

A CULTURAL RESOURCE EVALUATION
OF SUBMERGED LANDS
AFFECTED BY THE
400TH ANNIVERSARY CELEBRATION

MANTEO, NORTH CAROLINA



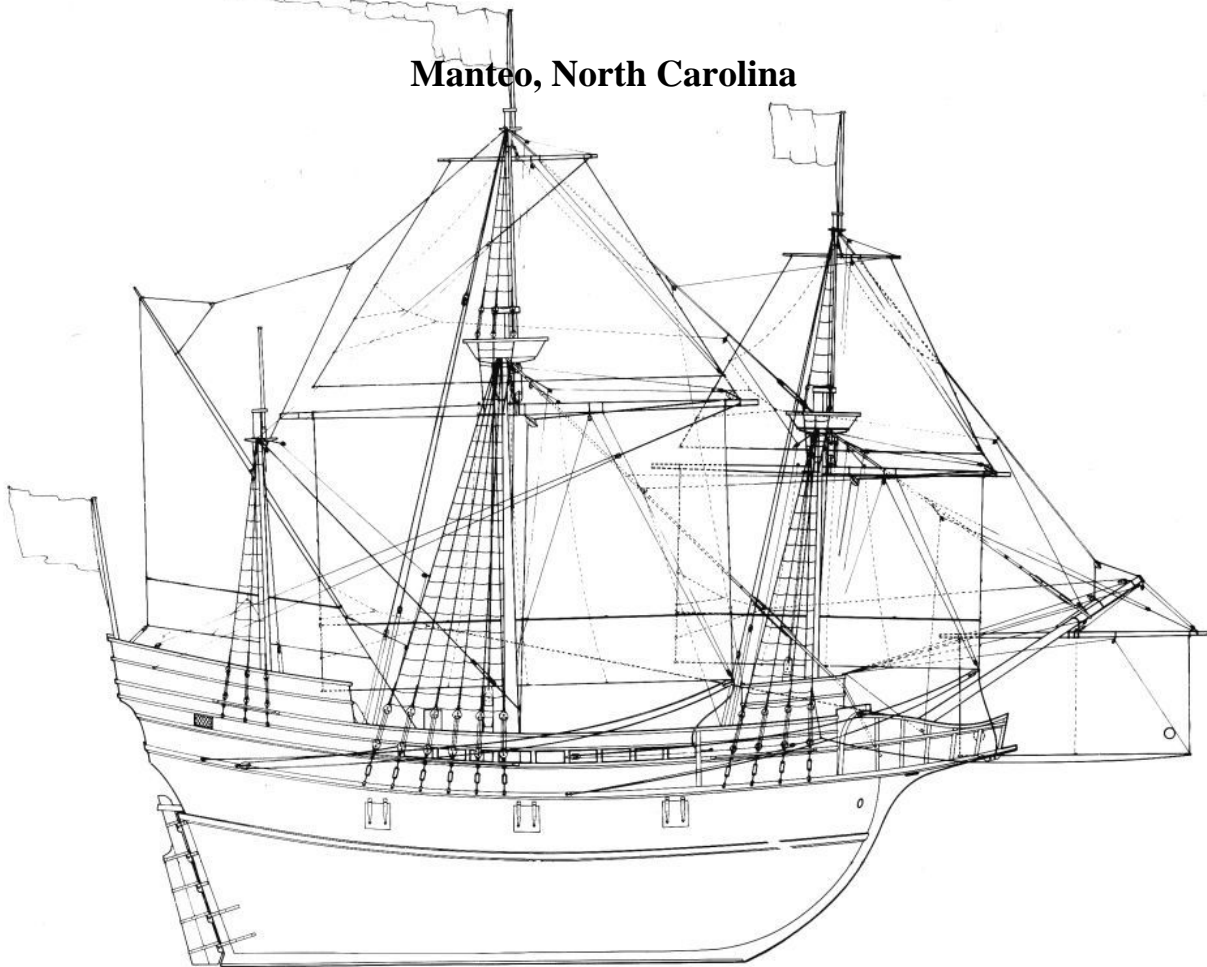
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NORTH CAROLINA DEPARTMENT OF CULTURAL RESOURCES

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**Conducted By
Underwater Archaeology Branch
North Carolina Department of Cultural Resources**

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**Report Prepared
by
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Abstract

Field investigations of the submerged bottom lands at Manteo, North Carolina were carried out by the Underwater Archaeology Branch, Division of Archives and History, Department of Cultural Resources. The purpose of these investigations was to identify historically and/or archaeologically significant cultural materials lying within the area to be affected by construction of a bridge and canal system and berthing area proposed for the 400th Anniversary Celebration (1984 to 1987) on Roanoke Island.

Initially, a systematic survey of the project area was performed using a proton precession magnetometer to isolate magnetic disturbances, any of which might be generated by cultural material. Following this, a diving and probing search was conducted on isolated magnetic targets to determine the source.

With the exception of the remains of a sunken vessel, Underwater Site #0001ROS, all magnetic disturbances were attributed to cultural debris of recent origin (twentieth century) and were determined historically and archaeologically insignificant. Recommendations for the sunken vessel located on the south side of the proposed berthing area are (1) complete avoidance of the site during construction activities, or (2) further documentation, if site avoidance is not possible, through historical research and/or on-site investigation, in order to assess historical significance.

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Introduction

In preparation for the 400th Anniversary Celebration of the founding of the Roanoke colonies, the construction of a bridge is proposed over Dough's Creek at Manteo to provide vehicle and pedestrian access to a visitor's center, parking lots, and other facilities to be built commemorating the event. In conjunction with the proposed bridge construction, a canal is planned which will follow the fringe of the existing spoil area on Ice Plant Island to provide a navigational outlet for the larger boats using Dough's Creek. At either end of the canal, access channels will provide the additional links to connect Dough's Creek with the federally maintained channel in Shallowbag Bay (Figure 1).

Central to the commemoration festivities and subsequent visitor's center facility will be the building and christening of the ship *Elizabeth II*, a replica of one of the vessels that brought the first colonists to Roanoke Island. To accommodate the ship, a berthing area and access channel are planned in a natural cove opposite Manteo's town hall on Dough's Creek (Figure 1).

Because of the historical and archaeological significance of the "Lost Colony" site and uncertainty of the original settlement location, the DAH recommended a general reconnaissance and assessment survey of the areas to be affected by construction in an attempt to identify and assess the significance of cultural resources prior to impact. In a coordinated effort between Billy Rose, State Highway Administrator, North Carolina Department of Transportation (DOT), and William S. Price, Jr., Director, Division of Archives and History (DAH), Department of Cultural Resources (DCR), an agreement was reached by which the archaeological investigations were divided among the two agencies and accomplished by their respective archaeologists. While DOT agreed to investigate all terrestrial portions of the affected areas, the DCR agreed to provide underwater archaeological reconnaissance and evaluation of archaeological sites discovered in all submerged areas to be affected by construction or dredging.

Three staff members of the UAB spent five field days the week of May 24-28, 1982, conducting a magnetometer reconnaissance survey and diving assessment of four areas to be affected: the proposed bridge crossing, canal access channel in Dough's Creek, berthing basin and channel in Dough's Creek, and the canal access channel in Shallowbag Bay. Upon completion of the field work, a letter from Dr. Price, North Carolina DAH to T.L. Waters, North Carolina DOT, dated June 8, 1982 was sent outlining the preliminary findings and

recommendations resulting from the Manteo project. The following report is a detailed account of the project.

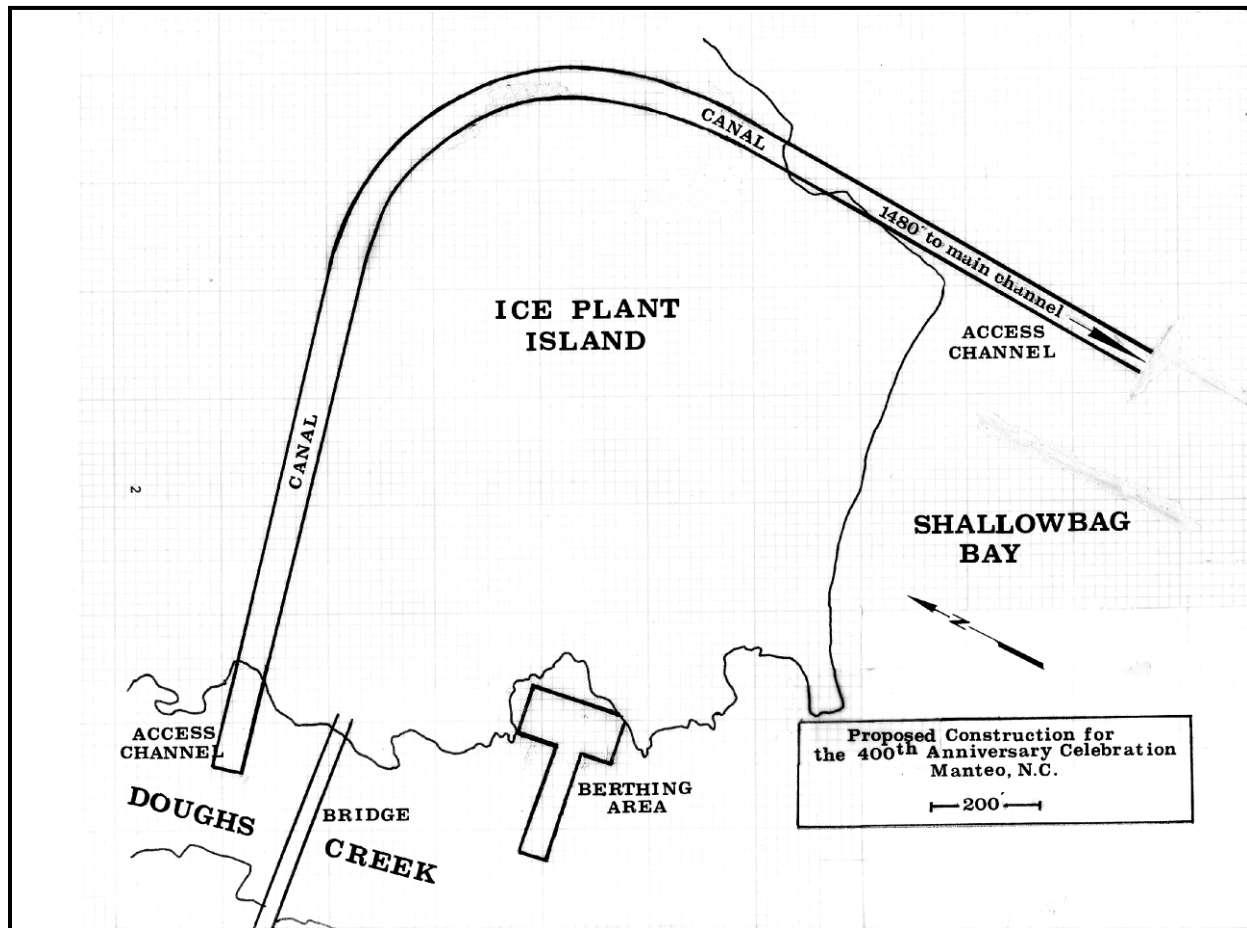


Figure 1: Proposed Construction Map

Environmental Settings

Project Description

The *Elizabeth II* State Historic Site is located at Manteo on the northeast end of Roanoke Island (Figure 2). The island lies midway between the mainland and barrier islands within a single grand lagoon consisting of Currituck, Albemarle, Pamlico, Core, Roanoke, and Croatan Sounds, and a great number of lesser bays and drainage systems. Measured north by northwest to south by southeast, the island's maximum length is 10 miles and varies in width from 1 mile to 3 miles.

