ENVIRONMENTAL ASSESSMENT

MAINTENANCE DREDGING

OF

GUILFORD HARBOR

GUILFORD, CONNECTICUT

Prepared by
Department of the Army
New England Division, Corps of Engineers
Waltham, Massachusetts 02254

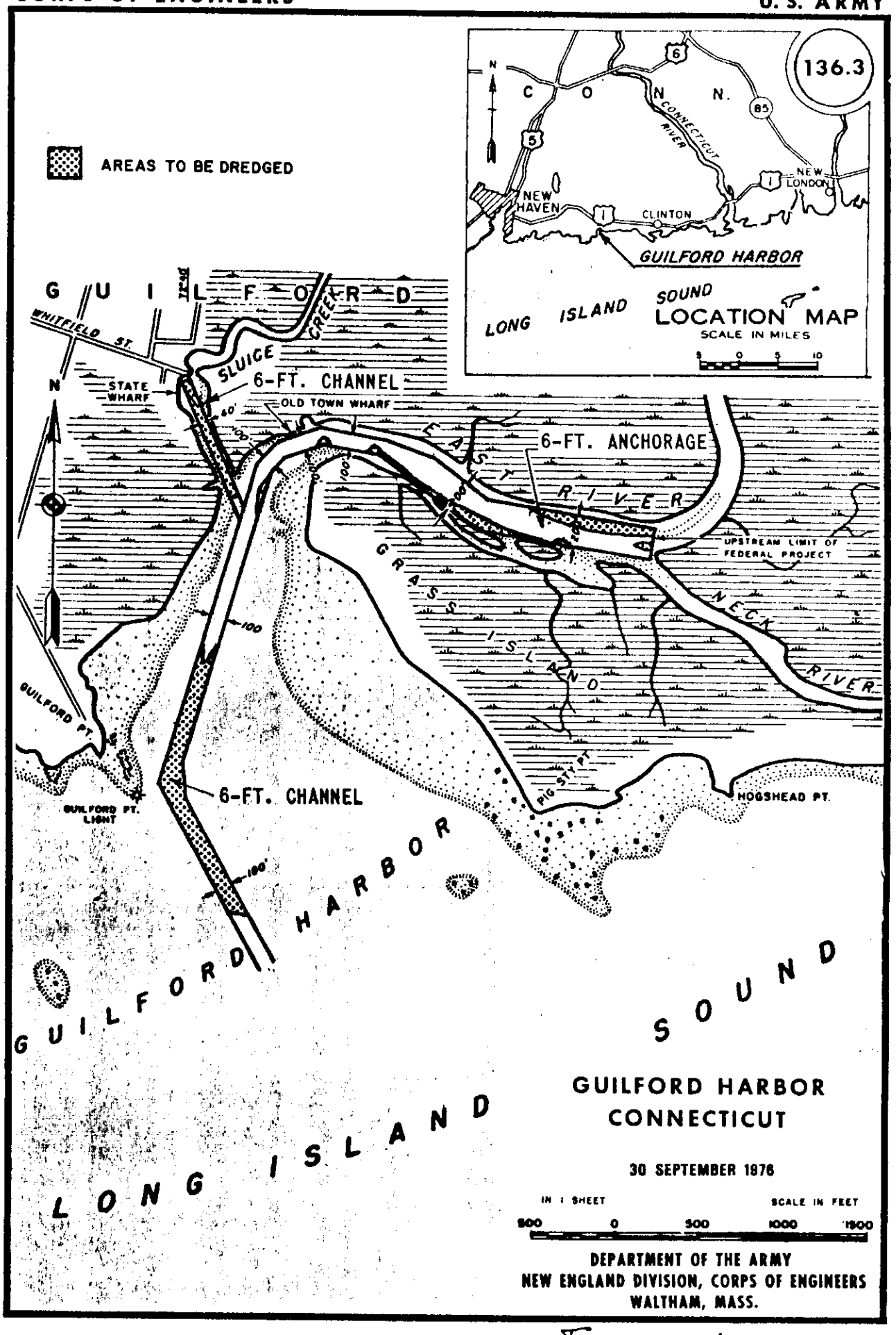
February 1981

TABLE OF CONTENTS

	Environmental Assessment	Page
I.	Proposed Action	1
II.	Environmental Consequences of the Proposed Maintenance Dredging	2
III.	Coordination	4
IV.	Compliance with Environmental Protection Statutes	6
V.	Comments and Responses to the Assessment	8

