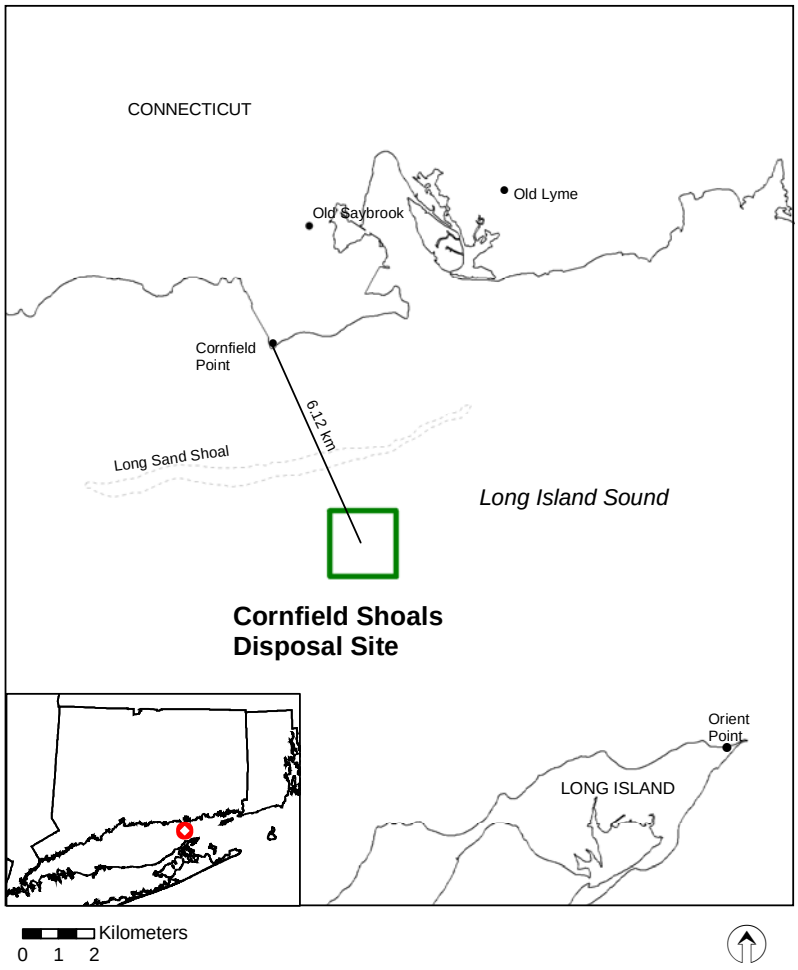
Monitoring Survey at the Cornfield Shoals Disposal Site
June 2004

Disposal Area Monitoring System DAMOS

DISPOSAL AREA MONITORING SYSTEM

Contribution 160
August 2005

US Army Corps of Engineers ®
New England District



This report should be cited as:

ENSR. 2005. Monitoring Survey at the Cornfield Shoals Disposal Site, June 2004. DAMOS Contribution No. 160. U.S. Army Corps of Engineers, New England District, Concord, MA, 26 pp.

REPORT DOCUMENTATION PAGE

form approved
OMB No. 0704-0188

1. AGENCY USE ONLY (LEAVE BLANK)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	August 2005	FINAL REPORT

4. TITLE AND SUBTITLE
Monitoring Survey at the Cornfield Shoals Disposal Site June 2004

5. FUNDING NUMBERS

6. AUTHOR(S)
ENSR International, CoastalVision, and Ocean Surveys, Inc.

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
ENSR International
2 Technology Park Drive
Westford, MA 01886

8. PERFORMING ORGANIZATION REPORT NUMBER
ENSR-9000-373-110

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
US Army Corps of Engineers-New England District
696 Virginia Rd
Concord, MA 01742-2751

10. SPONSORING/MONITORING AGENCY REPORT NUMBER
Contribution No. 160

11. SUPPLEMENTARY NOTES
Available from DAMOS Program Manager, Regulatory Division
USACE-NAE, 696 Virginia Rd, Concord, MA 01742-2751

12a. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

12b. DISTRIBUTION CODE

13. ABSTRACT

The Cornfield Shoals Disposal Site (CSDS) was monitored as part of the Disposal Area Monitoring System (DAMOS) on 14-16 June 2004. The June 2004 field effort consisted of a bathymetric survey designed to document any significant accumulation of dredged material around the center of the disposal site since the previous set of investigations in the early 1990s. More than 300,000 m^3 of dredged material had been disposed at CSDS since the studies performed in 1992 and 1994, with all of the disposal directed to the center of the site. The results of the June 2004 bathymetric survey found no distinct disposal mounds at CSDS. A comparison of the 2004 and 1992 bathymetry data indicated that limited accretion (less than one meter in thickness) was present to the west of the disposal target and limited erosion was noted to the east. The lack of a distinct mound at CSDS and limited areas of apparent accretion and erosion were consistent with sediment transport patterns observed in earlier surveys, further documenting the dispersive nature of this site and the dominant east-west transport orientation.

14. SUBJECT TERMS DAMOS, Cornfield Shoals Disposal Site, Dredged Material

15. NUMBER OF TEXT PAGES: 26

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified			

MONITORING SURVEY AT THE CORNFIELD SHOALS DISPOSAL SITE JUNE 2004

CONTRIBUTION #160

August 2005

Report No.
ENSR-9000-373-110

Submitted to:
New England District
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Prepared by:
ENSR International, CoastalVision, and
Ocean Surveys, Inc.

Submitted by:
ENSR International
2 Technology Park Drive
Westford, MA 01886
(978) 589-3000

US Army Corps
of Engineers®
New England District

TABLE OF CONTENTS

Page

LIST OF TABLES ii
LIST OF FIGURES iii
EXECUTIVE SUMMARY iv

1.0 INTRODUCTION 1
1.1 Overview of the DAMOS Program 1
1.2 Introduction to the Cornfield Shoals Disposal Site 1
1.3 Historic Dredged Material Disposal and Previous Monitoring Studies 2
1.4 Recent Dredged Material Disposal Activity 6
1.5 Survey Objectives 6

2.0 METHODS 12
2.1 Navigation and On-Board Data Acquisition 12
2.2 Bathymetry 12
2.2.1 Bathymetric Data Collection 12
2.2.2 Bathymetric Data Processing 15
2.2.3 Bathymetric Data Analysis 15

3.0 RESULTS 17

4.0 DISCUSSION 21

5.0 CONCLUSIONS 24

6.0 REFERENCES 25

APPENDICES

A DISPOSAL BARGE LOG SUMMARY FOR CSDS - JULY 1994 TO JUNE 2004

INDEX

LIST OF TABLES

Page

Table 1-1. Overview of Survey Activities at CSDS..... 3

Table 1-2. Overview of Recent Disposal Activity at CSDS..... 7

Table 2-1. June 2004 CSDS Field Activities Summary..... 13

LIST OF FIGURES

Page

Figure 1-1. Location of the Cornfield Shoals Disposal Site 4

Figure 1-2. CSDS with 1994 - 2004 dredged material disposal locations indicated 9

Figure 1-3. Annual distribution of dredged material disposal at CSDS 10

Figure 2-1. Actual bathymetric survey lines at CSDS, June 2004 14

Figure 3-1. Bathymetric contour map of CSDS survey area, June 2004 (1-m contour interval) 18

Figure 3-2. Bathymetric contour map of CSDS survey area, August 1992 (1-m contour interval) 19

Figure 3-3. Depth difference contour map of CSDS survey area, August 1992 vs. June 2004 survey results (0.5-m contour interval) 20

Figure 4-1. Bathymetry surrounding CSDS 22

Figure 4-2. Long Island Sound bathymetry 23

EXECUTIVE SUMMARY

A monitoring survey was conducted in June 2004 at the Cornfield Shoals Disposal Site (CSDS) as part of the Disposal Area Monitoring System (DAMOS). CSDS is located in eastern Long Island Sound. The site has received dredged material since 1961 and is characterized as a dispersive disposal site. A series of surveys were conducted at CSDS in 1991, 1992, and 1994 because of concerns that dispersed material could be transported to shellfish beds to the north of the site. These surveys documented the dispersive nature of the site, but revealed that sediment transport from the site was oriented in an east-west direction aligned with the predominant tidal currents.

The June 2004 field effort consisted of a bathymetric survey designed to document any significant accumulation of dredged material around the center of the disposal site since the previous set of investigations in the early 1990s. More than 300,000 m^3 of dredged material had been disposed at CSDS since the studies performed in 1992 and 1994, with all of the disposal directed to the center of the site. The 2004 bathymetric survey was performed over a 1.96 km^2 area at the center of CSDS.

The results of the June 2004 bathymetric survey found no distinct disposal mounds at CSDS. A comparison of the 2004 and 1992 bathymetry data indicated that limited accretion (less than one meter in thickness) was present to the west of the disposal target and limited erosion was noted to the east. At a depositional disposal site, 335,000 m^3 of disposal would be expected to form a mound approximately 2 m in height and 300 to 400 m in diameter. The lack of a distinct mound at CSDS and limited areas of apparent accretion and erosion were consistent with sediment transport patterns observed in earlier surveys, further documenting the dispersive nature of this site and east-west transport orientation.

1.0 INTRODUCTION

A monitoring survey was conducted at the Cornfield Shoals Disposal Site in June 2004 as part of the U.S. Army Corps of Engineers (USACE) New England District (NAE) Disposal Area Monitoring System (DAMOS). DAMOS is a comprehensive monitoring and management program designed and conducted to address environmental concerns associated with use of open-water disposal sites throughout the New England region. An introduction to the DAMOS Program and the Cornfield Shoals Disposal Site, including a brief description of previous dredged material disposal activities and previous monitoring surveys, is provided below.

1.1 Overview of the DAMOS Program

The DAMOS Program features a tiered management protocol designed to ensure that any potential adverse environmental impacts associated with dredged material disposal activities are promptly identified and addressed (Germano et al. 1994). For over 25 years, the DAMOS Program has collected and evaluated disposal site data throughout New England. Based on these data, patterns of physical, chemical, and biological responses of seafloor environments to dredged material disposal activity have been documented (Fredette and French 2004).

DAMOS monitoring surveys are designed to test hypotheses related to expected physical and ecological response patterns following placement of dredged material on the seafloor at established disposal sites. Thus, the data collected during DAMOS monitoring surveys provide answers to strategic management questions. The results of each monitoring survey are evaluated to determine the next step in the disposal site environmental management process.

One of the primary goals of DAMOS monitoring surveys has been to document the physical location of dredged material placed on the seafloor. Bathymetric data collection is conducted periodically at disposal sites, and these sequential measurements allow for characterization of the height and extent of discrete dredged material deposits or mounds created at disposal sites. DAMOS monitoring surveys may also feature additional types of data collection activities, such as sediment-profile imaging, side-scan sonar, and sediment coring, as deemed appropriate to achieve specific survey objectives.

1.2 Introduction to the Cornfield Shoals Disposal Site

The Cornfield Shoals Disposal Site (CSDS) is one of four regional dredged material disposal sites located in the waters of Long Island Sound. CSDS is situated in eastern Long Island Sound, approximately 6 km southeast of Cornfield Point in Old

Saybrook, Connecticut and centered at 41° 12.686' N, 72° 21.491' W (NAD 83). CSDS occupies 3.43 km^2 and is defined as a 1.85 x 1.85 km area on the seafloor (Figure 1-1).

CSDS is one of two open water dredged material disposal sites managed by USACE NAE as a non-depositional site (CSDS is managed as a dispersive disposal site and Buzzards Bay Disposal Site as a semi-dispersive site); all other DAMOS disposal sites are containment sites where it is expected that the dredged material remains on site as a stable deposit. At dispersive sites, some material is expected to leave the site, and no attempt is made to create stable mounds of dredged material. With the 50-meter depths and strong tidal currents present at the CSDS site, some material is likely to be dispersed following release during descent through the water column. Much of the sediment that does reach the bottom is subsequently remobilized and transported by tidal currents away from the disposal location and potentially beyond the CSDS, likely within a period of weeks to months following disposal (SAIC 1996a).

There has not been a disposal buoy or beacon deployed at CSDS to identify the present disposal location within the site since 1992. Instead, barge operators are given specific coordinates within the disposal boundaries to navigate to and release the dredged material. The majority of disposal activity at CSDS has been concentrated at the center of the site. In practice, it is expected that barge disposal occurs in a cluster around the target location but that some disposal events could occur at other locations within CSDS.

1.3 Historic Dredged Material Disposal and Previous Monitoring Studies

CSDS has been used regularly as a regional disposal site since 1978, receiving over 700,000 m^3 of dredged material over the past 26 years. Monitoring surveys have been performed periodically since 1978 to explore potential mound formation and to characterize the hydrodynamics and sediments at CSDS (Table 1-1). No well-defined dredged material mounds were detected at CSDS by bathymetric surveys performed in 1978, 1987, and 1990, although a 1990 SPI survey detected fine-grained dredged material near the center of the site (NUSC 1979, SAIC 1994, SAIC 1996a). The 1990 survey also provided evidence of active sediment transport at CSDS and raised concerns from National Marine Fisheries Service and the Connecticut Department of Environmental Protection of possible impacts of suspended sediment transport on shellfish beds located north of Long Sand Shoal, approximately 2 km north of CSDS (Figure 1-1) (SAIC 1996a). To address these concerns, a series of studies were undertaken from 1991 to 1994 to further characterize oceanographic and sediment transport patterns at CSDS.

