

F00879

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

DESCRIPTIVE REPORT

Type of Survey: Navigable Area

Registry Number: F00879

LOCALITY

State(s): Texas

General Locality: Galveston

Sub-locality: Galveston Channel and GIWW

2023

CHIEF OF PARTY
Matthew Jaskoski, CAPT/NOAA

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

F00879

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): **Texas**

General Locality: **Galveston**

Sub-Locality: **Galveston Channel and GIWW**

Scale: **10000**

Dates of Survey: **04/21/2023 to 05/23/2023**

Instructions Dated: **02/09/2023**

Project Number: **OPR-K371-TJ-23**

Field Unit: **NOAA Ship *Thomas Jefferson***

Chief of Party: **Matthew Jaskoski, CAPT/NOAA**

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

Imagery by: **EdgeTech 4200 (SSS)
Kongsberg Maritime EM 2040 (MBES Backscatter)**

Verification by: **Atlantic Hydrographic Branch**

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

Remarks:

Any revisions to the Descriptive Report (DR) applied during office processing are shown in red italic text. The DR is maintained as a field unit product, therefore all information and recommendations within this report are considered preliminary unless otherwise noted. The final disposition of survey data is represented in the NOAA nautical chart products. All pertinent records for this survey are archived at the National Centers for Environmental Information (NCEI) and can be retrieved via <https://www.ncei.noaa.gov/>. Products created during office processing were generated in NAD83 UTM 15N, MLLW. All references to other horizontal or vertical datums in this report are applicable to the processed hydrographic data provided by the field unit.

DESCRIPTIVE REPORT SUMMARY

A. Area Surveyed

This hydrographic survey was acquired in accordance with the requirements defined in Project Correspondence and the 2022 HSSD.

Data were acquired within the following survey limits:

Northwest Limit	Southeast Limit
29° 23' 59.36" N	29° 17' 3.48" N
94° 53' 44.68" W	94° 37' 24.71" W