Proposed Action

The New England Division of the Corps of Engineers proposes to perform maintenance-dredging of the Federal navigation channel in Guilford Harbor in Guilford, Connecticut. This would require removing approximately 40,000 cubic yards of fine sand and organic silt. A hydraulic dredge would pump the sediments from the channel bottom through a pipeline onto an upland disposal area located on the east bank of the West River. Maintenance dredging would allow for better access to and from the harbor. (Figure 1 shows the dimensions of the channel, and the areas to be dredged; Figure 2 shows the location of the disposal site and the route of the pipeline.)


136.3
AREAS TO BE DREDGED
CONN.
CONNECTICUT RIVER
NEW HAVEN
CLINTON
NEW LONDON
GUILFORD HARBOR
LONG ISLAND SOUND
LOCATION MAP
SCALE IN MILES
GUILFORD
WHITFIELD ST.
SLUICE CREEK
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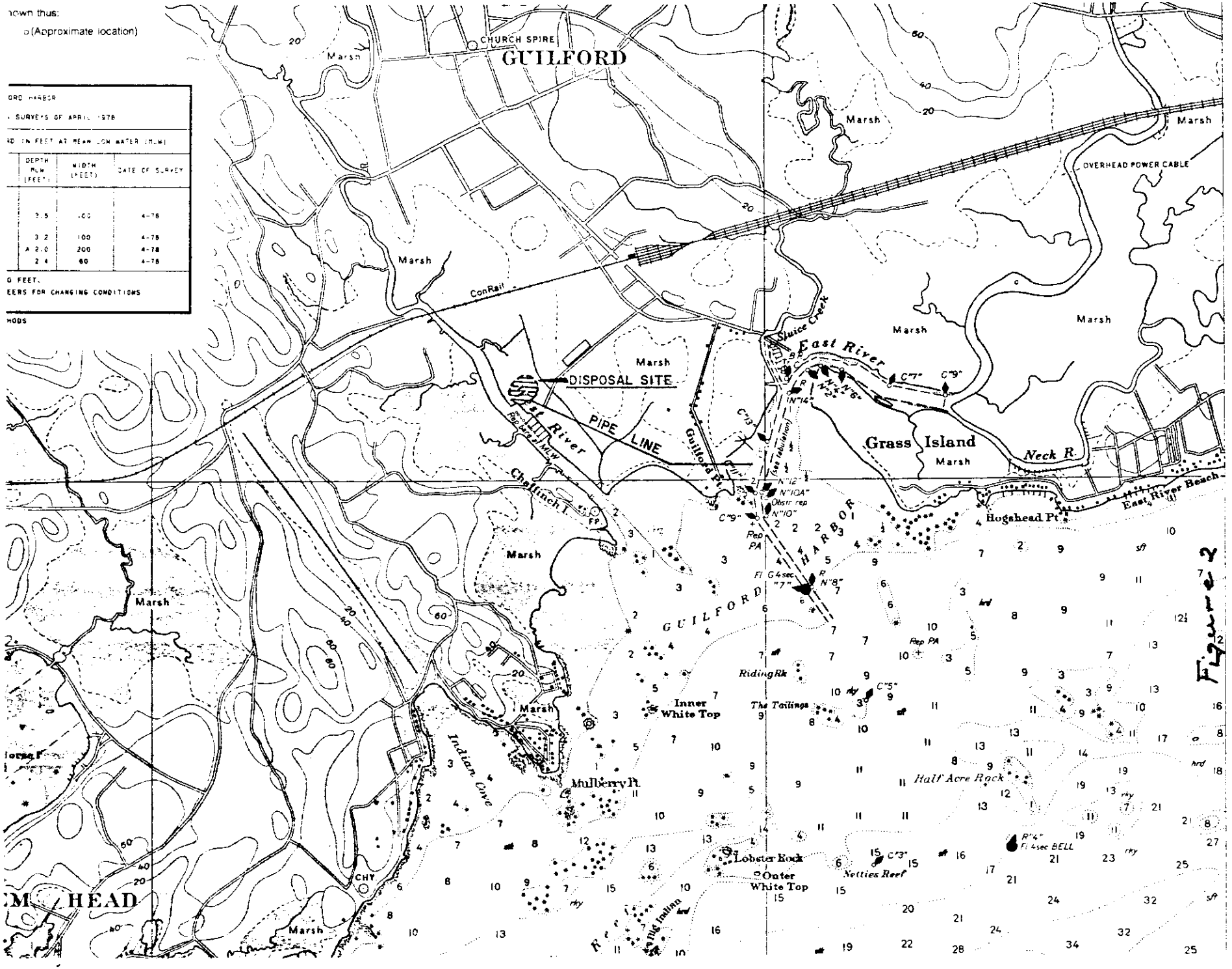
STATE WHARF
OLD TOWN WHARF
6-FT. ANCHORAGE
EAST RIVER
GRASS ISLAND
UPSTREAM LIMIT OF FEDERAL PROJECT
NECK RIVER
GUILFORD PT.
GUILFORD PT. LIGHT
PIG STY PT.
HOGSHEAD PT.
GUILFORD HARBOR
LONG ISLAND SOUND
GUILFORD HARBOR
CONNECTICUT
30 SEPTEMBER 1976
IN 1 SHEET
SCALE IN FEET
500 0 500 1000 1500
DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS.