In 1991, two moorings were deployed at CSDS to measure mid-depth and near-bottom current direction and magnitude, and near-bottom suspended sediment

Table 1-1.
Overview of Survey Activities at CSDS

Date	Purpose of Survey	Bathymetry Area (mxm)	# SPI Stations	Additional Studies	Contribution No.
1/1978	Monitoring	1800x1900	--	Current	Supplement G
7/1978	Monitoring	1800x1900	--	Benthic	Supplement G
7/1987	Monitoring	1000x1000	--	--	70
7/1990	Deposit Delineation	1000x1000	13	Testing Usefulness of REMOTS® Technology	90
8/1991	Evaluation of bed transport	1200x1200	--	Current and OBS meters	105
10/1991	Evaluation of bed transport	1200x1200	--	Current and OBS meters	105
12/1991	Evaluation of bed transport	1000x1000	--	Current and OBS meters	105
5/1992	Evaluation of bed transport	1200x1200	45	Benthic	105
8/1992	Deposit delineation	1200x1200	25	Sediment Density	106
7/1994	Deposit delineation	1000x750	--	Acoustic subbottom	110

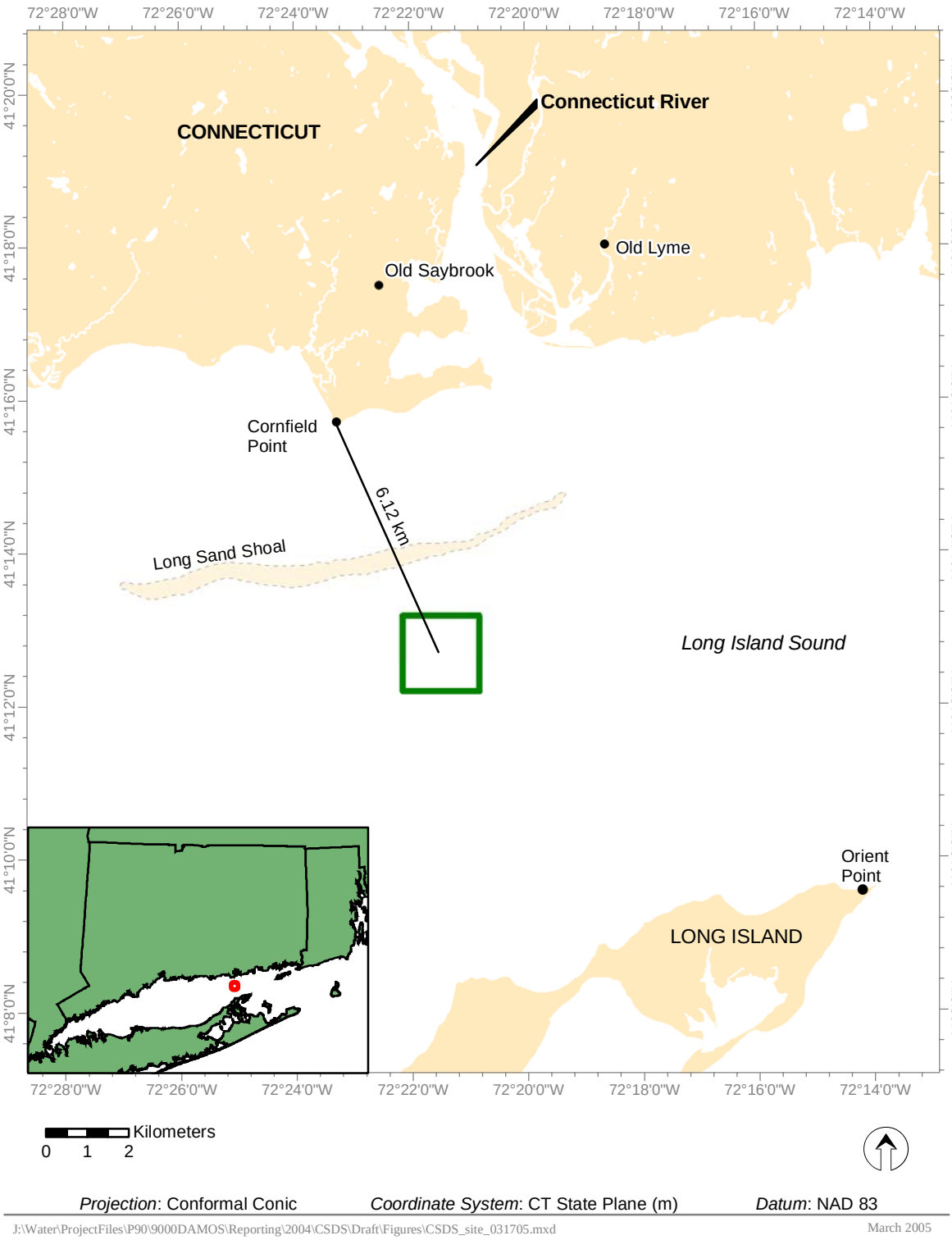


Figure 1-1. Location of the Cornfield Shoals Disposal Site

concentrations (SAIC 1996a). The moorings were deployed for approximately five months during the disposal season. Both mid-depth and near bottom measurements showed a dominant east-west semi-diurnal tidal component, with maximum velocities during the flood tide. Observed turbidity levels increased following discrete disposal events, and as dredged material accumulated throughout the disposal season, observed increases in background turbidity at the site were attributed to tidal resuspension and winnowing of finer particles (SAIC 1996a).

Between August 1991 and May 1992, a series of four bathymetric surveys were performed, one before the disposal season, one following disposal of sandy dredged material, one during ongoing disposal of fine-grained material, and one at the completion of the disposal season (SAIC 1996a). Depth-difference comparisons between sequential surveys indicated shifts in sediment accumulation locations consistent with the dominant current direction, but formation of only one limited mound. In the May 1992 bathymetric survey, following disposal of approximately 105,000 m^3 of cohesive, fine-grained material, a mound with dimensions of approximately 100 by 150 m and rising approximately 0.5 m above the seafloor was observed at the disposal location.

A SPI survey performed at the completion of the 1991-1992 disposal season identified fine-grained dredged material at a number of stations surrounding the disposal location (SAIC 1996a). At several stations, a thin layer of sand was detected over the fine-grained dredged material, which thickened with increasing distance away from the center of the mound. The presence of sand over the dredged material provided evidence of active bedload transport at CSDS and the relative stability of some of the cohesive, fine-grained material that was disposed.

In August 1992, a survey including bathymetry, SPI, and acoustic measurement of sediment density was performed to delineate the extent of the fine-grained dredged material and to measure the sand thickness above the dredged material (SAIC 1996b). The bathymetric survey found little change in water depth between May and August 1992, indicating continued stability of the limited mound that had formed at the disposal site. SPI images at several stations reported sand for the full penetration of the camera where previously sand over dredged material was observed, suggesting continued transport of sand over the fine-grained deposit. Sand waves observed in the SPI images also indicated transport. The acoustic survey was unable to resolve density differences in the surficial sediments of the mound area.

In July 1994, a bathymetric and subbottom profile survey was performed to further map the persistence and extent of the fine-grained dredged material deposit observed in 1992. Comparison of the July 1994 and August 1992 bathymetry data revealed very little

change in bottom topography (SAIC 1996c). The subbottom survey was able to resolve the limited dredged material mound, consistent with the bathymetric surveys and earlier SPI survey. The subbottom survey also showed ripple and wave features on the bottom, assumed to be sand structures. These structures were not observed at the same locations as they appeared in the SPI survey, further supporting the observations of active bed transport and a dynamic sediment surface layer at CSDS (SAIC 1996c).

In summary, results from the surveys performed at CSDS from 1991 to 1994 provided further evidence of a dispersive site with active sediment transport. Distinct disposal mounds had not formed at CSDS, although deposition of a relatively large volume of mechanically dredged, cohesive fine-grained material resulted in a low mound that was subsequently buried under shifting sand. Shifts in areas of sediment accumulation and erosion between subsequent surveys indicated ongoing sediment transport and a dynamic sediment bed at CSDS. Although the actual direction and magnitude of active bed transport apparently depends on local topography and the nature of materials being transported, in general, studies at CSDS showed active bed transport appeared to follow the predominant east-west current direction (SAIC 1996a). These survey results served to relieve concerns about transport of material to shellfish beds to the north of CSDS.

1.4 Recent Dredged Material Disposal Activity

Since the July 1994 survey, approximately 335,000 m^3 of dredged material has been placed at the center of CSDS (Table 1-2). The dredged material originated from various coves, rivers, and yacht clubs along the eastern coast of Connecticut, primarily from the Connecticut River area. Disposal was targeted at the center of the site (Figure 1-2). Dredged material disposal seasonal totals ranged from approximately 11,000 m^3 in 2001-2002 to approximately 97,000 m^3 in 1997-1998 (Figure 1-3). A detailed record of barge disposal activity at CSDS for the period from July 1994 to June 2004, including the origin of dredged material, the volume deposited, and the disposal location is provided in Appendix A.

1.5 Survey Objectives

The overall objective of the June 2004 CSDS survey was to document the distribution of any accumulated dredged material around the center of the disposal site. Specific survey objectives included completion of a single beam bathymetric survey to map seafloor topography and comparison with previous data to evaluate changes in bathymetry.

Table 1-2.
Overview of Recent Disposal Activity at CSDS

Source Project	Estimated Scow Volume Disposed (m^3)									
	1994-95 Season	1995-96 Season	1996-97 Season	1997-98 Season	1998-99 Season	1999-00 Season	2000-01 Season	2001-02 Season	2002-03 Season	2003-04 Season
Cedar Island Landing	--	--	--	9,576	--	--	--	--	--	--
Connecticut River, Between the Bridges	--	--	--	--	--	--	--	--	9,710	6,040
Connecticut River, Hull Harbor One	--	--	--	--	--	4,931	2982	--	--	--
Connecticut River, Hull Harbor One Marina	--	--	--	--	--	--	--	--	3,976	2,944
Connecticut River, Offshore East Marine	--	--	4,282	--	--	--	--	--	--	--
Connecticut River, Old Saybrook, CT; Island Cove Marina	--	28,751	7,894	--	--	--	--	--	--	--
Connecticut River, Old Saybrook, CT; River Landing Marina	478	5,161	--	--	--	--	--	--	--	--
Connecticut River, Saybrook Point Marina 1992	12,137	--	7,837	4,931	--	--	--	--	--	--
Connecticut River, Saybrook Point Marina 1999	--	--	--	--	--	--	11,698	--	--	8,563
Deep River	6,460	--	--	--	--	--	--	--	--	--
Essex Yacht Club	--	--	--	--	5,658	--	--	--	--	--
Hammonassett River, Clinton Yacht Haven	--	--	--	--	879	33,698	--	--	--	--
Hammonassett River, Riverside Basin Marina	--	--	--	--	--	--	917	--	--	--
Indian Town Harbor, Indian Town Association 1995	--	--	2,810	8,066	19,037	--	--	--	--	--
Indian Town Harbor, Indian Town Association 2002	--	--	--	--	--	--	--	--	2,905	--
Indian-Hammock Rivers	--	--	--	--	--	--	--	--	18,235	612
Marina, Island Cove Marina	--	--	--	--	--	--	--	1,873	--	--

Table 1-2 (continued)
Overview of Recent Disposal Activity at CSDS

Source Project	Estimated Scow Volume Disposed (m^3)									
	1994-95 Season	1995-96 Season	1996-97 Season	1997-98 Season	1998-99 Season	1999-00 Season	2000-01 Season	2001-02 Season	2002-03 Season	2003-04 Season
Menunketesucket and Patchogue Rivers	--	--	--	--	--	--	--	7,493	5,275	765
North Cove	--	--	--	2,599	--	--	--	--	--	--
Patchogue Harbor	--	--	--	--	--	--	--	--	--	2,982
Patchogue River Westbrook, CT; Pilots Point Marina Inc	--	--	4,931	9,519	7,149	--	--	--	--	--
Patchogue River, COE-Patchogue River	--	--		31,117	--	--	--	--	--	--
Patchogue River, Town of Westbrook 1997	--	--	3,899	--	--	--	--	--	--	--
Patchogue River at Westbrook CT 1996	--	1,185	--	--	--	--	--	--	--	--
Pratt Cove	--	--	--	--	--	--	--	--	2,087	--
River Landing	--	--	4817	16,572	--	2,255	--	--	--	--
Season Total	19,076	35,097	36,469	82,381	32,723	40,885	15,597	9,366	42,188	21,904
Grand Total	335,685									

