

NOAA COASTAL MAPPING PROGRAM PROJECT COMPLETION REPORT

PROJECT MN2002-CS-T

Port of Silver Bay, Minnesota

Introduction

Coastal Mapping Program (CMP) Project MN2002-CS-T provides highly accurate digital shoreline data for key areas of change within the port of Silver Bay, Minnesota. 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 MN2002-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. Orthorectified WorldView satellite imagery from DigitalGlobe 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 Project MN2002-CS-T for details regarding the chart comparison.

Field Operations

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

Georeferencing

Refinement of the georeferencing of the imagery used in the CSCAP analysis was not necessary since the image compared favorably spatially with data sources used to check its geolocation and since the image vendor provided an acceptable accuracy assessment. DigitalGlobe reported an RMSE of 3.9 meters for the WorldView imagery, used to calculate a horizontal accuracy of 6.8 meters at the 95% confidence level for 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 the RSD Applications Branch (AB) in July 2020. Digital feature data was compiled in shapefile format from the satellite image using Esri's ArcGIS (ver. 10.8) 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.

Spatial data accuracies for Project MN2002-CS-T were determined according to standard Federal Geographic Data Committee (FGDC) practices, with the actual value indicated in the preceding section. The following table provides further information on the satellite image used in project completion:

Image Source	Source File	GSD	Acquisition Date/Time	Water Level*
WorldView-3	20200530_WV03_ORI_MOS_NAD83.jp2 (Pan Sharpened Natural Color, Orthorectified)	0.25 m	2020-05-30 / 17:33:08 GMT	183.7 m

* Lake water levels are given in meters above IGLD 1985 and are based on verified observations at the Duluth and Grand Marais, Lake Superior, MN reference stations. The Low Water Datum (LWD) for Lake Superior is 183.2 meters above IGLD 1985.

Quality Control / Final Review

Quality control tasks were conducted subsequent to project completion, in July 2020, by senior CMP personnel. The review process included analysis of the image georeferencing 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
- GC11672 in shapefile format
- Project Completion Report (PCR)
- CEF in shapefile format

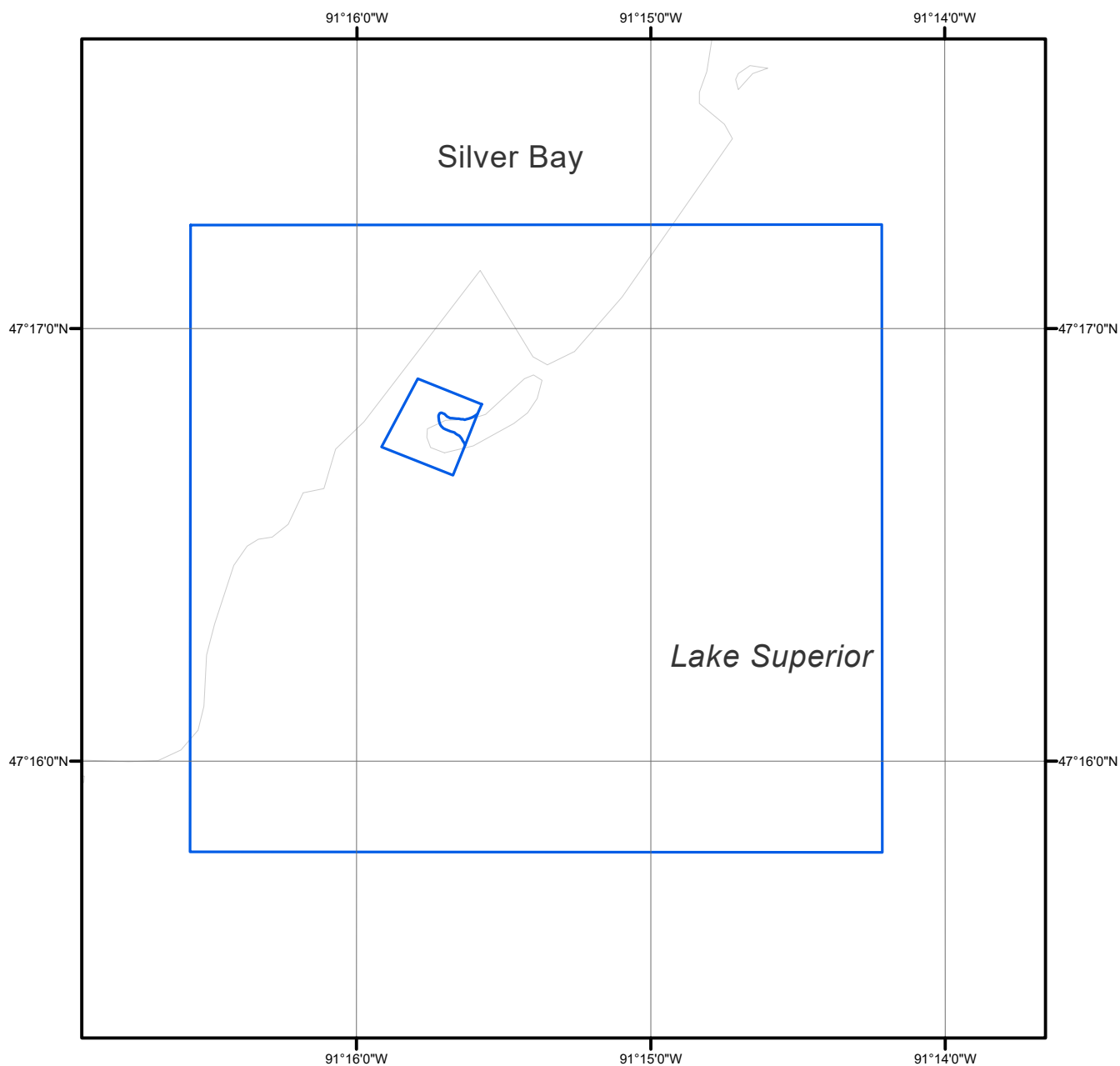
NOAA Shoreline Data Explorer

- GC11672 in shapefile format
- Metadata file for GC11672
- PCR in Adobe PDF format

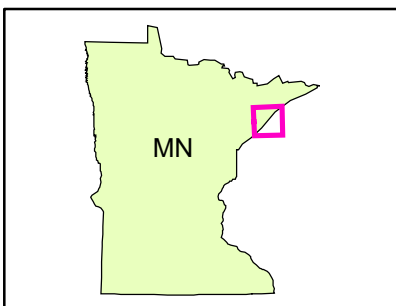
End of Report

PORT OF SILVER BAY

MINNESOTA



Overview



MN2002-CS-T

GC11672