NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

PROJECT MS1501C-CS-N

Port of Pascagoula-Moss Point, Mississippi

Introduction

Coastal Mapping Program (CMP) Project MS1501C-CS-N provides highly accurate digital shoreline data for key areas of change within the port of Pascagoula-Moss Point. 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 MS1501C-CS-N was accomplished by the Requirements Branch (RB) of the Remote Sensing Division (RSD) in response to the need for updates to the NOAA Electronic Navigational Chart (ENC) 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 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 complete. Refer to the RB change analysis memorandum of February 20, 2015 for details of the chart comparison process.

Field Operations

The field operations consisted of the collection of static and kinematic Global Positioning System (GPS) data and Inertial Measurement Unit (IMU) data and the acquisition of aerial imagery. Digital images utilized for this project were acquired with the NOAA King Air aircraft on January 26, 2015 using an Applanix Digital Sensor System (DSS) 539 aerial camera at a nominal altitude of 10,500 feet, resulting in an approximate ground sample distance (GSD) of 0.36 meters. The collection of these photographs was not tide coordinated.

GPS Data Reduction

The GPS/IMU data were processed by RSD personnel to yield precise camera positions in order to provide a control network necessary for aerotriangulation. The base station's geodetic position was derived using the NGS Online Processing User Service (OPUS), which computed fixed baseline solutions from nearby CORS stations. The kinematic GPS data was processed using Applanix POSPac MMS 7.1 software in February 2015. For further information refer to the Airborne Positioning and Orientation Reports (APOR) on file with other project data within the AB Project Archive.

Aerotriangulation

Routine softcopy aerotriangulation methods were applied to establish a network of precise camera positions and other control for mapping, and to provide model parameters and orientation

elements required for digital compilation. This work was performed by RSD personnel in April 2015 utilizing SOCET GXP (ver. 4.1) software on a Digital Photogrammetric Workstation (DPW), which is a configuration of computer hardware, modular software components, and other associated peripheral devices. The RGB images were measured and adjusted as a single block using the Triangulation module of SOCET GXP. Upon successful completion of this process, the SOCET GXP triangulation report provided the standard deviations for each aerotriangulated ground point, which were used to compute a predicted horizontal circular error of 0.29 meters based on a 95% confidence level. An Aerotriangulation Report was written and is on file with other project data within the RSD Project Archive. Positional data is referenced to the North American Datum of 1983 (NAD83).

Compilation

The data compilation phase of this project was accomplished by a member of AB in April 2015. Digital feature data was compiled from the aerotriangulated imagery using the ToolBox module of SOCET GXP. 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 features were further modified with additional descriptive information to refine general classification.

Spatial data accuracies for Project MS1501C-CS-N were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were compiled to meet a horizontal accuracy of 0.6 meters at the 95% confidence level. This predicted accuracy of compiled well-defined points is derived by doubling the circular error calculated from the aerotriangulation statistics.

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

Date	Time (UTC)	Roll #	Flight Line / Photo #s	Tide Level*
26-JAN-2015	17:36 – 17:38	15NC09	53-012 / 904 – 920	0.1 m
26-JAN-2015	17:45 – 17:48	15NC09	53-007 / 921 – 940	0.1 m
26-JAN-2015	18:02 – 18:05	15NC09	53-008 / 942 – 961	0.1 m
26-JAN-2015	18:13 – 18:16	15NC09	53-009 / 962 – 977	0.1 m
26-JAN-2015	18:24 – 18:27	15NC09	53-010 / 978 – 994	0.1 m
26-JAN-2015	18:34 – 18:36	15NC09	53-011 / 995 – 1004	0.1 m

* Tide levels are given in meters above MLLW and are based on verified observations at the Pascagoula NOAA Lab, MS (#8741533) and Dock E, Port of Pascagoula, MS (#8741041) tide stations. The elevation of MHW in the project area is approximately 0.44 meters above MLLW.

Quality Control / Final Review

The final review of the project was completed by a senior member of RSD in April 2015, and included analysis of aerotriangulation 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 Esri's ArcGIS desktop GIS software (v10.2.2). All project data 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 Airborne Positioning and Orientation Report (APOR)
- Hardcopy of the Aerotriangulation Report
- Hardcopy of the Project Completion Report (PCR) w/page-size graphic
- Hardcopy of the CSCAP evaluation memorandum

