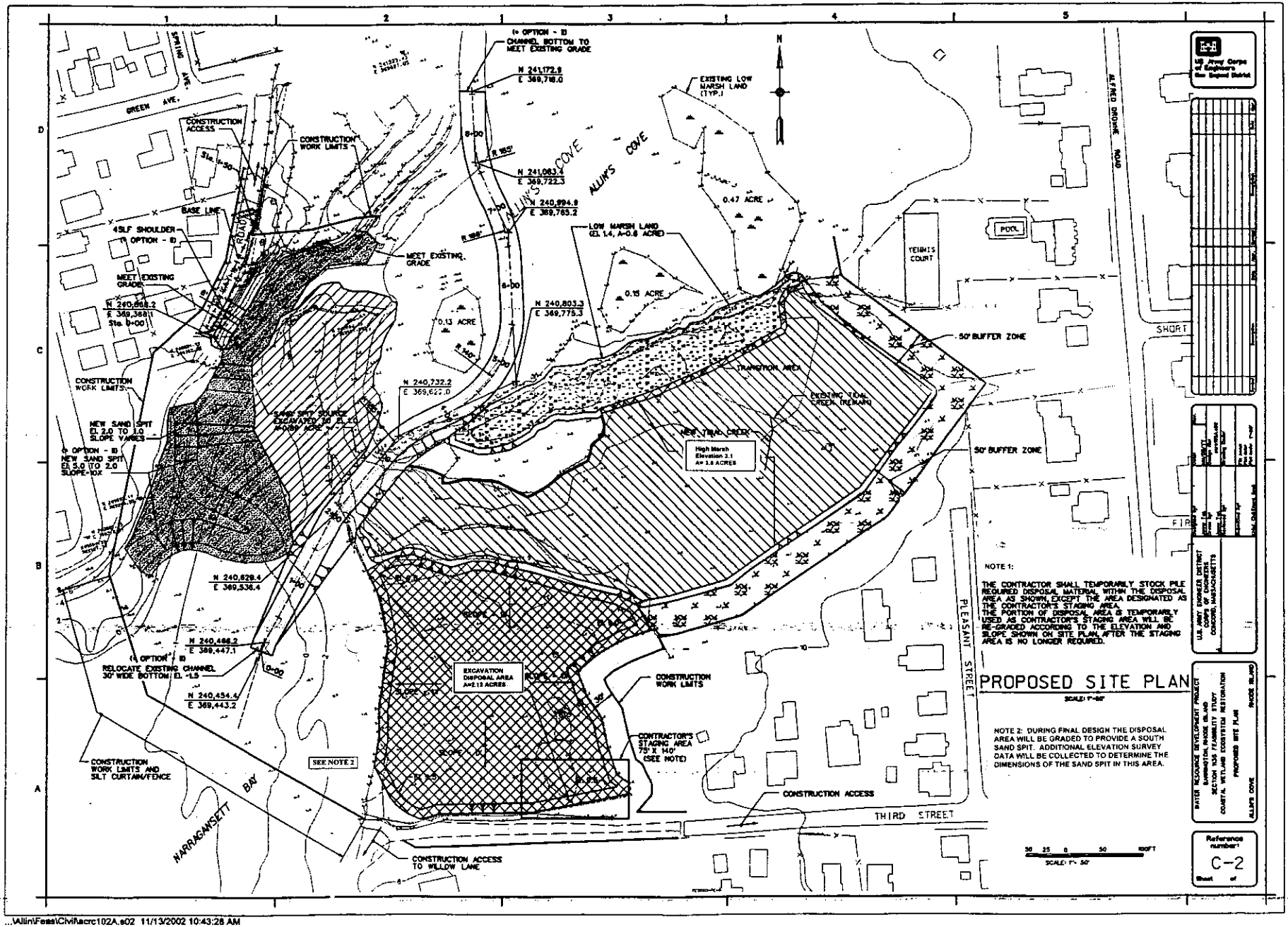
BULLOCKS PT. COVE
BARRINGTON, R.I.
SPOIL AREAS-4 & 5

APPROVED
DATE SEPT 1958

THIS MAP FORMS A PART OF THE SPECIFICATIONS DATED SEPT. 24, 1958

SCALE SCALES AS SHOWN
DRAWING NUMBER NAR. B 231
SHEET 3 of 3

EXHIBIT A



...\Allin\Feas\Civil\acrc102A.s02 11/13/2002 10:43:28 AM

EXHIBIT B

APPENDIX 12-E

ASSESSMENT OF NON-FEDERAL SPONSOR'S
REAL ESTATE ACQUISITION CAPABILITY

I. Legal Authority:

a. Does the sponsor have legal authority to acquire and hold title to real property for project purposes? (yes/no)

b. Does the sponsor have the power of eminent domain for this project? (yes/no) BY THE STATE OF RI AND THE POWER OF EMINENT DOMAIN

c. Does the sponsor have "quick-take" authority for this project? (yes/no) # SEE 6.

d. Are any of the lands/interests in land required for the project located outside the sponsor's political boundary? (yes/no)

e. Are any of the lands/interests in land required for the project owned by an entity whose property the sponsor cannot condemn? (yes/no)

II. Human Resource Requirements:

a. Will the sponsor's in-house staff require training to become familiar with the real estate requirements of Federal projects including P.L. 91-646, as amended? (yes/no)

b. If the answer to II.a. is "yes," has a reasonable plan been developed to provide such training? (yes/no)

c. Does the sponsor's in-house staff have sufficient real estate acquisition experience to meet its responsibilities for the project? (yes/no)

d. Is the sponsor's projected in-house staffing level sufficient considering its other work load, if any, and the project schedule? (yes/no)

e. Can the sponsor obtain contractor support, if required in a timely fashion? (yes/no)

f. Will the sponsor likely request USACE assistance in acquiring real estate? (yes/no) (If "yes," provide description)

III. Other Project Variables:

a. Will the sponsor's staff be located within reasonable proximity to the project site? (yes/no)

b. Has the sponsor approved the project/real estate schedule/milestones? (yes/no)

IV. Overall Assessment:

a. Has the sponsor performed satisfactorily on other USACE projects? (yes/no/not applicable)

b. With regard to this project, the sponsor is anticipated to be: highly capable/fully capable/moderately capable/marginally capable/insufficiently capable. (If sponsor is believed to be "insufficiently capable," provide explanation)

EXHIBIT "C"

V. Coordination:

a. Has this assessment been coordinated with the sponsor? (yes/no)
b. Does the sponsor concur with this assessment? (yes/no) (if "no" provide explanation)

Sponsor:
RI Coastal Resource Management Council
4808 Tower Hill Road
Wakefield, RI 02879

Prepared by:

A. Mary Dunn

A. Mary Dunn, Staff Appraiser

Reviewed and Approved by:

Joseph M. Redlinger
Chief, Real Estate Division

EXHIBIT "C"

APPENDIX 12-E

ASSESSMENT OF NON-FEDERAL SPONSOR'S
REAL ESTATE ACQUISITION CAPABILITY

I. Legal Authority:

a. Does the sponsor have legal authority to acquire and hold title to real property for project purposes? (yes/no)
b. Does the sponsor have the power of eminent domain for this project? (yes/no)
c. Does the sponsor have "quick-take" authority for this project? (yes/no)
d. Are any of the lands/interests in land required for the project located outside the sponsor's political boundary? (yes/no)
e. Are any of the lands/interests in land required for the project owned by an entity whose property the sponsor cannot condemn? (yes/no)

II. Human Resource Requirements:

a. Will the sponsor's in-house staff require training to become familiar with the real estate requirements of Federal projects including P.L. 91-646, as amended? (yes/no)
b. If the answer to II.a. is "yes," has a reasonable plan been developed to provide such training? (yes/no)
c. Does the sponsor's in-house staff have sufficient real estate acquisition experience to meet its responsibilities for the project? (yes/no)
d. Is the sponsor's projected in-house staffing level sufficient considering its other work load, if any, and the project schedule? (yes/no)
e. Can the sponsor obtain contractor support, if required in a timely fashion? (yes/no)
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a. Will the sponsor's staff be located within reasonable proximity to the project site? (yes/no)
b. Has the sponsor approved the project/real estate schedule/milestones? (yes/no)

IV. Overall Assessment:

a. Has the sponsor performed satisfactorily on other USACE projects? (yes/no/not applicable)
b. With regard to this project, the sponsor is anticipated to be: highly capable/fully capable/moderately capable/marginally capable/ insufficiently capable. (If sponsor is believed to be "insufficiently capable," provide explanation)

EXHIBIT "C"

V. Coordination:

a. Has this assessment been coordinated with the sponsor? (yes/no)
b. Does the sponsor concur with this assessment? (yes/no) (If "no," provide explanation

Town of Barrington
Dennis Phelan, Town Manager
Tel: 401-247-1900 Ext. 308

Prepared by:

A. Mary Dunn, Staff Appraiser

[typed name]
[title]

Reviewed and approved by:

Joseph M. Redlinger, Chief, Real Estat

[typed name]
Chief, Real Estate Division

EXHIBIT "C"

APPENDIX H

GEOLOGICAL CHANGE AND HABITAT RESTORATION

ALLINS COVE – ASSESSMENT OF GEOLOGIC CHANGE AND HABITAT RESTORATION

Draft Final Report

Jon C. Boothroyd, State Geologist
Depart of Geosciences
University of Rhode Island

OBJECTIVE

The overall objective of the project is to remove dredged material from within Allins Cove to restore marsh, tidal-flat and channel habitat as closely as possible to pre-placement conditions.

INTRODUCTION AND GEOLOGIC SETTING

Allins Cove is a small subembayment of Narragansett Bay estuary measuring about 21 acres in areal extent. It is located in the Town of Barrington, Rhode Island along the northeastern margin of the Bay (Figure 1). Mean tidal range in the Bay is about 3.5 feet. Allins Cove is also listed on some maps as Drown Cove, after a former owner of an old mill at the apex of the Cove. The Cove is enclosed behind a small, 700 ft long, 50-70 ft wide barrier spit that is anchored to a low, glacial headland to the south. A narrow inlet, approximately 60 ft wide at MHW, separates the barrier spit from another low glacial headland to the north (Byway Rd area). The inlet exhibits well-formed, though small, flood and ebb-tidal deltas. The Cove is mostly intertidal, with extensive sandy mudflats exposed at low tide. A single, small tidal creek connects the inlet with Annawomscutt River, a small stream now dammed. Numerous islands of salt marsh exist within the tidal-flat area. The southern 8 acres of the Cove were filled with dredged material placed by the US Army Corps of Engineers (ACOE) in 1958. Material was placed on both intertidal flats and previously salt marsh as illustrated below. Source of the dredged material was from other coves nearby in Narragansett Bay.

The Rhode Island Geological Survey at the Department of Geosciences, University of Rhode Island was contracted to provide geological expertise to support a habitat restoration effort whereby dredged material would be removed from the tidal flats and marsh in order to reconfigure the Cove to a pre-placement condition and restore tidal flat and low-marsh habitat. The task description is outlined below.

TASKS

1. Provide an analysis using historic aerial photographs of the sand movement in the area of the sand spit and inlet at Allins Cove in Barrington, Rhode Island. Provide a projection with and without the project alternatives of how things may continue to change over time. Corps will provide estimate of minimum inlet size required to reduce velocities along Byway Road.

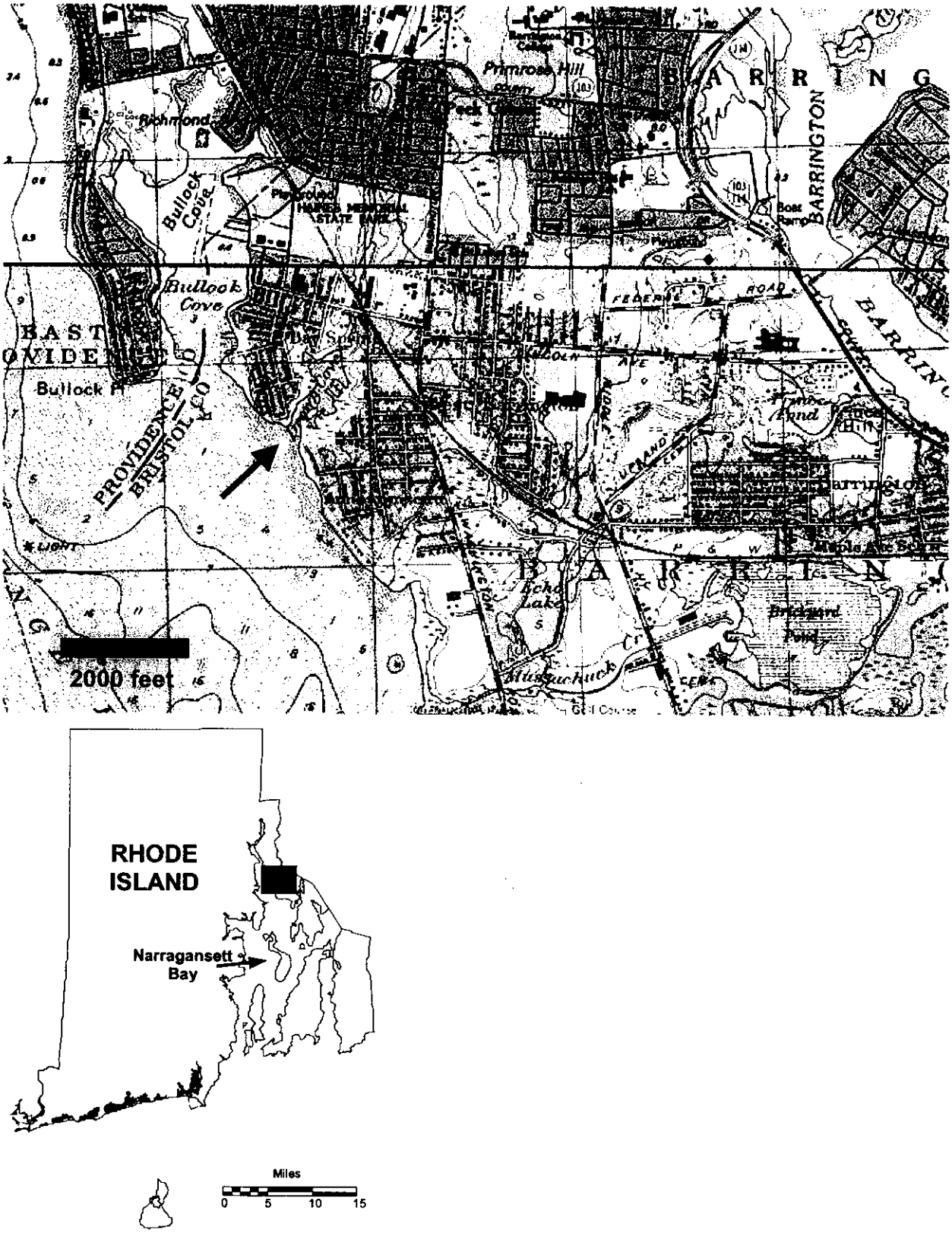

Figure 1. Location map of Allins (Drown) Cove.

2. Provide an assessment of what effect putting sand on beach might have on the inlet once it is redesigned (e.g. how quickly will it fill back in and what are the likely Operation and Maintenance requirements?). Discuss how storm events might impact the movement of sand at the site.

3. Provide Expert Coastal Geology support to Corps at meetings regarding the project (3 meetings).

METHODS

Vertical aerial photographs (9"x 9" black and white) taken in 1938 and 1975 of the Allins Cove area were selected from the archival files of the Rhode Island Geological Survey at the Department of Geosciences, University of Rhode Island. A color, vertical photograph taken in 1997 was loaned by RI Coastal Resources Management Council (RI CRMC). Orthophotographic coverage (1995) image) was downloaded from the Rhode Island Geographic Information System (RIGIS) web site (URL: http://www.edc.uri.edu/rigis/; and http://ortho.edc.uri.edu/). The vertical aerial photos were scanned on a flatbed scanner at 1200 dpi and converted to raster images. These images were registered to Rhode Island State Plane North American Datum 1983 (RISP NAD83) using control points such as corners of houses and utility poles obtained from the 1995 orthophoto. Registration was done within MapInfo™ using an add-on program (Smartimage). Metadata for the photos and images is given in Appendix 1.

All spatial data were placed in a Geographic Information System (GIS); we use MapInfo™ but translate the data to ESRI Arcview™ Shape files for final transmittal to ACOE.

Various geologic information was heads-up digitized from the registered images and the orthophoto. Obtained from the 1938 image were: the waterline (not a low-tide waterline or mean low water (MLW) or mean high water (MHW) and the landward edge of the washover fan on the barrier spit. Obtained from the 1997 color image were: a low-tide waterline, a base of revetment and edge of vegetation line for the Byway Road area, the base of the beachface of the barrier spit, and an edge of vegetation line at the landward edge of the berm of the barrier spit.

An erosional area adjacent to Byway Road was analysed by superimposing the 1938 and 1997 images to measure the displacement of the top of the erosional scarp through time at 6 transects. The 1975 image was used as an interim-year check because the 1938 image was of too poor quality for good high-resolution measurements. Results were estimated on a per year basis for the 59 year time span (1938-1997).

ACOE provided digital coverages of proposed habitat restoration areas, proposed buffer areas and sites for proposed placement of dredged material. They also provided quantitative estimates of dredged-material volume and grain size.

RESULTS

Changes in Configuration, Natural and Human Altered -

The analysis of aerial photographs led to the creation of 2 maps at a scale of 1: 1,000 scale, one using the 1997 base image and the other the 1938 base image (Plates 1 and 2). Smaller-scale versions (scale 1:2,200) were created to serve as handout copies at public meetings; these are also included in this report as Figures 2 and 3. A comparison of Figures 2 and 3 indicate that the barrier spit has migrated northward about 250 feet in the 59 years between photos, or about 4-5 feet per year. The spit has also retreated eastward, into the Cove, about one barrier width, 50-70 feet, in those 59 years. That retreat rate is about 1 foot per year.

It is clear from the 1938 image that numerous tidal channels existed between marsh islands before dredged material was placed in 1958 (Figure 3, Plate 2). Figures 4 and 5 are views of part of the Cove that focus on the proposed areas of change. Figure 5 also illustrates the spatial relationship of tidal channels and flats between the marsh islands that were covered by dredged material. An earlier draft proposed to place the new tidal-inlet channel further south to make use of what was an older main channel. Composition of the dredged material, little sand, made this option unfeasible. Figure 4 also indicates a redesigned south spit placed seaward to emulate the 1938 configuration. Lack of sand-sized material also made this option not viable.

New Alignments -

The present proposed new tidal inlet would cut through the barrier spit to enter the Cove at the northern margin of the present high marsh (also edge of dredged material)(Fig. 2, 4). Sand would be borrowed from the present end of the barrier spit and placed as a new north spit extending south from the Byway Road headland. The proposed new channel would be similar in size to the present low-water channel and would curve northward around a larger marsh island (Fig. 2) to rejoin the present natural channel. Dredged material would be removed from the southern area to a depth sufficient to create proper elevations for growth of low marsh *Spartina alterniflora* (middle interidal) and high marsh *Spartina patens* (higher intertidal). Excess silty sediment would be placed adjacent to the present barrier spit to create an upland habitat (Fig. 2).

Byway Road Erosion –

The low upland bluff, comprised of glacial sand and gravel, is shown to be eroding at an average rate of about 1 foot per year based on examination of 1975 and 1997 images. The 6 transects used to measure erosion rates are shown on Figures 2-5; tabular data is shown in Table 1. The proposed construction of a new north spit would include sand to be placed seaward of the eroding bluff in the Byway Road area (Fig. 2). Some of the sand would be obtained from the present flood-tidal delta ((Figs. 2 and 4).

