

NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT

PROJECT AK1109A-CM-T

Western St. Lawrence Island, Alaska

Introduction

NOAA Coastal Mapping Program (CMP) Project AK1109A-CM-T provides accurate digital shoreline data for the western half of St. Lawrence Island, Alaska, in the Bering Sea at approximately 63°30' N Latitude and 171° W Longitude. The project extends from Kookoolik Cape on the north side of St. Lawrence Island, around Northwest and Southwest Capes to Koozata Lagoon on the southern side, including the villages of Savoonga and Gambell. The Geographic Cell (GC) may be used to complement the Nautical Charting Program (NCP) as well as geographic information systems (GIS) for a variety of coastal zone management applications.

Project Design

Project AK1109A-CM-T was designed per a request from the Hydrographic Surveys Division (HSD) of the Office of Coast Survey, NOAA, for cartographic data in support of HSD field operations. Based on an analysis of project requirements, and as a result of a source data search, it was determined that CMP procedures for multiple source projects would apply for this project. Available source data deemed adequate for successful completion of this project included sources acquired in August 2011, July/August/September of 2014, and May 2015.

Field Operations

Routine CMP field operations did not apply for this project based on the origin of the project source data.

Aerotriangulation

The aerotriangulation (AT) task was initiated by Remote Sensing Division (RSD) personnel in November 2015 utilizing a Digital Photogrammetric Workstation (DPW), which is a configuration of computer hardware, modular software components and other associated peripheral devices. The image files were imported into SOCET SET (ver. 5.6) using the DataThruWay (DTW ver. 5.6) software module. The DTW import process converted stored compressed files to the National Imagery Transmission Format (NITF 2.0) with headers and metadata. AT procedures were accomplished using the Multi-Sensor Triangulation (MST) module of SOCET SET. The Automatic Point Measurement (APM) tool within MST was used to collect image points. The simultaneous solve adjustment was then performed, forecasting an average predicted horizontal circular error for all well-defined points of 4.6 meters at the 95% confidence level. Positional data for this project is referenced to the North American Datum of 1983 (NAD 83).

Compilation

Digital feature data compilation for this project was accomplished by RSD Applications Branch (AB) personnel in December 2015, using a DPW in conjunction with the SOCET SET Feature Extraction software module. 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.

Cartographic features were compiled to meet a horizontal accuracy of 7.6 meters at the 95% confidence level. Tidal information was referenced to the NOS tide station at Northeast Cape, AK (Station ID: 94648039) for only the 2011 imagery due to the removal of this station on October 5, 2011. The verified water level for the August 2011 images is 0.5 meters above Mean Lower Low Water (MLLW). For the other 2014 and 2015 dates the predicted tidal levels ranged from 0.0 to 0.7 meters above the MLLW tide level. The range between the MHW level and the MLLW level at the Northeast Cape station is 0.7 meters.

Quality Control / Final Review

Quality control tasks were conducted during all phases of project completion by a member of the Applications Branch of RSD. The final QC review was completed in April 2016. The review process 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 ArcGIS 10.2.2 software. All project data was evaluated for compliance to CMP requirements.

Comparisons of the largest scale NOAA nautical chart with source imagery and compiled project data resulted in creation of the Chart Evaluation File (CEF). The following nautical chart was used in the comparison process:

- Chart 16220, St. Lawrence Island to Bering Strait, Scale 1:315,350, 6th Ed., May 2013

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

- Project database
- Project Completion Report (PCR)
- GC11170 in shapefile format
- CEF in shapefile format

