

NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT

PROJECT NY1408-CM-C

Lower New York Bay to Jamaica Bay, New York

Introduction

Coastal Mapping Program (CMP) Project NY1408-CM-C provides highly accurate digital shoreline data for notable areas of change from Lower New York Bay to eastern Jamaica Bay, New York, including Rockaway Inlet. The Geographic Cell (GC) may be used in support of the NOAA Nautical Charting Program (NCP) as well as geographic information systems (GIS) for a variety of coastal zone management applications.

Project Design

Project NY1408-CM-C was designed in response to a request received from the Atlantic Hydrographic Branch (AHB) of the Hydrographic Surveys Division (HSD) of the Office of Coast Survey, NOAA, for updated shoreline data in response to shoreline changes observed during hydrographic survey operations. Based on analysis of project requirements and results of a source data search, it was determined that CMP procedures for multiple source projects would apply for this project. Available source data deemed adequate for successful completion of this project consisted of ortho-rectified natural color image mosaics created for the NOAA Integrated Ocean and Coastal Mapping (IOCM) initiative in Hurricane Sandy coastal impact areas, obtained through the NOAA Coastal Services Center's Digital Coast repository. This imagery has a GSD of 0.35 meters, and was created from source imagery acquired by NOAA contractors using Intergraph/Leica DMC Sensor Systems from January through April, 2014. Additionally, mean high water (MHW) and mean lower low water (MLLW) defined shoreline contours, derived from topographic/bathymetric lidar data acquired in conjunction with the source imagery described above, were incorporated into the GC where applicable. For more information on the methods used to derive shorelines from lidar data, see the journal article "Lidar-Derived National Shoreline: Empirical and Stochastic Uncertainty Analyses" (2010), published in the Journal of Coastal Research, also on file in the RSD Project Archive.

Field Operations

Routine CMP field operations did not apply for this project based on the origin of the project imagery, which was obtained from external sources.

Georeferencing

Further georeferencing tasks were not necessary since the IOCM orthoimagery compared well spatially with published NGS geodetic control points, and since the contractor provided an acceptable accuracy assessment for the imagery. The reported accuracy of the imagery is 0.53 meters at the 95% confidence level (CE95). This value was doubled in order to conservatively predict the accuracy of well-defined points measured during the compilation process. Positional data for this project is referenced to the North American Datum of 1983 (NAD 83).

Compilation

The compilation of cartographic feature data for this project was accomplished by a member of the Applications Branch (AB) of the Remote Sensing Division (RSD) in July 2015. Using Esri ArcGIS 10.2.2 desktop GIS software, digital feature data was compiled in shapefile format. Feature attributes were established using the Coastal Cartographic Object Attribute Source Table (C-COAST), which provides the definition and attribution scheme for the full range of cartographic features pertinent to the CMP.

Spatial data accuracies for Project NY1408-CM-C were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features extracted from the orthomosaic images were compiled to meet a horizontal accuracy of 1.1 meters (CE95), based on the contractor's image accuracy assessment referenced above. Accuracy assessment of the IOCM lidar point cloud data resulted in calculated horizontal accuracies (CE95) of 1.4 meters for MHW contours and 1.6 meters for MLLW contours.

The table below provides detailed information on the source images from which ortho-rectified image mosaics used for feature compilation were derived:

Date	Time (UTC)	Image ID	Tide Level*
2014-Jun-07	14:23 – 14:25	917978 – 930889	0.3
2014-Jun-07	14:38 – 14:41	1001026 – 1021473	0.3
2014-Jun-07	14:46 – 14:50	1044352 – 1069099	0.4 – 0.3
2014-Jun-08	13:15 – 13:19	307869 – 331542	0.7 – 0.4

* Tide levels are given in meters above MLLW and are based on verified observations at the Sandy Hook reference station (#8531680), with time/height corrections applied at various sub-stations in the vicinity of the project. The elevation of the MHW tidal datum in the project area varies between 1.4 – 1.8 meters above MLLW.

Quality Control / Final Review

Quality control tasks were conducted upon project completion by senior CMP personnel in July 2015. The review process included an assessment of the identification and attribution of digital feature data within the GC according to image analysis and criteria defined in C-COAST. The quality control process concluded with an inspection of topological connectivity within the GC using ArcGIS 10.2.2. The entire suite of project products was evaluated for compliance to CMP requirements.