PROPOSED CHANGES AND ALIGNMENTS

ALLINS COVE, BARRINGTON, RI

1997 Base Image

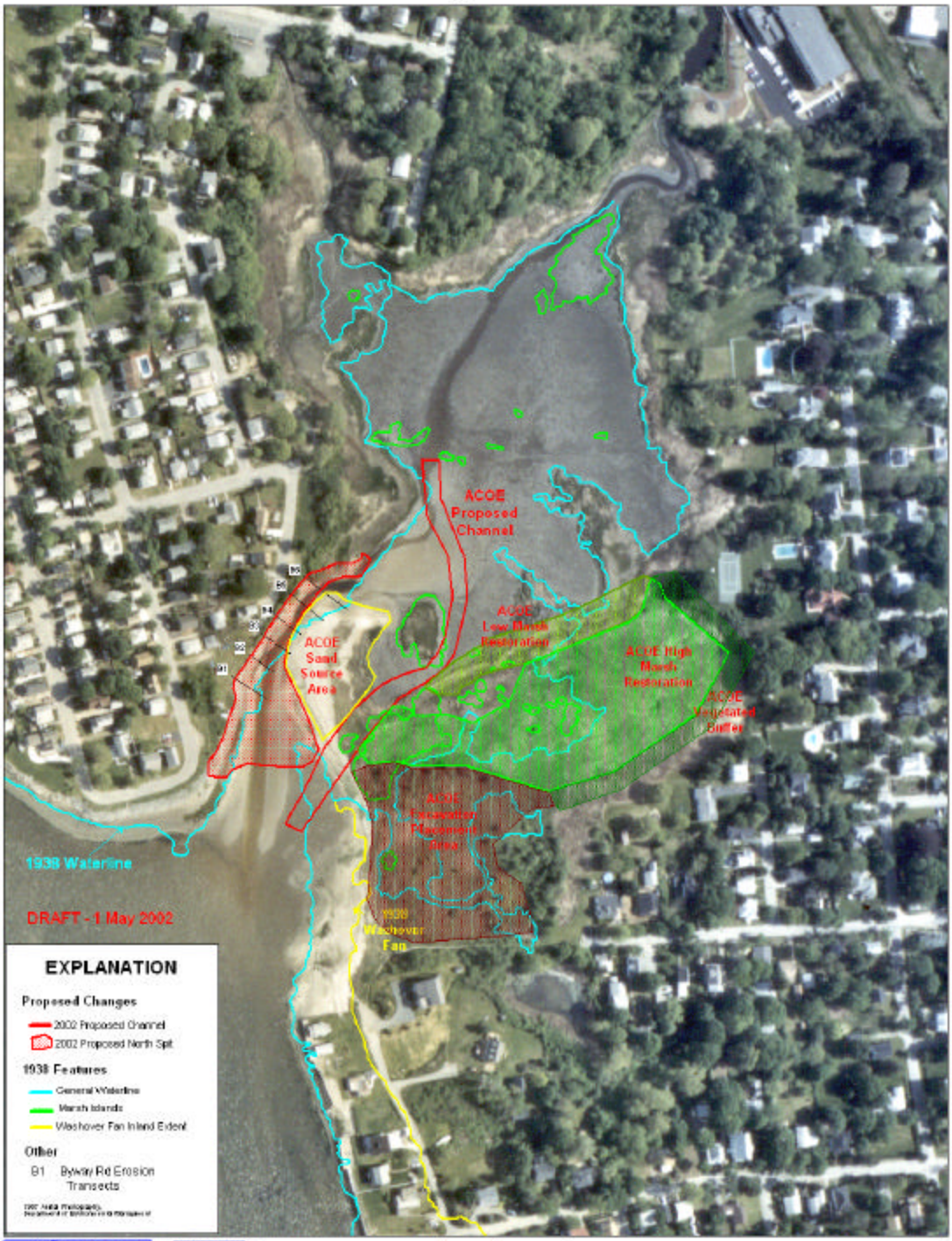

Figure 2

PROPOSED CHANGES AND ALIGNMENTS

ALLINS COVE, BARRINGTON, RI

1938 Base Image

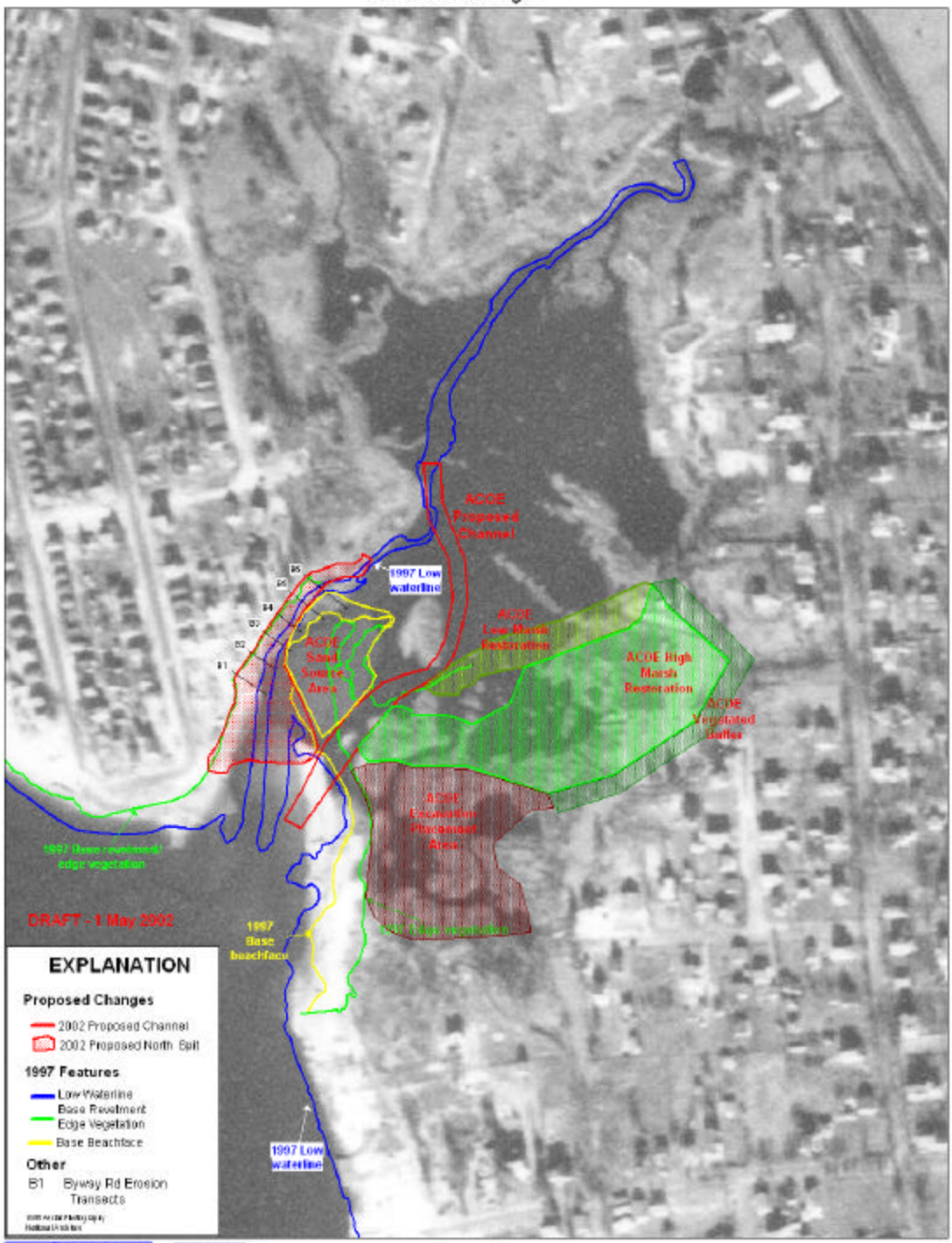

Figure 3

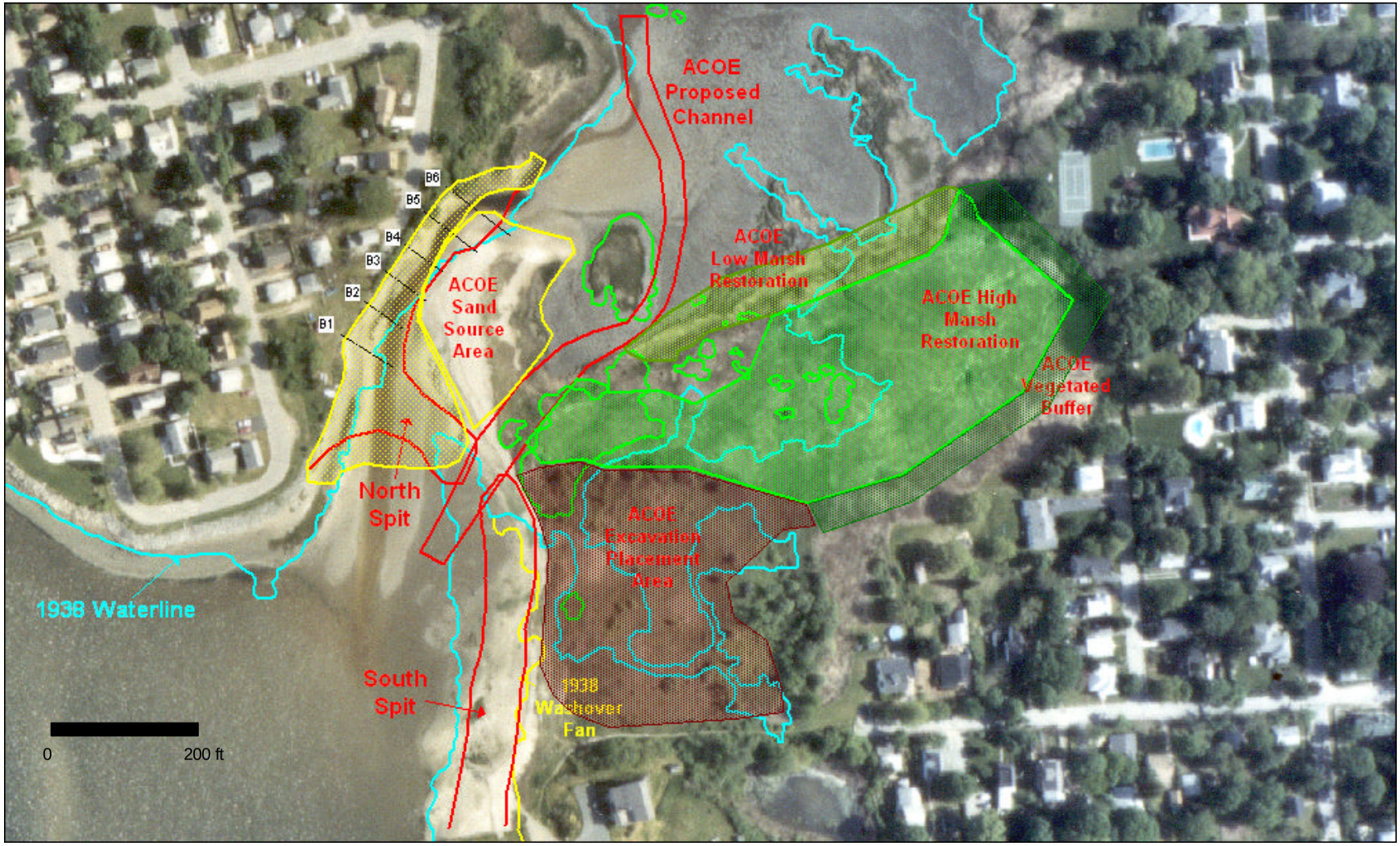

Figure 4. 1997 base image of area of Allins Cove subject to proposed habitat restoration. Note: ACOE marsh restoration areas, dredged-material excavation placement area, the proposed channel alignment, the new north spit (yellow) and the sand source area. Byway Road erosion transects also shown. This version indicates a redesigned south spit deleted because of insufficient sand.

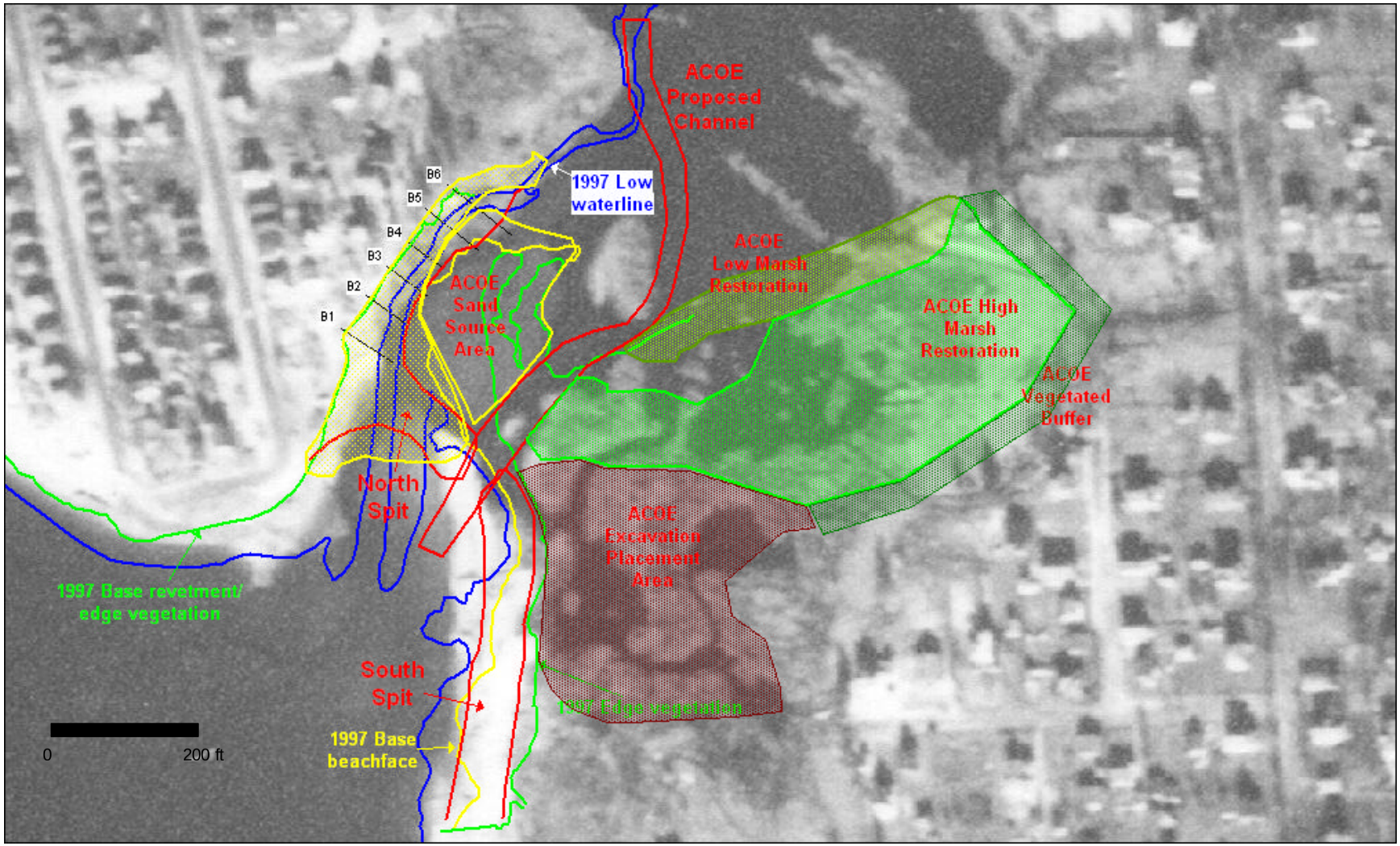

Figure 5. 1938 base image of area of Allins Cove subject to habitat restoration. Note: 1997 low waterline and base of beachface. See Figure 4 for additional explanation

Table 1. Byway Road Erosion Transects

Erosion Transect	Transect	Allins Cove Distance Eroded Waterline 1938-1997	Allins Cove Distance Eroded Top Bank 1938-1997	Annual Erosion Rate Top Bank
		ft	ft	ft/yr
1	B1	7	61	1
2	B2	12	43	0.7
3	B3	24	50	0.85
4	B4	20	49	0.8
5	B5	48	59	1
6	B6	60	85	1.4

DISCUSSION

Barrier Spit Growth and Tidal-Inlet Modification Through Time -

The barrier spit has migrated north-northwestward with time, with sediment transport primarily driven by waves approaching from the south and southwest. Inspection of Figure 1 indicates that the barrier and Cove are protected from waves from the northwest, and of course, northeast. The spit migrated northward 250 feet during the 1938-1997 time span. Migration would be enhanced by storm waves from sou'easters, storms that pass to the west of Narragansett Bay. Thus migration is driven by periods of storminess, and thus moves in pulses. The 4-5 ft per year average is just that, a simple average for presentation purposes.

The configuration of the marsh islands and tidal channels seen on the 1938 image, now buried by dredged material, indicate that the tidal inlet was once about 300 feet south of the 1938 position. Using the average migration rate, the inlet would have been in that southern position about 1880, the late 19th century.

Migration of the barrier spit has displaced the tidal inlet northward with time toward the Byway Road upland. Interaction of flood-tidal current flow and incoming waves has curved the end of the spit to a more northerly position as spit end approached the upland. The narrow throat of the tidal inlet has assumed an equilibrium cross section to enable the water volume of the tidal prism to enter and exit during a tidal cycle. Tidal-current flow in and out of the Cove has deposited a small ebb-tidal delta outside the Cove in Narragansett Bay proper, and a small sandy flood-tidal delta inside the Cove. Tidal-current flow does not appreciably contribute to erosion of the Byway Road bluff.

Barrier Spit and Byway Rd Bluff Erosion -

The barrier spit also has migrated or transgressed eastward into the Cove about one spit width

(60-70 feet) in the 59 years between the 1938 and 1997 images. Landward barrier migration is accomplished by erosion of the berm during storms and transport landward of a portion of that eroded sand by overwash processes, resulting in the development of a series of back-barrier washover fans. Washover fans generated by storm-surge overwash during the September 1938 hurricane are well displayed on the 1938 image that was taken in December, 1938 (Plate 2, Figs. 3 and 5). Again, an average erosion rate of about 1 foot per year can be calculated, but actual erosion proceeds in jumps during storm events. Major erosional storm events include: Hurricane Carol in 1954, the Blizzard of 1978, and Hurricane Bob in 1991. Other large extra-tropical storms have also contributed to spit erosion and migration.

The barrier spit is connected or pinned to the low glacial upland to the south (Annawomscutt area) and has rotated clockwise toward the Cove around the pinning point. The Annawomscutt headland is fixed more or less in place by coastal protection structures, mostly older 1954-vintage seawalls. The rotation of the barrier spit has exposed the Byway Road erosional area to more southerly wave fetch over time. This has resulted in increased erosion of the bluff. The point of the low headland is protected by a rip-rap revetment (Fig. 4). The averaged erosion rate determined by superimposing 1938, 1975, and 1997 images is 1 foot per year, but again, of course, erosion of the bluff occurs during storm events.

CONCLUSIONS AND RECOMMENDATIONS

1. The barrier spit will continue its northward growth and continue migrating into the Cove if no action is taken.

2. The barrier spit will continue to transgress landward at its present rate if no action is taken. It will migrate over the dredged material disposal area with time, incorporating any sand-sized sediment available.

3. The Byway Road bluff will continue to erode at its present rate if no action is taken. Erosion will occur during large storms whose passages allow waves to approach from the south-southwest.

4. The barrier spit should be breached and a new inlet should be placed in the position shown on the Plates and Figures.

5. The breaching will allow the northern end of the present spit to be reconfigured to afford some protection to the Byway Road erosional area as indicated on the Plates and Figures.

6. The new inlet position will allow increased circulation of Bay water to the low marsh restoration area.

7. New ebb and flood-tidal deltas will be deposited at the repositioned inlet. These sandy tidal deltas should not materially impede flow through the inlet. Modelling by ACOE indicates the proposed new inlet and tidal channel will achieve equilibrium cross sectional area to accommodate the present tidal prism.

8. The barrier spit and new tidal inlet will migrate northward with time. The proposed new inlet would be about 180 feet southeast of its present position. Allowing 5 feet per year of migration, the inlet will reoccupy its present position 30 to 40 years. This is an estimate based on past migration habit and storm conditions.

9. I recommend that sand be placed as a new berm on the southern barrier spit to reconfigure the barrier more closely to its 1938 position. Earlier working proposals called for this sand to come from the dredged material. However, the paucity of sand-sized sediment in the dredged material has made this option not feasible and the option was removed from the plan. The present proposed configuration would leave the south spit further landward than originally proposed. The south spit could migrate in a curve northward that could allow it to reorient the proposed tidal channel away from the marsh restoration area and to the north of the large marsh island (see Plates and Figures).

MEETINGS AND FIELD VISITS

07 July 1999	Site visit
15 December 2000	Site visit
26 January 2001	Contractor meeting, Providence RI
28 February 2001	Contractor meeting, Concord MA
29 May 2001	Site visit
09 July 2001	Contractor meeting, Concord MA
17 September 2001	Contractor meeting, Providence RI
02 October 2001	Town meeting, Barrington RI
18 January 2002	Contractor meeting, Concord MA
23 January 2002	Town meeting, Barrington RI

DELIVERABLES

1. Provide draft maps for public viewing at meeting to discuss restoration alternatives which would include scenarios for channel location.

2. Provide Draft Base Map (2 copies) showing changes over time (to include sand spit migration and erosion along Byway Road). Two each of 2 base maps (1938 and 1997) provided.

3. Provide Draft report (2 copies) containing information requested in Tasks 1 and 2. Corps and RICRMC will review report for any questions/comments.

4. Provide Final Report and Maps (2 copies) after incorporating as appropriate any changes based on review comments.

5. Also provided PowerPoint presentation for use by ACOE.

APPENDIX I

SEDIMENT TESTING AT DISPOSAL AREA

R.I. Analytical

Specialists in Environmental Services

CERTIFICATE OF ANALYSIS

State of R.I.-C.R.M.C.
Attn: Ms. Janet Freedman
Oliver H. Stedman Center
4808 Tower Hill Road-Suite 3
Wakefield, RI 02879-1900

Date Received: 02/05/2003
Date Reported: 02/27/2003
P.O. #:
Work Order #: 0302-01599

DESCRIPTION ALLINS COVE (TWO SOIL SAMPLES)

Subject sample(s) has/have been analyzed by our laboratory with the attached results.

Reference: All parameters were analyzed by ASTM and U.S. EPA approved methodologies. The specific methodologies are listed in the methods column of the Certificate Of Analysis.

Data qualifiers (if present) are explained in full at the end of a given sample's analytical results.

Certification #: RI-033, MA-RI015, CT-PH-0508, ME-RI015
NH-253700 A & B, USDA S-41844, NY-11726

If you have any questions regarding this work, or if we may be of further assistance, please contact us.

Approved by:

Paul Perrotti
Data Reporting Manager

enc: Chain of Custody

41 Illinois Avenue, Warwick, RI 02888
Tel: (401) 737-8500 Fax: (401) 738-1970

131 Coolidge Street, Bldg 2, Hudson, MA 01749
Tel: (978) 568-0041 Fax: (978) 568-0078

R.I. Analytical Laboratories, Inc.

