

NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT

PROJECT WA0601B

Port of Kalama, Washington

Introduction

Coastal Mapping Program (CMP) Project WA0601B provides highly accurate digital shoreline data for key areas of change within the port of Kalama, Washington. The digital cartographic feature file (DCFF) 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 WA0601B 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 15, 2006, "Results of CSCAP Change Analysis for Kalama, Washington (WA0601B)" 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

One QuickBird non-orthorectified color image with a spatial resolution of 61 centimeters, acquired from DigitalGlobe, Inc., was georeferenced using Erdas IMAGINE 9.0 software on a Windows platform. Ground control points (GCPs), photogrammetrically measured from metric quality aerial photography, were 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 imagery was resampled using the Nearest Neighbor sampling method. The RMS of the residuals for measured check points was used to compute a predicted horizontal circular error at the 95% confidence interval (CE95) of 1.36 meters for the satellite image. This CE value was tripled and then added to the CE95 of the source imagery from which ground control points were extracted, in order to conservatively predict the accuracy of well-defined points measured during the compilation process. Positional data is based on the UTM Coordinate System (zone 10), and referenced to the North American Datum of 1983.

Compilation

The data compilation phase of this project was accomplished by RSD in June 2006. 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 WA0601B were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were tested to have a horizontal accuracy of 4.4 meters at the 95% confidence level. 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 Source	Source ID	Source File Name	Acquisition Date/Time	Tide Level*
QuickBird	005537426030_01	06MAY04192624-S2AS-005537426030_01_P001	2006-05-04 19:26 GMT	0.5 m

* Tide levels are given in meters above MLLW and are based on actual observations recorded by the NOS gauge at the time of photography. The elevation of the MHW tidal datum at the Saint Helens, OR, tide gauge is equal to 0.53 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 August 2006. 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 DCFF 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 GC10616 file contents, attached to PCR
- Hardcopy of the CSCAP evaluation memorandum

Remote Sensing Division Electronic Data Library

- Digital copy of DCFF GC10616 in ESRI shapefile format
- Digital copy of the PCR in Adobe PDF format
- Chart Evaluation File (CEF) in shapefile format

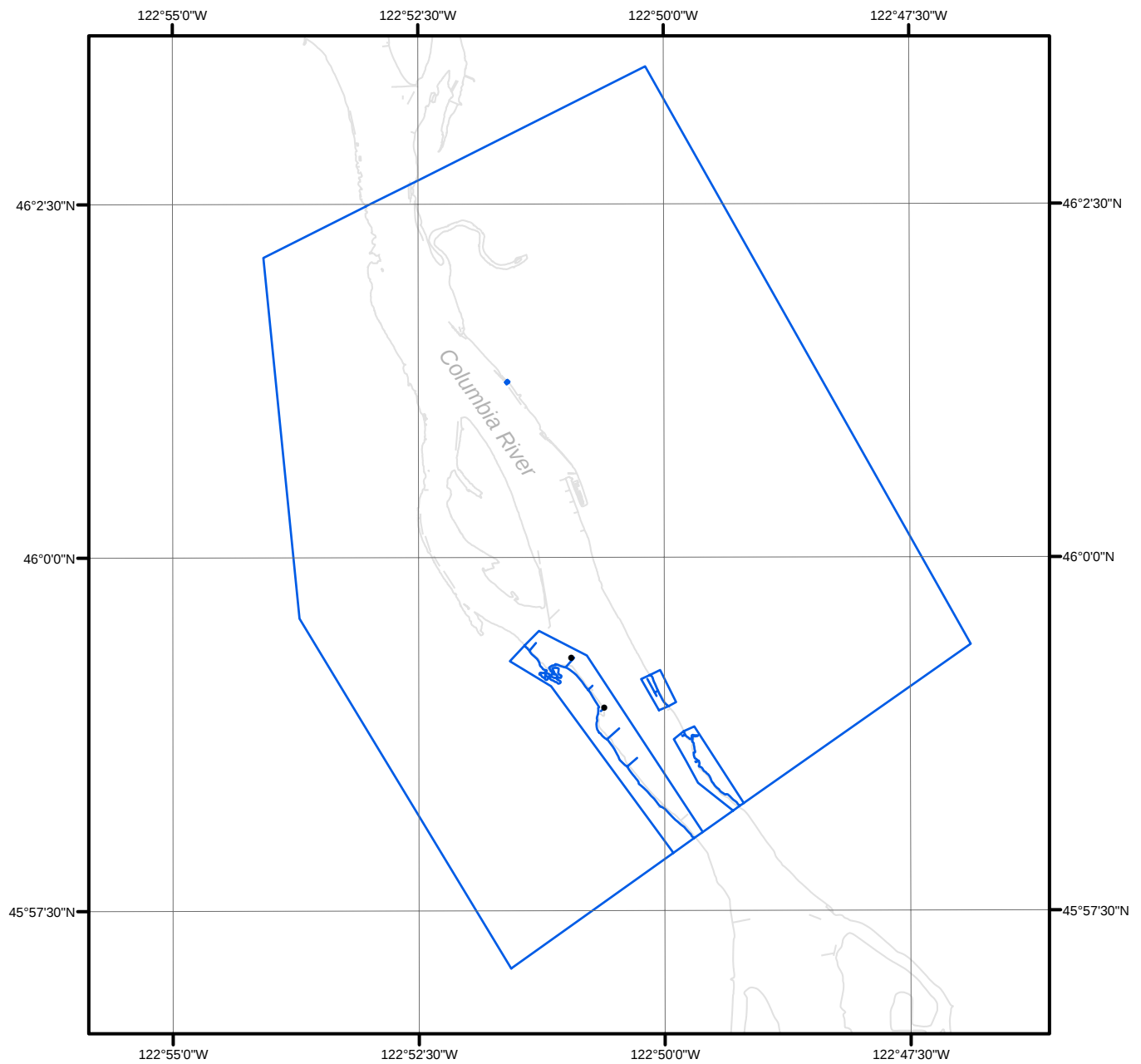
NOAA Shoreline Data Explorer

- DCFF for GC10616
- Metadata file for GC10616
- Digital copy of the PCR in Adobe PDF format

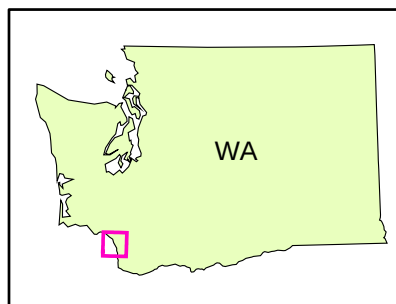
End of Report

PORT OF KALAMA

WASHINGTON



Overview



WA0601B

GC10616