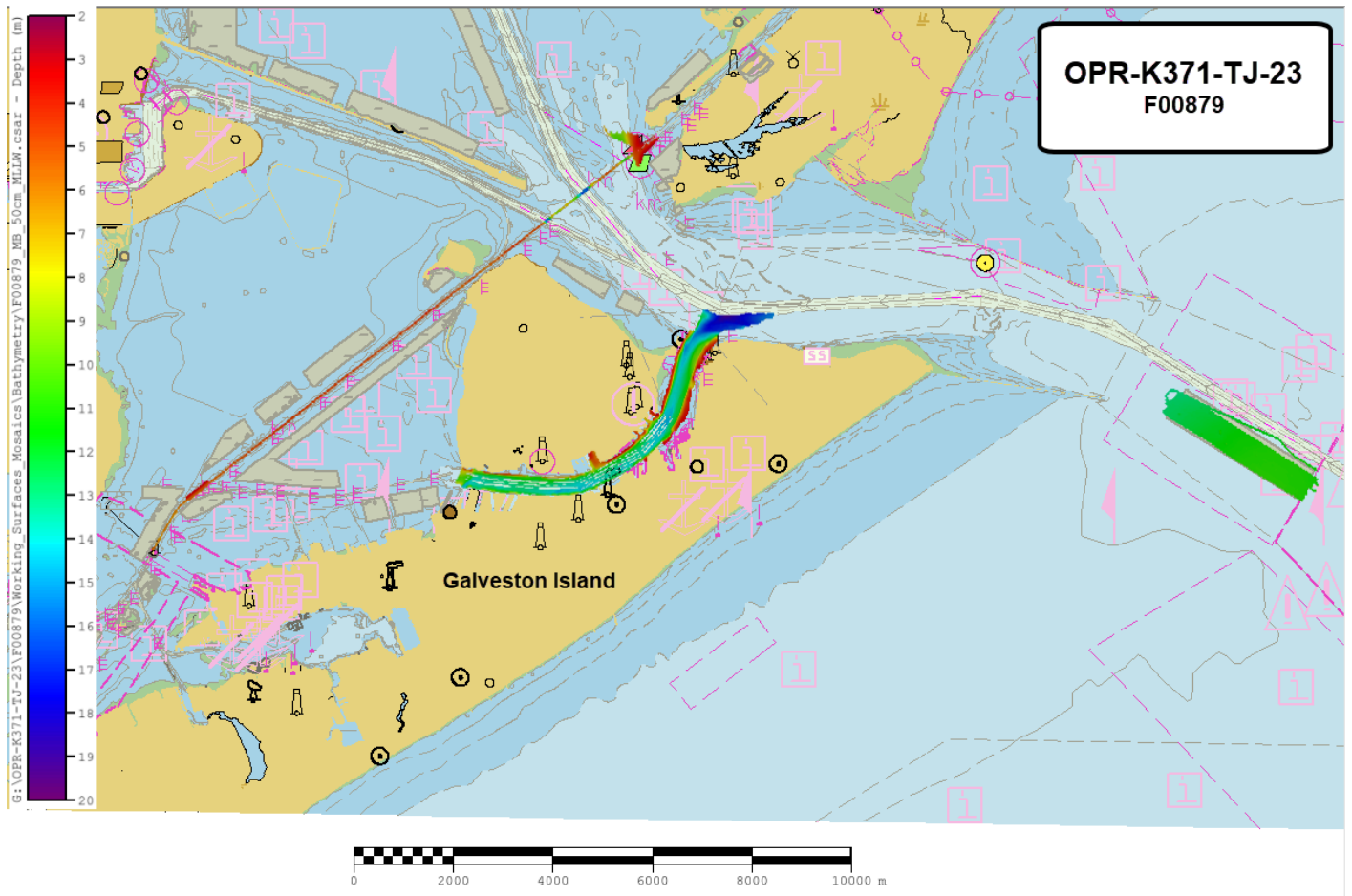


Figure 1: Survey coverage achieved for F00879 shown in color.

B. Survey Purpose

While conducting general hydrographic survey work on project OPR-K371-TJ-23, NOAA Ship *Thomas Jefferson* also completed opportunistic work and training in Galveston, Texas waters. Correspondence was initiated with the project manager, leading to assignment of F00879 as a multi-pronged field examination to support updated charted information in this area (see Project Correspondence). This work was prioritized from U.S. Coast Guard (USCG), U.S. Army Corps of Engineering (USACE), and Houston/Galveston pilot requests. Survey requests accomplished were:

- 1) Complete coverage in Galveston Channel
- 2) Complete coverage of intracoastal waterway (ICWW) from Galveston Causeway Bridge to buoy R"18" near Port Bolivar. This included expansion of depth coverage in the vicinity of the Bolivar land cut (Figure 2).
- 3) Complete coverage of several pier basins in the Galveston Channel
- 4) Feature investigation of obstructions near the USCG base
- 5) Complete coverage of a portion of the spoil ground south of Galveston Entrance Channel near buoys G"3" and G"5"

