

H12158

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT

Type of Survey: Navigable Area
Registry Number: H12158

LOCALITY

State: New York
General Locality: Approach to Ambrose Channel
Sub-locality: 14 NM east of Sandy Hook Point, NJ

2009

CHIEF OF PARTY
CDR Shepard M. Smith
NOAA

LIBRARY & ARCHIVES
DATE

HYDROGRAPHIC TITLE SHEET

H12158

INSTRUCTIONS: The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State: **New York**

General Locality: **Approach to Ambrose Channel**

Sub-Locality: **14 NM east of Sandy Hook Point**

Scale: **1:40,000** Date of Survey: **10/21/09 to 11/09/09**

Instructions Dated: **22 July, 2009** Project Number: **OPR-B310-TJ-09**

Vessel: **NOAA Ship *Thomas Jefferson*, *Launch Vessel 3102***

Chief of Party: **CDR Shepard M. Smith , NOAA**

Surveyed by: ***Thomas Jefferson* Personnel**

Soundings by: **Reson 7125 multibeam echo sounder.**

Graphic record scaled by: **N/A**

Graphic record checked by: **N/A**

Protracted by: **N/A** Automated Plot: **N/A**

Verification by: ***Atlantic Hydrographic Branch***

Soundings in: **Meters at MLLW**

H-cell Units in Feet at MLLW

Remarks:
1) All Times are in UTC.
2) This is a Navigable Area Hydrographic Survey.
3) Projection is NAD83, UTM Zone 18N.
Red, Bold, Italic notes made during office processing.

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Descriptive Report to Accompany Hydrographic Survey H12158

Project OPR-B310-TJ-09
 Approach to Ambrose Channel, NY
 14 NM east of Sandy Hook Point
 Scale 1:40,000
 October 21st – November 9th, 2009
NOAA Ship *Thomas Jefferson*

A. AREA SURVEYED

This hydrographic survey was completed as specified by Hydrographic Survey Letter Instructions OPR-B310-TJ-09*, dated 22nd July, 2009 and Change 01v2 to Final Instructions OPR-B310-TJ-09 NY Harbor *dated 8th September, 2009. The registry number came from ~~AHB~~ ***Hydrographic Surveys Division (HSD)*** in an email dated 09 October, 2009. The survey area is shown in figure 1.

Northern limit	Southern limit	Eastern limit	Western limit
40°32'11"	40°23'39"	-073°39'53"	-073°44'46"

Data acquisition was conducted from October 21st to November 9th, 2009.

The purpose of the project is to provide accurate depths and object detection in the approaches to New York Harbor. The goal is to provide accurate navigation data for safe and efficient marine transportation in the region. This project covers approximately 31 square nautical miles of critical survey area as designated in NOAA *Hydrographic Survey Priorities, 2008 edition*. ****filed with original field reports.***

	Linear Nautical Miles
LNM Single beam mainscheme only	N/A
LNM Multibeam mainscheme only	1131
LNM Lidar mainscheme only	N/A
LNM Side Scan Sonar mainscheme only	1
Lineal nautical miles of any combination of the above techniques (SSS 200%, MBES)	N/A
LNM Crosslines singlebeam and multibeam combined	59.5
LNM Lidar Crosslines	N/A
LNM development lines non mainscheme	N/A
LNM shoreline/nearshore investigations	N/A
Number of Bottom Samples	9 7
Number of items investigated that required additional time/effort in the field beyond the above survey operations	N/A
Total number of square nautical miles	39.9

Table 1: Hydrographic Survey Statistics

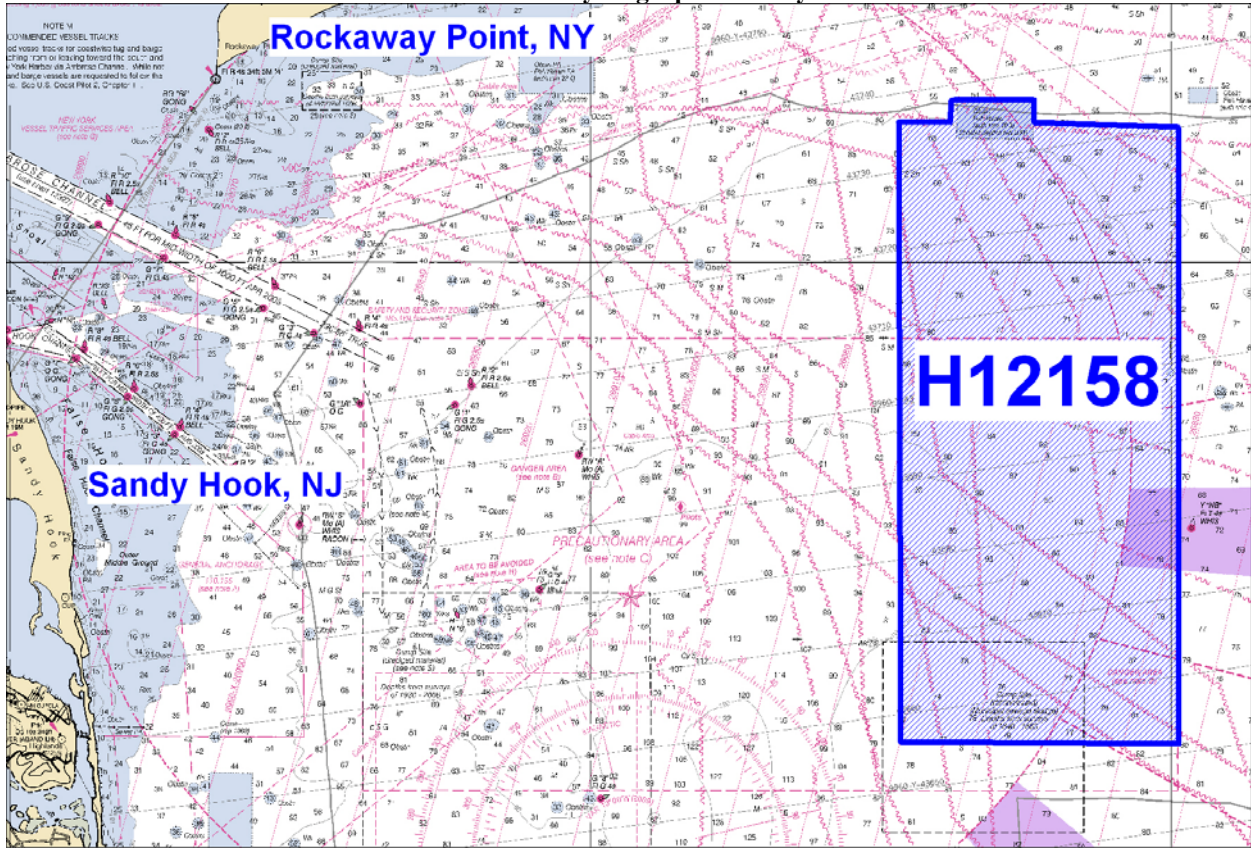


Fig. 1. H12158 Survey Area.

Calendar Date	Julian Day
October 21	294
October 22	295
October 23	296
October 25	298
October 26	299
October 27	300
October 28	301
November 2	306
November 3	307
November 4	308
November 5	309
November 6	310
November 7	311
November 8	312
November 9	313

Table 2: H12158 MBES Acquisition Dates**B. DATA ACQUISITION AND PROCESSING**

Refer to *OPR-B310-TJ-09 Data Acquisition and Processing Report (DAPR)** for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods. Additional information to supplement sounding and survey data, and any deviations from the DAPR* are included in this descriptive report. **Concur.**

B 1. EQUIPMENT AND VESSELS

Data were acquired by NOAA Ship *Thomas Jefferson*. NOAA Ship *Thomas Jefferson* acquired Reson 7125 multibeam echo sounder (MBES) soundings, sound velocity profiles, and Sea bed samples. NOAA launch *3102* acquired MBES soundings and Klein 5000 side scan imagery. Configurations, equipment operation and data acquisition and processing were consistent with specifications described in the *DAPR**. **Concur.**

B 2. QUALITY CONTROL**B 2.1 System Certification and Calibration**

Refer to NOAA Ship *Thomas Jefferson's DAPR** and *Hydrographic Systems Readiness Report (HSRR*)* for a complete description of system integration and initial calibration results for equipment and sensors used for this survey. **Concur.**

B.2.2 Sounding Coverage

As per the project instructions, this survey was conducted using complete multibeam coverage. The CUBE surfaces used were gridded at 0.5 meters for water depth of less than 20 meters and 2 meters at depths greater than **20** meters as per Letter Instructions*. **Concur.**

Some areas of the survey have less than the required 5 soundings per grid node, in particular just shoal of the 20 meter isobaths, as shown in Figure 2. Deeper than 20m, the grid size is 2 meters and there is adequate sounding density. **Concur. *filed with original field reports.**

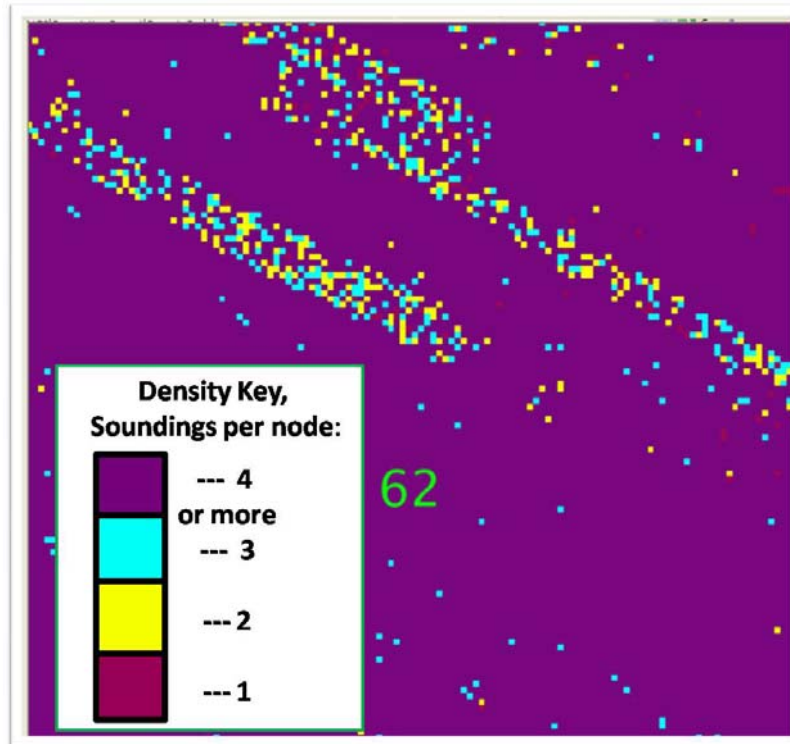


Figure 2: Sounding density near the 20 meter contour. Less than 20 meters the grid size is 0.5 meters, deeper than 20 meters the grid size is 2 meters. Sounding in image is in feet.