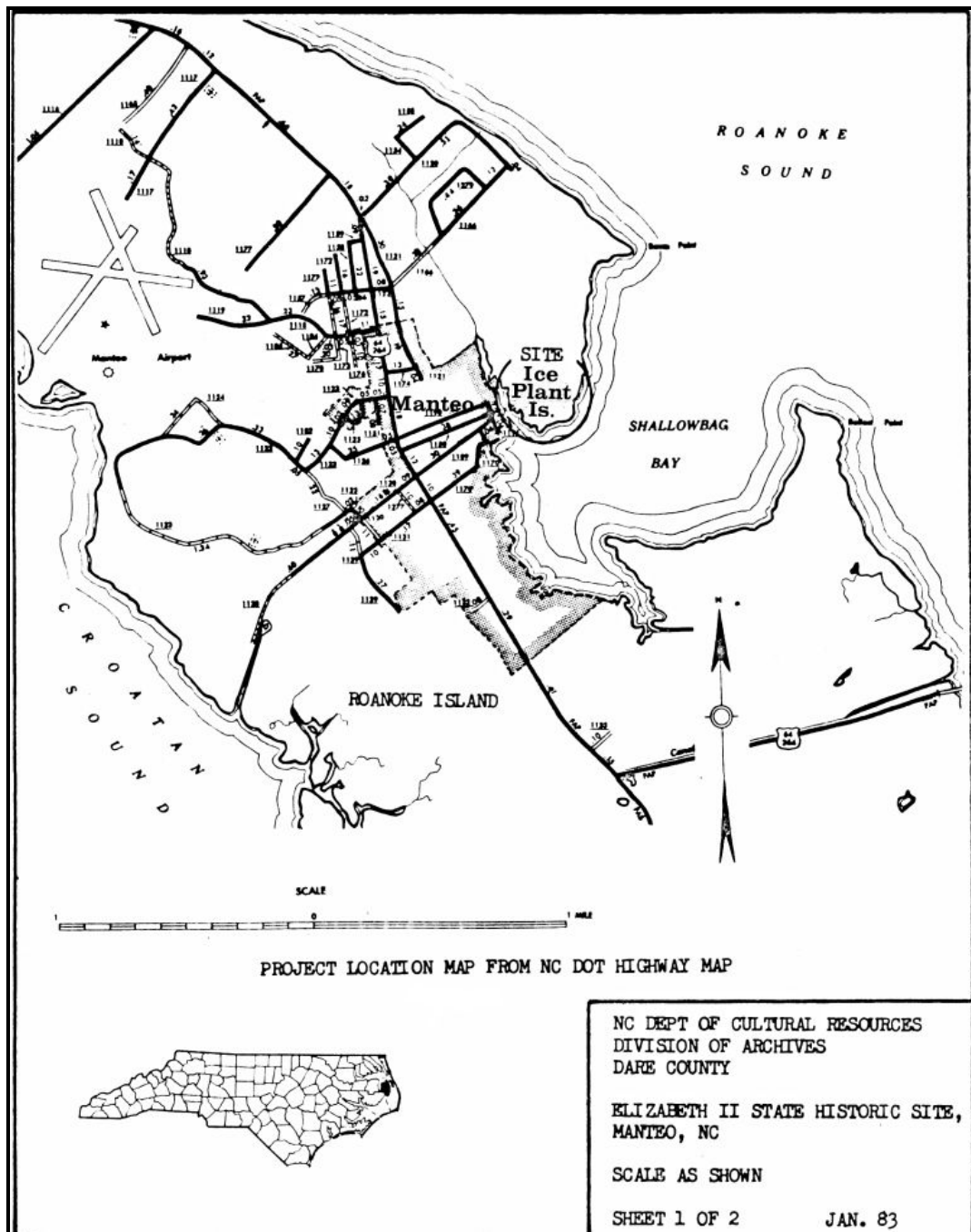


Figure 2: Project Location Map

Although not the only lagoon island behind the Banks, Roanoke is the largest and is of considerable importance in the geography and economics of the region. Manteo, the county seat of Dare County, is located at the mouth of Dough's Creek where it enters Shallowbag Bay on the eastern side of the island. The town was incorporated in 1899 and had a population of 902 persons in 1980.

Across Dough's Creek from Manteo is Ice Plant Island, now severed from the land mass of Roanoke Island by a series of drainage canals. In addition, dredging spoils were deposited on the southern end of Ice Plant Island by the Corps of Engineers (COE) in the mid-twentieth century, creating a circular lense-shaped deposit of sand approximately 1,000 feet in diameter with a maximum elevation of 11 feet 6 inches above mean sea level. Just north of this high ground site, the nearly level marsh is approximately 1-foot 6 inches above mean sea level.

Although construction of the bridge, canal, channels, and historic site will affect terrestrial areas, the concern of this report is with submerged lands to be affected. The majority of bottom lands in the project area lie at the mouth of Dough's Creek in the water adjacent to the Manteo waterfront. This includes the following bottom areas (Figure 1): 200 feet by 70 feet for the Dough's Creek access channel; 365 feet by 40 feet for the bridge crossing; approximately 100 feet by 50 feet for the ship berthing area and approximately 100 feet by 70 feet for an access channel. A fourth area is 1,600 feet by 70 feet for the Shallowbag Bay access channel connecting the Ice Plant Island canal with the main navigation channel. The total bottom land area to be affected is 3.53 acres.

Geology

Roanoke Island is situated within the Sea Island section of the Coastal Plain Geomorphic Province. This section is bounded on the west by the fall line and generally extends from the North Carolina/Virginia border to the Florida/Georgia border. It is characterized by a chain of coastal islands separated from the mainland by marshes, sounds, or lagoons; mildly submerged river valleys lacking estuaries; an abundance of shallow depressions called Carolina Bays; and step-like terraces, possibly the result of fluctuating sea level during Pleistocene glaciation (Thornburg 1965, p. 38-39).

The Coastal Plain of North Carolina can be thought of as an emergent portion of the sea floor over which poorly drained soils develop. It consists of unconsolidated sedimentary beds that incline or drop gently east. These beds are primarily of sand, gravel, silt, clay, marl, and shell limestone which range in age from Cretaceous to the Recent. The extremely short period of time called the Recent extends back about 12,000 years to the point at which the great glaciers melted and, so far as is known, sea level begins to rise from an elevation several hundreds of feet below

its present position. This gradual sea level rise continues to day and thus constantly encroaches upon established shorelines through erosion and inundation.

Roanoke Island is tilted with elevations approximately 30 feet above sea level at the northern end to actual sea level at the extreme southern end. The north end exhibits a well-developed 8 to 10-foot bluff with a Pleistocene soil horizon and recent dunes overlying an earlier Pleistocene terrace surface (Pamlico Terrace). A thin layer of charcoal, the remnant of a forest fire of unknown age, separates the Pleistocene sediments from the Recent (Dolan *et al.* 1980).

Climate

The project area is characterized by mild winters and hot moist summers. Although Manteo is blocked from the Atlantic Ocean by the Outer Banks, the area is still within the sphere of influence of the ocean coastline. Prevailing conditions of wind and other natural forces are similar to those on the coast.

The average annual temperature is approximately 61 degrees F with the hottest monthly average of 80 degree F occurring in July and the coldest, 44 degrees to 45 degree F, in January. Temperature extremes above 100 degrees F or below 0 degrees F are rare.

Precipitation is moderate, averaging between 45 and 50 inches a year with the greatest amount occurring during July, August, and September. Relative humidity averages 70 percent to 75 percent on an annual basis.

Prevailing winds are from the southwest except during the fall and winter months when northeasterlies caused by offshore storms may prevail. Surface wind speeds average 8.7 knots to 11.4 knots with maximums commonly reached during mid-afternoon and minimums just before sunrise. Destructive winds are associated with hurricanes which are accompanied by heavy rains. The hurricane season begins in June and often extends into November (COE 1976),

Present Environment - Terrestrial Areas

Lands in the vicinity of Manteo's downtown area have been heavily utilized for at least the last 100 years and consequently, much of the land area has been disturbed (Figure 3). Filling and bulkheading have pushed high ground waterward, thus covering the original shoreline.

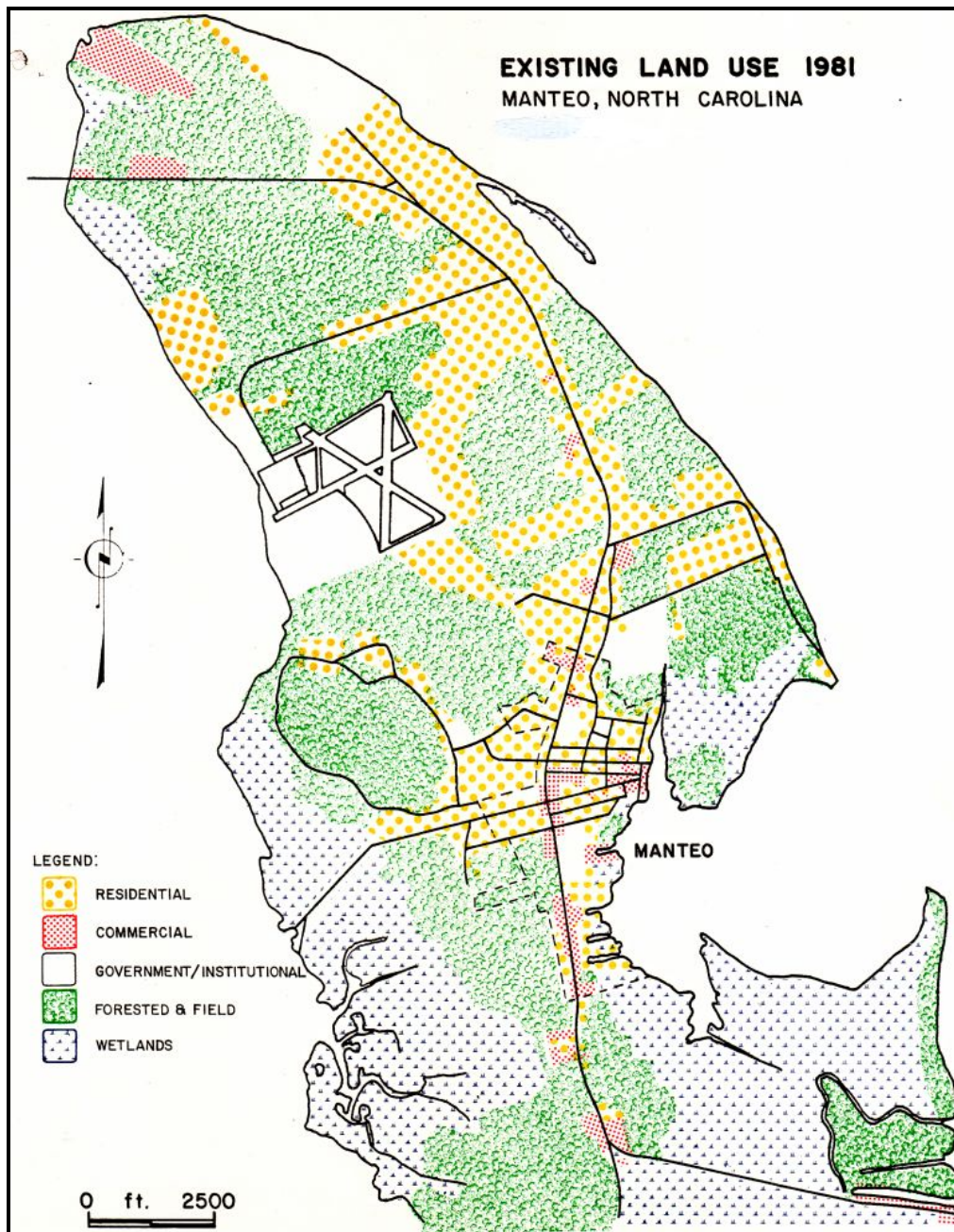


Figure 3: Existing Land Use Plan Map 1981

Soils at Manteo are within the Pactolus-Wakula-Wagram Association which are moderately well to well drained soils with gray to dark gray loamy sand surface layers and loamy sand to sandy clay loam subsoil's. This association comprises about one percent of the county's total acreage. When forested these soils support a mixed pine and oak forest and many mammalian species, including white-tailed deer and numerous small mammals as well as various reptilian

and avian species. Agriculture is limited to small acreage's and today is generally devoted to small garden plots (SCS 1973).