Figure 1



own thus:
(Approximate location)
ORD HARBOR
SURVEYS OF APRIL 1978
RD IN FEET AT MEAN LOW WATER (MLW)
DEPTH MLW (FEET)
WIDTH (FEET)
DATE OF SURVEY
3.5
100
4-78
3.2
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A 2.0
200
4-78
2.4
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O FEET.
EERS FOR CHANGING CONDITIONS
HODS
CHURCH SPIRE
GUILFORD
Marsh
OVERHEAD POWER CABLE
ConRail
Sluice Creek
East River
DISPOSAL SITE
PIPE LINE
Rep bare at MLW
Chaffinch I.
Guilford Pt.
Grass Island
Neck R.
East River Beach
Hogshead Pt.
GUILFORD HARBOR
Rep PA
Fl G 4sec "7"
Riding Rk
The Tailings
Inner White Top
Indian Cove
Mulberry Pt.
Half Acre Rock
Lobster Rock
Outer White Top
Netties Reef
Fl 4sec BELL
CHY
EM HEAD

Figure 2

Environmental Consequences of the Proposed Maintenance Dredging

All dredging operations have some negative impacts associated with them; the extent of the impacts varies with the type of equipment, with the type of disposal method, and with the quality of the sediments. For this operation, we believe only two impacts are of concern:

1. The creation of suspended material (turbidity) at both the dredge and disposal sites.

2. The possible release of pollutants in the discharge water from the disposal site.

Shellfish are the primary species that could be impacted by suspended material. The material can smother shellfish beds, and can hinder the feeding of these organisms. Guilford Harbor has substantial populations of shellfish. To determine the potential for these impacts to occur, we must know the amount of suspended material a dredge generates and the amount of suspended material that adversely affects these organisms.

A number of studies have looked into the amount of material released into the water column during dredging (Wakeman et al, Windon, 1973). The amount varies due to a number of factors; the major factors being particle size, currents, and the type and size of the dredge. Even though there was a wide range in variation found in each study, it was generally found that a hydraulic dredge created concentrations no greater than a few hundred milligrams per liter (mg/l).

