

APPENDIX D
CULTURAL RESOURCES EVALUATION REPORT

REPORT
ARCHAEOLOGICAL AND HISTORICAL RESOURCES ASSESSMENT
CEPA EVALUATION

HAMMONASSET BEACH STATE PARK
MADISON, CONNECTICUT

Prepared for Fuss and O'Neill, Inc.

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I. INTRODUCTION

The Connecticut Department of Environmental Protection (DEP) has identified a problem with shoreline erosion at the western end of the 2.5-mile-long beach at Hammonasset Beach State Park (HBSP). In the winter of 2004/05 storms caused a ¼-mile-long section of beach to wash into Long Island Sound, undercutting the boardwalk and leaving the beach and other park areas vulnerable to continued erosion. The sand has since been replaced twice but has eroded away into the Sound. DEP contracted with Fuss and O'Neill, Inc. to study the shoreline erosion problem, develop possible solutions in an engineering feasibility study, and to conduct an evaluation of the potential impact of the alternative solutions on natural and cultural resources in the form of an Environmental Impact Evaluation (EIE) in accordance with the Connecticut Environmental Protection Act (CEPA). Archaeological and Historical Services, Inc. (AHS), under contract to Fuss and O'Neill, performed an evaluation of potential impacts of the alternate solutions on cultural resources.

HBSP has an interesting history. First opened in 1920, the 919-acre park was damaged in the 1938 hurricane. During World War II the park was closed to the public and converted into an army reservation; planes flying out of Bradley Airport on training missions would use a firing range at Meigs Point for target practice. The park was rebuilt and reopened to the public in the late 1940s with a new boardwalk. Over 380,000 cubic yards of sand were placed on the beach in 1954 to return the beach to its original width of 175 feet. But a year later the 1955 hurricane damaged the park again, resulting in the replacement of the Tom's Creek jetty for the third time and the construction of a new breakwater built at the Meigs Point end of the park with stone brought in from northern New England.

In 1965 DEP pumped in sand from the bottom of Long Island Sound to fill in a salt marsh north of Meigs Point Road in order to create a parking lot. The parking lot failed because the sand was too loose. Some of the sand was harvested for beach nourishment in 2004.

After the 2004/05 winter storms destroyed a ¼-mile-long section of beach at the western end of the park, sand was bulldozed under the exposed boardwalk and 12-15,000 cubic yards of sand were excavated out of a filled wetland and placed on the beach. Another 3000 cubic yards was placed on the beach in Spring 2006 to protect the boardwalk. All of the replacement sand has washed into Long Island Sound, leaving the boardwalk at the risk of being lost and the beach and park land vulnerable to further negative erosion effects.

The alternatives analyzed in this project include various combinations of the following options: 1) No Action, in which nature takes its course; 2) Retreat, in which estimates of the future shoreline are used as a baseline for designing and relocating the infrastructure of a one-mile length of beach. Structures in harm's way would be removed and protected by sand dunes; 3) Replacement, in which the beach sand lost to erosion is replaced, with possible sources including sand dredged by the Army Corps of Engineers from navigation channels such as the Housatonic River and Clinton Harbor, or sand mined from upland sources, and 4) Structural Solutions such as using rock, concrete or other hard material to construct bulkheads, modify jetties, or construct a new jetty, floating breakwater or an offshore reef.

AHS determined the potential of the alternatives to adversely impact areas of archaeological sensitivity or significant historic (i.e., above-ground) resources. The work was performed in

accordance with CEPA standards and the guidelines set forth in the State Historic Preservation Office's *Environmental Review Primer for Connecticut's Archaeological Resources* (hereafter *Primer*).

II. SCOPE OF WORK

A CEPA EIE-level of cultural resources survey is a Phase Ia Archaeological Reconnaissance Survey. As defined by the *Primer*, it involves collection of data sufficient to evaluate the archaeological sensitivity of a project area (i.e., the potential of the project for containing significant buried archaeological resources); evaluating the potential significance of above-ground historical resources in the project area, including buildings, wharves and jetties; evaluating the potential of the project for impacting significant archaeological and/or historical resources; and recommending additional studies, if necessary to identify specific archaeological sites rather than broader areas of archaeological sensitivity, and/or strategies for avoiding or mitigating impacts to significant archaeological and historical resources. For the purpose of the cultural resource survey, the HBSP project area is broadly defined as the entire park, with a focus on the beach; i.e., the area between the breakwaters at Webster Point (Tom's Creek) on the western end and Meigs (Hammonasset) Point on the eastern end (Figure 1).

The tasks of the survey are outlined below.

A. Task 1 - Identify previously reported or potential archaeological resources within the project area, including HBSP and potential sand source areas, either underwater or in the uplands

AHS conducted background research in state site files of reported archaeological sites and historical resources; in published and unpublished reports, articles and books on the history and archaeology of the study area; in historical maps; and in environmental sources. The research identified known archaeological sites in the project area and delineated parts of the project area likely to contain archaeological sites.

B. Task 2 - Identify areas of low, moderate, and high archaeological sensitivity within the project area

AHS reviewed extant archaeological, ecological, and geological data in order to stratify the project area into zones of relative archaeological potential. The potential impacts of project undertakings on both terrestrial and submerged archaeological resources were assessed. For terrestrial sections of the project area, such as the extant beach, AHS performed a walkover survey to assess the existing conditions and look for above-ground evidence of archaeological resources. AHS also assessed potential damage to known archaeological resources from ongoing coastal erosion and erosion mitigation projects.

In addition, AHS assessed the archaeological sensitivity of submerged areas by review of project-related geotechnical borings and the latest reconstructions of sea-level changes within Long Island Sound.

C. Task 3 - Identify above-ground historic-period resources and evaluate their potential significance

AHS conducted historic map research and research in DEP/Parks and Forests records in order to identify past and present structures such as buildings, boardwalks, jetties and other resources. Extant resources were examined and their potential significance vis-à-vis the criteria of the National Register of Historic Places was evaluated. Locations of historic structures now removed may be considered archaeologically sensitive if associated buried remains are extant.

D. Task 4 - Evaluate the project alternatives for relative impacts on cultural resources

AHS assessed each of the project alternatives and ranked their potential negative impacts to identified cultural resources and areas of archaeological sensitivity.

E. Task 5 – Recommendations for additional archaeological or historical investigations of the project area and/or mitigation of potential adverse effects on cultural resources

AHS prepared recommendations for further cultural resources management studies, if warranted. For example, the level of survey conducted cannot identify all specific archaeological sites, which can only be done with systematic subsurface testing. Some of the alternatives warrant further archaeological and/or historical research to confirm their sensitivity. Some historic resources and archaeological site areas are sufficiently defined so that impact avoidance or mitigation measures are proposed.

F. Task 6 – Preparation of a comprehensive technical report

AHS completed a succinct but comprehensive written report documenting the project methods, results and recommendations (this document). Photographs and maps of identified cultural resources and areas of relative archaeological sensitivity are included. The report format allows for ready incorporation of key data into the project EIE.

III. IDENTIFICATION OF ARCHAEOLOGICAL SITES AND ARCHAEOLOGICALLY SENSITIVE AREAS

In order to identify known archaeological sites and assess the potential prehistoric sensitivity of the project area, AHS consulted the Connecticut state site files in the State Historic Preservation Office (SHPO) and Office of State Archaeology (OSA), researched the published record of archaeological sites in the vicinity, and assessed documentation provided by Fuss and O'Neill, including project plans, orthophotos and historical documentation of DEP actions within the project area (Figure 1).

A. Known Archaeological Sites

Thirty-three archaeological sites within the vicinity of the project area are documented in the state archaeological site files (Table 1; Figure 2). There is no mandate to report archaeological sites thus the site files likely only represent a sample of the actual archaeological sites in a given area. The site files, however, provide good context for assessing archaeological potential when used in combination with other documentary data. Two of these sites represent colonial-era standing structures, and one is an early colonial "Contact Period" Native American site. The rest, and majority of sites, are prehistoric sites (i.e., pre-Colonial Native American). These are variously described as "camps", "middens", fishweirs "burials" and a possible "sweat lodge". The 16 prehistoric "camps" generally represent small sites defined by the presence of a few stone tools and/or tool-making debris, most often located by avocational archaeologists collecting artifacts from plowed fields. Where such collections include hundreds of tools, sites are often described as "villages", although in fact, these are more likely locations of re-occupied camps. The eleven midden sites represent shell heaps or dense buried horizons of discarded shell, sometimes associated with artifacts. Such sites indicate the presence of nearby habitation areas. Three sites have been defined as cemeteries based on the presence of human remains. These sites date to the Woodland through Contact periods (ca. 3,000 to 350 years ago). One possible single burial (Site 27-14) is represented by a red ochre-stained feature without human remains. Table 2 summarizes the general prehistory of southeastern coastal Connecticut. Modeled sea levels are also provided based on Gayes and Bokuniewicz 1991.

Table 1: Documented Sites in the Vicinity of Hammonasset Beach State Park

Site Number	Site Type	Period
27-1	Midden	Late Archaic, Woodland?
27-2	Camp	Late Archaic, Terminal Archaic, Woodland?
27-4	Cemetery	Woodland
27-5	Camp	Late Archaic, Woodland?
27-6	Camp	Late Archaic, Middle Woodland?
27-7	Cemetery	Late Woodland - Contact?
27-8	Camp	unknown
27-9	Fishweir	unknown
27-10	Cemetery	Woodland-Contact?
27-11	Camp	Woodland
27-12	Sweatlodge?	unknown
27-13	Midden	unknown
27-14	Burial?	unknown
27-15	Camp?	Contact?
27-18	Midden	unknown
27-19	Camp	Late Contact
27-20	Midden	unknown
27-21	Midden	unknown
27-22	Midden	unknown
27-23	Midden	unknown
27-24	Midden	unknown
27-25	Midden	unknown
27-26	Camp	unknown
27-28	Midden	Terminal Archaic - Woodland
27-29	Camp	Late Archaic - Early Woodland
27-30	Camp	unknown
27-31	Midden	Late Archaic?
27-34	Camp	Late Archaic
27-35	Historic Structure	18th Century
27-36	Camp	unknown
76-1	Camp	Paleoindian - Woodland
76-3	Camp	Late Archaic - Contact
76-4	Unknown	20th Century

Table 2: Generalized Prehistoric Cultural Periods of Southeastern Coastal Connecticut

Cultural Period	Date Range (Radiocarbon years BP)	Habitat	Approximate Relative Sea Level
Paleoindian	11,000-9,000	spruce parkland	-42 to -30m
Early Archaic	9,000-8,000	pine-birch	-30 to -25m
Middle Archaic	8,000-6,000	oak-hemlock	-25 to -10m
Late Archaic	6,000-3,800	oak-beech	-10 to -6m
Terminal Archaic	3,800-2,700	oak-hickory	-6m to -4m
Early-Middle Woodland	2,700-1,000	oak-chestnut	-4 to -1.5m
Late Woodland	1,000-450	oak-chestnut	-1.5 to 0.5m
Contact	450-350	modern/clearcut	ca. 0.5m

Two of the reported sites fall within the HBSP project area. Site 76-1, located “50 meters east of the mouth of Tom’s Creek” according to the site form, refers to the collection of Lyent Russell, one of Connecticut’s most famous avocational archaeologists. Russell’s collection from the beach is said to contain “small-stemmed, side notched and triangular” points, most likely representing a variety of Late Archaic forms. More detailed descriptions of artifacts recovered from Hammonasset Beach are referenced in Frank Glynn’s article titled “Connecticut Indian Origins in the Light of Submerged Sites” (Glynn 1969). Glynn discusses the erosion of the beach after the 1955 hurricane and the subsequent dredging of sands from 900 feet offshore in 16 to 18 feet of water (see Figure 3: 1964 documentation of “Area Formerly Dredged”). Site 76-1, then, is composed of dredged material spread back over the beach, which included large amounts of clam and oyster shell, some showing signs of evident burning. In 1956, “many collectors” reported finding stone tools from the redeposited sands on the beach. The Fred Miller collection included nearly 200 projectile points, two dozen “blades” (bifaces) and scrapers, a dozen knives and ca. 100 flakes and debris (Glynn 1969: 70). Glynn concluded that most of the material likely dated between about 6,000 and 4,000 years ago, although a Paleoindian fluted point was also recovered, this latter find predates 10,000 years ago.

