

F00780

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: F00780

LOCALITY

State(s): New York

General Locality: New York Harbor and Lower Bay

Sub-locality: New York

2019

CHIEF OF PARTY
LTJG Dylan Kosten

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

F00780

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(s): **New York**

General Locality: **New York Harbor and Lower Bay**

Sub-Locality: **New York**

Scale: **5000**

Dates of Survey: **07/16/2019 to 07/18/2019**

Instructions Dated: **08/09/2019**

Project Number: **S-B910-NRT5-19**

Field Unit: **Navigation Response Team 5**

Chief of Party: **LTJG Dylan Kosten**

Soundings by: **Kongsberg Maritime EM 2040C (MBES)**

Imagery by: **N/A**

Verification by: **Pacific Hydrographic Branch**

Soundings Acquired in: **meters at Mean Lower Low Water**

Remarks:

The purpose of this survey is to provide contemporary surveys to update National Ocean Service (NOS) nautical charts. All separates are filed with the hydrographic data. Any revisions to the Descriptive Report (DR) generated during office processing are shown in bold red italic text. The processing branch maintains the DR as a field unit product, therefore, all information and recommendations within the body of the DR are considered preliminary unless otherwise noted. The final disposition of surveyed features is represented in the OCS nautical chart update products. All pertinent records for this survey, including the DR, are archived at the National Centers for Environmental Information (NCEI) and can be retrieved via <http://www.ncei.noaa.gov/>.

DESCRIPTIVE REPORT SUMMARY

A. Area Surveyed

This hydrographic survey was acquired in accordance with the requirements defined in the Project Instructions S-B910-NRT5-19. Feature investigation search areas (Figures 1-3) were surveyed to meet object detection coverage and the search radius specifications that are dictated by the chart scale. During quality analysis of the survey data, some of the search areas were found to have very small holidays, but there does not exist holidays over any significant features. The prescribed search radius for feature investigations was met or exceeded, with the exception of areas where there were moored vessels or other objects within the search area or where navigation was deemed unsafe. The requested discrepancy investigation in Gravesend Bay was unable to be addressed, as the search area was foul with ruins and not safe for navigation (Figure 4).

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
40° 46' 10.03" N 74° 5' 46.4" W	40° 31' 46.02" N 73° 56' 6.44" W