There is a 27 meter by 70 meter rectangular hole in the data record near the location of $40^{\circ}30'56''$ north latitude and $73^{\circ}39'59''$ west longitude. This is a result of a momentary heave artifact on line 103_133 acquired on day 311 by S222. The heave artifact is in excess of 0.8 meter and its cause is unknown. As no contacts were seen in the affected area, this data was removed. *Concur.*

There is a fish haven centered along the north edge of the survey area. The multibeam record showed that there is an east west ridge within this fish haven built of spoil and debris, see figure 3. As this anthropogenic reef rises as much as 5 meters above the surrounding bathymetry and during the times of survey operations there were often more than fifty boats anchored along this feature. Full multibeam coverage was not achieved in this area. Three gaps in coverage exist along its length. A line of side-scan data was obtained in this area and no evidence of additional high points were seen. *Concur.*

The minimum depth observed within the fish haven was slightly deeper than the charted depth; see appendix II* for details. *Concur. *filed with original field reports.*

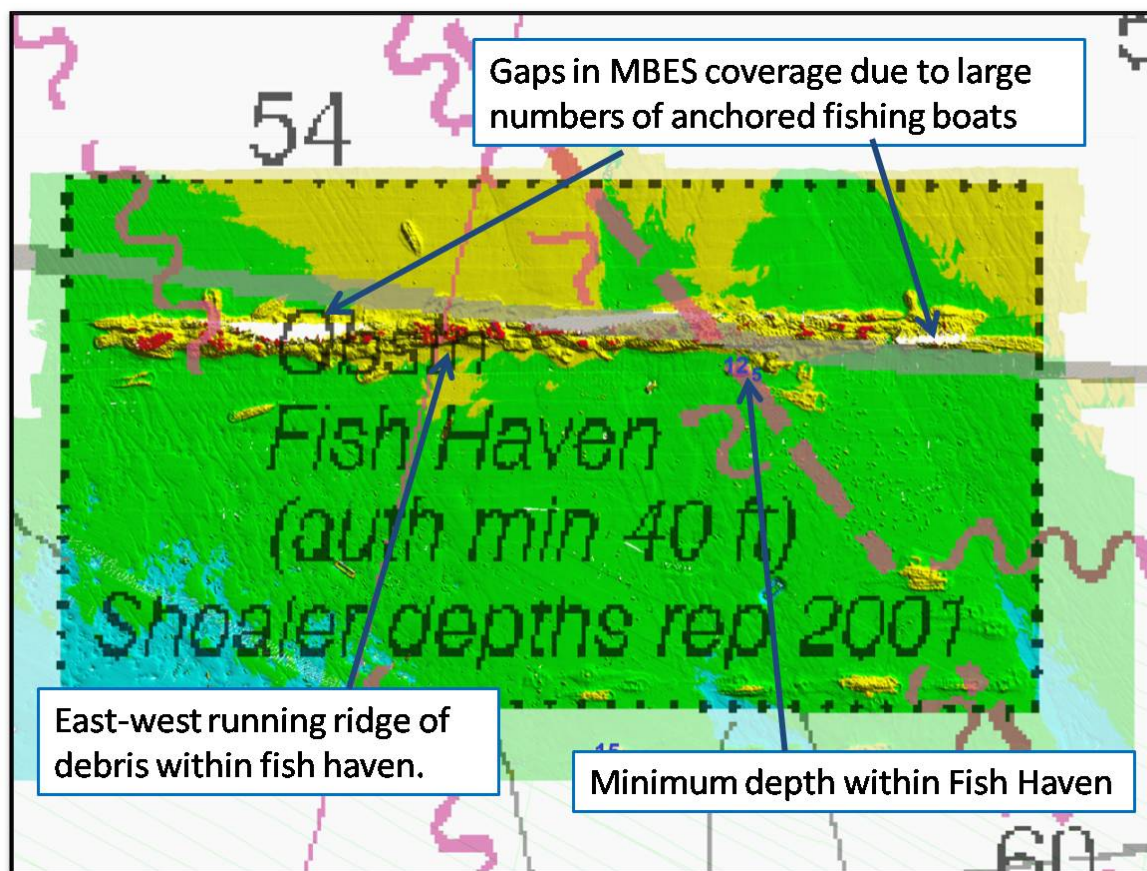


Figure 3: Multi-beam echo sounding image of the fish haven along north edge of survey area. East-west oriented reef of spoil and debris is visible in the bathymetry.

B 2.3 Crosslines

Multibeam echosounder cross-lines totaling 59.5 LNM (approximately 5.2% of the total main scheme, multibeam hydrography) were acquired during the course of the survey. As per email instructions dated 10 Sept, 2009 from AHB and located in the Descriptive Report, Appendix 5, quality control was performed using the standard deviation layer of the survey’s CUBE surface. Areas of unusually high standard deviation were investigated and resolved in processing, except where caused by areas of high bathymetric relief. Very few, if any, crosslines showed a standard deviation with the mainscheme record of greater than 0.2 meters. See section B.2.5 for description of exceptions. *Concur.*

B 2.4 Junctions and Prior Surveys

The following contemporary surveys junction with H12138, see figure 4.

<u>Registry #</u>	<u>Scale</u>	<u>Date</u>	<u>Field Party</u>	<u>Junction side</u>
H12036	1:40,000	2009	<i>Thomas Jefferson</i>	West
H12138	1:10,000	2009	<i>Thomas Jefferson</i>	North-West

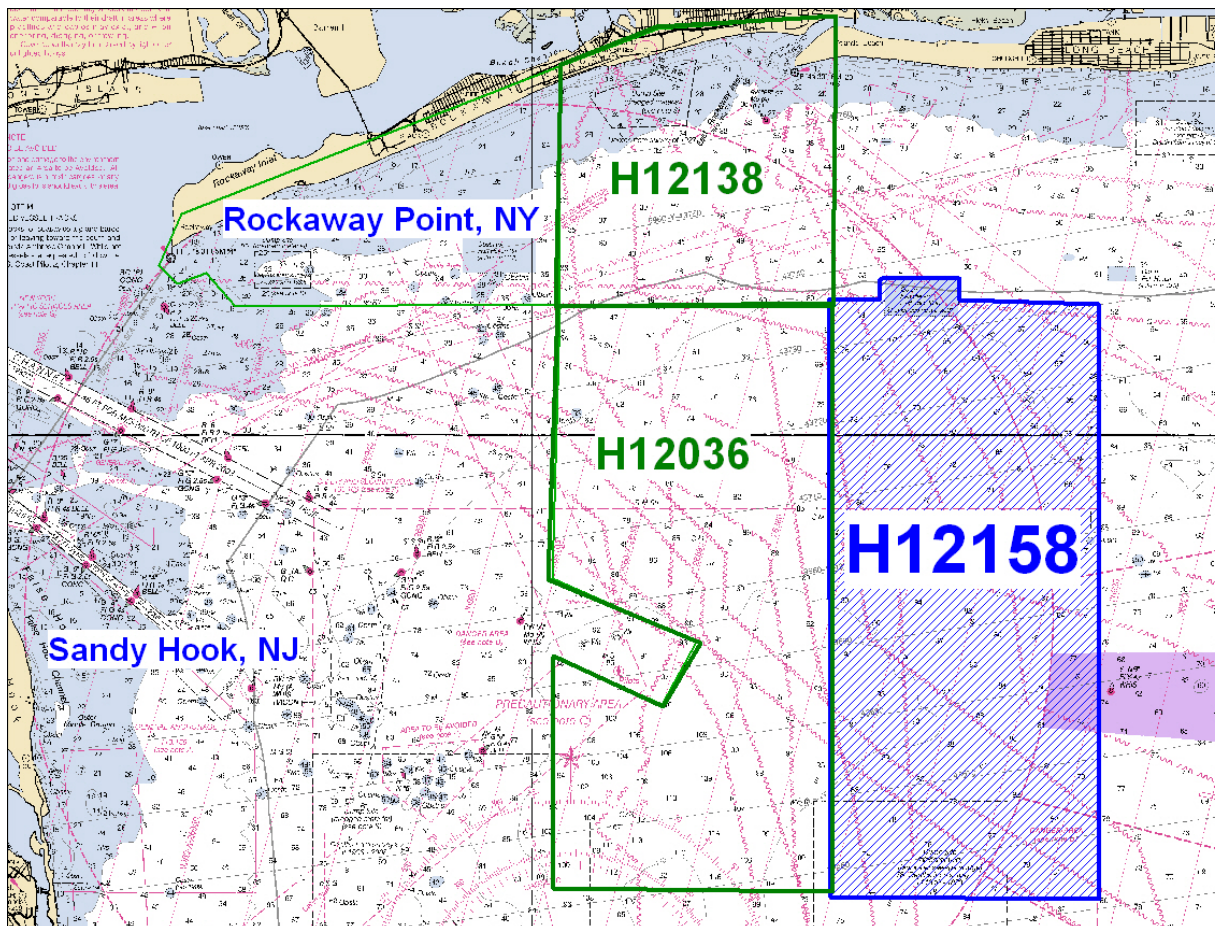


Figure 4: Junction Surveys.

The soundings that junction between H12036 and H12158 agree within 1 foot. Survey H12138, which is primarily a side scan sonar survey in this area has no overlapping bathymetry. **Concur with clarification. H12036 and H12158 agree to within 1-3 feet.**

B 2.5 Systematic Errors

No apparent systematic errors were observed during the time of the survey. **Concur with clarification; all systematic errors were within the IHO Order 1 error budget.**

B 3. CORRECTIONS TO ECHO SOUNDING

HDSC sounding data were reduced to mean lower-low water (MLLW) using verified water levels from The Battery, NY (8518750), and Sandy Hook, NJ (8531680) using preliminary zoning accepted as final zoning and illustrated in Figure 4.

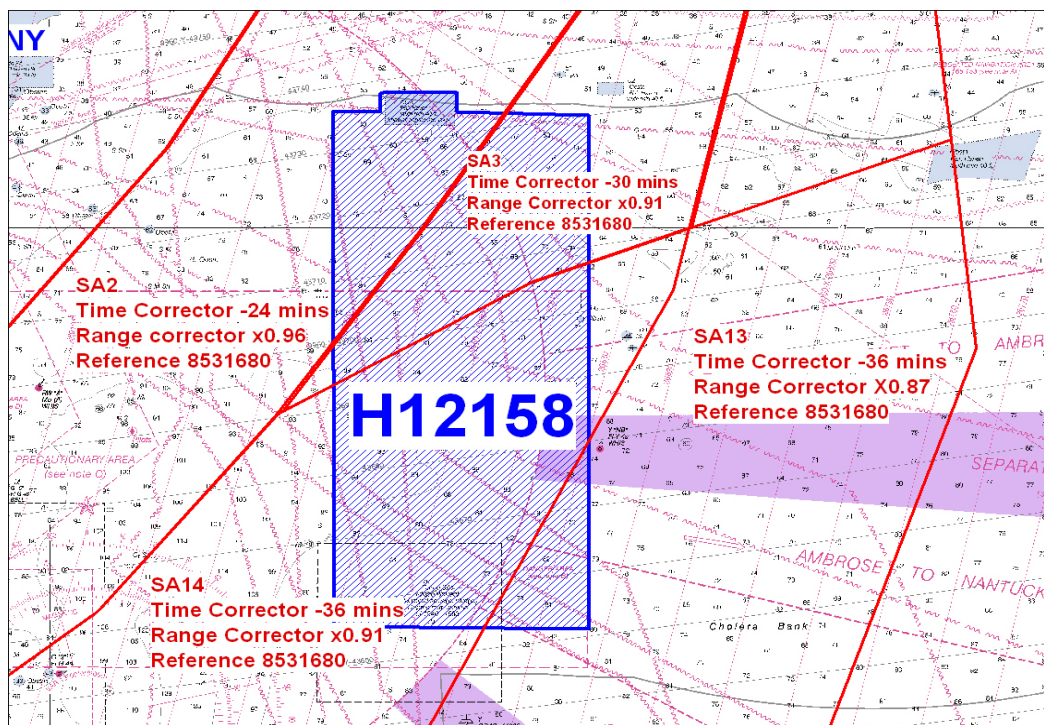


Fig 4: Final Tide Zoning

All other datum reduction procedures conform to those outlined in the *DAPR**. **Concur.**

All methods and instruments used for sound velocity correction were as described in the *DAPR**. A table detailing all sound velocity casts is located in *Separate II** of this Descriptive Report. **Concur.**

Sound velocity corrections for this survey were applied using the Conductivity, Temperature and Depth (CTD) profiler from the ship and launch *3102*. **Concur.**
**filed with original field reports.*

B 4. DATA PROCESSING

B 4.1 Total Propagated Error

For the 2009 field season, Total Propagated Error (TPE) parameters for sound, speed, and tides are calculated separately for each project. The project-specific parameters for OPR-B310-TJ-09, Survey H12158 are as follows:

Project	Vessel	Tide Values Combined Measured & Zoning	Sound Velocity Values		
			CTD	MVP	Surface
H12158	222	0.09	4	N/A	0.2
H12158	3102	0.09	4	N/A	0.2

Table 3: TPE Parameters

These values were calculated for all MBES data following CARIS Merge. **Concur.**

B 4.2 BASE Surfaces and Mosaics

Table 4 describes all BASE Surfaces submitted as part of Survey H12158:

<i>Name of Surface</i>	<i>Resolution</i>	<i>Type</i>	<i>Purpose</i>
H12158_S222_2m_A 2m		CUBE	Southwest DTM
H12158_S222_2m_B 2m		CUBE	Southeast DTM
H12158_S222_2m_C 2m		CUBE	Southcentral DTM
H12158_S222_2m_D 2m		CUBE	Central DTM
H12158_S222_2m_E 2m		CUBE	Northwest DTM
H12158_S222_2m_F 2m		CUBE	Northeast DTM
H12158_E1_CUBE_50cm	0.5m	CUBE	Northwest <20m DTM
H12158_E2_CUBE_50cm	0.5m	CUBE	Northwest <20m DTM
H12158_F1_CUBE_50cm	0.5m	CUBE	Northeast <20m DTM
H12158_F2_CUBE_50cm 0.5m		CUBE	Northeast <20m DTM
H12158_F3_CUBE_50cm 0.5m		CUBE	Northeast <20m DTM
<i>H12158_G1_CUBE_50cm 0.5m</i>		<i>CUBE</i>	<i>East <20m DTM: created during office processing</i>
H12158_FishHaven_50cm	0.5m	CUBE	North Fish Haven DTM
H12158_Feature_1d1_50cm 0.5m		CUBE	Reported feature 1.1
H12158_Feature_1d2_50cm 0.5m		CUBE	Reported feature 1.2
H12158_Feature_1d3_50cm 0.5m		CUBE	Reported feature 1.3
H12158_Feature_1d4_50cm 0.5m		CUBE	Reported feature 1.4
H12158_Feature_1d5_50cm 0.5m		CUBE	Reported feature 1.5
H12158_Feature_1d6_50cm 0.5m		CUBE	Reported feature 1.6
H12158_Feature_1d7_50cm 0.5m		CUBE	Reported feature 1.7
H12158_Feature_1d8_50cm 0.5m		CUBE	Reported feature 1.8

Table 4: BASE Surfaces

This survey was processed using the Combined Uncertainty and Bathymetry Estimator (CUBE) algorithm. The CUBE configuration was set to NOAA_0.5m for object detection surfaces (shoal of 20 meters) and NOAA_2m for all main-scheme **Complete Coverage** surfaces (deeper than 20 meters). Refer to the *2009 Data Acquisition and Processing Report**, *2009 Field Procedures Manual*, and *CARIS HIPS and SIPS User Guide* for further discussion. **Concur.**
**filed with original field reports.*

B 4.3 Data Cleaning

The survey data were cleaned using the swath and subset editor tools in CARIS. All areas of the BASE surface that indicated a high standard deviation were examined and cleaned as required such that no residual errors exist in the surface that exceed the International Hydrographic Organization (IHO) order 1 depth accuracy requirements. *Concur with clarification, additional data fliers were identified and cleaned during office processing.*

C. HORIZONTAL AND VERTICAL CONTROL

As per FPM section 5.2.3.2.3 a HVCR report was not filed as no horizontal or vertical control stations were established by the field party for this survey. A summary of horizontal and vertical control for this survey follows. *Concur.*

C 1.1 Horizontal Control

The horizontal datum for this project is the North American Datum of 1983 (NAD83). Differential GPS (DGPS) was the sole method of positioning. Differential corrections from U.S. Coast Guard beacons at Moriches, NY (293 kHz), and Sandy Hook, NJ (286 kHz), were used during this survey.

No horizontal control stations were established by the field party for this survey. *Concur.*

C 1.2 Vertical Control

The vertical datum for this project is Mean Lower-Low Water (MLLW). The operating National Water Level Observation Network (NWLON) stations at the Battery, NY (8518750), and Sandy Hook, NJ (8531680) will serve as datum control for H12158. A request for delivery of final approved (verified) tides for this survey was forwarded to N/OPS1 on 10 November, 2009* in accordance with the FPM and project letter instructions. *Concur.*

D. RESULTS AND RECOMMENDATIONS

D.1 Chart Comparison

D 1.1 Chart 12326 Comparison

Survey H12158 was compared to Chart 12326, (51st Ed., 04/01/2009, 1:80,000), the largest scale chart covering the survey area. Generally soundings agreed with the chart to within 2 feet throughout the survey area. Exceptions to this rule are in 4 locations where there are wrecks or obstructions. Each of these are described in the feature report, appendix 2*. *Concur.*

D 1.2 ENC US4NY1AM Comparison

This ENC is digitized from raster chart 12326. See 12326 chart comparison for details. *Concur. *filed with original field reports.*

D.2 Additional Results

D.2.1 Automated Wreck and Obstruction Information Service (AWOIS) Items

No AWOIS items were investigated for this survey. *Concur.*

D.2.4 Shoreline

There is no shoreline within the sheet limits of survey H12158. *Concur.*

D.2.5 Charted Features

Concur with clarification. A charted OBSTRN was observed during SAR. The charted OBSTRN exists within survey area at Latitude 40-28-33.7242 Longitude 073-40-00.2179. See Appendix-II for charting recommendations.

D.2.5.1 Uncharted Features

See Appendix-II for charting recommendations.

D.2.6 Charted Pipelines and Cables

Charted submarine cable and pipeline areas cover nearly the entire survey area. One damaged cable or pipeline was observed on the seabed in the vicinity of 40°30'07" north latitude by 073°40'39" west longitude. This object is within a charted pipeline area and does not appear to present any navigational hazard. No other cables or pipelines were observed in this survey so any which do exist are assumed to be properly buried. The hydrographer has no recommendations regarding these. *Concur.*

D.2.7 Bridges, Ferry Routes, and Overhead Cables

There are no ferry routes, bridges, or overhead cable crossings within the limits of the survey. *Concur.*

D.3 Dangers to Navigation and Shoals

D 3.1 Dangers to Navigation

No dangers to navigation were found or reported to the NOAA's Office of Coast Survey. *Concur.*

D 3.2 Shoals

There were no significant uncharted shoals discovered during this survey. *Concur.*

D.4 Aids to Navigation

There are no charted Aids to Navigation (ATON) within the limits of H12158. *Concur.*

D.5 Coast Pilot Information

The Hydrographer has no recommendations for changes or addenda to the Coast Pilot. *Concur.*

D.6 Miscellaneous

Bottom Samples

~~9~~ 7 seabed samples were collected in accordance with NOAA Hydrographic Survey Specifications and Deliverables. ~~A description of all bottom samples acquired during Survey H12158 are contained in the Hydro PSS.~~ A list of all bottom samples acquired during Survey H12158 is also *are* contained in Appendix V* of this report. *Concur.*

Environmental Conditions and Notes

No significant environmental conditions occurred during the survey. *Concur.*

D.8 Adequacy of Survey

This survey is considered complete and adequate to supersede charted depths and features within the common area except as noted in this report. *Concur.*

Summary and Recommendations for Additional Work

No additional work is needed to complete this survey. No changes significant to navigation have been noted and it is recommended that this survey receive normal processing priority. *Concur. *filed with original field reports.*


E. APPROVAL


As Lead Hydrographer, I have ensured that standard field surveying and processing procedures were followed in producing this examination in accordance with the Office of Coast Survey Hydrographic Surveys Division’s *Field Procedures Manual*, and NOS *Hydrographic Surveys Specifications and Deliverables*. Field operations for this basic hydrographic survey were conducted under my daily supervision with frequent checks of progress and adequacy.

All field sheets, this Descriptive Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to N/CS33, Atlantic Hydrographic Branch.

The *Data Acquisition and Processing Report* for OPR-B310-TJ-09 is submitted separately and contains additional information relevant to this survey.

Approved and Forwarded:

 Mark Blankenship
2009.12.23
16:12:43 Z

 Digitally signed by Shepard Smith
Date: 2009.12.23 11:27:23 -05'00'


LT Mark A. Blankenship, NOAA
Field Operations Officer

CDR Shepard M. Smith, NOAA
Commanding Officer

In addition, the following individuals were also responsible for overseeing data acquisition and processing of this survey:

Survey Managers:

Jasmine Cousins Jasmine Cousins
2009.12.23
16:10:25 Z

 Doug Wood
2009.12.23
16:10:55 Z

ENS Jasmine Cousins, NOAA

SST Douglas A. Wood, NOAA

Appendix I

Dangers to Navigation

- none

Appendix II

Survey Features Report

1. AWOIS Items

- **none**

2. Charted Features

- **none**

3. Uncharted Features

- **eight**

H12158 Appendix 2 Feature Report

Registry Number: H12158
State: New York
Locality: Approaches to New York Harbor
Sub-locality: 14NM East of Sandy Hook Pt.
Project Number: OPR-B310-TJ-09
Survey Dates: 10/27/2009 - 12/01/2010

Charts Affected

Number	Edition	Date	Scale (RNC)	RNC Correction(s)*
12350	59th	03/01/2006	1:20,000 (12350_1)	[L]NTM: ?
12326	51st	04/01/2009	1:80,000 (12326_1)	USCG LNM: 06/23/2009 (07/14/2009) CHS NTM: None (05/29/2009) NGA NTM: 05/10/2003 (07/25/2009)
12300	47th	05/01/2008	1:400,000 (12300_1)	[L]NTM: ?
13006	34th	05/01/2007	1:675,000 (13006_1)	[L]NTM: ?
5161	13th	10/01/2003	1:1,058,400 (5161_1)	[L]NTM: ?
13003	49th	04/01/2007	1:1,200,000 (13003_1)	[L]NTM: ?

* Correction(s) - source: last correction applied (last correction reviewed--"cleared date")

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	4504/223 - Sounding	Shoal	23.12 m	40° 26' 26.9" N	073° 40' 41.5" W	---
1.2	4171/298 - Obstruction	Obstruction	15.97 m	40° 30' 56.2" N	073° 42' 44.4" W	---
1.3	522/372 - Obstruction	Obstruction	14.84 m	40° 31' 46.7" N	073° 44' 15.9" W	---
1.4	11914/266 - Obstruction	Obstruction	15.42 m	40° 31' 34.3" N	073° 42' 57.0" W	---
1.5	2405/296 - Obstruction	Obstruction	16.08 m	40° 31' 34.5" N	073° 42' 36.9" W	---
1.6	3584/370 - Fish Haven	Obstruction	12.52 m	40° 31' 57.7" N	073° 42' 46.2" W	---
1.7	1916/203 - Wreck	Wreck	15.93 m	40° 31' 36.2" N	073° 43' 45.5" W	---
1.8	Charted Obstn - Disproved	GP	[None]	40° 28' 33.6" N	073° 40' 00.7" W	---

1.1) 4504/223 - Sounding

Survey Summary

Survey Position: 40° 26' 26.9" N, 073° 40' 41.5" W
Least Depth: 23.12 m (= 75.87 ft = 12.644 fm = 12 fm 3.87 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 1.001 m ; **TVU (TPEv)** ± 0.282 m
Timestamp: 2009-300.08:44:29.131 (10/27/2009)
Survey Line: h12158 / tj_s222_reson7125_stbd / 2009-300 / 000_0833
Profile/Beam: 4504/223
Charts Affected: 12326_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

Tall contact, minimum depth shoal of charted soundings.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h12158/tj_s222_reson7125_stbd/2009-300/000_0833	4504/223	0.00	000.0	Primary

Hydrographer Recommendations

Add obstruction.

S-57 Data

[None]

Office Notes

Do not concur. Item is just over a meter tall in 80 feet of water, chart representative sounding.