In 1972, the avocational archaeologist Richard Bourn summarized a number of coastal sites, including Hammonasset Beach (Bourn 1972). In 1977, he wrote a lengthy article carefully describing the Miller and Bourn collections from Hammonasset Beach (Bourn 1977), which are included as part of Site 76-1. Bourn made a number of important observations. First, about 90% of the artifacts recovered are estimated to have originated from the dredge spoils. Second, most of the artifacts were found along the northwestern half of the beach. Third, the few artifacts recovered from the southeastern portion of the beach (closer to Meig’s Point) were more waterworn. Fourth, artifacts

were recovered from between the Mean Low Tide and about six feet above Mean High Tide. Finally, some additional artifacts were found in the plowed field behind the beach in 1972 (Bourn 1977: 18). Bourn's assessments of the finds can be summarized briefly by time period as follows: Paleoindian: 1; Late Paleoindian: 1 possible; Middle Archaic: 3; Laurentian Late Archaic: 34; Narrow-Stem Late Archaic: 289; Terminal Archaic: 11; Early Woodland: 5; late Woodland: 19; untyped: 6; drills: 4; knives: 38; and scrapers: 22. One antler tool, 2 soapstone fragments, 2 hammerstones, 2 groundstone fragments, 8 notched weights, 63 blanks or preforms, 6 fire-cracked stones, 73 cores and 34 unworked flakes were also recovered. The following finds were made on the plowed field: 1 waterworn Narrow-Stem Late Archaic point, 4 Late Woodland points, 3 broken points, a stone hoe, a notched tool, 3 knives, a triangular preform, 8 corers, 74 unworked flakes (all quartz), a fire-cracked rock and 2 worked whelk shells (Bourn 1977: 30-31, see Figure 4). Bourn notes that the waterworn point could have originated from dredgings dumped in the marsh east of this area in the 1960s.

Overall, the combined artifact collections associated with Site 76-1 provide rich evidence for both inundated offshore Archaic period site(s) and the presence of terrestrial Late Woodland locations within the park area. Figure 4 represents a sample of prehistoric artifacts from Site 76-1. Unfortunately, the Connecticut site files do not reflect actual site boundaries. In this case, based on the existing documentation, site 76-1 consists *primarily* of materials that originated from the offshore dredge spoils deposited after the 1955 hurricane. Reports also note, however, that artifacts associated with the site were recovered from plowed fields behind the beach. While not precise, Figure 5 represents Bourne's published map with a rough location of the field.

The second reported site within the HBSP project area is Site 76-3, described as lying "in the marsh on the west side of the Hammonasset River, 500 feet south of the intersection of the Boston Post Road." The site file map places it within the northeastern park parcel along Boston Post Road north of the Griswold Airport (Figure 2). Little documentation exists for the site, but Frank Glynn, who first reported it, indicated it was Late Archaic in age.

A third area of artifact finds has also been reported from the park grounds, although without archaeological testing it is unclear if it represents an extension of Site 76-1, Site 76-3 or a discrete site of its own. In *A History of Hammonasset*, it is reported that in 1970, during the re-construction of the Cedar Knoll camp sites, a large number of Indian artifacts, mostly arrowheads, were found (Dunn 1973). This area lies east of the park entrance (Figure 2).

The presence of artifacts from various terrestrial portions of the park indicates that any undisturbed portions of the park grounds should be considered highly sensitive and potentially contain cultural materials. Until archaeological testing can establish that these areas represent independent locations of prehistoric activity, finds from the park grounds should be considered to represent dispersed loci of Site 59-1. The spatial extent of Site 59-1 is therefore best interpreted as the offshore area along the beach where artifacts are known to have been found during dredging operations as well as most terrestrial portions of the park. Whether the various locations noted represent discrete, individual sites cannot be known without archaeological testing. Most importantly, the existing data indicate that the whole park and surrounding offshore areas should be considered archaeologically sensitive during planning and management.

B. Archaeological Sensitivity

Offshore archaeological sites are extremely rare and important to better understanding the local prehistory, particularly human adaptations to coastal resources prior to the Woodland period. Moreover, inundated sites have the potential to contain preserved organic artifacts that are rarely encountered on terrestrial sites. The Hammonasset Beach Site (76-1) is one of just six known offshore sites in Connecticut noted in a recent summary by Merwin et al. (2003), and represents the largest collection of offshore artifacts that we are aware of from the Middle Atlantic and New England coastal region. The next largest collection is probably the Corcione Collection from redeposited dredgings taken off Monmouth Beach, New Jersey (Merwin et al. 2003: 46). The sheer number of finds from Hammonasset indicates two important variables are at work.

First, the nearshore geological environment of Hammonasset Beach can be broadly classified as depositional in the long-term sense. Depositional coastal environments consist of barrier islands and lagoons, tidal flats and marshes such as those that define the Hammonasset Beach area. Such environments can permit the preservation of buried sediments under a generally low-energy, transgressing system. Bourn's profile drawing of the beach in 1972 indicates the presence of a buried peat horizon just offshore east of the mouth of Tom's Creek (Bourn 1977: Figure 2). Boring logs noted in a 1964 technical report outlining proposed hydraulic fill also indicate potentially intact buried terrestrial sediments under about 6 meters of "gray organic silt and root matter" east of the pavilion (State of Connecticut 1964: Sheet 5). The fact that most of the artifacts collected from the dredge spoils appeared unweathered also indicates a good degree of preservation within buried sediments in the offshore zone.

Second, the great abundance of finds indicates that HBSP area was resource-rich and clearly attracted human foragers on a regular basis between as 8,000 and 3,000 years ago, and in at least one case before 10,000 years ago. The fact that most of the artifacts discovered date between ca. 5,000 and 4,000 years ago may reflect the particular offshore zone from which the dredgings were taken, rather than a focus of use at that time. Earlier finds may be present in sediments located further from shore, and younger ones in shallower waters closer to shore. The weathered nature of artifacts from the southeastern (Meig's Point) portion of the beach suggests that this area has been more thoroughly worked in the offshore zone, and inundated sites may not be as well-preserved as artifacts from deposits to the west.

The abundance of sites in the vicinity of Hammonasset Beach as depicted on Figure 2 underscores the general sensitivity of the landscape for cultural remains. The high number of midden (shell dump) sites indicates relatively intensive use of the coastal and estuarine resources of the Hammonasset River mouth. It is highly probable that as yet undiscovered midden sites exist within the project area. Of additional concern is the relatively high number of nearby prehistoric cemeteries. Cemeteries represent the most culturally sensitive resources on the landscape, and great care must be taken to avoid their disturbance. There is a good chance that one or more prehistoric cemeteries lie within the bounds of the project area. Finally, the identification of a terrestrial prehistoric site within the park indicates that others likely exist in undisturbed portions of the grounds.

In sum, the entire HBSP area, and offshore areas, can be considered to be of high archaeological sensitivity, particularly for prehistoric sites. Firm data exist to demonstrate intensive and long-term prehistoric use of the near-shore and offshore areas.

C. Recommendations Regarding Prehistoric Archaeological Sites and Site Areas

Dredging work in the offshore area of Hammonasset Beach in the 1950s resulted in the discovery of the richest known inundated prehistoric site in the Northeast because the deposition of offshore sands on the beach resulted in the identification of prehistoric sites in the sands. In addition, the state site files list numerous prehistoric sites in the coastal and near-coastal areas in the HBSP vicinity, attesting to the attraction of the area for prehistoric peoples. The Hammonasset Beach and Clinton Harbor areas should be considered highly sensitive cultural landscapes. The following recommendations apply to potential prehistoric-period archaeological remains within the HBSP project area:

- Any areas of planned onshore ground disturbance first be carefully evaluated by standard Phase Ib Archaeological Reconnaissance Survey subsurface archaeological testing to identify all buried archaeological sites.
- The offshore area should be considered highly sensitive for cultural resources and disturbance to the area avoided if possible. Offshore actions (i.e., dredging, deposition of material, sand-pumping), if necessary, should involve archaeological assessment to ensure that archaeological sites are not adversely affected.

IV. IDENTIFICATION AND EVALUATION OF HISTORIC-PERIOD ABOVE-GROUND RESOURCES

A. Historic Background of the Project Area

In order to document historical uses within the project area, AHS's historian consulted a series of 18th- and 19th-century maps and navigational charts (see Figures 6 through 11), as well as the 1934 Fairchild aerial photograph and early versions of the U.S.G.S. Clinton Quadrangle (Figures 14 and 18). General histories of Madison (Platt 1964, Lord and Montgomery 1998) were consulted for background on the town, as was a history of the state park itself by a Connecticut Department of Environmental Protection employee (Dunn 1973). The reports of the State Parks and Forests Commission were consulted for information on the construction of the park and early views of its structures.

Hammonasset Point marks the western side of the inflow of the Hammonasset River into Long Island Sound. The river is the boundary between New Haven and Middlesex counties and between the towns of Clinton, originally part of Killingworth, and Madison, until 1826 part of the town of Guilford. This area was settled by the English in the middle of the 17th century. In 1641 a deed was obtained from a Pequot leader named Wequash, but this transaction was challenged by Uncas, the leader of the Mohegans, based upon his claim to the territory as spoils from the Pequot War. In 1650 George Fenwick of Saybrook executed an agreement with Uncas that paved the way for English settlement of what are now the towns of Guilford and Madison. Madison began to assume a separate identity in 1705, when it was made a separate parish known as East Guilford, a name it retained until town incorporation in 1826.