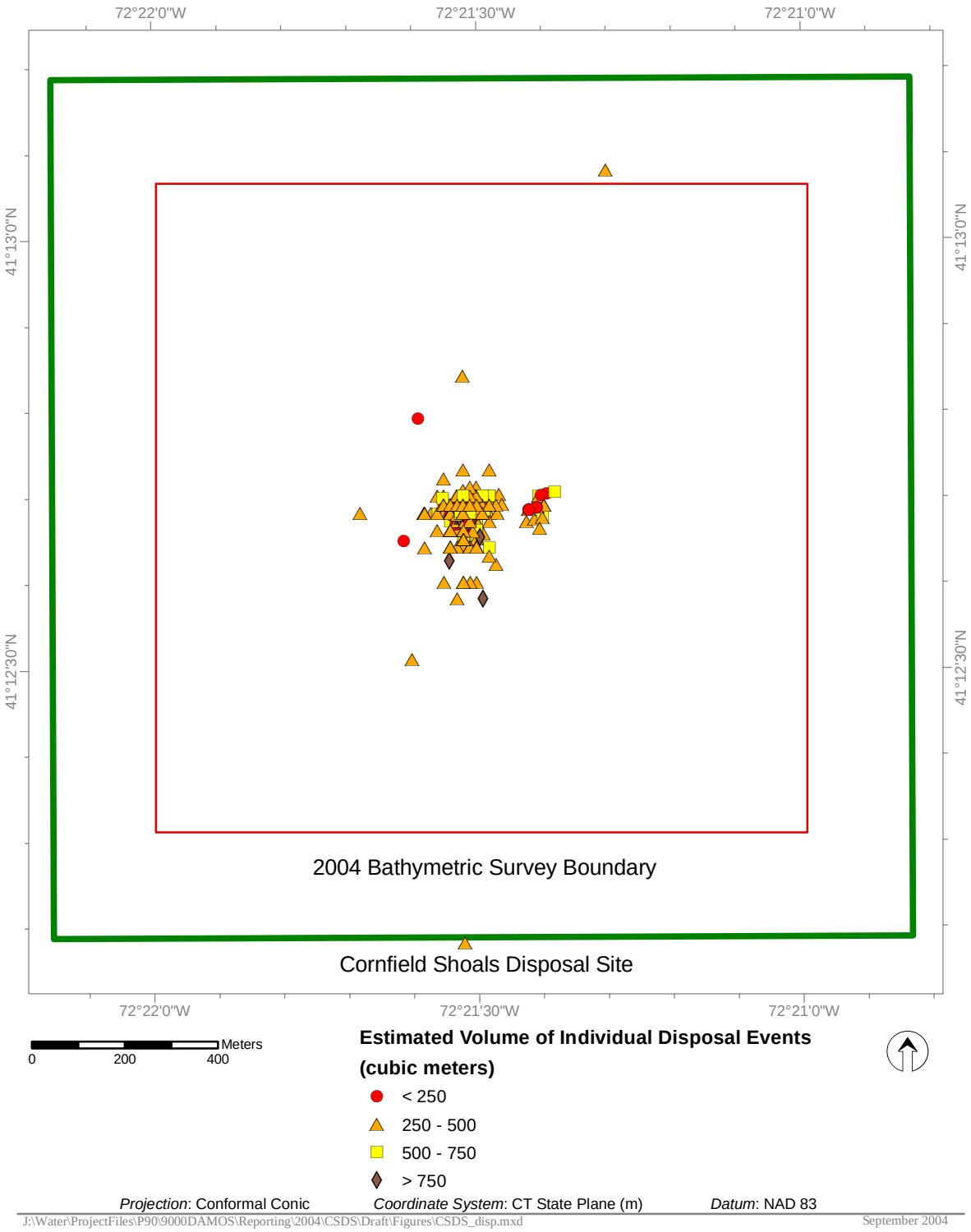


Figure 1-2. CSDS with 1994 - 2004 dredged material disposal locations indicated

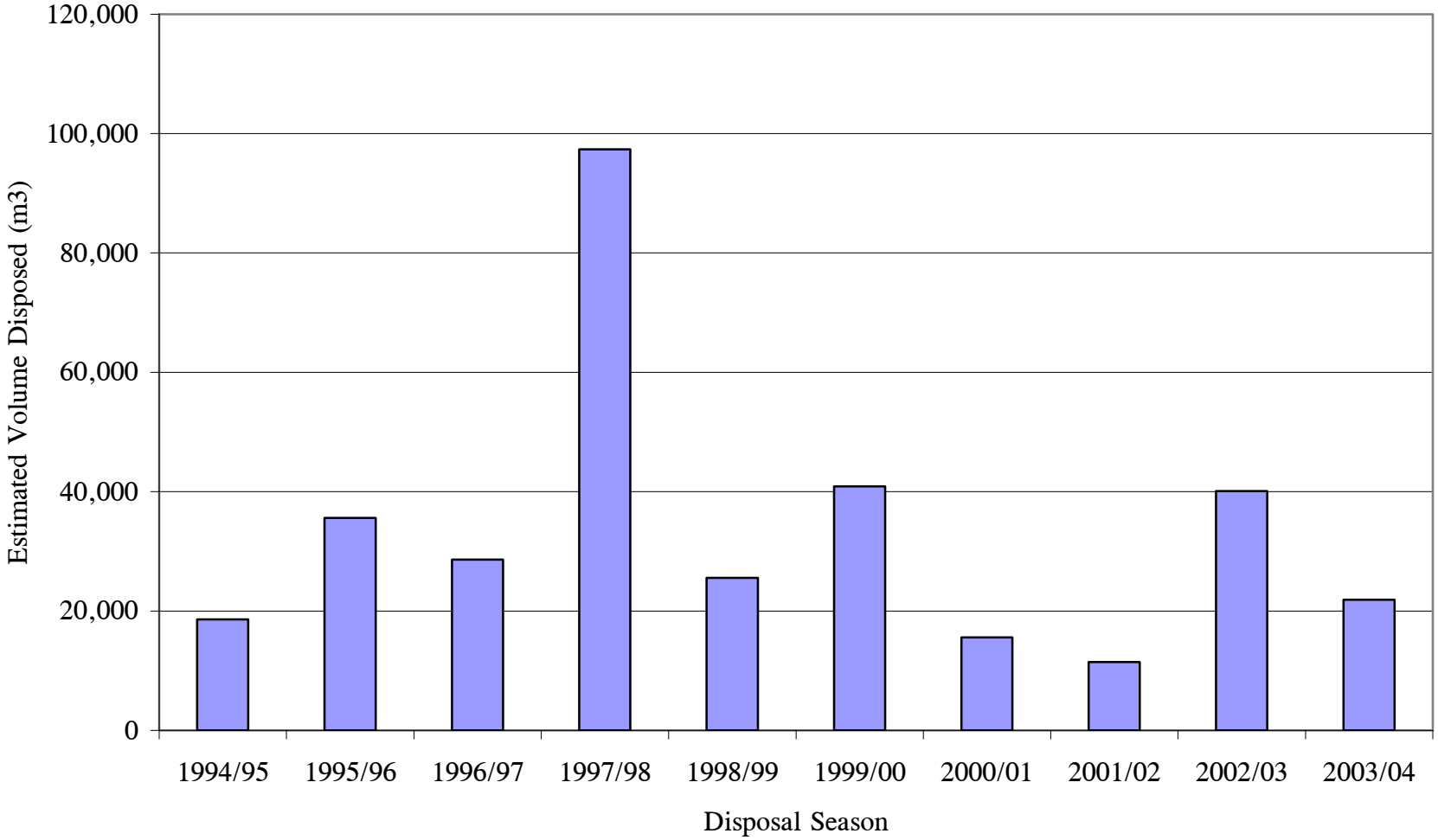


Figure 1-3. Annual distribution of dredged material disposal at CSDS

The design of the June 2004 survey allowed assessment of the following expectation:

- Given the dispersive nature of CSDS, the release of 335,000 m^3 of dredged material at the center of CSDS over 10 years will result in little to no change in the bottom elevation of the site.

2.0 METHODS

A team of investigators from ENSR International and Ocean Surveys, Inc. conducted the June 2004 bathymetric survey at CSDS. The survey was conducted 14 – 16 June 2004. Field activities are summarized in Table 2-1, and an overview of the methods used to collect, process, and analyze the survey data is provided below. A more detailed description of methodology and the related terminology can be found in ENSR (2004).

2.1 Navigation and On-Board Data Acquisition

Positional data, comprised of horizontal positioning (x- and y-dimensional data) and time (t-dimensional data), were collected using a Trimble 4000 series Global Positional System (GPS) receiver interfaced with a Trimble Probeacon differential beacon receiver. This system received and processed satellite and land-based beacon data and provided real-time vessel position, typically to sub-meter accuracy. Coastal Oceanographics, Inc. HYPACK® hydrographic survey software was used to acquire, integrate, and store all positional data from the DGPS as well as bathymetric and station data. The HYPACK® software also displayed real-time vessel position and bathymetric data over a background electronic chart of the study area, thus enabling survey scientists to review and evaluate survey data on a real-time basis.

2.2 Bathymetry

Bathymetric surveys provide measurements of water depth that, when processed, can be used to map the seafloor topography. The processed data can also be compared with previous surveys to track changes in the size and location of seafloor features. This technique is the primary tool in the DAMOS Program for mapping the distribution of dredged material at disposal sites.

2.2.1 Bathymetric Data Collection

The 2004 single-beam bathymetric survey was designed to cover a 1400 x 1400 m area of approximately 1.96 km^2 , centered at 41°12.686' N, 72°21.491'W (NAD 83) (Figure 2-1). The survey area was centered on the region where dredged material disposal occurred from 1994 through 2004. The bathymetric survey was initiated 14 June 2004 aboard the R/V *Parker,* but was aborted the next day due to unfavorable weather conditions. The survey was resumed and completed on 16 June 2004. A total of 57 survey lines, each 25 m apart, were occupied as part of the survey (Figure 2-1). Additional tie-lines were occupied perpendicular to the main survey lines to assess data quality.

Table 2-1.
June 2004 CSDS Field Activities Summary

Survey Type	Date	Summary
Bathymetry	14 – 16 June 2004	Area: 1400 x 1400 m Lines: 57 Spacing: 25 m

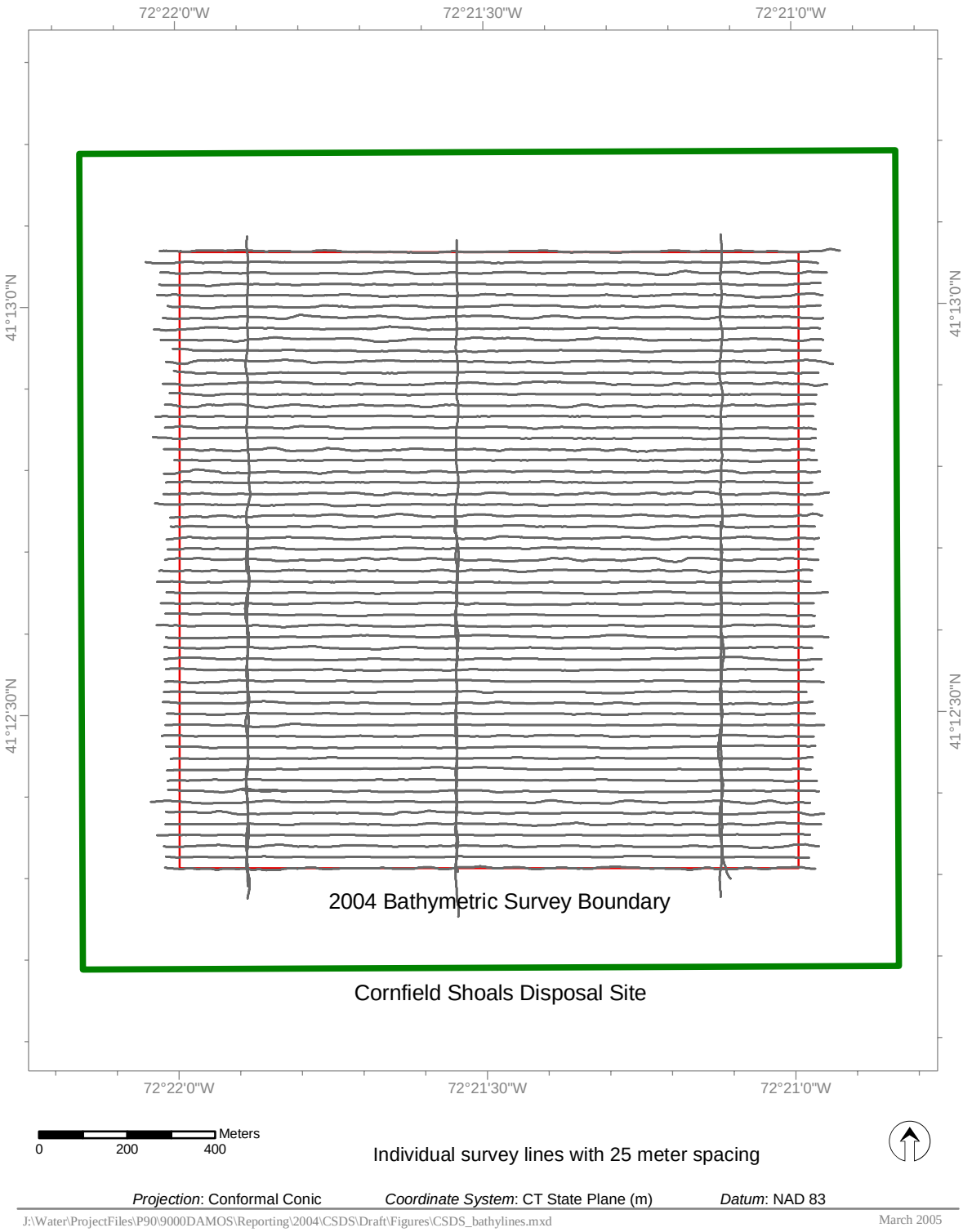


Figure 2-1. Actual bathymetric survey lines at CSDS, June 2004

Bathymetric data were collected using an Innerspace Model 448 Echo Sounder outfitted with an 8° beam, 208 kHz transducer, which achieved an accuracy of approximately 3 cm in the water depths at CSDS. Data were collected at a rate of 17 to 18 soundings per second at boat speeds of approximately 2 m/s (4 knots), resulting in soundings spaced at less than 0.2 m intervals along each survey transect line. Bathymetric data were recorded in feet by means of a high-resolution trace on a thermal printer in addition to the digital data stored within Hypack®. Hypack® managed data acquisition and storage of data from the echosounder and the Trimble DGPS. In addition, Hypack® recorded depth, vessel heave, heading, position, and time along each survey transect line.

Calibration procedures were conducted on-site prior to data collection as well as at the conclusion of each survey day. The average speed of sound through the water column was calculated from salinity and temperature data obtained from a full depth cast of a CTD profiler. Additional calibration information was obtained from a bar check.

2.2.2 Bathymetric Data Processing

The bathymetric data were processed using the HYPACK® software program and included corrections for tidal conditions, local speed of sound, and spurious data points. Tidal correction consisted of transforming the raw measurements of depth below the transducer to seafloor elevation measurements relative to mean low water (MLW) using predicted tidal elevation data from the Old Saybrook Jetty. Heave data supplied by the vessel's motion reference unit was incorporated into the raw data to minimize the effects of vessel motion. The bathymetric data were also reviewed for spurious data points (clearly unrealistic measurements resulting from signal interference), and these points were removed. Once processed, the water depth data were converted to meters.

2.2.3 Bathymetric Data Analysis

Bathymetric data were analyzed to gain a better understanding of the existing conditions at the site and to document changes in seafloor topography in comparison with previous surveys. The corrected bathymetric data were analyzed using a combination of the contouring and surface plotting software program, Surfer® 8.0 and the GIS-based software package ArcView® 9.0. Using Surfer®, the processed CSDS 2004 data were gridded to a cell size of 25m x 25m. Bathymetric contour lines were then generated and displayed using ArcView®.

Surfer® was also used to calculate depth-difference grids based on the July 1994 and June 2004 bathymetric data sets as well as the August 1992 and June 2004

bathymetric data sets. These grids were calculated by subtracting the July 1994 or August 1992 interpolated depth estimates from the June 2004 depth estimates at each point throughout the grid. The resulting depth differences were contoured and displayed using ArcView®.

3.0 RESULTS

The June 2004 bathymetric survey results for CSDS were generally consistent with previous bathymetric results (May 1992, August 1992, and July 1994; SAIC 1996a, 1996b, 1996c) with gently sloping topography from northeast to southwest (Figure 3-1). Water depths ranged from a minimum depth of 46 meters in the northeast corner of the site to a maximum depth a 57.5 meters in the southwestern quadrant (depths reported as MLW). The maximum depth was located within a depression approximately 1.5 meters deep in the southern portion of the site. The disposal of over 335,000 m^3 of dredged material since 1994 had not resulted in the formation of a distinct mound (Figure 3-1).

Historic and recent bathymetric data were compared to evaluate any changes to the seafloor topography of the site. A review of historic bathymetric surveys indicated little change over the period of 1992 to 1994 (SAIC 1996a, 1996, 1996c), and data from the August 1992 survey (Figure 3-2) were selected for comparison with the 2004 data, as it provided the largest area of overlap between the historic and recent surveys. A depth-difference map developed from the August 1992 and the 2004 bathymetric survey data indicated little change over the ten-year period between surveys (Figure 3-3). An area of limited sediment accretion, no greater than 1 m in thickness, was observed in the southwest quadrant of the site, and areas of erosion were indicated on the east and west sides of the surveyed area. The areas of highest apparent erosion (>1 m) could be artifacts of different data processing and interpolation methodologies and different coverage areas between the two surveys, as the greatest depth increase was observed along the 1992 survey boundary.

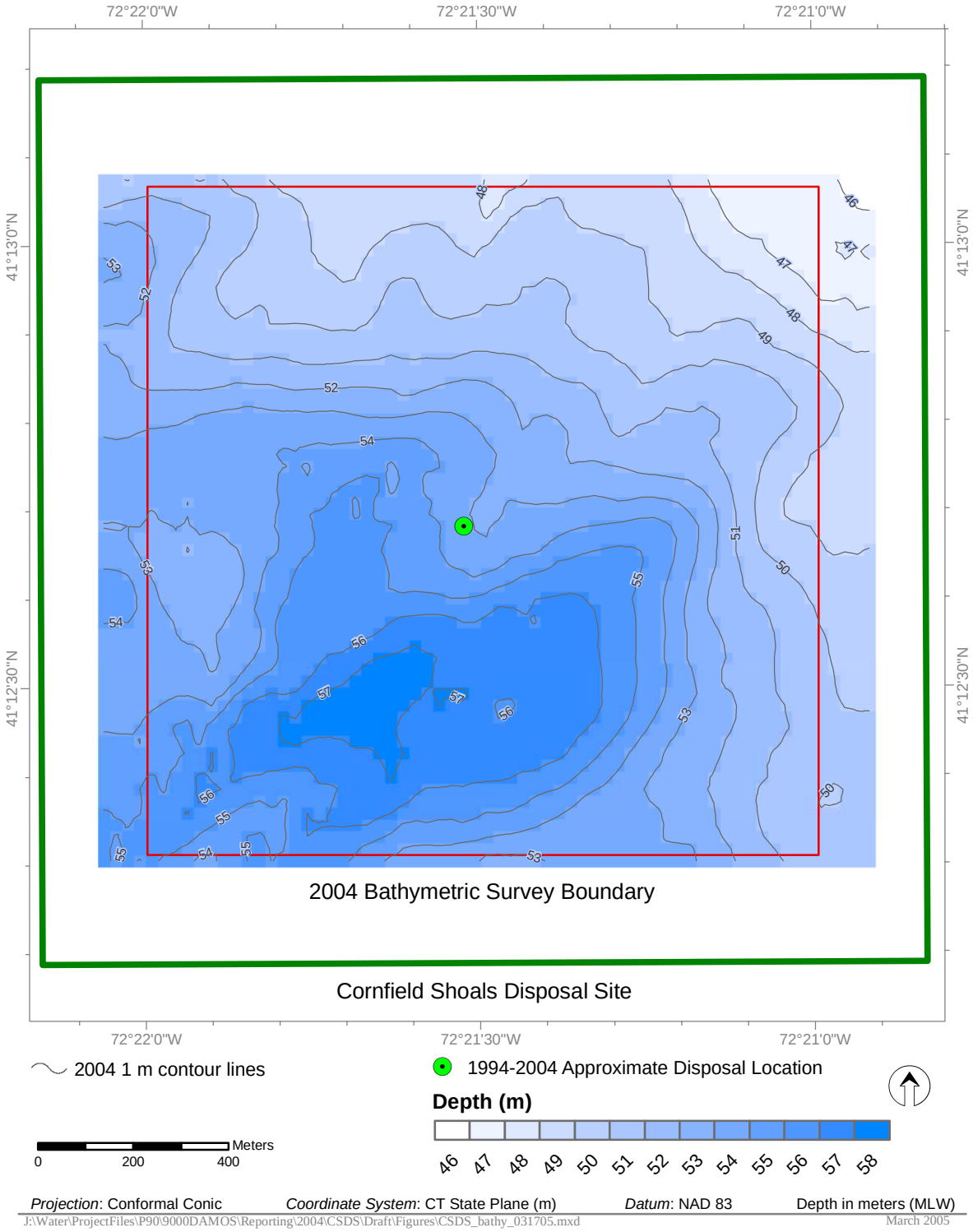


Figure 3-1. Bathymetric contour map of CSDS survey area, June 2004 (1-m contour interval)