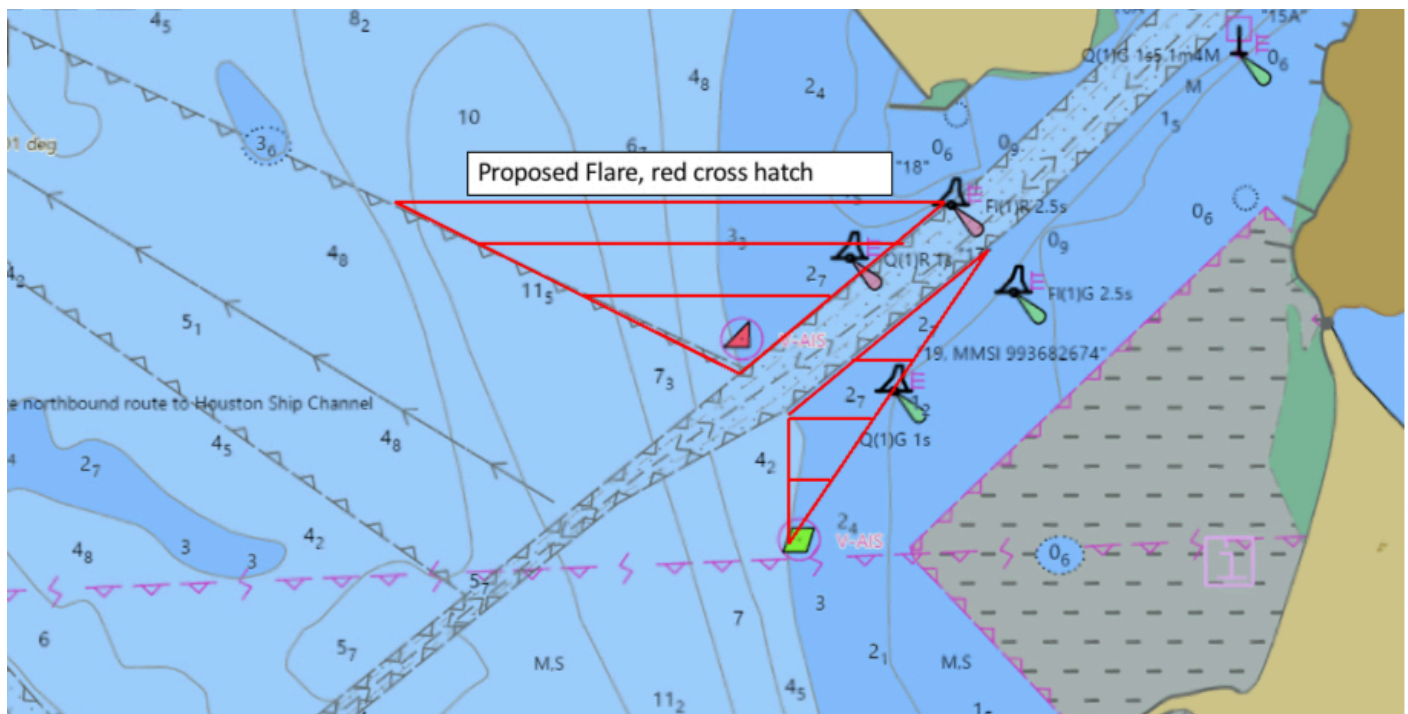


Figure 2: USCG request for extended coverage outside the ICWW fairway at the Bolivar land cut

C. Intended Use of Survey

The entire survey is adequate to supersede previous data.

Numerous MBES holidays exist within the coverage acquired for F00879 and were created by the data cleaning process. The survey area is frequented by tug and ferry vessels that create widespread turbulence, resulting in sonar blowouts. Due to operational time constraints, the field unit was not able to re-acquire data over these coverage gaps. Additionally, after multiple rounds of surface cleaning, 42 fliers remain as flagged by QC Tools "Flier Finder" tool. The hydrographer has reviewed the flagged nodes, considers them to be accurate representations of the seafloor, and they have been retained in the final delivered surfaces.

Portions of F00879 coverage have been surveyed more recently by USACE (i.e. ICWW and Galveston Channel). F00879 coverage extending beyond USACE coverage should be used to supercede previously charted data.

No features were assigned in F00879. However, the field unit addressed features if identified, requested, or covered by the survey area. Features investigated or identified through complete coverage detection in F00879 should be updated on the chart; reference the Final Feature File (FFF) for more information.

D. Data Acquisition and Processing

Reference the Data Acquisition and Processing Report 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 discussed in the following section.

At the end of OPR-K371-TJ-23 acquisition, the field unit observed a "wobble" artifact in the outer edges of the multibeam for TJ launch 2903. Systematic issues were not observed during Hydrographic Systems Readiness Review (HSRR) or throughout the project due to acquisition in shallow water. The "wobble" became apparent in depths greater than 20 meters.