The inland parts of East Guilford/Madison were farming areas, but the parts closer to the sea were engaged in a variety of maritime activities from the earliest years of settlement. There have been numerous shipyards in Madison, and at least two major wharves were built out into the Sound to accommodate merchant vessels. Tidal areas were conducive to the cultivation of spartina and other salt or brackish-water grasses. Animals were grazed on salt-hay meadows, and salt hay was harvested for its commercial value as packing, insulation, and as an ingredient in making coarser forms of paper. The former farmhouse, now the Nature Center, was undoubtedly part of such a saltwater farm. The characteristic grid of drainage channels associated with salt-hay cultivation were evident at the time of the 1934 Fairchild aerial photograph (Figure 18), and extensive areas of salt marsh still make up much of the park today (Photograph 12). At this point in the research, no particular individuals have been associated with the farmhouse; the name "Scranton," which appears on the 1852 map (Figure 10), was extremely common, so it could not be determined which of the dozens of Madison Scranton families was associated with the site. (Scranton, Pennsylvania, is named for settlers from Madison).

Although beaches were not used intensively before becoming recreational destinations in the late 19th and early 20th centuries, they were the site of fishing activities. The 1792 Blodgett map (Figure 7) notes a porpoise fishery off Hammonasset Beach, and Madison once had a thriving dried-cod industry (Platt 1964: 186). According to the 1946 reminiscence of Benjamin Hand Scranton (Platt 1964: 185-87), Madison fishermen practiced hand-seining from the town's beaches, a communal activity involving several men. Once a likely school of fish was spotted, men would rush to their boats and haul out a seine leaded with weights on side and fitted with floats on the other. The

seine would be set so as to encircle the school of fish. Then the seine would be hauled in by men or horses turning a capstan on the shore. Over 100,000 fish could be obtained in one haul.

Pound fishing, the other method used in Madison, superceded the older seine method. A pound was a series of permanent nets set out in the Sound that channeled fish into a central area, where they could be caught and hauled ashore as with the seine method. One 19th-century pound off Hammonasset Beach was operated by the Williams brothers (Platt 1964: 206). Madison's nets hauled huge amounts of menhaden (*Brevoortia tyrannus*), the full-bodied herring also known as porgies, fatbacks, and mossbunkers. Menhaden were processed in the fish houses that formerly dotted the shore in Madison (Platt 1964: 186). The fish were boiled for their oil, a gallon of which required about 1,000 fish, with the parts leftover dried and sold for fertilizer. There are two such fish houses within the project area indicated on the 1868 map (Figure 11). Fish houses were typically small, utilitarian structures (Figure 12); one Madison fish house (not in the project area) is known to have been made over from a relocated Sabbath-day house, the informal structures erected at Congregational meetinghouses where families could find shelter in between morning and afternoon services. At the end of the 19th century, when the Remington Repeating Arms Company owned the beach (see below), the ruins of one of the fish houses, referred to as a fish-oil factory, could still be seen (Dunn 1973).

Remington came to Hammonasset in 1898 because the company needed an range 1,800 yards long to test a new rifle site. The target was set up near the east end of the beach and the rifles were mounted on a horse-drawn stone boat. In 1907 the company began purchasing property along the beach for a permanent testing area, eventually acquiring 72 separate parcels, including the farm. Hammonasset was used extensively for testing ammunition during World War I.

Hammonasset was identified as a priority acquisition by the newly created Connecticut State Parks and Forests Commission in 1914, but it was not until 1919 that funds became available to actually purchase the land. The state lost no time in creating camps sites, parking areas, roads, and a large pavilion that accommodated changing rooms and toilets; that pavilion (Figure 16) lasted until 1967. The park was first opened to the public on July 18, 1920. The next season, a restaurant called the Clam Shed was erected some 600 feet east of the Grand Pavilion, to which it was connected by a boardwalk. In 1923 additional purchases of land almost doubled the park's size; that year, 228,700 visitors enjoyed the park. Some time around 1900, at least four families had built beach-side cottages at Hammonasset; these pre-existing cottages were re-located, along with a newly built cottage, to the Cedar Knoll area for use as rentals.

Over the years, additional amenities were added to the park, all of which have now disappeared without a visible trace:

- 1924 Twelve canvas bungalows, later replaced by cabins, were built at the point for weekly rentals. A 600-foot-long bench was built along the boardwalk.
- 1926 The bench and boardwalk were extended another 400 feet.
- 1928 Two bathhouse-locker buildings were erected east of the Clam Shack.
- 1930 The Clam Shed was enlarged to seat 1,200 people, and the boardwalk, 16 feet wide,

reached a length of 2,300 feet.

- 1931 Additional changing houses and toilets were built on the inland side of the road to the point. An area with fireplaces and picnic tables was created where previously the private cottage had stood.
- 1939 A 1,700-foot-long boardwalk was built to replace the one swept away by the Hurricane, and many damaged buildings had to be repaired.
- 1948 The boardwalk was again replaced.
- 1955 A stone breakwater was constructed at the east end of the beach, along with sheet-pile walls at the west end to channel Tom's Creek. One of the latter was replaced in the 1970s with the present west-end breakwater.
- 1958 The bath facilities east of the Clam Shed were replaced.

During World War II, the park was closed to the public so that the Army Air Corps could use it as an aircraft firing range. According to Dunn (1973), the planes took off from what is now Bradley Airport in Windsor Locks, flew south over Clinton harbor, fired at the target, and then continued on over Long Island Sound. There is a report of one aircraft ditching "several hundred yards offshore," with pre-positioned boats rescuing the crew. Dunn refers to "wreckage" at the site. It is possible that further research at the New England Air Museum, in Army aviation records, and interviews with local aviation and crash-site enthusiasts could clarify the location of the remains of the accident, which might be National-Register eligible because of the possibility of yielding important information for aviation archaeology.

B. Results of Historic Resource Walkover Inspection

The project historian walked the entire length of the beach in June 2007, including both the beach side and the back of the dune, in order to identify any significant historic buildings or above-ground remains of historic-period uses. The existing buildings at the park, which proved to be, with one exception, all of recent construction, were photographed at this time; a selection of the photographs appears as Appendix II. The dense vegetation on the back of the dune, which was left undisturbed, greatly limited the visibility of any remains.

Field inspection by the project historian identified only one building of historic interest, the park Nature Center, an exhibit building remodeled in 1973 from a 1 ½-story wood-shingled 19th-century farmhouse (Photographs 2 and 3). An ell extends from the rear, and there is a small shed-roofed extension on the south side. Emerging from the center of the roof, which has its ridgeline parallel to the long side of the house, where there is a central entrance, is a single stove-sized brick chimney. The house originally was accompanied by two small barns, one of which is thought to have washed away in the Hurricane of 1938 and the other demolished in 1954 (Dunn 1973); see also the 1934 aerial photograph (Figure 18). The former farmhouse rests on a foundation that is part fieldstone and part brick (Photograph 3). The Nature Center building, despite its age, is not

recommended as eligible for listing on the National Register of Historic Places because of the numerous changes that have affected its integrity: added dormer on the back slope of the roof, modern windows, and complete removal of all interior finishes for the installation of nature exhibits. However, undisturbed areas surrounding the 19th-century farmhouse may contain subsurface artifacts and/or features that might be significant in illuminating lifeways at a modest 19th-century saltwater farm.

There are two mid-20th-century stone breakwaters, the larger of which is at the east end of the beach (Photographs 4 and 5). Both are built of huge irregular pieces of granite, with more rectangular slabs set on top to create a flat-topped, approximately trapezoidal section. The east breakwater was built following the hurricanes of the mid 1950s, at which time steel sheet-piling was installed to prevent erosion at the west end of the beach at the outflow of Tom's Brook. The west-end breakwater was built in the 1970s. Although the east breakwater is now 50 years old, it is not recommended as eligible for listing on the National Register of Historic Places because it is a commonplace structure with little claim to exceptional engineering significance.

The rest of the park's buildings appear to be of relatively recent origin and are wood-frame construction set on timber or concrete piles or concrete-slab foundations. The buildings' clapboard or board-pattern plywood exteriors are stained a natural dark brown. Directly fronting on the beach are three large toilet and changing room structures (Photograph 6) and two snack bars (Photograph 7). The Camp Store (Photograph 8) is located at the west end of the beach between the dune and the camping area. There are also four open picnic pavilions (Photograph 9), three near the beach's dune and the fourth northeast of the nature center.

Infrastructure at the park includes a two-lane paved road leading from the entrance to the point parking area, a stone-dust walking/bicycle trail paralleling the back of the dune, and a short section of modern boardwalk at the west end of the beach (Photograph 10).

No evidence of earlier park buildings or structures was observed during the walkover, nor could anything be discerned of the Winchester Repeating Arms Company target butt cited by Dunn (1973) or of the two "fish houses" shown on the 1868 map (Figure 11). However, the back side of the dune is heavily overgrown with roses, cattails, and tall grasses, and it may be that the vegetation obscured evidence of these structures (Photograph 11). It is also possible that natural and human-initiated dune-building actions have buried remains in sand to the point that they are no longer readily visible.

C. Recommendations Regarding Historic Resources Remains

The following conditional recommendations apply to potential historic-period archaeological remains:

- Additional subsurface testing is recommended for the grounds surrounding the former 19th-century farmhouse, now the Nature Center, if project impacts extend into this area.
- If project impacts appear to extend into the area, subsurface testing should attempt to locate the 19th-century fish houses shown on the 1868 map (Figure 11) and determine if cultural-material-bearing soils are associated with these sites. If there are artifacts or features, they could well make the sites eligible for the National Register based upon the relative paucity

of information from comparable, archaeologically-examined maritime sites.

- Offshore actions (i.e., dredging, deposition of material, sand-pumping) should be evaluated to ensure that they do not impact the World War II plane-crash site. Additional research in aviation records might be able to pinpoint better where the plane went down and if the plane was recovered. There is a real possibility of meaningful aircraft remains from this incident. In 1993, most of a World War II-era F-6F “Hellcat” Navy fighter was recovered intact after being buried in the sand in 20 feet of water off Martha’s Vineyard; it is now at the Quonset Air Museum awaiting either restoration or display as an underwater-recovery artifact.

V. AN EVALUATION OF POTENTIAL IMPACTS TO CULTURAL RESOURCES OF HAMMONASSET STATE PARK BASED ON PROPOSED ALTERNATIVES FOR PARK IMPROVEMENTS

DEP has selected five final alternatives to be considered in the EIE for the HBSP project. Each alternative expresses varying degrees of potential impact to archaeological and historical resources. The alternatives, their potential impacts to cultural resources, and recommendations for impact mitigation are presented below in narrative and tabular form.