Feature Images

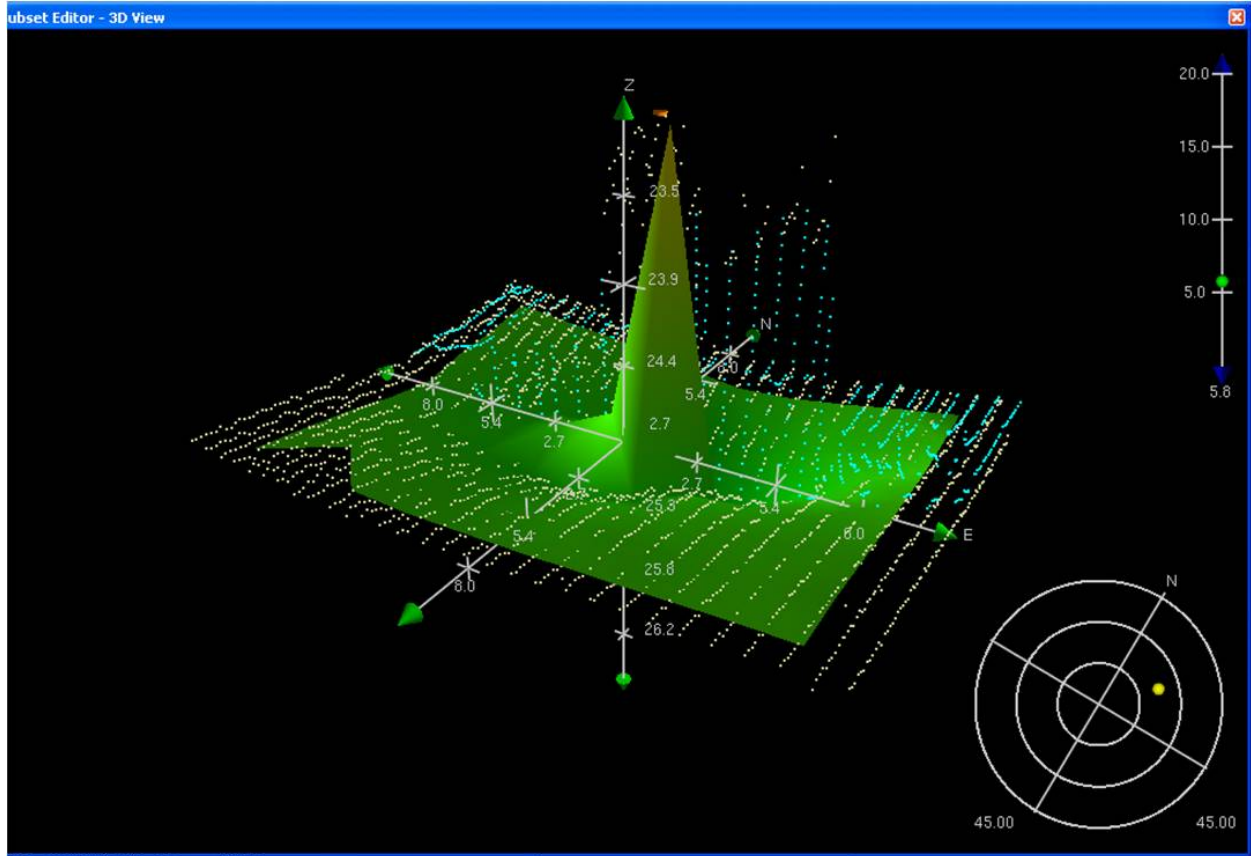


Figure 1.1.1

1.2) 4171/298 - Obstruction

Survey Summary

Survey Position: 40° 30' 56.2" N, 073° 42' 44.4" W
Least Depth: 15.97 m (= 52.39 ft = 8.732 fm = 8 fm 4.39 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 1.000 m ; **TVU (TPEv)** ± 0.271 m
Timestamp: 2009-310.06:01:07.100 (11/06/2009)
Survey Line: h12158 / tj_s222_reson7125_stbd / 2009-310 / 151_0550
Profile/Beam: 4171/298
Charts Affected: 12326_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

25 meter long, 4 meter tall wreck or obstruction.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h12158/tj_s222_reson7125_stbd/2009-310/151_0550	4171/298	0.00	000.0	Primary

Hydrographer Recommendations

Add obstruction.

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: SORDAT - 20091109
 SORIND - US,US,nsurf,H12158
 VALSOU - 15.969 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart dangerous OBSTRN with least depth 53.471 ft at present survey position at Latitude 40-30-56.3361, Longitude 073-42-44.3227

1.3) 522/372 - Obstruction

Survey Summary

Survey Position: 40° 31' 46.7" N, 073° 44' 15.9" W
Least Depth: 14.84 m (= 48.68 ft = 8.113 fm = 8 fm 0.68 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 1.002 m ; **TVU (TPEv)** ± 0.275 m
Timestamp: 2009-310.12:43:12.399 (11/06/2009)
Survey Line: h12158 / tj_s222_reson7125_stbd / 2009-310 / 172_1242
Profile/Beam: 522/372
Charts Affected: 12350_1, 12326_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

4.5 meter tall obstruction. Minimum depth significantly shoal of charted soundings, however, it is not deemed to be a DTON due to its proximity to the fish haven. Also no deep draft traffic was observed in this area during the survey.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h12158/tj_s222_reson7125_stbd/2009-310/172_1242	522/372	0.00	000.0	Primary

Hydrographer Recommendations

Add obstruction.

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: QUASOU - 6:least depth known
 SORDAT - 20091109
 SORIND - US,Us,nsurf,H12158
 VALSOU - 14.837 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur. Chart dangerous OBSTRN with least depth 48 ft at present survey position at Latitude 40-31-46.7011, Longitude 073-44-15.8593.

Feature Images

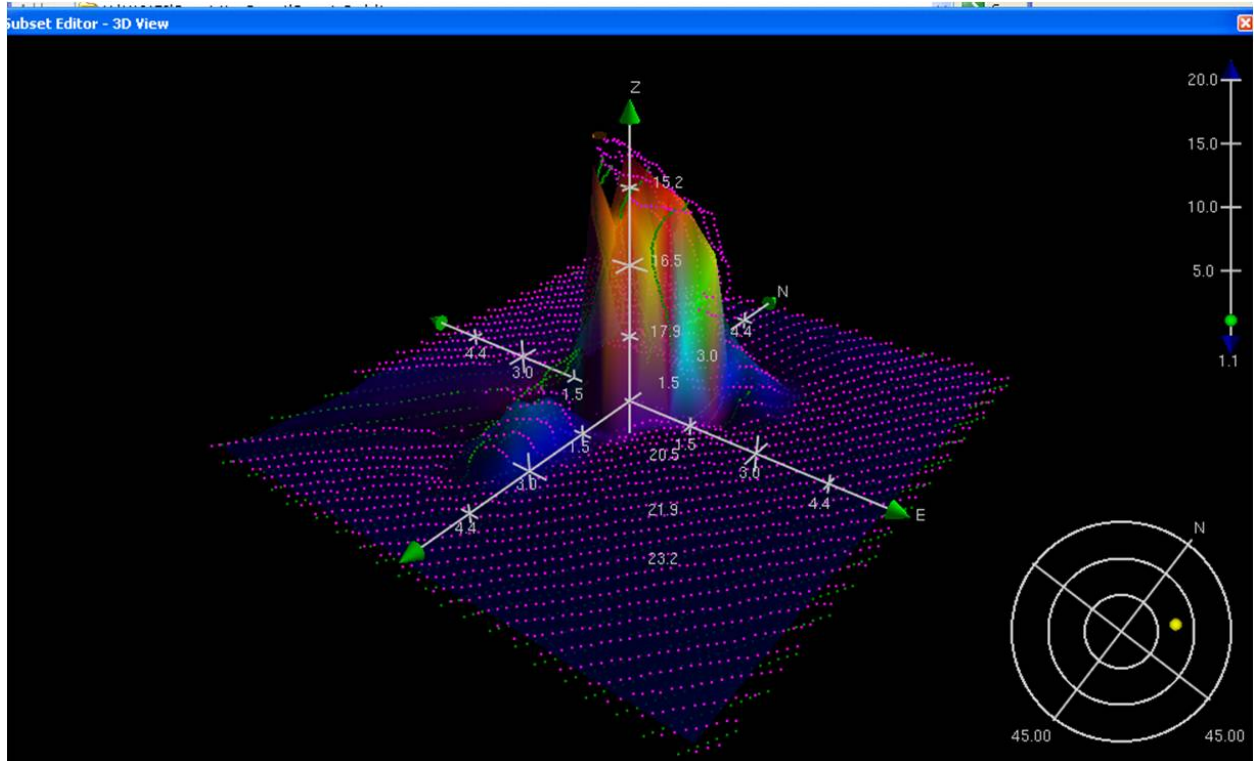


Figure 1.3.1

1.4) 11914/266 - Obstruction

Survey Summary

Survey Position: 40° 31' 34.3" N, 073° 42' 57.0" W
Least Depth: 15.42 m (= 50.59 ft = 8.432 fm = 8 fm 2.59 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 1.000 m ; **TVU (TPEv)** ± 0.271 m
Timestamp: 2009-310.21:00:46.110 (11/06/2009)
Survey Line: h12158 / tj_s222_reson7125_stbd / 2009-310 / 185_2040
Profile/Beam: 11914/266
Charts Affected: 12326_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

Debris pile, minimum depth shoal of current charted sounding.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h12158/tj_s222_reson7125_stbd/2009-310/185_2040	11914/266	0.00	000.0	Primary
h12158/tj_s222_reson7125_stbd/2009-310/185_2040	11895/299	9.19	274.8	Secondary (grouped)

Hydrographer Recommendations

Add obstruction or extend southern border of fish haven to south to include this obstruction.

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: QUASOU - 6,7:least depth known,least depth unknown, safe clearance at value shown
 SORDAT - 20091109
 SORIND - US,Us,nsurf,H12158
 VALSOU - 15.420 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart dangerous OBSTRN with least depth 50 ft at present survey position at Latitude 40-31-34.2890, Longitude 073-42-56.9869

Feature Images

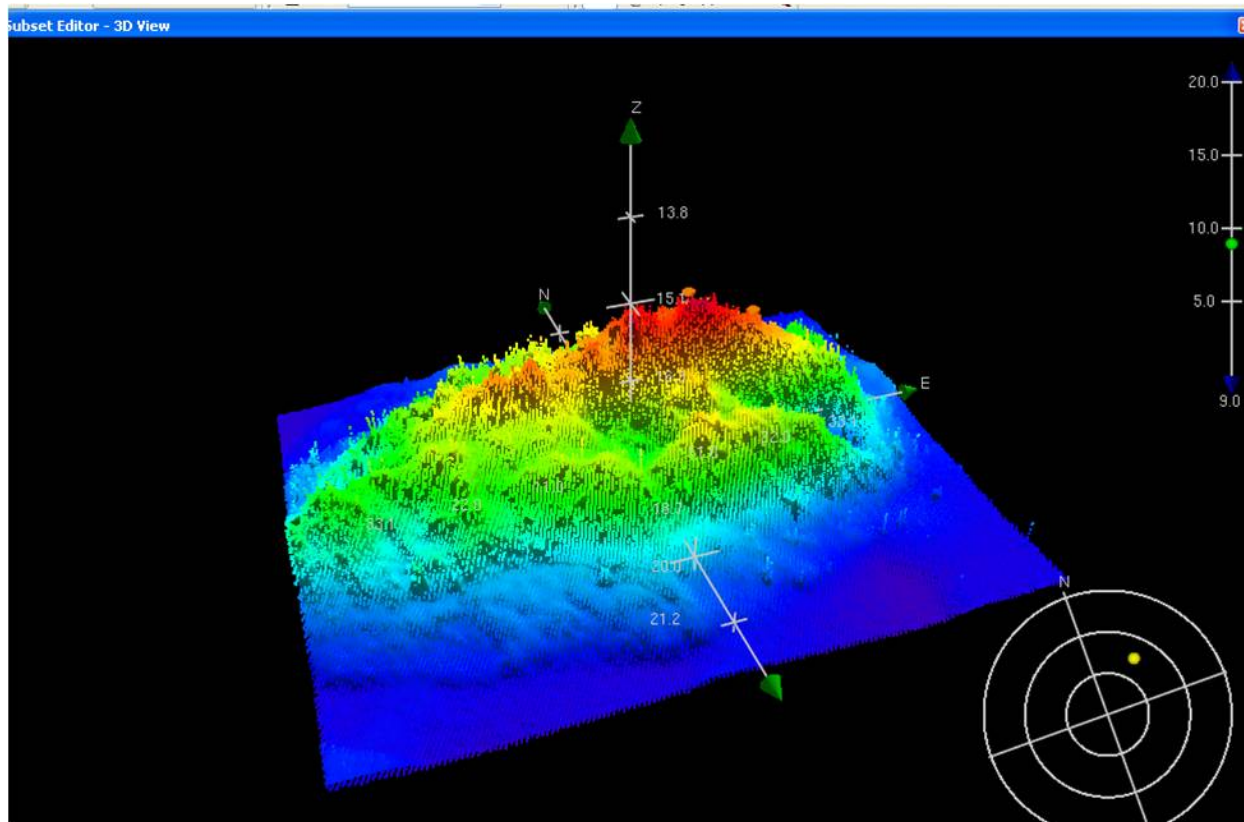


Figure 1.4.1

1.5) 2405/296 - Obstruction

Survey Summary

Survey Position: 40° 31' 34.5" N, 073° 42' 36.9" W
Least Depth: 16.08 m (= 52.75 ft = 8.792 fm = 8 fm 4.75 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 1.000 m ; **TVU (TPEv)** ± 0.273 m
Timestamp: 2009-311.03:20:35.127 (11/07/2009)
Survey Line: h12158 / tj_s222_reson7125_stbd / 2009-311 / 205_0316
Profile/Beam: 2405/296
Charts Affected: 12326_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

Large debris pile outside of fish haven, significantly shoal of charted soundings.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h12158/tj_s222_reson7125_stbd/2009-311/205_0316	2405/296	0.00	000.0	Primary

Hydrographer Recommendations

Add obstruction or extend southern border of fish haven south to include this obstruction.