The land on the east side of Dough's Creek, known as Ice Plant Island, is devoid of any development. However, this land area has received dredged material in the past, and as a result, a vegetation community type consisting of a maritime shrub thicket has replaced the once dominant low-land *Juncus* marsh. These marshlands are irregularly flooded and are primarily influenced by wind tides. Dominated by grasses and shrubs these areas are rich in shellfish, small mammals, and reptiles. Avian fauna, especially wintering migratory birds, are also abundant in the marshland, since Roanoke Island is situated near the midpoint of the Atlantic Flyway.

Present Environment - Aquatic Areas

Roanoke Sound, the main water body, which influences Dough's Creek and Shallowbag Bay, is about 8 miles long and .5 to 2 miles wide, with 1-foot to 3-foot depths in all but maintained channel areas. The waters in the northern portions of the sound in the vicinity of Manteo are often fresh, while those south of Manteo are subject to incursions of saline water from Oregon Inlet. The North Carolina Department of Water and Air Resources classified Roanoke Sound as "SC" waters at the north end. The "SC" classification designates waters that are suitable for fishing and other usage except bathing or shell fishing for marketing purposes.

Shallowbag Bay is approximately 2 miles by 2.5 miles and lies to the west of the northern end of Roanoke Sound. The sound has a surface area of about 5 square miles. This bay is similar to Roanoke Sound with shallow depths and a "SC" water quality classification.

Dough's Creek is 3.2 miles long and flows north to south into Shallowbag Bay, draining the northeastern portion of Roanoke Island. The creek is navigable by small boats for approximately one mile above its mouth and by canoe for another mile. It is generally narrow and shallow throughout the majority of its length and is extremely sluggish, lacking significant tidal or stream current. At its mouth, Dough's Creek widens appreciably at Manteo to provide a natural small boat harbor.

The waters of Shallowbag Bay and Dough's Creek are a major component of Dare County's estuarine system. This highly productive biological system provides habitat for estuarine dependent species which must spend all or some part of their life cycle within the estuarine

waters to mature and reproduce. Both water bodies have been designated as nursery grounds for many sport and commercial fish species found in North Carolina's waters. Data supplied by the North Carolina Division of Marine Fisheries show a diverse composition of fish species in these two water bodies. This is due primarily to the intermixing of freshwater and brackish water in the bay.

Subsurface investigations were conducted in Dough's Creek and Shallowbag Bay by the North Carolina DOT geologists in preparation for bridge and canal/channel construction (DOT foundation investigation project reference #82050101, two sheets). Corings at these locations provide a profile of the subbottom sediments.

In general, substrata at the mouth of Dough's Creek are composed of deep (4 to 8 feet) deposits of much and organic debris (muck). Muck-type sediments at this location are derived from the inundation of salt marsh peats; the upper strata represents eroded and re deposited peat while a portion of the basal peats may survive intact (G.L. Bunch 1982: personal communication). Below the muck a thin layer of very loose, slightly organic fine brown sand found in the Dough's Creek profiles may represent a previous creek bottom surface (Bunch 1982: personal communication). The principal underlying sediment throughout the project area is a very loose-to-medium-dense tan and gray sand.

In Shallowbag Bay the muck layer is generally thin or nonexistent due to erosion from wave energy. The south facing shoreline is exposed to waves created by prevailing winds fetching across nearly two miles of open water.

Department of Transportation coring's show a disturbed muck strata in Dough's Creek along the waterfront where modern boating traffic has been heavy. The absence of a muck strata in a coring taken in the middle of Dough's Creek along the proposed bridge crossing suggests that the dredging of the Manteo Harbor turning basin by the COE in 1948 extended to that point. In contrast, Coring's on the east side of the creek along Ice Plant Island indicate a relatively undisturbed bottom with thick muck deposits.

Historical Background

Roanoke Island has received considerable attention by historians, who have attempted to determine the location and nature of the remains of the "Lost Colony" settlement. Presently a

number of works (e.g. Quinn, Durant, Cheeseman, Stick) provide an extremely thorough background of the English attempts of colonization on Roanoke Island.

In brief summary, beginning in 1584 English settlers constructed a fort and a village of dwellings and associated features (i.e. wells, brick kiln, etc.) on the north end of Roanoke Island. This settlement, the first attempted English colony in the New World, was periodically inhabited until the late 1580s when it was found mysteriously abandoned. Today the only indication of the settlement's existence is the archaeological remains of a small fortification at the site of the Fort Raleigh National Park (Harrington 1962).

A number of site locations for the settlement remains have been proposed based on historical documentation, including the Dough's Creek/Manteo area. Historian Durant writes:

In 1580-1590 the marshland which now lies between Manteo town and Baum Point, around the north side of the bay, did not exist--it was dry land then--and Baum Point is the logical place for a defensive fort.....and the settlement which is protected. (Durant 1981:172)

Others have speculated that Dough's Creek was the site of a boat landing and/or rough slipway (Cheeseman notes 1982).

The early history of the Manteo area is reproduced from Cheeseman's notes:

It should be noted that the island was inhabited by Indians of Algonquian stock or language group long before the arrival of the English colonists, as well as for nearly a century (1580s-1680s) afterward. While no particular Algonquian sites have been identified in the Baum Point-Dough Creek area, that possibility remains. Permanent white settlement began in the later seventeenth century (1660s-1670s). Baum Point and Dough Creek apparently take their respective names from the families that settled the lands around them: one James Dauge was in Currituck Precinct which then included Roanoke Island as early as 1706; while one Peter Baum was listed on a 1735 quit rent roll as the owner of 256 acres, the approximate size of the Baum Point plantation in the nineteenth century. Even earlier, however, this land (the Baum Point-Dough Creek area) was included as part of a town proposed (but never built) by the Lords Proprietors in 1676; and subsequent efforts were made to establish a town on Shallowbag Bay in 1716 and again in 1723. Inclusion of the area (called the "winelands".....Dough's Creek was called first "Towne Creek" and then "Gibson's Creek," perhaps an earlier settler than Dauge) in these plans hints that it was indeed much better land than the extensive marshes of today (see 1761 map, Figure 4.)

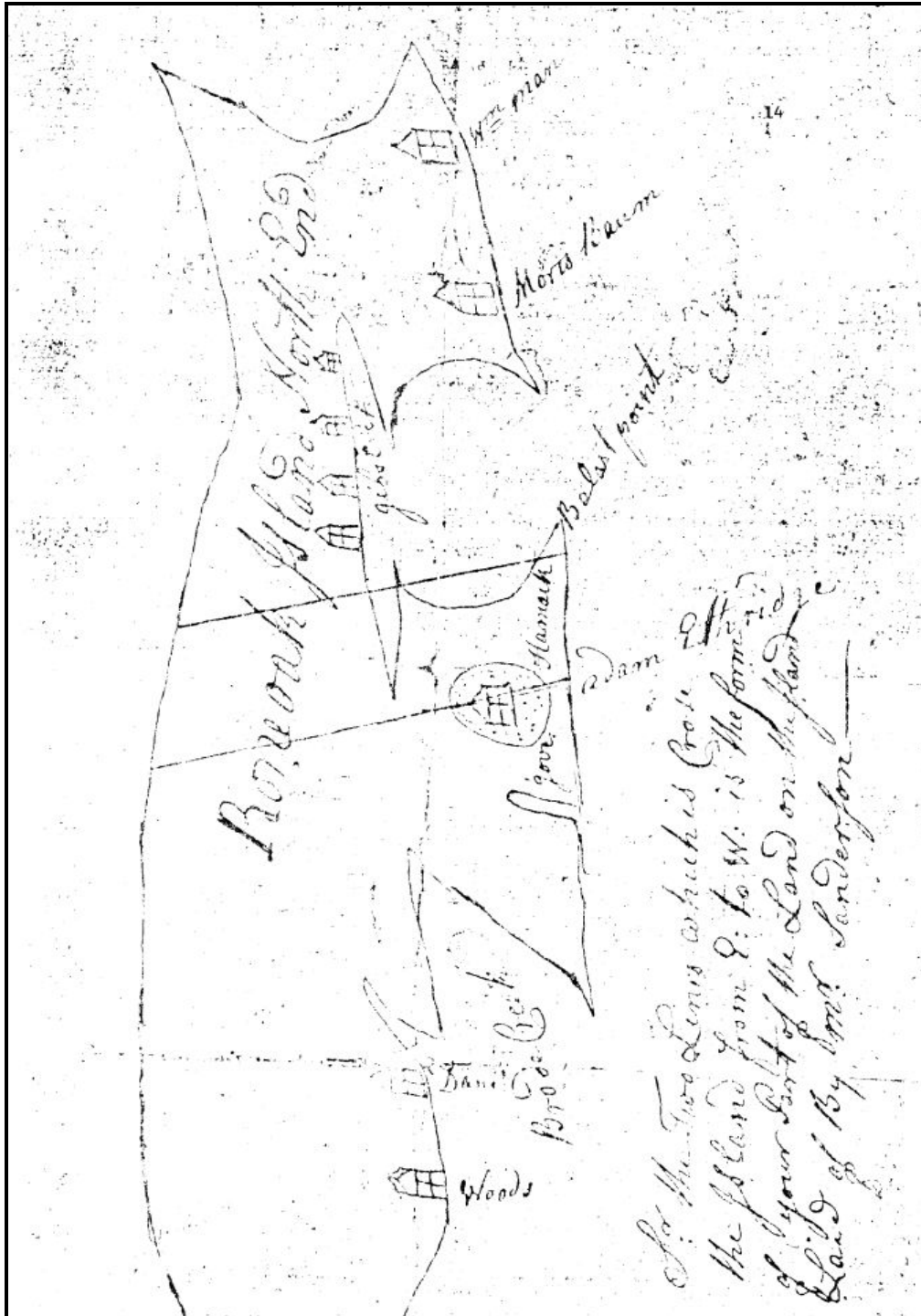


Figure 4: John Clayton 1761 Map

The gradual closing of Roanoke Inlet to shipping traffic was the major factor in deterring efforts to develop the Manteo area as a maritime trade center for the transfer of shipping goods. Beginning with a hurricane in 1693 which denied navigation to large ships (Logan 1956) the inlet became less and less usable to mariners and was completely closed by 1833. Accompanying

the inlet transformation was a general shift in the Albemarle Sound drainage from a course through Roanoke Sound to one through Croatan Sound and its eventual ocean outlet at Ocracoke Inlet, well to the south of Roanoke Island. (Refer to a series of historic maps, Figures 5, 6, and 7)