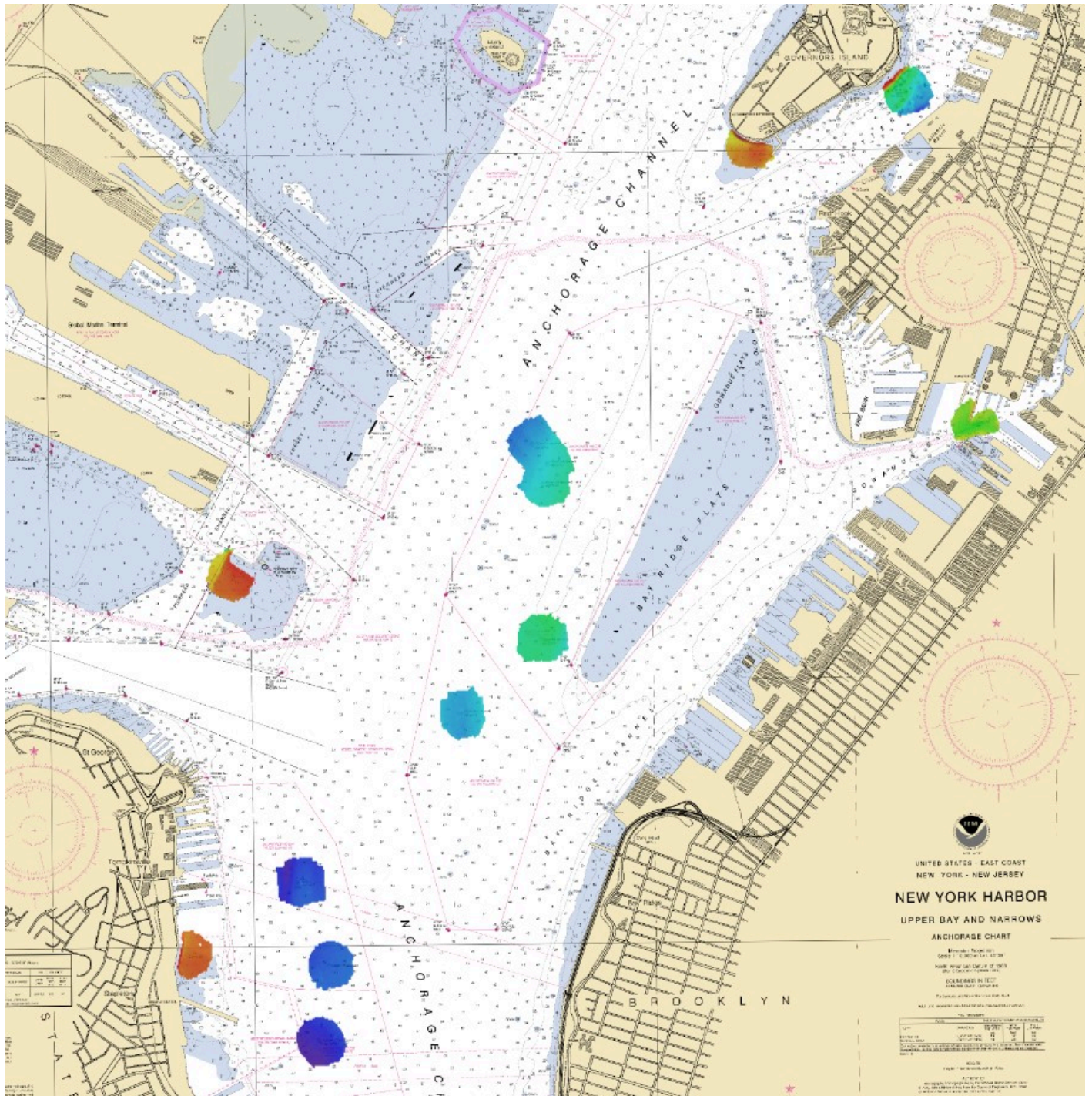


Figure 1: Discrepancies in the New York Harbor anchorage areas.