Hydrographic Systems Technology Branch used QPS' Qimera Software to investigate the issue and computed a yaw misalignment of $+2.2^\circ$ with the wobble tool. It was further determined that the yaw value calculated during initial patch testing was entered in Applanix POS M/V as -0.9° instead of $+0.9^\circ$. The field unit used Applanix POSpac Software to update the Z-component of the IMU with respect to reference point mounting angles to 1.1° to correct the misalignment. Then, the following steps were taken:

Re-ran GNSS-inertial processor

Re-exported SBET (with corrected offsets)

Imported the new SBET and RMS to affected TJ Launch 2903 data and overwrote position, height, and attitude (gyro, pitch, and roll)

Georeferenced all affected data

Created new surfaces

Updated SBETs and RMS files are included in the product deliverables. Reference the Project Correspondence included in the submission package for a record of the correspondence with HSTB.

E. Uncertainty

Total Propagated Uncertainty (TPU) values for survey F00879 were derived from a combination of fixed values for equipment and vessel characteristics, as well as from field assigned values for sound speed uncertainties. Additionally, real-time and post-processed uncertainty sources associated with position were applied using SBET and RMS files generated using POSPac MMS software. The bathymetric surface is compliant with 2022 HSSD uncertainty standards (Figure 3); over 99.5% of all nodes pass density standards (Figure 4).

