NOAA COASTAL MAPPING PROGRAM
PROJECT COMPLETION REPORT

PROJECT TX0601C

Port of Texas City, Texas

Introduction

Coastal Mapping Program (CMP) Project TX0601C provides highly accurate digital shoreline data for key areas of change within the port of Texas City, Texas. 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 TX0601C was accomplished by the Requirements Branch (RB) of the Remote Sensing Division (RSD) in response to the need for timely updates to the NOAA Electronic Navigational Chart (ENC) series. 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 products in order to ascertain the need for more current shoreline data. Refer to the RB Memorandum of August 16, 2006, "Results of CSCAP Change Analysis for Texas City, Texas (TX0601C)" for details of 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

A mosaic of color aerial imagery with a spatial resolution of 0.5 meters, acquired with an ADS40 Leica Digital Camera for Federal disaster planning purposes by Aerials Express, LLC, was georeferenced using Erdas IMAGINE 9.0 software on a Windows platform. Ground control points (GCP) photogrammetrically measured from metric quality aerial photography from previously aerotriangulated Coastal Mapping Project (CMP) TX0001, were imported into IMAGINE and used to georeference the image mosaic. Within IMAGINE the Raster Geometric Correction tool was used with a 1st order polynomial model. The image mosaic was re-sampled using the Nearest Neighbor sampling method. The RMS of the residuals for measured check points was used to compute a predicted horizontal circular error at the 95% confidence interval (CE95) of 1.24 meters for the mosaicked image. This CE value was tripled and then added to the CE95 of the CMP TX0001 source imagery in order to conservatively predict the accuracy of well-defined

points measured during the compilation process. Positional data is referenced to the North American Datum of 1983.

Compilation

The data compilation phase of this project was accomplished by a member of AB in November 2006. Digital feature data was compiled in ESRI shapefile format from imagery using ESRI's ArcGIS 9.1 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. Selected cartographic features were further modified with additional descriptive information to refine general classification.

Spatial data accuracies for Project TX0601C were determined according to standard Federal Geographic Data Committee (FGDC) practices. Cartographic features were tested to have a horizontal accuracy of 6.0 meters at the 95% confidence level. This predicted accuracy of well-defined points is based on a minimum of twenty (20) check points that were compared to an independent source of higher accuracy.

The following table provides information on the images used in the project completion:

Image #	Image Source	Source File Name	Acquisition Date/Time*	Tide Level
1	Leica ADS40	TX_GalvestonCounty_r31c31.tif	2006-04	unknown
2	Leica ADS40	TX_GalvestonCounty_r32c30.tif	2006-04	unknown
3	Leica ADS40	TX_GalvestonCounty_r32c31.tif	2006-04	unknown
4	Leica ADS40	TX_GalvestonCounty_r33c30.tif	2006-04	unknown
5	Leica ADS40	TX_GalvestonCounty_r33c31.tif	2006-04	unknown

* Image acquisition times reported by the contractor did not include day or time, therefore tide levels within the project area could not be determined. The elevation of the MHW tidal datum above MLLW at the NOS gauge at Galveston Pier 21 is 0.4 meters.

Quality Control / Final Review

Quality control tasks were conducted during all phases of project completion by a senior member of the Applications Branch of RSD. QC activities for this project were finalized in April 2008. The review process included analysis of the georeferencing results and evaluation of the identification and attribution of cartographic features 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 9.1. 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:

RSD Applications Branch Archive
- Hardcopy of the Project Completion Report (PCR)
- Page-size graphic plot of GC10636 file contents, attached to PCR
- Hardcopy of the CSCAP evaluation memorandum