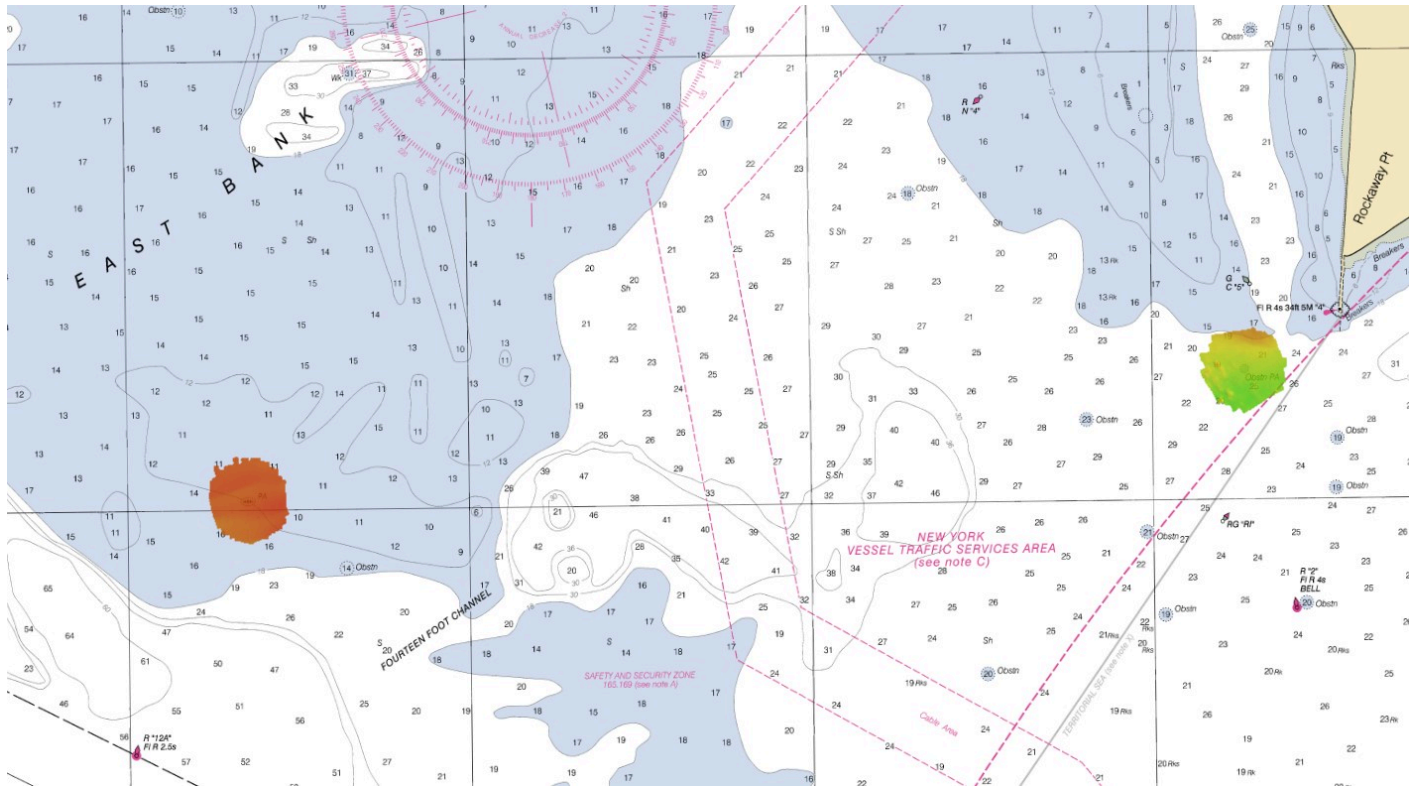


Figure 2: Discrepancies on the East Bank and off Rockaway Point.

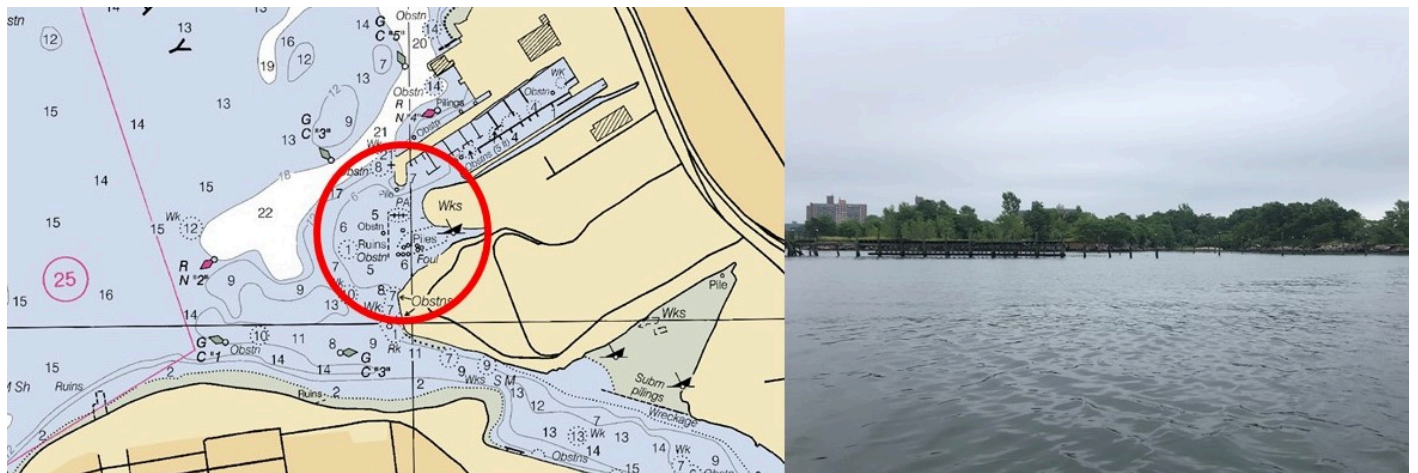


Figure 3: Discrepancy in Gravesend Bay that was unable to be addressed.

B. Survey Purpose

NRT5 was assigned to investigate charted feature discrepancies in New York Harbor and in New York Lower Bay.

C. Intended Use of Survey

The entire survey is adequate to supersede previous data.

Survey coverage of discrepancy search areas meets specifications for both data density and uncertainty. The QC Tools Grid QA application was used to verify that data density and uncertainty specifications were met.

D. Data Acquisition and Processing

Please reference Data Acquisition and Processing Report (2019_NRT5_DAPR) for a complete description of data acquisition and processing systems, survey vessels, quality control procedures and data processing methods.

E. Uncertainty

Total Propagated Uncertainty (TPU) values for F00780 were derived from a combination of fixed values for equipment and vessel characteristics, as well as field assigned values for sound speed uncertainties. The uncertainty for the VDatum model (9.2 centimeters) was provided to the field unit in the Project Instructions. Using the Grid QA application within QC Tools, all submitted grids were found to meet HSSD uncertainty requirements (Figures 5-10).

In addition to the usual a priori estimates of uncertainty, some real time and post processed uncertainty sources were also incorporated into the depth estimates of the survey. Real-time uncertainties from the sonar were incorporated and applied during post processing. Uncertainties associated with vessel roll, pitch, gyro, navigation, and heave were applied during post-processing. All of the aforementioned uncertainties were applied in CARIS. As stated, F00780 is an ellipsoidally referenced survey (ERS) and the tidal component was accomplished with a separation model.