The major shellfish species that this project might impact are oysters and hard shell clams (see Figure 3). These species have been extensively studied (Lunz, 1938; Wilson, 1950; Ingle, 1952; Mackin, 1956 and 1962; and Loosanoff, 1961 and 1965). In the Loosanoff study, oysters lived and fed in water containing up to 700 mg/l of suspended material with no adverse effect. Hard shell clams were even more resistant to turbidity than oysters. Comparing the highest amount of suspended material generated by dredging of few hundred ppm against the Loosanoff study (700 ppm), it is obvious that these species should not be harmed by suspended sediments even immediately adjacent to the dredge.

As for other organisms subjected to turbidity, studies have shown that estuaries are dynamic and substantial amounts of turbidity can be naturally generated (Bohlen 1979, Oviatt and Nixon 1975); consequently, other organisms present should already be acclimated to increased levels of suspended materials. In addition, since dredging induced turbidity is transitory (Windom, 1973), there should be no significant impact to the ecosystem.

As a hydraulic dredge removes sediments, it mixes the sediments in a slurry and pumps this slurry to the dispoal site. It has generally been preceived that this mixing of sediments with water could lead to the

release of some contaminants from the sediments into the slurry water. When this water is discharged back into a water system, the constituents could be available to organisms.

A number of studies have been conducted on the release of pollutants during hydraulic dredging (Lu et al. 1978; Hoeppel et al., 1978, Lee et al. 1972, and Windon, 1973). In general, it has been found that there is not a substantial release of contaminants into the water; most constituents remain bound to the sediment solids. The first three studies also found that plant life found in disposal sites are excellent for slowing down the flow of water over the site. This allows solids to settle out, and the contaminants are retained at the disposal site.

The disposal site we propose to use is approximately 7-acres, and contains a pure stand of phragmites. Consequently, we expect that few contaminants would be discharged in the waters of the West River. We also expect that turbidity would not be a problem at either dredging or disposal site.

Coordination

The proposal to hydraulicly dredge Guilford Harbor has been coordinated with various State and Federal agencies. However, only three agencies supplied a formal written response (see coordination letters) the National Marine Fisheries Service letter contained all of the comments submitted by the other agencies. Therefore, we will use their letter as a format for responding to all the agencies comments:

Comment:

a. The disposal area dikes be designed and constructed to safely contain all the material. (Dike failure has been a problem at these sites.)

Response:

The dikes would be designed to meet Government specifications, and would be sufficient to contain all the Federal maintenance dredging material, and still have 2-feet of free board.

Comment:

b. Baffle walls be constructed within the containment areas to maximize residence time of the carrier water thereby reducing the suspended sediment load prior to discharge.

Response:

The sediments would be discharged into the northwest corner of the disposal area and the discharge water would flow towards the southeast segment of the dike. Since there is a substantial stand of phragmites in the disposal area and since the disposal site is relatively large, 7-acres, we do not anticipate the need to construct a baffle system to reduce suspended sediment loading.

Comment:

c. Weir structures should be designed and maintained to maximize ponding time thereby further reducing the suspended sediment load in the effluent.

Response:

The weir would be constructed to maximize ponding; however the plant growth present at the disposal site would be equally as efficient as ponding in removing suspended sediment loading.

Comment:

d. The weir and discharge point should be situated to minimize the extent of wetland crossing. Locating them immediately adjacent to the West River and piping the flow directly into the River is recommended.

Response:

The weir would be located at the southeast corner of the disposal site; there is no wetland vegetation at this segment of the dike, and therefore there would not be a need for piping the discharge water into the river.

Comment:

e. Because the effluent will be returned to the West River at or near the Guilford Yacht Club boat basin that site should be the last one dredged.

Response:

The Guilford Yacht Club dredging would be a private undertaking. The only way the Corps can have control over this dredging is if the yacht club uses the same contractor as the Corps uses. If this should be the case, our contract would require that the Government dredging be completed before the contractor could undertake any private work.

Comment:

f. The selected time frame of April and May should be adhered to in order to minimize the biological impacts of performing the work.

Response:

The Corps would make every effort to accompish the proposed dredging within the April/May time-frame.

Comment:

g. Pipe placement across the various wetlands from the project area to the disposal sites should be done with equipment designed to minimize compaction and disruption of those vegetations.