CERTIFICATE OF ANALYSIS

State of R.I.-C.R.M.C.
Date Received: 02/05/2003
Work Order #: 0302-01599

Approved by: _____
R.I. Analytical

Sample #: 001
SAMPLE U-1 GRAB 02/05/03 @1120

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE ANALYZED	ANALYST
TOTAL CYANIDE	<2.0	2.0	mg/kg dry	SW-846 9010A	02/11/2003	LKS
MOISTURE	8.5		%	SM2540 G.	02/07/2003	KLL
SIEVE ANALYSIS	*			ASTM	02/11/2003	CCP
T. VOLATILE SOLIDS	<0.5	0.5	%	SM2540 E	02/10/2003	CCP
% SOLIDS	92		%	SM2540 G.	02/07/2003	CCP
TOC	0.17	0.10	%	EPA 415.1	02/12/2003	RGM
TOTAL PETROLEUM HYDROCARBONS						
C6-C10	<12	12	mg/kg dry	SW846 8015B	02/11/2003	RML
C10-C28	<4.0	4.0	mg/kg dry	SW846 8015B	02/11/2003	RML
C28-C36	<20	20	mg/kg dry	SW846 8015B	02/11/2003	RML
PESTICIDES / PCBs						
Aldrin	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Alpha-BHC	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Beta-BHC	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Delta-BHC	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Gamma-BHC	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Chlordane	<0.005	0.005	mg/kg dry	SW-846 8080	02/26/2003	RML
4-4'-DDD	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
4-4'-DDE	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
4-4'-DDT	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Dieldrin	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Endosulfan I	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Endosulfan II	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Endosulfan Sulfate	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Endrin	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Endrin Aldehyde	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Heptachlor	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Heptachlor epoxide	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Methoxychlor	<0.005	0.005	mg/kg dry	SW-846 8080	02/26/2003	RML
Toxaphene	<0.05	0.05	mg/kg dry	SW-846 8080	02/26/2003	RML
Aroclor-1016	<0.01	0.01	mg/kg dry	SW-846 8080	02/26/2003	RML
Aroclor-1221	<0.01	0.01	mg/kg dry	SW-846 8080	02/26/2003	RML
Aroclor-1232	<0.01	0.01	mg/kg dry	SW-846 8080	02/26/2003	RML
Aroclor-1242	<0.01	0.01	mg/kg dry	SW-846 8080	02/26/2003	RML
Aroclor-1248	<0.01	0.01	mg/kg dry	SW-846 8080	02/26/2003	RML
Aroclor-1254	<0.01	0.01	mg/kg dry	SW-846 8080	02/26/2003	RML
Aroclor-1260	<0.01	0.01	mg/kg dry	SW-846 8080	02/26/2003	RML
SURROGATE			RANGE	SW-846 8080	02/26/2003	RML
Decachlorobiphenyl	103		60-140%	SW-846 8080	02/26/2003	RML
Volatile Organic Compounds						
Benzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS

R.I. Analytical Laboratories, Inc.

CERTIFICATE OF ANALYSIS

State of R.I.-C.R.M.C.
Date Received: 02/05/2003
Work Order #: 0302-01599

Approved by: _____
R.I. Analytical

Sample #: 001
SAMPLE U-1 GRAB 02/05/03 @1120

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE ANALYZED	ANALYST
Bromobenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Bromochloromethane	<0.4	0.4	mg/kg	SW-846 8260B	02/10/2003	BAS
Bromodichloromethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Bromoform	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Bromomethane	<1.0	1.0	mg/kg	SW-846 8260B	02/10/2003	BAS
n-Butylbenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
sec-Butylbenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
tert-Butylbenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Carbon Tetrachloride	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Chlorobenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Chloroethane	<0.5	0.5	mg/kg	SW-846 8260B	02/10/2003	BAS
Chloroform	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Chloromethane	<0.5	0.5	mg/kg	SW-846 8260B	02/10/2003	BAS
2-Chlorotoluene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
4-Chlorotoluene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Dibromochloromethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,2-Dibromo-3-Chloropropane	<0.4	0.4	mg/kg	SW-846 8260B	02/10/2003	BAS
1,2-Dibromoethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Dibromomethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,2-Dichlorobenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,3-Dichlorobenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,4-Dichlorobenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Dichlorodifluoromethane	<0.5	0.5	mg/kg	SW-846 8260B	02/10/2003	BAS
1,1-Dichloroethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,2-Dichloroethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,1-Dichloroethene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
cis-1,2-Dichloroethene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
trans-1,2-Dichloroethene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,2-Dichloropropane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,3-Dichloropropane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
2,2-Dichloropropane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,1-Dichloropropene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Ethylbenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Hexachlorobutadiene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Isopropylbenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
p-Isopropyltoluene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Methylene Chloride	<0.5	0.5	mg/kg	SW-846 8260B	02/10/2003	BAS
Naphthalene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
n-Propylbenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Styrene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,1,1,2-Tetrachloroethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,1,2,2-Tetrachloroethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Tetrachloroethene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Toluene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS

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State of R.I.-C.R.M.C.
Date Received: 02/05/2003
Work Order #: 0302-01599

Approved by: _____
R.I. Analytical

Sample #: 001
SAMPLE U-1 GRAB 02/05/03 @1120

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE ANALYZED	ANALYST
1,2,3-Trichlorobenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,2,4-Trichlorobenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,1,1-Trichloroethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,1,2-Trichloroethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Trichloroethene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Trichlorofluoromethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,2,3-Trichloropropane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,2,4-Trimethylbenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,3,5-Trimethylbenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Vinyl Chloride	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
o-Xylene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
m&p-Xylene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
MTBE	<0.4	0.4	mg/kg	SW-846 8260B	02/10/2003	BAS
Tetrahydrofuran	<1.0	1.0	mg/kg	SW-846 8260B	02/10/2003	BAS
Acetone	<1.0	1.0	mg/kg	SW-846 8260B	02/10/2003	BAS
Methyl Ethyl Ketone	<1.0	1.0	mg/kg	SW-846 8260B	02/10/2003	BAS
4-Methyl-2-pentanone	<1.0	1.0	mg/kg	SW-846 8260B	02/10/2003	BAS
2-Hexanone	<1.0	1.0	mg/kg	SW-846 8260B	02/10/2003	BAS
Diethyl Ether	<1.0	1.0	mg/kg	SW-846 8260B	02/10/2003	BAS
SURROGATES			RANGE	SW-846 8260B	02/10/2003	BAS
Dibromofluoromethane	96		80-120%	SW-846 8260B	02/10/2003	BAS
Toluene-d8	98		81-117%	SW-846 8260B	02/10/2003	BAS
4-Bromofluorobenzene	96		74-121%	SW-846 8260B	02/10/2003	BAS
SEMI-VOLATILE ORGANIC COMPOUNDS						
Acenaphthene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Acenaphthylene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Anthracene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Benzidine	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Benzo(a)anthracene	0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Benzo(b)fluoranthene	0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Benzo(k)fluoranthene	0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Benzo(g,h,i)perylene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Benzo(a)pyrene	0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Bis(2-chloroethyl)ether	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Bis(2-Chloroethoxy)methane	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
bis(2-chloroisopropyl)ether	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Bis(2-ethylhexyl)phthalate	0.10	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
4-Bromophenyl phenyl ether	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Butylbenzyl phthalate	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2-Chloronaphthalene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
4-Chlorophenyl phenyl ether	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Chrysene	0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Dibenzo(a,h)anthracene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT

R.I. Analytical Laboratories, Inc.

CERTIFICATE OF ANALYSIS

State of R.I.-C.R.M.C.
Date Received: 02/05/2003
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R.I. Analytical

Sample #: 001
SAMPLE U-1 GRAB 02/05/03 @1120

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE ANALYZED	ANALYST
Di-n-butyl phthalate	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
1,2-Dichlorobenzene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
1,3-Dichlorobenzene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
1,4-Dichlorobenzene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
3,3'-Dichlorobenzidine	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Diethyl phthalate	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Dimethyl phthalate	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2,4-Dinitrotoluene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2,6-Dinitrotoluene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Di-n-octyl phthalate	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
1,2-Diphenylhydrazine	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Fluoranthene	0.02	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Fluorene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Hexachlorobenzene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Hexachlorobutadiene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Hexachlorocyclopentadiene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Hexachloroethane	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Indeno(1,2,3-cd)pyrene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Isophorone	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Naphthalene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Nitrobenzene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
N-nitrosodimethylamine	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
N-nitrosodiphenylamine	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
N-nitrosodi-n-propylamine	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Phenanthrene	0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Pyrene	0.02	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
1,2,4-Trichlorobenzene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
4-Chloro-3-methylphenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2-Chlorophenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2,4-Dichlorophenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2,4-Dimethylphenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2-Methyl-4,6-dinitrophenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2,4-Dinitrophenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2-Nitrophenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
4-Nitrophenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Pentachlorophenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Phenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2,4,6-Trichlorophenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
SURROGATES			RANGE	SW-846 8270	02/11/2003	MT
Phenol-d5	30		24-113%	SW-846 8270	02/11/2003	MT
2-Fluorophenol	10		25-121%	SW-846 8270	02/11/2003	MT
2,4,6-Tribromophenol	69		19-122%	SW-846 8270	02/11/2003	MT
Nitrobenzene-d5	24		23-120%	SW-846 8270	02/11/2003	MT
2-Fluorobiphenyl	40		30-115%	SW-846 8270	02/11/2003	MT

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R.I. Analytical

Sample #: 001
SAMPLE U-1 GRAB 02/05/03 @1120

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE ANALYZED	ANALYST
P-Terphenyl-d14	83		18-137%	SW-846 8270	02/11/2003	MT
TOTAL METALS						
ANTIMONY	<1.0	1.0	mg/kg dry	SW-846 6010	02/10/2003	VIK
ARSENIC	<0.5	0.5	mg/kg dry	SW-846 6010	02/10/2003	VIK
BARIUM	4.6	0.26	mg/kg dry	SW-846 6010	02/10/2003	VIK
BERYLLIUM	<0.05	0.05	mg/kg dry	SW-846 6010	02/10/2003	VIK
CADMIUM	<0.26	0.26	mg/kg dry	SW-846 6010	02/10/2003	VIK
CHROMIUM	4.2	1.0	mg/kg dry	SW-846 6010	02/10/2003	VIK
COPPER	3.2	1.0	mg/kg dry	SW-846 6010	02/10/2003	VIK
LEAD	6.3	1.0	mg/kg dry	SW-846 6010	02/10/2003	VIK
MANGANESE	32	1.0	mg/kg dry	SW-846 6010	02/10/2003	VIK
MERCURY	<0.02	0.02	mg/kg dry	SW-846 7471A	02/07/2003	NMC
NICKEL	1.6	1.0	mg/kg dry	SW-846 6010	02/10/2003	VIK
SELENIUM	<0.8	0.8	mg/kg dry	SW-846 6010	02/10/2003	VIK
SILVER	<0.1	0.1	mg/kg dry	SW-846 6010	02/10/2003	VIK
THALLIUM	<1.6	1.6	mg/kg dry	SW-846 6010	02/10/2003	VIK
VANADIUM	3.2	1.0	mg/kg dry	SW-846 6010	02/10/2003	VIK
ZINC	14	1.0	mg/kg dry	SW-846 6010	02/10/2003	VIK
TOTAL PCBs						
PCBs BY NOAA SUMMATION OF CONGENERS	<0.001	0.001	mg/kg dry	SW-846 8082	02/25/2003	RML

Cadmium, Selenium, and Thallium: Unable to achieve detection limit due to matrix interference.

Sieve - * See Attached

Volatile organic samples collected, preserved and analyzed under guidelines of method SW-846 5035.

Method 8270: Benzo[e]pyrene = 0.02 mg/kg dry

R.I. Analytical Laboratories, Inc.

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R.I. Analytical

Sample #: 002
SAMPLE U-2 GRAB 02/05/03 @1130

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE ANALYZED	ANALYST
TOTAL CYANIDE	<2.0	2.0	mg/kg dry	SW-846 9010A	02/11/2003	LKS
MOISTURE	8.4		%	SM2540 G.	02/07/2003	KLL
SIEVE ANALYSIS	*			ASTM	02/11/2003	CCP
T. VOLATILE SOLIDS	0.9	0.5	%	SM2540 E	02/10/2003	CCP
% SOLIDS	92		%	SM2540 G.	02/07/2003	CCP
TOC	0.18	0.10	%	EPA 415.1	02/12/2003	RGM
TOTAL PETROLEUM HYDROCARBONS						
C6-C10	<12	12	mg/kg dry	SW846 8015B	02/11/2003	RML
C10-C28	5.8	4.0	mg/kg dry	SW846 8015B	02/11/2003	RML
C28-C36	<20	20	mg/kg dry	SW846 8015B	02/11/2003	RML
PESTICIDES / PCBs						
Aldrin	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Alpha-BHC	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Beta-BHC	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Delta-BHC	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Gamma-BHC	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Chlordane	<0.005	0.005	mg/kg dry	SW-846 8080	02/26/2003	RML
4-4'-DDD	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
4-4'-DDE	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
4-4'-DDT	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Dieldrin	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Endosulfan I	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Endosulfan II	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Endosulfan Sulfate	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Endrin	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Endrin Aldehyde	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Heptachlor	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Heptachlor epoxide	<0.001	0.001	mg/kg dry	SW-846 8080	02/26/2003	RML
Methoxychlor	<0.005	0.005	mg/kg dry	SW-846 8080	02/26/2003	RML
Toxaphene	<0.05	0.05	mg/kg dry	SW-846 8080	02/26/2003	RML
Aroclor-1016	<0.01	0.01	mg/kg dry	SW-846 8080	02/26/2003	RML
Aroclor-1221	<0.01	0.01	mg/kg dry	SW-846 8080	02/26/2003	RML
Aroclor-1232	<0.01	0.01	mg/kg dry	SW-846 8080	02/26/2003	RML
Aroclor-1242	<0.01	0.01	mg/kg dry	SW-846 8080	02/26/2003	RML
Aroclor-1248	<0.01	0.01	mg/kg dry	SW-846 8080	02/26/2003	RML
Aroclor-1254	<0.01	0.01	mg/kg dry	SW-846 8080	02/26/2003	RML
Aroclor-1260	<0.01	0.01	mg/kg dry	SW-846 8080	02/26/2003	RML
SURROGATE			RANGE	SW-846 8080	02/26/2003	RML
Decachlorobiphenyl	104		60-140%	SW-846 8080	02/26/2003	RML
Volatile Organic Compounds						
Benzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS

R.I. Analytical Laboratories, Inc.

CERTIFICATE OF ANALYSIS

State of R.I.-C.R.M.C.
Date Received: 02/05/2003
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R.I. Analytical

Sample #: 002
SAMPLE U-2 GRAB 02/05/03 @1130

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE ANALYZED	ANALYST
Bromobenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Bromochloromethane	<0.4	0.4	mg/kg	SW-846 8260B	02/10/2003	BAS
Bromodichloromethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Bromoform	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Bromomethane	<1.0	1.0	mg/kg	SW-846 8260B	02/10/2003	BAS
n-Butylbenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
sec-Butylbenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
tert-Butylbenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Carbon Tetrachloride	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Chlorobenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Chloroethane	<0.5	0.5	mg/kg	SW-846 8260B	02/10/2003	BAS
Chloroform	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Chloromethane	<0.5	0.5	mg/kg	SW-846 8260B	02/10/2003	BAS
2-Chlorotoluene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
4-Chlorotoluene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Dibromochloromethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,2-Dibromo-3-Chloropropane	<0.4	0.4	mg/kg	SW-846 8260B	02/10/2003	BAS
1,2-Dibromoethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Dibromomethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,2-Dichlorobenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,3-Dichlorobenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,4-Dichlorobenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Dichlorodifluoromethane	<0.5	0.5	mg/kg	SW-846 8260B	02/10/2003	BAS
1,1-Dichloroethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,2-Dichloroethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,1-Dichloroethene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
cis-1,2-Dichloroethene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
trans-1,2-Dichloroethene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,2-Dichloropropane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,3-Dichloropropane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
2,2-Dichloropropane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,1-Dichloropropene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Ethylbenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Hexachlorobutadiene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Isopropylbenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
p-Isopropyltoluene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Methylene Chloride	<0.5	0.5	mg/kg	SW-846 8260B	02/10/2003	BAS
Naphthalene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
n-Propylbenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Styrene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,1,1,2-Tetrachloroethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,1,2,2-Tetrachloroethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Tetrachloroethene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Toluene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS

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R.I. Analytical

Sample #: 002
SAMPLE U-2 GRAB 02/05/03 @1130

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE ANALYZED	ANALYST
1,2,3-Trichlorobenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,2,4-Trichlorobenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,1,1-Trichloroethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,1,2-Trichloroethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Trichloroethene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Trichlorofluoromethane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,2,3-Trichloropropane	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,2,4-Trimethylbenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
1,3,5-Trimethylbenzene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
Vinyl Chloride	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
o-Xylene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
m&p-Xylene	<0.2	0.2	mg/kg	SW-846 8260B	02/10/2003	BAS
MTBE	<0.4	0.4	mg/kg	SW-846 8260B	02/10/2003	BAS
Tetrahydrofuran	<1.0	1.0	mg/kg	SW-846 8260B	02/10/2003	BAS
Acetone	<1.0	1.0	mg/kg	SW-846 8260B	02/10/2003	BAS
Methyl Ethyl Ketone	<1.0	1.0	mg/kg	SW-846 8260B	02/10/2003	BAS
4-Methyl-2-pentanone	<1.0	1.0	mg/kg	SW-846 8260B	02/10/2003	BAS
2-Hexanone	<1.0	1.0	mg/kg	SW-846 8260B	02/10/2003	BAS
Diethyl Ether	<1.0	1.0	mg/kg	SW-846 8260B	02/10/2003	BAS
SURROGATES			RANGE	SW-846 8260B	02/10/2003	BAS
Dibromofluoromethane	98		80-120%	SW-846 8260B	02/10/2003	BAS
Toluene-d8	99		81-117%	SW-846 8260B	02/10/2003	BAS
4-Bromofluorobenzene	95		74-121%	SW-846 8260B	02/10/2003	BAS
SEMI-VOLATILE ORGANIC COMPOUNDS						
Acenaphthene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Acenaphthylene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Anthracene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Benzidine	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Benzo(a)anthracene	0.02	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Benzo(b)fluoranthene	0.02	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Benzo(k)fluoranthene	0.02	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Benzo(g,h,i)perylene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Benzo(a)pyrene	0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Bis(2-chloroethyl)ether	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Bis(2-Chloroethoxy)methane	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
bis(2-chloroisopropyl)ether	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Bis(2-ethylhexyl)phthalate	0.12	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
4-Bromophenyl phenyl ether	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Butylbenzyl phthalate	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2-Chloronaphthalene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
4-Chlorophenyl phenyl ether	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Chrysene	0.02	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Dibenzo(a,h)anthracene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT

R.I. Analytical Laboratories, Inc.

CERTIFICATE OF ANALYSIS

State of R.I.-C.R.M.C.
Date Received: 02/05/2003
Work Order #: 0302-01599

Approved by: _____
R.I. Analytical

Sample #: 002
SAMPLE U-2 GRAB 02/05/03 @1130

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE ANALYZED	ANALYST
Di-n-butyl phthalate	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
1,2-Dichlorobenzene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
1,3-Dichlorobenzene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
1,4-Dichlorobenzene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
3,3'-Dichlorobenzidine	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Diethyl phthalate	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Dimethyl phthalate	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2,4-Dinitrotoluene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2,6-Dinitrotoluene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Di-n-octyl phthalate	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
1,2-Diphenylhydrazine	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Fluoranthene	0.03	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Fluorene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Hexachlorobenzene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Hexachlorobutadiene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Hexachlorocyclopentadiene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Hexachloroethane	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Indeno(1,2,3-cd)pyrene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Isophorone	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Naphthalene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Nitrobenzene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
N-nitrosodimethylamine	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
N-nitrosodiphenylamine	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
N-nitrosodi-n-propylamine	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Phenanthrene	0.02	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Pyrene	0.03	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
1,2,4-Trichlorobenzene	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
4-Chloro-3-methylphenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2-Chlorophenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2,4-Dichlorophenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2,4-Dimethylphenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2-Methyl-4,6-dinitrophenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2,4-Dinitrophenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2-Nitrophenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
4-Nitrophenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Pentachlorophenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
Phenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
2,4,6-Trichlorophenol	<0.01	0.01	mg/kg dry	SW-846 8270	02/11/2003	MT
SURROGATES			RANGE	SW-846 8270	02/11/2003	MT
Phenol-d5	50		24-113%	SW-846 8270	02/11/2003	MT
2-Fluorophenol	26		25-121%	SW-846 8270	02/11/2003	MT
2,4,6-Tribromophenol	76		19-122%	SW-846 8270	02/11/2003	MT
Nitrobenzene-d5	48		23-120%	SW-846 8270	02/11/2003	MT
2-Fluorobiphenyl	58		30-115%	SW-846 8270	02/11/2003	MT

R.I. Analytical Laboratories, Inc.

CERTIFICATE OF ANALYSIS

State of R.I.-C.R.M.C.
Date Received: 02/05/2003
Work Order #: 0302-01599

Approved by: _____
R.I. Analytical

Sample #: 002
SAMPLE U-2 GRAB 02/05/03 @1130

PARAMETER	SAMPLE RESULTS	DET. LIMIT	UNITS	METHOD	DATE ANALYZED	ANALYST
P-Terphenyl-d14	102		18-137%	SW-846 8270	02/11/2003	MT
TOTAL METALS						
ANTIMONY	<1.0	1.0	mg/kg dry	SW-846 6010	02/10/2003	VIK
ARSENIC	<0.5	0.5	mg/kg dry	SW-846 6010	02/10/2003	VIK
BARIUM	6.3	0.26	mg/kg dry	SW-846 6010	02/10/2003	VIK
BERYLLIUM	0.08	0.05	mg/kg dry	SW-846 6010	02/10/2003	VIK
CADMIUM	<0.26	0.26	mg/kg dry	SW-846 6010	02/10/2003	VIK
CHROMIUM	4.8	1.0	mg/kg dry	SW-846 6010	02/10/2003	VIK
COPPER	4.8	1.0	mg/kg dry	SW-846 6010	02/10/2003	VIK
LEAD	9.3	1.0	mg/kg dry	SW-846 6010	02/10/2003	VIK
MANGANESE	56	1.0	mg/kg dry	SW-846 6010	02/10/2003	VIK
MERCURY	<0.02	0.02	mg/kg dry	SW-846 7471A	02/07/2003	NMC
NICKEL	2.4	1.0	mg/kg dry	SW-846 6010	02/10/2003	VIK
SELENIUM	<1.0	1.0	mg/kg dry	SW-846 6010	02/10/2003	VIK
SILVER	<0.1	0.1	mg/kg dry	SW-846 6010	02/10/2003	VIK
THALLIUM	<1.4	1.4	mg/kg dry	SW-846 6010	02/10/2003	VIK
VANADIUM	4.2	1.0	mg/kg dry	SW-846 6010	02/10/2003	VIK
ZINC	18	1.0	mg/kg dry	SW-846 6010	02/10/2003	VIK
TOTAL PCBs						
PCBs BY NOAA SUMMATION OF CONGENERS	<0.001	0.001	mg/kg dry	SW-846 8082	02/25/2003	RML

Cadmium, Selenium, and Thallium: Unable to achieve detection limit due to matrix interference.