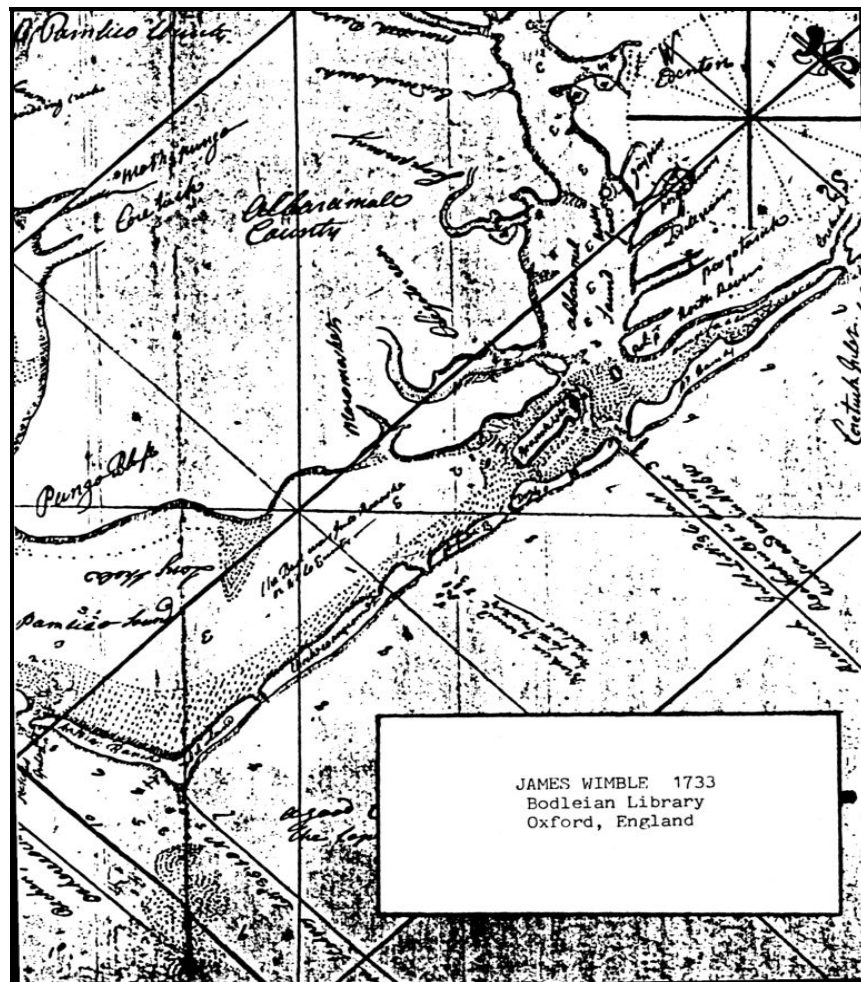


Figure 5: James Wimble 1733 Map

Oregon Inlet was created by a hurricane in 1846 (Powell 1968) through the barrier island adjacent to the southern tip of Roanoke Island, thus providing ocean access within eleven miles of the Manteo area. However, the inlet's presence did not affect the Albemarle Sound drainage through Croatan Sound and thus navigation in Roanoke Sound and Shallowbag Bay continued to be restricted to small, shallow draft vessels.

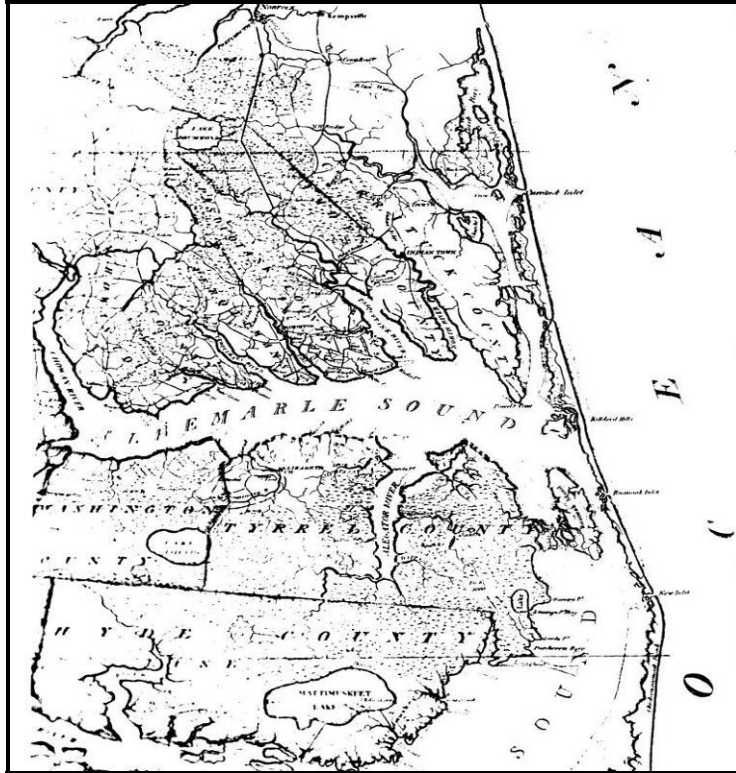


Figure 6: Price-Strother 1808 Map



Figure 7: Mac Rae-Brazier 1833 Map

Therefore the Dough's Creek/Shallowbag Bay area had only a minimal amount of maritime activity during the many years preceding the 1870s, primarily associated with plantations involved in farming and herding. During the Civil War, fortifications and the naval activities involved in the Federal occupation of Roanoke Island were concentrated on its west and northwest side adjacent to the Croatan channel. Shallowbag Bay's limited role in the war was to serve as an escape route during the February 10, 1861 retreat of the Confederate forces (Civil War map, Figure 8).

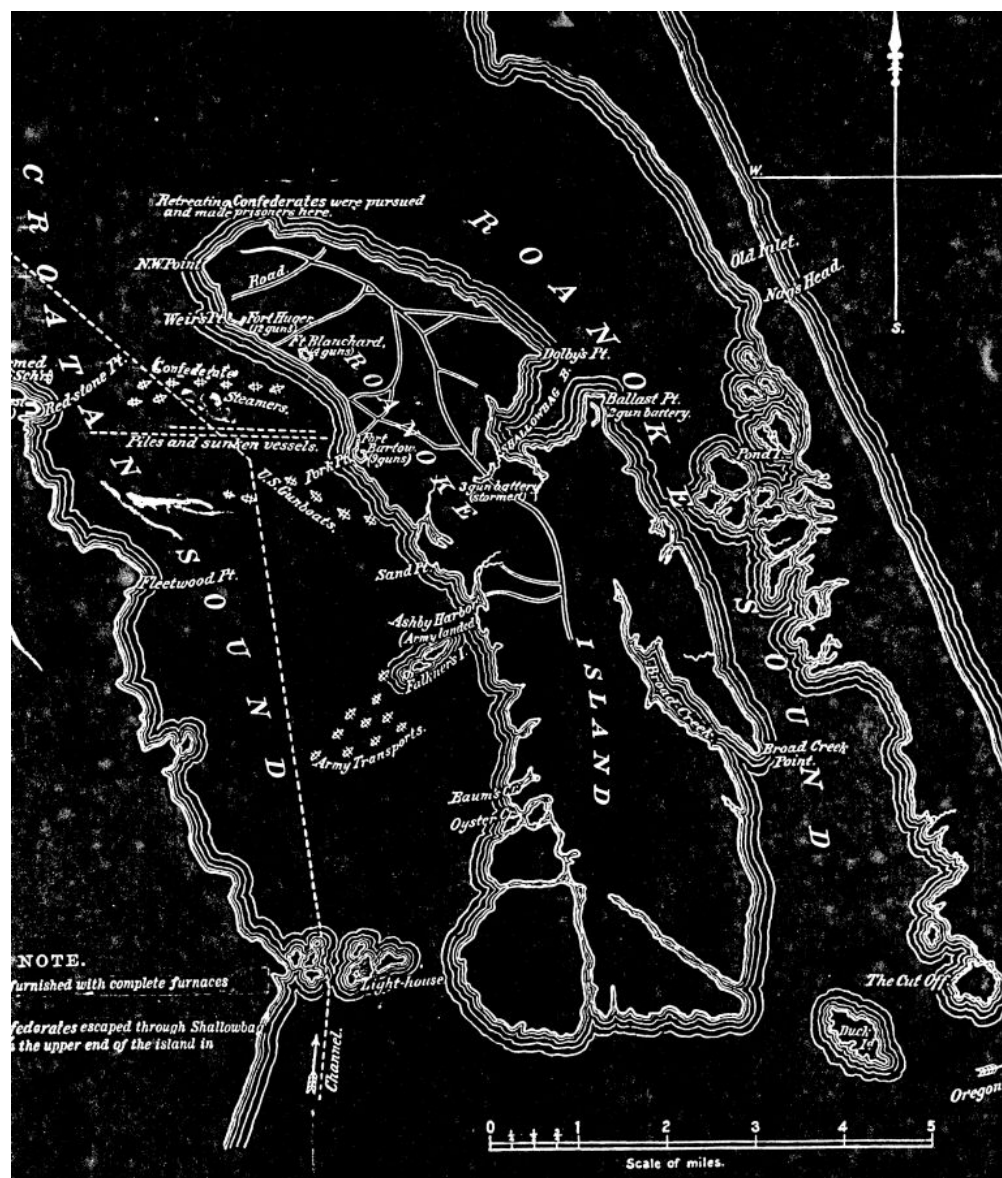


Figure 8: Roanoke Island Defenses 1861

Maritime activities at Manteo increased dramatically with the formation in 1870 of present-day Dare County and selection of Manteo as the county seat. The town grew around the mouth of Dough's Creek to accommodate both the functions of county government and the intensification of commercial fishing which greatly accelerated with the advent of refrigeration in the 1870s (Stick 1970). Harbor construction and improvement, including the dredging and maintenance of a basin and 6-foot channel to provide dependable access to the main shipping routes, attest to Manteo's active waterfront (Figure 9 and 10).