Uncertainty Standards

Grid source: F00780_MB_50cm_MLLW_1of6_Final

99.5+% pass (308,889 of 309,177 nodes), min=0.35, mode=0.36, max=2.48

Percentiles: 2.5%=0.36, Q1=0.37, median=0.38, Q3=0.45, 97.5%=0.68

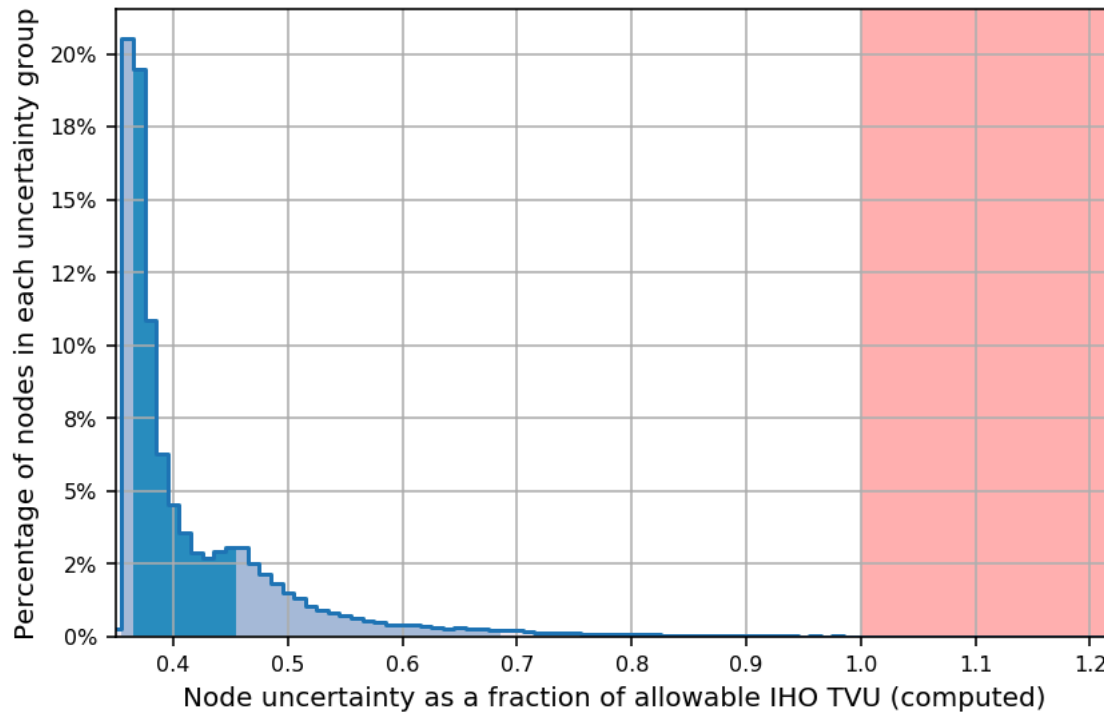


Figure 4: Pydro derived histogram plot showing HSSD uncertainty standards compliance of F00780 50cm finalized surface (Grid 1 of 6).