Response:

All precautions would be used to minimize any impact to wetland vegetation from equipment used to lay the pipeline to the disposal site.

Compliance with Environmental Protection Statutes

I. Archeological and Historic Preservation Act, as amended, 16 U.S.C. 469 et seq. Active disposal site.

II. Clean Air Act, as amended, 42 U.S.C. 7401 et seq. Review of this Assessment will determine if the proposal is in compliance with this Act.

III. Clean Water Act (Federal Water Pollution Control Act), as amended, 33 U.S.C. 1251 et seq. N/A*

IV. Coastal Zone Management Act of 1972, as amended, 16 U.S.C. 1451 et seq. Review of this Assessment will determine if the proposal is in compliance with this Act.

V. Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq. Review of this Assessment will determine if the proposal is in compliance with this Act.

VI. Estuary Protection Act, 16 U.S.C. 1221 et seq. Review of this Assessment will constitute compliance with this Act.

VII. Federal Water Project Recreation Act, as amended, 16 U.S.C. 4601-12 et seq. N/A

VIII. Fish and Wildlife Coordination Act, as amended, 16 U.S.C. 661 et seq. Review of this Assessment will constitute compliance with this Act.

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

X. Marine Protection, Research, and Sanctuaries Act of 1972, as amended, 33 U.S.C. 1401 et seq. N/A

XI. National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470 et seq. N/A

XII. National Environmental Policy Act of 1969, as amended, 42 U.S.C. 432 et seq. Review of this Assessment will constitute compliance with this Act.

XIII. Rivers and Harbors Appropriation Act of 1899, as amended, 33 U.S.C. 401 et seq. N/A

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*N/A - Not Applicable

XIV. Watershed Protection and Flood Prevention Act, as amended, 16 U.S.C. 1001 *et seq*. N/A

XV. Wild and Scenic Rivers Act, as amended 16 U.S.C. 1271 *et seq*. N/A

Comment and Response

There were only two commentors to the Environmental Assessment on the Maintenance Dredging of Guilford Harbor in Guilford, Connecticut. The U.S. Fish and Wildlife Service stated that the assessment had adequately addressed their concerns; the National Marine Fisheries Service, on the other hand, expressed some reservations on the proposal. The following responds to the National Marine Fisheries Service's comments; both letters are included at the end of this section.

Comments:

1. Although the disposal area is seven acres in total size it is composed of two separate retention areas separated by a road. This fact is not apparent in any of the discussions offered regarding the project. It should be, particularly when containment and dike design are addressed.

2. In the second response on page 4, weir and discharge site locations appear to be reversed. If they are not, we need an explanation of how material will return to the river from the southeast corner of the disposal area.

3. The first response on page 5 is also inaccurate or requires a discussion similar to that noted in our point 2 above. If the location of the weir is in the southeast corner of the disposal area as stated, the effluent will flow into an extensive saltmarsh. Should this actually be the proposed effluent discharge site, we would be opposed to that location.

Response:

The first three comments show a misunderstanding over the location of the disposal site. Inspection of Figure 2 in the Environmental Assessment shows the disposal site located immediately adjacent to the West River, and slightly upstream of the Guilford Yacht Club. This places the site on the west side of the road leading into the yacht club. The weir would be placed in the southeast portion of the dike, as stated in the assessment; thus the weir would be just a few feet from the river itself, and the effluent would not discharge into an extensive saltmarsh. This explanation answers your first three comments.

Comment:

4. The second comment on page 5 regarding the sequence of dredging fails to address our concern. We recommended dredging the Guilford Yacht Club basin last to avoid the need to redredge the basin when fine grained materials from the disposal area resettle there. Simply put, why dredge the club basin twice if a little forethought could preclude that need?

Response:

The assessment notes on page 3 that plants are excellent for slowing down the flow of water in a disposal site. This allows solids to settle out. The disposal site contains a pure stand of phragmites; consequently most solids would settle out before reaching the weir. With this in mind, you can appreciate why very little material from the disposal site should reach the basin at the yacht club. Therefore, it should make little difference whether the yacht club is done first or last. But as we point out in the assessment, "The Guilford Yacht Club dredging would be a private undertaking. The only way the Corps can have control over this dredging is if the yacht club uses the same contractor as the Corps uses. If this should be the case, our contract would require that the Government dredging be completed before the contractor could undertake any private work."