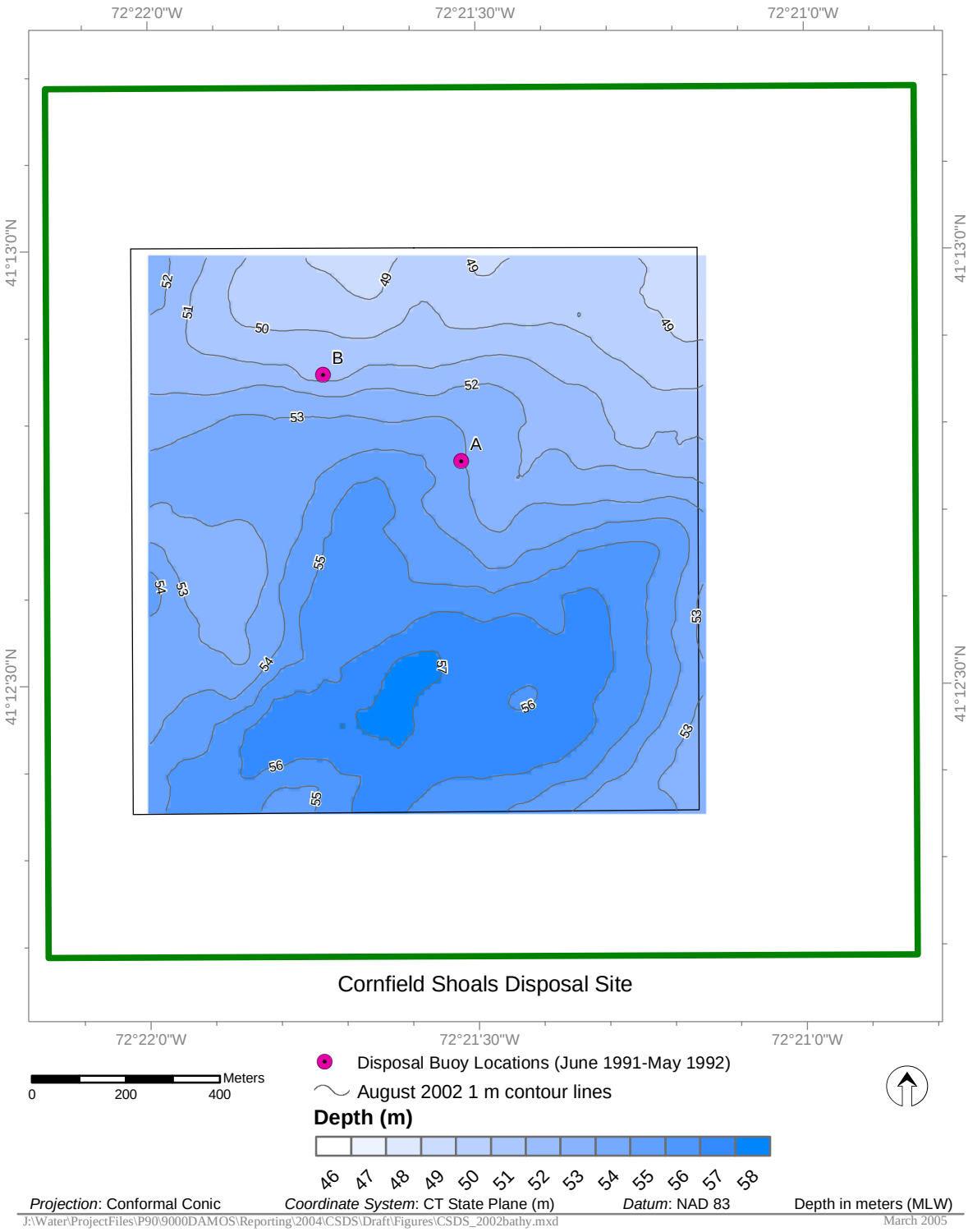


Figure 3-2. Bathymetric contour map of CSDS survey area, August 1992 (1-m contour interval)

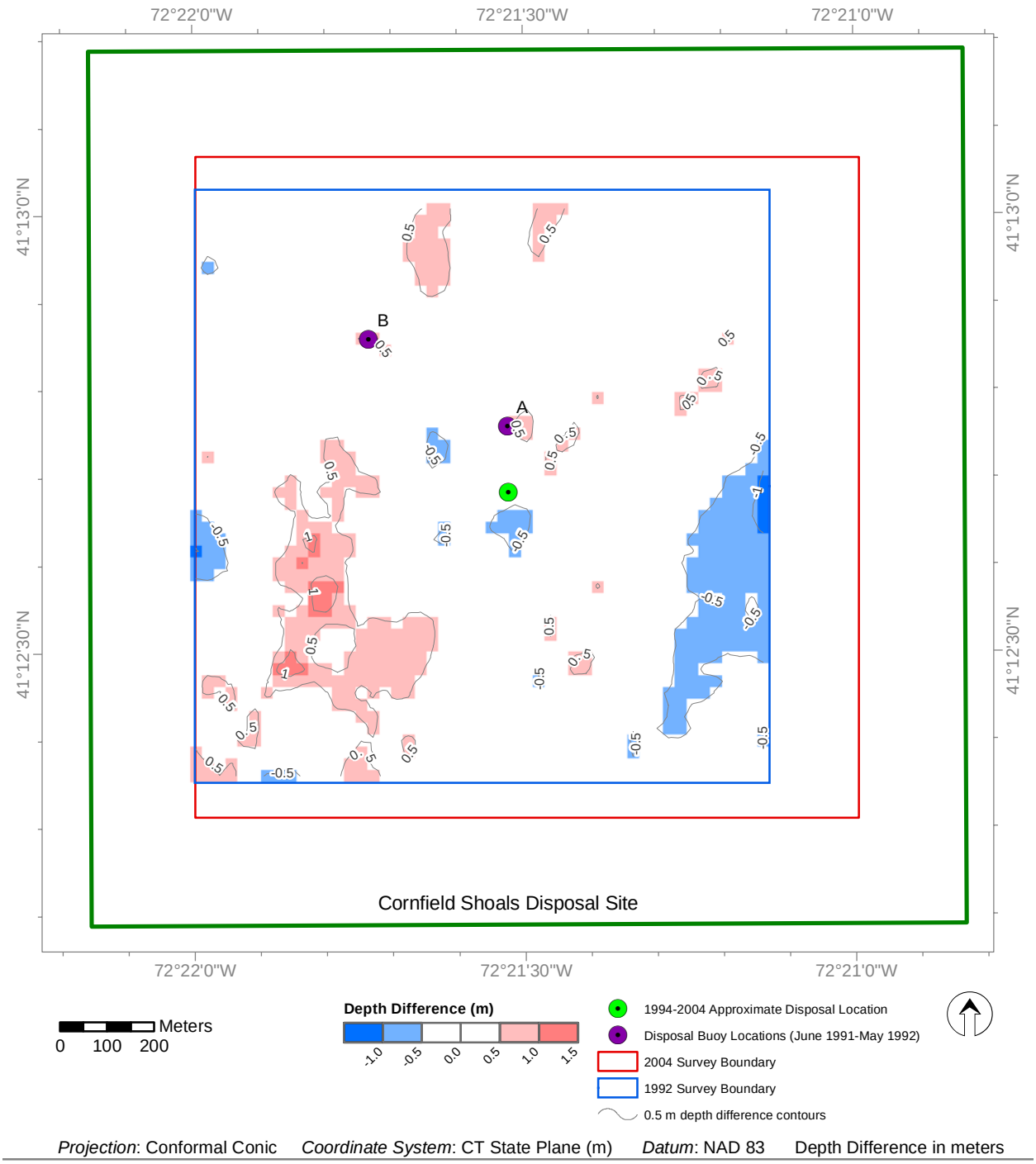


Figure 3-3. Depth difference contour map of CSDS survey area, August 1992 vs. June 2004 survey results (0.5-m contour interval)

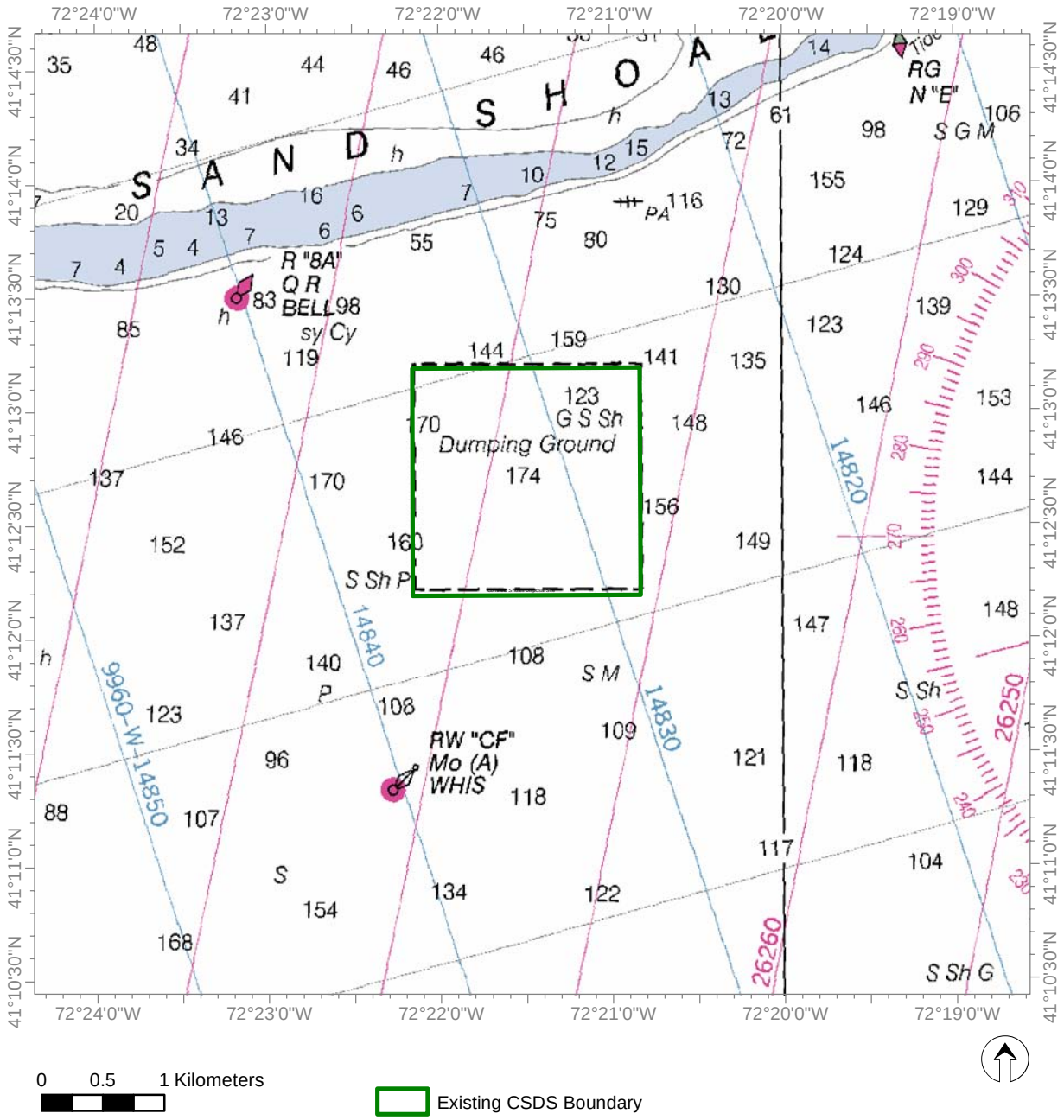
4.0 DISCUSSION

CSDS is managed as a dispersive dredged material disposal site under the DAMOS Program. Disposal at this site began in 1978, and periodic monitoring surveys have been performed to evaluate changes in seafloor topography and to characterize sediment transport patterns. The objective of the June 2004 survey at CSDS was to document any accumulation of dredged material around the center of the disposal site. This objective was accomplished by completing a bathymetric survey and comparing the topography of the site with previous sets of depth data collected at CSDS from 1992-1994.

The data comparison revealed that release of 335,000 m^3 of dredged material at the center of CSDS from 1994 through 2004 did not result in the formation of a distinct mound at the site. At a depositional disposal site, a mound of approximately 2 m in height and 300 to 400 m in diameter would be expected following disposal of this volume of material. The chronology of annual disposal indicated that smaller volumes (20,000 to 40,000 m^3) were released in recent years (Figure 1-3). Based on this disposal record and the dispersive nature of the site, a distinct disposal mound was not expected to form at CSDS even though disposal was focused at a single location over the ten-year period (Figure 1-2).

The depth difference comparison indicated slight differences in seafloor topography between the 1992 and the 2004 surveys, including areas of erosion and accretion, both limited in extent and thickness. The area of sediment accretion (with a maximum thickness of $\sim$1 m) was located to the west of the disposal target, in the dominant current direction and could be the result of the more recent disposal activity. Because of the dynamic nature of this site documented in earlier studies, it is likely that the areas of erosion and deposition apparent in the depth difference comparison are transient, and would be expected to change seasonally and annually.

CSDS is situated near the mouth of Long Island Sound at a point where the Sound reaches its narrowest width (Figure 1-1). This constriction accelerates tidal currents in the area, and the very shallow, east-west trending shoal approximately 2 km north of CSDS further constricts tidal flow and focuses currents in an east-west direction (Figure 4-1, Signell et al. 2000). There is an ebb (east) residual transport north of the shoal and flood (west) residual transport south of the shoal (Knebel and Poppe 2000). The site itself lies in a deep trough that extends through eastern Long Island Sound, with depths ranging from 40 to 60 m (Figure 4-2) and maximum near-bottom currents reported at 80 $cm \cdot sec^{-1}$ (SAIC 1996a). The results of the 2004 survey further supported the classification of CSDS as a dispersive disposal site. This high energy environment is sufficient to limit accumulation of disposed material, and material leaving the site is likely dispersed to the west, into Long Island Sound.