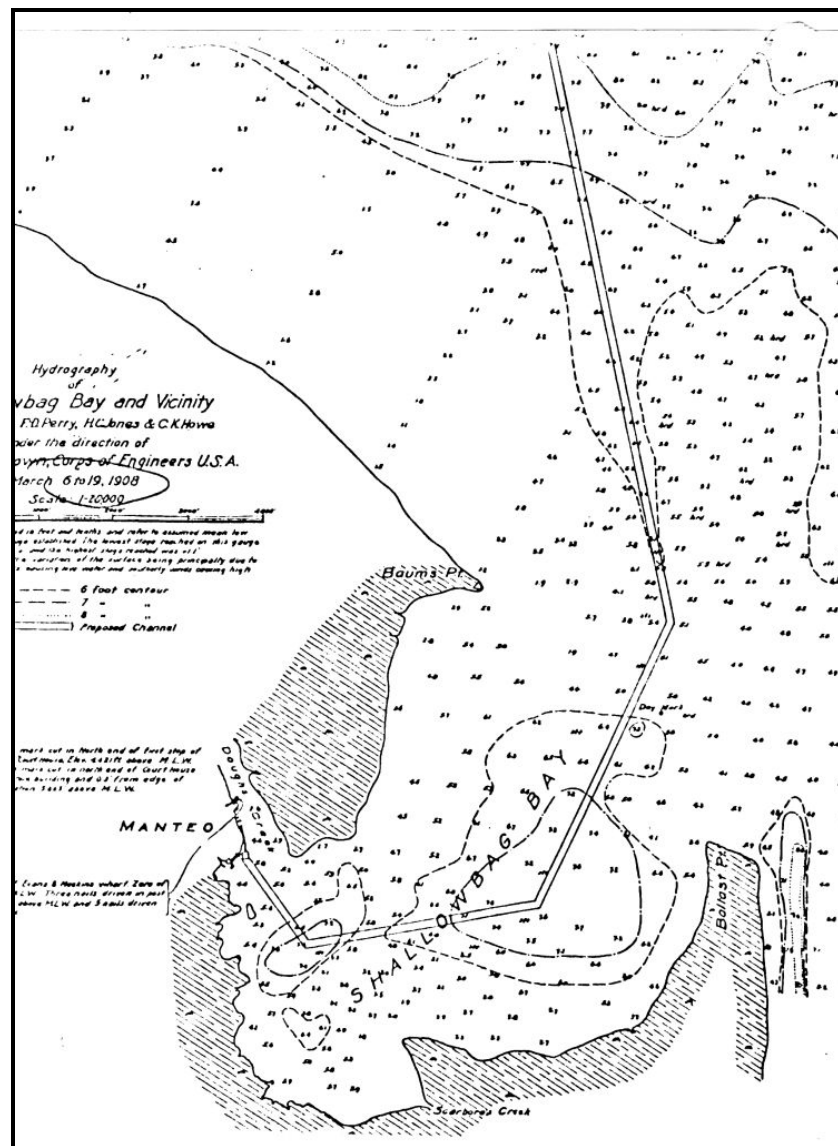


Figure 9: Brown 1908 Map

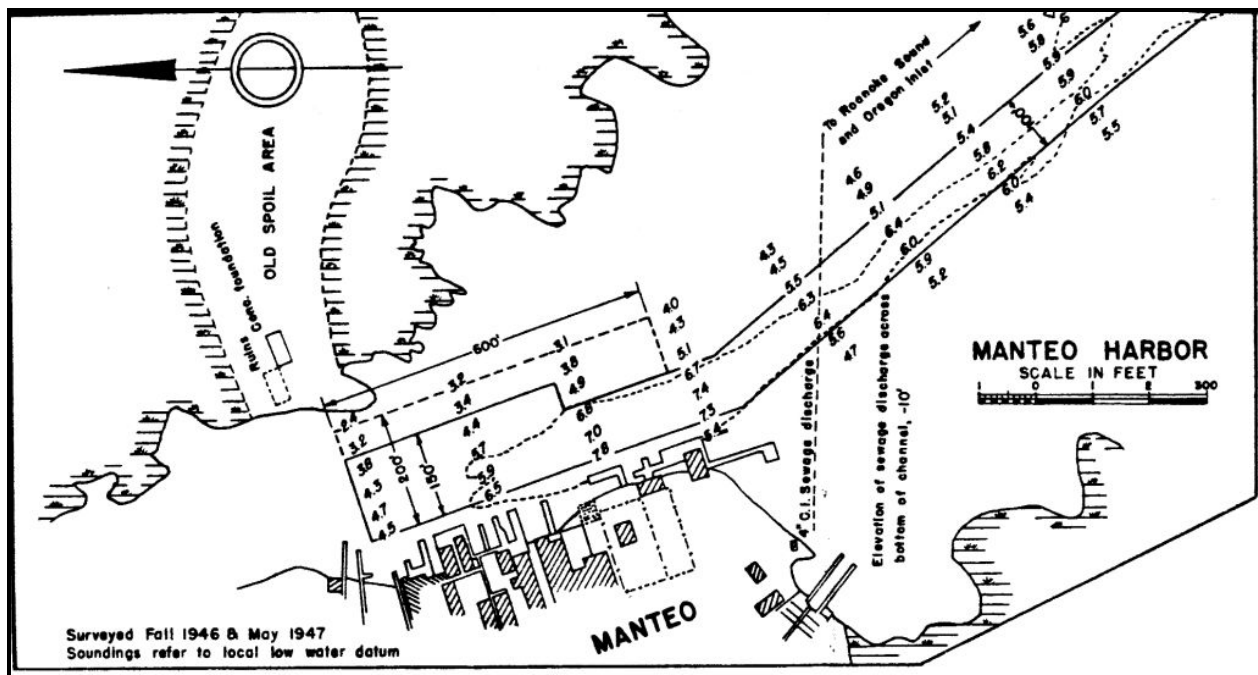


Figure 10: Corps of Engineers 1946-47 Map

When citizens came to the county seat from any of the outlying townships or from Nags Head they had to come by boat, and on court days it was not an uncommon sight to see hundreds of small sailboats, many of them being the shad boats especially designed for use in the shallow sounds, tied up in Shallowbag Bay on the Manteo waterfront. (Stick 1970, 232)

The deteriorated condition of the Manteo waterfront as seen today (prior to the present downtown renovation) signifies two important trends which turned use away from Manteo's harbor facility: the construction of bridges and good roads providing easy overland access to Manteo and the shifting of the island's commercial fishing to a centralized location at Wanchese, both occurring around World War II (Stick 1970).

Archaeological Background

Archaeology conducted on Roanoke Island, as one might expect, has concentrated on the north end of the island in an attempt to locate evidence of the ill-fated colonies sponsored by Sir Walter Raleigh in the 1580s. Investigations by Talcott Williams in the late nineteen century followed by a detailed search by J.C. Harrington in the forties and fifties have located a small earthen fortification dating to the period of the original settlement. However, neither

documentary research nor archaeological field work has established the settlement site of the English colonists or the native Algonkian village sites of that period.

Interest and funding are currently being generated in conjunction with the 400th anniversary to intensify the search. Archaeological investigations which are in progress or planned for the near future will examine the areas around the fort and the waters to the north for further evidence of Indian and colonial habitation.

In connection with the 400th Commemoration, terrestrial portions of the Manteo waterfront and Ice Plant Island affected by proposed construction were investigated by the DOT archaeologist (DOT, EIS 1982:26-28). The general findings are reproduced below:

Methodology

Specific area of investigation included the western bridge approach locality at the end of Ananias Dare Street, the eastern bridge approach locality on Ice Plant Island and the area to be disturbed by dredging a canal through Ice Plant Island to provide boating access to docks along Dough's Creek.

Besides pedestrian survey of the impact area, subsurface testing, documentary research, and interviews with local residents were conducted to complete the cultural resources evaluation. Some background information was derived from notes provided by Bruce Cheeseman, researcher at the DAH in Raleigh. Other documentary research was carried out at the Dare County Public Library in Manteo and the Dare County Courthouse Record of Deeds and Clerk of Court offices. Geological information was provided by G.L. Bunch, DOT Area Geologist.

1. Western Bridge Approach. The western bridge approach will tie in directly with Ananias Dare Street and will not affect any previously undisturbed areas. Much of this area along the waterfront is land built up by spoil fill. It is currently being used as a parking lot and a boat ramp area. Previous disturbances in the area include gutters and underground storm drain system, underground utility lines, and water mains. No significant archaeological remains will be affected by the project in this locality.

2. Eastern Bridge Approach. The eastern end of the bridge will be constructed on the site of some existing concrete foundations. Local tradition holds that the foundations are the ruins of an ice plant and the area between Dough's Creek and Baum's Point is called Ice Plant Island.

The foundations form two rectangles, both approximately 30 by 60 feet, joined but offset from each other. The foundations are three to four feet high and contain imbedded three-quarter-inch anchor bolts. A few brick bats were noted around the foundation, but the only concentration of bricks was at the southwest corner of the structure near the shoreline, suggesting that they were dumped there as a breakwater. Probing and shovel testing in the vicinity failed to locate any

trash dumps or other archaeological features associated with the site. Several rusted-out sheet metal ice molds were found among the ruins. These molds originally measured 1 by 2 by 4 feet, and would make a standard 200 pound block of ice. All that remains of most of the molds is the reinforced rim portions which have on-half-inch-diameter holes locate midway along the long axis whereby the molds were moved and could be pivoted to dump out the ice block.

According to the courthouse records, the Manteo Fish and Ice Company was incorporated in October, 1912. The land on Ice Plant Island was purchased by one of the directors of the corporation, Theodore Meekins, in December of 1912. Construction probably was completed in 1913. According to local residents, the plant was powered by a steam engine and burned down after a few years of operation, probably around 1918. The ice plant was rebuilt in another location.

Since the foundations are the only remaining physical features of the site, the site does not qualify for National Register listing based on architectural qualities of appearance, design, or construction. The site has no artistic or aesthetic value. The site is not mentioned in any historical summaries and was in operation for a relatively short period of time, having not important influence on the historic development of the area.

From an archaeological perspective, the site is not likely to yield any more information than can be obtained easier from documentary sources. Historical archaeology has largely moved beyond the "foundation chasing" stage to studies attempting to elucidate historical cultural patterns and processes. This site does not have enough potential to contribute new knowledge of the cultural development of the region to warrant its being considered for the National Register of Historic Places.

3. Canal Across Ice Plant Island. Although the revised alignment of the proposed canal has not been staked in the field, its appropriate location was checked during the archaeological survey. Four subsurface tests showed that the soil profile consists of organic muck overlain with a thin (1 to 1 1/2 foot) layer of sand representing the edge of the spoil pile that covered the center portion of the island. The bore holes that had been drilled during geotechnical investigations were inspected to determine it was possible that any shell midden layers had been encountered but not noted in the geological report. Members of the geological team confirmed that no shell strata had been encountered in any of the drilling in the project area.

Based on the geological evidence that the island was a marshland until dredge spoil was used to build the land up, no prehistoric archaeological sites would be expected in the project area. However, there are some historic period artifacts contained in the sand, which was dredged from Shallowbag Bay at different times beginning in the early 1900s and possibly late 1800s. The artifacts noted during this survey included bottle fragments, various iron and nonferrous metal objects,

brick and other ceramic fragments, and cobbles which likely served as ballast stone. None of these artifacts are significant finds.

Conclusions

As a result of the archaeological survey, geological investigations, and documentary research, it can be concluded that the project will not affect any significant archaeological or historic resources. No properties on, or eligible to be listed on, the National Register of Historic Places will be affected by the proposed highway project (NC DOT 1982:26-28)

Cultural Resource Potential

A preliminary examination was made using the UAB's environmental review procedures to establish cultural resources potential in the project area. Using the summary of Roanoke Island's early history provided by the Research Branch (Cheeseman 1982) and David Stick's Dare County: A History, it became apparent that the potential for pre-1870 cultural resources was low. Maritime activity from the period of Roanoke colonies until the development of Manteo was sparse and basically limited to servicing the few plantations in the area. Only during the late-1600s to the mid-1700s was there a slight increase in waterfront activity with a few houses along Dough's Creek western shoreline and talk of establishing a town.

In contrast, the probability for finding post-1870s submerged cultural resources is high due to the maritime activities associated with Manteo as the county seat and a commercial fishing center. During this period some gaps exist in our knowledge of maritime shipbuilding techniques, such as the local development of the shad boat. Prototype vessels shedding light on the evolution of locally developed boat building could make them eligible for listing on the National Register of Historic Places. On the whole, however, submerged cultural resources from this relatively recent period are not likely to yield significant maritime information.

Bottom disturbance at the bridge crossing has been extensive from the early twentieth century ice plant operations on the east side of Dough's Creek and modern boating activities associated with the public boat ramp and docks on the west (Manteo) side. If they existed, significant cultural resources most likely would not have survived at the bridge crossing. Similarly the access channel in Shallowbag Bay has been exposed to high energy wave and wind action, diminishing the chances of intact preservation of cultural resources there.

This is not the case, though, in the canal access channel and the boat berthing area in Dough's Creek which are situated in shallow coves. Both areas exhibit a bottom environment extremely conducive to artifact preservation. This is due to the lack of bottom disturbance, either natural or manmade, and to the absence of dissolved salts combined with the low light levels and protective muck-type bottom sediments.

In summary, the project area is generally considered to hold a low potential for containing significant cultural resources. If they exist they would probably be found in Dough's Creek in the access channel or boat basin areas and would be contemporaneous with the town of Manteo. However, the vicinity of the proposed project is historically sensitive because of its association with the sixteenth century English attempts to colonize and explore Roanoke Island and the adjacent region. The possibility, however remote, of locating any evidence which might contribute to further understanding of those very early colonial attempts pre-empts a general finding of low potential for cultural resources.

Survey Methods and Equipment

A standard proton precession magnetometer survey and anomaly assessment investigation were employed for the underwater archaeological reconnaissance of the project area. The magnetometer is a sensitive instrument that records the total magnetic intensity of a given area. During a survey, when ferrous masses are encountered, the variance produces anomalous readings which are detectable over normal background patterns. The proton magnetometer has been used extensively by underwater archaeologists in the search for shipwrecks, both iron and wood-hulled, and has been found to also register other submerged cultural resources such as concentrations of small artifacts at landing sites and inundated brick foundations (see UAB site files, #0003BAR, #0001PUR, #0003ROR). There is always the possibility that historic and prehistoric artifacts, particularly wood, will go undetected during a magnetometer survey but chances are that some component of the cultural resource or a related artifact will register and be located, thus instigating a more intense search for additional evidence. Diving a probing activities during site assessments, although predicated on anomaly location, also provide a "hands on" inspection of the bottom thus raising the possibility of locating artifacts that would not register on the magnetometer.

