

W00597

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

DESCRIPTIVE REPORT

Type of Survey: Habitat Mapping

Registry Number: W00597

LOCALITY

State(s): Texas

General Locality: Galveston Bay

Sub-locality: West Galveston Bay

2014

CHIEF OF PARTY
Dr. Emma Clarkson

LIBRARY & ARCHIVES

Date:

HYDROGRAPHIC TITLE SHEET

W00597

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: **Galeveston Bay**

Sub-Locality: **West Galveston Bay**

Scale: **10000**

Dates of Survey: **09/11/2014 to 09/21/2016**

Instructions Dated: **08/02/2021**

Project Number: **ESD-PHB-21**

Field Unit: **Texas Parks and Wildlife**

Chief of Party: **Dr. Emma Clarkson**

Soundings by: **Biosonics DT-X (SBES)**

Imagery by: **N/A**

Verification by: **Pacific 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 MEMO

October 04, 2021

MEMORANDUM FOR: Pacific Hydrographic Branch

FROM: Report prepared by PHB on behalf of field unit
Kurt Brown
Physical Scientist, Pacific Hydrographic Branch

SUBJECT: Submission of Survey W00597

The Texas Parks and Wildlife Department conducted the survey. The exact purpose of this survey is not included in the metadata, however other surveys conducted by Texas Parks and Wildlife in the area around the same time were conducted for habitat mapping.

Habitat mapping products were the original products from the survey.

All soundings were reduced to Mean Lower Low Water using Discrete Zoning. 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 data was collected in WGS84 and projected to UTM 15N. Depths were reduced to MLLW using 1-hour intervals from nearest tide station, Galveston Pier 21, Texas - 8771450. The data was provided as a .csv file. During prioritization the data was transformed from WGS84 to NAD83.

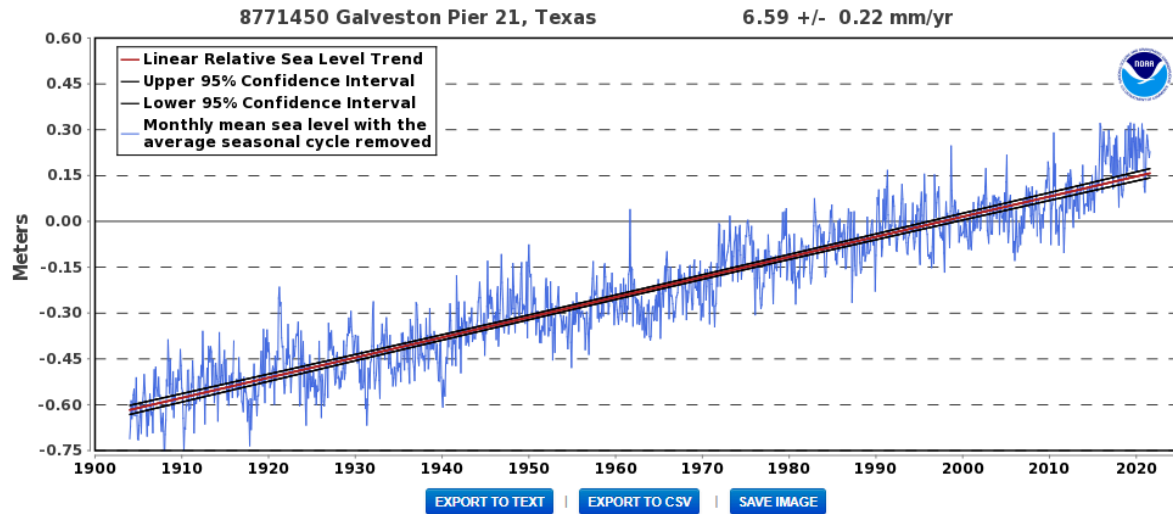
The data provided was collected with Biosonics DT-X 120 kHz single beam echo sounder data and processed in CARIS HIPS into a 4m surface. Side Scan Sonar data was collected but is of poor quality and not useful for coverage considerations. Limited information on survey systems, acquisition and processing is described in the Metadata document "Metadata - West Galveston Bay" provided by Texas Parks and Wildlife. The metadata document is attached.

All data were reviewed for DTONs and none were identified in this survey.

Texas Parks and Wildlife acquired the data outlined in this report. Additional documentation from the data provider may be attached to this report.

The soundings were compared to charted depths and found to be approximately .4m deeper. The tide gauge shows a historical rise in sea level between the charted data (1960s) and the current survey (see image below).

