NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

PROJECT VA1101

Ports of Norfolk and Newport News, Virginia

Introduction

NOAA Coastal Mapping Program (CMP) Project VA1101 provides a highly accurate database of new digital shoreline data for the Ports of Norfolk and Newport News, including Hampton Roads, Elizabeth River and Lafayette River, Virginia. 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

The design of Project VA1101 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. Refer to the CSCAP analysis memo for the Ports of Norfolk and Newport News, Virginia for details regarding 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. Existing sources of horizontal control were used for the georeferencing process.

Georeferencing

Two WorldView-1 panchromatic images with a spatial resolution of 0.5 meters were georeferenced using Erdas IMAGINE 9.3 software on a Windows platform. Ground control points (GCPs) were photogrammetrically measured from previously aerotriangulated images from project VA0203, then imported into IMAGINE and used to georeference the satellite imagery. Within IMAGINE the Raster Geometric Correction tool was used with a 1st order polynomial model. The satellite imagery was resampled using the Nearest Neighbor sampling method. The RMS of the residuals for measured check points was used to compute a CE95 of 0.7 meters for image #1, and 0.8 meters for image #2. This CE value was tripled and then added to the source imagery's CE95 in order to conservatively predict the accuracy of well-defined points measured during the compilation process. A Georeferencing Report was written and is on file with other project data within the AB Project Archive. Positional data is based on the UTM Coordinate System (Zone 18), and referenced to the North American Datum of 1983.

Compilation

The data compilation phase of this project was accomplished by RSD in January 2011. Digital feature data was compiled in ESRI shapefile format from imagery using ESRI's ArcGIS 9.3 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. Selected cartographic features were further modified with additional descriptive information to refine general classification.

Spatial data accuracies for Project VA1101 were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were tested to have a horizontal accuracy of 3.7 meters for image #1 and 4.0 meters for image #2 at the 95% confidence level. This predicted accuracy of well-defined points is based on a minimum of twenty (20) check points for each image, that were compared to an independent source of higher accuracy.

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

Image Source	Image Source	Source File Name	Acquisition Date/Time	Tide Level*
#1	WorldView-1	09apr28160453-p1bs-052122016010_03_p007_RPC.tif	2009-04-28, 16:04 GMT	0.7
#2	WorldView-1	09apr28160450-p1bs-052122016010_03_p006_RPC.tif	2009-04-28, 16:04 GMT	0.7

* Tide levels are given in meters above MLLW and are based on actual observations recorded by the NOS tide gauge at Hampton Roads (Sewells Point), Virginia at the time of imagery acquisition. The elevation of the MHW tidal datum at Sewells Point is equal to 0.8 meters above MLLW.

Quality Control / Final Review

Quality control tasks were conducted during all phases of project completion by a senior member of AB. The final QC review was completed in February 2011. The review process included analysis of the georeferencing results and 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. 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 Georeferencing Report
- Hardcopy of the Project Completion Report (PCR)
- Page size graphic plot of GC10863 file contents, attached to PCR
- Hardcopy of the CSCAP evaluation memorandum

Remote Sensing Division Electronic Data Library

- GC10863 in shapefile format
- Digital copy of the PCR in Adobe PDF format
- Chart Evaluation File (CEF) in shapefile format

