NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

PROJECT MI2202-CM-T

St. Clair River between Sans Souci and Grande Pointe, Michigan

Introduction

Coastal Mapping Program (CMP) Project MI2202-CM-T provides accurate digital shoreline data for a small portion of the Michigan shore of St. Clair River between Sans Souci and Grande Pointe. 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 MI2202-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 one orthorectified panchromatic satellite image (downloaded in tiled format) from DigitalGlobe, Inc., obtained via the NextView contract.

Field Operations

Routine CMP field operations did not apply for this project based on the origin of the project imagery, which was obtained from external sources.

Georeferencing

Satellite image accuracy was refined using the Georeferencing toolset within Esri's ArcGIS (ver. 10.8.1) desktop GIS software by a member of the Applications Branch (AB) of the Remote Sensing Division (RSD) in February 2022. The satellite image was adjusted to feature data from previous CMP project MI0906D. Check points were also extracted from this project to assess final georeferencing accuracy. The RMS of the residuals for measured check points was used to compute a horizontal accuracy at the 95% confidence level of 0.92 meters. This value was 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 February 2022. Digital feature data was compiled in shapefile format from the satellite image 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 MI2202-CM-T were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were compiled to meet a horizontal accuracy of 2.1 meters at the 95% confidence level, a predicted accuracy value based on comparison of check points to an independent source of higher accuracy. The following table provides further detail on the imagery used to complete this project:

Sensor	Resolution	Source File ID	Acquisition Date/Time	Tide Level*
WorldView-1	0.5 m	20210518_WV01_ORI_mos.jp2	2021-05-18 / 19:40:26 GMT	175.7 m

* Water level is given in meters above IGLD 1985 and based on verified observations at the NOS gage at Algonac, MI. The Low Water Datum (LWD) at the Algonac station is 174.58 meters.

Quality Control / Final Review

Quality control tasks were conducted upon project completion by senior CMP personnel in March 2022. The review process included an assessment of image georeferencing and 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.

Comparison of the largest scale NOAA ENCs with the project imagery and compiled feature data resulted in creation of the Chart Evaluation File (CEF). The following ENC was used:

- US5MI30M, 7th Ed., Jun. 2021, Scale 1:15,000

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
- GC11772 in shapefile format
- Project Completion Report (PCR)
- CEF in shapefile format

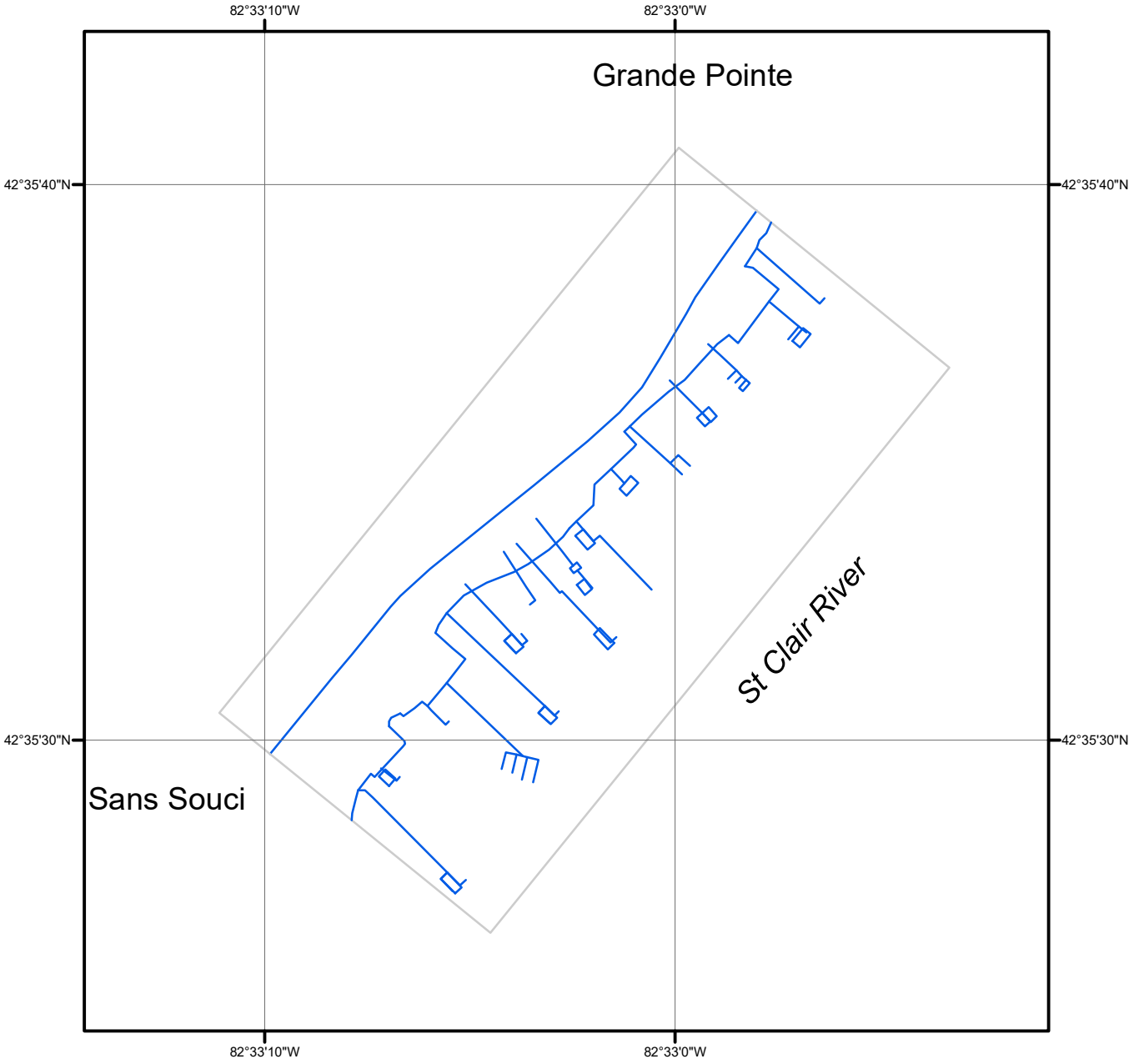
NOAA Shoreline Data Explorer

- GC11772 in shapefile format
- Metadata file for GC11772
- PCR in Adobe PDF format

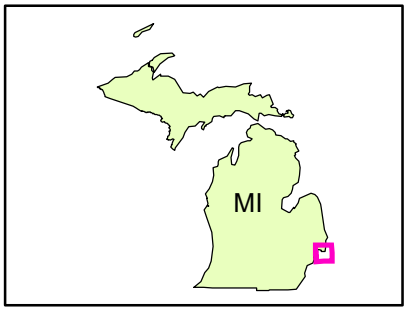
End of Report

ST CLAIR RIVER BETWEEN SANS SOUCI & GRANDE POINTE

MICHIGAN



Overview



MI2202-CM-T

GC11772