For the UAB the results of the survey were an important test for the Branch's environmental review procedures, which produce the framework for determining cultural resources potential in a given area. While archaeological investigations are often recommended and completed for areas considered high in potential for significant cultural resources, the Manteo project provided an oppory to conduct an archaeological survey in a low-potential area. This will provide data with which to refine prediction procedures.

During the course of the remote sensing survey, the areas of impact were investigated using a Geometrics G-806M proton precession magnetometer. This magnetometer features the selection of 1 or 0.5 gamma resolution at a one second sampling rate. In addition to a LED display of magnetic intensity, measured in gammas, the G-806M magnetometer included a Soltec dual-channel analog recorder. The recorder printed the magnetic intensity on a strip chart at a 100 and 1,000 gamma scale simultaneously keeping a record of both subtle and large magnetic variations.

A 20-foot McKee Craft fiberglass boat with a 175 h.p. Evinrude outboard was employed as the survey vessel and carried the magnetometer sensor on a boom extended 5 feet forward of the bow and approximately 3 feet above the water surface. The survey vessel was kept on a fixed track by a transit operator stationed at a known position on shore using radio communications. A Lietz #550, 5 1/2-inch transit was used for survey positioning.

Magnetometer runs were executed in a manner to provide survey lane spacing of 50 feet or less and generally on the order of 25 feet throughout the Manteo survey. The following describes transit positions and magnetometer lanes within each of the four primary survey areas:

Shallowbag Bay Access Channel. Existing DOT survey points marking the channel center line (20 + 88) and 35-foot offset lines on either side (channel width) were used to align three parallel survey lanes. The survey vessel began on the south side of the main channel and was guided toward the on-shore transit position (Figure 11).

Dough's Creek Access Channel. A single transit position was established on the west bank of Dough's Creek opposite the canal entrance at an existing DOT survey point which marked the channel center line. Five radial survey lanes were completed along the centerline (Bearing N 76° 21' E) and on either side at 5 and 10 degree angles. The survey vessel ran all survey lanes from the transit position to the east bank (Figure 13).

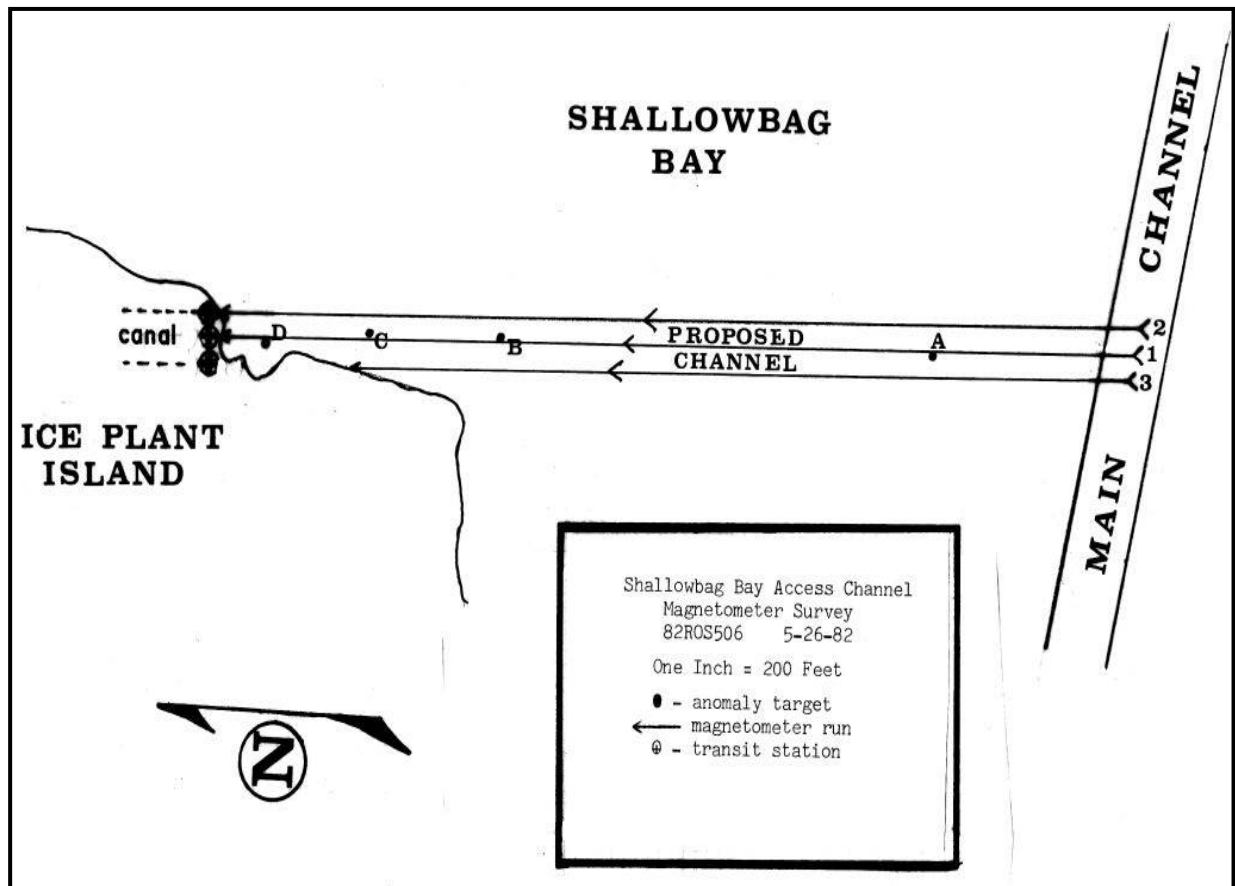


Figure 11: Shallowbag Bay Access Channel Magnetometer Survey

Dough's Creek Bridge. Two transit positions were established in order to guide parallel lanes, one on the bridge center line at an existing DOT mark and another 20 feet south. The survey vessel was guided from the transit position across the creek to the east bank (Figure 13).

Elizabeth II Berthing Area. A single transit position was established on an abandoned dock behind the Manteo municipal building. Using magnetic north as the base reference line, six radial survey lanes were completed at N60°E, N65°E, N71°E, N83°E, and due east by heading the survey vessel from the creek channel to the east bank. In addition, five parallel survey lanes were completed inside the berthing cove using a north or south heading and a lane spacing of approximately 25 feet (Figure 14).

During the survey as significant magnetic disturbances (anomalies) were registered, a buoy was deployed to mark their approximate position. Significant anomalies consisted of a five or greater gamma variation exhibited over a three pulse duration. The survey continued until an area was completely covered. The survey vessel then returned to each buoy or cluster of buoys

and ran a series of parallel lanes at 5-foot spacing until no magnetic disturbance was detected. Similarly, another series of parallel lanes was then run perpendicular to the first. This enabled the placement of a final buoy(s) over a defined anomaly target in preparation for the diving investigation.

Divers equipped with standard SCUBA equipment located all targets using random search and probe techniques. Where possible the material suspected to have caused each magnetic disturbance was removed by the divers and the immediate area was re surveyed to insure that historical remains were not masked by modern debris associated with twentieth-century activities.

Upon completion of the anomaly site inspection, buoys were repositioned over the materials identified as the cause of magnetic disturbance. Positions were established by recording an angle off of a known reference baseline (DOT survey line or magnetic north) and a distance read from a stadia rod (accuracy ± 2 feet at 500 feet). Environmental information including depth of water, muck, and sand were recorded at each anomaly site.

At the site of the vessel remains, 0001ROS (Anomaly M), a limited, uncontrolled excavation was undertaken to remove sediment from select areas for preliminary site identification purposes. An induction type dredge powered by a Hale Fire Pump 25FA with a 2 1/2-inch intake and discharge hose, was employed for this excavation.

Description of Results and Recommendation

The following is an account of each significant magnetic anomaly that was located during the course of the underwater reconnaissance survey at Manteo. A description of the magnetic profile for each site is given along with a summary of the investigation of the site. The locations of the various sites within the four survey areas are shown on Figure 11, 12, and 13.

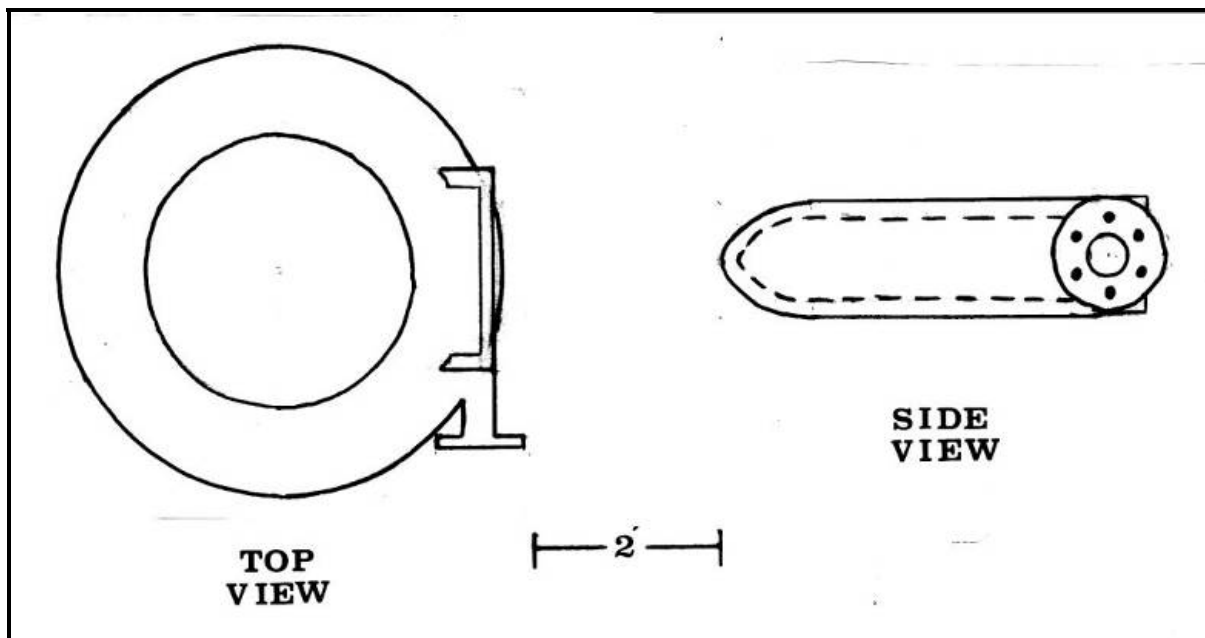


Figure 12: Anomaly Designation 82ROS50 "C"

ANOMALY DESIGNATION 82ROS506 "A"

Body of Water:		Shallowbag Bay, Access Channel
Water Depth:		5 feet
Bottom Composition:		Coarse Sand
Location of Anomaly:	Transit Station:	Channel Centerline (20+82 DOT)
	Bearing:	S 02 degrees, E 48 feet
	Distance:	Approximately 1,200 feet
Nature of Anomaly:	Single Component:	Dipolar
Linear Extent of Anomaly:		24 feet
Maximum Gamma Variation:	Positive:	38
	Negative:	6
Identification:		Partially buried, chicken wire crab pot (3" square)
Recommendation:		No Further Archaeological Investigation