Cartographically-Rounded Depth (Affected Charts):

52ft (12326_1)

8 $\frac{3}{4}$ fm (12300_1, 13006_1, 13003_1)

16.1m (5161_1)

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: QUASOU - 6:least depth known
 SORDAT - 20091109
 SORIND - US,US,nsurf,H12158
 VALSOU - 16.078 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur with clarification. Chart dangerous OBSTRN with least depth 52 ft at present survey position at Latitude 40-31-34.4791, Longitude 073-42-36.8665

Feature Images

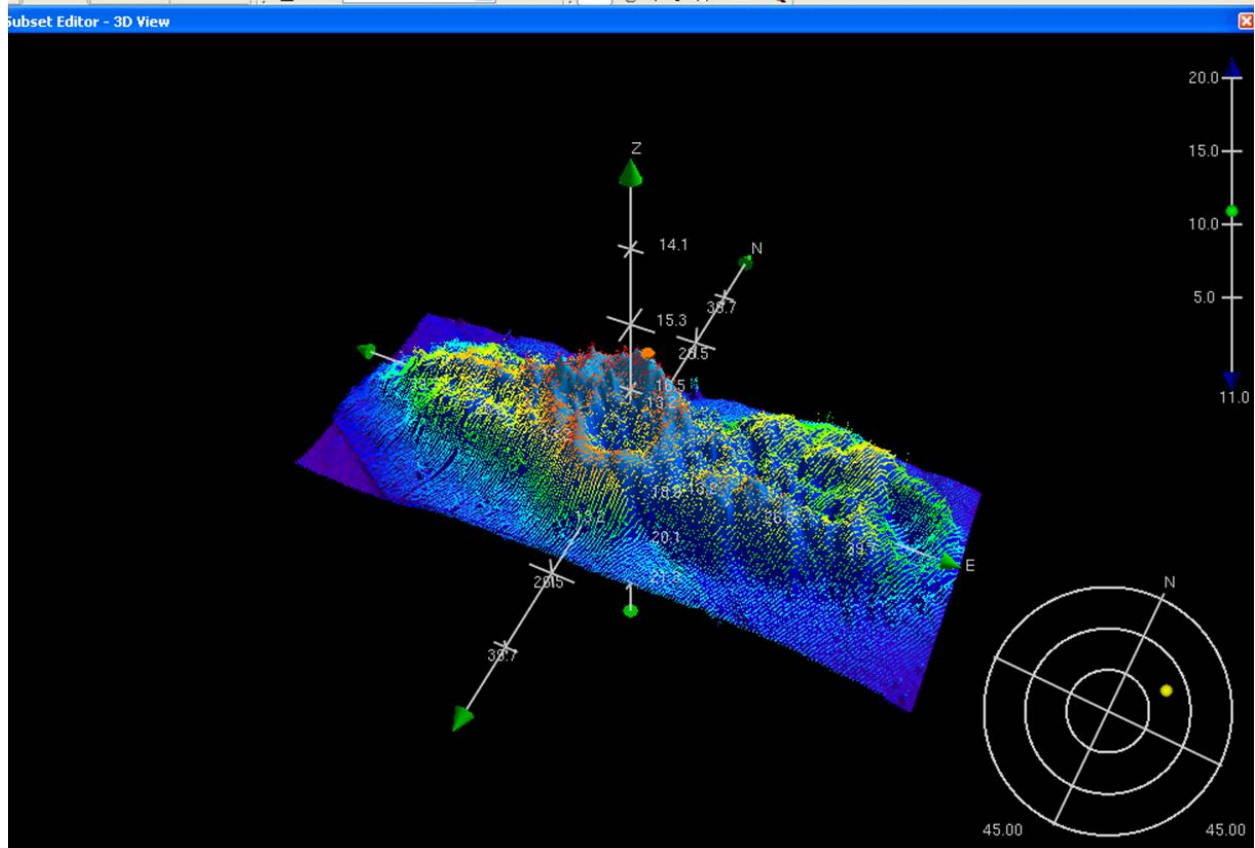


Figure 1.5.1

1.6) 3584/370 - Fish Haven

Survey Summary

Survey Position: 40° 31' 57.7" N, 073° 42' 46.2" W
Least Depth: 12.52 m (= 41.07 ft = 6.845 fm = 6 fm 5.07 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 1.003 m ; **TVU (TPEv)** ± 0.218 m
Timestamp: 2009-313.16:32:21.676 (11/09/2009)
Survey Line: h12158 / tj_3102_reson7125_mb / 2009-313 / 409_1626
Profile/Beam: 3584/370
Charts Affected: 12326_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

Minimum depth within Fish Haven, see descriptive report section B.2.2 for information.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h12158/tj_3102_reson7125_mb/2009-313/409_1626	3584/370	0.00	000.0	Primary

Hydrographer Recommendations

Retain charted fish haven with 'auth min 40 ft'. Remove 'Shoaler depths rep 2001' note

S-57 Data

Geo object 1: Obstruction (OBSTRN)
Attributes: CATOBS - 5:fish haven
 QUASOU - 6:least depth known
 SORDAT - 20091109
 SORIND - US,US,nsurf,H12158
 TECSOU - 3:found by multi-beam
 VALSOU - 12.518 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur. Retain Fish Haven with 'auth min 40 ft.' Remove 'Shoaler depths rep 2001' note.

Feature Images

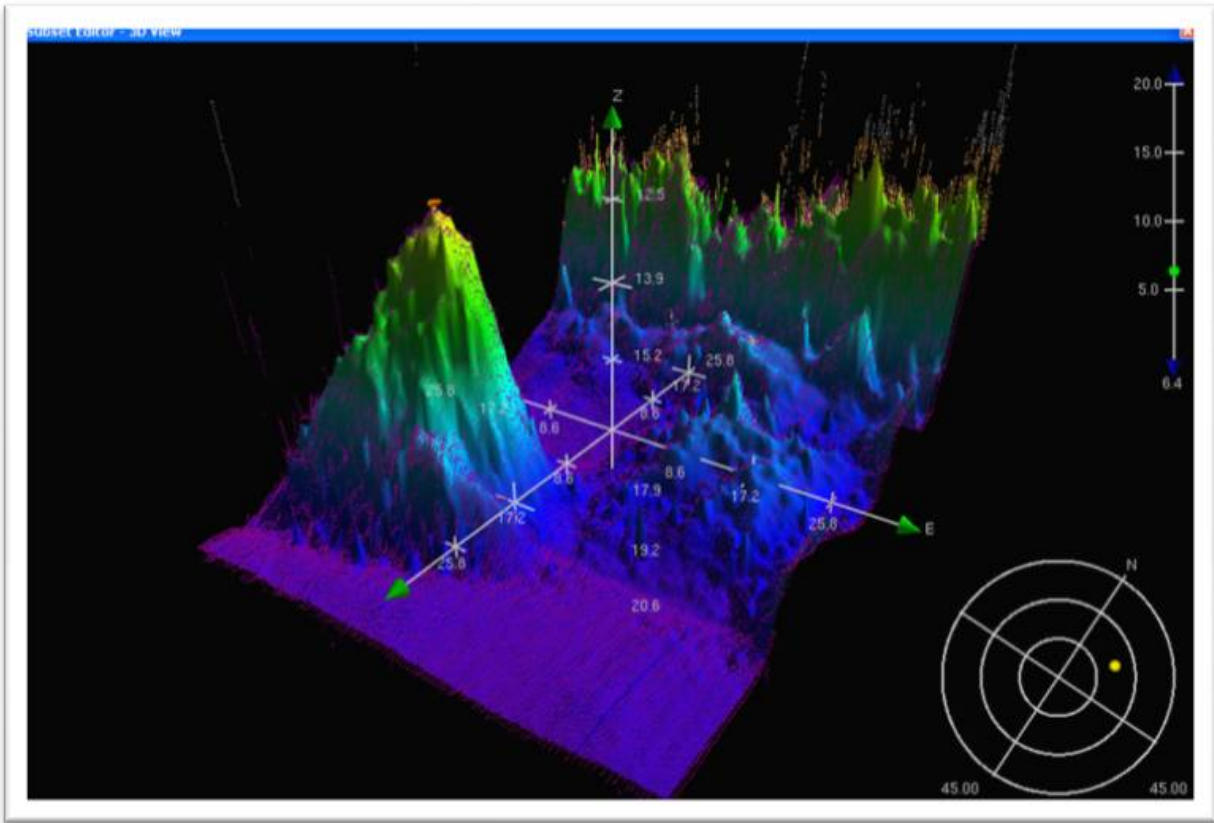


Figure 1.6.1

1.7) 1916/203 - Wreck

Survey Summary

Survey Position: 40° 31' 36.2" N, 073° 43' 45.5" W
Least Depth: 15.93 m (= 52.28 ft = 8.713 fm = 8 fm 4.28 ft)
TPU ($\pm 1.96\sigma$): **THU (TPEh)** ± 1.001 m ; **TVU (TPEv)** ± 0.273 m
Timestamp: 2009-310.14:07:18.704 (11/06/2009)
Survey Line: h12158 / tj_s222_reson7125_stbd / 2009-310 / 174_1403
Profile/Beam: 1916/203
Charts Affected: 12326_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

22 meter long wreck.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h12158/tj_s222_reson7125_stbd/2009-310/174_1403	1916/203	0.00	000.0	Primary

Hydrographer Recommendations

Add wreck.

Cartographically-Rounded Depth (Affected Charts):

52ft (12326_1)

8 $\frac{3}{4}$ fm (12300_1, 13006_1, 13003_1)

15.9m (5161_1)

S-57 Data

Geo object 1: Wreck (WRECKS)
Attributes: CATWRK - 2:dangerous wreck
 QUASOU - 6:least depth known
 SORDAT - 20091109
 SORIND - US,US,nsurf,H12158
 VALSOU - 15.934 m
 WATLEV - 3:always under water/submerged

Office Notes

Concur. Chart a dangerous wreck with least depth 52 ft at survey position at Latitude 40-31-36.1967, Longitude 073-43-45.5318

Feature Images

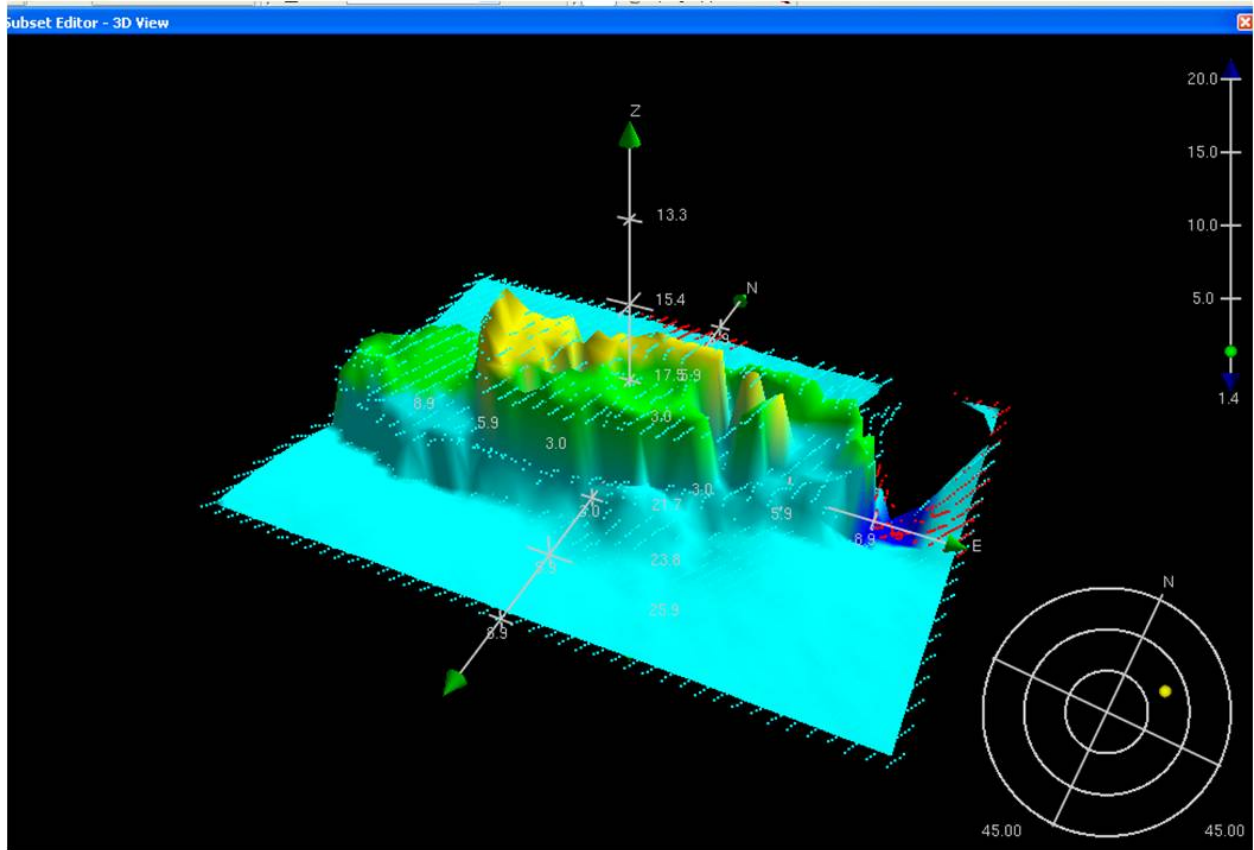


Figure 1.7.1

1.8) Charted Obstn - Disproved

Survey Summary

Survey Position: 40° 28' 33.6" N, 073° 40' 00.7" W
Least Depth: [None]
TPU ($\pm 1.96\sigma$): **THU (TPEh)** [None] ; **TVU (TPEv)** [None]
Timestamp: 2010-335.15:54:10 (12/01/2010)
GP Dataset: ChartGPs - Digitized
GP No.: 1
Charts Affected: 12326_1, 12300_1, 13006_1, 5161_1, 13003_1

Remarks:

[None]

Feature Correlation

Address	Feature	Range	Azimuth	Status
ChartGPs - Digitized	1	0.00	000.0	Primary

Hydrographer Recommendations

No obstn found using complete coverage MBES.

