

NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT

PROJECT FL1614-CM-T

Shell Key to Egmont Key, Florida

Introduction

NOAA Coastal Mapping Program (CMP) Project FL1614-CM-T provides accurate digital shoreline data for a small portion of the Florida coast near the mouth of Tampa Bay, from Shell Key to Egmont Key. 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 FL1614-CM-T 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 this project included two orthorectified, pan-sharpened natural color commercial satellite images from DigitalGlobe, Inc., obtained through the NextView government contract.

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. Field surveyed ground control points (GCPs) from a prior research project (FL0401) were used in the georeferencing phase.

Georeferencing

Satellite images were received from the vendor as a series of tiles, with only those tiles covering the area of interest mosaicked for further use. One satellite image (GeoEye) was assessed for positional accuracy and determined to be suitable for feature compilation without need for further processing. The second image (WorldView) was georeferenced with the surveyed GCPs using Esri's ArcGIS® (v10.2.2) desktop GIS software. This work was accomplished by a member of the Applications Branch (AB) of the Remote Sensing Division (RSD) in June 2016. Within ArcGIS, the Georeferencing tool was used, and the georeferenced image was resampled using the Nearest Neighbor method with a 1st order polynomial model. The GCPs were used to assess the accuracy of both images, and the RMS of the residuals for measured check points was used to compute horizontal accuracies at the 95% confidence level (CE95) of 0.95 meters (GeoEye image) and 1.18 meters (WorldView image). These values were 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

Data compilation was accomplished by AB personnel in June 2016. Digital feature data was compiled in shapefile format from the satellite imagery using ArcGIS (v10.2.2). Feature attribution was assigned in compliance with 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 FL1614-CM-T were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were tested to have a horizontal accuracy of 1.9 meters (GeoEye) or 2.4 meters (WorldView) at the 95% confidence level. These predicted accuracies of well-defined points are based on comparisons of at least 20 check points to an independent source of higher accuracy. The following table provides further information on the imagery used to complete this project:

Image Source	Resolution	Source File ID	Acquisition Date/Time	Tide Level*
WorldView-2	0.5 m	20160528_R789_georef.jp2	2016-05-28 / 16:15 GMT	0.5 m
GeoEye-1	0.41 m	20160614_1622_GE1_ori_sub.tif	2016-06-14 / 16:22 GMT	0.5 m

* Tide levels are given in meters above MLLW and are based on actual observations by the NOS gauge at St. Petersburg, FL at the time of image acquisition, with offsets applied to a substation within the project area. The elevation of MHW in the project area is 0.6 meters above MLLW.

Quality Control / Final Review

Quality control tasks were conducted upon project completion by senior CMP personnel in June 2016. 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. A Chart Evaluation File (CEF) was created by comparing project imagery with the following nautical chart:

- 11415, Tampa Bay Entrance, FL, 1:40,000 scale, 11th Ed., Jun. 2015

End Products and Deliverables

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

Remote Sensing Division Electronic Data Library

- Project database
- GC11229 in shapefile format
- Project Completion Report (PCR)
- CEF in shapefile format

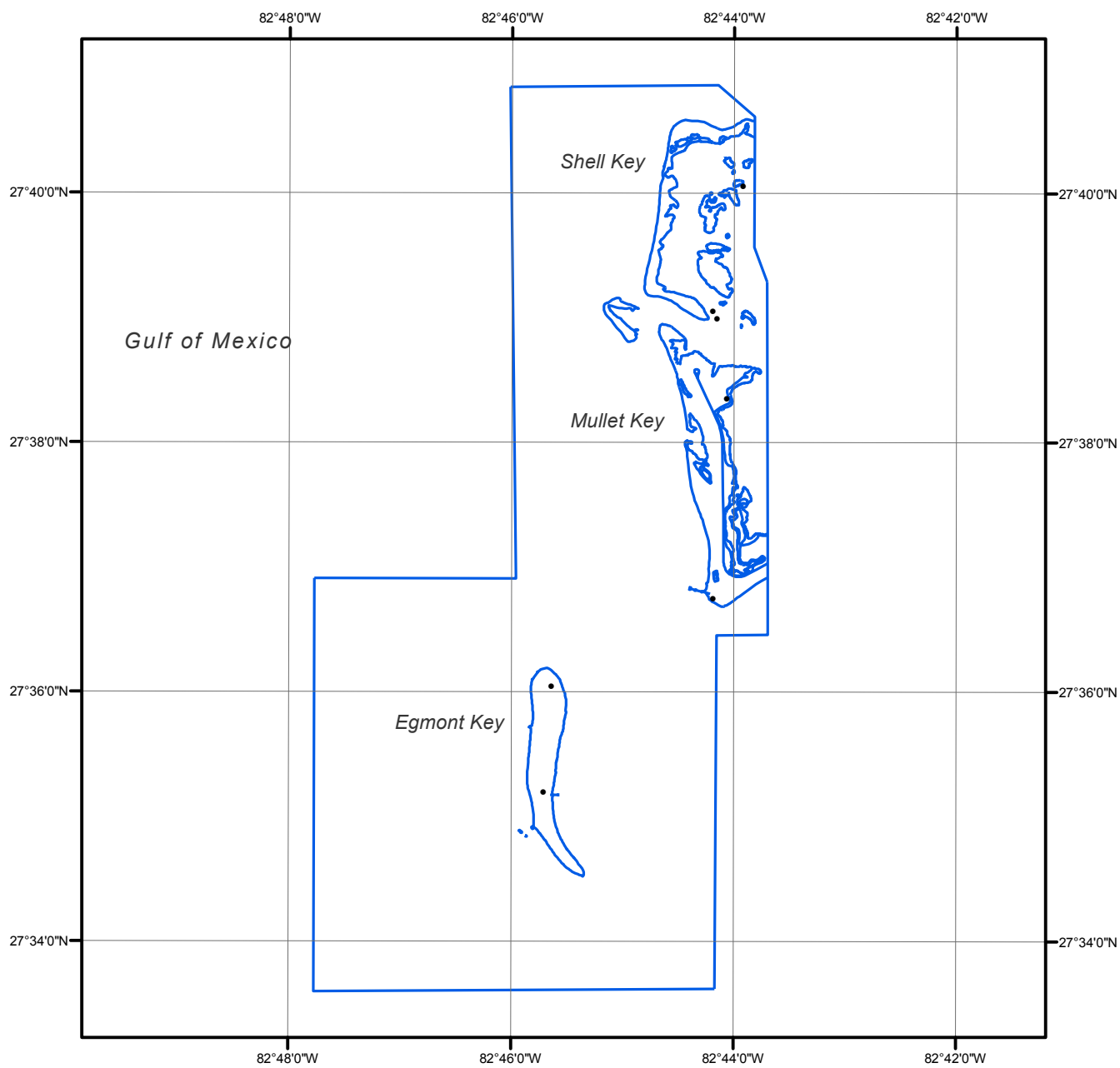
NOAA Shoreline Data Explorer

- GC11229 in shapefile format
- Metadata file for GC11229
- Digital copy of the PCR in Adobe PDF format

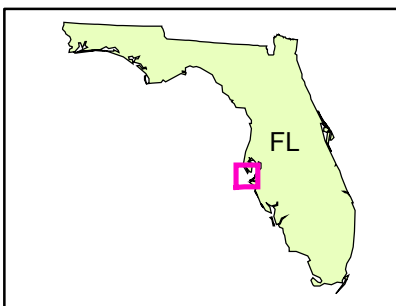
End of Report

SHELL KEY TO EGMONT KEY

FLORIDA



Overview



FL1614-CM-T

GC11229