# NOAA COASTAL MAPPING PROGRAM
# PROJECT COMPLETION REPORT

## *PROJECT AK1405-CS-T*

## *Port of Petersburg, Alaska*

### Introduction

Coastal Mapping Program (CMP) Project AK1405-CS-T provides highly accurate digital shoreline data for key areas of change within Petersburg, Alaska. 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 AK1405-CS-T was accomplished by the Requirements Branch (RB) of the Remote Sensing Division (RSD) in response to the need for expedited 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 of July 1, 2014 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 initiated by a member of the Applications Branch (AB) of the RSD in July 2015. One WorldView-1 panchromatic image from DigitalGlobe, Inc. with a spatial resolution of 0.5 meters was georeferenced using Esri's ArcGIS® (ver. 10.2.2) desktop GIS software. Within ArcGIS, the Georeferencing tool was used, and the imagery was re-sampled using the Nearest Neighbor sampling method with a 1st order polynomial model. Check points measured from stereo imagery for a previous project (CMP Project AK0707) were used as control and to assess the accuracy of the resampled imagery. The RMS of the residuals for each measured check point was used to compute a predicted horizontal circular error of 1.5 meters based on a 95% confidence level (CE95). This value was doubled and added to the CE95 of the check points 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 July 2015. Digital feature data was compiled in shapefile format from satellite imagery using Esri's ArcGIS (ver. 10.2.2) 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.

Spatial data accuracies for Project AK1405-CS-T were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were compiled to meet a horizontal accuracy of 3.5 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 | Acquisition Date/Time | Tide Level* |
|---|---|---|---|
| WorldView-1 | 01NOV12WV021400012NOV01204747-P1BS-052508548010_04_P002_rpc_sub.tif | 2012-11-01 / 20:47 GMT | 3.8 m |

* Tide levels are given in meters above MLLW and based on verified observations recorded at the NOS gage in Ketchikan, Alaska at the time of image acquisition, with time and height offsets applied to a tidal sub-station in the project area. The MHW tidal datum is 4.7 meters above MLLW in the project area.

## Quality Control / Final Review

Quality control tasks were conducted during all phases of project completion by a senior member of RSD. The final QC review was completed in July 2015. 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 10.2.2. 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**

- GC11162 in shapefile format
- Digital copy of the PCR in Adobe PDF format
- CEF in shapefile format

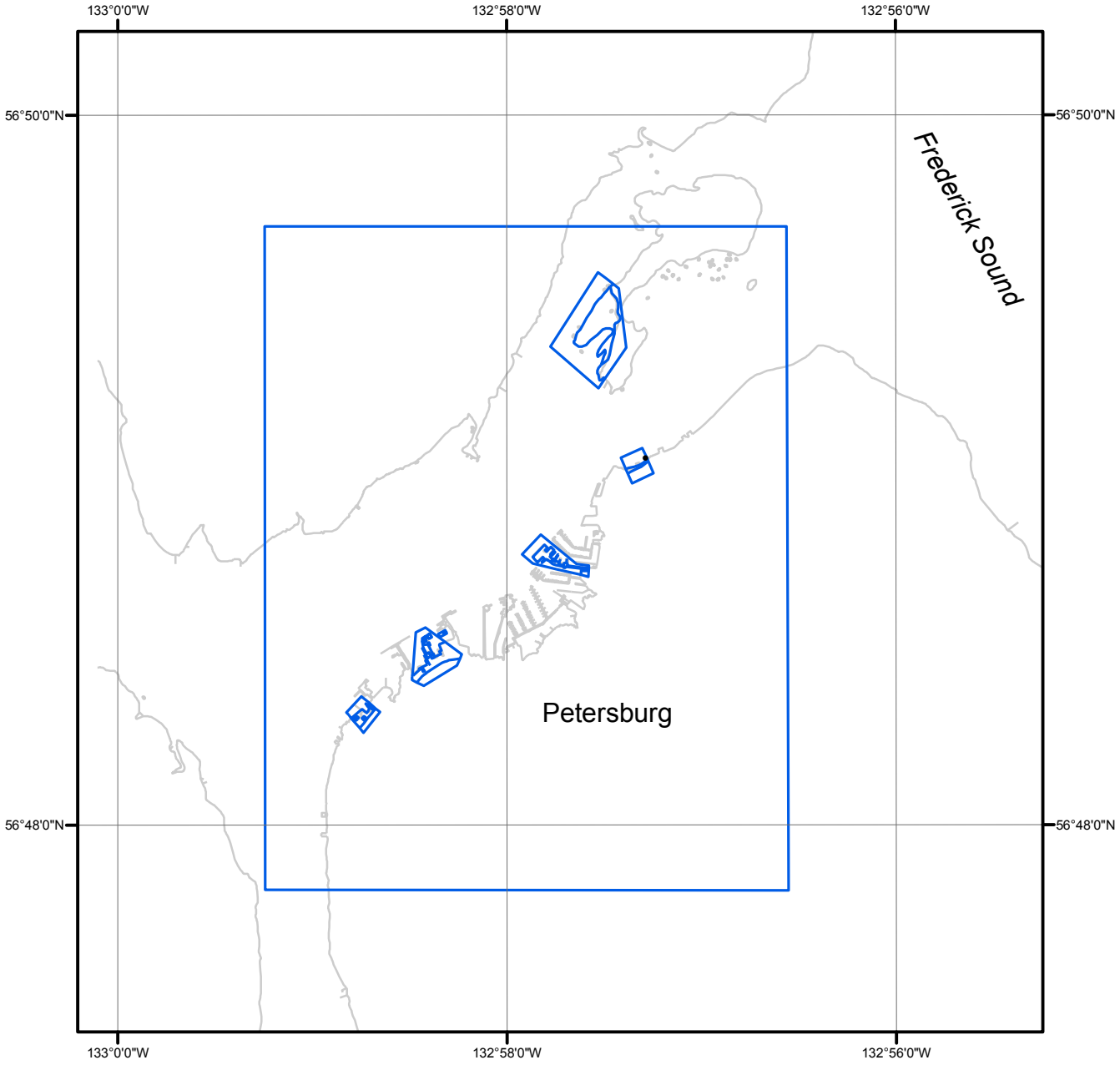
**NOAA Shoreline Data Explorer**

- GC11162 in shapefile format
- Metadata file for GC11162
- Digital copy of the PCR in Adobe PDF format

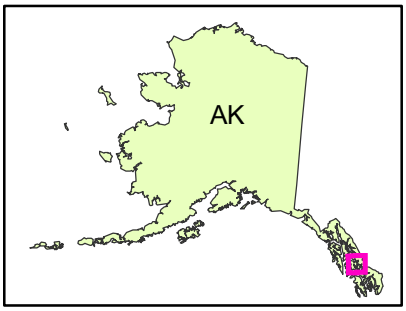
## End of Report

# PORT OF PETERSBURG

# ALASKA




Overview




AK1405-CS-T

GC11162