S-57 Data

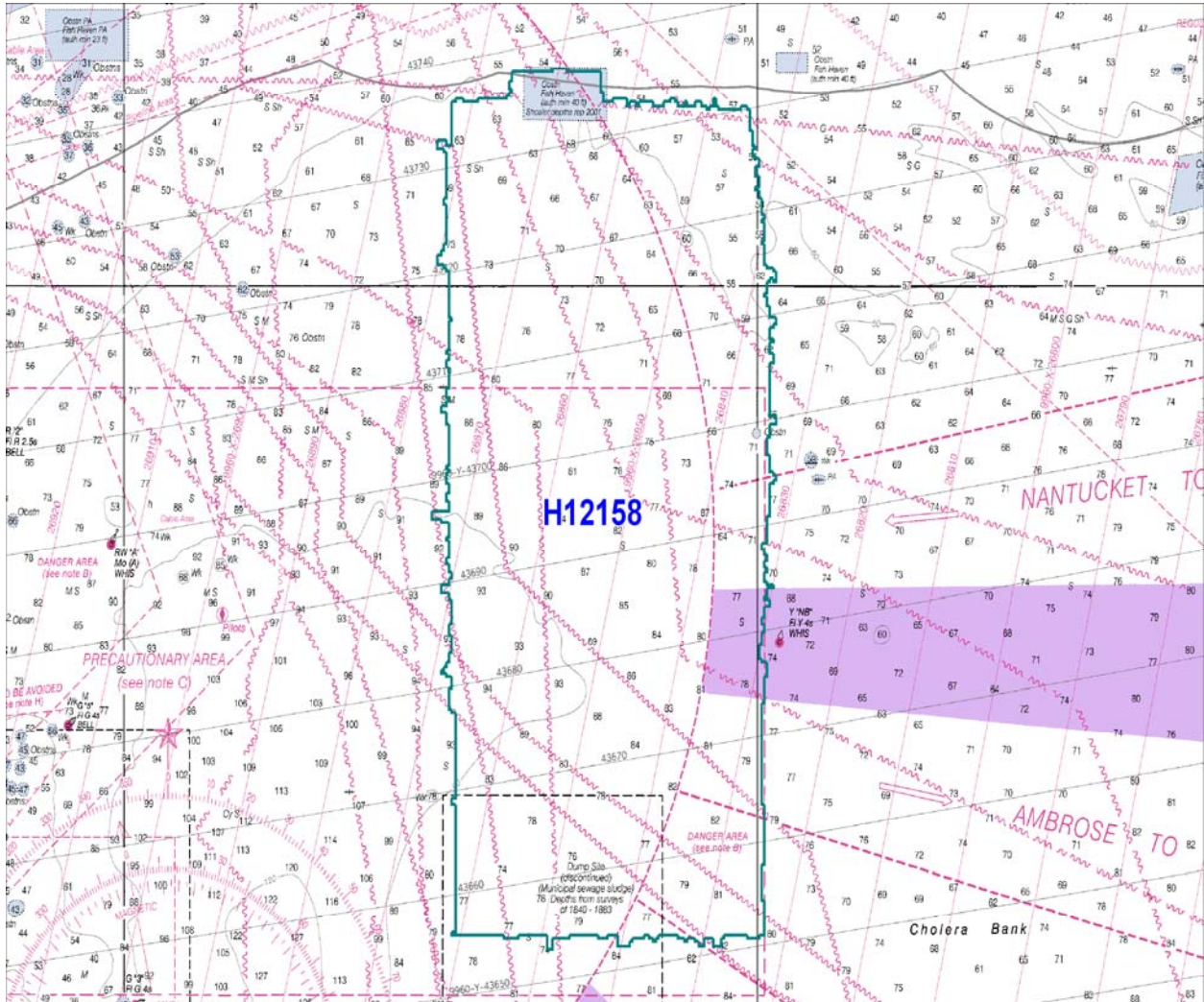
[None]

Office Notes

Concur. Delete charted dangerous OBSTRN at Latitude 40-28-32.5308, Longitude 073-40-01.0992

Appendix III

Progress Sketch



NOAA Ship THOMAS JEFFERSON

FY 2009 Project Statistics

Project	Location	Month/ Year	LNM VBES		LNM MB		LNM SSS		*vbes & SSS		*MB+SSS		Items Investigated	Tide Gauges Installed / Removed	Bottom Samples
			Ship	Launch	Ship	Launch	Ship	Launch	Ship	Launch	Ship	Launch			
CY 2009															
OPR-B310	H12158	Nov-09	0.00	0.00	1188.52	2.09	0.00	1.10	0.00	0.00	0.00	0.00	24	0	9

Appendix IV

Tides and Water Levels

- 1. Tide Notes**
- 2. Request for Approved Tides**
- 3. Final Tide Notes**



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE : November 13, 2009

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-B310-TJ-2009
HYDROGRAPHIC SHEET: H12158

LOCALITY: 14 NM East of Sandy Hook Pt., NY
TIME PERIOD: October 21 - November 9, 2009

TIDE STATION USED: 853-1680 Sandy Hook, NJ
Lat. 40° 28.0'N Long. 74° 0.6' W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.492 meters

REMARKS: RECOMMENDED ZONING

Preliminary zoning is accepted as the final zoning for project OPR-B310-TJ-2009, H12158, during the time period between October 12 and November 9, 2009.

Please use the zoning file "B310TJ2009CORP_Rev2" submitted with the project instructions for OPR-B310-TJ-2009. Zones SA2, SA3, SA13 and SA14 are the applicable zones for H12158.

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time on the 1983-2001 National Tidal Datum Epoch (NTDE).

Peter J. Stone

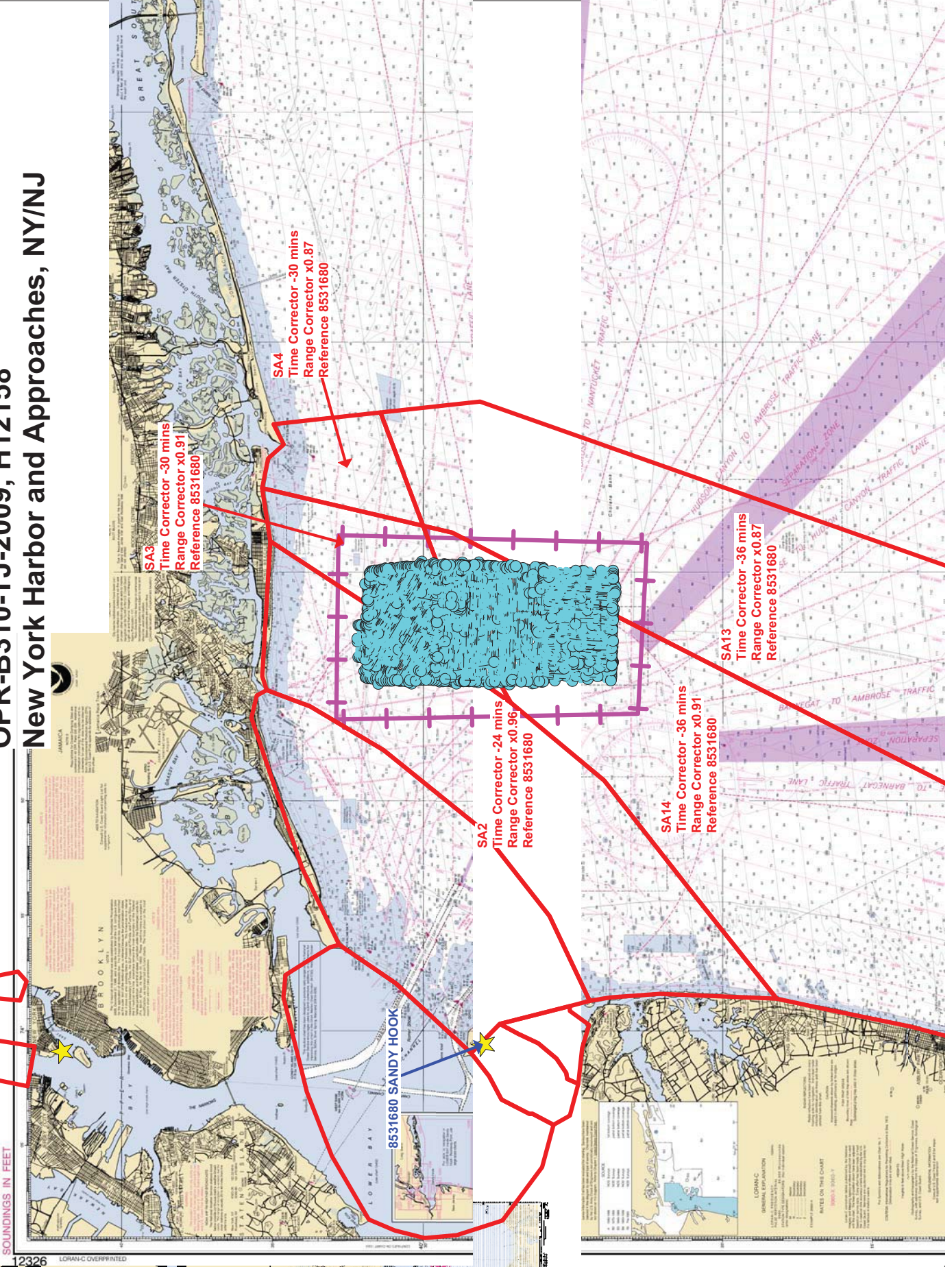
Digitally signed by Peter J. Stone
DN: cn=Peter J. Stone, o=CO-OPS, ou=NOAA/
NOS, email=peter.stone@noaa.gov, c=US
Date: 2009.11.18 14:50:21 -05'00'

CHIEF, OCEANOGRAPHIC DIVISION



Preliminary as Tidal Zoning for OPR-B310-TJ-2009, H12158 New York Harbor and Approaches, NY/NJ

TRK
BETH



Appendix V

Supplemental Survey Records & Correspondence

Subject: [Fwd: Re: requirements for B310, H1XXXXX]
From: "co.thomas.jefferson" <co.thomas.jefferson@noaa.gov>
Date: Sat, 07 Nov 2009 10:52:42 -0500
To: foo.thomas.jefferson@noaa.gov
CC: James M Crocker <James.M.Crocker@noaa.gov>

So, Complete with OD developments deeper than 20m, OD for less than 20m.

CO

----- Original Message -----

Subject: Re: requirements for B310, H1XXXXX
Date: Fri, 09 Oct 2009 15:05:27 -0400
From: james.m.crocker <James.M.Crocker@noaa.gov>
To: co.thomas.jefferson <CO.Thomas.Jefferson@noaa.gov>
References: <4ACE7C6D.2070908@noaa.gov> <4ACF276A.7030504@noaa.gov>
<4ACF8464.9050602@noaa.gov>

Shep,

What type of coverage did you use for the first ship sheet? I'm fine with the same approach as BIS.