Sieve - * See Attached

Volatile organic samples collected, preserved and analyzed under guidelines of method SW-846 5035.

Method 8270: Benzo[e]pyrene = 0.03 mg/kg dry

R.I. Analytical Laboratories, Inc.

CERTIFICATE OF ANALYSIS

RICRMC
Work Order No.: 0302-1599
Date Received: 2/5/03

Approved by: _____
R.I. Analytical

Sample #: 01

Sieve Analysis – Method ASTM D422

Sieve Size	% Retained	% Passing
No. 4	2.87	97.13
No. 10	2.15	94.98
No. 20	3.98	91.00
No. 40	13.63	77.37
No. 60	24.53	52.84
No. 140	42.03	10.81
No. 200	7.57	3.24

R.I. Analytical Laboratories, Inc.

CERTIFICATE OF ANALYSIS

RICRMC
Work Order No.: 0302-1599
Date Received: 2/5/03

Approved by: _____
R.I. Analytical

Sample #: 02

Sieve Analysis – Method ASTM D422

Sieve Size	% Retained	% Passing
No. 4	8.15	91.85
No. 10	8.14	83.71
No. 20	13.64	70.07
No. 40	19.83	50.24
No. 60	21.24	29.00
No. 140	22.23	6.77
No. 200	4.31	2.46

R. I. Analytical
41 Illinois Av **Sieve Analysis**
Warwick, RI 02888
Tele: 401-737-8500

Page No.: 221
Date: 2/11/03
Time: 845
Analyst: CAP

Sample No. ~~Stat~~ 1599-1
Client: ~~State~~ of RI

Dry Sample + Plate 291.29
Plate 10.04
Initial Sample (g) 281.25

Sieve No.	Sieve + Cardboard (g)	Sieve + Cardboard + Sample (g)	Sample (g)	% Retained	% Passing
4	540.66	549.74	8.08 ✓	2.87 ✓	97.13 ✓
10	490.03	496.07	6.04 ✓	2.15 ✓	94.98 ✓
20	454.90	466.09	11.19 ✓	3.98 ✓	91.00 ✓
40	420.88	459.21	38.33 ✓	13.63 ✓	77.37 ✓
60	446.14	515.14	69.00 ✓	24.53 ✓	52.84 ✓
140	421.25	539.45	118.20 ✓	42.03 ✓	10.81 ✓
200	368.04	389.33	21.29 ✓	7.57 ✓	3.24 ✓
Pan	383.47	392.56	9.12 ✓	3.24 ✓	∅
			281.25 ✓	100.00 ✓	

FT 2/11/03

R. I. Analytical
41 Illinois Av **Sieve Analysis**
Warwick, RI 02888
Tele: 401-737-8500

Page No.: 221
Date: 2/11/03
Time: 915
Analyst: CAP

Sample No. 1599-2
Client: ~~State~~ of RI

Dry Sample + Plate 289.81
Plate 10.12
Initial Sample (g) 279.69

Sieve No.	Sieve + Cardboard (g)	Sieve + Cardboard + Sample (g)	Sample (g)	% Retained	% Passing
4	540.73	563.53	22.80 ✓	8.15 ✓	91.85 ✓
10	490.10	512.87	22.77 ✓	8.14 ✓	83.71 ✓
20	459.91	498.05	38.14 ✓	13.64 ✓	70.07 ✓
40	420.89	476.34	55.45 ✓	19.83 ✓	50.24 ✓
60	447.01	506.41	59.40 ✓	21.24 ✓	29.00 ✓
140	421.31	483.49	62.18 ✓	22.23 ✓	6.77 ✓
200	368.12	380.19	12.06 ✓	4.31 ✓	2.46 ✓
Pan	383.35	390.24	6.89 ✓	2.46 ✓	∅
			~~282~~ 279.69 ✓	100.00 ✓	

FT 2/11/03

* Shaded area is % Silt and Clay Number

R. I. Analytical
41 Illinois Av **Sieve Analysis**
Warwick, RI 02888
Tele: 401-737-8500

Page No.: 221
Date: 2/11/03
Time: 845
Analyst: CP

Sample No. ~~Stat~~ 1599-1
Client: ~~State~~ of RI

Dry Sample + Plate 291.29
Plate 10.04
Initial Sample (g) 281.25

Sieve No.	Sieve + Cardboard (g)	Sieve + Cardboard + Sample (g)	Sample (g)	% Retained	% Passing
4	540.66	549.74	8.08 ✓	2.87 ✓	97.13 ✓
10	490.03	496.07	6.04 ✓	2.15 ✓	94.98 ✓
20	454.90	466.09	11.19 ✓	3.98 ✓	91.00 ✓
40	420.88	459.21	38.33 ✓	13.63 ✓	77.37 ✓
60	446.14	515.14	69.00 ✓	24.53 ✓	52.84 ✓
140	421.25	539.45	118.20 ✓	42.03 ✓	10.81 ✓
200	368.04	389.33	21.29 ✓	7.57 ✓	3.24 ✓
Pan	383.44	392.56	9.12 ✓	3.24 ✓	Ø
			281.25 ✓	100.00 ✓	

FZ 2/11/03

R. I. Analytical
41 Illinois Av **Sieve Analysis**
Warwick, RI 02888
Tele: 401-737-8500

Page No.: 221
Date: 2/11/03
Time: 915
Analyst: CP

Sample No. 1599-2
Client: State of RI

Dry Sample + Plate 289.81
Plate 10.12
Initial Sample (g) 279.69

Sieve No.	Sieve + Cardboard (g)	Sieve + Cardboard + Sample (g)	Sample (g)	% Retained	% Passing
4	540.73	563.53	22.80 ✓	8.15 ✓	91.85 ✓
10	490.10	512.97	22.77 ✓	8.14 ✓	83.71 ✓
20	459.91	498.05	38.14 ✓	13.64 ✓	70.07 ✓
40	420.89	476.34	55.45 ✓	19.83 ✓	50.24 ✓
60	447.01	506.41	59.40 ✓	21.24 ✓	29.00 ✓
140	421.31	483.49	62.18 ✓	22.23 ✓	6.77 ✓
200	368.12	380.19	12.06 ✓	4.31 ✓	2.46 ✓
Pan	383.35	390.24	6.89 ✓	2.46 ✓	Ø
			~~282.~~ 279.69 ✓	100.00 ✓	

FZ 2/11/03

* Shaded area is % Silt and Clay Number

APPENDIX J

PUBLIC COMMENT AND RESPONSES ON DRAFT REPORT

APPENDIX J
Allin's Cove Restoration Project
Public Comment Letters and Responses on Draft Report

The Allin's Cove Draft Report and Environmental Assessment dated February 2003 was provided for a 30-day Public Review in March 2003. In addition, on March 26, 2003 an informational meeting was held in Barrington, Rhode Island to describe the project and answer any questions regarding the proposed project.

Following the meeting comment letters (24) were received (See Table 1). Letters are included in this Appendix are in alphabetical order by sender.

GENERAL RESPONSE A

Many of the letters were concerned about the loss of the end of the existing sand spit. Resident on the east side of the Cove use the existing south sand spit for walking and recreational enjoyment of the area. The plan proposed in the draft report results in the loss of the end of the south sand spit (about 300 feet) that is used by residents for recreation purposes.

In addition, many residents were concerned about the height of the disposal pile. The proposed plan would increase the height of this area by about 3 to 4 feet.

Corps: We understand the local resident's concerns regarding the loss of the beach at the end of the spit. The final proposed plan includes re-configuring the south sand spit, which would provide an improved beach area along the remaining spit. The proposed plan would excavate the sandy material from the disposal area and place it on the south sand spit. This would result in a wider beach area at the toe of the disposal area and also reduce the height of the disposal area. This would re-configure the barrier more closely to the 1938 position. The re-configuration of the south sand spit was proposed by Jon Boothroyd, State Geologist, RI in his report on the site. However, we initially dropped this from consideration due to lack of sandy material. Subsequent, testing of the material at the disposal area has indicated that this is sandy material.

GENERAL RESPONSE B

Another general area of concern was the need to do something to improve the quality of the storm water runoff into the area and specifically to improve the health of the small drainage pond located at the end of Third Street

Corps: The maintenance and correction of any storm water issues in the area are not part of this project. The project will not change existing storm water runoff. In general, the Corps does not have authorities to investigate and construct local drainage solutions. These actions are considered a local community responsibility. It is our understanding that the town and Save the Bay will be investigating ways to address storm water issues in the area.

GENERAL RESPONSE C

A third area of concern was the walking path from the end of Third Street to Willow Way. The path is used by local residents as pedestrian access to the south sand spit. This walking path will be outside the construction area for the project. However, it may need to be closed for public safety reasons during project construction.

1. **Response to Letter from Scott Adams, dated March 27, 2003.**
   See Response A.

2. **Response to Letter from Bethany Aspinwall, dated April 24, 2003.**
   Support letter. No response required.

3. **Response to Letter from Paul Bannon, dated April 6, 2003.**
   Shoreline Access Loss: We changed the discussion in the recreation section of the report (Sections 2.4 and 5.7) to include recreation at the end of the sand spit. We will continue to consider public access as plans and specifications are developed for the project. See Response A above.

   As you note we have met to discuss the recreational access and did include in the draft report a possible walking path from Willow Way to near Short Street along the perimeter of the marsh. RI CRMC does not support this concept. (See letter dated 11 April 2003 and as a result we have removed plate C-5 from the report.) However, we are willing to work with the RICRMC to develop a low cost walking path plan that is acceptable to the agencies during the plans and specifications phase.

   Recreational/Aesthetics: This comment is relative to the height of the disposal area and you note that adding 3 to 4 feet of height to this area will cause an access issue. During final design we will grade the area so that there is not a steep drop off from the disposal area to the beach. As you note in your letter, we plan to use sand from this area to augment the south sand spit so this will provide capacity at the disposal area.

   Drainage /Water Quality: See Response B above.

4. **Response to letter from Alan Buff, dated April 4, 2003.**
   Erosion control and turbidity controls will be included in the plan and specifications for the project. These controls are required by RI DEM and the Corps will obtain Water Quality Certification from RI DEM before project construction.

   The proposed project depends on on-site disposal of material excavated from the *Phragmites* marsh area. No other disposal sites were identified.

   Rip Rap is not allowed in the area along Byway Road per state regulation (See RICRMC letter dated April 11, 2003).

Also see response A and B above.

5. **Response to letter from Cate Chason, dated March 23, 2003.**
   See Response A above regarding loss of beach at end of spit. We do not plan to permanently obstruct the walking path from Third Street to Willow Way. However, during construction the path may need to be closed for public safety reasons.

6. **Response to letter from Laura Cooke, dated April 2, 2003.**
   See response A above regarding loss of beach at the end of the spit.

   After completion of the project, the disposal area would be graded and planted with suitable grasses. This should provide a meadow area and would be maintained by the Town of Barrington.

   The existing walking trail from end of Willow Way to Third Street may be closed during construction for public safety, but will reopen once construction is complete.

7. **Response to Letter from Robert Hagan, dated April 7, 2003.**
   The proposed alignment of the tidal inlet is based on analysis of historic and geological and hydrologic conditions at the site.

   No retention is planned for the north sand spit. Local access to the north sand spit will be as allowed by the town and state regulations.

   The proposed project will be reviewed and coordinated with state and federal permitting agencies to ensure we are in compliance with applicable laws and regulations.

8. **Responses to Letter from Carl f. Furtado, dated April 5, 2003.**
   Support letter. No response required

9. **Response to letter from Burton M. Greifer, dated April 5, 2003.**
   Long-term pedestrian access from the neighborhood to the Beach should not be impacted by the project. However, during construction it may be necessary to limit access for public safety reasons.

10. **Response to Letter from Valarie Harris, dated April 5, 2003.**
    Support letter. No response required.

11. **Response to Letter from Edward Ionata, dated April 3, 2003.**
    Comment Ia. We considered off-site disposal of the material and this effort is noted on page 23 of the draft report. Any alternative to remove the material from the site would increase the project costs. Currently, we estimate the amount of

material to be disposed of at 8,200 cubic yards (cy). One can assume a $20 per cy disposal cost and calculate an additional cost of $164,000. This would not result in any increased salt marsh restoration thus the on-site disposal option is more cost effective than the off-site option. If the disposal area were also excavated to create salt marsh this would result in the loss of the existing meadow, public access to the area, and add additional costs to the project. Assuming the 2 acre area would require about 3 feet of excavation to lower the elevations to levels inundated by the tide, then this would be about 4,840 cy of material to be disposed of for an estimated total disposal amount of 13,000 cy. Using the $20 per cy figure for disposal, this would increase the disposal costs to $260,000 not including the cost of excavating the 2-acre disposal area. As an established project constraint was the funding available to construct the project and the local desire to have access to the area, off-site disposal was dropped from further consideration.

Comment Ib. The Providence River dredging project is depending primarily on ocean disposal. The disposal cost for the Providence River dredging project is about 10 dollars per cubic yard. The cost for Allin's Cove would be substantially higher considering the logistical requirements (getting material on to a barge, the 40 mile trip out to disposal site, and biological testing) so that use of the Rhode Island Sound Disposal site for the Allin's Cove project would not be practicable.

Comment II. During plans and specifications we will provide a grading plan for the area. Also see Response A, B, and C above.

12. Response to letter from Patricia Kelly, dated April 5, 2003.

Letter of Support. No response required.

13. Response to Letter from Lorraine Keeney, dated March 31, 2003

This was historically salt marsh and open water with a wider south sand spit than currently exists. The sand spit has elongated and narrowed over time. This land is owned by the state, the town, and the Barrington Land Conservation Trust. We have worked closely with these groups and held several meetings in the area that included local residents to develop a locally acceptable plan as well as one that is consistent with Corps authorities and regulations.

The proposed plan is to restore the *Phragmites* marsh area to salt marsh and use the sand under the meadow/proposed disposal area to re-form the south sand spit. The disposal area would be graded and seeded with grasses following construction. In addition, Section 2.9 and 5.7 of report have been re-worded to include mention of recreation at the end of the sand spit. Also see responses A and C above.

We intend to have a meeting with residents, land owner (BCLT), RI CRMC, town officials, and Save the Bay early during plans and specs to discuss the final site configuration.

14. Response to letter from Carol Meeker, dated April 7, 2003.

See Response A above.

You also note the need to improve the health of the small drainage pond off Third Avenue by dredging accumulated sediments. Corps authority under the Section 1135 program does not extend to local drainage problems. See response B above.

15. Response to letter from Sydney Monstream-Quas., dated March 27, 2003

See Response A above.

We intend to have a meeting with residents, land owner (BCLT), RI CRMC, town officials, and Save the Bay early during plans and specs to discuss the final site configuration.

16. Response to letter from Brian and Judy Ott, dated April 7, 2003.

See Response A above.

17. Response to letter from Lillian C. Rose dated April 5, 2003.

Letter of Support. No response required.

18. Response to letter from Charlotte B. Sornborger, dated April 4, 2003.

Letter of Support. No response required.

19. Response to letter from Dawn Stanzione, no date

We do not plan to treat the *Phragmites* area with herbicide prior to construction. The maintenance plan for the disposal site will include the provision for limited spot treatment of *Phragmites* plants with herbicides if *Phragmites* begins to grow in the disposal area.

20. Response to letter from Helen Tjader, dated April 3, 2003.

Currently, the plan does not provide additional public parking at the site after project completion. We can discuss this with the town to see what provisions they may be able to make for improved public parking near the area.

21. Response to letter from E. Douglas Rayner, dated April 5, 2003.

Letter of Support. No response required.

22. Response to letter from Irene Nolan Urban, dated April 6, 2003.

Comment Letter. No response required.

23. Response to letter from Insa and Michael Wood, dated March 27, 2003.

Concerns on the loss of the end of the spit, walking area, and dredge spoils area. are addressed in Responses A and C above.

24. Response to letter from Sandra Wyatt, dated April 7, 2003.

Comment Letter. No response required.

APPENDIX J

TABLE 1 - List of Public Comment Letters

MR. SCOTT B. ADAMS 2 WILLOW WAY BARRINGTON, RI 02806	MS. LORRAINE KENNEY 43 THIRD STREET BARRINGTON, RI 02806
BETHANY ASPINWAU 276 NARRAGANSETT AVENUE BARRINGTON, RI	MS. CAROL C. MEEKER 58 THIRD STREET BARRINGTON, RI 02806
MR. PAUL J. BANNON 50 THIRD STREET BARRINGTON, RI 02806	MR. SYDNEY MONTSTREAM-QUAS 45 ANNAWAMSCUTT ROAD BARRINGTON, RI 02806
MR. ALAN BUFF 45 ALFRED DROWNE ROAD BARRINGTON, RI 02806	BRIAN AND JUDY OTT 56 ALFRED DROWNE ROAD BARRINGTON, RI 02806
CATE CHASON 24 PLEASANT STREET BARRINGTON, RI 02806	E. DOUGLAS RAYNER 88 PROSPECT STREET BARRINGTON, RI 02806
MS. LAURA COOKE 27 SHORT ROAD BARRINGTON, RI 02806	LILLIAN C. ROSE RAYMOND F. ROSE 75 ALFRED DROWNE ROAD BARRINGTON, RI 02806
MR. ROBERT D. HAGAN 70 SPRING AVENUE BARRINGTON, RI 02806	MS. CHARLOTT B. SCORNBORGER, PRESIDENT THE BARRINGTON LAND CONSERVATION TRUST, INC. P.O. BOX 324 BARRINGTON, RI 02806
MR. CARL F. FURTADO 01 PROMENADE STREET BARRINGTON, RI 02806	MS. DAWN STANZIONE 55 GREENE AVENUE BARRINGTON, RI 02806-1352
MR. BURTON M. GREIFER 284 NAYATT ROAD BARRINGTON, RI 02806	MS. HELEN HERSH TJADER 15 ETON ROAD BARRINGTON, RI 02806
VALERIE HARRIS 32 BYWAY ROAD BARRINGTON, RI	MS. IRENE NOLAN URBAN 289 NARRAGANSETT AVENUE BARRINGTON, RI 02806
MR. EDWARD W. IONATA 26 FIRST STREET BARRINGTON, RI 02806	INSA & MICHAEL WOOD 76 ANNAWAMSCUTT ROAD BARRINGTON, RI 02806
MS. PATRICIA KELLY 10 HALF MILE ROAD BARRINGTON, RI 02806	SANDRA WYATT 28 BYWAY ROAD BARRINGTON, RI 02806

Scott B. Adams
2 Willow Way
Barrington, RI. 02806

March 27, 2003

District Engineer
Engineering/Planning Division
Army Corps of Engineers
696 Virginia Rd.
Concord, MA. 01742
Attn: Barbera Blumeris

RE: Allin's Cove Restoration Project
Public Comment

To whom it may concern:

In my opinion the project as proposed makes no attempt to replace the beach that will be lost on the south side of the proposed new channel. My family and I use that beach on a daily basis for recreational activities and the current plan virtually eradicates this wonderful resource that currently exists. This is completely unacceptable!

The Corps states in its recent report that "..it is expected that there will be no negative impact to enjoyment of the area and enjoyment of the area will be improved". This statement is simply not true and I find it offensive that the Corps can simply float an inaccurate and uneducated statement like this in a public document. The current plan will negatively impact the enjoyment of the area if one of its greatest treasures is destroyed.

I would ask that the Corps consider redesigning the plan to include the replication of the sandy beach on the south side of the proposed new channel. This is an existing vital recreational asset that should not be eliminated by this project.

Respectfully submitted,

Scott B Adams

April 24, 2003

Dear Ms. Blumeris:

I am writing in support of the Army Corps' draft preliminary restoration plan for Allin's Cove. Restoring 3.6 acres of the salt marsh on the eastern side of the cove will greatly enhance ~~the wildlife habitat, and the relocation of the~~ channel to the east will help reduce erosion of the marsh and the bank under Byway road on the west side.

I understand that loss of the sandspit as a recreational area is of concern to some residents of the Allin's Cove neighborhood. However, the proposed plan should be a good solution for all.

I look forward to seeing the positive changes for the area and hope that people involved will see the big picture.

Sincerely,

Bethany Aspinwall

BETHANY ASPINWALL
276 NARRAGANSETT AVE
BARRINGTON, RI 02806

April 6, 2003

Colonel Thomas L. Konig
District Engineer
US Army Corps of Engineers- New England District
696 Virginia Road
Concord, MA 01742

ATTN: Barbara Blumeris, Engineering/Planning Division

Re: Draft Integrated Ecological Restoration Report/Environmental Assessment
Allin's Cove Wetland Restoration, Barrington, Rhode Island

Dear Colonel Konig:

I am submitting this letter to the Army Corps of Engineers (ACOE), as a comment on the Draft Integrated Ecological Restoration Report /Environmental Assessment (EA) for the Allin's Cove Wetland Restoration project. I understand it is presently under public review as required by the Council on Environmental Quality and U.S. Army Corps of Engineers (ACOE) regulations for implementing the National Environmental Policy Act.