Projection: Conformal Conic *Coordinate System*: CT State Plane (m) *Datum*: NAD 83
Source: MapTech NOAA Chart, Depth feet, MLLW

J:\Water\ProjectFiles\P90\9000DAMOS\Reporting\2004\CSDS\Draft\Figures\CSDS_DD_dump_area_031705.mxd March 2005

Figure 4-1. Bathymetry surrounding CSDS

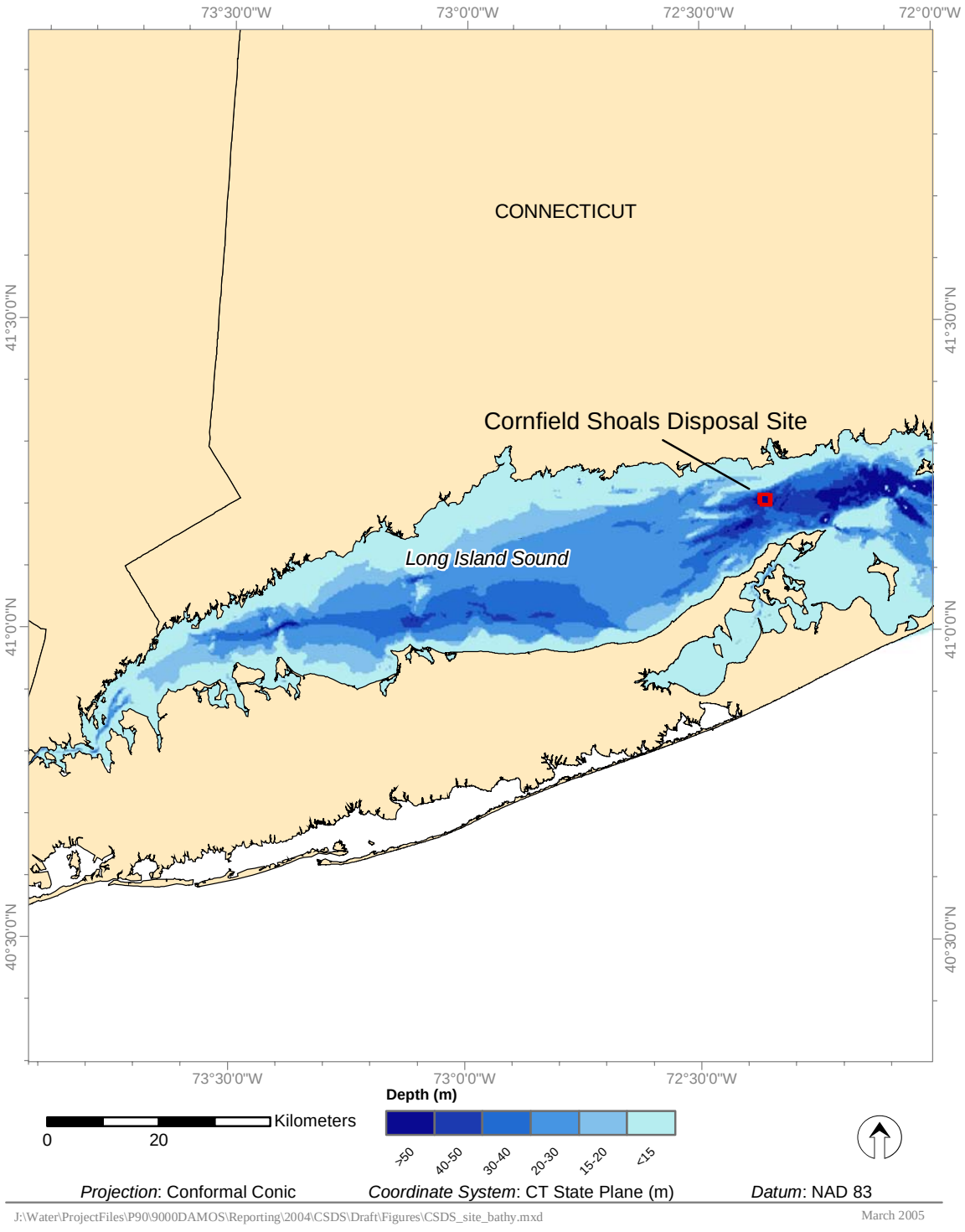


Figure 4-2. Long Island Sound bathymetry

5.0 CONCLUSIONS

The June 2004 survey was performed to evaluate sediment distribution and bathymetric changes that may have occurred at CSDS since the previous set of surveys performed from 1991 to 1994. Because of the dispersive nature of the site, only limited accumulation of dredged material had been observed in historic surveys, and a discrete mound was not expected to be apparent in the 2004 survey. The results of the 2004 bathymetric survey were consistent with the earlier surveys and site characterizations. The release of 335,000 m^3 of dredged material at the center of CSDS between July 1994 and June 2004 did not result in a distinct disposal mound. Areas of limited accretion and erosion were observed, consistent with the high energy, east-west oriented currents found at CSDS.

Given the results of the June 2004 survey, no specific follow up investigations are warranted. Rather, periodic bathymetry surveys to confirm the dispersive nature of the site are recommended.

6.0 REFERENCES

ENSR. 2004. Monitoring Survey at the Rockland Disposal Site, September 2003. DAMOS Contribution No. 156. U.S. Army Corps of Engineers, New England District, Concord, MA, 66 pp.

Fredette, T. J.; French, G. 2004. Understanding the physical and environmental consequences of dredged material disposal: history in New England and current perspectives. Mar. Pollut. Bull. 49:93-102.

Germano, J. D.; Rhoads, D. C.; Lunz, J. D. 1994. An integrated, tiered approach to monitoring and management of dredged material disposal sites in the New England region. DAMOS Contribution No. 87. U.S. Army Corps of Engineers, New England Division. Waltham, MA.

Knebel, H.J.; Poppe, L.J. 2000. Sea-Floor environments within Long Island Sound: A regional overview. J. Coastal Res. 16(3):533-550.

Naval Underwater Systems Center (NUSC). 1979. DAMOS Annual Data Report 1978 Supplement G. Cornfield Shoals Disposal Site. U.S. Army Corps of Engineers, New England Division, Waltham, MA.

SAIC. 1994. Monitoring cruise at the Cornfield Shoals Disposal Site, July 1990. DAMOS Contribution No. 90. U.S. Army Corps of Engineers, New England Division, Waltham, MA.

SAIC. 1996a. Synthesis of Monitoring Surveys at the Cornfield Shoals Disposal Site, July 1991 to May 1992. DAMOS Contribution No. 105. U.S. Army Corps of Engineers, New England Division, Waltham, MA, 30 pp.

SAIC. 1996b. Monitoring Cruise at the Cornfield Shoals Disposal Site, August 1992. DAMOS Contribution No. 106. U.S. Army Corps of Engineers, New England Division, Waltham, MA, 27 pp.

SAIC. 1996c. Bathymetric and Subbottom Survey at the Cornfield Shoals Disposal Site, July 8, 1994. DAMOS Contribution No. 110. U.S. Army Corps of Engineers, New England Division, Waltham, MA, 18 pp.

Signell, R.P.; List, J.H.; Farris, A.S. 2000. Physical processes affecting the sea-floor environments of Long Island Sound. J. Coastal Res. 16(3):551-566.

INDEX

accretion, iv, 16, 20, 23
accumulation, iv, 4, 5, 20, 23
bathymetric survey, iii, iv, 2, 4, 5, 11, 13, 16, 20, 23
bathymetry, i, iii, iv, 4, 5, 11, 12, 21, 22, 23
buoy, 2
Cornfield Shoals Disposal Site, 1, i, iii, iv, 1, 3, 24
  CSDS, i, ii, iii, iv, 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21, 23
currents, iv, 2, 20, 23
dispersive, iv, 2, 5, 10, 20, 23
dredged material, i, iii, iv, 1, 2, 4, 5, 8, 9, 10, 11, 16, 20, 23, 24
erosion, iv, 5, 16, 20, 23
Long Island Sound, iv, 1, 20, 22, 24, 25
mound, iv, 4, 5, 16, 20, 23
sediment, iv, 1, 2, 4, 5, 16, 20, 23
sediment-profile imaging, 1
  SPI, 2, 4, 5
topography, 4, 5, 11, 14, 16, 20

Appendix A

Disposal Barge Log Summary for CSDS
July 1994 to June 2004

Permit Number: 199010208
Project Name: DEEP RIVER
Permittee: DEEP RIVER MARINA INC

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
1/14/1995	800	612	41.211749	-72.356328
1/15/1995	700	535	41.211665	-72.356728
1/16/1995	700	535	41.211249	-72.356645
2/25/1995	650	497	41.211449	-72.356795
2/26/1995	650	497	41.211449	-72.356795
3/1/1995	650	497	41.211399	-72.356995
3/2/1995	650	497	41.211449	-72.356795
3/3/1995	650	497	41.211449	-72.356795
3/8/1995	650	497	41.211449	-72.356795
3/10/1995	500	382	41.211449	-72.356795
3/11/1995	650	497	41.211449	-72.356795
3/13/1995	600	459	41.211449	-72.356795
3/14/1995	600	459	41.211449	-72.356795
Total Dredged Material Volume:	8,450	6,460		

Permit Number: 199201482
Project Name: CONNECTICUT RIVER
Permittee: SAYBROOK POINT MARINA

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
1/9/1995	400	306	41.211449	-72.356795
1/9/1995	400	306	41.211165	-72.357045
1/10/1995	400	306	41.211449	-72.356795
1/10/1995	300	229	41.211715	-72.356528
1/12/1995	400	306	41.211449	-72.356795
1/13/1995	400	306	41.211215	-72.356845
1/14/1995	400	306	41.211449	-72.356795
1/18/1995	400	306	41.217982	-72.354978
1/19/1995	450	344	41.211449	-72.356795
1/19/1995	450	344	41.211449	-72.356795
1/24/1995	450	344	41.211249	-72.356645
1/25/1995	450	344	41.211449	-72.356795
1/30/1995	450	344	41.211449	-72.356795
1/30/1995	450	344	41.211449	-72.356795
2/1/1995	450	344	41.211032	-72.356711
2/14/1995	400	306	41.211449	-72.356795
2/15/1995	400	306	41.211449	-72.356795
2/17/1995	450	344	41.211449	-72.356795
2/18/1995	450	344	41.211449	-72.356795
2/19/1995	450	344	41.211449	-72.356795
2/20/1995	400	306	41.211449	-72.356795
2/21/1995	450	344	41.211449	-72.356795
2/22/1995	450	344	41.211449	-72.356795
2/23/1995	400	306	41.211449	-72.356795
3/1/1995	450	344	41.211449	-72.356795
3/2/1995	450	344	41.211449	-72.356795
3/3/1995	400	306	41.211449	-72.356795
3/4/1995	400	306	41.211449	-72.356795
3/6/1995	400	306	41.211449	-72.356795
3/7/1995	450	344	41.211449	-72.356795
3/17/1995	450	344	41.211449	-72.356795

3/19/1995	450	344	41.211449	-72.356795
3/20/1995	450	344	41.211449	-72.356795
3/21/1995	450	344	41.211449	-72.356795
3/22/1995	400	306	41.211449	-72.356795
3/23/1995	400	306	41.211449	-72.356795
3/24/1995	400	306	41.211449	-72.356795
3/26/1995	225	172	41.211449	-72.356795
3/1/1997	450	344	41.211333	-72.358667
3/3/1997	450	344	41.211333	-72.358667
3/4/1997	450	344	41.211333	-72.358667
3/5/1997	450	344	41.211333	-72.358667
3/5/1997	400	306	41.211333	-72.358667
3/8/1997	450	344	41.211333	-72.358667
3/10/1997	450	344	41.211333	-72.358667
3/11/1997	450	344	41.211667	-72.358667
3/12/1997	450	344	41.211333	-72.358667
3/13/1997	450	344	41.211667	-72.358333
3/14/1997	300	229	41.211667	-72.356667
3/18/1997	450	344	41.211667	-72.358333
3/19/1997	400	306	41.211333	-72.358667
3/20/1997	450	344	41.211000	-72.358333
3/21/1997	400	306	41.211333	-72.358667
3/24/1997	400	306	41.211333	-72.358667
3/24/1997	450	344	41.211333	-72.358333
3/25/1997	450	344	41.211667	-72.358333
3/25/1997	450	344	41.211333	-72.358333
3/27/1997	450	344	41.211333	-72.358000
3/28/1997	450	344	41.211333	-72.358333
3/28/1997	400	306	41.211333	-72.358667
3/30/1997	350	268	41.211333	-72.358667
3/30/1997	400	306	41.211333	-72.358667
3/13/1998	450	344	41.211333	-72.358667
3/15/1998	400	306	41.211333	-72.358667
3/16/1998	400	306	41.211333	-72.359000
3/17/1998	400	306	41.211333	-72.358500
3/18/1998	400	306	41.211000	-72.358667
3/19/1998	400	306	41.211167	-72.358500
3/20/1998	450	344	41.211333	-72.358667
3/23/1998	450	344	41.211333	-72.358500
3/24/1998	400	306	41.211333	-72.358333
3/25/1998	300	229	41.211167	-72.358667
3/25/1998	400	306	41.211333	-72.358667
3/27/1998	450	344	41.211333	-72.358667
3/28/1998	400	306	41.211333	-72.525333
3/30/1998	400	306	41.211333	-72.525333
3/30/1998	350	268	41.211333	-72.525333
3/31/1998	400	306	41.211333	-72.358667
Total Dredged Material Volume:	32,575	24,905		

Permit Number: 199300238
Project Name: CONNECTICUT RIVER, OLD SAYBROOK, CT
Permittee: RIVER LANDING MARINA

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
3/26/1995	225	172	41.211449	-72.356795
3/27/1995	400	306	41.211449	-72.356795
3/14/1996	450	344	41.211449	-72.356795
3/15/1996	450	344	41.211449	-72.356795
3/18/1996	500	382	41.211449	-72.356795
3/19/1996	500	382	41.211449	-72.356795
3/20/1996	450	344	41.213932	-72.344828
3/21/1996	500	382	41.211449	-72.356795
3/22/1996	500	382	41.211665	-72.356728
3/22/1996	500	382	41.211482	-72.356595
3/23/1996	450	344	41.211482	-72.356595
3/25/1996	500	382	41.211399	-72.356995
3/25/1996	450	344	41.211449	-72.356795
3/26/1996	250	191	41.211399	-72.356995
3/27/1996	250	191	41.211449	-72.356795
3/28/1996	250	191	41.211399	-72.356995
3/28/1996	250	191	41.211399	-72.356995
3/29/1996	250	191	41.211449	-72.356795
3/29/1996	250	191	41.211399	-72.356995
Total Dredged Material Volume:	7,375	5,639		

Permit Number: 199402769
Project Name: CEDAR ISLAND LANDING
Permittee: TOWN OF CLINTON