Uncertainty Standards

Grid source: F00780_MB_50cm_MLLW_2of6_Final

99.5+% pass (381,833 of 381,966 nodes), min=0.35, mode=0.36, max=2.33

Percentiles: 2.5%=0.36, Q1=0.37, median=0.40, Q3=0.44, 97.5%=0.58

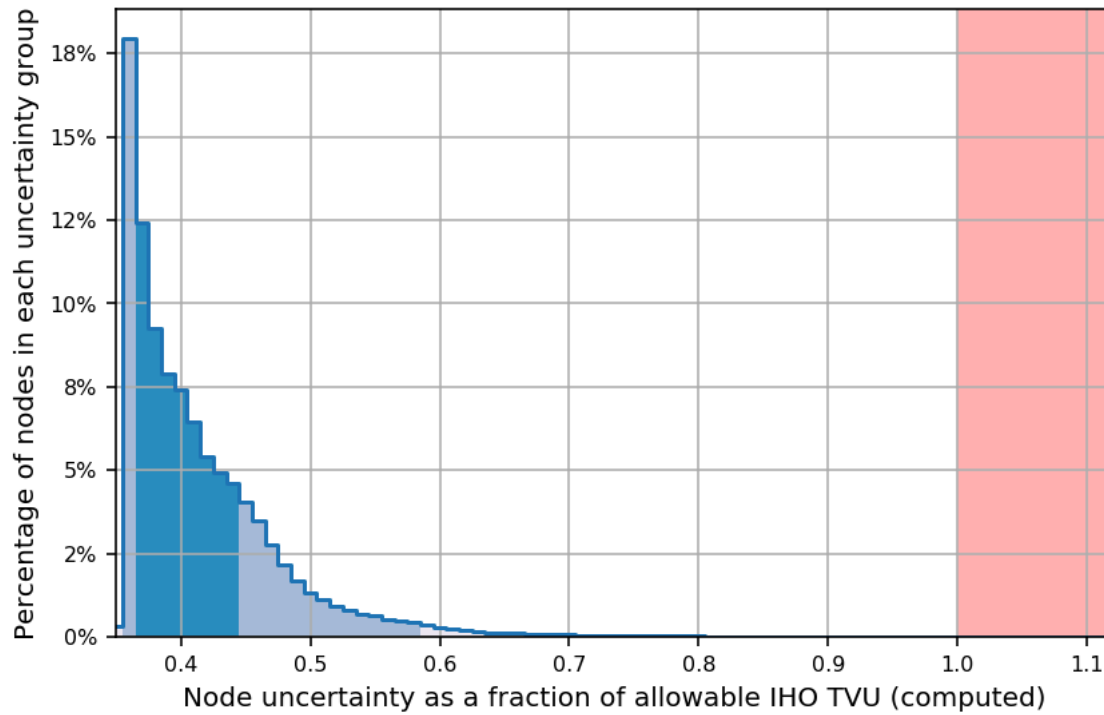


Figure 5: Pydro derived histogram plot showing HSSD uncertainty standards compliance of F00780 50cm finalized surface (Grid 2 of 6).

Uncertainty Standards

Grid source: F00780_MB_50cm_MLLW_3of6_Final

99.5+% pass (818,287 of 818,750 nodes), min=0.35, mode=0.36, max=1.96

Percentiles: 2.5%=0.36, Q1=0.37, median=0.39, Q3=0.43, 97.5%=0.65

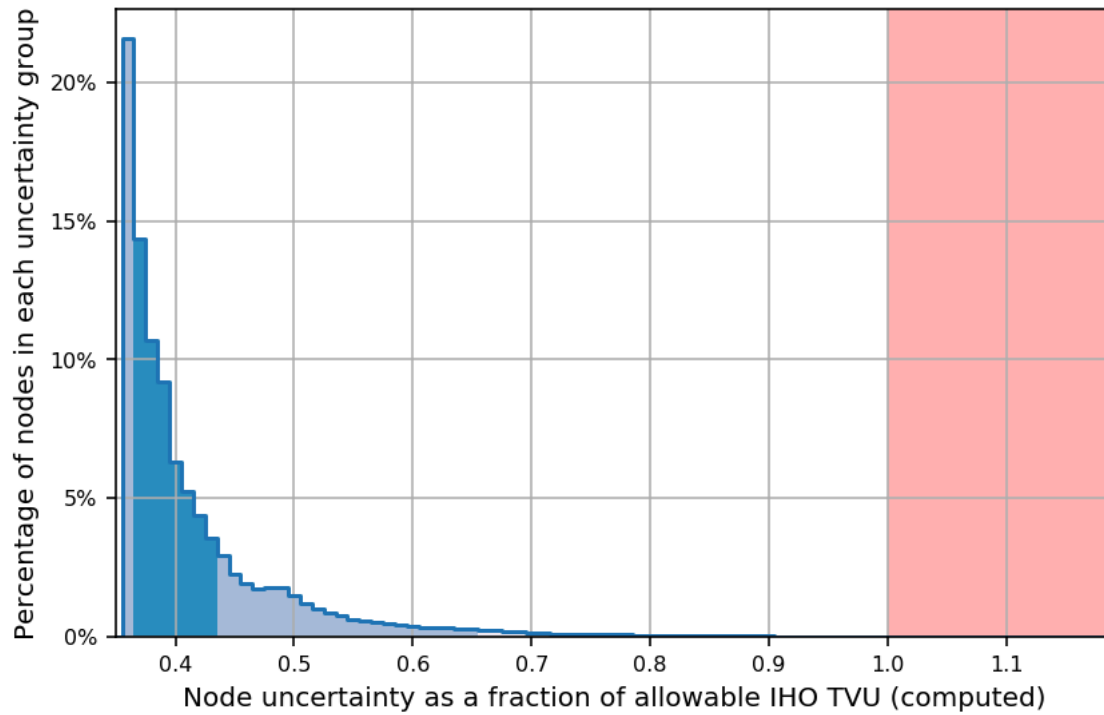


Figure 6: Pydro derived histogram plot showing HSSD uncertainty standards compliance of F00780 50cm finalized surface (Grid 3 of 6).