Remote Sensing Division Electronic Data Library
- GC10636 in shapefile format
- Digital copy of the PCR in Adobe PDF format
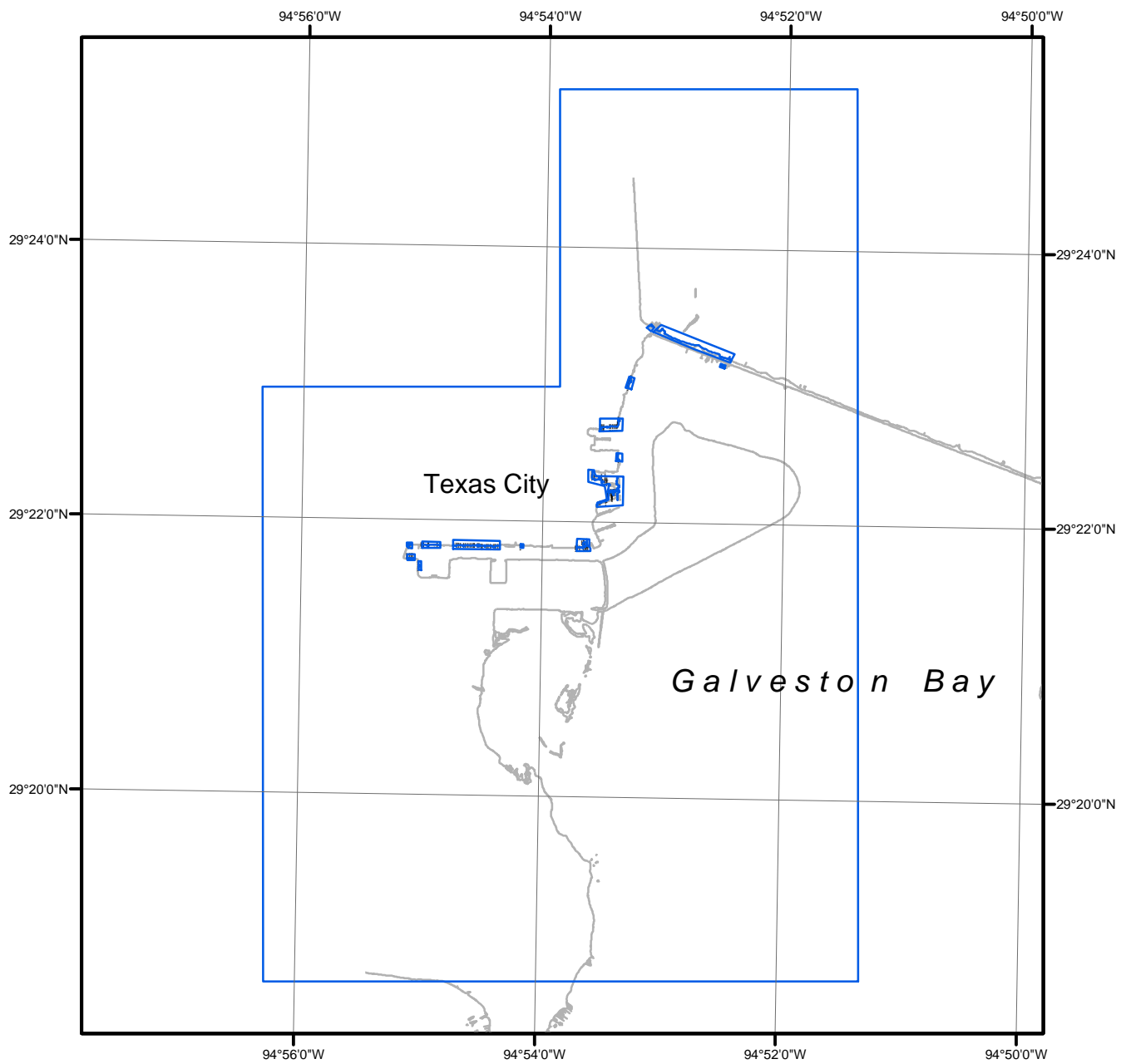- Chart Evaluation File (CEF) in shapefile format

NOAA Shoreline Data Explorer
- GC10636 in shapefile format
- Metadata file for GC10636
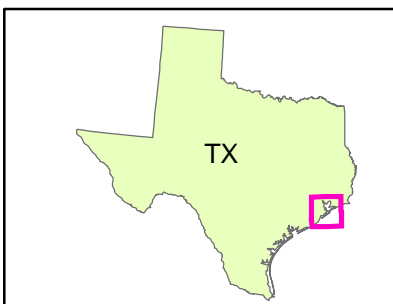- Digital copy of the PCR in Adobe PDF format

End of Report

PORT OF TEXAS CITY

TEXAS

94°56'0"W 94°54'0"W 94°52'0"W 94°50'0"W

29°24'0"N

29°22'0"N

Texas City

29°22'0"N

Galveston Bay

29°20'0"N

94°56'0"W 94°54'0"W 94°52'0"W 94°50'0"W

Overview

TX

TX0601C

GC10636