A. Impacts and Mitigative Recommendations

1. No action. Under this alternative, no changes to the existing beach, infrastructure, or structures would occur. As a result, beach erosion would continue, damaging or destroying a large portion of the boardwalk and the two west beach bath houses. Other structures would be unlikely to be threatened during the 50 or 100 year shoreline forecast period. The beach would likely narrow significantly and steepen in slope.

- **Potential Impact to Archaeological Resources:** “No action” will result in continued beach erosion at a rate of approximately 1 foot per year. The eroding strand line will result in a degree of burial of near-shore sediments as the dune progresses inland. However, as the beach steepens and is further eroded, wave action will simultaneously cut the beach front, exposing buried sediments. If sea levels rise at a more rapid rate in the coming 50 years as some project, the rate of sedimentation and burial may outpace that of erosion. The risk of an eroding beach front is the likelihood that it will expose buried cultural horizons associated with Native American residential sites or even burials. In sum, “No action” results in gradual, but long-term threats to archaeological resources in the near-shore area.
- **Recommended Plan of Action:** It is recommended that the effects of erosion be monitored by park staff so that damage to exposed cultural resources, possibly including both Native American archaeological resources and historic archaeological remains associated with the fish houses shown on the 1868 map, can be professionally mitigated through excavation or local stabilization efforts. For this measure to be effective, park staff should receive training in the recognition of archaeological features and artifacts by a professional archaeologist. Clear protocols should also be developed detailing points of contact within the State Historic Preservation Office.

2. Retreat. Under this alternative, beach buildings and infrastructure that are threatened by the eroding coastline would be relocated or demolished and replaced inland such that they are no longer likely to be threatened as predicted by the 50 and 100-year shoreline forecasts. CAD plans for the location of the re-located structures and infrastructure indicate placement immediately behind the west beach.

- **Potential Impact to Archaeological Resources:** The “Retreat” alternative includes all of the threats to cultural resources outlined in the “No action” plan detailed above. In addition to these, the relocation of buildings and infrastructure will result in serious ground disturbance that is likely to threaten cultural resources in the near-shore zone. The recovery of artifacts by collectors from fields just offshore of Hammonasset beach was documented in our summary for the CEPA evaluation. The presence of these artifacts indicates that undocumented sites are likely to exist in areas of proposed building, road, boardwalk and leach field construction. These areas will need to be assessed for the presence of potential National Register eligible cultural resources through standard archaeological subsurface testing methods as spelled out in the *Environmental Review Primer for Connecticut’s Archaeological Resources* published by the State Historic Preservation Office. If the buildings are to be relocated in the vicinity of the fish houses shown on the 1868 map, then the possibility of encountering significant historic-period remains should also be factored into the relocation planning.
- **Recommended Plan of Action:** The “Retreat” alternative requires the continuous monitoring of beach erosion for the exposure of cultural resources outlined in the “No action” alternative above. In addition, once detailed plans of proposed construction are available, estimates for the scope of archeological testing can be made. Within broad footprints for building and leach fields, testing in the form of 50x50cm shovel test pits spaced at 10-meter intervals is recommended. Ten-meter-interval sampling should also be taken along areas of linear ground disturbance, such as buried telephone and electrical cables, sewer lines, paths, boardwalks and roads. Where cultural resources are encountered, intensified survey will be required to determine their National Register eligibility. Damage to sites eligible for the National Register must be mitigated through avoidance or professional archaeological excavation.

3. Beach nourishment using barged sand, combined with structure. This alternative includes barging sand that would be dredged as part of the proposed Housatonic River and Clinton Harbor dredging projects to Hammonasset Beach to provide a long-lasting, larger usable beach area. A stone groin would be constructed at the eastern end of the nourishment area to increase the useful life of the project and reduce maintenance. Ongoing sand replenishment would be needed.

- **Potential Impact to Archaeological Resources:** The “Beach nourishment with groin structure” alternative is unlikely to have adverse effects to the cultural resources of the Hammonasset Beach State Park area, except beneath the groin itself. If beach nourishment results in retarded beach erosion, this alternative may actually help to preserve near-shore buried cultural resources from future erosive destruction. The Beach nourishment alternative does require the mining of sandy sediments from the mouth of the Housatonic River and Clinton Harbor. This dredging activity could result in the inadvertent destruction of inundated off-shore prehistoric cultural resources in these two areas. Construction of the groin itself is expected to have minimal impact on inundated offshore resources unless material will be removed from the sea floor prior to its construction. More detailed plans for

the construction of the groin will be needed to assess its potential impact.

- **Recommended Plan of Action:** Boring logs of the proposed dredging locations of the Housatonic River and Clinton Harbor should first be assessed by professional archaeologists to determine if there is a risk of encountering inundated terrestrial sediments which are likely to contain cultural resources. If there is a risk of encountering such sediments, recommendations for preventing impact to potential offshore cultural resources should be made, either through shallower dredging or avoidance of potentially sensitive locations. Even if it is believed that intact inundated terrestrial sediments will not be impacted, it is highly recommended that a professional archaeologist monitor and sample dredging spoils during the mining operation. If the sea floor will be modified during the construction of the groin, efforts should be made to sample the sea floor first to assess the presence of intact cultural remains. Should intact cultural remains be encountered, underwater archaeology may be necessary to document and remove artifacts and features if avoidance is not possible.

4. Beach nourishment using barged sand, without structure. Similar to Alternative 3, this option includes barging sand that would be dredged as part of the proposed Housatonic River and Clinton Harbor dredging projects to Hammonasset Beach to provide a long-lasting, larger usable beach area. No groin would be constructed as part of this alternative. Ongoing sand replenishment would be needed.

- **Potential Impact to Archaeological Resources:** The “Beach nourishment without groin structure” alternative is unlikely to have any adverse effects on the cultural resources of Hammonasset Beach State Park. However, as in Alternative 3 above, there are potential threats to the offshore resources of the proposed dredging areas. See alternative 3 for details.
- **Recommended Plan of Action:** Mitigation of damage to potential offshore cultural resources should follow the plan outlined in Alternative 3 above. Because no groin is proposed in this alternative, no additional archaeological sampling of the offshore area of the park would be required.

5. Beach nourishment using upland sources, with structure. Similar to Alternative 3, this alternative includes nourishment of Hammonasset Beach with adequate sand to provide a long-lasting, larger usable beach area with a stone groin. However, this alternative assumes that upland sand sources would be used and hauled to Hammonasset Beach for placement. This would involve a significant trucking operation and the associated infrastructure and nuisance impacts (noise, air quality, visual, etc.).

- **Potential Impact to Archaeological Resources:** The “Beach nourishment with upland source and groin structure” alternative is unlikely to have adverse effects to the cultural resources of the Hammonasset Beach State Park area except in the offshore area of the proposed groin. As with Alternatives 3 and 4, the source areas of the sand should be

evaluated by a professional archaeologist to determine that no adverse effect to potential cultural resources will occur during the mining operation. If sand mining results in disturbance to landscapes with relatively intact topsoil/subsoil profiles, archaeological testing prior to disturbance may be warranted. As in Alternative 3, construction of the groin itself is expected to have minimal impact on inundated offshore resources unless material will be removed from the sea floor prior to its construction. More detailed plans for the construction of the groin will be needed to assess its potential impact.

- Recommended Plan of Action:** If a professional evaluation determines that sand mining will result in disturbance to landscapes with relatively intact topsoil/subsoil profiles, archaeological testing prior to disturbance may be warranted. If testing is called for, the area of potential effect will need to be assessed for the presence of National Register-eligible cultural resources through standard archaeological subsurface testing methods as spelled out in the *Environmental Review Primer for Connecticut’s Archaeological Resources* published by the State Historic Preservation Office. If significant cultural resources are encountered, mitigation efforts through avoidance or professional excavation may be necessary. As in Alternative 3, the offshore area of the proposed groin should be sampled if construction is likely to disturb sea floor sediments. Should intact cultural remains be encountered, underwater archaeology may be necessary to document and remove artifacts and features if avoidance is not possible.

B. Summary of the Five Alternatives in Terms of Their Potential Negative Effect of Cultural Resources of Hammonasset Sate Park and Sand Source Areas

All five alternatives have the potential to negatively impact the cultural resources of Hammonasset State Park or sand source areas, either dredged offshore or mined in the uplands. The alternatives can be approximately ranked in terms of their anticipated degree of potential negative effect to cultural resources of the state. The following ranking is based both on the anticipated physical extent of potential effect and the presumed likelihood of encountering significant cultural resources.

Table 3

Ranked Effect, Lowest to Highest	Alternative	Potential Negative Effects
1	Beach Nourishment, offshore dredging, no groin (Alternative 4)	Potential effect is limited to the area of harvested offshore sand
2	Beach Nourishment, inland mining, with groin (Alternative 5)	Potential effect at source of mined sand and beneath the offshore groin
3	Beach Nourishment, offshore dredging, with groin (Alternative 4)	Potential effect at the area of harvested offshore sand and beneath the offshore groin
4	No Action (Alternative 1)	Long-term erosion may threaten buried near-shore resources
5	Retreat (Alternative 2)	Construction of new facilities and infrastructure likely to impact buried near-shore resources,