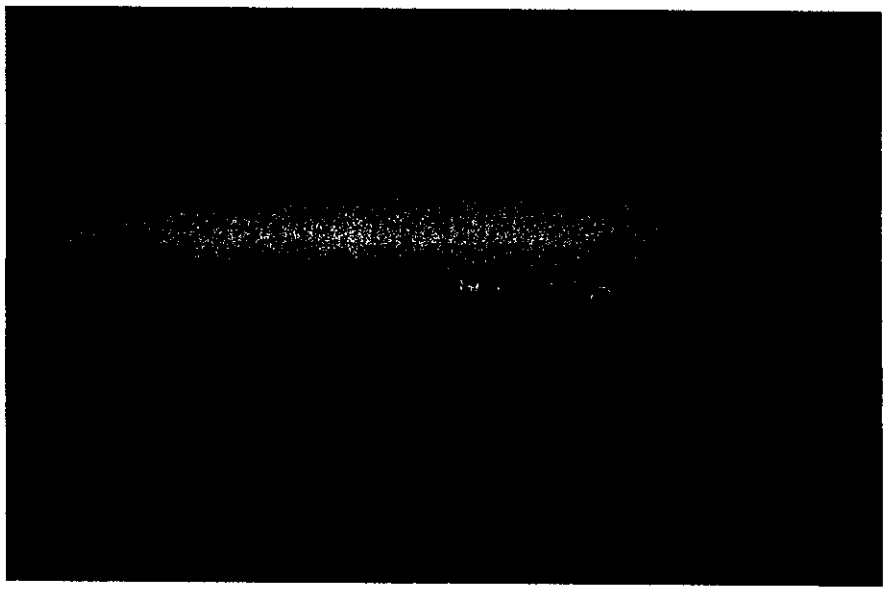
I am a resident in the Alfred Drowne neighborhood, living on the lower end of Third Street. My family and I regularly visit the beach and upland areas of Allin's Cove that will be directly affected by the Wetland Restoration project. I specifically maintain the Third Street walking path for access to the shoreline to/from the neighborhood. The path is shown in the adjacent photo which clearly indicates the heavy use of neighborhood residents for access to the waterfront. Every night during the summer months, my three young children are on the beach walking the shoreline to fish, enjoy beautiful sunsets, beach comb, or watch the Thursday night sailboat races on the river. These daily activities I find, will be lost if the plan as proposed by the ACOE moves forward. We have repeatedly voiced our concerns on several key issues to ACOE and CRMC staff. The report as presented does not commit to doing any of the mitigation that we feel must be a part of this project to be determined as having *no significant impact* on the Alfred Drowne neighborhood. I have been following the development of the project for the past several

years, more in earnest since your release of the proposed plan this past fall. I am in support of the concept of cove/marsh and wetland restoration that the New England District staff has worked so diligently on over the last several years. Representatives in the neighborhood have met on several occasions with the supporting agencies. At each opportunity we have consistently stressed the importance of the recreational and aesthetic qualities of the site. Allin's Cove is a highly utilized recreational area for the Alfred Drowne neighborhood and the preferred alternative as presented, raises major concerns relative to waterfront/beach loss, recreational access, aesthetics and water quality.

I have had an opportunity to review the Draft EA and offer the following specific comments relating to how I feel the project can be greatly improved without major changes in the plan or additional cost:

1. Shoreline Access Loss:

The existing channel into Allin's Cove will be relocated more than 200 feet to the south. Essentially a new channel will cut through the existing shoreline approximately halfway from the end of Willow Way to the existing channel inlet. The beach (and only pristine sand), along the Alfred Drowne side of the Cove will be relocated (bulldozed) to build a beach and "sand spit" on the Byway Road side of the channel.



The Corps report states: "*The project to move the inlet channel to the north will also make the existing barrier spit extending from Willow Way shorter by about 200 feet. Local residents are concerned about this change as they like the walking area the spit currently provides. However, the new spit along Byway road will be walkable. Overall it is expected that there will be no negative impact to enjoyment of the area and enjoyment of the area will be improved.*"

This statement is highly insulting to me, suggesting that I can take my children, without endangering their safety to access the new shoreline/beach on Byway Road so we can fish or search for crabs. How can loss of the beach and shoreline as shown in this photo, which has forever been a part of the Alfred Drowne neighborhood, and that my children have enjoyed since they

have been able to walk, not be a significant recreational loss to them and to our neighborhood? This statement gives no consideration to this loss along the easterly side of the cove and suggests improved enjoyment of the area. Without mitigation this statement/finding cannot possibly be valid.

I have met with staff from the ACOE and CRMC and discussed an alternative to somewhat mitigate the loss of the beach. The plan is depicted in Figure C-5 and attempts to replicate the existing beach on the south side of the channel at the proposed new channel location. This plan does not address the loss of over 200 feet of shoreline access though, but does provide a vital beach area to replace what is being lost to the neighborhood as part of the restoration project. Any plans that do not provide this mitigation will not be supported by the neighborhood and a commitment to this replacement/restoration should be included in the Final EA. Discussions with staff have indicated a willingness to provide this mitigation as we have stressed our concern of this vital asset presently available to our neighborhood.

2. Recreational / Aesthetics:

The proposed disposal area creates significant recreational and aesthetic impacts to the Alfred Drowne neighborhood that are not adequately or specifically mitigated by the Recommended Alternative. Section 2.9 of the EA defines the recreational and aesthetic resources of Allin's Cove but ignores a critical component of these resources – accessibility. The first concern regarding access is the height of the disposal area, 3-4 feet as defined in the EA. Our desire is to limit to the extent possible, the height of the filled area as not to create a barrier to the upland area, from the neighborhood and from the shoreline. Presently there is a shear, three foot embankment to the upland area from the beach as depicted in the photograph. Access from the shoreline to the upland is possible today. If the embankment is increased by another three to four feet, the upland will not be accessible from the shoreline, except for the area near the southern limits at Willow Way.

A method to minimize the height of the disposal area is to better distribute the material on-site. I had suggested using some of the material from the eastern shoreline (other than the beach area at the northern point) as fill for the Byway Road side. This idea has not met with favorable response due to silt content, but led to the idea by ACOE and CRMC to possibly remove to the extent possible, the sand from the upland area and distribute that material along the eastern shoreline. The option would benefit aesthetics as well as recreational access as this redistribution of material will have an overall effect of reducing the height of the upland area while restoring some of the eastern beach area if the sand material is suitable.

A second option which I have discussed with staff that would provide dual benefits (access and water quality) would be to distribute more of the material through establishment of a walking trail/berm along the northerly edge of the upland area extending along the cove, up to a public right-of-way to the neighborhood. This plan is depicted in Figure C-5. The walking trail would provide an offset to the loss of over 200 feet of shoreline on the easterly side of the cove and provide a continuous trail from the neighborhood along the shoreline. Again this option increases the area of disposal available to lessen the height of upland area, while mitigating the loss of shoreline access and enhancing the aesthetic benefits of the project.

A reference in the EA to detract from the berm/walking trail alternative was the possibility of drainage problems resulting from the berm. This statement was made with no engineering thought or substantiation. Easily implemented engineering solutions are possible to mitigate any potential for drainage issues and to the contrary, substantial drainage/storm water management benefits could be realized for the cove. Refer to item three.

3. Drainage/Water Quality

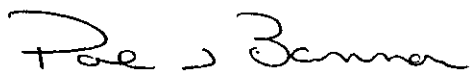
An opportunity exists for the supporting agencies; Town of Barrington, CRMC, ACOE and Save the Bay to include storm water management practices to enhance water quality into the cove/bay, decrease flooding potential and mosquito breeding areas as part of this project. Presently storm water runoff from the neighborhood discharges directly into the cove through three direct discharge or poorly-maintained detention basins. Specifically the watershed to the east of the cove including the Alfred Drowne neighborhood could be investigated to include soon to be mandated, storm water management practices that will improve water quality of the cove.

Implementation of soil erosion and sediment controls at the outfalls, as well as structural best management practices (i.e. grassed swales, storm water wetlands) would have a beneficial impact on the receiving waters and therefore upgrade the wildlife habitat and breeding grounds of Allin's Cove. The time is now while the opportunity exists with the wetland/marsh restoration project. It will never be more cost effective, economical and create less environmental impacts than being completed together, or it will be an opportunity lost.

I hope these comments are considered in the development of the Final EA, as I look forward to the opportunity for continued coordination with New England Division staff to develop final design details for the project. The final design plans and specifications are critical in completing a successful project and I would like the opportunity as being an engineer, to review the preliminary and final bid documents.

In conclusion, it is important to note that the Draft EA makes findings for approval of the EA that are supported only by statements suggesting mitigative alternatives that could be incorporated into the project as defined in Figure C-5. Those positive findings (issuance of a FONSI), are based on the suggested mitigation and not the impact of the preferred alternative defined by Figure C-2. If the suggested mitigation is not incorporated into the document, the findings as put forth in the Draft EA would not be valid. It is requested that the Final EA make a firm commitment to provide the mitigation discussed herein and with staff, so that the ultimate design for the restoration project will provide recreational access, aesthetic enhancements and restoration of the beach area that will be lost as part of the ACOE project.

Sincerely,



Paul J. Bannon
50 Third Street
Barrington, RI 02806

45 Alfred Drowne Rd.
Barrington, RI 02806

April 4, 2003

District Engineer
696 Virginia Road
Concord, MA 01742
Attn: Barbara Blumeris
Barbara.r.blumeris@usace.army.mil

~~Reference: Allin's Cover Restoration Project, Barrington, RI~~

Good morning:

I am writing to express comment on the proposed project referenced above. As a property owner on the east side of Allin's cove, I have several questions and concerns regarding the proposed project that were not addressed fully during the preliminary meetings I attended. I was unable to attend the Army Corps' presentation on March 26. To the best of my knowledge, these issues have still not been fully resolved.

Our property abuts the northeast section of the cove where tidal water flows at the present time. My first concern is that the process of removing the dredged material deposited in the southern end of the cove will result in a flow of silt into the northern end, reducing the depth of the existing cove. Anecdotal information indicates that significant amounts of silt flowed into the cove when the dredge spoils were originally deposited and that the cove depth was reduced. I believe further reduction in the depth of the northern end of the cove would be harmful. As I understand the plan, abatement measures will be taken to avoid the flow of silt. However, I have heard of no plan to take quantitative measures to confirm the success of the abatement strategy and no plan to remedy any damage caused should the measures indicate a necessity.

My second concern is the current plan to deposit the removed material into a two-acre site between the cove and the path connecting Third Street and Willow Way. As I understand the proposal, up to four feet of material will be deposited in this two-acre site. I believe this strategy of "disposing" of the removed material on site will be detrimental to the area and will create a visual barrier unnatural to the site. Despite the plan to vegetate the 4' berm, I fear that the disposed material will create an enduring odor. I understand that several alternate suggestions have been made with regard to the disposal of this material and I strongly urge that these be explored and submitted to the abutters for approval.

The relocation of the channel and the shortening of the beachfront accessible from Willow Way is detrimental to those of us living in Drownville who have enjoyed access to the spit. The suggestion that there is no net loss of beachfront, because the same amount of sandy beach will be added on the Byway Road side of the cove, is true in the aggregate sense but is ridiculous from the perspective of Drownville residents. Aerial photographs of the cove from 1938 indicate that the channel has "always" been located at the northern end of the spit and the beach has "always" been at the southern end of the cove. I understand and appreciate the need to control erosion at the foot of Byway Road but believe alternatives to bisecting the spit should be explored further.

A significant riprap sea wall exists just 100-200 yards to the west of the existing channel. I don't believe the strategy of extending that wall or adding a companion wall has been seriously considered. Such a strategy might necessitate only a minor shortening of the existing spit.

At a minimum, an effort should be made to nourish or replenish the eroding beach at the end of Willow Way so that the shortened beach can function more effectively as a recreational alternative to the existing, longer spit. Perhaps some of the material removed from the southern end of the cove could be used as base material for building the spit at the northern end of the cove, thereby enabling some of the sand from the existing spit to be used to replenish the southern beach.

Finally, it seems rather shortsighted that the issues of drainage and water quality are not being addressed in conjunction with this project. I understand that the Army Corps' responsibility is to right the previous wrong and that the redirection of run-off and storm water is the responsibility of others. It just seems logical to me as a taxpayer that the responsible parties work together to maximize the efficiency of the project to achieve the mutually desired goal of reestablishing a thriving cove environment.

Please consider these comments as the plans to restore Allin's Cove are finalized. I am fully supportive of restoring the natural habitat but I believe that the concerns of Drownville residents can be addressed in the final plan.

Sincerely,
Alan Buff

cc: DEM, rsantoro@dem.state.ri.us
Save the Bay, savebay@savebay.org
Barrington Town Council, asec@msn.com
Janet Freedman, CRMC, j_freedman@crmc.state.ri.us

March 23, 2003

Cate Chason
24 Pleasant St
Barrington, RI 02806

District Engineer
696 Virginia Rd
Concord, Ma 01741
Attn. Barbara Blumeris

To Whom It May Concern,

I live one block from Allin's cove and I walk there every day of the year, often twice a day. There are several concerns that I my neighbors have about the Allin's Cove Restoration Project. I will be brief in listing my concerns, and hope that as a resident who daily enjoys the beauty of this area, my thoughts will be considered.

First, cutting a channel and relocating a beach on the Byway Road side of the channel will take away our much-used shoreline. Innumerable families and nature lovers enjoy this beach area. Why is our shoreline being removed without what seems to be much consideration?

Secondly, I am greatly concerned and perplexed by the idea of piling the land and vegetation presently existing up along the Third Street path. Please consider more inventive solutions to disposing of this material. What are the options? Why have other ideas not been considered? This is now a beautiful walkway that dozens of people use daily, and it is considered the meeting place for many families and friends. The present rebuilding as proposed will destroy this area.

I would hope that my concerns would not go unheard.

Thanking you kindly in advance,

Cate Chason

2 April 2003

To Whom It May Concern:

My family has lived in our Alfred Drowne neighborhood since 1997. One of the reasons we moved to this area was because of the wonderful access to the beach. We have always loved walking down the path at the end ofThird Street to play in the meadow or to walk down to the spit of sand for a picnic. It is a perfect spot for children - lots of nice white sand for building sandcastles, and easy access to water for little bare feet. Other beaches within walking distance just don't offer the same amenities, and I feel it would be a real shame to lose this.

While others have suggested that it will be possible to cross the new channel to enjoy the beach on the Byway Road side, I feel this is not a viable alternative for any family with children, or at any time except the very middle of summer. I myself have seen very few people cross the channel at any time except the very lowest tides, and those have been only adults. Truthfully I believe that by simply moving the sand to the opposite side, we will have lost the best beach available to us in our neighborhood. For this reason I can understand why the Byway Road residents are in favor of this plan, but it seems unfair to punish one neighborhood at the expense of another.

Another issue I sould like to address is the piling of fill in the current meadow. My family has always enjoyed exploring this meadow - the tracks left by wild animals, the wild flowers that bloom through the summer and fall, the interesting bits of nature that we find there. To hear that this meadow will be raised 3-4 feet by fill is distressing as I imagine a bare field devoid of any plant life and susceptible to run-off and puddles forming.

To close, I feel that the current plan doesn't address these issues adequately. I would like to see a plan that changes our existing access as little as possible, and doesn't pit one neighborhood against another. We love the beach, the meadow, and the path just as they are! This plan in its current state threatens our nicest beach area, and the meadow, all places used daily by my family and myself, as well as many others in the neighborhood.

Sincerely yours,

Laura Cooke

Laura Cooke
27 Short Rd.

Blumeris, Barbara R NAE

From: Robert Hagan [haganr@worldnet.att.net]
Sent: Monday, April 07, 2003 11:29 AM
To: Blumeris, Barbara R
Subject: Allin's Cove, Barrington, RI

Ms. Barbara Blumeris,

I am writing to list a few comments I have regarding the planned Allin's Cove project. Having lived near the cove all my life, I have seen the natural and man-made changes that have affected the cove over the past 50 years.

My comments are as follows:

1. I would like to see the entrance of the cove NOT be on such an extreme angle as the plans indicate. I would also like to see the entrance closer to the existing beach area on the east side.

2. I am concerned about the mound of sand (5 foot high) at the entrance of the cove. a. How do you plan to retain this 5' high sand hill?
b. Also, I would not want to see any restrictions for Bay Spring side area access to new cove entrance. (i.e., walking and/or fishing at cove edge where sand mound is located.)

3. On the west side, I am concerned that all the existing grass will be used and transplanted since I understand that it is against the law to bury the existing grasses.

Thank you for your time and attention to my concerns.

Robert D. Hagan
70 Spring Avenue
Barrington, RI 02806
(401)246-0762
cell (401)451-4956

April 5, 2003

USA Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742

Re: Allins Cove Wetland Restoration, Barrington, RI

Dear Sirs,

I have lived in Barrington since 1956. My first place of resident was Pleasant Street and it was the end house on Pleasant Street. So, I had a good view of Allins Cove and the marsh land. I much preferred the way it was and I am glad to hear that it will be restored.

I have seen the Corps plan for restoration and hope that it goes through as soon as possible, as presented in Plan D, with out any alterations.

Sincerely,

Carl F. Furtado
101 Promenade St.
Barrington, RI 02806

Carl F. Furtado

Cc RI DEM
J. Freedman RI CRMC
Save The Bay
Barrington Town Council

RECEIVED
APR - 8 2003
REGULATORY DIVISION

Burton M. Greifer

284 Nayatt Road
Barrington, Rhode Island 02806-4032

Phone 245-1044
Fax 401-245-1044

April 5, 2003

Army Corps of Engineers
District Engineer
696 Virginia Rd.
Concord, MA 07142

Dear Ms. Blumeris,

I worked on the Allin's Cove project at it's inception, doing title work on the properties in the area which were unclaimed by heirs , and were mostly under water. (Mr. Allin did exist!!) I am also a member of the Barrington conservation commission, but speak here for myself. I have attended most of the meetings with the Corps and the Allin's Cove Neighborhood Coalition and I am quite surprised that the objectors have waited so long to make a statement. Well, not surprised, just annoyed.

I still believe that the plan is a good plan, and that there is no alternative to your objectives. However, I do feel that if pedestrian access from the neighborhood to the beach could be maintained, a major concern would be addressed. I don't think the neighbors should be denied access to their beach, some of which will disappear. If a little stretch of land is left high and dry, they will make their own path.

This project has to begin moving now. Further delays will jeopardize its future.

Sincerely,

Burton M Greifer

Burton M. Greifer

April 3, 2003

Army Corps of Engineers
District Engineer
696 Virginia Road
Concord, MA 01742

Attn: Ms. Barbara Blumeris
Engineering / Planning Division

Re: Allin's Cove Restoration Project
Barrington, RI

Dear Barbara,

On behalf of my neighborhood of Bayspring, in Barrington, Rhode Island, I want to take the opportunity to thank you and the Corps for all your work and care in the planning and presentation of the Allins Cove Restoration Project.

The plan presented last week was so thorough and beautifully thought-out that the meeting left me with a very heightened sense of anticipation and excitement.

I care very much indeed about having a healthy and diverse shoreline and I am amazed that, through clever and efficient engineering, the salt marsh can be restored to a working ecological system which will

provide a continuous and renewable habitat for wildlife and plants in our lovely town, at the same time as stopping the erosion seriously threatening our road, occasioned by the dumping of waste material in our cove several decades ago.

I thought it would be a good idea to write because there seemed to be a few people at the meeting doing all the talking, but people such as myself, who care deeply, were showing our approval so quietly.

I wanted to make this point particularly because of the very tragic death of one of the most dedicated and vocal supporters of the project: Lisa d'Andrea, in February, in the horrible fire at The Station night club in West Warwick. Lisa, one of my neighbors, was a remarkable and huge-hearted teacher of the handicapped and her dedication to the Allin's Cove Restoration Project was enormous. Had she been at that meeting, you would have heard her kind and intelligent voice as well, urging you and all our neighbors, to support the urgent restoration of the Cove's environment. In a sense, I am writing for her as well.

She felt, as I do, that the restoration of our wonderful shoreline should be a

very high priority for all of Rhode Island, and we thank you deeply for your dedication to the project.

Yours sincerely,

Valerie Thomas
32 Byway Road
Barrington, RI 02806

April 3, 2003

26 First Street
Barrington, RI 02806

Colonel Thomas L. Konig
District Engineer
US Army Corps of Engineers- New England District
696 Virginia Road
Concord, MA 01742
ATTN: Barbara Blumeris, Engineering/Planning Division

SUBJECT: **Draft Integrated Ecological Restoration Report/Environmental Assessment Allin's Cove Wetland Restoration, Barrington, Rhode Island**

Dear Colonel Konig:

The Draft Integrated Ecological Restoration Report /Environmental Assessment (EA) for the Allin's Cove Wetland Restoration is presently under public review as required by the Council on Environmental Quality and U.S. Army Corps of Engineers (ACOE) regulations for implementing the National Environmental Policy Act. I live in the vicinity of the proposed Allin's Cove Wetland Restoration project, visit the project site for recreation regularly, and have been following the development of the project for the past several years. New England District staff have developed an admirable Draft EA and proposed a recommended alternative that addresses many, but not all of the concerns voiced by citizens and government agencies. Several opportunities for information exchange among concerned parties have occurred including briefings and site tours. At each opportunity to communicate with the ACOE, Members of the public consistently stressed the importance of the recreational and aesthetic qualities of the site.