Jim

co.thomas.jefferson wrote:

> Hi Jim,
>
> Would you consider doing the same way we are doing the BIS ship sheets
> in similar depths? Complete MB with OD developments and disprovals?
> In these depths, we get the multibeam coverage anyway while doing the
> SSS, which then adds little. Most of the area is nowhere near
> critical underkeel clearance depths.
>
> We can do it either way, just thought we would throw it out.
>
> Shep
>
> We will run the numbers both ways and let you know which is going to
> be more time.
> CDR Shepard Smith, NOAA
> Commanding Officer
> NOAA Ship Thomas Jefferson
> 439 West York St
> Norfolk, VA 23510
> 757-647-0187
>
>

> james.m.crocker wrote:

>> Jasper,
>>
>> Survey requirements are the same and for greater than 20 m complete
>> MB is required and not OD MB. Of course nav sig features will
>> require OB MB development.
>>
>> Regards,
>> Jim
>>

>> jasper schaeer wrote:
>>> CDR Crocker-
>>>
>>> Does the eastern sheet we would like add adjunct to H12036 have any
>>> different survey requirements? Charted depths range from 57 to 93.
>>> Relatively featureless. Is there any reason why we cannot be just
>>> a OD MB survey only?
>>>
>>>
>>>
>>> V/r-js

--
CDR Shepard Smith, NOAA
Commanding Officer
NOAA Ship Thomas Jefferson
439 West York St
Norfolk, VA 23510
757-647-0187

Subject: H12158, B310 need updated awois info

From: "jasper schae" <jasper.schaer@noaa.gov>

Date: Wed, 14 Oct 2009 17:08:52 -0400

To: Jeremy McHugh <Jeremy.McHugh@noaa.gov>

CC: james.m.crocker@noaa.gov, "co.thomas.jefferson" <co.thomas.jefferson@noaa.gov>

see attached.

r-js

Re_ Need a _H_ registry for east sheet of H12158.pdf

Content-Type: application/pdf

Content-Encoding: base64

Subject: Re: Crossline comparison

From: Chris van Westendorp <Christiaan.VanWestendorp@noaa.gov>

Date: Thu, 10 Sep 2009 13:00:35 -0400

To: "mark.blankenship" <Mark.Blankenship@noaa.gov>

CC: LCDR Rick Brennan <Richard.T.Brennan@noaa.gov>, Castle Parker <Castle.E.Parker@noaa.gov>, Edward Owens <Edward.Owens@noaa.gov>, LT Jasper Schaer <jasper.schaer@noaa.gov>, CDR Shep Smith <Shep.Smith@noaa.gov>, Daniel Wright <Daniel.Wright@noaa.gov>

Mark,

Per 5.1.4.3 of the HSSD, AHB authorizes TJ to use the Standard Deviation layer to conduct surface difference comparison and analysis on future survey submissions of multibeam data. This meets the crossline comparison requirement laid out in HSSD.

Please let me know if you have any questions or need for further clarification.

R/

LCDR Chris van Westendorp, NOAA

mark.blankenship wrote:

Chris,

You mentioned in the meeting today that AHB was not going to require the multiple CUBE surface comparison, instead allowing us to use a single surface standard deviation layer to do our checks with. Is there any memo coming out for that?

Mark

LCDR Chris van Westendorp <christiaan.vanwestendorp@noaa.gov>

Atlantic Hydrographic Branch

NOAA OCS

Subject: Re: H12158, B310 need updated awois info
From: Jeremy.McHugh@noaa.gov
Date: Mon, 19 Oct 2009 11:02:41 -0400
To: jasper.schaer <jasper.schaer@noaa.gov>

Hi Jasper,
I am back in the office now and going through email.

Jim is right. There are no AWOIS items assigned for this new survey. The database I sent previously for the project still applies and is valid.

Let me know if you have more questions,
Jeremy

----- Original Message -----

From: jasper.schaer <jasper.schaer@noaa.gov>
Date: Wednesday, October 14, 2009 9:13 pm
Subject: Re: H12158, B310 need updated awois info
To: "james.m.crocker" <James.M.Crocker@noaa.gov>
Cc: Jeremy McHugh <Jeremy.McHugh@noaa.gov>, "co.thomas.jefferson" <CO.Thomas.Jefferson@noaa.gov>

Sir,

I was not sure, since we expanded the survey scope beyond the limits of the projected 09 season, if the the awois data base in our project instruction was still validate. I will standby to hear from jeremy, if there are any updates.

r-js

james.m.crocker wrote:

Japer,
Your message seems cryptic but I'll do my best to answer what I think you are asking. Jeremy has been out on leave and then sick so he can

confirm once he gets back to the office. There aren't any AWOIS items assigned on this sheet. There are AWOIS items that can be provided for information, which are located at the northern edge of the sheet, near and in the fish haven, and for the charted obstruction on the eastern edge of the sheet.

Regards,
Jim

jasper.schaer wrote:
see attached.

r-js

Subject: Re: Need a "H" registry for east sheet of H12036
From: "james.m.crocker" <James.M.Crocker@noaa.gov>
Date: Fri, 09 Oct 2009 07:58:47 -0400
To: jasper schaeer <jasper.schaer@noaa.gov>
CC: Jeremy McHugh <Jeremy.McHugh@noaa.gov>, "co.thomas.jefferson" <CO.Thomas.Jefferson@noaa.gov>, daniel wright <Daniel.Wright@noaa.gov>, Mark Blankenship <Mark.Blankenship@noaa.gov>

Jasper,

Registry information for new sheet:

Survey Number H12158
Project Number OPR-B310-TJ-09
Survey Type H
Locality Approaches to New York Harbor
Sub Locality 14NM East of Sandy Hook Pt.
State New York,
Scale 40,000
Sheet 5

Regards,
Jim

jasper schaeer wrote:

Jeremy-

About to wrap up H12036, would like to start on the next sheet east. Need a registry.

-js

CDR James Crocker, NOAA <James.m.crocker@noaa.gov>
Chief, Operations Branch
Hydrographic Surveys Division
NOAA

AHB COMPILATION LOG

General Survey Information	
REGISTRY No.	H12158
PROJECT No.	OPR-B310-TJ-09
FIELD UNIT	NOAA SHIP THOMAS JEFFERSON
DATE OF SURVEY	20091021 - 20091109
LARGEST SCALE CHART	<i>12326_1, edition 51, 20090401, 1:80,000</i>
ADDITIONAL CHARTS	N/A
SOUNDING UNITS	FEET
COMPILER	Rosemary P. Abbitt

Source Grids	File Name
	H:\Compilation\H12158_B310_TJ\AHB_H12158\SAR Final Products\GRIDS
	H12158_E1_CUBE_NOAA_50cm_Final.csar H12158_E2_CUBE_NOAA50cm_Final.csar H12158_F1_CUBE_NOAA50cm_Final.csar H12158_F3_CUBE_NOAA50cm_Final.csar H12158_F3_CUBE_NOAA50cm_Final.csar H12158_F_CUBE_2m_Final.csar H12158_Feature_1d1_50cm_Final.csar H12158_Feature_1d2_50cm_Final.csar H12158_Feature_1d3_50cm_Final.csar H12158_Feature_1d4_50cm_Final.csar H12158_Feature_1d5_50cm_Final.csar H12158_Feature_1d6_50cm_Final.csar H12158_Feature_1d7_50cm_Final.csar H12158_Feature_1d8_50cm_Final.csar H12158_FishHaven_50cm_Final.csar H12158_G1_CUBE_50cm_Final.csar H12158_S222_2m_A_Final.csar H12158_S222_2m_B_Final.csar H12158_S222_2m_C_Final.csar H12158_S222_2m_D_Final.csar H12158_S222_2m_E_Final.csar
Surfaces	File Name
	H:\Compilation\H12158_B310_TJ\AHB_H12158\COMPILE\Working
<i>Combined</i>	H12158_2m_Combined.csar
<i>Interpolated TIN</i>	\Interpolated TIN\H12158_12m_InterpTIN.csar
<i>Shifted Interpolated TIN</i>	\Shifted Surface\H12158_12m_InterpTIN_Shifted.csar
Final HOBs	File Name
	H:\Compilation\H12158_B310_TJ\AHB_H12158\COMPILE\Final_Hobs
<i>Survey Scale Soundings</i>	H12158_SS_Soundings.hob
<i>Chart Scale Soundings</i>	H12158_CS_Soundings.hob
<i>Contour Layer</i>	H12158_Contours.hob
<i>Feature Layer</i>	H12158_Features.hob
<i>Meta-Objects Layer</i>	H12158_MetaObjects.hob
<i>Blue Notes</i>	H12158_BlueNotes.hob
<i>ENC Retain Soundings</i>	N/A

Meta-Objects Attribution

This Document is for Office Process use only and is intended to supplement, not supersede or replace, information/recommendations in the Descriptive or H-Cell Reports.

Acronym	Value
M_COVR	
CATCOV	1 – coverage available
SORDAT	20091109
SORIND	US,US,graph,H12158
M_QUAL	
CATZOC	6 – zone of confidence U (data not assessed)
INFORM	NOAA Ship Thomas Jefferson S222, and Launch Vessel 3102
POSACC	10.0 m
SORDAT	20091109
SORIND	US,US,graph,H12158
SUREND	20091109
SURSTA	20091021
DEPARE	
DRVALV 1	40.0197 ft
DRVALV2	95.7513 ft
SORDAT	20091109
SORIND	US,US,graph,H12158
M_CSCL	
CSCALE	N/A
SORDAT	
SORIND	

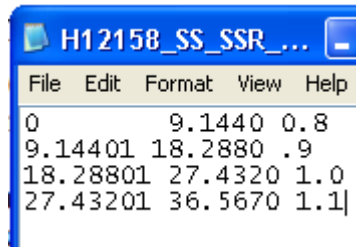
SPECIFICATIONS:

- I. COMBINED SURFACE:
 - a. Number of ESAR Final Grids: 21
 - b. Resolution of Combined (m): 4 m

- II. SURVEY SCALE SOUNDINGS (SS):
 - a. Attribute Name: Depth
 - b. Selection criteria: Radius, Shoal bias
 - c. Radius value is: mm at map scale
 - i. Use single-defined radius: N/A
 - ii. And/Or use radius table file: H12158_SS_SSR_table.txt [80k = chart scale]

- d. Queried Depth of All Soundings
 - i. Minimum: 40.0197ft
 - ii. Maximum: 95.7513 ft

- III. INTERPOLATED TIN SURFACE:
 - a. Resolution (m): 12 m
 - b. Interpolation method: Natural Neighbor
 - c. Shift value: -0.75 ft [only include applicable shift values]



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[-0.75 feet (And/Or) -0.75 fathoms]

IV. CONTOURS:

- | | |
|----------------------|-------------------------------------|
| a. Attribute Name: | Depth |
| b. Use a Depth List: | H12158_depth_contours_list_FEET.txt |
| c. Output Options: | Create contour lines |
| i. Line Object: | DEPCNT |
| ii. Value Attribute: | VALDCO |

V. FEATURES:

- | | | |
|----------------------------------|----|---|
| a. Number of Chart Features: | 13 | <i>[all features included in H-Cell]</i> |
| b. Number of Non-Chart Features: | 2 | <i>[all features submitted by field & not included in H-Cell]</i> |

VI. CHART SURVEY SOUNDINGS (CS):

- | | |
|--|----------------------------|
| a. Number of ENC CS Soundings: | 106 |
| b. Attribute Name: | Depth |
| c. Selection criteria: | Radius, Shoal bias |
| d. Radius value is: | Distance on the ground (m) |
| i. Use single-defined radius: | 1000 m |
| ii. <u>And/Or</u> use radius table file: | N/A |
| iii. Enable Filter: | Interpolated !=1 |
| e. Number Survey CS Soundings: | 111 |

VII. NOTES:

[Type text]

**ATLANTIC HYDROGRAPHIC BRANCH
H-CELL REPORT to ACCOMPANY
SURVEY H12158 (2009)**

This H-Cell Report has been written to supplement and/or clarify the original Descriptive Report (DR) and pass critical compilation information to the cartographers in the Marine Chart Division. Sections in this report refer to the corresponding sections of the Descriptive Report.