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APPENDIX I

Figures

Figure 1:
The Hammonasset Beach
Project Area
1:24000 USGS
Clinton Quadrangle

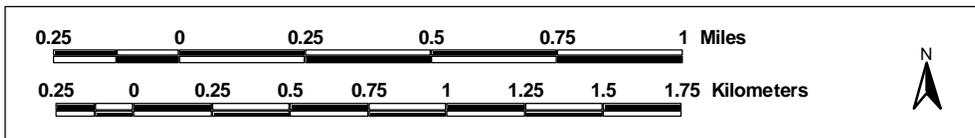
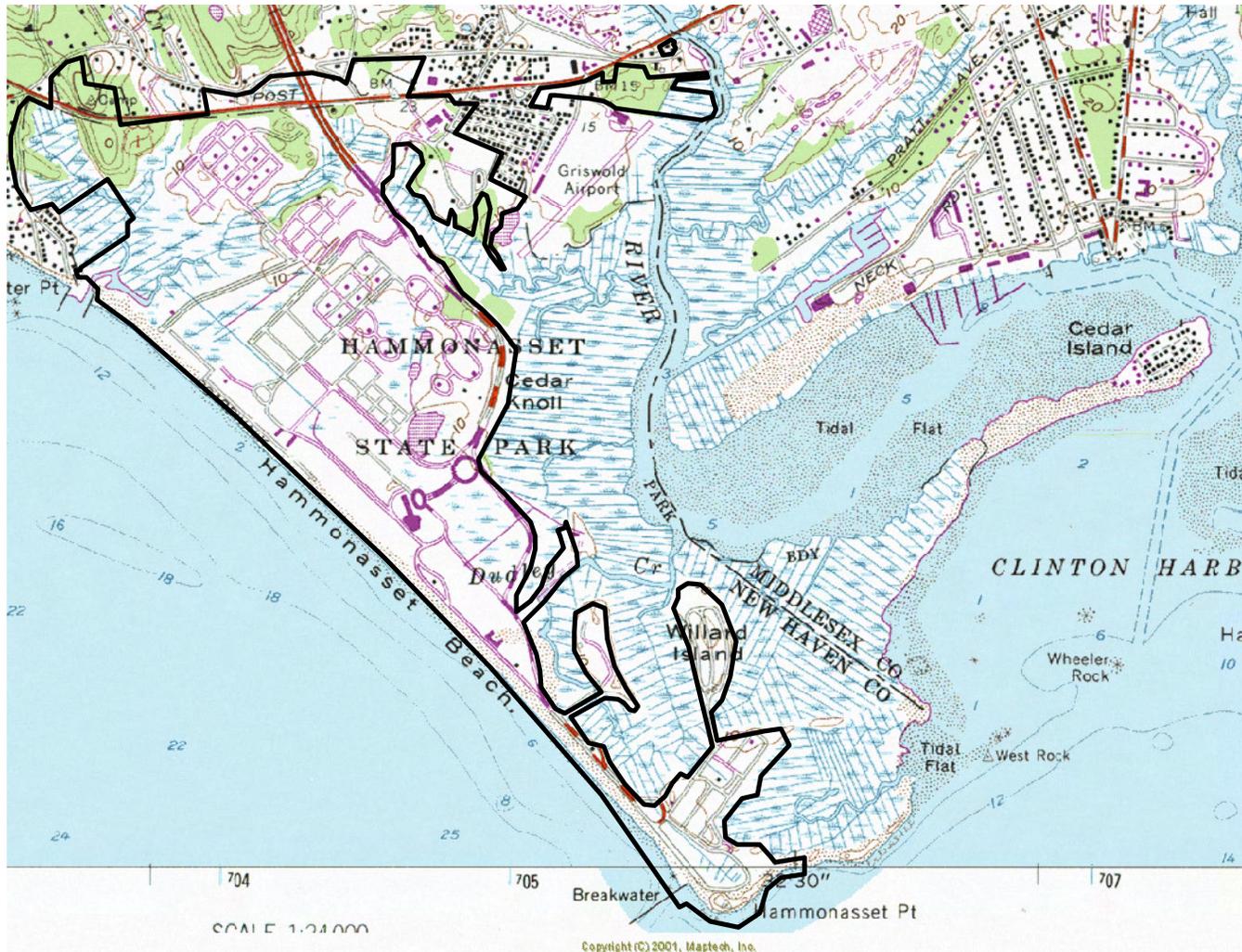
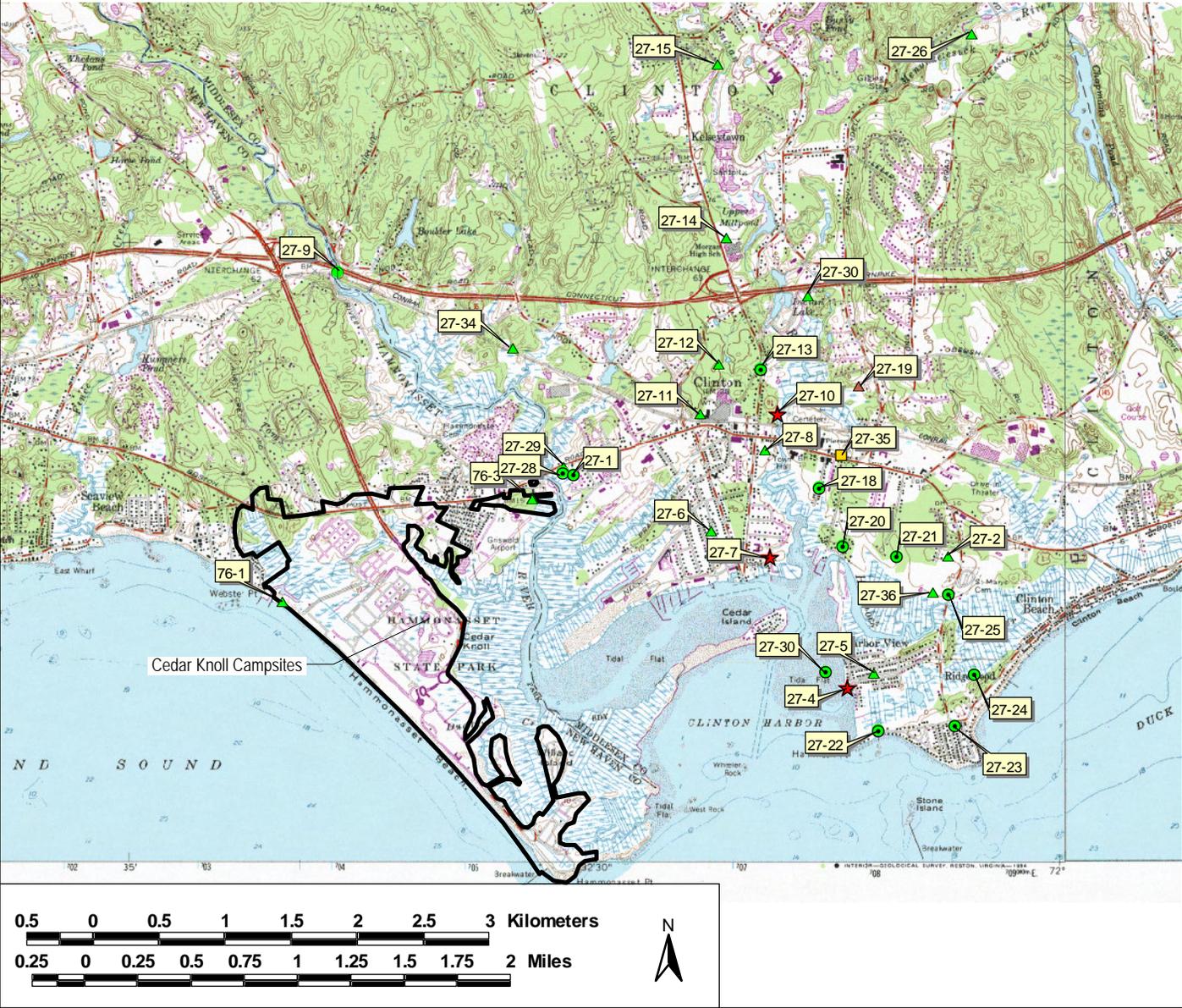


Figure 2:
Archaeological Sites
Reported in the Vicinity
of the Hammonasset Beach
Project Area

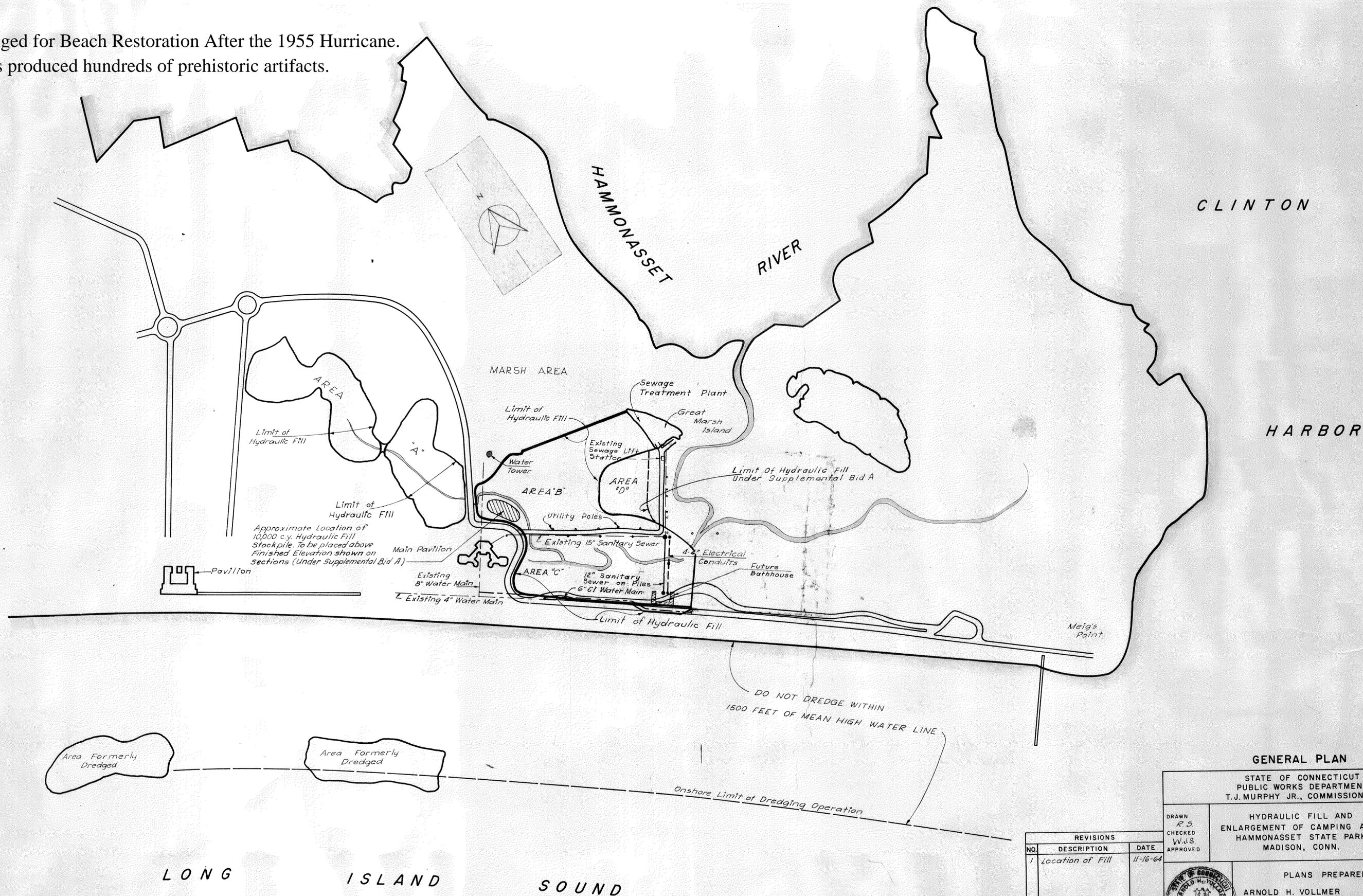


Archaeological Sites

Sites Types

- ▲ Contact Period Camp
- Historic Structure
- ▲ Prehistoric Camp
- ★ Prehistoric Cemetery
- Prehistoric Fishweir
- Prehistoric Midden

Figure 3:
 Areas Dredged for Beach Restoration After the 1955 Hurricane.
 These areas produced hundreds of prehistoric artifacts.