I have reviewed the Draft EA in detail and I concur that the ecological benefit created by the Recommended Alternative meets the goals of the 1135 Ecosystem Restoration Program. My comments on the draft EA address two categories of concern:

I. While the Recommended Alternative provides significant wetland habitat improvement, it does not maximize ecosystem restoration benefits. None of the dredged material deposited on the site by the ACOE is removed from the site - the material is merely removed from one portion of the site thus restoring saltmarsh habitat. The removed material is then placed on top of a portion of the original dredged material deposited by the ACOE forming a disposal mound, eliminating the possibility of restoring the entire marsh area originally impacted.

The alternatives described in Section 3.4 include no analysis of removing all of the dredged material from the site. Discussions with New England Division Staff at public meetings have cited the lack of economical disposal for the material as the prime reason requiring rearranging the material on the site rather than removing it. I believe that at least one alternative should be provided which removes all of the material from the site. The most economical environmentally sound disposal method should be determined and a cost established for disposal. If the cost exceeds the available funds for the project, then let the off-site disposal option be eliminated due to cost.

Disposal should be considered in conjunction with the ACOE's Providence River Dredging Project that has completed environmental review (Record of Decision March 2002) and provides disposal for nearly 5.5 million cubic yards of dredged material. The relatively small amount of material (less than 20,000 cubic yards) resulting from the Allin's Cove restoration if all of the dredged material were removed from the site may be able to be economically disposed of as part of the Providence River Project. The cost of transporting the material for disposal may benefit from the availability of equipment brought to the area by the Providence River Dredging Project, which will occur a short distance from Allin's Cove.

II. The creation of the disposal mound creates significant recreational and aesthetic impacts that are not adequately or specifically mitigated by the Recommended Alternative. Section 2.9 of the EA catalogs the recreational and aesthetic resources of Allin's Cove but ignores a critical component of these resources – accessibility. While access to the new shoreline area adjacent to Byway road will be improved, access to the shoreline from the east suffers. Presently, the western shore of the original disposal area is used for all of the recreational activities listed in Section 2.9 and is accessible via walking trails extending northward from the end of Willow Way and westward from the end of Third Street. The Recommended Alternative, as depicted in the EA, would establish a new channel just to the west of the existing disposal area and would raise the height of the disposal mound by depositing materials removed for saltmarsh restoration. The steep slope of the disposal mound adjacent to the new channel would limit access along the channel's eastern side. I recommend contouring the western edge of the new disposal mound to create a gently sloped, beach area above the high tide level providing recreational access along the eastern side of the new channel and avoiding eliminating the existing shoreline access from Third Street and Willow Way. Such contouring would

also serve to protect the new disposal mound from the eroding forces of wave action that are currently eroding the western edge of the existing disposal area.

The southern portion of the present disposal area, after many years, has developed a diverse and aesthetically pleasing upland grass and shrub habitat. The material removed for saltmarsh restoration will cover this area. The Recommended Alternative depicts the resulting disposal mound as a flat-topped, steeply sloped engineered fill. The disposal mound must be contoured to mimic natural uplands and planted with native grass and shrub species to mitigate the aesthetic impact of the mound and to stabilize the mound and control erosion. In general, the engineered mound depicted in the EA should be reworked by a landscape architect to ensure that it is properly contoured and vegetated. The concepts shown in Figure C-5, Conceptual Walkway, should be carefully considered during final design as means to even further enhance recreational access and aesthetics.

I look forward to continued opportunity to work with New England Division staff to develop final design details for the project, since the details of the project will be crucial elements contributing to its success. As mentioned in the public meeting on March 26, 2003, future meetings are planned as the design develops. I request that the Final EA makes a firm commitment that the ultimate design for the new disposal mound will provide recreational access, aesthetic mitigation and most importantly, proper vegetation to prevent erosion. I hope that a way can be found to remove all of the dredged material and dispose of it off site, alleviating the need to build a disposal mound.

Sincerely,

Edward W. Ionata

10 Half Mile Road
Barrington, RI 02806
April 5, 2003

Ms. Barbara Blumeris
District Engineer
Army Corps of Engineers
696 Virginia Road
Concord, MA 07142

Dear Ms. Blumeris,

As a resident of Barrington, a Barrington Land Conservation Trust Board Member, and one who helped to develop the Barrington Comprehensive Plan, I am writing in support of the plan to restore Allin's Cove – Plan D. "Marsh Restoration and Channel and Sand Spit Realignment".

The plan, which will relocate the channel to the east, appears to alleviate the continuing erosion of Byway Road. Your planned beach relocation which will recreate a close facsimile to the original beach location, a dune-like scene along the shoreline, and improved, upgraded access to this shoreline seems to be right on target with recreation and restoration. It appears to truly be a corrective measure for what was done long ago.

I am sure along the way there may be some minor changes called for, as is frequently the case with an environmental project. But this project is desperately needed, and should be moved along as quickly as possible.

Sincerely,

Patricia A. Kelly

Patricia A. Kelly

Lorraine Keeney
43 Third Street
Barrington, RI 02806
245-3660

March 31, 2003

Barbara Blumeris
District Engineer
Engineering/Planning Division
Army Corps of Engineers
696 Virginia Road,
Concord, MA 01742

Dear Ms. Blumeris

I am writing in regards to the project being undertaken by the Army Corps of Engineers, the Rhode Island Coastal Resources Management Council, Save the Bay, and the Allin's Cove Neighborhood Coalition to restore salt marsh to Allin's Cove.

There are two areas that were addressed at the March 26 meeting that I would like to reiterate. I understand that the plan states that the existing channel into Allin's Cove will be relocated more than 200 feet to the south. Essentially a new channel will cut through the existing shoreline approximately halfway from the end of Willow Way to the existing channel. The beach, from the Alfred Drowne side of the Cove will be relocated (bulldozed) to build a beach and sand spit on the Byway Road side of the channel.

The first area of concern *is loss of recreational lands and access to the water.* Several times a day I walk down Third Street and along the path to the water. I observe wading and song birds in addition to gulls and swans. Third Street is always busy with people coming and going to the field and the shore. Children and their parents go to sit and read, to fish, to look for crabs, or to bird. Other people go boating, to fly kites, play ball, to take pictures, or to talk with neighbors. There have been articles in the Providence Journal and Barrington Times about the sense of community in the Alfred Drowne neighborhood. The beach and field which we have had for generations of residents has contributed to that valued sense of community.

The report looks at the cove as a whole and says that there will be no total loss of beach and no impact to recreation. The report states: "*The project to move the inlet channel to the north will also make the existing barrier spit extending from Willow Way shorter by about 200 feet. Local residents are concerned about this change as they like the walking area the spit currently provides. However, the new spit along Byway road will be walkable. Overall it is expected that there will be no negative impact to enjoyment of the area and enjoyment of the area will be improved.*"

What is very clear if you live here, but may not be clear from maps, is that there will be a significant negative impact on this neighborhood on this side of the cove. Housing lots are relatively small and there is no easy access to playgrounds. The field and shore are the recreation area for the children and adults in the neighborhood. Adults would not let children venture to the other side of the cove and they themselves will be unlikely to cross the channel to go to a beach on the other side of the cove. Health experts are trying to encourage adults and children both to walk and exercise more. Taking away an area where people already walk and recreate seems counter productive.

At the meeting on March 26 at the Barrington Public Library, discussion between representatives of the Corps, CRMC, Save the Bay and representatives from the Alfred Drowne neighborhood came up with several proposals that would help maintain this valuable recreational asset for the neighborhood:

Janet Freeman noted that the soil has been tested and that the tests indicate that the soil could be bulldozed toward the water to form a sloped area where people could continue to walk during low and high tides. A beach, along the channel, as proposed in Paul Bannon's earlier drawings, could be developed. I think both of these suggestions are very worthwhile recommendations and would help preserve the recreational area we enjoy.

My second area of concern is the piling of dredge spoils on the 2 acre designated site. As you know, we in the Alfred Drowne neighborhood have met several times with the city trying to find an alternative disposal site. (I realize that the Corps and CRMC also tried to find another site.) Because another alternative is not available, it seems only just to create the most attractive area possible. Many in the community were here when the original fill was put on that land in the 50's; they do not want to live through those problems again.

Here is a list of concerns:
Elevation: The proposal to remove the top soil and to bulldoze sand three feet below the present elevation and to then fill the hole with the spoils, causing the elevation to remain the same is a plan that meets with my approval and the approval of many people at the meeting. I understand that the spoils would then be covered with the "top soil" that is currently there.

Plantings: The plan that was proposed, to plant a native grass, switch grass, seems to be a good one. My only concern is that the spoils and top soil be tested to make sure that they will support the proposed vegetation. I understand from the meeting that the Corps or CRMC would return if necessary (if the spoils are too wet)to landscape.

Aesthetics: I understand from the meeting that there is a possibility that a landscape architect might be engaged to design a walking path, sitting area, and aesthetics of the upland area where spoils are being deposited.

We appreciated the opportunity to comment on the proposed project and look forward to seeing the final plans.

Sincerely,

Lorraine I. Keeney

CC: Janet Freeman,

Carol C. Meeker
58 Third Street
Barrington, RI
02806

April 7, 2003

District Engineer
696 Virginia Road
Concord, MA 01742
Attn: Barbara Blumeris, Engineering/Planning Division
Army Corps of Engineers

Re: Allin's Cove Restoration Project, Barrington, Rhode Island

To the District Engineer:

I am writing to follow up on the public presentation and discussion of March 26, 2003 concerning the above-referenced project and to offer comments on the draft report dated February 2003. Much effort went into the preparation of the report and the presentation and I commend the Corps and its partners for their efforts. In addition, I support the stated habitat restoration goals of the project, as far as they go. Where I believe the project endorsed in the draft report fails is in the disparate treatment of the northern and southern ends of the former Cove and the emphasis on shoring-up Byway Road, the erosion of which seems just as likely to have resulted from manmade riprap and seawall structures in the area as from the 1959 Corps fill project.

Instead of restoring the Cove to it's pre-1959 condition , the project will result in partial restoration of the northern part of the Cove at the expense of further degradation of the southern half of the Cove through additional disposal of dredging spoils and loss of beach access. This "half a loaf" approach has divided neighbors and bred distrust.. How can something that bills itself as a "restoration" project result in a landfill-type elevated cap where there was once open water? It is similarly hard to square the loss of beach to a neighborhood beyond what has ever been lost to natural causes with a restoration goal. The project does nothing to restore the southern end of the Cove and appears to close the door on any hope of future restoration of that area. While the restoration of a portion of the Cove to salt marsh will be wonderful and beneficial to all, must it come at the expense of further negative impacts to the neighbors that were arguably most impacted by the initial dumping - those of Third Street and Willow Way in the Alfred Drowne neighborhood?

If habitat restoration is the goal of the project, what of the pond area at the end of Third Street that was, by neighbors' accounts and historical photo records, once hydraulically connected to the Cove? It currently hosts egrets, blue herons, night herons, kingfishers and more but is fast filling in with *Phragmites* and silt. Yet, the Corps has rejected any suggestion of including repairs that would help extend the life of the pond in the current project as inconsistent with habitat restoration goals. The cost efficiencies and savings in construction disturbance time to be gained by onetime mobilization of heavy equipment in the area are clear. The Corps position is especially frustrating in that the pond work is likely to be a very small amount of money compared to the entire project cost. That the Corps is considering spending $40,000 per acre (multiplied by 3 acres) to plant *Spartina* which will revegetate naturally indicates that there are sufficient funds available in the project to address the relatively minor habitat repair required at the pond.

I urge the Corps to please reconsider inclusion of pond repairs to this project or at least to make it easy for the Town to take advantage of the project mobilization and achieve savings on needed work to improve the capacity of the pond, the quality of the runoff from Third Street, and to ensure the pond's continued tidal connection to the Bay. By a copy of this comment letter to the Town Manager, I also encourage the Town to advocate for inclusion of this work in the project. The Town will have to deal with the issue of storm water runoff down Third Street at some point soon by installing a properly functioning collection structure

and removing some of the silt in the pond to ensure continued adequate capacity. Why not push for inclusion of some or all of these items in the Allin's Cove project as a cost, time and construction impact minimizing alternative?

Reconnecting the pond to the Cove may not be feasible at this time due to the seeming inevitability of onsite disposal of dredge spoils. However, extending the life of the pond through other means would have benefits for the wildlife that visit and feed there as well as improve storm water collection capacity and mosquito control to the benefit of the surrounding neighborhood. It seems to me that this small pond ecosystem on the edge of the former Cove should be considered "habitat" worthy of restoration under the principles guiding this project.

Despite my initial disappointment in the recommendations and conclusions contained in the draft report, the meeting on March 26th gave cause for optimism. At the meeting, an option was discussed which was not included in the report. It involves excavating sandy material from the so-called Disposal Area and pushing it to the west to create more beach and, in turn, create a lower area for the disposal material to be placed at approximately the level of the current grade. This option has the benefit of eliminating the negative visual, access and drainage impacts posed by an elevated impoundment as well as creating new beach to help mitigate for the loss of 200" of sand spit which those who live in the Alfred Drowne neighborhood will no longer be able to walk. I am wholeheartedly in support of this option and believe that it brings balance to a project that is otherwise unfair in its distribution of benefits and impacts.

In closing, I believe this to be a good and beneficial project if the above option for beach nourishment and disposal of dredge spoils at current grade is incorporated into the final plan. It would be an even better project if the health of the pond at the end of Third Street could be improved to the benefit of wildlife and neighbors alike with relatively small additional effort and expense on the part of the Corps and its partners.

Thank you for your attention to my comments and for your work on this important project.

Sincerely,

Carol C. Meeker

Cc: Barrington Town Manager

Sydney Montstream-Quas
45 Annawamscutt Rd.
Barrington, RI 02806
245-8076

District Engineer
Attn.: Barbara Blumeris
Engineering/Planning Division Army Corps of Engineers
696 Virginia Road
Concord, MA 01742

March 27, 2003

Dear District Engineer,

I attended the Allin's Cove Restoration Public Comment meeting on March 26, 2003 and was impressed with most of your plans for Allin's Cove. Yet as a resident of the affected Alfred Drowne neighborhood living two blocks from Allin's Cove, I have two major concerns. First, the loss of our beach will have a negative effect on our neighborhood and the recreational usage of that area. My children (ages 3 1/2 and 1), husband, and I utilize that beach several times per week, primarily to watch and identify birds and to have "treasure hunts" for beach glass, oyster and mussel shells, and wampum. I propose that beach replenishment and restoration is built into your plans so that the Alfred Drowne community does not lose one of our most vital, beautiful and frequently used assets. Second, I am concerned about the proposed elevation of the disposal site. The disposal site would look more natural if it were the same elevation as the area is now. Additionally, the area could be architecturally landscaped so that it has a natural look rather than looking like a flat field, as one gentleman proposed at the meeting.

Thank you very much for considering these concerns. If you have any questions, please feel free to call me at (401) 245-8076.

Sincerely,

Sydney Montstream-Quas

April 7, 2003

Ms. Barbara Blumeris
Engineering/Planning Division
Army Corps of Engineers
696 Virginia Road
Concord, MA 07142

~~Dear Ms. Blumeris:~~

As residents of Alfred Drowne Road in Barrington for the past 13 years, we feel obliged to voice our concerns and objections to the Allin's Cove Restoration Project, as presently defined in the public notice. For many years our children as well as many of the other neighborhood children and adults have enjoyed the natural beauty of the Third Street beach as well as Allin's Cove. While we certainly praise the plan's design for restoration of the Cove and prevention of further bank erosion, we oppose the simultaneous destruction of the adjacent beach by the placement of 3-4 feet of dredged silt onto it. This silt bed would not only deprive our residents of an environmentally valuable beach, but it would also prove to be an uninviting access to the Cove area for many years.

We propose that revisions be made to this short-sighted proposal. Specifically we suggest that the beach be preserved by either 1) moving the silt elsewhere or 2) lowering the height of the disposal area and covering it with an adequate bed of sand. Thank you for your consideration.

Sincerely,

Brian + Judy Ott

Brian and Judy Ott
56 Alfred Drowne Road
Barrington, RI 02806

April 5, 2003

Army Corps of Engineers
District Engineer
696 Virginia Road
Concord, MA 07142

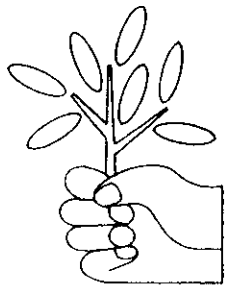
Attn: Engineering/Planning Division, Ms.Barbara Blumeris
Re: Allin's Cove Restoration Project, Barrington, Rhode Island

Dear Barbara:

After attending your presentation on March 26th on the proposed plan to restore the salt marsh and protect erosion on the west shore at Allin's Cove, We took a walk to our side of the cove (eastern) and tried to visualize the loss of the sand spit. Yes it will reduce the length of the beach but, if it will restore the marsh and improve the wildlife habitat then we are greatly in favor of the proposal.

Yours truly,

Lillian C. Rose
Raymond F. Rose
75 Alfred Drowne Road
Barrington, RI 02806



District Engineer,
Army Corps of Engineers
696 Virginia Road
Concord, MA 01741

Attention: Barbara Blumeris

Dear Ms. Blumeris,

As abuttors and owners to land that will be affected in the marsh restoration project at Allins Cove in Barrington, Rhode Island, the Barrington Land Conservation Trust applauds your thorough consideration of the many issues involved, and voice our full support of the project. We were impressed by the advice solicited by so many coastal and environmental experts.

Congratulations on your excellent work!

Yours truly,

Charlotte B. Sornborger

Charlotte B. Sornborger
President

April 4, 2003

US Army Core of Engineers
696 Virginia Rd.
Concord, MA 01742

In regards to:Allin's Cove Wetland Restoration

Dear Ms. Barbra Blumiers:

I am writing to you today to comment on the Allin's Cove Wetland Restoration project. In my opinion the presentation you gave on the project was very detailed and I fully support the restoration project. I think it will beautify the overall area and it will also help the environment.

~~The only negative I would like to address is the possibility of use of the herbicide Rodeo. I have done some research online~~ which I have enclosed. In the first enclosure titled EXTOXNET you will see in the highlighted area Glyphosate is the main chemical they are reviewing and it's trade names are Roundup, Rodeo, and Pondmaster. In the second and third enclosure you will notice that Roundup and Rodeo have Glyphosate, isopropylamine salt. The main difference is that Rodeo has it at a much higher concentration than Roundup. In fact the Glyphosate is more that double in amount. In my fourth enclosure titled Aquatic Herbicide Alert please notice there is reference on page one that many herbicides make false claims of safety. On the third page of the same report highlighted in pink you will notice many side affects of Glyphosate. Some of the mentioned affects are miscarriages, premature births, and non-Hodgkins lymphoma. In my fifth enclosure titled Responding To A Chemical Goliath it points out much of the safety testing is done by the companies who make the chemical thus it is good for their profit margin to have good reports and most negative reports come from nonprofit organizations. In my sixth and final enclosure I have highlighted many things starting on the first page an overview highlighted in blue. Next highlighted in green it points out that Monsato markets Glyphosate under the names Roundup and Rodeo. Also on what is labeled as page six it notes that it is usually portrayed as toxicologically benign, but NCAP's review showed the opposite. All the rest of the following highlights in that enclosure show different affects it has on people, animals, water, and plants.

Thank you for your time and consideration of these comments. I look forward to the day when Allin's Cove is restored to its original beauty.

Sincerely Yours,

Dawn Stanzione

Dawn Stanzione
55 Greene Ave.
Barrigton, RI 02806-1352

Enclosures (6)

April 3, 2003

Army Corps of Engineers
District Engineer
696 Virginia Road
Concord, MA 07142

Attn: Engineering/Planning Division, Ms. Barbara Blumeris
Re: Allin's Cove Restoration Project, Barrington, Rhode Island

Dear Barbara:

Thank you for your presentation last Wednesday. It has been quite a few years since I first inquired about a project at Allin's Cove on behalf of the town in my role as Conservation Commission Chair. Currently I serve on the Board of the Barrington Land Conservation Trust. Thank you for pursuing this restoration project since that time.

The current proposed plan D. "Marsh Restoration and Channel and Sand Spit Realignment" represents a very thoughtful and balanced approach to remedying the effects of the previous fill project as well as mitigating the erosion problems. Although I am not a resident of either of the immediate neighborhoods, I could appreciate the concerns of the Alfred Drowne neighbors about the loss of beach area. If it is possible to lower the final height of the disposal area by leaving more sand along the coastal edge, that would be a very positive benefit all around.

Also, it is important to maintain some designated parking at the end of Willow Way, (I think there are about three parking spots now) so that other Rhode Islanders can occasionally enjoy this special area. I wasn't certain if the plan addresses the parking spaces in any way.

Finally, the establishment of native plants and the creation of inlets in order to displace the phragmites and discourage mosquitoes sounded ideal. A varied coastline will lead to more shore edge habitat and an aesthetically pleasing, natural shoreline in contrast to the current straight arrow fill line that has survived after 50 some years.

Thank you again for following through with this project. Plan D would be a remarkable improvement in the quality of natural life around throughout the cove and a benefit to our town and all Rhode Islanders.

With great appreciation,

Helen Hersh Tjader
15 Eton Road
Barrington, RI 02806

hhtjader@cox.net
401-245-6209

April 5, 2003

US. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742

Re: Allins Cove Wetland Restoration, Barrington, RI

Dear Sir:

As a seventy year resident of Barrington, RI, I am writing this letter to urge you to carry out your plans to restore Allins Cove to its former condition.

I grew up in this area and well remember it as a beautiful and productive salt marsh. I have seen the Corps plans for restoration and was extremely pleased with the detailed attention paid to the environmental concerns of the project. I am anxious to see this work begin as soon as possible as presented in Plan D, without any alterations.

Sincerely,

E. Douglas Rayner
88 Prospect St.
Barrington, RI 02806
(401) 246-1326

cc: J. Freedman, RI CRMC
Save The Bay
RI DEM
Barrington Town Council

RECEIVED
APR - 8 2003
REGULATORY DIVISION

Ms. Barbara Blumeris
District Engineer
Army Corps of Engineers
696 Virginia Road
Concord, MA 07142

April 6, 2003

Dear Ms. Blumeris:

I am writing in support of the Army Corps's draft preliminary restoration plan for Allin's Cove while making my feelings on this plan known.