Uncertainty Standards

Grid source: F00780_MB_50cm_MLLW_4of6_Final

99.5+% pass (1,812,473 of 1,813,227 nodes), min=0.35, mode=0.36, max=2.38

Percentiles: 2.5%=0.36, Q1=0.37, median=0.41, Q3=0.48, 97.5%=0.63

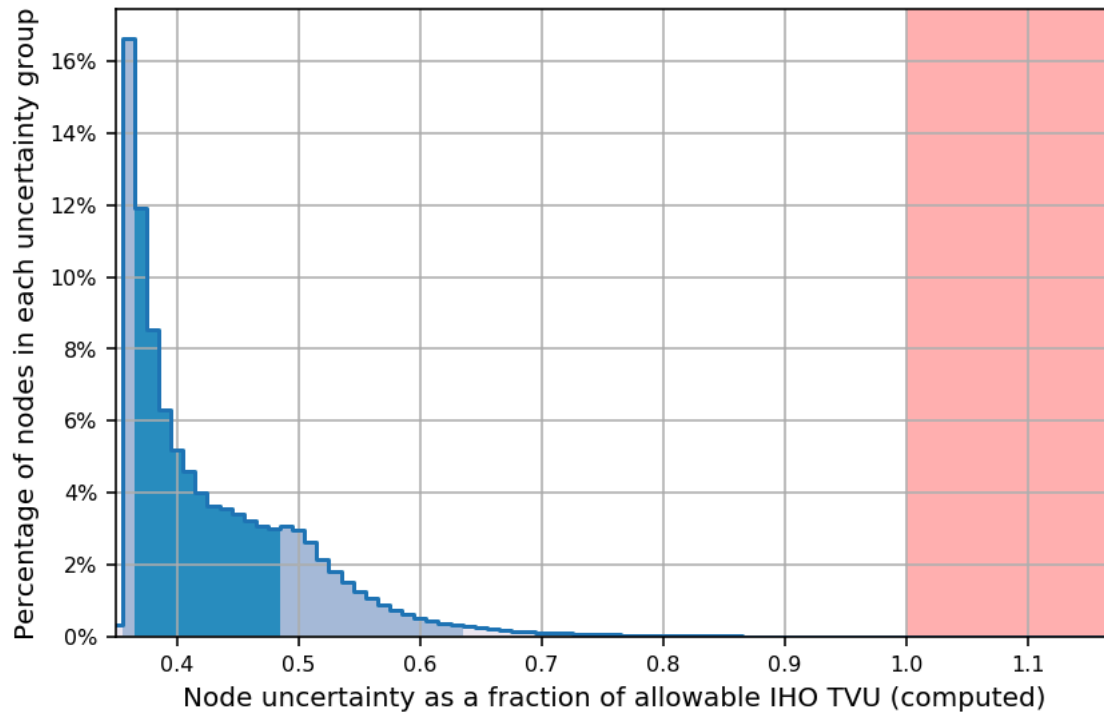


Figure 7: Pydro derived histogram plot showing HSSD uncertainty standards compliance of F00780 50cm finalized surface (Grid 4 of 6).

