

NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT

PROJECT AK2209-CM-T

Sitka Sound Cruise Terminal, Alaska

Introduction

Coastal Mapping Program (CMP) Project AK2209-CM-T provides digital shoreline data for Sitka Sound Cruise Terminal and the immediate vicinity, in 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

Project AK2209-CM-T was designed in response to a data request from the Marine Chart Division (MCD) of NOAA's Office of Coast Survey. Based on analysis of project requirements and results 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 three orthorectified WorldView (WV) satellite images (downloaded in tiled format) from DigitalGlobe, Inc.

Field Operations

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

Georeferencing

Satellite image accuracy was refined for two of the three WV images using the Georeferencing toolset within Esri's ArcGIS (ver. 10.8.1) desktop GIS software. This work was done by a member of the Applications Branch (AB) of the Remote Sensing Division (RSD) in July 2022. The images were adjusted to control from CMP project AK1604-CM-N, with several check points used to assess final image accuracy. The RMS of the residuals for measured check points was used to compute horizontal accuracies at the 95% confidence level of 0.90 meters for the 2022 WV03 image and 0.96 meters for the 2021 WV01 image. These values were doubled and added to the accuracy of the source from which check points were obtained in order to conservatively predict the accuracy of well-defined points measured during compilation. Positional data for this project is referenced to the North American Datum of 1983 (NAD 83).

Compilation

Data compilation was completed by AB personnel in July 2022. Feature data was positioned using the 2022 WV03 image, with the other two satellite images used as aids for interpretation. The data was compiled in shapefile format from the satellite imagery using ArcGIS software. Feature identification and attribution within the GC were based on image analysis of the satellite image as well as information extracted from the largest scale NOAA nautical chart and other ancillary sources. 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 AK2209-CM-T were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were compiled to meet a horizontal accuracy of 2.7 meters at the 95% confidence level, a predicted accuracy value derived using check points as described above. The following table provides information on the imagery used to complete this project.

Image Source	Source File / Image Type	Acquisition Date/Time	GSD	Tide Level*
WorldView-3	20210822_WV03_ORI_R1C1.jp2 / Pan Sharpened Natural Color	2021-08-22 / 20:28 GMT	0.33 m	2.2 m
WorldView-1	20210822_WV01_ORI_R1C1.jp2 / Panchromatic	2021-08-22 / 23:31 GMT	0.5 m	2.4 m
WorldView-3	20220616_WV03_ORI_R1C1.jp2 / Pan Sharpened Natural Color	2022-06-16 / 20:34 GMT	0.34 m	1.0 m

* Tide Levels are given in meters relative to MLLW and are based on verified observations (or preliminary observations for the 2022 image) at the NOS tide station in Sitka, AK Sta. 9451600. The elevation of MHW is 2.791 meters above MLLW at the Sitka station.

Quality Control / Final Review

Quality control tasks were conducted by senior members of RSD. The final QC review was completed in July 2022. 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 (ver. 10.8.1) software. All project data was evaluated for compliance to CMP requirements.

A Chart Evaluation File (CEF) resulted from the comparison of source imagery and compiled project data with the largest scale NOAA electronic nautical charts covering the project area:

US5AK3FM, 9th Ed., Oct. 2018, Scale 1:40,000

End Products and Deliverables

The following specifies the location and identification of end products generated during the completion of this project:

RSD Electronic Data Library

- Project database
- Project Completion Report (PCR)
- GC11797 in shapefile format
- CEF in shapefile format

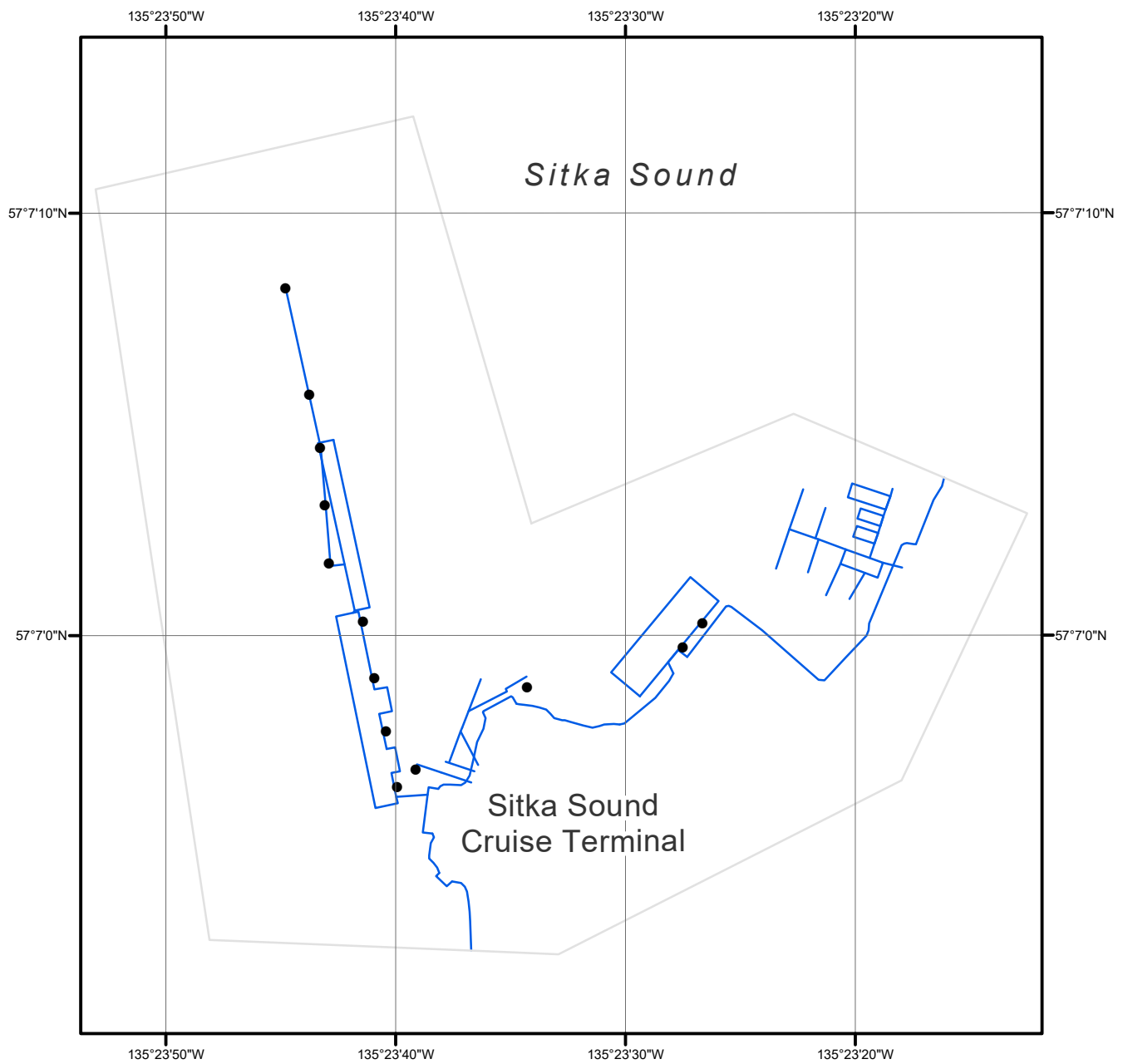
NOAA Shoreline Data Explorer

- GC11797 in shapefile format
- Metadata file for GC11797
- PCR in Adobe PDF format

End of Report

SITKA SOUND CRUISE TERMINAL

ALASKA



Overview



AK2209-CM-T

GC11797