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
12/21/1997	750	573	41.211500	-72.358667
12/21/1997	950	726	41.211500	-72.358667
12/22/1997	875	669	41.211500	-72.358667
12/23/1997	750	573	41.211333	-72.358667
1/4/1998	700	535	41.211167	-72.358333
1/5/1998	900	688	41.211500	-72.358333
1/7/1998	900	688	41.211333	-72.358333
1/10/1998	900	688	41.211333	-72.358667
1/10/1998	900	688	41.210833	-72.358333
1/11/1998	900	688	41.210833	-72.358333
1/12/1998	800	612	41.211500	-72.358667
1/14/1998	800	612	41.211667	-72.358667
1/18/1998	800	612	41.211167	-72.359000
1/19/1998	800	612	41.211500	-72.358500
1/20/1998	400	306	41.211333	-72.358667
1/20/1998	400	306	41.211667	-72.358667
Total Dredged Material Volume:	12,525	9,576		

Permit Number: 199501228
Project Name: INDIAN TOWN HARBOR
Permittee: INDIAN TOWN ASSOCIATION

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
5/11/1997	200	153	41.211333	-72.358500
5/14/1997	300	229	41.211167	-72.358333
5/21/1997	350	268	41.211500	-72.358333
5/23/1997	350	268	41.211000	-72.359000
5/24/1997	300	229	41.211667	-72.358667
5/27/1997	325	248	41.211667	-72.358333
5/28/1997	350	268	41.211400	-72.359000
5/29/1997	400	306	41.211000	-72.358667
5/29/1997	375	287	41.211500	-72.358500
5/30/1997	350	268	41.211667	-72.358500
5/31/1997	375	287	41.211333	-72.358833
4/29/1998	300	229	41.211333	-72.358500
5/1/1998	400	306	41.211333	-72.358500
5/2/1998	400	306	41.211167	-72.358667
5/3/1998	400	306	41.211333	-72.358500
5/4/1998	400	306	41.211333	-72.358667
5/4/1998	400	306	41.211333	-72.358667
5/5/1998	400	306	41.211333	-72.358500
5/11/1998	400	306	41.211333	-72.358667
5/13/1998	400	306	41.211333	-72.358500
5/13/1998	400	306	41.211333	-72.358500
5/15/1998	350	268	41.211333	-72.358667
5/16/1998	400	306	41.211333	-72.358500
5/19/1998	400	306	41.211333	-72.358500
5/20/1998	400	306	41.211333	-72.358500
5/22/1998	400	306	41.211333	-72.358833
5/22/1998	400	306	41.211167	-72.358667
5/23/1998	400	306	41.211333	-72.358833
5/24/1998	400	306	41.211333	-72.358833
5/25/1998	400	306	41.211333	-72.358667
5/26/1998	400	306	41.211333	-72.358667
5/26/1998	400	306	41.211333	-72.358667
5/27/1998	400	306	41.211333	-72.358833
5/27/1998	400	306	41.211333	-72.358667
5/28/1998	400	306	41.211333	-72.358667
5/28/1998	300	229	41.211333	-72.358667
5/29/1998	400	306	41.211333	-72.358833
5/30/1998	400	306	41.211333	-72.358667
10/13/1998	400	306	41.211333	-72.358667
10/13/1998	400	306	41.211333	-72.358667
10/15/1998	400	306	41.211333	-72.358833
10/17/1998	500	382	41.211333	-72.358833
10/17/1998	600	459	41.211333	-72.358667
10/21/1998	600	459	41.211333	-72.358833
10/22/1998	500	382	41.211333	-72.358833
10/23/1998	600	459	41.211500	-72.358667
10/24/1998	600	459	41.211333	-72.358667
10/28/1998	600	459	41.211167	-72.358500
10/28/1998	600	459	41.211000	-72.358667
10/29/1998	600	459	41.211167	-72.358833
10/29/1998	600	459	41.211167	-72.358533
11/5/1998	500	382	41.211333	-72.358667
11/5/1998	400	306	41.211333	-72.358500
11/7/1998	300	229	41.211333	-72.358667

11/7/1998	400	306	41.211333	-72.358833
11/9/1998	500	382	41.211500	-72.358833
11/13/1998	500	382	41.211500	-72.358667
11/15/1998	400	306	41.211317	-72.358867
11/17/1998	400	306	41.211500	-72.358833
11/18/1998	400	306	41.211167	-72.358833
11/19/1998	500	382	41.211333	-72.358833
11/20/1998	500	382	41.211333	-72.358833
11/20/1998	500	382	41.211333	-72.358833
11/24/1998	500	382	41.211500	-72.358833
11/25/1998	450	344	41.211500	-72.359000
12/1/1998	500	382	41.211500	-72.358833
12/3/1998	500	382	41.211333	-72.358833
12/5/1998	500	382	41.211333	-72.358833
12/5/1998	500	382	41.211167	-72.358833
12/6/1998	500	382	41.211500	-72.358833
12/7/1998	500	382	41.211500	-72.358667
12/8/1998	500	382	41.211333	-72.358333
12/9/1998	500	382	41.211333	-72.358667
12/10/1998	500	382	41.211667	-72.358667
12/17/1998	500	382	41.211500	-72.358833
12/17/1998	500	382	41.211333	-72.358500
12/20/1998	500	382	41.211500	-72.358667
1/23/1999	500	382	41.211333	-72.358833
1/23/1999	450	344	41.210667	-72.358833
1/28/1999	450	344	41.211000	-72.358833
1/28/1999	450	344	41.211167	-72.358500
4/23/1999	300	229	41.211167	-72.358833
4/25/1999	300	229	41.211250	-72.358767
4/27/1999	300	229	41.211333	-72.358833
4/28/1999	300	229	41.211417	-72.358583
4/28/1999	300	229	41.211383	-72.358617
4/30/1999	300	229	41.211217	-72.358833
5/1/1999	300	229	41.211383	-72.358733
5/4/1999	300	229	41.211233	-72.358767
5/5/1999	300	229	41.211200	-72.358850
5/6/1999	300	229	41.211117	-72.358867
5/7/1999	300	229	41.211417	-72.358833
5/10/1999	300	229	41.211133	-72.358733
5/13/1999	200	153	41.210800	-72.360200
Total Dredged Material Volume:	39,125	29,913		

Permit Number: 199501419
Project Name: PATCHOGUE RIVER WESTBROOK, CT.
Permittee: PILOTS POINT MARINA INC

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
4/3/1997	400	306	41.211333	-72.358667
4/4/1997	450	344	41.211333	-72.358667

4/5/1997	450	344	41.211333	-72.358667
4/6/1997	450	344	41.211333	-72.358667
4/7/1997	450	344	41.211333	-72.361333
4/9/1997	450	344	41.211333	-72.358667
4/10/1997	450	344	41.211333	-72.358667
4/11/1997	450	344	41.212167	-72.358667
4/11/1997	450	344	41.211333	-72.358667
4/12/1997	450	344	41.211333	-72.358667
4/12/1997	300	229	41.211333	-72.358667
4/13/1997	450	344	41.211333	-72.358667
4/14/1997	450	344	41.211500	-72.358667
4/14/1997	450	344	41.211333	-72.358667
4/15/1997	350	268	41.211333	-72.358667
1/10/1998	450	344	41.211333	-72.358667
1/11/1998	450	344	41.211333	-72.358667
1/12/1998	450	344	41.211333	-72.358667
1/13/1998	450	344	41.211333	-72.358667
1/15/1998	450	344	41.211333	-72.359667
1/18/1998	450	344	41.211333	-72.358667
1/19/1998	450	344	41.211333	-72.358333
1/20/1998	450	344	41.211333	-72.358667
1/21/1998	450	344	41.211333	-72.358667
1/22/1998	450	344	41.211333	-72.358667
1/22/1998	450	344	41.211333	-72.358667
1/26/1998	450	344	41.211333	-72.359000
1/26/1998	450	344	41.211333	-72.359667
1/29/1998	450	344	41.211333	-72.358667
1/30/1998	450	344	41.211333	-72.358667
1/31/1998	450	344	41.211333	-72.358667
2/1/1998	450	344	41.211333	-72.358667
2/9/1998	450	344	41.211167	-72.358667
2/10/1998	450	344	41.211333	-72.358667
2/10/1998	450	344	41.211500	-72.358500
2/11/1998	450	344	41.211333	-72.358667
2/11/1998	450	344	41.211333	-72.358500
2/13/1998	450	344	41.211333	-72.358667
2/13/1998	400	306	41.211333	-72.358667
2/14/1998	400	306	41.211333	-72.358667
2/15/1998	400	306	41.211333	-72.358667
2/16/1998	450	344	41.211333	-72.358667
11/2/1998	450	344	41.211333	-72.358667
11/3/1998	450	344	41.211333	-72.358667
11/4/1998	450	344	41.211333	-72.358667
11/5/1998	400	306	41.211333	-72.358667
11/5/1998	400	306	41.211333	-72.358667
11/6/1998	450	344	41.211333	-72.358667
11/7/1998	450	344	41.211333	-72.358667
11/9/1998	450	344	41.211333	-72.358667
11/10/1998	450	344	41.211333	-72.358667
11/12/1998	450	344	41.211333	-72.358667
11/13/1998	450	344	41.211333	-72.358667
11/14/1998	450	344	41.211333	-72.358667
11/17/1998	450	344	41.211333	-72.358667
11/18/1998	450	344	41.211333	-72.358667
11/18/1998	450	344	41.211333	-72.358667
11/19/1998	450	344	41.211333	-72.358667
11/23/1998	450	344	41.211333	-72.358667
11/25/1998	450	344	41.211333	-72.358667
11/25/1998	450	344	41.211333	-72.358667
11/30/1998	450	344	41.211333	-72.358667
12/1/1998	450	344	41.211333	-72.358667
Total Dredged Material Volume:	27,800	21,255		

Permit Number: 199501784
Project Name: CONN RIVER AT OLD SAYBROOK CT.
Permittee: ISLAND COVE MARINA

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
12/7/1995	200	153	41.211333	-72.358667
12/7/1995	400	306	41.211333	-72.358667
12/8/1995	600	459	41.211333	-72.358667
12/8/1995	550	421	41.211333	-72.358667
12/12/1995	550	421	41.211333	-72.358667
12/13/1995	550	421	41.211333	-72.358667
12/13/1995	550	421	41.211333	-72.358667
12/14/1995	550	421	41.211333	-72.358667
12/14/1995	550	421	41.211333	-72.358667
12/15/1995	550	421	41.211333	-72.358667
12/15/1995	400	306	41.211333	-72.358667
12/16/1995	400	306	41.211333	-72.358667
12/18/1995	450	344	41.211333	-72.358667
12/18/1995	450	344	41.211333	-72.358667
12/19/1995	400	306	41.211333	-72.358667
12/21/1995	440	336	41.211333	-72.358667
3/1/1996	450	344	41.211333	-72.358667
3/2/1996	550	421	41.211333	-72.358667
3/5/1996	450	344	41.211333	-72.358667
3/6/1996	550	421	41.211333	-72.358667
3/6/1996	600	459	41.211333	-72.358667
3/7/1996	440	336	41.211333	-72.358667
3/10/1996	550	421	41.211333	-72.358667
3/11/1996	600	459	41.211333	-72.358667
3/12/1996	600	459	41.211333	-72.359500
3/12/1996	450	344	41.211333	-72.358667
3/13/1996	550	421	41.211333	-72.358667
3/13/1996	500	382	41.211333	-72.358667
3/14/1996	450	344	41.211333	-72.358667
3/14/1996	500	382	41.211333	-72.359000
3/15/1996	400	306	41.211333	-72.358667
3/15/1996	550	421	41.211333	-72.358667
3/18/1996	550	421	41.211333	-72.358667
3/19/1996	550	421	41.211333	-72.358667
3/19/1996	550	421	41.211333	-72.358667
3/20/1996	550	421	41.211333	-72.358667
3/21/1996	550	421	41.211333	-72.358667
3/21/1996	550	421	41.211333	-72.359000
3/22/1996	0	0	41.211333	-72.358667
3/25/1996	550	421	41.211333	-72.358667
3/25/1996	550	421	41.211333	-72.358667
3/26/1996	550	421	41.211667	-72.358333
3/27/1996	550	421	42.211000	-72.358667
3/27/1996	550	421	42.211667	-72.358667
3/28/1996	550	421	41.211333	-72.358667

3/28/1996	550	421	41.211333	-72.358667
3/29/1996	550	421	42.211333	-72.359000
3/29/1996	550	421	42.210833	-72.359000
4/2/1996	400	306	41.211333	-72.359000
4/2/1996	550	421	41.211333	-72.358667
4/3/1996	550	421	41.211333	-72.358667
4/4/1996	550	421	41.211333	-72.358667
4/4/1996	550	421	41.211333	-72.358667
4/8/1996	550	421	41.211333	-72.359000
4/12/1996	550	421	41.211333	-72.358667
4/12/1996	550	421	41.211333	-72.358667
4/13/1996	550	421	41.211500	-72.358333
4/14/1996	500	382	41.211000	-72.359000
4/15/1996	550	421	41.211333	-72.358333
4/15/1996	550	421	41.211333	-72.359000
4/17/1996	550	421	41.211167	-72.358500
4/18/1996	550	421	41.211333	-72.358667
4/18/1996	550	421	41.211000	-72.359000
4/19/1996	550	421	41.211333	-72.358667
4/19/1996	550	421	41.211333	-72.358667
4/22/1996	550	421	41.211333	-72.358667
4/23/1996	550	421	41.211000	-72.358667
4/24/1996	550	421	41.211000	-72.358333
4/25/1996	500	382	41.211333	-72.359000
4/25/1996	550	421	41.211333	-72.358667
4/27/1996	575	440	41.211000	-72.359000
4/29/1996	600	459	41.211333	-72.358667
4/29/1996	550	421	41.211333	-72.358667
3/1/1997	550	421	41.211333	-72.358667
3/17/1997	425	325	41.211167	-72.358333
3/18/1997	450	344	41.211000	-72.358667
3/19/1997	425	325	41.211167	-72.358667
3/20/1997	450	344	41.211333	-72.358167
3/21/1997	425	325	41.211000	-72.358667
3/21/1997	425	325	41.211167	-72.358833
3/22/1997	425	325	41.211000	-72.358500
3/25/1997	400	306	41.211500	-72.358500
3/26/1997	400	306	41.211333	-72.358500
3/27/1997	400	306	41.211333	-72.358667
3/27/1997	400	306	41.211167	-72.358667
3/28/1997	425	325	41.211667	-72.358667
3/28/1997	400	306	41.211333	-72.358667
3/29/1997	425	325	41.211333	-72.358500
3/29/1997	425	325	41.211333	-72.358833
3/30/1997	400	306	41.211333	-72.359167
3/30/1997	425	325	41.211500	-72.358500
4/8/1997	450	344	41.211000	-72.358500
4/11/1997	450	344	41.211500	-72.358833
4/12/1997	450	344	41.211500	-72.358500
4/13/1997	450	344	41.211167	-72.358500
4/14/1997	450	344	41.211167	-72.358667
4/16/1997	400	306	41.211333	-72.358667
Total Dredged Material Volume:	47,930	36,645		

Permit Number: 199600628
Project Name: PATCHOQUE RIVER AT WESTBROOK CT
Permittee: TOWN OF WESTBROOK

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
4/22/1996	700	535	41.210667	-72.358000
4/24/1996	850	650	41.211333	-72.359333
Total Dredged Material Volume:	1,550	1,185		

Permit Number: 199600687
Project Name: CONNECTICUT RIVER
Permittee: OFFSHORE EAST MARINE

