

NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT

PROJECT CA2002-CS-T

Port of Humboldt/Eureka, California

Introduction

Coastal Mapping Program (CMP) Project CA2002-CS-T provides highly accurate digital shoreline data for key areas of change within the port of Humboldt/Eureka, California. 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 CA2002-CS-T was accomplished by the Requirements Branch (RB) of the Remote Sensing Division (RSD) in response to the need for updates to the NOAA chart suite in key ports. 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. Commercial satellite imagery was utilized for the CSCAP analysis. A Chart Evaluation File (CEF) was created once the change analysis was complete. Refer to the CSCAP memorandum for CA2002-CS-T 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

Georeferencing tasks were conducted by a member of the Applications Branch (AB) of the RSD in April 2021. Two pan-sharpened WorldView-2 images were obtained via the Enhanced View Web Hosting Site, although only one was georeferenced for use in compilation. The image was georeferenced with control points from previous CMP project CA1401-CS-N using Esri's ArcGIS (ver. 10.8.1) desktop GIS software. Within ArcGIS, the Georeferencing tool was used, and the image was re-sampled using the Nearest Neighbor method with a 1st order polynomial model. Check points from CA1401-CS-N were used to assess the accuracy of the resampled imagery, and the RMS of the residuals for each measured check point was used to compute a predicted horizontal circular error (CE) of 1.1 meters for based on a 95% confidence level. This CE value was doubled and added to the accuracy of the source dataset from the which check points were extracted in order to conservatively predict the accuracy of well-defined points measured during compilation. Positional data is referenced to the North American Datum of 1983 (NAD 83).

Compilation

Data compilation was accomplished by a member of AB in April 2021. Digital feature data was compiled in shapefile format from the satellite imagery using Esri's ArcGIS 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 features were further modified with additional descriptive information to refine general classification.

Spatial data accuracies for Project CA2002-CS-T were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were compiled to meet a horizontal accuracy of 2.8 meters at the 95% confidence level, which is a deductive estimate based on georeferencing statistics. The following table provides information on the satellite images used in the project completion:

Image Source	Source File ID	GSD	Acquisition Date/Time	Tide Level*
WorldView-2	20190921_WV02_ORI_MOS_NAD83.jp2	0.5 m	2019-09-21 / 19:35:27	n/a
WorldView-2	20191010_WV02_ORI_MOS_NAD83_georef.jp2	0.5 m	2019-10-10 / 19:35:36	1.7 m

* Tide level is given in meters above MLLW and is based on verified observations at the NOS gauge at North Spit, CA (#9418767). The elevation of MHW at the tide gauge is 1.873 meters above MLLW.

Quality Control / Final Review

Quality control tasks were conducted subsequent to project completion in April 2021 by senior CMP personnel. 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. 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:

Remote Sensing Division Electronic Data Library

- CSCAP evaluation memorandum
- GC11721 in shapefile format
- Project Completion Report (PCR)
- CEF in shapefile format

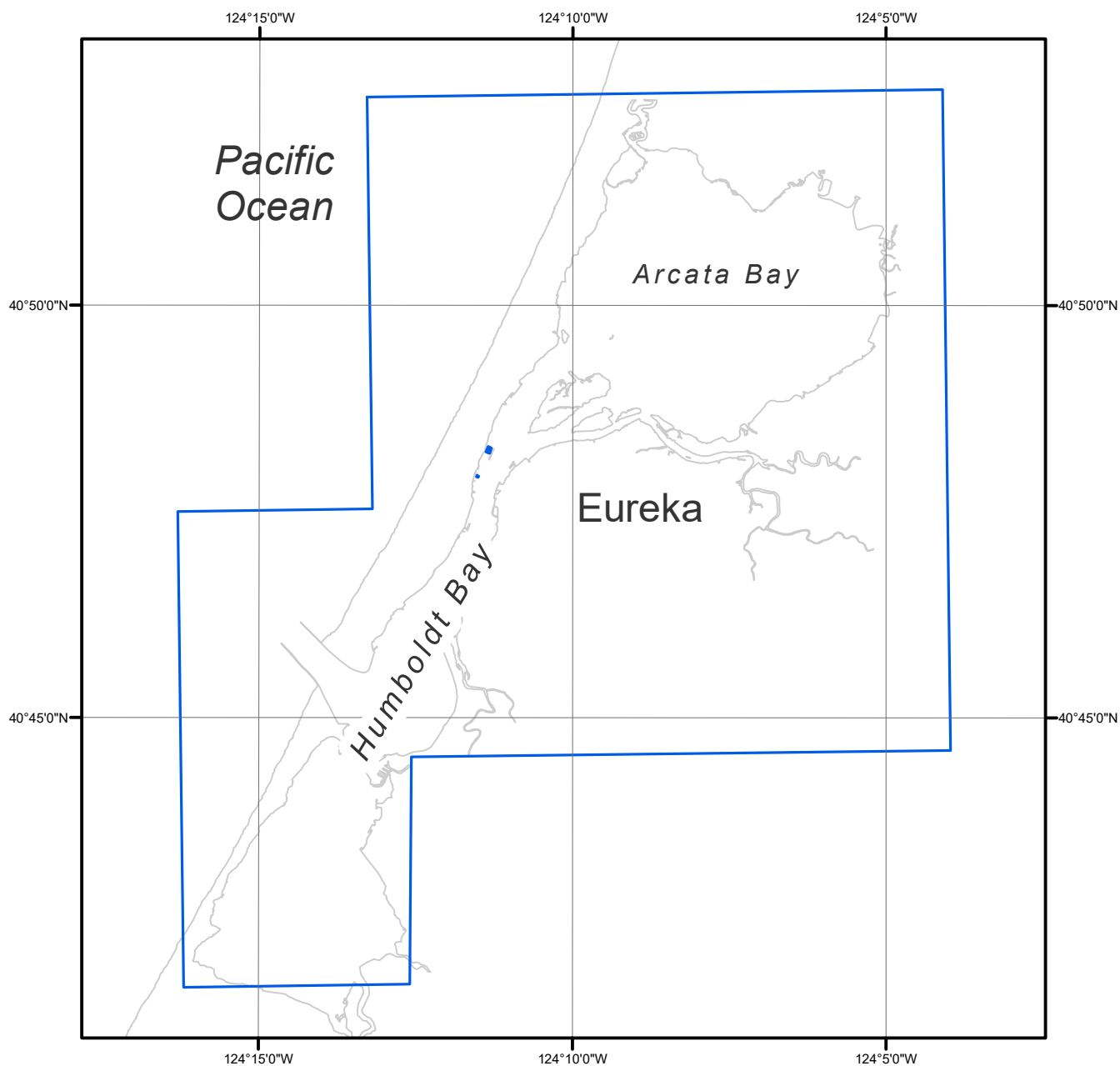
NOAA Shoreline Data Explorer

- GC11721 in shapefile format
- Metadata file for GC11721
- PCR in Adobe PDF format

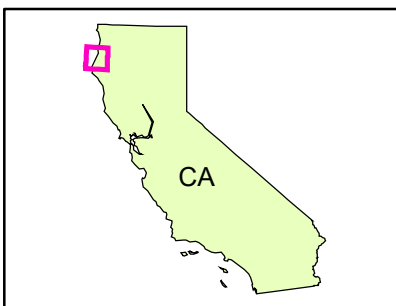
End of Report

PORT OF HUMBOLDT/EUREKA

CALIFORNIA



Overview



CA2002-CS-T

GC11721