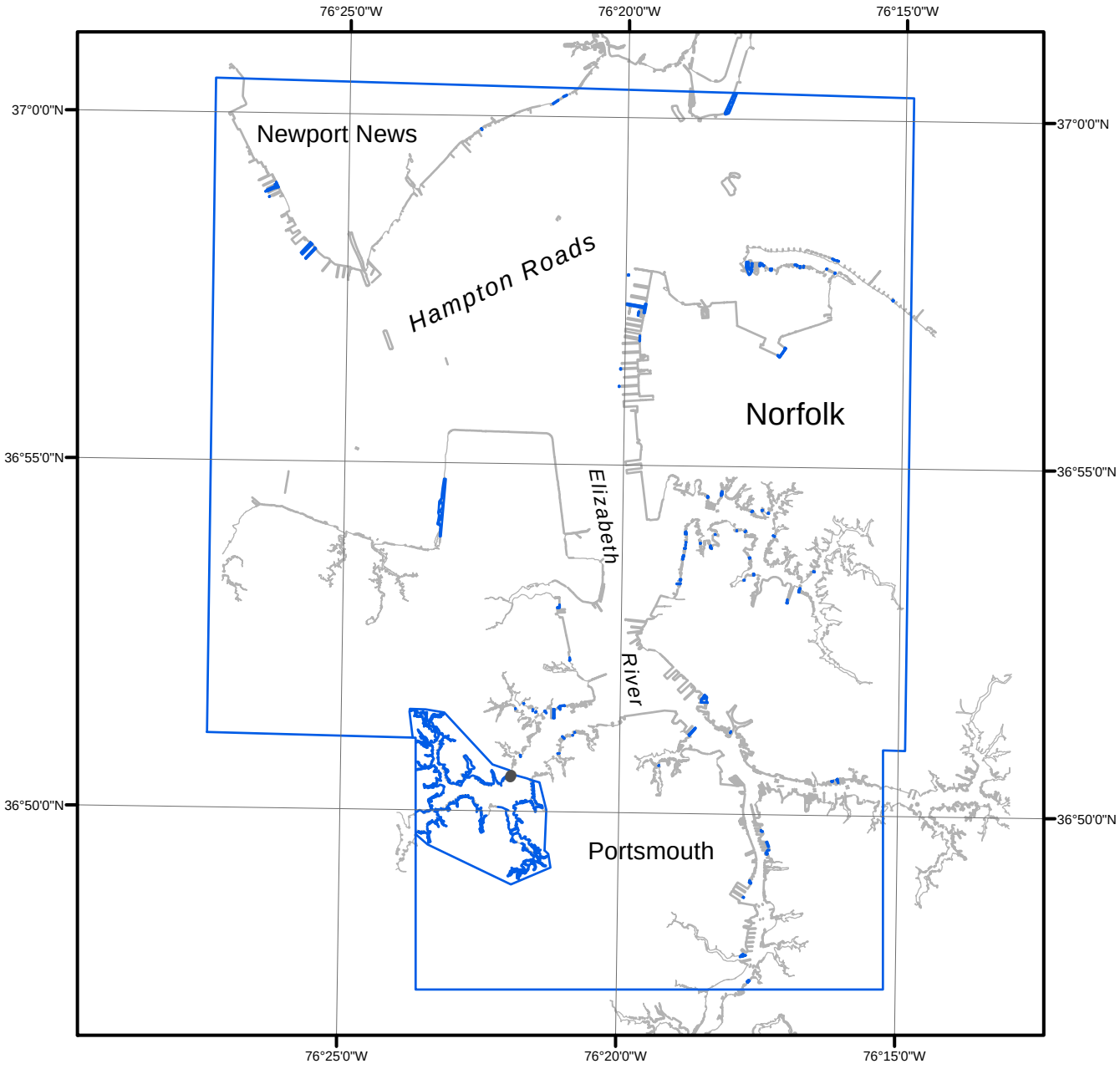
NOAA Shoreline Data Explorer

- GC10863 in shapefile format
- Metadata file for GC10863
- Digital copy of the PCR in Adobe PDF format

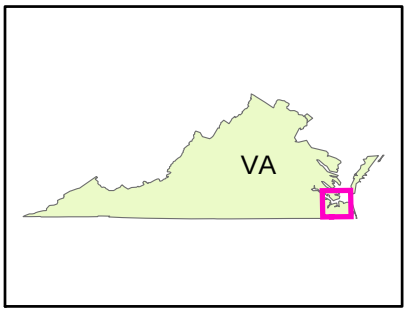
End of Report

PORTS OF NORFOLK AND NEWPORT NEWS

VIRGINIA



Overview



VA1101

GC10863