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
12/26/1996	500	382	41.211333	-72.358667
12/27/1996	550	421	41.144917	-72.884917
12/31/1996	600	459	41.144917	-72.884917
1/2/1997	600	459	41.211333	-72.358667
1/9/1997	600	459	41.211667	-72.358667
1/14/1997	550	421	41.211767	-72.358667
1/15/1997	550	421	41.211333	-72.358500
1/29/1997	550	421	41.211333	-72.358667
1/31/1997	550	421	41.211333	-72.358667
2/2/1997	550	421	41.211450	-72.358667
Total Dredged Material Volume:	5,600	4,282		

Permit Number: 199600992
Project Name: ESSEX YACHT CLUB
Permittee: ESSEX YACHT CLUB

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
2/1/1999	450	344	41.211333	-72.358500
2/2/1999	550	421	41.211000	-72.358333
2/3/1999	450	344	41.211000	-72.359000
2/3/1999	500	382	41.210000	-72.358500
2/4/1999	500	382	41.211000	-72.358667
2/6/1999	550	421	41.211000	-72.358333
2/7/1999	400	306	41.211000	-72.358667
2/7/1999	400	306	41.211167	-72.358833
2/9/1999	400	306	41.210000	-72.359167
2/10/1999	400	306	41.210667	-72.358500
2/10/1999	400	306	41.211000	-72.358333
2/11/1999	450	344	41.210833	-72.358667
2/11/1999	500	382	41.210667	-72.359000
2/12/1999	550	421	41.210667	-72.358333
2/13/1999	600	459	41.210667	-72.358333
2/16/1999	300	229	41.211000	-72.358500
Total Dredged Material Volume:	7,400	5,658		

Permit Number: 199601010
Project Name: HAMMONASSETT RIVER
Permittee: CLINTON YACHT HAVEN

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
5/27/1999	600	459	41.211333	-72.358333
6/2/1999	550	421	41.211167	-72.358500
2/9/2000	420	321	41.211333	-72.358333
2/10/2000	330	252	41.211333	-72.358667
2/12/2000	450	344	41.211333	-72.358667
2/13/2000	450	344	41.211333	-72.358667
2/15/2000	525	401	41.211333	-72.358667
2/17/2000	525	401	41.211333	-72.358667
2/18/2000	550	421	41.211333	-72.358667
2/18/2000	575	440	41.211333	-72.358667
2/21/2000	575	440	41.211333	-72.358667
2/22/2000	575	440	41.210000	-72.358667
2/23/2000	575	440	41.211333	-72.358667
2/24/2000	575	440	41.211333	-72.358667
2/25/2000	575	440	41.211333	-72.358667
2/25/2000	575	440	41.211333	-72.358667
2/26/2000	575	440	41.211333	-72.358667
2/28/2000	575	440	41.211333	-72.358667
2/29/2000	575	440	41.211333	-72.358667
3/1/2000	575	440	41.211333	-72.358667
3/2/2000	575	440	41.211333	-72.358667
3/3/2000	575	440	41.211333	-72.358667
3/4/2000	575	440	41.211333	-72.358667
3/5/2000	575	440	41.211333	-72.358667
3/6/2000	550	421	41.211333	-72.358667
3/7/2000	575	440	41.211333	-72.358667
3/8/2000	575	440	41.211333	-72.358667
3/9/2000	575	440	41.211333	-72.358667
3/10/2000	575	440	41.211333	-72.358667
3/11/2000	575	440	41.211333	-72.358667
3/14/2000	575	440	41.211333	-72.358667
3/14/2000	575	440	41.211333	-72.358667
3/15/2000	575	440	41.211333	-72.358667
3/16/2000	575	440	41.211333	-72.358667
3/17/2000	575	440	41.211333	-72.358667
3/19/2000	575	440	41.211330	-72.392000
3/19/2000	575	440	41.211330	-72.359000
3/20/2000	575	440	41.211330	-72.358800
3/21/2000	575	440	41.211330	-72.358666
3/24/2000	575	440	41.211330	-72.358670
3/25/2000	575	440	41.211330	-72.358670
3/26/2000	575	440	41.211330	-72.358670
3/26/2000	575	440	41.211330	-72.358670
3/26/2000	575	440	41.211330	-72.358670
3/30/2000	575	440	41.211330	-72.358670
3/31/2000	575	440	41.211330	-72.358670
4/1/2000	575	440	41.211330	-72.358670
4/3/2000	575	440	41.211330	-72.358670
4/5/2000	575	440	41.211330	-72.358670
4/6/2000	575	440	41.211330	-72.358670
4/7/2000	575	440	41.211330	-72.358670
4/7/2000	575	440	41.211330	-72.358670
4/11/2000	600	459	41.211330	-72.358670
4/12/2000	575	440	41.211330	-72.358670
4/13/2000	575	440	41.211330	-72.358670

4/14/2000	575	440	41.211330	-72.358670
4/16/2000	575	440	41.211330	-72.358670
4/17/2000	575	440	41.211330	-72.358670
4/18/2000	575	440	41.211330	-72.358670
4/19/2000	575	440	41.211330	-72.358670
4/20/2000	575	440	41.211333	-72.358667
4/24/2000	575	440	41.211330	-72.358670
4/25/2000	575	440	41.211330	-72.358670
4/26/2000	575	440	41.211330	-72.358670
4/28/2000	575	440	41.211330	-72.358670
4/29/2000	575	440	41.211330	-72.358670
5/1/2000	575	440	41.211330	-72.358500
5/2/2000	575	440	41.211330	-72.359660
5/3/2000	575	440	41.211330	-72.358670
5/5/2000	575	440	41.211330	-72.359660
5/6/2000	575	440	41.211330	-72.358670
5/8/2000	575	440	41.211330	-72.358670
5/9/2000	575	440	41.211330	-72.358670
5/12/2000	575	440	41.211330	-72.358670
5/15/2000	575	440	41.211330	-72.358670
5/22/2000	575	440	41.211330	-72.358670
5/23/2000	575	440	41.211330	-72.358670
5/24/2000	575	440	41.211333	-72.358667
5/25/2000	575	440	41.211330	-72.358670
6/5/2000	575	440	41.211330	-72.358670
Total Dredged Material Volume:	45,225	34,577		

Permit Number: 199602985
Project Name: RIVER LANDING
Permittee: RIVER LANDING CONDO. ASSOC.

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
4/3/1997	700	535	41.211667	-72.358500
4/3/1997	500	382	41.210667	-72.358500
4/4/1997	600	459	41.211667	-72.359333
4/4/1997	500	382	41.211000	-72.358667
4/5/1997	500	382	41.210000	-72.358333
4/6/1997	950	726	41.210667	-72.358667
4/7/1997	900	688	41.210833	-72.358667
4/7/1997	900	688	41.211000	-72.358667
4/9/1997	750	573	41.210833	-72.358667
2/7/1998	500	382	41.211333	-72.358833
2/18/1998	1000	765	41.211333	-72.358333
2/19/1998	1000	765	41.211333	-72.358333
2/20/1998	1000	765	41.211333	-72.358333
2/21/1998	1000	765	41.211333	-72.358333
2/26/1998	550	421	41.211333	-72.359000
2/27/1998	500	382	41.211500	-72.358667
2/28/1998	550	421	41.211333	-72.359000
3/1/1998	500	382	41.211333	-72.358667
3/5/1998	550	421	41.211333	-72.359000
3/6/1998	875	669	41.211333	-72.358333
3/6/1998	450	344	41.211333	-72.358333
3/6/1998	950	726	41.211333	-72.358667
3/7/1998	350	268	41.211333	-72.358333
3/7/1998	950	726	41.211333	-72.358667
3/7/1998	350	268	41.211333	-72.358333
3/7/1998	950	726	41.211333	-72.358667
3/12/1998	900	688	41.211333	-72.358833
3/13/1998	550	421	41.211333	-72.358833
3/13/1998	800	612	41.211333	-72.358833
3/13/1998	550	421	41.211333	-72.359000
3/16/1998	850	650	41.211333	-72.359000
3/17/1998	550	421	41.211333	-72.358500
3/18/1998	550	421	41.211167	-72.358667
3/22/1998	550	421	41.211500	-72.358833
3/24/1998	550	421	41.211333	-72.358667
3/24/1998	500	382	41.211333	-72.358333
3/25/1998	550	421	41.211167	-72.358667
3/26/1998	550	421	41.211333	-72.358500
3/27/1998	550	421	41.211333	-72.358333
3/28/1998	550	421	41.211167	-72.358667
3/29/1998	550	421	41.211333	-72.358833
4/10/1998	550	421	41.211333	-72.358667
3/7/2000	500	382	41.211667	-72.359167
3/8/2000	500	382	41.211833	-72.358333
3/8/2000	550	421	41.211000	-72.359000
3/8/2000	500	382	41.211500	-72.358833
3/9/2000	500	382	41.212167	-72.358000
3/10/2000	400	306	41.211000	-72.358333
Total Dredged Material Volume:	30,925	23,644		

Permit Number: 199700620
Project Name: PATCHOGUE RIVER
Permittee: TOWN OF WESTBROOK

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
4/30/1997	300	229	41.211333	-72.358667
5/7/1997	300	229	41.211333	-72.358667
5/8/1997	300	229	41.211333	-72.358667
5/9/1997	300	229	41.211500	-72.358667
5/10/1997	300	229	41.211333	-72.358667
5/12/1997	300	229	41.211667	-72.358667
5/13/1997	300	229	41.211500	-72.358667
5/14/1997	300	229	41.211333	-72.358667
5/19/1997	300	229	41.211500	-72.359167
5/19/1997	300	229	41.213167	-72.359833
5/19/1997	300	229	41.211333	-72.358667
5/24/1997	300	229	41.211333	-72.358667
5/24/1997	300	229	41.211333	-72.358667
5/25/1997	300	229	41.211333	-72.358667
5/26/1997	300	229	41.211333	-72.358667
5/26/1997	300	229	41.211333	-72.358667
5/27/1997	300	229	41.211333	-72.358667
Total Dredged Material Volume:	5,100	3,899		

Permit Number: 199701534
Project Name: NORTH COVE
Permittee: MICHAEL FOISIE

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
5/4/1998	500	382	41.210833	-72.358333
5/6/1998	500	382	41.210667	-72.358667
5/7/1998	500	382	41.211667	-72.358333
5/8/1998	500	382	41.211000	-72.358833
5/13/1998	200	153	41.211000	-72.358667
5/14/1998	200	153	41.211333	-72.359000
5/14/1998	200	153	41.211000	-72.358667
5/15/1998	200	153	41.211000	-72.358667
5/15/1998	200	153	41.211000	-72.358500
5/16/1998	200	153	41.211500	-72.358167
5/17/1998	200	153	41.211167	-72.358500
Total Dredged Material Volume:	3,400	2,599		

Permit Number: 199901750
Project Name: CONNECTICUT RIVER
Permittee: SAYBROOK POINT MARINA

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
1/29/2001	400	306	41.211330	-72.358670
2/1/2001	400	306	41.211330	-72.358670
2/2/2001	400	306	41.211330	-72.358670
2/7/2001	400	306	41.211330	-72.358670
2/8/2001	400	306	41.211330	-72.358670
2/12/2001	400	306	41.210830	-72.358670
2/13/2001	400	306	41.210830	-72.358670
2/14/2001	400	306	41.211330	-72.358670
2/15/2001	400	306	41.211330	-72.358670
2/16/2001	400	306	41.211333	-72.358667
2/19/2001	400	306	41.211330	-72.358670
2/20/2001	400	306	41.211330	-72.358670
2/22/2001	400	306	41.211330	-72.358670
2/24/2001	400	306	41.211330	-72.358670
2/27/2001	400	306	41.210830	-72.358670
2/28/2001	400	306	41.211330	-72.358670
3/1/2001	400	306	41.211330	-72.358670
3/2/2001	300	229	41.211330	-72.358670
3/7/2001	400	306	41.211330	-72.358670
3/8/2001	400	306	41.211330	-72.358670
3/9/2001	300	229	41.211330	-72.358670
3/12/2001	400	306	41.211330	-72.358670
3/13/2001	400	306	41.211330	-72.358670
3/15/2001	400	306	41.211330	-72.358670
3/15/2001	400	306	41.211330	-72.358670
3/16/2001	400	306	41.211330	-72.358670
3/17/2001	400	306	41.211330	-72.358670
3/19/2001	400	306	41.211330	-72.358670
3/20/2001	400	306	41.211330	-72.358670
3/26/2001	400	306	41.211330	-72.358670
3/27/2001	400	306	41.211330	-72.358670
3/28/2001	400	306	41.211330	-72.358670
3/29/2001	400	306	41.211330	-72.358670
3/31/2001	400	306	41.211330	-72.358670
4/2/2001	400	306	41.211330	-72.358670
4/3/2001	400	306	41.211330	-72.358670
4/4/2001	400	306	41.211330	-72.358670
4/5/2001	400	306	41.211330	-72.358670
4/7/2001	300	229	41.211330	-72.358670
2/12/2004	400	306	41.211300	-72.358833
2/13/2004	400	306	41.211433	-72.358733
2/20/2004	400	306	41.211333	-72.358667
2/20/2004	400	306	41.211333	-72.358667
2/23/2004	400	306	41.211333	-72.358667
2/24/2004	400	306	41.211333	-72.358667
2/25/2004	400	306	41.211333	-72.358667
2/26/2004	400	306	41.211333	-72.358667
2/27/2004	400	306	41.211333	-72.358667
3/1/2004	400	306	41.211333	-72.358667
3/2/2004	400	306	41.211333	-72.358667
3/3/2004	400	306	41.211333	-72.358667
3/4/2004	400	306	41.211333	-72.358667
3/5/2004	400	306	41.211333	-72.358667
3/9/2004	400	306	41.211333	-72.358667
3/10/2004	400	306	41.210833	-72.358667
3/10/2004	400	306	41.210833	-72.358667

3/12/2004	400	306	41.210833	-72.358667
3/15/2004	400	306	41.210833	-72.358667
3/16/2004	400	306	41.210833	-72.358667
3/18/2004	400	306	41.210833	-72.358667
3/23/2004	400	306	41.210833	-72.358667
3/23/2004	400	306	41.210833	-72.358667
3/24/2004	400	306	41.210833	-72.358667
3/25/2004	400	306	41.210833	-72.358667
3/26/2004	400	306	41.210667	-72.359000
3/29/2004	400	306	41.210833	-72.358667
3/30/2004	400	306	41.210833	-72.358667
Total Dredged Material Volume:	26,500	20,261		

Permit Number: 200000209
Project Name: CONNECTICUT RIVER
Permittee: HULL HARBOR ONE

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
3/27/2000	450	344	41.211330	-72.358670
3/28/2000	500	382	41.211670	-72.358000
3/29/2000	500	382	41.210330	-72.357830
3/30/2000	550	421	41.210670	-72.358500
3/30/2000	500	382	41.211170	-72.358830
3/31/2000	550	421	41.211670	-72.358830
3/31/2000	450	344	41.211330	-72.358670
4/1/2000	500	382	41.211000	-72.359340
4/1/2000	450	344	41.211670	-72.358330
4/2/2000	550	421	41.211330	-72.358330
4/2/2000	500	382	41.211670	-72.358500
4/3/2000	450	344	41.211330	-72.358330
3/12/2001	600	459	41.211670	-72.358670
3/15/2001	300	229	41.211500	-72.358830
3/16/2001	350	268	41.211330	-72.358330
3/17/2001	400	306	41.210670	-72.359660
3/19/2001	300	229	41.211500	-72.358670
3/20/2001	400	306	41.211500	-72.358830
3/24/2001	350	268	41.209670	-72.358830
3/26/2001	400	306	41.211330	-72.358500
3/29/2001	400	306	41.211500	-72.358670
3/29/2001	400	306	41.211670	-72.358670
Total Dredged Material Volume:	9,850	7,531		