In Charge of *M. V. Stein*
 Drawn by *R. S.*
 Checked by *W. J. S.*
 Traced by *W. J. S.*
 Checked by *L. C. Stein*

REVISIONS		
NO.	DESCRIPTION	DATE
1	Location of Fill	11-16-64

GENERAL PLAN

STATE OF CONNECTICUT
 PUBLIC WORKS DEPARTMENT
 T. J. MURPHY JR., COMMISSIONER

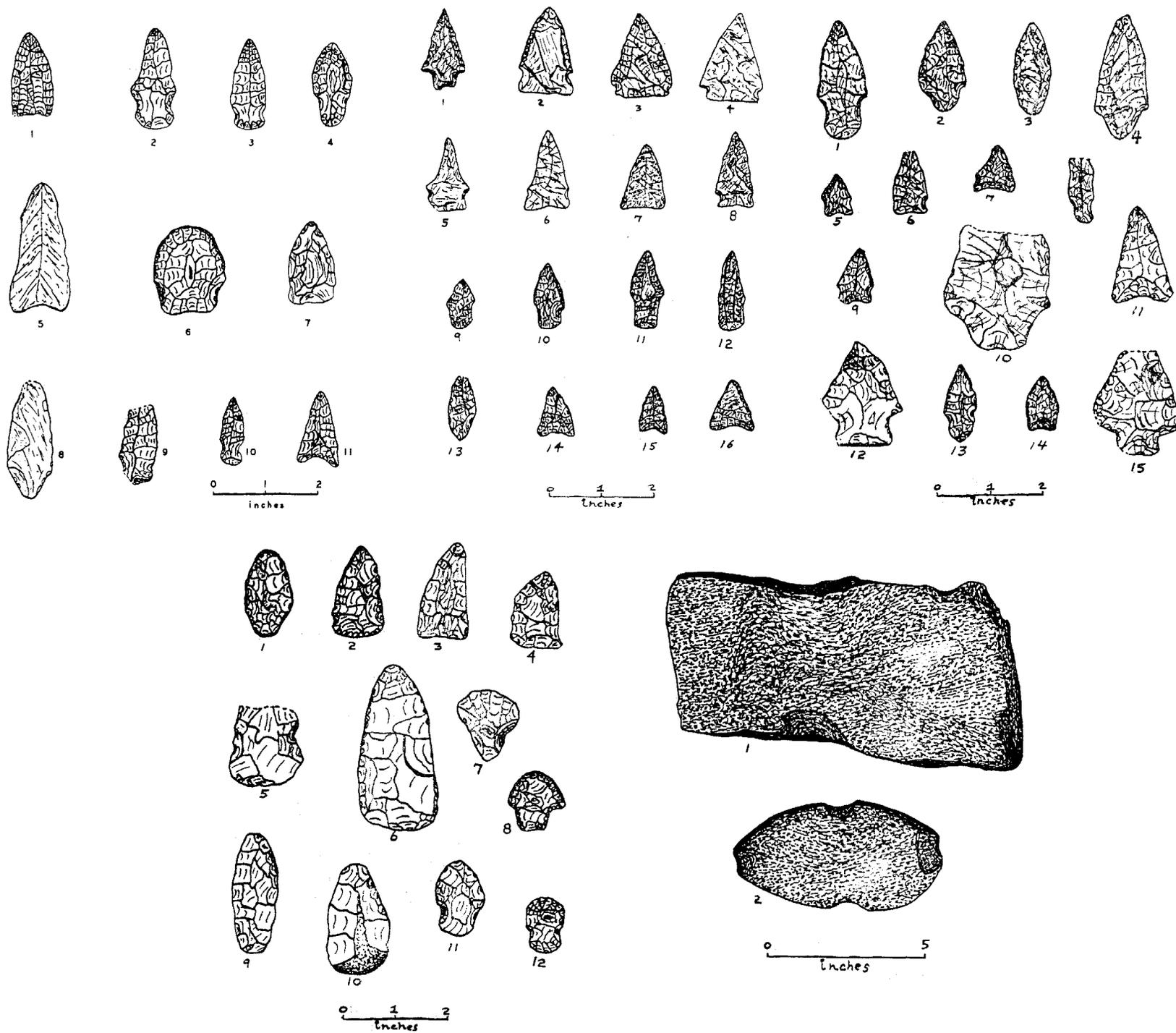
DRAWN <i>R. S.</i> CHECKED <i>W. J. S.</i> APPROVED	HYDRAULIC FILL AND ENLARGEMENT OF CAMPING AREA HAMMONASSET STATE PARK MADISON, CONN.	PROJECT NO. B1-T-53 DRAWING NO. 2
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PLANS PREPARED BY:
 ARNOLD H. VOLLMER DARIEN, CONN.

SCALE: 1" = 400' DATE: Nov. 11, 1964

Arnold Vollmer

Figure 4. Selected Artifacts from the Hammonasset Beach Site (76-1) Reported by Bourn (1977)



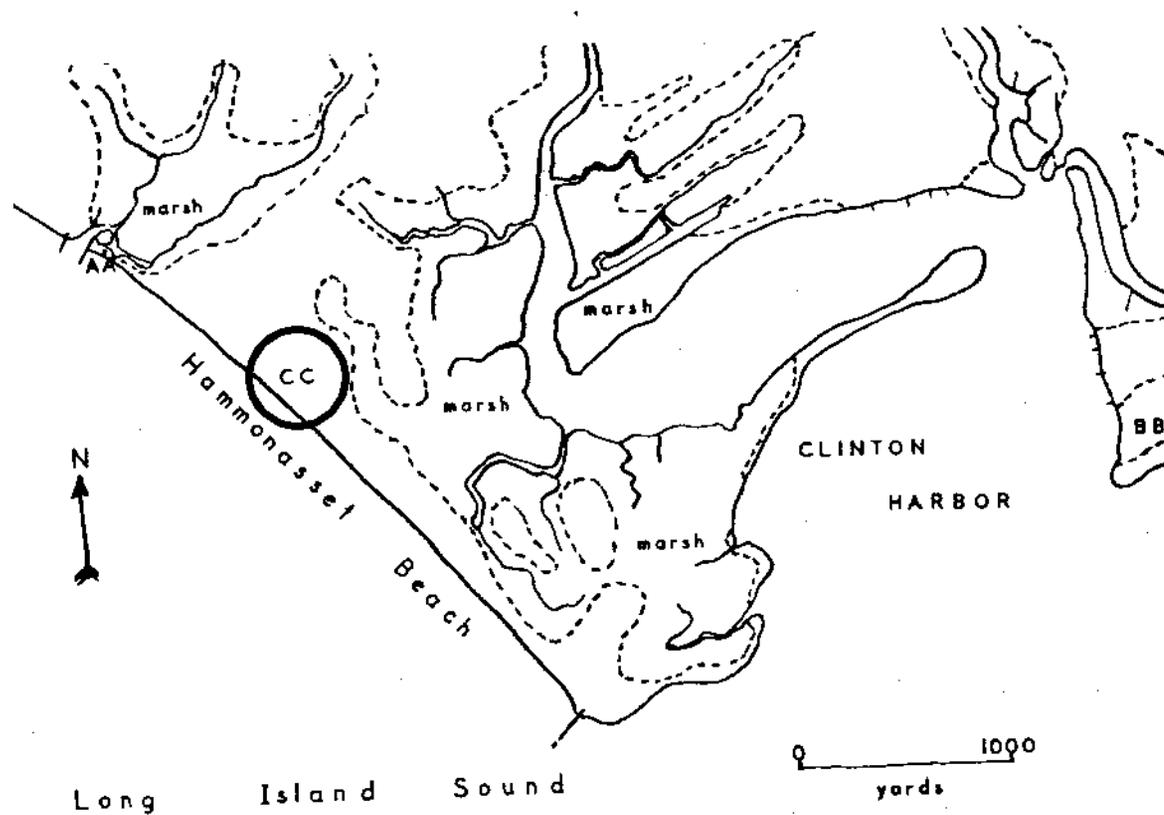


Figure 5. Location of Artifacts recovered from the Plowed Field

Area 'CC' represents the approximate location of artifacts found in a plowed field in the park.
 Areas 'AA' and 'BB' represent peat exposures (Bourne 1977).

Figure 6: Hammonasset Point (Henasset Pt.) as shown on 1781 DesBarres map.



Figure 7: Hammonasset Point as shown on the 1792 Blodget map. The notation reads “Porpoise Fishery.”



Figure 8: Hammonasset Point as shown on the 1812 Warren and Gillet map.

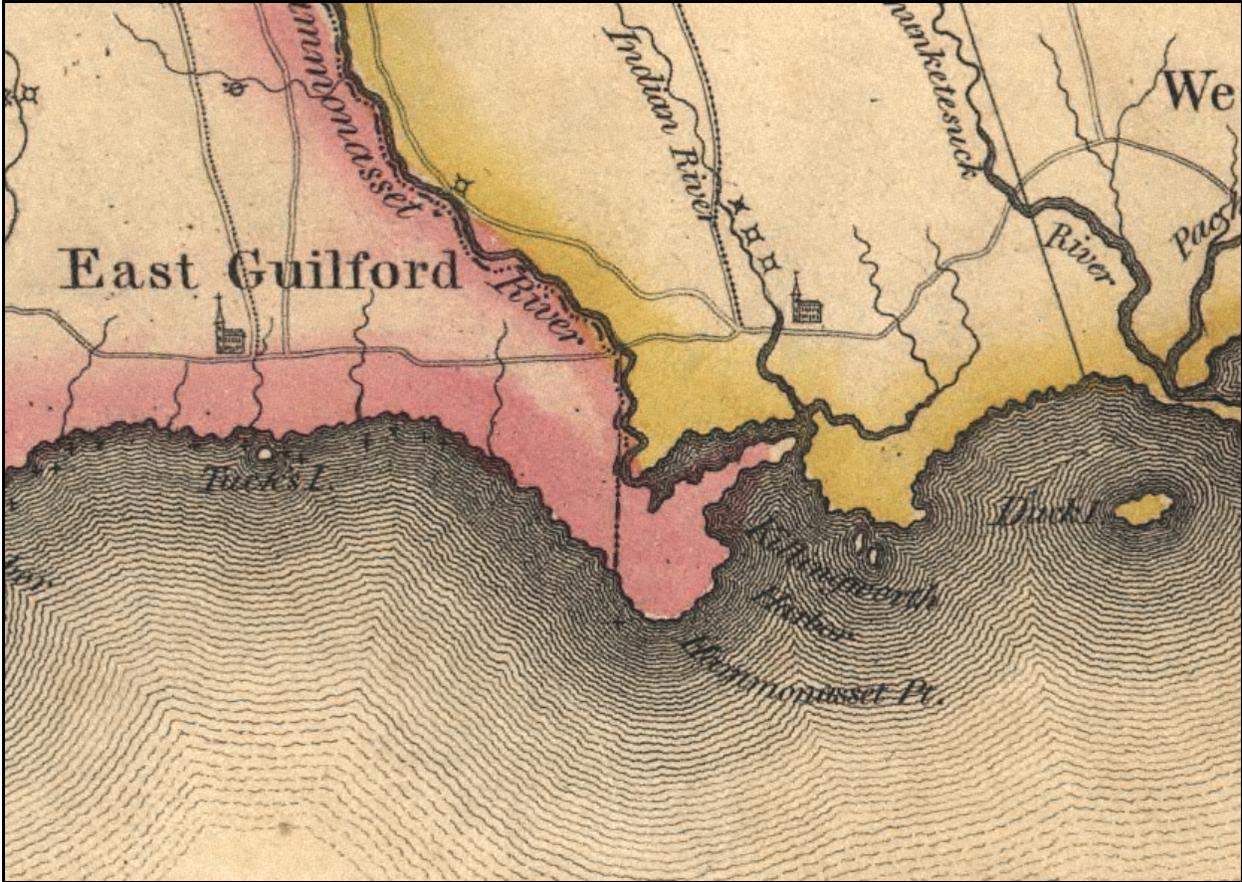


Figure 9: Hammonasset Point as shown on the 1838 U. S. Coast and Geodetic Survey soundings chart.