Comparison of the largest scale NOAA nautical charts with the orthoimagery resulted in creation of the Chart Evaluation File (CEF), which was used to guide the compilation effort. The following nautical charts were used in the comparison:

- 12350, Jamaica Bay and Rockaway Inlet, 1:20,000 scale, 60th Ed., Aug. /11
- 12352, Shinnecock Bay to East Rockaway Inlet, 1:20,000 scale, 34th Ed., Sep. /12
- 12402, New York Lower Bay Northern Part, 1:15,000 scale, 12th Ed., Jun. /12

End Products and Deliverables

The following specifies the location and identification of end products generated during the completion of this project:

RSD Applications Branch Archive

- Hardcopy of the Project Completion Report (PCR)
- Page size graphic plot of GC11156 file contents, attached to PCR

Remote Sensing Division Electronic Data Library

- Project database
- GC11156 in shapefile format
- Digital copy of the PCR in Adobe PDF format
- CEF in shapefile format

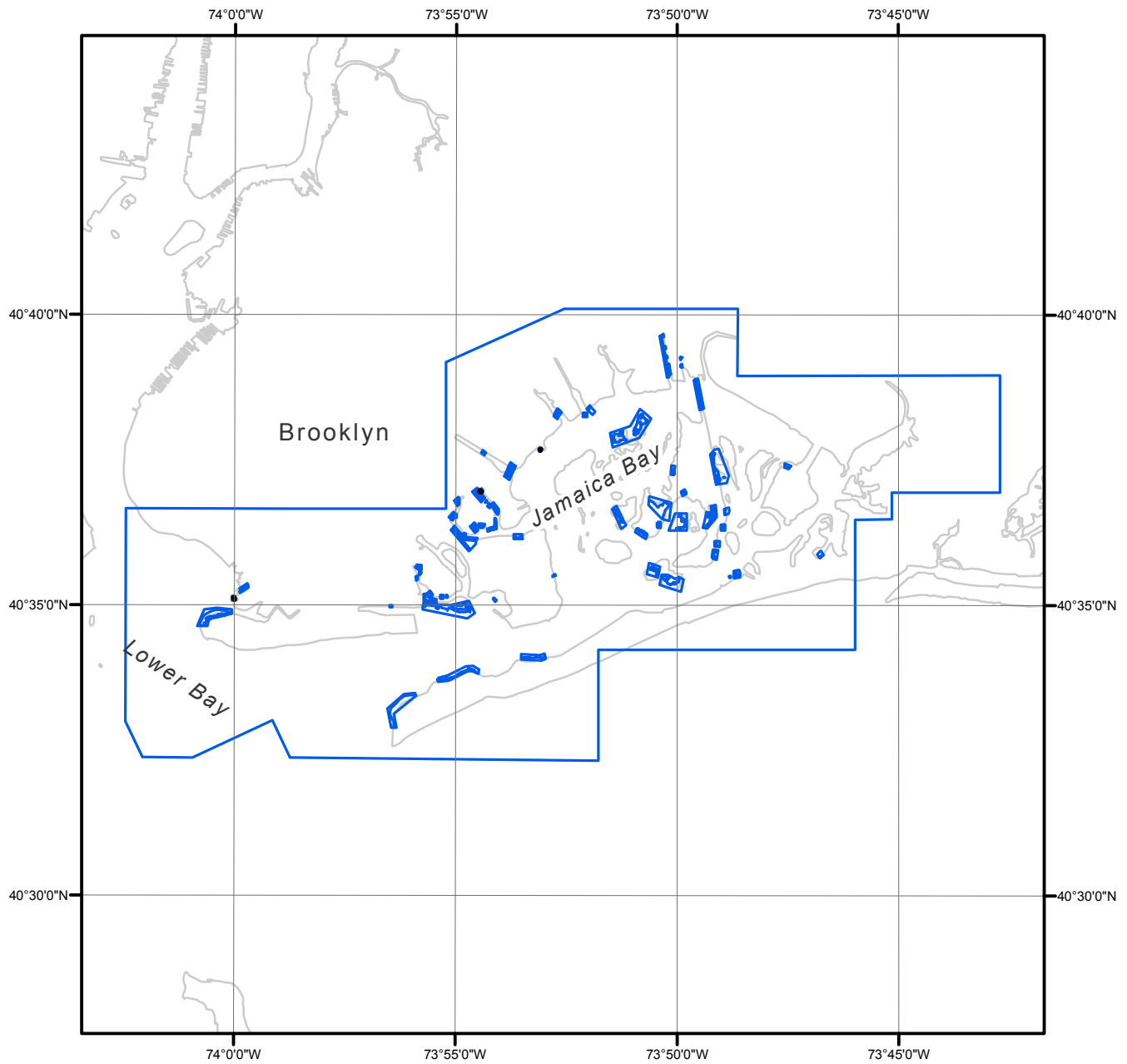
NOAA Shoreline Data Explorer

- GC11156 in shapefile format
- Metadata file for GC11156
- Digital copy of the PCR in Adobe PDF format

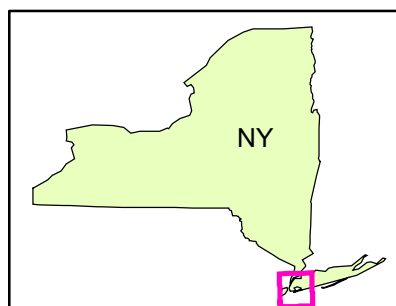
End of Report

LOWER NEW YORK BAY TO JAMAICA BAY

NEW YORK



Overview



NY1408-CM-C

GC11156