Uncertainty Standards

Grid source: F00780_MB_50cm_MLLW_5of6_Final

99.5+% pass (1,326,733 of 1,327,212 nodes), min=0.35, mode=0.36, max=2.61

Percentiles: 2.5%=0.35, Q1=0.36, median=0.37, Q3=0.38, 97.5%=0.59

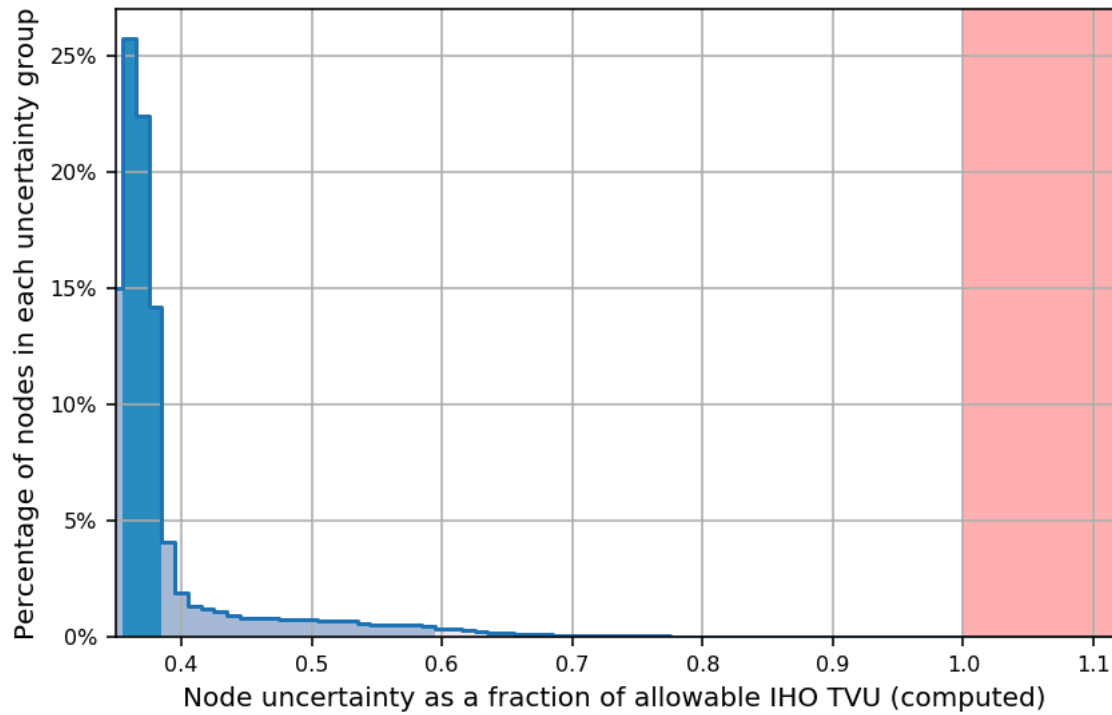


Figure 8: Pydro derived histogram plot showing HSSD uncertainty standards compliance of F00780 50cm finalized surface (Grid 5 of 6).

Uncertainty Standards

Grid source: F00780_MB_50cm_MLLW_6of6_Final

99.5+% pass (715,298 of 715,328 nodes), min=0.36, mode=0.37, max=1.83

Percentiles: 2.5%=0.36, Q1=0.37, median=0.38, Q3=0.39, 97.5%=0.46

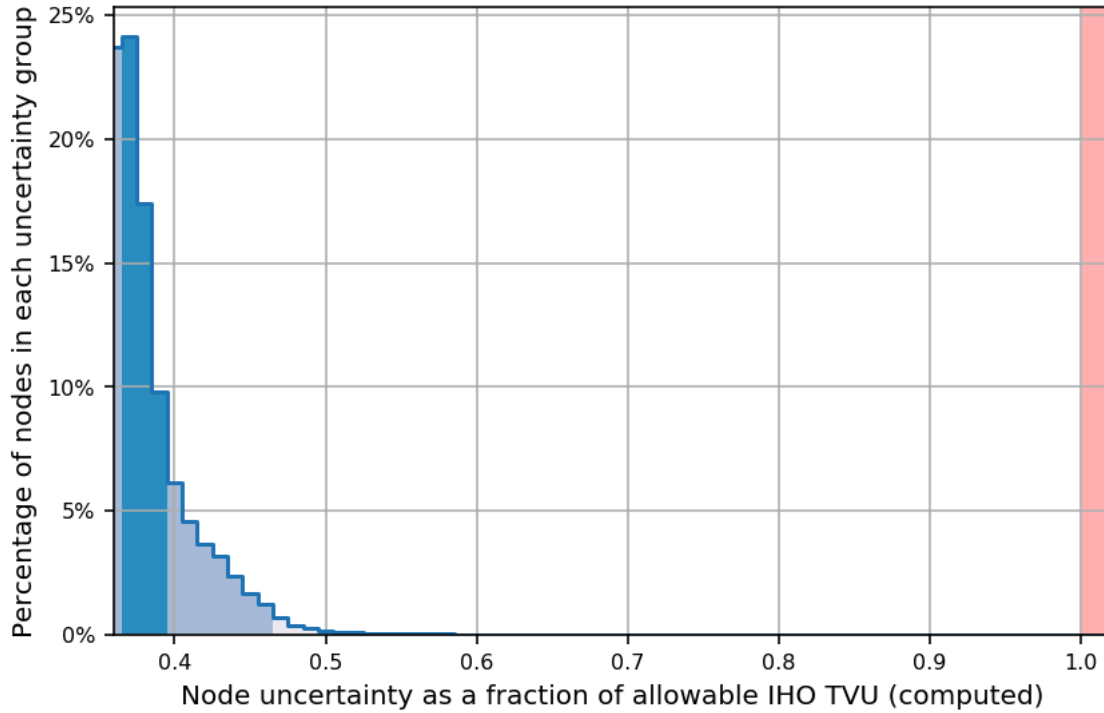


Figure 9: Pydro derived histogram plot showing HSSD uncertainty standards compliance of F00780 50cm finalized surface (Grid 6 of 6).

