

# **NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT**

## ***PROJECT GU1401***

### ***Apra Harbor, Guam***

#### **Introduction**

Coastal Mapping Program (CMP) Project GU1401 provides highly accurate digital shoreline data for key areas of change within Apra Harbor, in the territory of Guam. The geographic cell (GC) may be used in support of the NOAA Nautical Charting Program (NCP) as well as geographic information systems (GIS) for coastal zone management applications.

#### **Project Design**

The design of Project GU1401 was accomplished by the Requirements Branch (RB) of the Remote Sensing Division (RSD) in response to the need for timely updates to NOAA's Electronic Navigational Chart series. Project requirements were formulated as a result of analysis conducted within the Coast and Shoreline Change Analysis Program (CSCAP), in which NOAA nautical chart products are compared to contemporary high resolution satellite imagery in order to ascertain the need for more current shoreline data. A Chart Evaluation File (CEF) was forwarded to the Applications Branch (AB) of RSD once the change analysis was completed. Refer to the RB CSCAP memorandum of November 14, 2013 for details of the chart comparison process.

#### **Field Operations**

Routine CMP field operations did not apply for this project based on the origin of the project source data.

#### **Georeferencing**

Four basic-level pan-sharpened WorldView-2 satellite images from DigitalGlobe, Inc. with a spatial resolution of 0.5 meters were obtained through the National Geospatial-Intelligence Agency (NGA). Rigorous refinement of the georeferencing of the WorldView images used for compilation was not necessary since the images compared favorably spatially with the data sources used to check its geolocation, and since DigitalGlobe provided an acceptable accuracy assessment for their imagery. The accuracy of the WorldView images reported by the vendor is 5.0 m at the 90% confidence level (CE90). The published positions of nine U.S. Coast Guard maintained navigational aids were compared with their positions as measured in the satellite imagery as a means of verifying this accuracy. The reported accuracy is exclusive of viewing geometry and terrain distortions.

#### **Compilation**

Data compilation was performed by RSD personnel in March 2014. Digital feature data was compiled in shapefile format from the WorldView imagery using Esri's ArcGIS 9.3.1 desktop GIS software. 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 GU1401 were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were compiled to meet a horizontal accuracy of 5.7 meters, based on the vendor reported CE90 accuracy converted to the 95% confidence level (CE95).

The following table provides information on satellite imagery used in the project completion:

Image Source	Image Source File Name	Acquisition Date/Time	Tide Level
WorldView-2	13mar08011636-s3dm_r3c1-053107742010_01_p001.tif.tif	2013-03-08 01:16 GMT	0.5 m
WorldView-2	13mar08011636-s3dm_r3c2-053107742010_01_p001.tif.tif	2013-03-08 01:16 GMT	0.5 m
WorldView-2	13mar08011636-s3dm_r4c1-053107742010_01_p001.tif.tif	2013-03-08 01:16 GMT	0.5 m
WorldView-2	13mar08011636-s3dm_r4c2-053107742010_01_p001.tif.tif	2013-03-08 01:16 GMT	0.5 m

\* Tide levels are given in meters above MLLW and are based on actual observations recorded by the NOS reference gauge at Apra Harbor, Guam. The elevation of the MHW tidal datum at Apra Harbor is 0.68 meters above MLLW.

## Quality Control / Final Review

Quality control tasks were conducted by a senior member of RSD. The final QC review was completed in March 2014. The review process included analysis of the image georeferencing and 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 9.3.1. The entire suite of project products was evaluated for compliance to CMP requirements

## 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 GC11062 file contents, attached to PCR
- Hardcopy of the CSCAP evaluation memorandum

### Remote Sensing Division Electronic Data Library

- GC11062 in shapefile format
- Digital copy of the PCR in Adobe PDF format
- CEF in shapefile format