Permit Number: 200000248
Project Name: HAMMONASSETT RIVER
Permittee: RIVERSIDE BASIN MARINA

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
4/26/2001	200	153	41.211330	-72.358670
4/27/2001	200	153	41.211330	-72.358670
5/1/2001	200	153	41.211330	-72.358670
5/2/2001	200	153	41.211330	-72.358670
5/3/2001	200	153	41.211330	-72.358670
5/4/2001	200	153	41.211330	-72.358670
Total Dredged Material Volume:	1,200	917		

Permit Number: 200001092
Project Name: PRATT COVE
Permittee: BREWERS DEEP RIVER MARINA

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
11/5/2002	430	329	41.211000	-72.359000
11/9/2002	500	382	41.211700	-72.357750
11/13/2002	600	459	41.203000	-72.358670
11/15/2002	600	459	41.211330	-72.358670
11/18/2002	600	459	41.211330	-72.358670
Total Dredged Material Volume:	2,730	2,087		

Permit Number: 200002514
Project Name: MENUNKETESUCKET AND PATCHOGUE RIVERS
Permittee: BREWERS PILOTS POINT MARINA

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
12/7/2001	450	344	41.210930	-72.358150
12/10/2001	450	344	41.211170	-72.358330
12/11/2001	450	344	41.211200	-72.358583
12/12/2001	450	344	41.211420	-72.358750
12/13/2001	450	344	41.211250	-72.358720
12/17/2001	450	344	41.211240	-72.358720
12/19/2001	450	344	41.211420	-72.358630
12/23/2001	300	229	41.211170	-72.358670
1/4/2002	450	344	41.211420	-72.358750
1/8/2002	450	344	41.211330	-72.358630
1/11/2002	400	306	41.211300	-72.358670
1/14/2002	350	268	41.211330	-72.358630
1/17/2002	350	268	41.211500	-72.358580
1/18/2002	450	344	41.211250	-72.358580
1/19/2002	450	344	41.211330	-72.358700
1/21/2002	400	306	41.211300	-72.358670

1/22/2002	450	344	41.211250	-72.358670
1/24/2002	450	344	41.211420	-72.358700
1/28/2002	400	306	41.211330	-72.358630
1/28/2002	450	344	41.211300	-72.358700
1/29/2002	450	344	41.211370	-72.358670
1/30/2002	450	344	41.214000	-72.358670
1/31/2002	400	306	41.211250	-72.358630
11/14/2002	450	344	41.211330	-72.358670
11/19/2002	450	344	41.211330	-72.358670
11/20/2002	400	306	41.211330	-72.358670
11/21/2002	400	306	41.211330	-72.358670
11/22/2002	400	306	41.210830	-72.358670
11/25/2002	400	306	41.211330	-72.358670
11/26/2002	400	306	41.211330	-72.358670
1/28/2003	450	344	41.210000	-72.358670
1/29/2003	450	344	41.211330	-72.358670
1/30/2003	450	344	41.211330	-72.358670
1/31/2003	400	306	41.211330	-72.358670
2/3/2003	450	344	41.211330	-72.358670
2/4/2003	450	344	41.211330	-72.358670
2/6/2003	450	344	41.211330	-72.358670
2/10/2003	450	344	41.211330	-72.358670
2/14/2003	450	344	41.211330	-72.358670
4/24/2004	400	306	41.211333	-72.358667
4/24/2004	600	459	41.211333	-72.358667
Total Dredged Material Volume:	17,700	13,533		

Permit Number: 200100119
Project Name: MARINA
Permittee: ISLAND COVE MARINA

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
2/4/2002	200	153	41.211170	-72.358500
2/7/2002	200	153	41.211250	-72.358580
2/8/2002	200	153	41.211300	-72.358670
Total Dredged Material Volume:	600	459		

Permit Number: 200101045
Project Name: MARINA
Permittee: ISLAND COVE MARINA

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
2/9/2002	400	306	41.211330	-72.357800
2/11/2002	250	191	41.211330	-72.358580
2/14/2002	200	153	41.211300	-72.358670
2/14/2002	300	229	41.211250	-72.358670
2/15/2002	300	229	41.211330	-72.358670
2/17/2002	400	306	41.211250	-72.358670
Total Dredged Material Volume:	1,850	1,414		

Permit Number: 200201581
Project Name: INDIAN-HAMMOCK RIVERS
Permittee: NEW HARBOR MARINA

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
1/13/2003	500	382	41.208500	-72.360000
1/14/2003	550	421	41.211330	-72.358500
1/15/2003	550	421	41.210500	-72.358000
1/15/2003	400	306	41.210830	-72.358670
1/16/2003	450	344	41.210670	-72.358330
1/16/2003	400	306	41.211500	-72.358330
1/18/2003	450	344	41.211330	-72.359000
1/21/2003	500	382	41.211500	-72.358170
1/22/2003	400	306	41.211170	-72.358000
1/25/2003	500	382	41.211000	-72.359000
1/28/2003	450	344	41.211330	-72.358830
1/28/2003	400	306	41.212000	-72.359170
1/30/2003	500	382	41.211500	-72.359000
1/31/2003	400	306	41.211330	-72.359340
1/31/2003	450	344	41.211500	-72.359000
2/1/2003	500	382	41.211500	-72.358830
2/2/2003	400	306	41.211170	-72.358330
2/3/2003	450	344	41.211330	-72.359000
2/6/2003	400	306	41.211330	-72.358330
2/8/2003	350	268	41.211330	-72.358670
2/10/2003	450	344	41.211000	-72.358330
2/14/2003	400	306	41.211500	-72.359000
2/15/2003	400	306	41.211500	-72.359170
4/16/2003	400	306	41.211500	-72.358667
4/17/2003	500	382	41.211500	-72.358500
4/18/2003	400	306	41.211333	-72.358500
4/21/2003	400	306	41.211500	-72.358833
4/22/2003	500	382	41.211667	-72.358833
4/23/2003	400	306	41.211333	-72.358333
4/24/2003	400	306	41.211333	-72.358333
4/25/2003	400	306	41.211333	-72.358167
4/27/2003	400	306	41.211500	-72.358167
4/29/2003	500	382	41.211500	-72.359167
4/30/2003	400	306	41.211500	-72.358667
5/1/2003	400	306	41.211500	-72.359167
5/2/2003	500	382	41.211500	-72.358333
5/3/2003	500	382	41.211500	-72.358833
5/4/2003	500	382	41.211500	-72.357667
5/4/2003	500	382	41.211500	-72.357833
5/5/2003	400	306	41.211500	-72.358500
5/6/2003	500	382	41.211667	-72.358833
5/6/2003	400	306	41.211500	-72.358333
5/7/2003	500	382	41.211500	-72.358833
5/8/2003	400	306	41.211667	-72.358500
5/9/2003	400	306	41.211500	-72.358333
5/9/2003	500	382	41.211500	-72.358000
5/10/2003	400	306	41.211333	-72.358333
5/11/2003	400	306	41.211500	-72.358333
5/11/2003	400	306	41.211500	-72.359000
5/12/2003	400	306	41.211500	-72.358833
5/13/2003	500	382	41.211500	-72.358000
5/13/2003	400	306	41.211667	-72.358833
5/14/2003	500	382	41.211500	-72.358333
5/15/2003	400	306	41.211500	-72.359167

3/3/2004	400	306	41.211333	-72.358167
3/4/2004	400	306	41.211000	-72.358667
Total Dredged Material Volume:	24,650	18,846		

Permit Number: 200202683
Project Name: CONNECTICUT RIVER
Permittee: BETWEEN THE BRIDGES

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
3/26/2003	1000	765	41.210867	-72.358250
3/27/2003	1000	765	41.211467	-72.358550
3/30/2003	1000	765	41.209667	-72.358167
4/1/2003	1000	765	41.210417	-72.359033
4/2/2003	700	535	41.211617	-72.359200
4/4/2003	1000	765	41.211433	-72.358867
4/7/2003	1000	765	41.211333	-72.358683
4/9/2003	1000	765	41.211167	-72.358667
4/9/2003	1000	765	41.211083	-72.358617
4/10/2003	1000	765	41.211450	-72.358617
4/13/2003	1000	765	41.211200	-72.358733
4/14/2003	1000	765	41.211217	-72.358417
4/14/2003	1000	765	41.211167	-72.358617
3/8/2004	1000	765	41.211333	-72.358667
3/9/2004	700	535	41.211333	-72.358750
3/10/2004	800	612	41.211333	-72.358750
3/16/2004	800	612	41.211333	-72.358750
3/18/2004	700	535	41.211333	-72.358633
3/20/2004	800	612	41.211333	-72.358667
3/26/2004	800	612	41.211333	-72.358667
4/1/2004	800	612	41.211333	-72.358667
4/7/2004	700	535	41.211333	-72.358500
4/8/2004	800	612	41.211367	-72.358750
Total Dredged Material Volume:	20,600	15,750		

Permit Number: 200202707
Project Name: CONNECTICUT RIVER
Permittee: HULL HARBOR ONE MARINA

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
2/26/2003	300	229	41.211330	-72.358330
2/27/2003	300	229	41.211670	-72.358330
3/4/2003	400	306	41.211330	-72.358330
3/5/2003	700	535	41.211670	-72.358000
3/6/2003	900	688	41.211670	-72.358000
3/7/2003	900	688	41.211000	-72.358330
3/8/2003	850	650	41.211500	-72.358330
3/10/2003	850	650	41.211670	-72.358170
2/12/2004	400	306	41.211333	-72.358500
2/13/2004	400	306	41.211333	-72.358500
2/16/2004	350	268	41.211667	-72.358667
2/17/2004	400	306	41.211667	-72.358333
2/19/2004	350	268	41.211333	-72.358667
2/20/2004	400	306	41.211667	-72.358333
2/23/2004	350	268	41.211833	-72.358500

2/24/2004	450	344	41.211333	-72.358500
2/25/2004	400	306	41.211667	-72.358500
2/26/2004	350	268	41.211167	-72.358500
Total Dredged Material Volume:	9,050	6,919		

Permit Number: 200202839
Project Name: INDIAN TOWN HARBOR
Permittee: INDIAN TOWN ASSOCIATION

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
5/22/2003	500	382	41.211200	-72.358517
5/23/2003	500	382	41.211433	-72.358333
5/24/2003	400	306	41.210983	-72.358417
5/25/2003	400	306	41.210833	-72.358667
5/27/2003	400	306	41.211167	-72.358583
5/28/2003	500	382	41.211200	-72.358583
5/29/2003	400	306	41.211167	-72.358617
5/30/2003	400	306	41.211167	-72.358617
5/31/2003	300	229	41.211200	-72.358533
Total Dredged Material Volume:	3,800	2,905		

Permit Number: 200400050
Project Name: PATCHAGUE HARBOR
Permittee: TOWN OF WESTBROOK

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
5/7/2004	700	535	41.211667	-72.358667
5/8/2004	600	459	41.211500	-72.359000
5/10/2004	500	382	41.211500	-72.358333
5/11/2004	500	382	41.211500	-72.358667
5/12/2004	550	421	41.211500	-72.358833
5/13/2004	500	382	41.211500	-72.358667
5/14/2004	550	421	41.211500	-72.358500
Total Dredged Material Volume:	3,900	2,982		

Permit Number: 1997C0017
Project Name: PATCHOGUE RIVER
Permittee: COE-PATCHOGUE RIVER

Disposal Date	Volume Disposed (yd^3)	Volume Disposed (m^3)	Disposal Latitude	Disposal Longitude
10/23/1997	500	382	41.211565	-72.358261
10/24/1997	500	382	41.211332	-72.358328
10/24/1997	600	459	41.211115	-72.358378
10/25/1997	600	459	41.211299	-72.358528
10/25/1997	700	535	41.211382	-72.358128
10/26/1997	600	459	41.211565	-72.358261
10/28/1997	650	497	41.211332	-72.358328
10/29/1997	500	382	41.211565	-72.358261
10/29/1997	500	382	41.211115	-72.358378
10/30/1997	600	459	41.211599	-72.358061
10/30/1997	500	382	41.211115	-72.358378
10/31/1997	600	459	41.211332	-72.358328
11/3/1997	500	382	41.211565	-72.358261
11/4/1997	400	306	41.211332	-72.358328
11/4/1997	450	344	41.211115	-72.358378
11/5/1997	450	344	41.211565	-72.358261
11/6/1997	450	344	41.211299	-72.358528
11/6/1997	400	306	41.211332	-72.358328
11/10/1997	500	382	41.211332	-72.358328
11/11/1997	500	382	41.211115	-72.358378
11/11/1997	750	573	41.211565	-72.358261
11/12/1997	750	573	41.211299	-72.358528
11/12/1997	700	535	41.211065	-72.358578
11/13/1997	700	535	41.211565	-72.358261
11/13/1997	700	535	41.211065	-72.358578
11/15/1997	700	535	41.211299	-72.358528
11/16/1997	700	535	41.211599	-72.358061
11/17/1997	600	459	41.211382	-72.358128
11/18/1997	600	459	41.211115	-72.358378
11/19/1997	750	573	41.211115	-72.358378
11/20/1997	800	612	41.211565	-72.358261
11/20/1997	600	459	41.211115	-72.358378
11/21/1997	500	382	41.211332	-72.358328
11/21/1997	500	382	41.211299	-72.358528
11/23/1997	600	459	41.211565	-72.358261
11/23/1997	500	382	41.211332	-72.358328
11/26/1997	750	573	41.211565	-72.358261
11/28/1997	750	573	41.211065	-72.358578
11/29/1997	650	497	41.211332	-72.358328
11/29/1997	500	382	41.211115	-72.358378
12/3/1997	400	306	41.211599	-72.358061
12/4/1997	500	382	41.211565	-72.358261
12/5/1997	750	573	41.211115	-72.358378
12/5/1997	600	459	41.211332	-72.358328
12/6/1997	400	306	41.211565	-72.358261
12/10/1997	750	573	41.211565	-72.358261
12/10/1997	800	612	41.211332	-72.358328
12/11/1997	850	650	41.211382	-72.358128
12/12/1997	750	573	41.211382	-72.358128
12/13/1997	500	382	41.211332	-72.358328
12/13/1997	750	573	41.211299	-72.358528
12/16/1997	800	612	41.211299	-72.358528
12/17/1997	800	612	41.211299	-72.358528
12/18/1997	900	688	41.211332	-72.358328
12/18/1997	900	688	41.211065	-72.358578
12/19/1997	800	612	41.211565	-72.358261

12/20/1997	800	612	41.211299	-72.358528
12/22/1997	700	535	41.211115	-72.358378
12/23/1997	650	497	41.211115	-72.358378
12/23/1997	600	459	41.211332	-72.358328
12/26/1997	700	535	41.211299	-72.358528
12/27/1997	500	382	41.211565	-72.358261
12/27/1997	750	573	41.211599	-72.358061
12/28/1997	500	382	41.211332	-72.358328
12/28/1997	450	344	41.211115	-72.358378
2/26/1998	200	153	41.211115	-72.358378
Total Dredged Material Volume:	40,700	31,117		