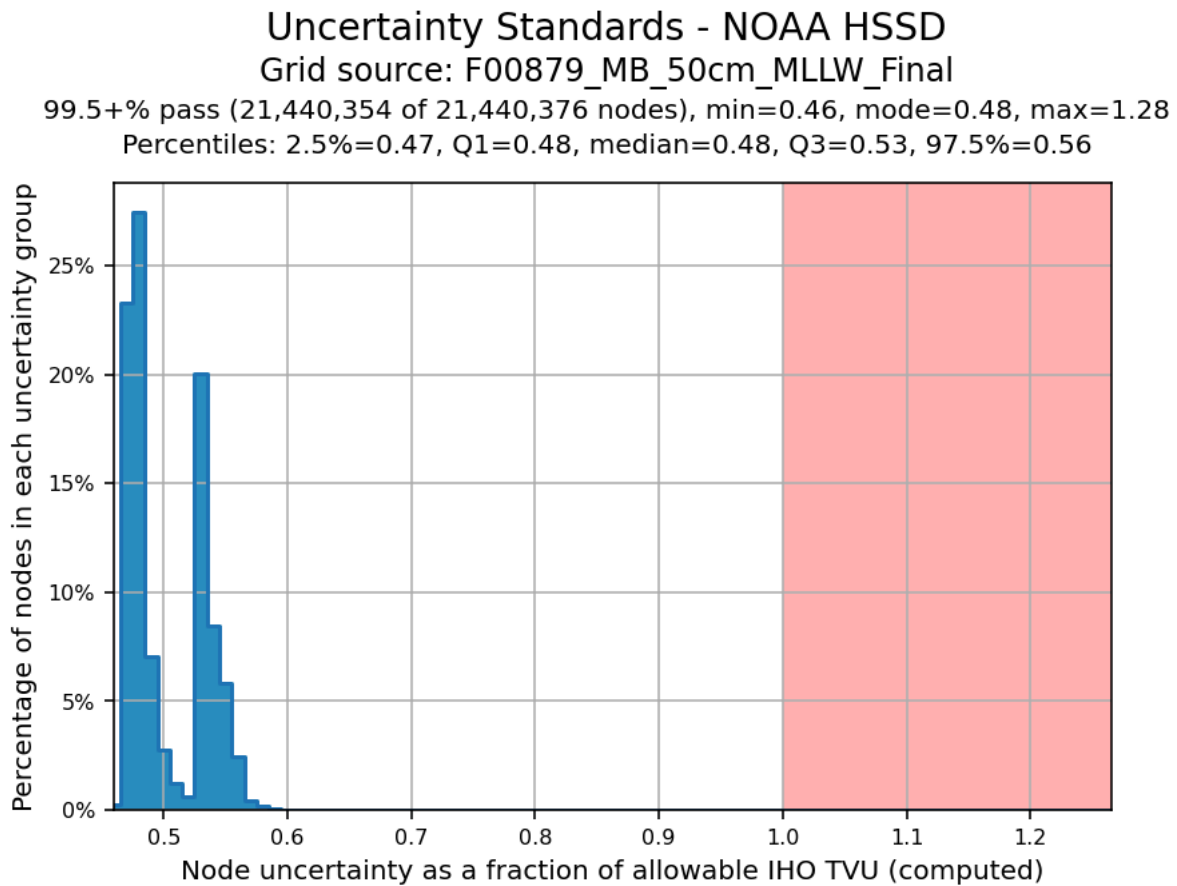


Figure 3: F00879 uncertainty standards

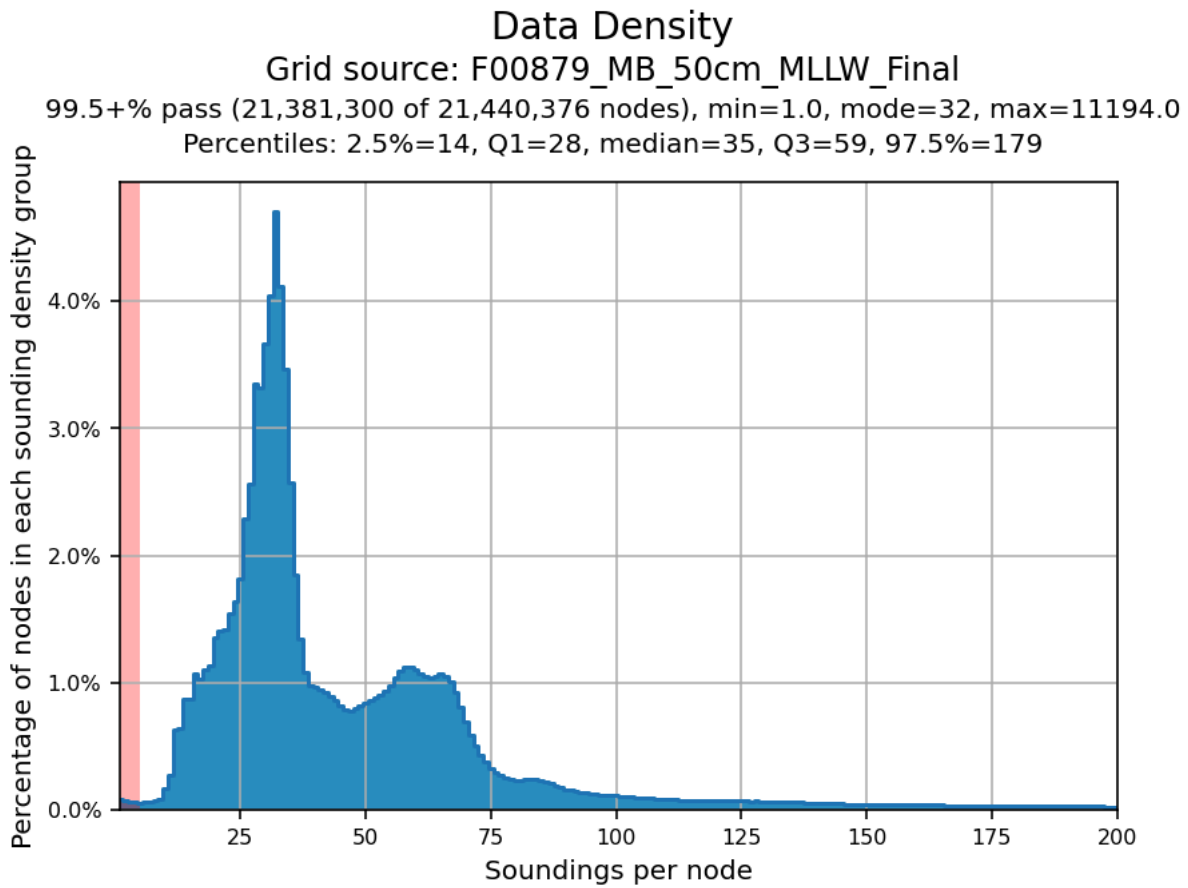


Figure 4: F00879 data density standards

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
US5TXTEC	1:10000	1	07/21/2023	07/21/2023
US5TXTEB	1:10000	1	05/31/2023	08/14/2023
US5TXTDB	1:10000	1	09/21/2023	09/21/2023
US5TXTDC	1:10000	1	07/21/2023	07/21/2023
US5TXTED	1:10000	1	07/21/2023	08/10/2023
US5TXTDA	1:20000	1	09/21/2023	09/21/2023
US5TXTDE	1:20000	1	07/21/2023	07/21/2023