Restoring 3.6 acres of the salt marsh on the eastern side of the cove will greatly enhance the wildlife habitat, and relocation of the channel to the east will help reduce erosion of the marsh and the bank under Byway Road on the west side.

As a neighbor to the salt marsh and cove, I spend hours just sitting on the lower rocks at the point of Narragansett Avenue enjoying the magnificent view and water. I would hate to see any major changes to the shoreline at the point of Narragansett Avenue. In keeping with proposed plan to replenish the beach south of the new channel opening using sand from the existing upland area seems to be a very good solution whereby a new beach is created and the upland fill area consequently lowered.

However, when I mention 'new beach', I am simply requesting that the 'old beach area' not be enlarged or used to encourage the migration of people from other areas to this spot. That would be contrary to the original plan. I have lived in Barrington 33 years and plan to stay in this particular area for many more years to come.

Sincerely,

Irene Nolan Urban
289 Narragansett Avenue
Barrington, RI 02806
1-401-246-0092

Insa & Michael Wood
76 Annawamscutt Road
Barrington, RI 02806
(401) 245-5748

March 27, 2003

District Engineer
696 Virginia Road
Concord, MA 01742
Attn: Barbara Blumeris, Engineering/Planning Division Army Corps of Engineers

Dear Ms. Blumeris,

We are writing to provide input on the Allin's Cove Restoration Project in Barrington, RI. We are in favor of the stated project goals (restoring wetlands and shoring up Byway Road), but we have the following concerns about the detrimental effects of the project as currently proposed:

1. **Loss of beach on the south side of the Cove**: The existing beach is a *very* important asset to our neighborhood, used and enjoyed daily by many people. The proposal to move the inlet 200 feet south would not only cut our beach in half, but it would leave us with only the muddy and rocky part of the beach, as all the sandy beach would be moved over to the Byway road side of the inlet. Losing so much beach would be very upsetting to us and the whole neighborhood.
2. **Loss of walking area and shoreline access on the south side**: The proposed shortened beach means a dramatically shortened area available for walking, plus complete loss of the sandy shoreline (which, with its various crab populations, is an extremely interesting aspect of the cove for kids).
3. **Dredge spoils creating a high plateau next to the beach and Third Street path**: The existing upland area is already a good 2-3 feet higher than the beach, with a cliff transition from one area to another. The thought of making this upland area another 3-4 feet higher is horrifying! It would completely negate any improvements to the aesthetics of the cove behind it, since it would create a cliff along the beach so high that most people couldn't even see the top, never mind being able to gaze across the area to enjoy views of the new salt marsh.

At the public meeting on March 26, a proposal was made to dig sand out of the existing upland area, relocate it to expand the beach on the south side of the new inlet, fill the upland area back up with dredge spoils, and create a walking path around the new upland area. This would address all of our concerns, and we cannot urge you strongly enough to incorporate these modifications into your plans.

We contemplate the existing Allin's Cove proposal with dread (as do many of our neighbors), but the simple modifications discussed would have so many benefits: beach nourishment on the south side of the new inlet, minimal or no increase in the height of the upland (disposal) area, and new walking paths to enhance recreational use of the restored cove. These enhancements would turn this into a project that the neighborhood could get excited about.

Thank you for your consideration and your work on this project.

Insa M. Wood Michael Wood

Insa and Michael Wood

cc: Sandra Wyatt, Janet Freedman

April 7, 2003

Ms. Barbara Blumeris
District Engineer
US Army Corps of Engineers
696 Virginia Road
Concord, MA 01742

Dear Barbara;

I am writing in response to the enclosed letter from Paul Bannon, Lorraine Keeney and Carol Meeker distributed to residents on the Alfred Drowne side of Allin's Cove prior to the public informational meeting on March 26. I believe that some of the letters you have received will speak to the issues highlighted in this letter. I would like to respond to them as well.

1. Beginning with the first of three "key issues" they address, "Recreational area threatened", they discuss the moving of the channel and the detrimental effects they envision to their enjoyment of the cove. In response, there will be no barrier to their continuing to enjoy the area they describe as "Third and Willow" as this will not be affected by any of the planned construction - they can continue to fish, enjoy sunsets, visit with neighbors, etc. in this area. If they wish to go further into the cove they will be able to do so on the restructured and redesigned upland which is planned with walking paths and an attractive lookout area.

I understand the concern of the Alfred Drowne neighbors to losing a portion of the sand spit on their side of the channel. As you know, a beach adjacent to the mouth of the channel using sand from the upland area is being discussed as an add on to the project. Every avenue to making this happen is being explored by the RI Coastal Resources Management Council, the Allin's Cove Neighborhood Coalition, the Army Corps and the Town of Barrington. If it is at all possible, it will happen.

2. The second issue, "Shoreline Access/Aesthetics", addresses their fears of "a yard high wall extending from the edge of the path over two acres out to the high tide mark". I don't believe any of them actually heard your explanation of grading the fill to a top leveling off. It is important to maintain easy access to this area and to reduce visual impairment of the river and cove as much as possible. I support Ed Ionata's suggestion of creating a concave curved rise from the channel and the beach to the top of the upland, which would increase the beach area landward and lessen the impact of the tide on the newly created beach.

The filled upland area, owned by the Town of Barrington and the Barrington Land Conservation Trust (BLCT), will be properly vegetated. Insurance that it remains well kept will be determined by vigilant maintenance. I have met with Barrington DPW Director, Peter DeAngelis, BLCT President, Charlotte Sornborger, to discuss maintenance. We have agreed that, together with the CRMC, we will combine resources to maintain desired upland vegetation and control Phragmites growth. Once the upland area is completed we will draw up a maintenance plan.

Last summer the group advocated a walking path around the perimeter of the cove atop a berm made of some of the fill material. Last summer, both you and CRMC Coastal Geologist, Janet Freedman, replied to this suggestion that the raised area would probably impound water on the landward side, increase flooding conditions on the adjoining property, potentially create a mosquito breeding habitat and cause drainage problems. Enclosed are CRMC biologist, Tracey Silvia's comments concerning the walkway.

3. Drainage/Water quality is a natural follow-up to salt marsh restoration projects such as that at Allin's Cove. Lorraine Keeney has been working with me for the two months on a project with the Eastern RI Conservation District and the Town of Barrington under a grant by the New England Grassroots Environmental Fund, mapping storm water drainage areas in the Allin's Cove watershed for a project with the town in identifying potential mitigation sites. This project is preliminary to a proposal for a DEM 319 Nonpoint Source Pollution Abatement grant to bring two sites deemed most feasible to 100% design and permitting.

Thank you for your attention to this letter.

Sincerely,

Sandra Wyatt
President, Allin's Cove Neighborhood Coalition

Enc: copy of Alfred Drowne neighborhood letter
copy Tracey Silva's comments on walking path

cc: Janet Freedman
Dennis Phelan, Barrington Town Manager
Barrington Town Council

Paul Bannon presented a sketch drawing showing the redistribution of the material, including the berm with a walking trail, and a restored beach area at the point of the relocated channel, similar to existing beach conditions. Barbara Blumeris and Janet Freedman reviewed and saw no problems with reconsidering distribution of material and the concept as shown (Impounding water behind the berm is an issue that was brought up at the meeting). Barbara will consider including it in the draft report as Scheme B, proposed by the community. She thinks she will be able to do this without redoing the report which is presently under in-house review. If it is part of the report, the Corps will be able to get comments on the alternative plan early on. Barbara indicated she needed to discuss how this can be done with staff and inform us of their decision and how the process will move forward. (The berm was not well received during the internal technical review at CRMC. I think the issue of impounding water is very serious. There is the potential for creating mosquito breeding habitat as well as stormwater and flooding problems. Even with a segmented berm, maybe in combination with walkover structures, there would probably be some drainage problems. Tracy Silvia, the CRMC biologist who reviewed the document, also saw some serious problems with the design. Her comments concerning the walkway are as follows:

4-The only mention of a walkway/access path for neighborhood residents comes in Section 4.1 and on Sheet C-5. There appears to be little detail regarding the construction of this walkway. Should the walkway indeed be a low-cost walking trail, the ideal place for such a spot is on the inland edge of the 50-foot Phrag buffer, so that the buffer is not

compromised by disturbance. While I realize that residents want to be able to get to the beach , there already exists two streets (Pleasant/Third) which terminate at an existing walking path down to the shore. Should this project propose to modify the seaward end of this existing path by turning it north/northwest (rather than due west as it now heads) through the restored upland/disposal area to the beach, there would be no objection from CRMC staff.

I know that currently there exists remnants of walking trails leading down from the ends of the easterly-abutting streets (one led right to the observation platform). However, these trails are prohibited under CRMC regulation, and are in fact, existing violations.

Lastly, according to Sheet C-5, the walkway is actually proposed fill in wetland under CRMC regulations. In order to create the proposed 8' walkway (4' width is normally CRMC's permissible path size), approximately 34' of disturbance is proposed to create the 9' elevation/slopes with fill from the removed dredge material. Additionally, this area lies almost in the middle of the 50' buffer, which would leave ~8' of very tall Phrag between the walkway and the marsh, so that visitors would not be able to see or access the marsh from this walkway anyway. Such a proposal does not seem a necessary component of this restoration effort, and may be prohibited under CRMC regulations. Lastly, by building a "walkway" of such elevation, how will the stormwater runoff from the east/southeasterly areas abutters be impacted? According to the Hydrology Report, those areas now drain as sheet flow through the Phrag/marsh. Would this runoff back up into the resident's yards?)

CC: J_Freedman@crmc.state.ri.us

Allin's Cove Restoration Project Public Comment

Your voice is important.
Put in your 2 cents before April 7!

Save the Bay
DEM
Barrington Town Council

Attend the Army Corps of Engineers presentation
Wednesday, March 26, at the Library, 7 PM.

Write a letter before April 7
To: District Engineer
696 Virginia Road,
Concord, MA 01742
Attention: Barbara Blumeris, Engineering/Planning Division Army Corps of Engineers

~~**Summary of the Project:**~~

The Rhode Island Coastal Resources Management Council (CRMC), the Town of Barrington, the Army Corps of Engineers (ACOE), and the Allin's Cove Neighborhood Coalition are cooperating on a project to "*1) restore salt marsh to Allin's Cove in the area impacted by the disposal of dredged material in 1959; and 2) to address the erosion along the western edge of the cove at Byway Road and adjacent marsh land.*"[1]

"*Alternative plans were analyzed using incremental analysis of project costs and habitat benefits to determine the best buy plans. The selected alternative is a combination of excavating the filled area, realigning the tidal inlet and constructing a sand spit along Byway Road.*"[2] (The complete report is available in Town Hall and the Library.)

A review of the report and plans put forth by the ACOE, have identified several key areas that we (residents of the Alfred Drowne neighborhood), feel will greatly affect the use of recreational lands presently available to our neighborhood and the historical shoreline that will be irrevocably altered to the detriment of the neighborhood. Is this what we want to live with for our lifetime, and the legacy we want to leave behind for our children?

The original dumping and harm was done to the cove and our neighborhood more than forty years ago. To again be harmed and become a dumping ground for the ACOE, is not progress in our view. It is time to speak up for our neighborhood or it WILL happen again.

In general the goals of the ACOE, CRMC and the Allin's Cove Neighborhood Coalition are positive and will attempt to partially right a wrong done to the cove in the late 1950's. What is troubling is the insensitivity and inflexibility these organizations have shown to our concerns and suggestions that would easily make this project a win-win project for their goals and for our neighborhood. Our attempts to minimize the fill to be placed on the existing field (three to four feet), replace in-part the beach to be lost, and the access to the shoreline and cove that we enjoy on a daily basis has received only a token response.

OVER

[1] US Army Corps of Engineers, New England District. Draft, Allin's Cove Wetland Restoration, Barrington, Rhode Island, February 2003, page i
[2] Ibid, page ii

Please come to the hearing and/or write a letter to the ACOE, CRMC, and Town Council to voice your concern about what we see as a detrimental impact to our neighborhood and access to the shoreline that is an integral part of our daily lives.

These are the key issues we feel can be resolved through your voice.

1. Recreational area threatened:
The existing channel into Allin's Cove will be relocated more than 200 feet to the south. Essentially a new channel will cut through the existing shoreline approximately halfway from the end of Willow Way to the existing channel. The beach (and only pristine sand), from the Alfred Drowne side of the Cove will be relocated (bulldozed) to build a beach and sand spit on the Byway Road side of the channel.

The Corps report states: "*The project to move the inlet channel to the north will also make the existing barrier spit extending from Willow Way shorter by about 200 feet. Local residents are concerned about this change as they like the walking area the spit currently provides. However, the new spit along Byway road will be walkable. Overall it is expected that there will be no negative impact to enjoyment of the area and enjoyment of the area will be improved.*" Do you agree?

What do you think and what you can do: If you love and use the beach area extending from Third Street/Willow Way, paint a picture for the Corps about how you, your family, and your friends gather at the foot of Third and Willow to talk, watch the sun set in the summer, watch the children play, fish when the blues are in a frenzy in the fall, search for crabs and feast your eyes on scores of egrets in the Cove in spring and summer, or to sit and read a book and enjoy the natural setting it provides. Explain to the Corps why it is not a viable alternative to cross the marsh or channel to visit the beach on the other side of the peninsula to enjoy what we have today and **what we as a neighborhood have always had.** Tell them to replicate the sandy point that is a vital recreational asset to the Alfred Drowne neighborhood.

2. Shoreline Access/Aesthetics:
Dredge spoils from the marsh will be piled at the foot of Third Street in a two acre pen formed from bulldozed top soil and the vegetation that is there now. The area will be three to four feet higher than it is now. Walk down Third Street and imagine a yard-high wall extending from the edge of the path over two acres out to the high tide mark. Standing on the shoreline you'd see a cliff over three feet higher than the current four-foot drop off rising up. It will, on a short-term basis, smell, and if not properly vegetated, as was not done in the previous 1950's project be a wasteland for an undetermined, extended period.

What you can do: Envision a better plan and let the Corps know! Encourage the Corps to better distribute the material that exists on the site today and the material that will be excavated within the marsh. THERE IS A BETTER ALTERNATIVE. Our goal is to minimize the extent of the filling on the existing field presently proposed at four feet in the center tapered to three at the outer perimeter of the fill area.

Could some of the material other than the sandy beach on the Alfred Drowne side of the cove be utilized to replenish the Byway Road side of the cove?

Could a walking path be created along the cove perimeter extending from Willow Way along the cove to Short Street and Pleasant Street? This alternative would accomplish two goals by first increasing the available fill area (therefore lessening fill height), replace lost shoreline access resulting from the channel relocation, and enhance pedestrian access from the neighborhood to one of our most vital and important assets.

We provided a plan to ACOE showing these options. There is NO viable reason we have been given why this cannot be done; ask them to provide the engineering solutions to whatever excuses that are put forth. We want to maintain the shoreline access presently available to us and enhance access where feasible.

Suggest that you value access along the Third Street / Willow Way path and want it to continue as a pleasant alternative for a walk and essential access to the Bay for the neighborhood. Let the Corps know how often you and your family use the paths for beach and recreational access. Tell the Corps that walking and talking and gathering with neighbors in this shoreline area is one of the aspects of the neighborhood you most value.

3. Drainage/Water Quality

It is time for the Town in cooperation with the ACOE to step up to the plate and consider enhancing water quality into the Bay, decrease flooding potential, and eliminating mosquito breeding areas. Presently storm water runoff from the neighborhood discharges directly into the cove through direct discharge or un-maintained detention basins. Specifically the watershed to the east of the cove including the Alfred Drowne neighborhood should be investigated to include soon to be mandated storm water management practices that will improve water quality of the cove and Narragansett Bay. Is this not an aspect of upgrading the wildlife habitat of Allin's Cove? Three discharge areas that would include the southern and eastern parts of the cove should be considered in this project.

What you can do: Ask the Town to accelerate the RIDEM-mandated water quality program to include this project as a model for what can and should be done in the future throughout the Town. It will never be cheaper than now to include these measures in the ACOE project.

If you have any questions or suggestions, please contact any of us. Thanks for your concern and help!

Paul Bannon 245-5075 - Lorraine Keeney 245-3660 - Carol Meeker 245-9858

P.S. Come to the meeting on March 26 at the Library. Write a letter before April 7
To: District Engineer
696 Virginia Road,
Concord, MA 01742
Attention; Barbara Blumeris, Engineering/Planning Division Army Corps of Engineers

Every person counts!!

APPENDIX K

AGENCY COMMENT AND RESPONSES ON DRAFT REPORT

APPENDIX K
Allin's Cove Restoration Project
Agency Comment Letters on Draft Report and Corps Responses.

The Allin's Cove Draft Report and Environmental Assessment dated February 2003 was provided to state, federal, and Save the Bay for review. Agency letters provided and Corps responses are included in this Appendix. In addition, USFWS reviewed the draft report and EA and noted in an e-mail dated June 12, 2003 to the study manager Barbara Blumeris, that USFWS has no additional comments on the proposed project. They had previously commented on the project in a letter dated June 5, 2002. That letter is included in Appendix A. US EPA region 1, Mr. Peter Holmes was provided with a report and no comments were received.

Corps Responses to Agency Comments

Letter from RI Historical Preservation and Heritage Commission, dated 14 March 2003

No response required.

Letter from Save the Bay, dated April 7, 2003

Bullet 1 - The suggestion is to hire a landscape architect to assist with the project. The Corps normally relies on the in-house capability to develop a contour plan and planting plan suitable for restoration projects and we believe we have sufficient expertise to handle the restoration design for the Allin's Cove project. In addition, we plan to have a meeting with local residents, Save the Bay, town representatives, RI CRMC, and the Barrington Land Conservation early during plans and specs to discuss final site configuration.

Bullet 2 - The Corps conducted the original planting of the disposal area of the Galilee, RI salt marsh restoration project. The RI Division of Fisheries and Wildlife has done an excellent job of managing the vegetation on the disposal site. We will coordinate with the Division as final planting plans are developed for the Allin's Cove project disposals area and utilize this recent experience in developing a successful coastal grassland habitat.

Bullet 3 - We agree that planting a portion of the site would be useful to hasten the re-establishment of salt marsh vegetation on the site. Because of the expense and affinity of marsh grasses to colonize the site without plantings, planting would be limited to areas most susceptible to erosion. We agree that a volunteer effort would contribute to the overall success of the project.

Bullet 4 - The Corps has revised the proposed grading of the disposal area to include using the existing sand at the site to re-configure the existing south sand spit, thus lowering the disposal area height. Details on the disposal area-grading plan will be developed during plans and specifications.

Bullet 5 - The Corps will consider design of a low-cost walking path in the disposal area during plans and specifications. However, RICRMC has stated that they are not in favor of a walking path that extends to Short Street. (See RI CRMC comment letter, dated April 11, 2003.)

Letter from RI CRMC, dated April 11, 2003

Comment 1 - We agree with this concept and final design will include grading the disposal area to re-configure the south sand spit.

Comment 2 - Ok replaced Table 2B with current classification. Reworded discussion on Arsenic as follows: "Comparisons of bulk chemistry results (Table 2A) to residential direct exposure criteria (Table 2B) indicated the measured arsenic values of 3.9, 3.7 and 7.5 kg/mg (or ppm) for stations 1,2,and 3 respectively exceed the arsenic criteria of 1.7 mg/kg. However, the TCLP test for the composited samples was 0.0159 ppm which is well below the TCLP criteria of 5.0 mg/l. In addition, it is planned that this material when excavated will be disposed of on-site and covered with cleaner material from the central and western portions of the marsh. Thus, the observed levels of arsenic are not considered a restriction to project implementation."

Comment 3 - The best construction methods will be determined following final design of the project. A significant portion of the marsh restoration excavation involves areas that are above the normal high tide. It is likely that low-pressure mechanical excavation equipment will be used in these areas. In addition, portions of the sand areas are also dry which would preclude hydraulic dredging.

The construction window for the project is based on protection of the environmental resources, consultation with resource agencies, and the type of work to be performed at the site. Most of the excavation work will be in the existing *Phragmites* marsh and this area is above the normal tide range. Work on realignment of the tidal inlet and the construction of the sand spits will be limited to September 1 to January 31. We understand from the information that you provided that the normal dredging window in RI is November 1 through December 31. We have requested the widest window possible to ensure project completion within one season. Turbidity control will be included in the project design and specifications.

Comment 4. We removed this sentence from report.

Comment 5. The conceptual walkway plan plate C-5 will be removed from the report.

Comment 6. We concur. The site-grading plan will be determined during final design and we will consider your habitat/grading suggestions in the final design.

Comment 8. Changed to two Osprey platforms.

Letter from NOAA, National Marine Fisheries Service, dated April 23, 2003

Comment 1. Due to winter flounder spawning concerns, you suggest that the work window for in-water activity be limited to September 1 to January 31 instead of September 1 to February 15. We will make this change in the report.

Comment 2. As you note, the design guideline recommended by USFWS of a 2: 1 ratio of high marsh to low marsh was used for the restoration and we included the existing low marsh areas in our considerations of the amount of low marsh to create. We designed the project to provide as much salt marsh habitat as possible while leaving the existing meadow area for disposal and re-vegetation as coastal grassland. For planning purposes, we estimated the about 2-acre disposal area with an increase in height of 3 to 4 feet would accommodate an excavation volume about 9,000 cubic yards. In order to grade the area to create more low marsh we would need to dispose of an increased volume of material. During plans and specs, more detailed volume calculations will be made of the actual excavation amount and disposal area and final grading plans established. These more detailed calculations will be reviewed and a determination made as to whether or not the low marsh area might be increased.