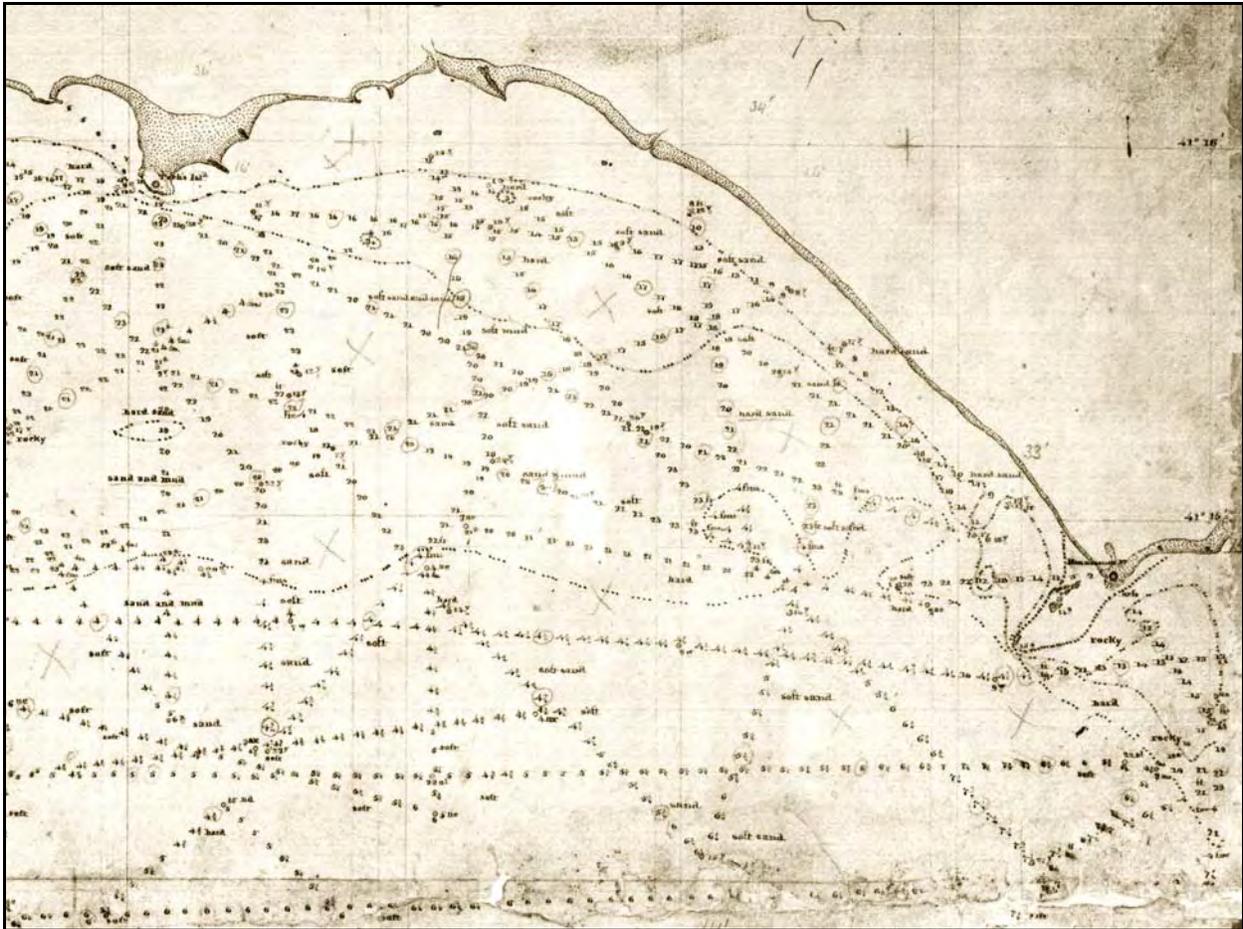


Figure 11: Hammonasset Point as shown on the 1868 Beers atlas map. The Nature Center farmhouse is shown as the property of G. C. Phelps, and two “fish houses” are shown along the road.



Figure 12: Traditional New England fish house for preparing dried or smoked fish (from Goode 1887).

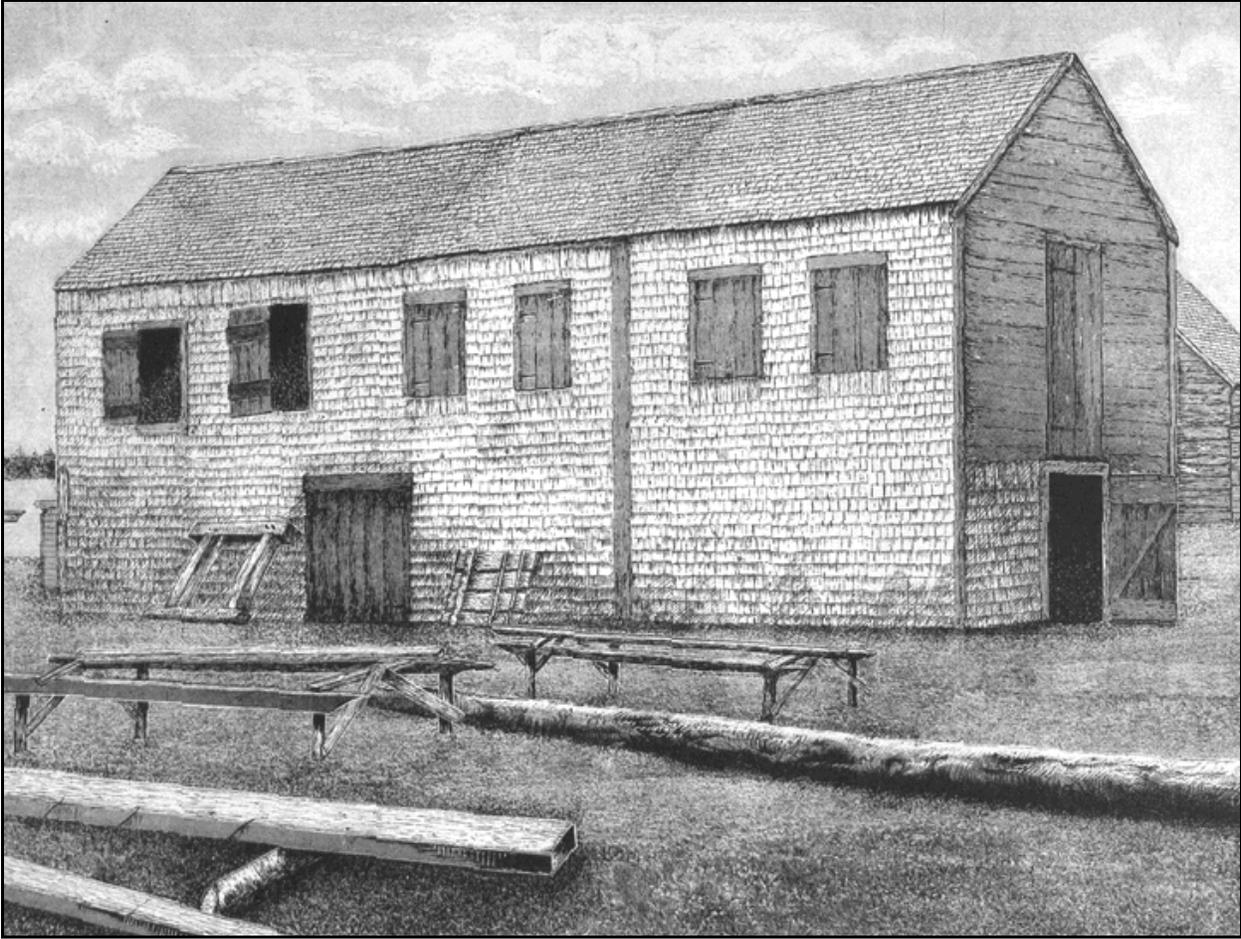


Figure 13: Hammonasset Point as shown on Chart 115 (1886). Three buildings, probably the farm house and fish houses, are shown just back from the beach.

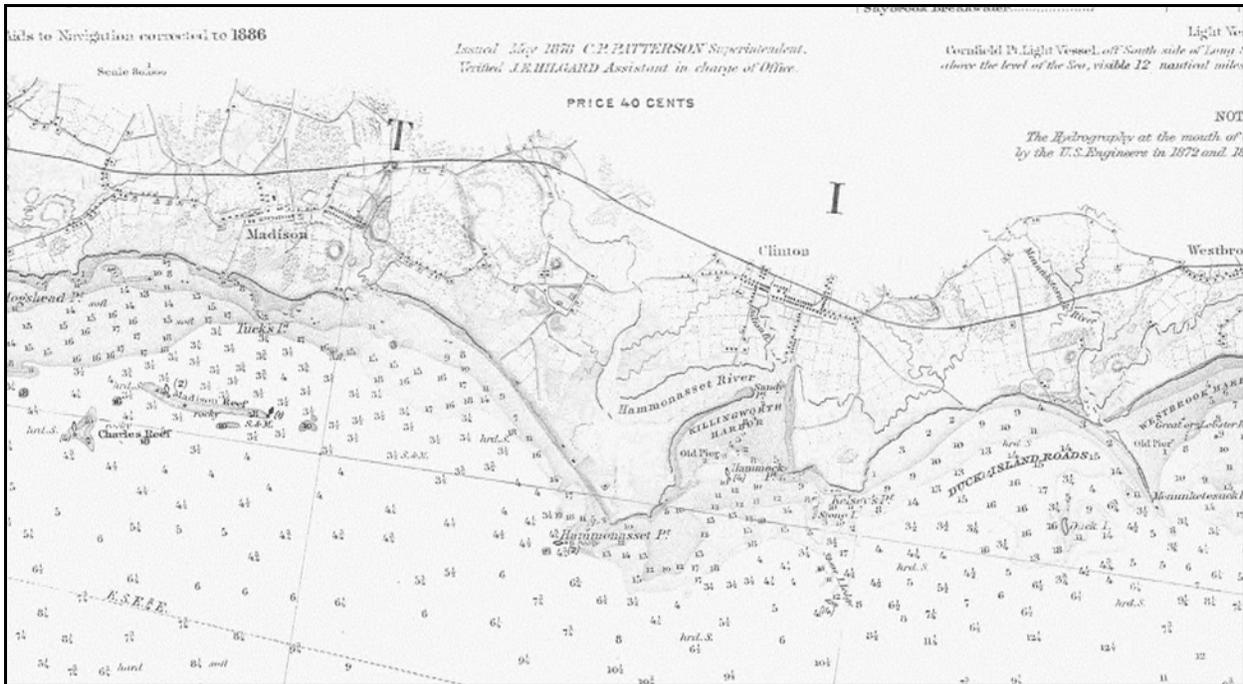


Figure 14: Hammonasset Point as shown on the 1893 U.S.G.S. Guilford Quadrangle, surveyed in 1890. Only two buildings are shown, both at the Meigs Point farm. The structure shown extending into the Sound from the north end of the beach does not appear on any other maps or charts.