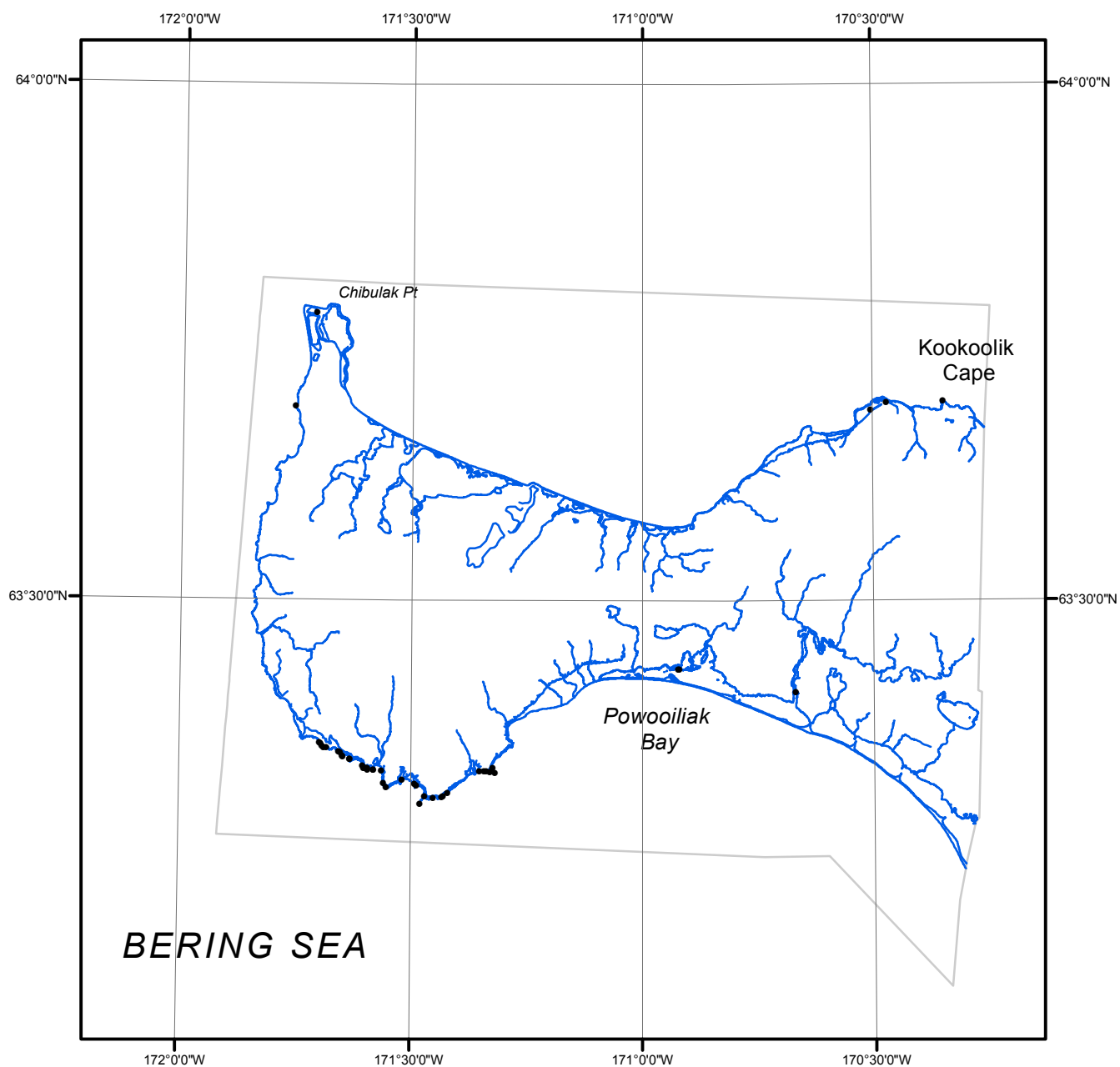
NOAA Shoreline Data Explorer

- GC11170 in shapefile format
- Metadata file for GC11170
- Digital copy of the PCR

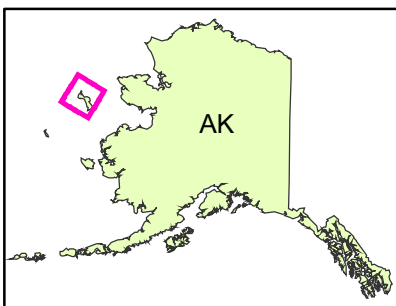
End of Report

WESTERN ST LAWRENCE ISLAND

ALASKA



Overview



AK1109A-CM-T

GC11170