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ECOLOGICAL SERVICES
P.O. Box 1518
Concord, New Hampshire 03301

Ref: NEDPL-I

JAN 7 1981

Colonel William E. Hodgson
Acting Division Engineer
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Colonel Hodgson:

We have reviewed the Environmental Assessment and the Finding of No Significant Impact for the maintenance dredging of Guilford Harbor in Guilford, Connecticut.

Our concerns have been adequately addressed in these documents. We would like to repeat our recommendations that:

1. Any wetland areas that are damaged as a result of pipeline placement should be restored to their original state.

2. The period of June 1 and September 30 should be avoided because of fish and shellfish spawning.

Please inform us if there are any changes in the proposed activity.

Sincerely yours,

Gordon E. Beckett

Gordon E. Beckett
Supervisor

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Services Division
Habitat Protection Branch
7 Pleasant Street
Gloucester, MA 01930

JAN 28 1981

Col. William E. Hodgson, Jr.
Acting Division Engineer
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Colonel Hodgson:

The National Marine Fisheries Service has reviewed the environmental assessment document for the proposed maintenance dredging of Guilford Harbor at Guilford, Connecticut. We offer the following comments for your consideration:

1. Although the disposal area is seven acres in total size it is composed of two separate retention areas separated by a road. This fact is not apparent in any of the discussions offered regarding the project. It should be, particularly when containment and dike design are addressed.

2. In the second response on page 4, weir and discharge site locations appear to be reversed. If they are not, we need an explanation of how material will return to the river from the southeast corner of the disposal area.

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We hope that this review clarifies our concerns and that the New England Division will modify the document to address these issues.

Sincerely,

Ruth Rehfus

Ruth Rehfus
Acting Branch Chief

Bohlen, F.W.; D.F. Candy and J.M. Tramontano. 1979. Suspended Material Distributions in the Wake of Estuarine Channel Dredging Operations. Estuarine and Coastal Marine Science. 9, 699-711.

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FINDING OF NO SIGNIFICANT IMPACT

MAINTENANCE DREDGING

OF

GUILFORD HARBOR

GUILFORD, CONNECTICUT

Prepared by
Department of the Army
New England Division, Corps of Engineers
Waltham, Massachusetts 02254

December 1980

Findings of No Significant Impact

I have reviewed the information presented in the Environmental Assessment (EA) for the maintenance dredging of Guilford Harbor in Guilford, Connecticut. The analysis presented in the Assessment shows that there should not be any significant release of suspended sediments at either the dredge or disposal site. Further, there should not be any significant release of contaminants. The concerns expressed by various State and Federal agencies were addressed in the Assessment, and we will adhere to many of the conditions these agencies wanted imposed; however, in some instances the EA evaluation revealed that certain conditions were unwarranted.

Since there would be no significant impacts associated with this project, a formal Environmental Impact Statement will not be prepared. These Findings and Environmental Assessment will be distributed to concerned agencies for 30-days of review.

