NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

PROJECT WA0601C

Port of Astoria, Oregon

Introduction

Coastal Mapping Program (CMP) Project WA0601C provides highly accurate digital shoreline data for key areas of change within the Port of Astoria, Oregon, extending from Point Adams (northwest) to Lois Island and South Channel (southeast). 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 WA0601C was accomplished by the Requirements Branch (RB) of the Remote Sensing Division (RSD) in response to the need for timely 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 satellite imagery in order to ascertain the need for more current shoreline data. Refer to the RB Memorandum of May 30, 2006, "Change Analysis Report for Astoria, Oregon," 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. Existing sources of horizontal control were used for the georeferencing process.

Georeferencing

Two QuickBird non-orthorectified color images with a spatial resolution of 0.6 meters, acquired from DigitalGlobe, Inc., were georeferenced using Erdas IMAGINE 9.0 software on a Windows platform. Within IMAGINE, the Raster Geometric Correction tool was used with a 1st order polynomial model. Ground control points (GCPs), which were photogrammetrically measured from metric quality aerial photography, were imported into IMAGINE and used to georeference the satellite imagery. Once the control points were measured in IMAGINE, the satellite imagery was resampled using the Nearest Neighbor sampling method. The RMS of the standard deviations of the residuals for each measured check point were used to compute a predicted horizontal circular error (CE) of 1.3 meters for image #1 and 1.7 meters for image #2, based on a 95% confidence level. This CE value was tripled to yield a conservative predictor of the accuracy of well defined points measured during compilation. Positional data is referenced to the North American Datum of 1983 (NAD 83).

Compilation

The data compilation phase of this project was accomplished by RSD in February 2007. Digital feature data was compiled in ESRI shapefile format from imagery using ESRI's ArcGIS 9.1 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. Selected cartographic features were further modified with additional descriptive information to refine general classification.

Spatial data accuracies for Project WA0601C were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were tested to have a horizontal accuracy at the 95% confidence level of 4.2 meters for image #1 and 5.0 meters for image #2. This predicted accuracy of well-defined points is based on a minimum of twenty (20) check points that were compared to an independent source of higher accuracy.

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

Image #	Image Source	Source File Name	Acquisition Date/Time	Tide Level*
1	QUICKBIRD	06FEB18193914-S2AS-05537426010_01_P001	18-FEB-2006 19:39 GMT	0.0 m
2	QUICKBIRD	06MAY01194153-S2AS-005537426010_01_P002	01-MAY-2006 19:41 GMT	0.7 m

* Tide levels are given in meters above MLLW and are based on actual observations recorded by the NOS gauge at the times of photography. The elevation of the MHW tidal datum at the Astoria, OR Tide Gauge is equal to 2.1 meters above MLLW.

Quality Control / Final Review

Quality control tasks were conducted during all phases of project completion by a senior member of the Applications Branch of RSD. The final QC review was completed in June 2007. The review process included analysis of the georeferencing results and assessment of the identification and attribution of cartographic features 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 9.1. 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 GC10654 file contents, attached to PCR
- Hardcopy of the CSCAP evaluation memorandum

Remote Sensing Division Electronic Data Library

- GC10654 in shapefile format
- Digital copy of the PCR in Adobe PDF format
- Chart Evaluation File (CEF) in shapefile format