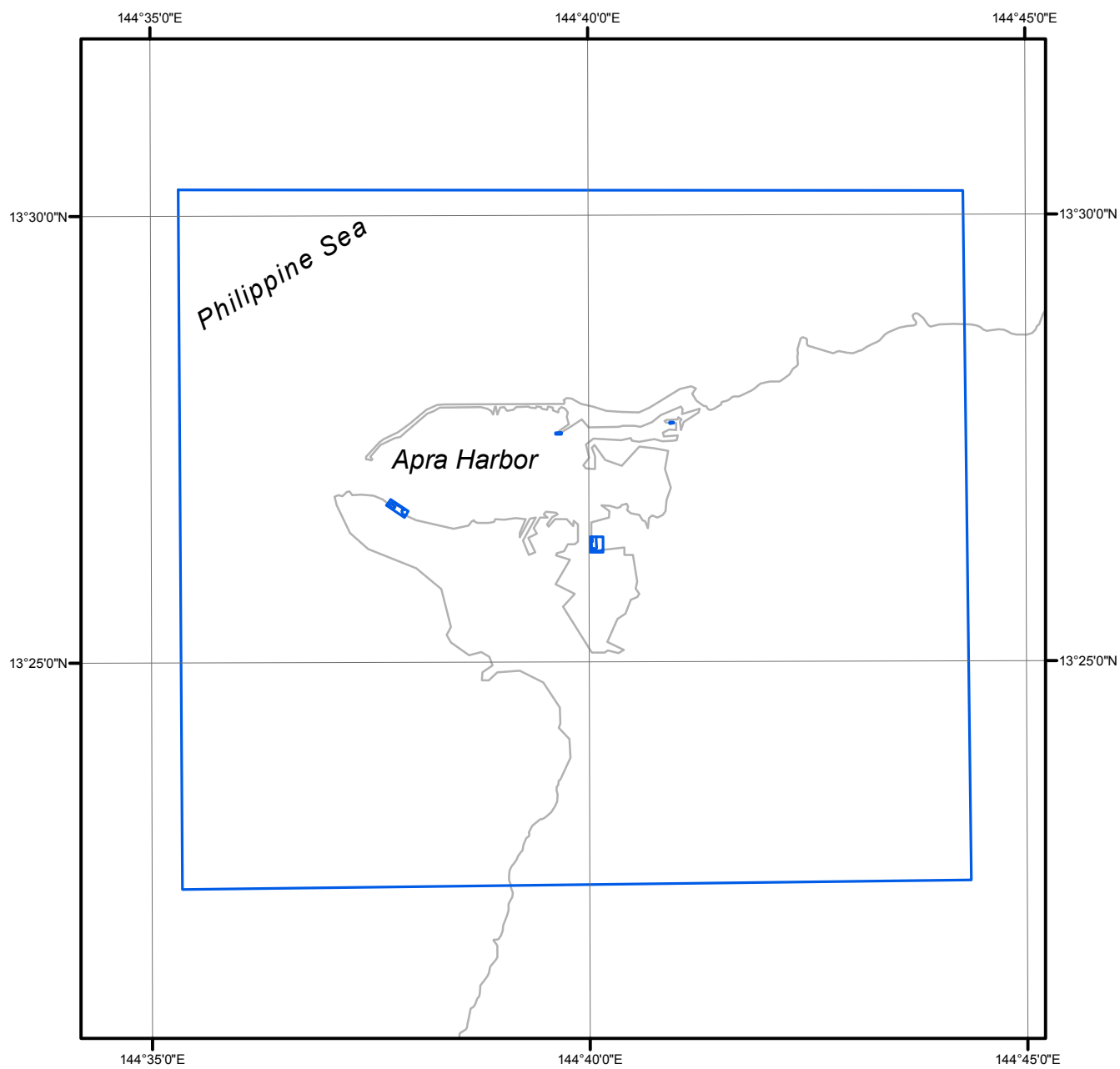
### NOAA Shoreline Data Explorer

- GC111062 in shapefile format
- Metadata file for GC11062
- Digital copy of the PCR in Adobe PDF format

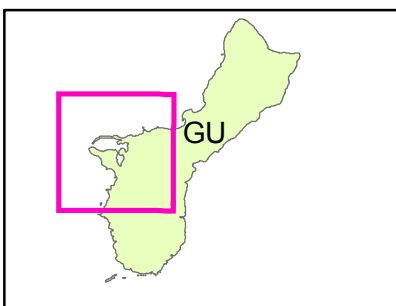
## End of Report

# APRA HARBOR

## GUAM



Overview



GU1401

GC11062