28 November 1980
DATE

WILLIAM E. HODGSON, JR.
Colonel, Corps of Engineers
Acting Division Engineer

ENVIRONMENTAL ASSESSMENT

MAINTENANCE DREDGING

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GUILFORD HARBOR

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Prepared by
Department of the Army
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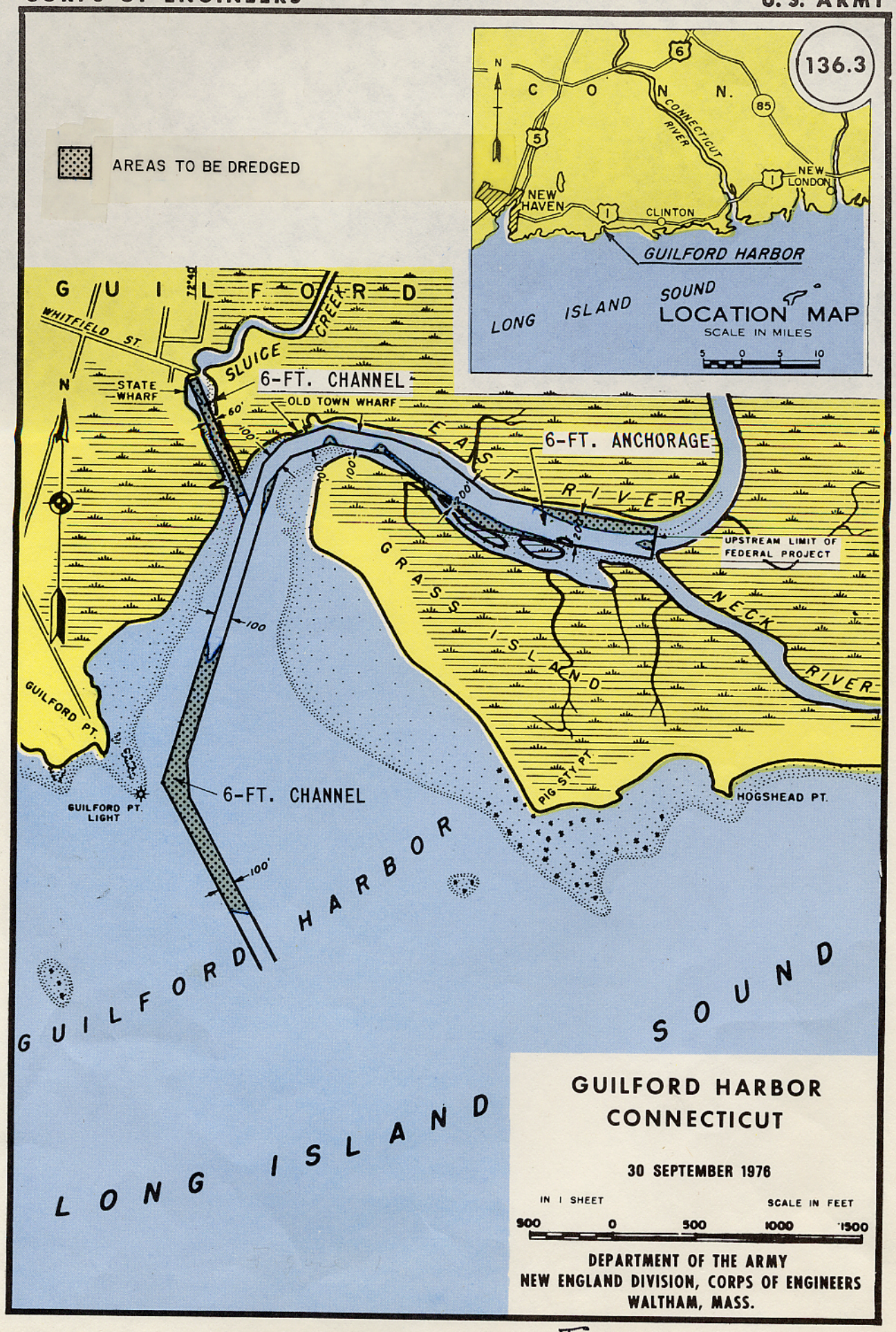
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Figure 1