Relative Sea Level Trend
8771450 Galveston Pier 21, Texas



The relative sea level trend is 6.59 millimeters/year with a 95% confidence interval of +/- 0.22 mm/yr based on monthly mean sea level data from 1904 to 2020 which is equivalent to a change of 2.16 feet in 100 years.

Sea level rise at Galveston

The survey is partially adequate to supersede previous data. The entire dataset qualifies for a CATZOC B categorization for accuracy. The survey data should supersede charted sounding data where it overlaps charted soundings. Selected charted soundings between survey lines are recommended to be retained. All features in the survey area should be retained.

Products available for this survey area

- Sidescan sonar imagery (GeoTIFF) *poor quality*
 - The noise in this imagery makes the image quality extremely poor. Large regions of the survey area are comprised of a noise signal only, where the benthic habitat is not discernable. It is NOT suggested for use in interpreting habitats or any analysis, but the product is available for qualitative purposes. The sidescan range violated the 1:10 depth: range ratio rule-of-thumb, as range was to 30 to 50x water depth.
- Bathymetric point data from Singlebeam Echosounder (ArcGIS Shapefile and CSV)
- Bottom features including Maximum SV, First echo, second echo, kurtosis, skew, rise, hardness, and roughness (see EchoView support for description of these features)
 - Caution should be used when interpreting all bottom features other than depth. Poor weather and resulting heave affected the signal for some survey days. In general, the singlebeam data in the southwest portion of the bay is reliable. The use of the features to automate a habitat classification is not suggested.
- Interpolated DEM from bathymetric point data (Raster)

Field Data Collection

- Data were collected from 11 September 2014 to 21 September 2016
- Sidescan = Teledyne Benthos C3D
 - Bow-mounted
 - 200 kHz frequency
 - Range of 100 meters
 - 12% Overlap between transect
 - Transect spacing of 185 meters
 - Data collected in WGS 84
 - Projected to UTM 15N
 - Location Data: Ashtec dGPS receiver with Communication System International MBX-3 Differential
- Singlebeam = Biosonics DTX
 - 120 kHz frequency
 - Collected in Visual Acquisition
 - Beam width = 8.1°
 - Pulse rate = 5
 - Pulse duration = 0.1
 - Power Reduction = -9.2
 - Transducer depth = 0.61 m
 - With the exception of all lines that were re-surveyed in 2016 due to shallower habitat depths, transducer was moved up to 0.495 m depth
 - Depth information in bathy file has been corrected for transducer offset
 - Location Data = Garmin GA 29 GPS
 - Projection: WGS84 UTM Zone 15 N
- Survey planning in Hypack

Data Post Processing

- Sidescan
 - Chesapeake SonarWiz V6

- Bottom track
- Empirical Gain Normalization
- Mosaic and output as 8-bit GeoTiff with 0.5 m-resolution
- WGS84 UTM 15N
- Singlebeam
 - Processed in EchoView
 - Bottom Line Selection
 - Min SV for pick = -9
 - Backstep @ -15 discrimination level
 - Peak threshold = -13
 - Bottom Classification (to pull features)
 - Distance between intervals = 5 m
 - Background noise = -999
 - Bottom echo threshold @ 1 m = ranges from -60 to -40
 - Final SingleBeam file
 - “Dep_Orig” = raw depth values that were all calculated using a 0.495 m transducer offset, have not been corrected for transducer offset error in 2014/2015. If you want to use these, then:
 - Data from 2016 is correct
 - Data from 2014-2015 needs to have 0.15 m ADDED to it
 - “Depth” = depths that have been corrected for transducer offset
 - “Dep_TidCor” = Transducer-corrected depths that have been corrected for tide
 - Tide corrections in 1-hour intervals from Pier 21
 - All depths are in meters

DEM Creation

- Empirical Bayesian kriging
 - Output cell size 50
 - Logempirical transformation
 - Exponential semivariogram
 - 500 points in each local model
 - Local model overlap 3
 - 50 simulated semivariograms
 - Standard circular search pattern
 - Radius of 100 m
 - Maximum neighbors = 500
 - Minimum neighbors = 100
 - Angle 45
 - Sector Type - 4
 -

APPROVAL PAGE

W00597

The survey data meet or exceed the current requirements of the Office of Coast Survey hydrographic data review process and may be used to update NOAA products. The following survey products will be archived at the National Centers for Environmental Information:

- Descriptive Report
- Collection of Bathymetric Attributed Grids (BAGs)
- Geospatial PDF of survey products

Approved: _____

Peter Holmberg

Acting Chief, Pacific Hydrographic Branch