Remote Sensing Division Electronic Data Library

- GC11144 in shapefile format
- Digital copy of the PCR in Adobe PDF format
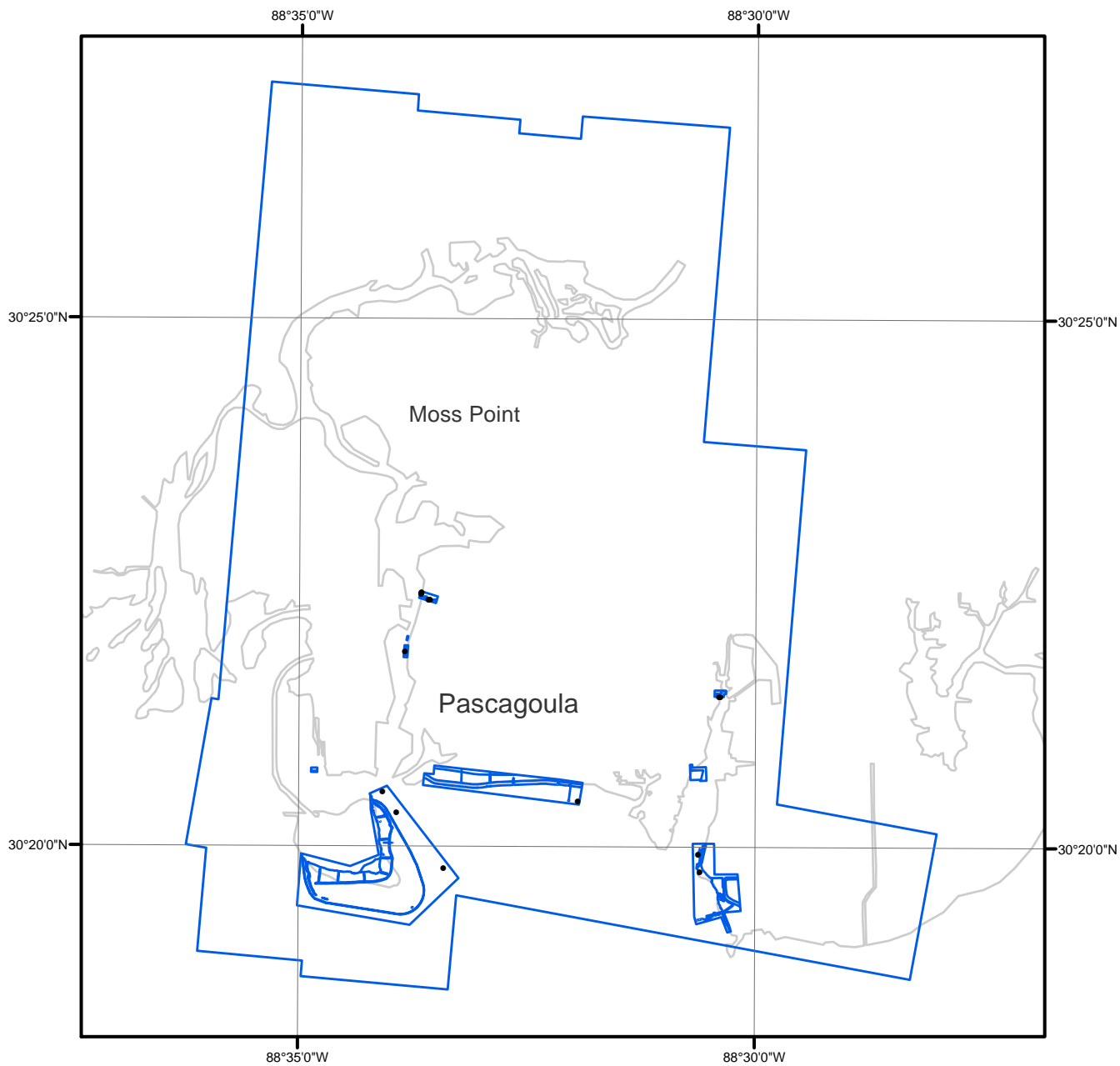- CEF in shapefile format

NOAA Shoreline Data Explorer

- GC11144 in shapefile format
- Metadata file for GC11144
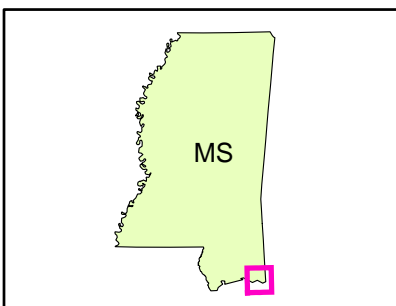- Digital copy of the PCR in Adobe PDF format

End of Report

PORT OF PASCAGOULA-MOSS POINT

MISSISSIPPI

88°35'0"W

88°30'0"W

30°25'0"N

Moss Point

Pascagoula

30°20'0"N

88°35'0"W

88°30'0"W

30°25'0"N

30°20'0"N

Overview

MS

MS1501C-CS-N

GC11144