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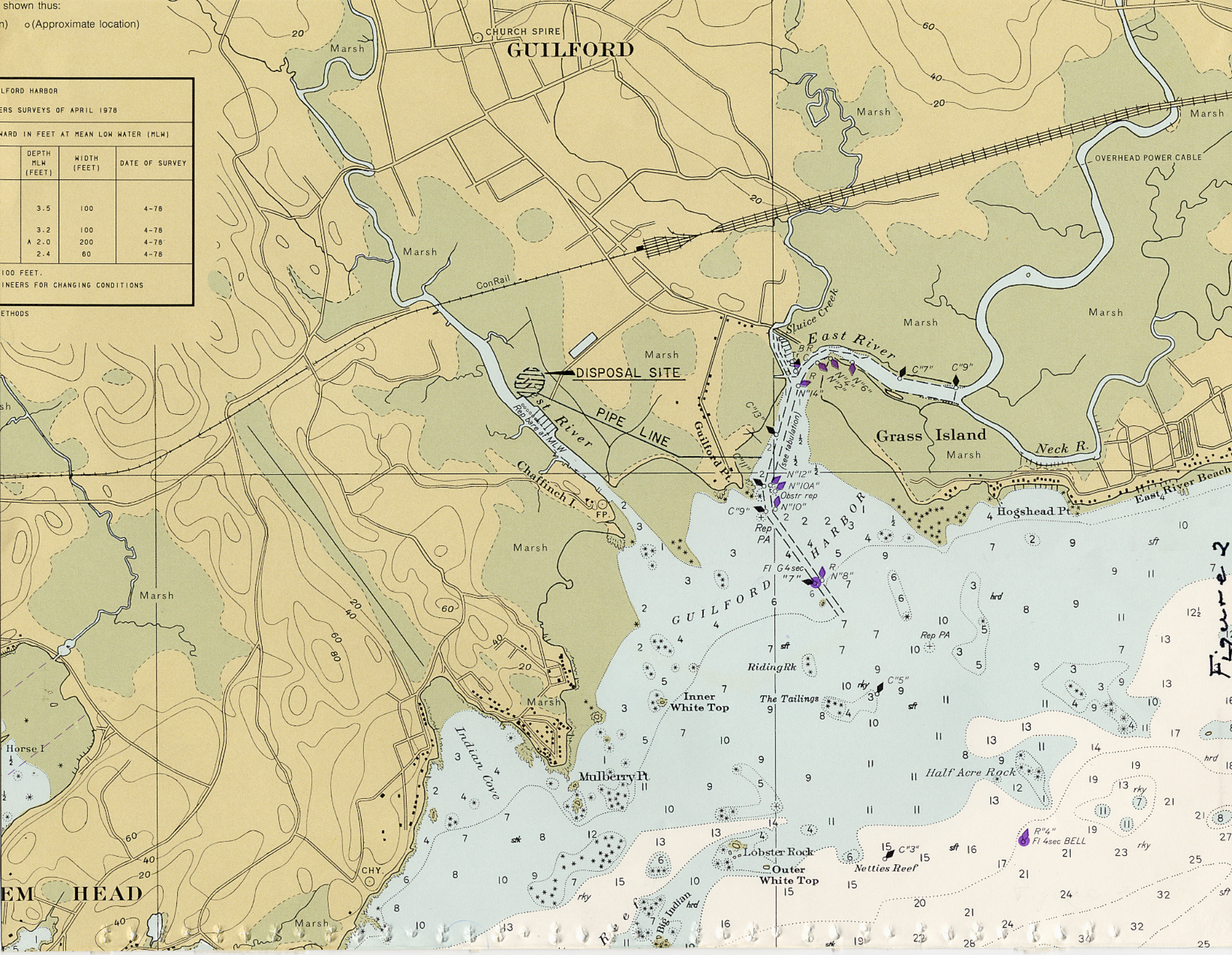

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As a hydraulic dredge removes sediments, it mixes the sediments in a slurry and pumps this slurry to the dispoal site. It has generally been preceived that this mixing of sediments with water could lead to the

release of some contaminants from the sediments into the slurry water. When this water is discharged back into a water system, the constituents could be available to organisms.

A number of studies have been conducted on the release of pollutants during hydraulic dredging (Lu et al. 1978; Hoeppel et al., 1978, Lee et al. 1972, and Windon, 1973). In general, it has been found that there is not a substantial release of contaminants into the water; most constituents remain bound to the sediment solids. The first three studies also found that plant life found in disposal sites are excellent for slowing down the flow of water over the site. This allows solids to settle out, and the contaminants are retained at the disposal site.

The disposal site we propose to use is approximately 7-acres, and contains a pure stand of phragmites. Consequently, we expect that few contaminants would be discharged in the waters of the West River. We also expect that turbidity would not be a problem at either dredging or disposal site.