F. Results and Recommendations

The following are the largest scale ENC's, which cover the survey area:

ENC	Scale	Edition	Update Application Date	Issue Date	Preliminary?
US5NY1CM	1:10000	46	05/30/2019	05/30/2019	NO
US5NY1DM	1:10000	31	10/31/2018	05/23/2019	NO
US5NY19M	1:15000	27	04/09/2018	06/17/2019	NO

The following surfaces and/or BAGs were submitted to the Processing Branch:

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
F00780_MB_50cm_MLLW_1of6	CARIS Raster Surface (CUBE)	0.5 m	1.150 m - 17.206 m	NOAA_0.5m	Object Detection
F00780_MB_50cm_MLLW_1of6_Final	CARIS VR Surface (CUBE)	0.5 m	1.150 m - 17.206 m	NOAA_0.5m	Object Detection
F00780_MB_50cm_MLLW_2of6	CARIS Raster Surface (CUBE)	0.5 m	2.666 m - 14.762 m	NOAA_0.5m	Object Detection
F00780_MB_50cm_MLLW_2of6_Final	CARIS Raster Surface (CUBE)	0.5 m	2.666 m - 14.762 m	NOAA_0.5m	Object Detection
F00780_MB_50cm_MLLW_3of6	CARIS Raster Surface (CUBE)	0.5 m	0.838 m - 17.886 m	NOAA_0.5m	Object Detection
F00780_MB_50cm_MLLW_3of6_Final	CARIS Raster Surface (CUBE)	0.5 m	0.838 m - 17.886 m	NOAA_0.5m	Object Detection
F00780_MB_50cm_MLLW_4of6	CARIS Raster Surface (CUBE)	0.5 m	2.425 m - 15.728 m	NOAA_0.5m	Object Detection
F00780_MB_50cm_MLLW_4of6_Final	CARIS Raster Surface (CUBE)	0.5 m	2.425 m - 15.728 m	NOAA_0.5m	Object Detection
F00780_MB_50cm_MLLW_5of6	CARIS Raster Surface (CUBE)	0.5 m	1.602 m - 18.584 m	NOAA_0.5m	Object Detection
F00780_MB_50cm_MLLW_5of6_Final	CARIS Raster Surface (CUBE)	0.5 m	1.602 m - 18.584 m	NOAA_0.5m	Object Detection
F00780_MB_50cm_MLLW_6of6	CARIS Raster Surface (CUBE)	0.5 m	3.091 m - 9.610 m	NOAA_0.5m	Object Detection
F00780_MB_50cm_MLLW_6of6_Final	CARIS Raster Surface (CUBE)	0.5 m	3.091 m - 9.610 m	NOAA_0.5m	Object Detection

Six 50cm CUBE grids were created to cover each of the search areas.

The six submitted surfaces were condensed in to one 50cm object detection CUBE surface (F00780_MB_50cm_MLLW) at the Processing Branch and finalized (F00780_MB_50cm_MLLW_Final).

G. Vertical and Horizontal Control

The vertical datum for this project is Mean Lower Low Water. The vertical control method used was VDatum.

The VDatum model used was "S-B910_VDatumLimits_100m_NAD83-MLLW_geoid12b".

The horizontal datum for this project is North American Datum of 1983 (NAD 83). The projection used for this project is Universal Transverse Mercator (UTM) Zone 18.

POSPac MMS Smart Base processing methods were used for horizontal control. WAAS was used for real-time corrections.

H. Additional Results

New features



Aside from the features assigned to investigate, 3 new features were found within the search areas and have been added to the final feature file.

I. Approval

As Chief of Party, field operations for this hydrographic survey were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports.

All field sheets, this Survey Summary Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to the Processing Branch.

The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys Specifications and Deliverables, Field Procedures Manual, Standing and Letter Instructions, and all HSD Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required with the exception of deficiencies noted in the Survey Summary Report.

Approver Name	Title	Date	Signature
LTJG Dylan Kosten	Team Lead	08/22/2019	 <small>Digitally signed by KOSTEN.DYLAN.ANDREW.150452 7405 Date: 2019.09.16 16:40:10 -04'00'</small>
Eli Smith	Sheet Manager	08/22/2019	 <small>SMITH.ELI.RYAN.150060365 4 2019.09.16 13:04:16 -04'00'</small>

APPROVAL PAGE

F00780

Data meet or exceed current specifications as certified by the OCS survey acceptance review process. Descriptive Report and survey data except where noted are adequate to supersede prior surveys and nautical charts in the common area.

The following products will be sent to NCEI for archive

- Descriptive Report
- Collection of Bathymetric Attributed Grids (BAGs)
- Collection of backscatter mosaics
- Processed survey data and records
- GeoPDF of survey products

The survey evaluation and verification has been conducted according current OCS Specifications, and the survey has been approved for dissemination and usage of updating NOAA's suite of nautical charts.

Approved: _____

Commander Olivia Hauser, NOAA
Chief, Pacific Hydrographic Branch