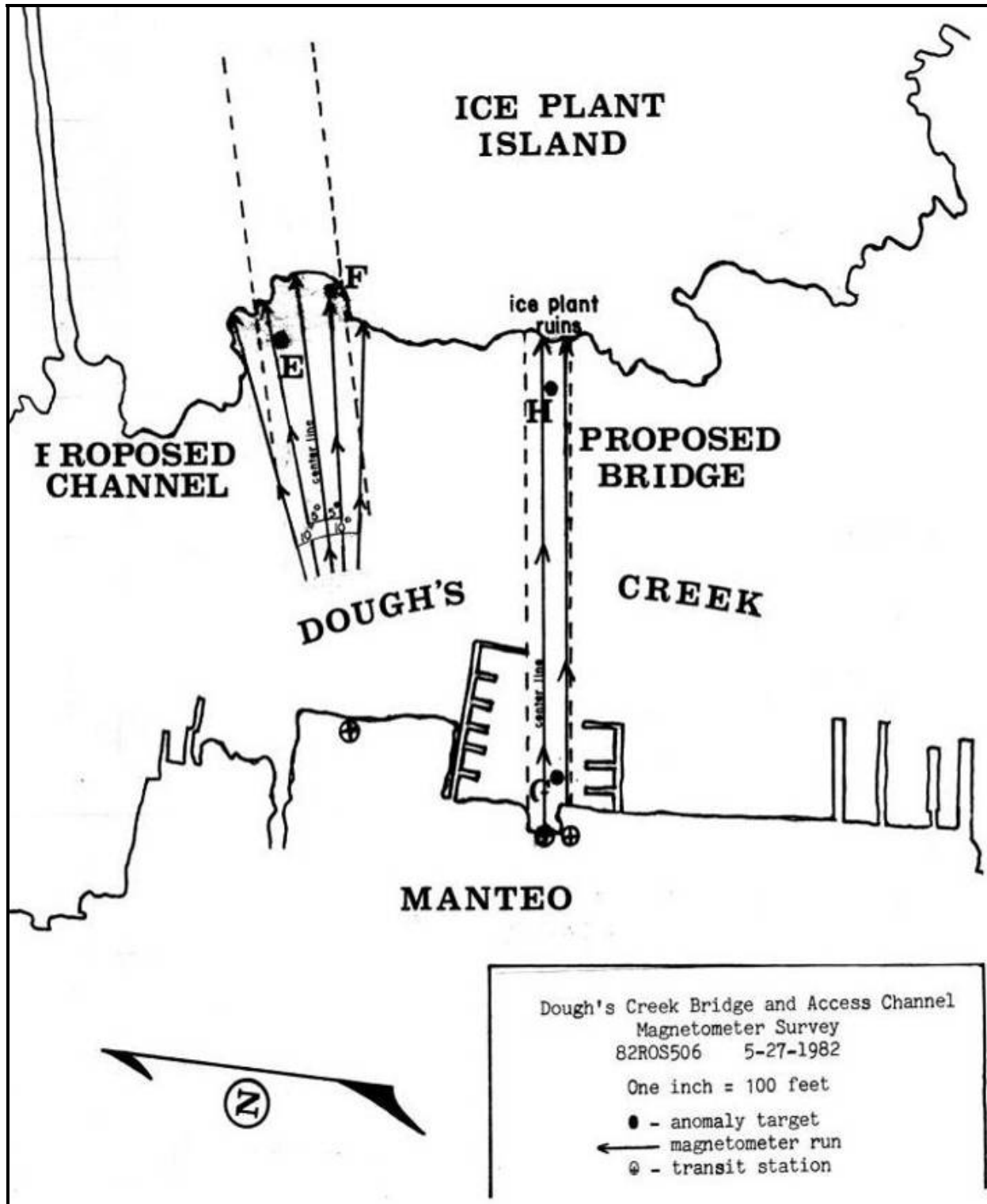


Figure 13: Dough's Creek Bridge Magnetometer Survey

ANOMALY DESIGNATION 82ROS506 "B"

Body of Water:		Shallowbag Bay, Access Channel
Water Depth:		4 feet
Bottom Composition:		Slightly Organic Fine Sand
Location of Anomaly:	Transit Station:	Channel Centerline (20+82 DOT)
	Bearing:	S 02 degrees, E 49 feet
	Distance:	488 feet
Nature of Anomaly:	Single Component:	Dipolar
Linear Extent of Anomaly:		18 feet
Maximum Gamma Variation:	Positive:	25
	Negative:	22
Identification:		Chicken Wire Crab Trap (3' square) lying on the bottom surface.
Recommendation:		No Further Archaeological Investigation

ANOMALY DESIGNATION 82ROS506 "C"

Body of Water:		Shallowbag Bay, Access Channel
Water Depth:		3 feet
Bottom Composition:		Slightly Organic Fine Sand
Location of Anomaly:	Transit Station:	Channel Centerline (20+82 DOT)
	Bearing:	S 06 degrees, E 16 feet
	Distance:	260 feet
Nature of Anomaly:	Single Component:	Dipolar
Linear Extent of Anomaly:		48 feet
Maximum Gamma Variation:	Positive:	460
	Negative:	180
Identification:		Tire-shaped cast iron object, 4'8" diameter and 1'5" deep; resembles an impeller housing for a dredge pump.
Recommendation:		No Further Archaeological Investigation

ANOMALY DESIGNATION 82ROS506 "D"

Body of Water:		Shallowbag Bay, Access Channel
Water Depth:		2 feet 6 inches
Bottom Composition:		Heavy with suspended organic matter over fine sand; tree stumps
Location of Anomaly:	Transit Station:	Channel Centerline (20+82 DOT)
	Bearing:	S 02 degrees, E 27 feet
	Distance:	85 feet
Nature of Anomaly:	Single Component:	Dipolar
Linear Extent of Anomaly:		36 feet
Maximum Gamma Variation:	Positive:	48
	Negative:	42
Identification:		20' scatter of modern debris (metal pipe and miscellaneous fragments, modern bottles and jars, brick, copper screws, etc.) in a resorted and disturbed context.
Recommendation:		No Further Archaeological Investigation

ANOMALY DESIGNATION 82ROS506 "E"

Body of Water:		Dough's Creek, Access Channel
Water Depth:		2 feet 6 inches
Bottom Composition:		3'6" of muck over fine sand
Location of Anomaly:	Transit Station:	Channel Centerline (West Bank)
	Bearing:	N 80 degrees, E 11 feet
	Distance:	284 feet
Nature of Anomaly:	Single Component:	Dipolar
Linear Extent of Anomaly:		40 feet
Maximum Gamma Variation:	Positive:	28
	Negative:	8
Identification:		Fifty five gallon steel drum buried upright half into the bottom sediments
Recommendation:		No Further Archaeological Investigation

ANOMALY DESIGNATION 82ROS506 "F"

Body of Water:		Dough's Creek, Access Channel
Water Depth:		0 to 2 feet
Bottom Composition:		4'6" of muck over fine sand; layer of coal cinders on surface along shoreline.
Location of Anomaly:	Transit Station:	Channel Centerline (West Bank)
	Bearing:	N 76 degrees, E 21 feet to N 86 degrees , E 21 feet
	Distance:	300 to 330 feet
Nature of Anomaly:	Multi Component:	Dipolar
Linear Extent of Anomaly:		30 feet
Maximum Gamma Variation:	Positive:	140
	Negative:	20
Identification:		Steel belted radial car tire and a heavy concentration of coal cinders were spread about fifty feet along the shoreline.
Recommendation:		No Further Archaeological Investigation

ANOMALY DESIGNATION 82ROS506 "G"

Body of Water:		Dough's Creek, Bridge Crossing
Water Depth:		7 feet
Bottom Composition:		Slightly organic fine sand; disturbed
Location of Anomaly:	Transit Station:	Bridge Centerline
	Bearing:	N 83 degrees E
	Distance:	37 feet
Nature of Anomaly:	Single Component:	Dipolar
Linear Extent of Anomaly:		32 feet
Maximum Gamma Variation:	Positive:	70
	Negative:	20
Identification:		Two crab pots and a wide range of small debris (i.e. cans, bottles, plastic and metal pipe) in a disturbed context
Recommendation:		No Further Archaeological Investigation

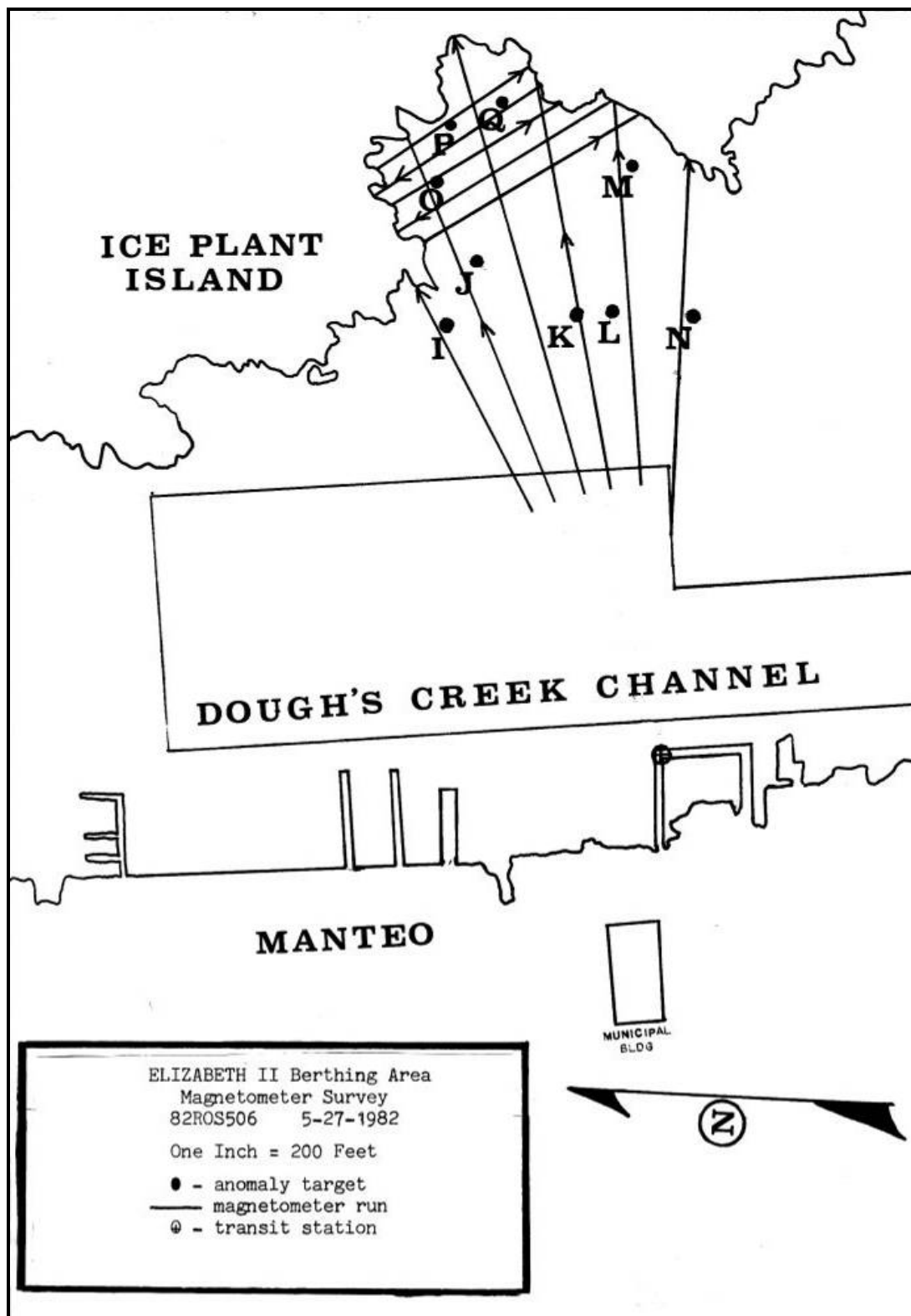


Figure 14: *Elizabeth II* Berthing Area

ANOMALY DESIGNATION 82ROS506 "H"