A. AREA SURVEYED

B. DATA ACQUISITION AND PROCESSING

B.2 QUALITY CONTROL

The AHB source depth grids for the survey's nautical chart update were .5m, and 2m resolution BASE surfaces (*.CSAR), which were combined at 4m resolution". The survey scale soundings were created from the combined surface at a single defined radius of 1mm at the largest scale chart covering the respective area of the survey (Chart 12326 ~ 1:80,000) and/or using a sounding spacing range (SSR) file. A TIN was created from the survey scale soundings, from which an interpolated surface of 12m resolution was generated. The chart scale soundings were derived from only the non-interpolated nodes of this surface to preserve absolute continuity between the charted depths, the survey scale soundings, and the original source grid. The chart scale soundings were selected using a single defined radius of 1000m on the ground. The chart scale soundings are a subset of the survey scale soundings. The surface model was referenced when selecting the chart scale soundings, to ensure that the selected soundings portray the bathymetry within the common area.

The interpolated TIN surface of 12m resolution was shifted by the NOAA sounding rounding value of -0.75 feet. The shifted interpolated TIN was used to generate depth contours in feet (60, and 90 feet). The depth contours are forwarded to MCD for reference only. The contours were utilized during chart scale sounding selection and quality assurance efforts at AHB. The depth contours are incorporated into the SS H-Cell product as per 2009 H-Cell Specifications.

The compilation products (Final *.HOB files) for this survey are detailed in the H12158 AHB Compilation Log contained within this document. The Final HOB files include depth areas (DEPARE), depth contours (DEPCNT), soundings (SOUNDG), meta-objects (M_COVR, and M_QUAL), cartographic Blue Notes (\$CSYMB), and features (OBSTRN, SBDARE, WRECK).

As dictated by Hydrographic Technical Directive 2008-8, the Final HOB files were combined into two separate H-Cell files in S-57 format. Both S-57 files were exported from CARIS Bathy DataBASE in meters, and then converted from metric units into feet using CARIS HOM ENC 3.3. Quality assurance and topology checks were conducted using CARIS S-57 Composer 2.1 and DKART Inspector 5.1 validation tests.

The final H-Cell products are two S-57 files, in Lat/Long NAD-83. The contents of these two H-Cell deliverables are listed in the table below:

TABLE 1 - Contents of H-Cell Files			
H12158_CS.000		Scale 1:80,000	
Object Class Types	Geographic	Cartographic	Meta
S-57 Object Acronyms	DEPARE	\$CSYMB	M_COVR
	OBSTRN		M_QUAL
	SBDARE		
	WRECKS		
	SOUNDG		
H12158_SS.000		Scale 1:40,000	
Object Class Types	Geographic		
S-57 Object Acronyms	DEPCNT		
	SOUNDG		

B.2.4 Junctions and Prior Surveys

Survey H12158 (2009) junctions with survey H12138 (2009) to the northwest and H12036 (2009) to the west. Most present survey depths compare within 1-2 feet of junctioning survey depths to the northwest, and within 1-2 feet of junctioning survey depths to the west. Most present survey depths compare within 1-2 feet of the charted hydrography to the north, south and east.

B.4 DATA PROCESSING

The following software was used to process data at the Atlantic Hydrographic Branch:

- CARIS Bathy DataBase version 3.0/HF10
- CARIS HIPS/SIPS version 7.0/SP2/HF6
- CARIS S-57 Composer version 2.1/HF5
- CARIS HOM ENC version 3.3/SP3/HF8
- DKART Inspector version 5.1
- HSTP Pydro version 10.11 (r3191)

C. HORIZONTAL AND VERTICAL CONTROL

The hydrographer makes adequate mention of horizontal and vertical control used for this survey in section C of the DR. The sounding datum for this survey is Mean Lower Low Water (MLLW), and the vertical datum is Mean High Water (MHW). Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD83), UTM projection zone 18 North.

D. RESULTS AND RECOMMENDATIONS

D.1 CHART COMPARISON 12326 (51st Edition, APRIL/2009)

Approaches to NY Fire Island Light to Sea Girt
Corrected through NM 03/19/2011
Corrected through LNM 03/08/2011
Scale 1:80,000

ENC COMPARISON US4NY1AM

Approaches to NY Fire Island Light to Sea Girt
Edition 22
Application Date 03/09/2011
Issue Date 03/09/2011
Chart 12326

D.2 ADDITIONAL RESULTS

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section D and Appendix I and II of the DR. The hydrographer recommends that any charted features not specifically addressed either in the H-Cell files or the Blue Notes should be retained as charted. The following exceptions are noted:

- a. This feature was generalized as a sounding due to the surrounding depths. This feature exists in depths 75-84 ft.

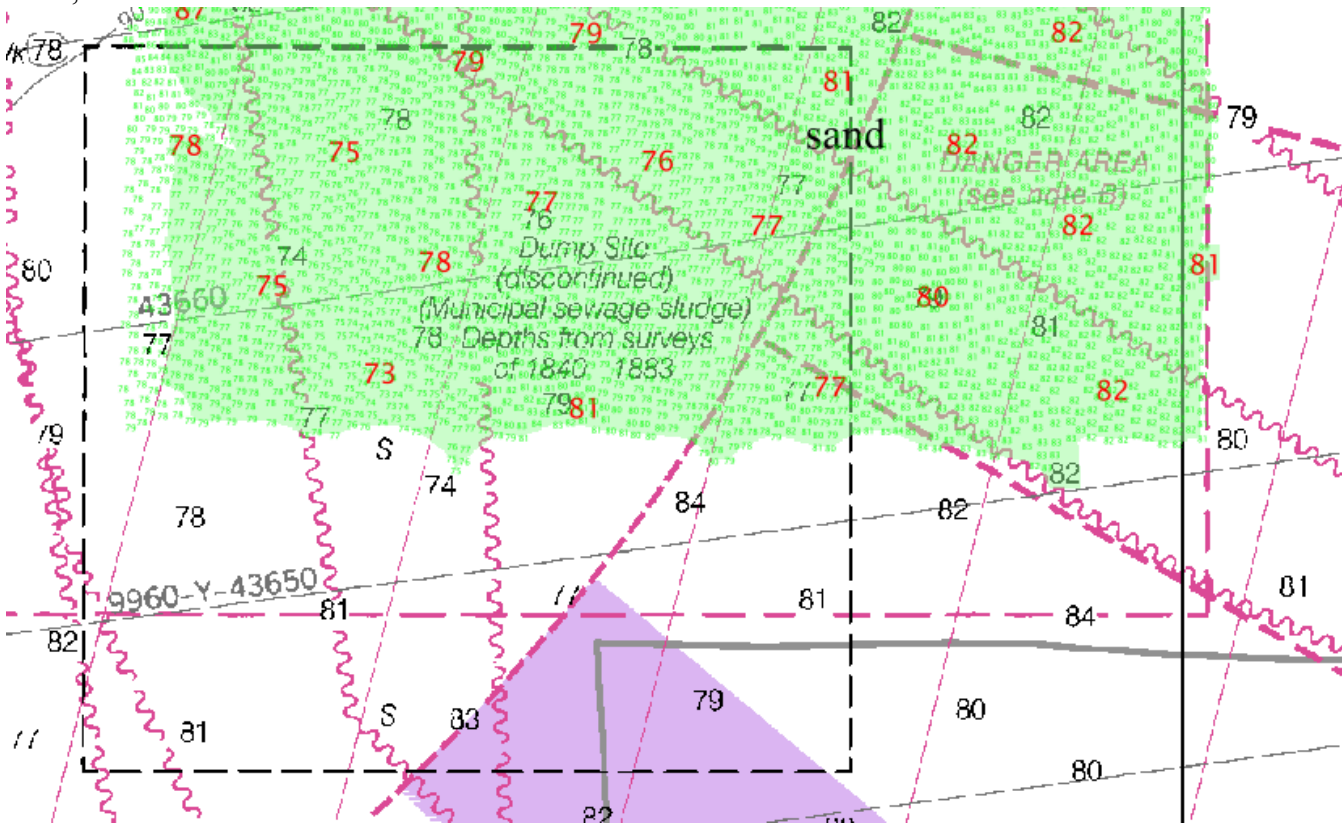


Geometry	Latitude	Longitude	Depth
Sounding	40-26-26.8652N	073-40-41.5063W	75.8661

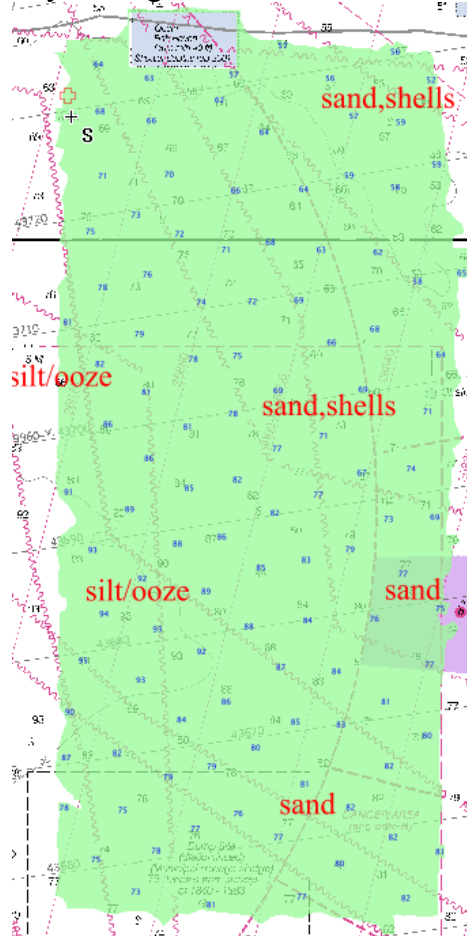
- b. This feature was disproved. No OBSTRN was found using complete MBES coverage, and therefore, has been bluenoted to remove from chart.



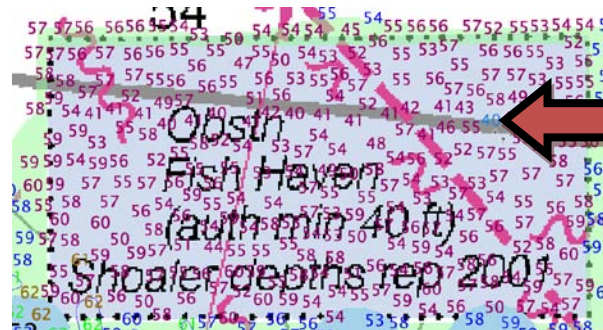
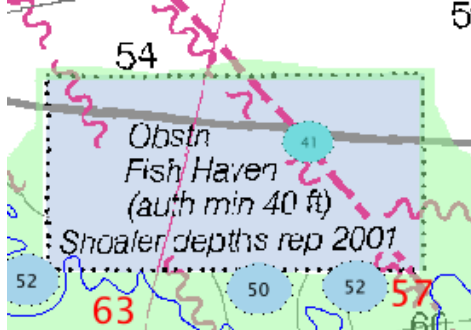
- c. Update note from 'Depths from surveys of 1840-1883,' to 'Depths from surveys of 1840-1883, 2009'



- d. The field unit collected a total of 7 bottom samples. The charted seabed characteristics were superseded by the survey findings.



- e. Least depth known within fish haven: 40.0197 ft. Remove note 'shoaler depths rep 2001'



D.6 MISCELLANEOUS

Chart compilation was completed by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compilation data will be forwarded to the Marine Chart Division in Silver Spring, Maryland. See section D.1 of this report for a list of the Raster Charts and Electronic Navigation Charts (ENC) used for compiling the present survey.

D.7 ADEQUACY OF SURVEY

The present survey is adequate to supersede the charted bathymetry within the common area. Any features not specifically addressed either in the H-Cell files or the Blue Notes should be retained as charted. Refer to section D and Appendix I and II of the DR for further recommendations by the hydrographer.

APPROVAL SHEET
H12158

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth contours, disposition of critical depths, cartographic symbolization, and verification or disproof of charted data. All revisions and additions made to the H-Cell files during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with National Ocean Service and Office of Coast Survey requirements except where noted in the Descriptive Report and the H-Cell Report.

All final products have undergone a comprehensive review per the Hydrographic Surveys Division Office Processing Manual and are verified to be accurate and complete except where noted.

Rosemary P. Abbitt
Hydrographic Survey Intern
Atlantic Hydrographic Branch

I have reviewed the H-Cell files, accompanying data, and reports. This survey and accompanying Marine Chart Division deliverables meet National Ocean Service requirements and standards for products in support of nautical charting except where noted.

Approved: _____
CDR Richard T. Brennan, NOAA
Chief, Atlantic Hydrographic Branch