ENC	Scale	Edition	Update Application Date	Issue Date
US5TXTDD	1:20000	1	07/21/2023	07/21/2023

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

Surface Name	Surface Type	Resolution	Depth Range	Surface Parameter	Purpose
F00879_MB_50cm_MLLW	CARIS Raster Surface (CUBE)	0.5 m	1.82 m - 20.03 m	NOAA_0.5m	Complete Coverage
F00879_MB_50cm_MLLW_Final	CARIS Raster Surface (CUBE)	0.5 m	1.82 m - 20.03 m	NOAA_0.5m	Complete Coverage
F00879_SSSAB_1m_600kHz_1of2	SSS Mosaic	1 m	N/A	N/A	100% SSS
F00879_SSSAB_1m_600kHz_2of2	SSS Mosaic	1 m	N/A	N/A	200% SSS
F00879_MBAB_2m_2903_300kHz_1of2	MB Backscatter Mosaic	2 m	N/A	N/A	Complete Coverage
F00879_MBAB_2m_S222_300kHz_2of2	MB Backscatter Mosaic	2 m	N/A	N/A	Complete Coverage

The field unit created a 50 cm resolution grid as it was found to be a more accurate representation of observed bathymetry.

Several groups requested coverage over the spoil ground (unsurveyed area) outside the Galveston Entrance Channel. Despite this area being charted as unsurveyed for > 80 years, it is recommended to provide bathymetry over this area based on its close proximity to a highly transited shipping lane.

By request, obstructions near the USCG base were investigated due their charted location near pier faces. Several obstructions were observed in their charted location. Other obstructions were not identified, however, the entire disapproval radii could not be covered due to reaching the limit of safe navigation. Reference the FFF for more information.

Multiple areas of shoaling were observed at the edge of the Galveston Channel, however, the channel was more recently surveyed by the USACE in October 2023. Reference USACE survey for the most recent channel information. F00879 coverage outside the USACE area of responsibility can be used to supercede previous charted coverage.

A chart comparison was conducted using Pydro22's CA Tool between a 50 cm grid and the most recent ENC's for the area . While some discrepancies exist, most surveyed soundings fall within their respective charted depth areas. Surveyed soundings shallower than their corresponding depth area were not considered dangerous to navigation due to their proximity to shallower depth areas or other obstructions in the vicinity. F00879 coverage outside USACE coverage should be used to supercede charted data.

G. Vertical and Horizontal Control

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

Refer to the DAPR for a complete description of vertical control procedures.

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 15.

The Trimble-RTX service was used with an Applanix POS MVv5 GNSS_INS system to obtain highly accurate ellipsoidally referenced position data to meet ERS specifications for F00879 MBES data from vessels S222 and HSL 2903. The Wide Area Augmentation System was used for real-time horizontal control during data acquisition on vessels S222 and 2903.

Refer to the DAPR for a complete description of horizontal control procedures.

H. Additional Results




There are no additional results for this survey.

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
Matthew J. Jaskoski, CAPT/NOAA	Commanding Officer	11/30/2023	 JASKOSKI.MATTHEW.JACOB .1275636262 2023.12.01 12:28:59 -05'00'
Sydney M. Catoire, LT/NOAA	Field Operations Officer	11/30/2023	CATOIRE.SYDNEY. MARIE.1120060623  Digitally signed by CATOIRE.SYDNEY.MARIE.1120060 623 Date: 2023.11.30 15:24:22 -05'00'
Erin K. Cziraki	Chief Survey Technician	11/30/2023	CZIRAKI.ERIN.KA YE.1550015338  Digitally signed by CZIRAKI.ERIN.KAYE.1550015338 Date: 2023.11.30 15:25:34 -05'00'