Letter from RI DEM, dated May 1, 2003

Comment 1. Disposal area comments will be addressed during plans and specifications.

Comment 2. This comment notes that silty material also requires chloride testing if within 400 feet of ground water supply. This area has public water supply and we are not aware of any groundwater water uses within the limits noted, therefore chloride testing would not be required.

Comment 3, part 1. We collected benthic samples at the site and this report is included as Appendix C. See Section 2.5 of report.

Comment 3, part 2. Question on amount of material to be moved. Approximately 3.6 acres of *Phragmites* marsh will be excavated and approximately 8,200 cubic yards of material will be disposed of on-site in a 2-acre area that was also filled in 1959. Sandy material from this 2-acre fill area will be graded to re-configure the existing south sand spit at the toe of the disposal area.

The inlet channel to the cove will be realigned and a north sand spit will be relocated along the western edge of the marsh near Byway Road. Approximately 1 acre of sand spit, consisting of about 3,400 cubic yards of sand, will be excavated and relocated to the west to fill the existing channel and to create a north sand spit to alleviate erosion conditions along the western portion of the cove. This information will be provided with the Water Quality Certification application.

Comment 4. Dredging windows. No response required.

Comment 5. Construction equipment access will be finalized during plans and specifications. Currently it is planned that access to the site will be at the end of Willow Way and from the town land off Ocean Avenue.

Comment 6. No response required

Comments from Brian Tefft, RI DEM. We concur. As you suggested, it is proposed to seed disposal area with a grass seed mixture containing switch grass. Monitoring and maintenance of the area will be done by the local sponsor to prevent colonization of the disposal area with invasive species. We decreased number of Osprey platforms to two.

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
HISTORICAL PRESERVATION & HERITAGE COMMISSION
Old State House • 150 Benefit Street • Providence, R.I. 02903-1209
TEL (401) 222-2678 FAX (401) 222-2968
TTY (401) 222-3700 Website www.rihphc.state.ri.us

14 March, 2003

Michael Elliott
Army Corps of Engineers
696 Virginia Road
Concord MA 01742

RE: Allin's Cove Restoration Project
Barrington, RI

Dear Mr. Elliott:

The Rhode Island Historical Preservation and Heritage Commission has reviewed the information provided by you regarding the above-referenced project. Based on this information, and on our previous review of this project, we continue to conclude that this project will have no effect on significant cultural resources (those listed on or eligible for listing on the National Register of Historic Places).

These comments are provided in accordance with Section 106 of the National Historic Preservation Act. If you have any questions, please contact Charlotte Taylor, Staff Archaeologist, or Richard Greenwood, Project Review Coordinator for this office.

Very truly yours,

Edward F. Sanderson
Executive Director
Deputy State Historic
Preservation Officer

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MAR 18 2003
REGULATORY DIVISION

SAVE THE BAY PEOPLE FOR NARRAGANSETT BAY

April 7, 2003

Barbara Blumeris
Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742

Dear Ms. Blumeris,

Save The Bay strongly supports the Army Corps of Engineer's salt marsh restoration project in Allins Cove. Restoring this salt marsh will improve the ecological integrity of Allins Cove and will be a model for similar habitat restoration projects throughout the northeast.

Save The Bay has been an active partner in this restoration initiative since 1997 and would like to provide the following comments on the Integrated Ecological Restoration Report and Environmental Assessment.

- Save The Bay recommends contracting a landscape architect to assist in planning the final design of the upland disposal area including the planting plan and the contour designs. The landscape architect could work with the town of Barrington, the Barrington Conservation Land Trust, the Allins Cove Neighborhood Coalition and abutters to develop a landscape plan that provides both habitat value and public access.

- Save The Bay recommends reviewing the final planting and maintenance plan for the upland disposal area with the staff from the Department of Environmental Management's Division of Fish and Wildlife responsible for the long-term maintenance of the Galilee salt marsh restoration's upland disposal area. The Division of Fish and Wildlife has successfully established an ecologically valuable upland habitat consisting of warm season grasses while controlling the spread of *Phragmites australis* at Galilee's upland disposal area. Save The Bay also recommends excavating some of the existing sand material from the upland disposal site at same time the top soil is removed to use in regrading the site after the fill is placed in this area.

- Save The Bay recommends planting the restored salt marsh area with appropriate wetland vegetation. By planting the newly exposed soil, the salt marsh will revegetate faster, thereby restoring a functioning salt marsh more quickly. Community volunteers could be directly involved in planting of the vegetation. The community's hands on involvement in the project would build long-term stewardship of the restored salt marsh.

Headquarters 434 Smith Street Providence RI 02908 phone 401-272-3540 fax 401-273-7153 e-mail savebay@savebay.org website www.savebay.org
Narragansett BayStation 18 Market Square Newport RI 02840 phone 800-NARRBAY fax 401-324-6022 e-mail reservations@savebay.org

SAVE THE BAY
PEOPLE FOR NARRAGANSETT BAY

- Save The Bay commends the ACOE for responding to neighbors' concerns about loss of access to the beach on the south side of Allins Cove by incorporating a beach area directly south of the proposed channel. The CRMC geologist's proposal to excavate sand from the upland disposal site prior to disposal and to use this sand to recreate the beach profile from the 1930s would compliment the ACOE's plan. This proposal would increase the beach area on the southern side of the spit and would reduce the height of the upland disposal site, responding to neighbors' concerns about both the loss of beach as well as the height of the disposal area.

- Save The Bay supports the ACOE's efforts to enhance public access to the restored site by establishing a path in the upland disposal area.

Save The Bay looks forward to continuing to work with the Army Corps of Engineers, the Coastal Resources Management Council and the community partners on the development of the final restoration plan. Thank you for your time and consideration.

Sincerely,

Wenley Ferguson
Program Coordinator

Cc: Janet Freedman, CRMC
Dennis Phelan, Town Manager, Barrington
Barrington Town Council
Sandra Wyatt, Allins Cove Neighborhood Coalition

Headquarters 434 Smith Street Providence RI 02908 phone 401-272-3540 fax 401-273-7153 e-mail savebay@savebay.org website www.savebay.org
Narragansett BayStation 18 Market Square Newport RI 02840 phone 800-NARRBAY fax 401-324-6022 e-mail reservations@savebay.org

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

COASTAL RESOURCES MANAGEMENT COUNCIL
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
Wakefield, R.I. 02879-1900

(401) 783-3370
FAX: (401) 783-3767

April 11, 2003

John R. Kennelly
Chief, Planning Branch
U. S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

RE: Allin's Cove Wetland Restoration, Barrington, RI Integrated Ecological Restoration Report and Environmental Assessment Comments:

Dear Mr. Kennelly:

Thank you for the opportunity to review the Allin's Cove Ecological Restoration Report and Environmental Assessment. We strongly support this project and concur with the report recommendations. The Rhode Island Coastal Resources Management Council has the following comments in regard to the project.

1. CRMC supports creating lower dune habitat in the area identified as the south spit on Figure 5 in Appendix H. This will eliminate the currently existing reflective beach profile that leads to increased erosion during storms. In addition to the functional and ecological role of the lower dune habitat, creating lower dune habitat will address the concerns of the neighborhood about loss of beach and the height of the on-site disposal area. The upland area can be used as the sand source. The depression that will be left can be filled with the finer grained sediment from the marsh restoration area to create contours that are similar to slightly higher than what exists on the site now.

2. The RIDEM classification of dredged material have changed as of February 6, 2003 (see attached). Table 2B on page 15 should be replaced. Arsenic levels for the Residential Direct Exposure Criteria, formerly Class I, are subject to ongoing review. Recommended work procedures for on-site disposal are to excavate and dispose of the material on the easternmost portion of the marsh first, so that the finer sediment with the higher arsenic levels is buried in the lowest level in the disposal area. Two feet of overlying material is the recommended cover. Sediment removed from the central and western portions of the marsh should be adequate cover.

3. The placement and grading of the beach strand habitat, identified as the new spit on site plans, are not discussed in the draft document. The dredging for beach nourishment are proposed to be performed mechanically. This is a limited area to be moving a barge mounted crane and scow. It would seem that a hydraulic dredging option would be more make more logistical sense as you would only need one smaller piece of equipment on the nourishment shore to move the pipe and the grading would happen naturally as part of the placement. The windows for construction seem longer than necessary and our outside RIDEM's typical windows for dredging. Turbidity controls will need to be employed particularly if hydraulic dredging is utilized.

4. The report states that riprap will be considered for the base of the sand spit during final design. Allin's Cove is classified as a CRMC Type 1 water body. Structural shoreline protection is prohibited in areas adjacent to Type 1 waters. The spit is designed as a non-structural alternative to placement of riprap along the shoreline.

5. The walkway depicted on sheet C-5 is actually proposed fill in wetland under CRMC regulations. In order to create the proposed 8' walkway (4' width is normally CRMC's permissible path size), approximately 34' of disturbance is proposed to create the 9' elevation/slopes with fill from the removed dredge material. Additionally, this area lies almost in the middle of the 50' buffer, which would leave ~8' of very tall *Phragmites* between the walkway and the marsh, so that visitors would not be able to see or access the marsh from this walkway anyway. Such a proposal does not seem a necessary component of this restoration effort, and may be prohibited under CRMC regulations. In addition, by building a "walkway" of such elevation may affect the stormwater runoff from the east/southeasterly areas abutters. According to the Hydrology Report, those areas now drain as sheet flow through the *Phragmites* marsh. Runoff may back up into the resident's yards and/or create mosquito breeding habitat.

6. We concur with the USFWS that the creation of panes, pools and tidal creeks with sloped banks will greatly enhance the habitat value of the restored area, for both avian and fishery resources. We also recommend a transitional shrub area between the grassland and trees on the upland area.

7. Four osprey poles seem like a lot for this area, unless they are a combination of perch poles and nesting platforms. The best location for osprey poles may be in the upland area rather than the marsh itself. If they are located in the upland area, it is recommended that educational signs regarding protected species, prohibitions on feeding waterfowl, etc. be used.

In addition to these points, we have a few editorial comments.

Page 9:
2.6—Last paragraph make sure Genus names are accurate *(not Alsoa)*

Page 22:
3.3—Marsh Restoration, 4th sentence doesn't read well, recommend rephrase.

Site Plans:
C-1—Existing Conditions, Proposed construction areas/access/staging/work limits/silt curtain should be removed from this plan. Only show existing information should be shown, i.e. depict *Phragmites* v high v low marsh areas already existing, as well as upland areas, and area of erosion along Byway Road, in order to compare to proposed conditions on C-2.

C-2 Proposed Site Plan, "diposal" should be "disposal".
--Option III "remove existing P*hragmites* and replace with higher value vegetation" should be removed since this option is no longer being considered
--Add the lower dune restoration area.

C-5 Site Plan/Walkway—
--Disposal area and sandy beach area (south) should have acreages depicted.
--Remove walkway in middle of buffer zone (see discussion).

The CRCM appreciates the effort and cooperation that the U. S. Army Corps of Engineers has put into this project. We look forward to working with the U. S. Army Corps of Engineers on the next phase of the Allin's Cove Wetland Restoration. With the above design changes, we anticipate that the project will meet federal consistency requirements. Thank you for the opportunity to comment.

Sincerely,

Grover Fugate, Executive Director
Coastal Resources Management Council

/lam

cc: Barbara Blumeris, ACOE
Dan Goulet, CRMC
Tracy Silvia, CRMC

Appendix D

Constituent	Beach Nourishment Criteria	Residential Direct Exposure Criteria[1]	Commercial/ Industrial Direct Exposure Criteria[2]	TCLP Criteria for Hazardous Waste Determination	GA Leachability Criteria[3]
% Solids	75	NA	NA	NA	NA
Total Petroleum Hydrocarbons (TPH)	NA	500 ppm	2500 ppm	NA	500 ppm
PCBs	NA	10 ppm	10 ppm	NA	10 mg/kg
Arsenic (As)	1.7 mg/kg (subject to ongoing review)	1.7 mg/kg (subject to ongoing review)	3.8 mg/kg (subject to ongoing review)	5.0 mg/L	NA
Cadmium (Cd)	1 mg/kg	39 mg/kg	1000 mg/kg	1.0 mg/L	0.03 mg/L
Chromium (Cr)	10 mg/kg	390 mg/kg	10000 mg/kg	5.0 mg/L	1.1 mg/L
Copper (Cu)	10 mg/kg	3100 mg/kg	10000 mg/kg		
Lead (Pb)	25 mg/kg	150 mg/kg	500 mg/kg	5.0 mg/L	0.04 mg/L
Mercury (Hg)	0.5 mg/kg	23 mg/kg	610 mg/kg	0.2 mg/L	0.02 mg/L
Nickel (Ni)	5 mg/kg	1000 mg/kg	10000 mg/kg	NA	1 mg/L
Vanadium (V)	25 mg/kg	550 mg/kg	10000 mg/kg	NA	NA
Zinc (Zn)	25 mg/kg	6000 mg/kg	10000 mg/kg	NA	NA

Other TCLP criteria to be considered to determine if the material is hazardous waste:

Constituent	TCLP Criteria for Hazardous Waste Determination
Barium (Ba)	100.0 mg/L
Selenium (Se)	1.0 mg/L
Silver (Ag)	5.0 mg/L

[1] Residential Direct Exposure Criteria are defined in Table 1 in Section 8 of the Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases.

[2] Commercial/Industrial Direct Exposure Criteria are defined in Table 1 in Section 8 of the Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases.

[3] GA Leachability Criteria are defined in Table 2 in Section 8 of the Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases.

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
One Blackburn Drive
Gloucester, MA 01930-2298

APR 2 3 2003

John R. Kennelly
Chief, Planning Branch
Department of the Army
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Mr. Kennelly:

This letter is in response to your request for recommendations on Essential Fish Habitat and consultation pursuant to Section 7 of the Endangered Species Act for the Allin's Cove Wetland Restoration Project. The following comments are preliminary and the National Marine Fisheries Service (NOAA Fisheries) will provide more detailed comments based upon receipt of the completed project application. NOAA Fisheries offers the following information on marine resources located within the project site.

Recommendations on Essential Fish Habitat

Winter Flounder *(Pseudopleuronectes americanus)* is an important recreational and commercial fish species in Narragansett Bay. As stated in the environmental assessment, winter flounder reproduction occurs from January to May with peak activity during February and March. Winter flounder eggs are demersal and adhesive. Page 33 of the assessment describes a construction window for work in the marsh as September 1-March 30, and work on the tidal inlet and sand spit as September 1–February 15. We are concerned that the construction window, as proposed, overlaps the peak spawning period for winter flounder. It is recommended that the work window for in-water activity be limited to September 1-January 31.

Low marsh that is dominated by Spartina spp. can serve as important habitat for marine/estuarine fish species. The proposed project will create approximately 3.6 acres of Spartina marsh (3.0 acres of high marsh and 0.6 acres of low marsh). Consistent with the US Fish and Wildlife Service letter of January 27, 2001, a 2:1 ratio of high marsh to low marsh should be created. The proposed project includes existing low marsh in order to achieve this 2:1 ratio. In order to achieve maximum benefit for marine/estuarine fish species, we recommend that the ratio of high marsh to low marsh exclude existing low marsh in the calculation, thus increasing the amount of low marsh restored.

Endangered Species

Based on the information currently available to us, there are no federally listed endangered or threatened species under the jurisdiction of NOAA Fisheries known to occur in the project area.

Again, we appreciate your request for information on the potential impacts this project may have on marine resources and look forward to working with the Corps of Engineers on projects to restore fish habitat. If you have any further questions or comments about this information, please contact Chris Boelke, Marine Habitat Resource Specialist, at 978-281-9131.

Sincerely,

Louis A. Chiarella

for Peter D. Colosi
Assistant Regional Administrator
for Habitat Conservation

RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

235 Promenade Street, Providence, RI 02908-5767 TDD 401-831-5508

May 1, 2003

Mr. John R. Kennelly
Chief, Planning Branch
New England District, Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Subject: **Allin's Cove Wetland Restoration, Barrington, RI**
Integrated Ecological Restoration Report/Environmental Assessment

Dear Mr. Kennelly:

Thank you for providing the environmental disclosure documents regarding the Allin's Cove Restoration to the Rhode Island Department of Environmental Management (RIDEM) for review. RIDEM has participated in a site visit and other discussions regarding the development of this project and we appreciate the effort that the Army Corps of Engineers has made to fully involve us and other concerned parties in project planning. We are very supportive of the project's goals of restoring salt marsh to Allin's Cove in the area impacted by the disposal of dredged material in 1959 and addressing the erosion along the western edge of the cove at Byway Road and adjacent marsh land.

Our comments consist of the identification of information that will be needed to comply with the State's *Rules and Regulations for Dredging and the Management of Dredged Material, February 2003,* and which you may wish to add to the final Environmental Assessment for clarification. These comments are confined to the project as described in the Integrated Ecological Restoration Report/ Environmental Assessment in hand. As project planning progress towards the permitting stage, you may wish to schedule a preapplication meeting with this office to discuss how our new Dredging Regulations will apply to this project. A copy of the Dredging Regulations is enclosed for your information. Numbers at comment headings below refer to the applicable section of the above-cited RI Dredging Regulations.

Disposal Area - Section 9 Upland Disposal and Beneficial Use of Dredged Materials

- Existing and proposed contours will be needed for the upland disposal area.

- RIDEM will require engineering plans that show the containment berm around the proposed disposal area, any temporary access road over the marsh, dewatering details, cofferdam, stockpiling area(s), dewatering area(s), equipment storage area(s), erosion and sediment controls.

30% post-consumer fiber

- A construction sequencing plan for the disposal area, including containment berm, the dredging in the marsh, the sand spit relocation, the channel relocation and the tidal creek creation will be needed for RIDEM's dredging review.

Disposal of Silty Material - Section 7 Characterizing Material to Be Disposed

- Chloride testing of silty material will be required under the *Rules and Regulations for Dredging and the Management of Dredged Material, February 2003,* if material is to be placed 200 feet or more from mean high water **and** points of groundwater use are located within 1759 feet of the disposal or beneficial use site. Chloride testing is also required if the disposal or beneficial use is within 200 feet of mean high water **and** points of groundwater use occur within 400 feet of the disposal or beneficial use site.

Disposal of Sandy Material - Section 8 Application of Dredging and the Management of Dredged Material

- Documentation of the resources within the existing channel that is to be filled with sand spit material will be needed to assess impacts.

- It is our understanding that the figure of 8,200 cubic yards used in disposal calculations represents only the dredged material to be disposed of at the disposal area. The sand to be excavated from the tidal creek will be put to beneficial use for construction of the new sand spit and possibly graded at the toe of the disposal area. For purpose of the state review, the quantity and disposition of the any sand excavated from the tidal creek must be made clear.

Dredge Windows

- The dredge windows (times when work is permissible) established on page 33 of the Environmental Assessment will need to be strictly adhered to in order to protect biological resources.

Access - Appendix A Application Site Plan Requirements

- How will dredging equipment gain access to the dredging site? Will temporary access be needed to reach the marsh areas for work to be performed?

Stormwater

- A RI Pollution Discharge Elimination System (RIPDES) stormwater construction permit will be required for the project in addition to the review under the Dredging Regulations

This concludes RIDEM's comments on the *draft* Allin's Cove Wetland Restoration Integrated Ecological Restoration Report/Environmental Assessment. Our Department is aware of the commitment and extraordinary efforts of local people and their elected representatives in the Town of Barrington to restore Allin's Cove to its former condition. The partnership of the ACOE, the RI Coastal Resource Management Council and the Town of Barrington are providing the means to make this goal a reality It is a real pleasure to know that, with the publication of the Final Environmental Assessment, another step will have been taken towards implementing the restoration of Allin's Cove..

Please feel free to contact me if I can be of any assistance to you as this project progresses. I can be reached at (401) 222-4700, x-7500 or email rgagnon@dem.state.ri.us

Sincerely,

Ronald Gagnon

Ronald Gagnon
Chief, Office of Technical & Customer Assistance.

Cc:B. Blumeris
J. Reitsma
T. Gray
A. Good
M. Grant

RIDEM Fish and Wildlife
PO Box 218
West Kingston, RI 02892

Memo

To: Carolyn Weymouth

From: Brian C. Tefft, Principal Wildlife Biologist

CC:

Date: 05/08/2003

Re: Allin's Cove Wetland Restoration

I have the following comments on the Allin's Cove Wetland Restoration Project:

This project is very similar in nature to the Galilee Restoration, using the US ACOE Section 1135 Program. This project is well designed and evaluated and will result in tangible and substantial natural resources restoration (3.6 acres of *Spartina* marsh) involving valuable salt marsh resources. The temporary impacts to local wildlife, including mammals and birds, are insignificant and should result in few if any long-term impacts. The benefits obtained by the restoration will far outweigh the short-term disturbance.

The project will also develop onsite disposal of dredged materials, using a 2.13 acre upland area. This is a good alternative provided that care is taken to prohibit colonization by invasive shrubs and herbaceous plants, particularly autumn olive (*Eleagnus umbellata*) and Phragmities (*P. australis*). I recommend that grassland be planted featuring warm season grass seed mixture containing a substantial amount of switchgrass (*Panicum virgatum*). This mixture was featured at Galilee and produced excellent results. Finally, I feel that installation of four osprey poles in a 21 acre overall area may be too much in terms of platform density. Two or three tall osprey platforms in the area should be sufficient.

Please let me know if you have any questions regarding these comments.

Blumeris, Barbara R NAE

From:	Greg_Mannesto@fws.gov
Sent:	Thursday, June 12, 2003 01:58 PM
To:	Blumeris, Barbara R
Cc:	William_Neidermyer@fws.gov
Subject:	Re: Allin's Cove Restoration project letter needed

Hello Barb: I have reviewed the Allin's Cove Wetland Restoration Project report dated February, 2003 and have no additional comments from my original comment letter of June 5, 2002.