Body of Water:		Dough's Creek, Bridge Crossing
Water Depth:		2 to 4 feet
Bottom Composition:		Slightly organic fine sand; heavy with cultural debris (i.e., rubbish)
Location of Anomaly:	Transit Station:	Bridge Centerline
	Bearing:	N 83 degrees, E
	Distance:	320 feet
Nature of Anomaly:	Multi Component:	Dipolar
Linear Extent of Anomaly:		40 feet
Maximum Gamma Variation:	Positive:	100+
	Negative:	40
Identification:		Debris and rubble associated with the ice plant and in a disturbed context. A 4' solid iron bar (1" stock) was removed and remagging indicated additional debris from ice plant operation. Coal cinders were thick on bottom and along shoreline.
Recommendation:		No Further Archaeological Investigation

ANOMALY DESIGNATION 82ROS506 "I"

Body of Water:		Dough's Creek, Berthing Area
Water Depth:		4 feet, 6 inches
Bottom Composition:		1.9' to 2.9' muck over fine sand
Location of Anomaly:	Transit Station:	Manteo Town Dock
	Bearing:	N 61 degrees, E
	Distance:	370 feet
Nature of Anomaly:	Single Component:	Dipolar
Linear Extent of Anomaly:		36 feet
Maximum Gamma Variation:	Positive:	8
	Negative:	4
Identification:		Early to middle twentieth century debris primarily jars and bottles (soft drink, liquor, medicine – 1920 to 1940) with a piece of iron barrel strapping in the center of the 25' diameter artifact scatter.
Recommendation:		No Further Archaeological Investigation

ANOMALY DESIGNATION 82ROS506 "J"

Body of Water:		Dough's Creek, Berthing Area
Water Depth:		4 to 4 feet 6 inches
Bottom Composition:		1'1" to 2'11" of muck over fine sand.
Location of Anomaly:	Transit Station:	Manteo Town Dock
	Bearing:	N 67 degrees, E 14 feet
	Distance:	400 feet
Nature of Anomaly:	Multi Component:	Dipolar
Linear Extent of Anomaly:		84 feet
Maximum Gamma Variation:	Positive:	77
	Negative:	15
Identification:		Wood and metal fragments of a disarticulated, 20 th century wharf/dock structure; wire nail fastenings and welded components.
Recommendation:		No Further Archaeological Investigation

ANOMALY DESIGNATION 82ROS506 "K"

Body of Water:		Dough's Creek, Berthing Area
Water Depth:		5 feet 6 inches
Bottom Composition:		2'6" of muck over fine sand.
Location of Anomaly:	Transit Station:	Manteo Town Dock
	Bearing:	N 76 degrees, E 30 feet
	Distance:	346 feet
Nature of Anomaly:	Single Component:	Dipolar
Linear Extent of Anomaly:		36 feet
Maximum Gamma Variation:	Positive:	86
	Negative:	8
Identification:		20' piling (14" diameter) wrapped with ¾" wire rope on the west end (length of cable 6')
Recommendation:		No Further Archaeological Investigation

ANOMALY DESIGNATION 82ROS506 "L"

Body of Water:		Dough's Creek, Berthing Area
Water Depth:		5 feet 3 inches
Bottom Composition:		2'6" of muck over fine sand.
Location of Anomaly:	Transit Station:	Manteo Town Dock
	Bearing:	N 81 degrees, E 11 feet
	Distance:	345 feet
Nature of Anomaly:	Single Component:	Dipolar
Linear Extent of Anomaly:		60 feet
Maximum Gamma Variation:	Positive:	86
	Negative:	12
Identification:		4' of a wooden shaft, 6" in diameter was exposed with a 6" steel collar deeply embedded in bottom sediments at a 45 degree angle.
Recommendation:		No Further Archaeological Investigation

ANOMALY DESIGNATION 82ROS506 "M"

Body of Water:		Dough's Creek, Berthing Area
Water Depth:		3 feet 10 inches
Bottom Composition:		3'4" of muck over fine sand
Location of Anomaly:	Transit Station:	Manteo Town Dock
	Bearing:	N 84 degrees, E 15 feet
	Distance:	454 feet
Nature of Anomaly:	Multi Component:	Dipolar
Linear Extent of Anomaly:		60 feet
Maximum Gamma Variation:	Positive:	230
	Negative:	26
Identification:		Remains of a sunken vessel and collapsed dock structure. The 24' wooden vessel is fastened with iron nails, propelled by an internal combustion engine which had been salvaged, and shows signs of extensive burning. (See Figure 15)
Recommendation:		(1) Avoidance of vessel during construction activities, or(2) additional documentation of vessel using historical research and/or onsite archaeological investigation to determine its historical/archaeological significance. No further archaeological investigation is recommended for the dock structure.

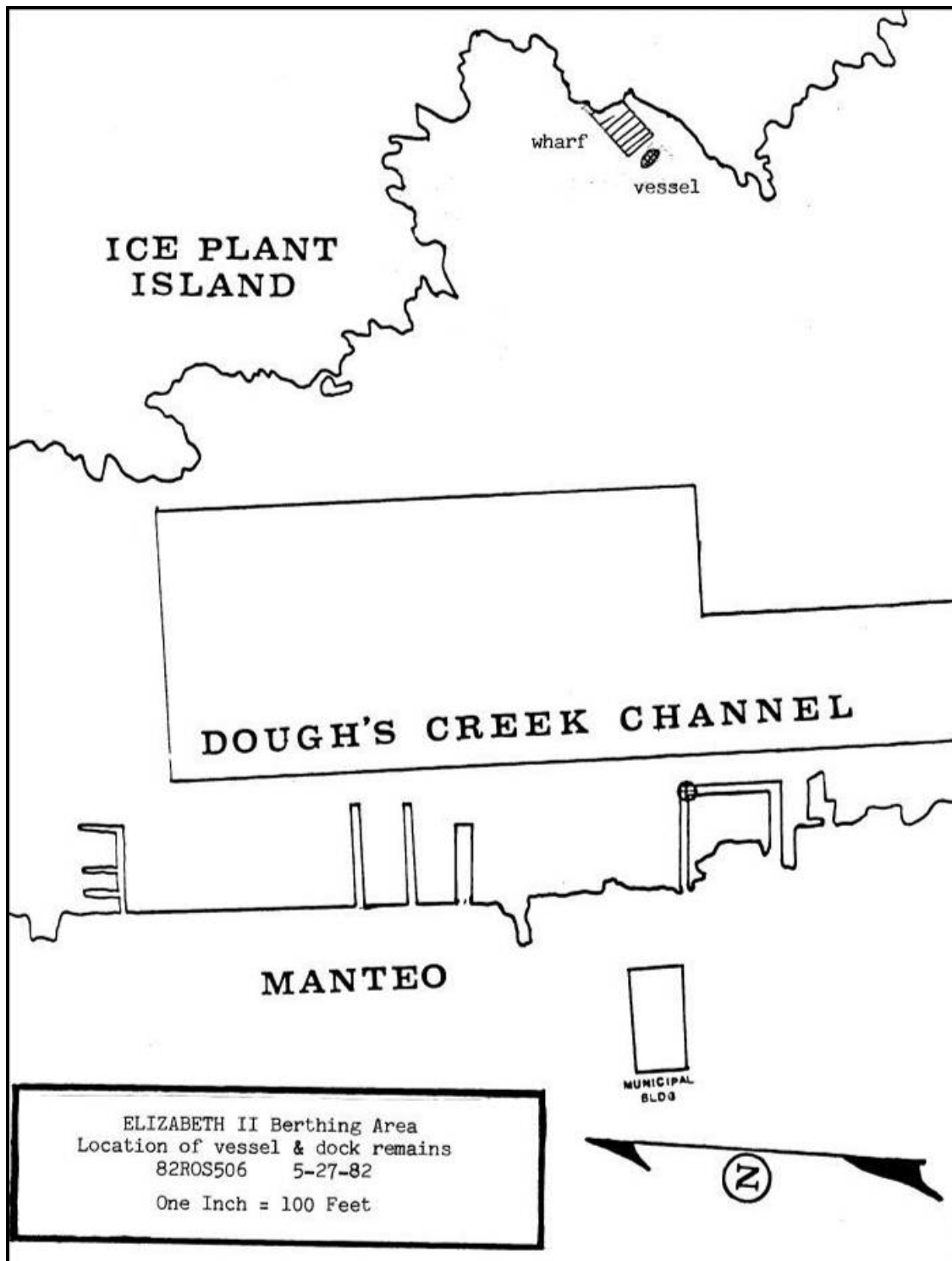


Figure 15: Location of Vessel and Dock Remains

ANOMALY DESIGNATION 82ROS506 "N"

Body of Water:		Dough's Creek, Berthing Area
Water Depth:		5 feet 2 inches
Bottom Composition:		3'4" muck over fine sand
Location of Anomaly:	Transit Station:	Manteo Town Dock
	Bearing:	S 88 degrees, E 36 feet
	Distance:	340 feet
Nature of Anomaly:	Single Component:	Dipolar
Linear Extent of Anomaly:		45 feet
Maximum Gamma Variation:	Positive:	120
	Negative:	20
Identification:		10" diameter iron pipe protruding 8' above to ttom sediments
Recommendation:		No Further Archaeological Investigation

ANOMALY DESIGNATION 82ROS506 "O"

Body of Water:		Dough's Creek, Berthing Area
Water Depth:		3 feet 2 inches
Bottom Composition:		4' of muck over fine sand
Location of Anomaly:	Transit Station:	Manteo Town Dock
	Bearing:	N 66 degrees, E 55 feet
	Distance:	470 feet
Nature of Anomaly:		Located by waders guiding the mag boat
Linear Extent of Anomaly:		
Maximum Gamma Variation:	Positive:	
	Negative:	
Identification:		10' x 6' section of pier structure with wire nail fasteners
Recommendation:		No Further Archaeological Investigation

ANOMALY DESIGNATION 82ROS506 "P"

Body of Water:		Dough's Creek, Berthing Area
Water Depth:		2 feet 8 inches
Bottom Composition:		4'6" of muck over fine sand
Location of Anomaly:	Transit Station:	Manteo Town Dock
	Bearing:	N 69 degrees, E 20 feet
	Distance:	512 feet
Nature of Anomaly:	Single Component:	Dipolar
Linear Extent of Anomaly:		39 feet
Maximum Gamma Variation:	Positive:	14
	Negative:	8
Identification:		Small homemade anchor of ½' steel bar
Recommendation:		No Further Archaeological Investigation

ANOMALY DESIGNATION 82ROS506 "Q"

Body of Water:		Dough's Creek, Berthing Area
Water Depth:		2 feet 5 inches
Bottom Composition:		5'3" of muck over fine sand
Location of Anomaly:	Transit Station:	Manteo Town Dock
	Bearing:	N 73 degrees, E 35 feet
	Distance:	518 feet
Nature of Anomaly:	Single Component:	Dipolar
Linear Extent of Anomaly:		26 feet
Maximum Gamma Variation:	Positive:	43
	Negative:	21
Identification:		Remains of a badly deteriorated sheet metal ice chest, approximately 3' x 2' x 2'
Recommendation:		No Further Archaeological Investigation

Conclusions

The findings of the Manteo survey generally support the UAB's preliminary predication based on current Environmental Review Procedures. No cultural evidence was encountered from a period of history prior to the development of Manteo around 1870. Cultural resources lying in the bridge alignment were found highly disturbed as was the scatter of debris found at Anomaly "D" in Shallowbag Bay. Only in the relatively undisturbed cove adjacent to the Manteo harbor were intact remains located and as predicted they represented the period of heightened maritime activities associated with Manteo.

Evidence from this survey and other in North Carolina harbors such as Edenton, Wilmington, New Bern and Bath (UAB research files) support the premise that submerged cultural resources can be expected in harbor locations. Furthermore, these resources are most likely to exist and survive intact in areas within or near the harbor that have seen minimal waterfront development or at some time have fallen into disuse.

The value of a thorough examination of waterfront histories, maps, and Hydrographic charts for specific areas cannot be underestimated. They are essential in the predication of submerged cultural resources, in the determination of the survey techniques used to find expected resources, and in the evaluation of the archaeological and historical value of those discovered resources.

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