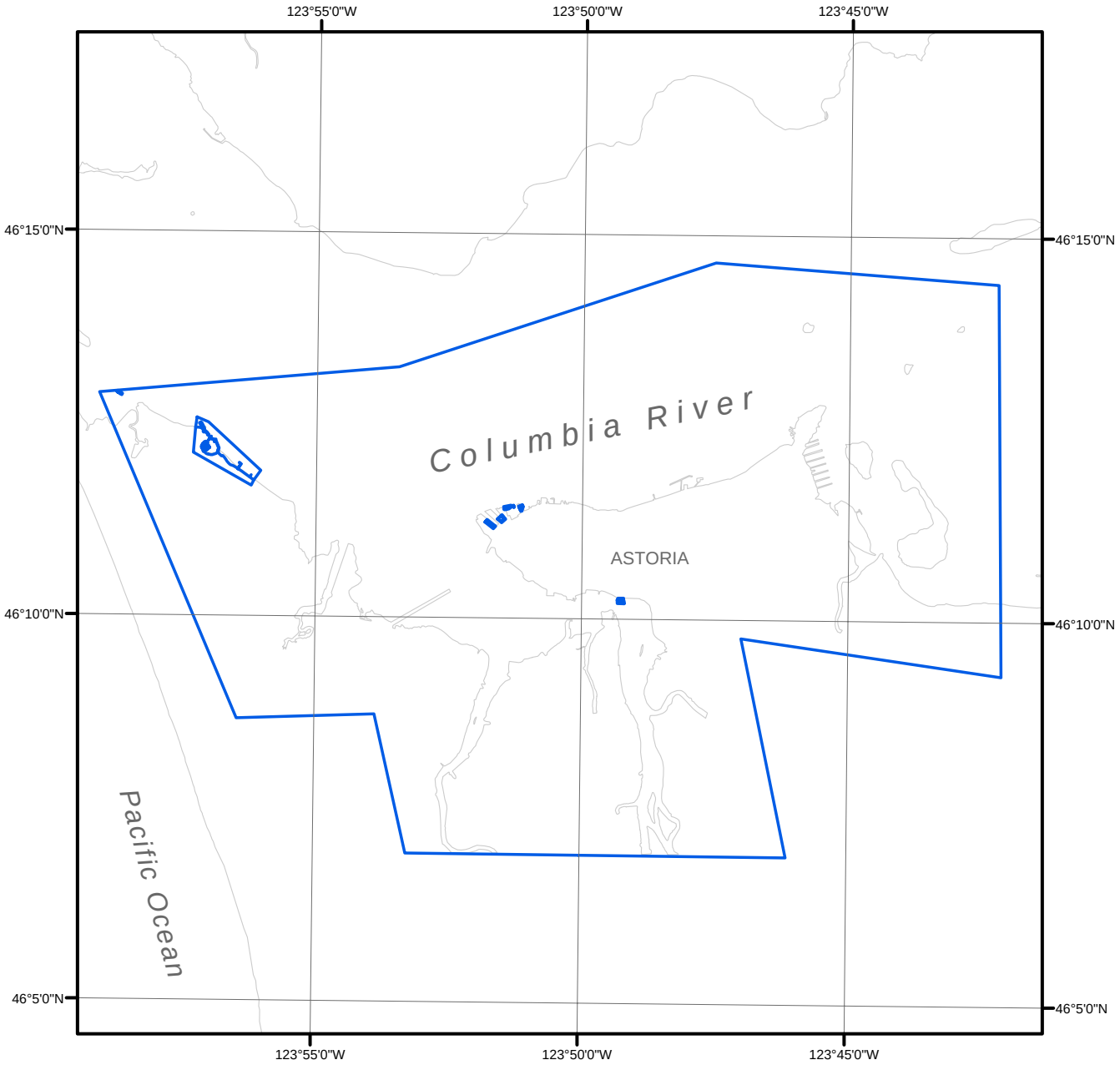
NOAA Shoreline Data Explorer

- GC10654 in shapefile format
- Metadata file for GC10654
- Digital copy of the PCR in Adobe PDF format

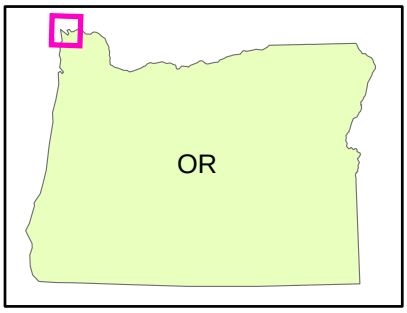
End of Report

PORT OF ASTORIA

OREGON



Overview



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