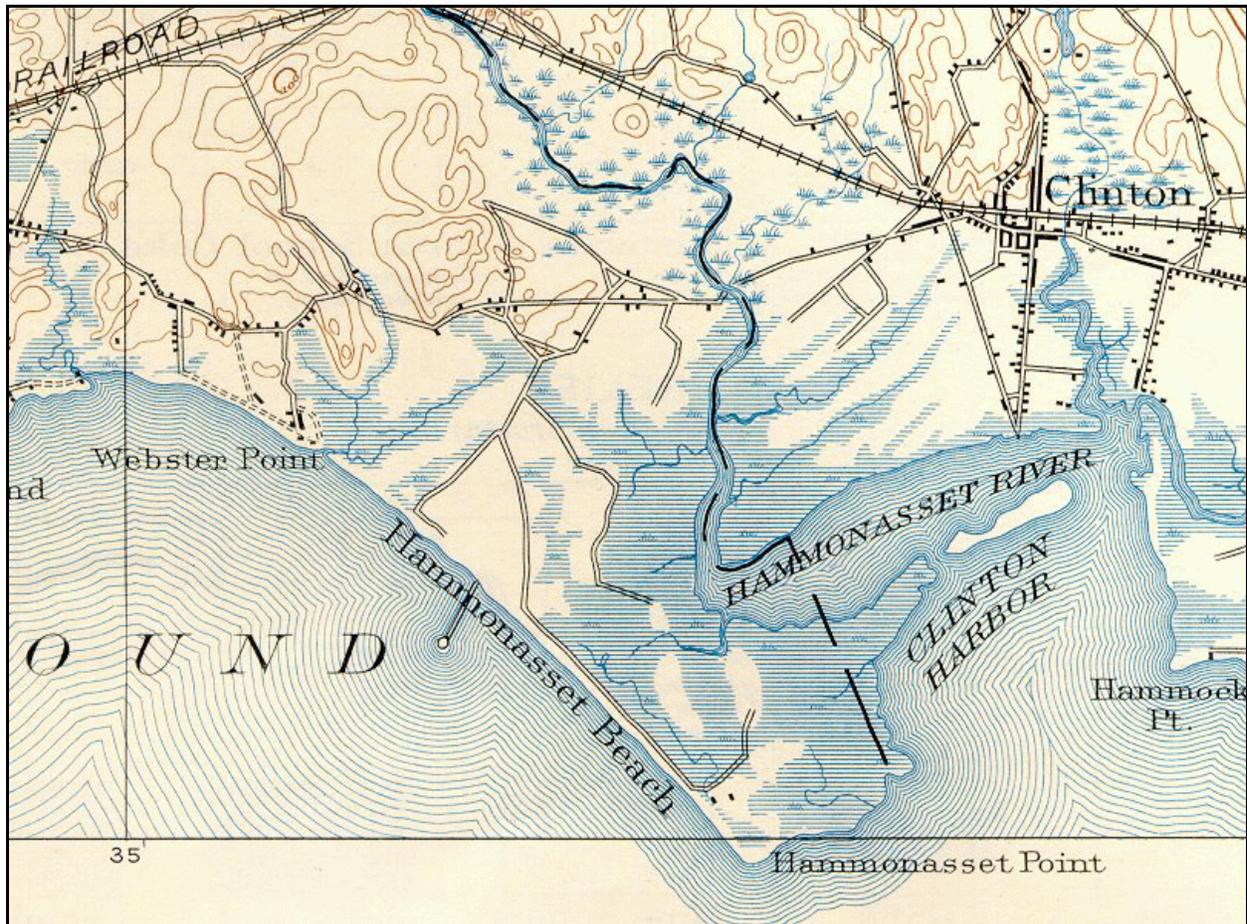


Figure 15: Hammonasset Beach just after state acquisition, from State Parks and Forests Commission, *Annual Report*, 1920. The view is looking south toward the point.



Figure 16: Pavilion at Hammonasset Beach shortly after construction, from State Parks and Forests Commission, *Annual Report*, 1920.



Figure 17: Camp ground at Hammonasset State Park, from Lord and Montgomery 1998: 22).



Figure 18: Hammonasset Point as shown on the 1934 Fairchild aerial photograph.



Figure 19: Hammonasset Point as shown on the 1951 U.S.G. S. Clinton Quadrangle, showing the cluster of buildings near the north end of the beach.

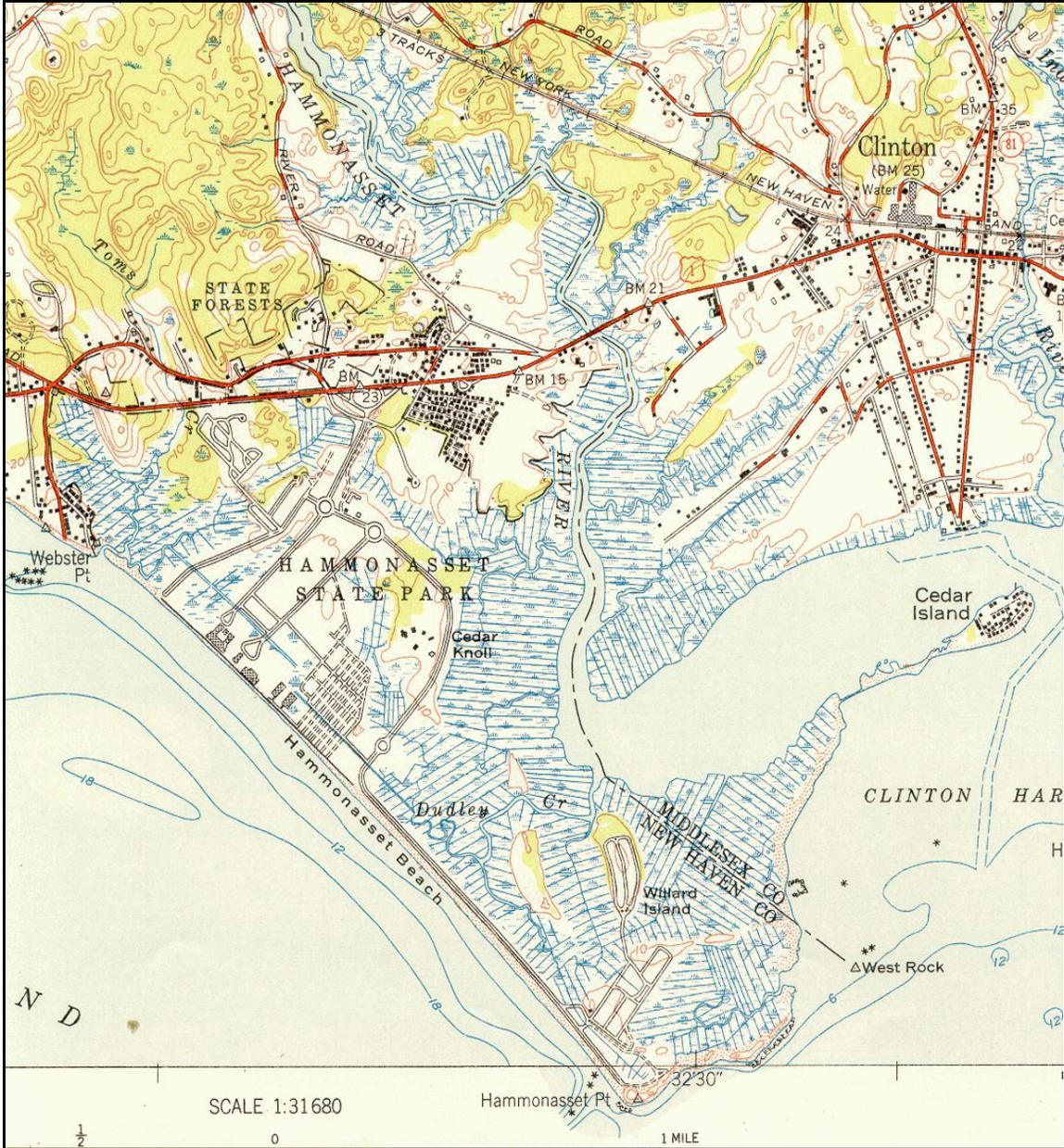


Figure 20: Postcard view of the Hammonasset Beach Pavilion, 1960s.



APPENDIX II

Photographs

Photograph 1: Overview of Hammonasset Beach from the east breakwater, Nature Center at right, camera facing northeast.



Photograph 2: Hammonasset Beach Nature Center, remodeled from a 19th-century farmhouse, camera facing northeast.



Photograph 3: Hammonasset Beach Nature Center, remodeled from a 19th-century farmhouse, camera facing southeast.



Photograph 4: Breakwater at east end of beach, camera facing northwest.



Photograph 5: Breakwater at west end of beach, camera facing northwest.



Photograph 10: Modern boardwalk along dune at west end of beach, camera facing northeast.



Photograph 6: Modern changing rooms/toilets structure, east end of beach, camera facing northeast. One three such structures on the beach, all modern.



Photograph 7: One of two identical (modern) snack bars, camera facing northeast.



Photograph 9: Typical picnic pavilion, camera facing north. There are three other picnic pavilions similar to this one at the west end of the beach.



Photograph 8: Camp Store, camera facing northeast.



Photograph 11: Typical dune backside vegetation, east end of beach, camera facing southwest.



Photograph 12: Typical former salt marsh, looking south toward the point.

