

H11911

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

DESCRIPTIVE REPORT

<i>Type of Survey</i>	<u>Basic Hydrography</u>
<i>Field No</i>	<u>NRT4</u>
<i>Registry No.</i>	<u>H11911</u>

LOCALITY

<i>State</i>	<u>MICHIGAN</u>
<i>General Locality</i>	<u>ST. CLAIR RIVER, MI</u>
<i>Locality</i>	<u>GROSSE POINTE WOODS TO THE USACE CHANNEL</u>

2008

TEAM LEADER
LUCY HICK

NRT4

LIBRARY & ARCHIVES

DATE

<p style="text-align: center;">U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION</p> <p style="text-align: center;">HYDROGRAPHIC TITLE SHEET</p>	<p>REGISTRY No. H11911</p>
	<p>FIELD No. NRT4</p>
<p>State Michigan</p> <p>General Locality Lake St. Clair</p> <p>Sub-Locality Grosse Pointe Woods to USACE Channel</p> <p>Scale 1:10,000 Date of Survey Sept 29 to Oct 15, 2008</p> <p>Instructions Dated June 2, 2008 Project No. OPR-W408-NRT4-08</p> <p>Vessel NOAA Launch S1211</p> <p>Chief of Party Lucy Hick, Team Leader</p> <p>Surveyed by Lucy Hick, John Doroba, & Dan Jacobs</p> <p>Soundings by echo sounder Odom CVX2 Vertical Beam Echosounder</p> <p>Graphic record scaled by N/A</p> <p>Graphic record checked by N/A Automated Plot N/A</p> <p>Verification by Atlantic Hydrographic Branch</p> <p>Soundings in meters <i>(feet)</i> at Great Lakes Low Water Datum (LWD)</p>	
<p>REMARKS: (1) All times are in UTC.</p> <p style="padding-left: 40px;">(2) This is a basic hydrographic survey under the Navigable Area Concept.</p> <p style="padding-left: 40px;">(3) Projection is UTM Zone 17N</p> <p style="color: red; font-style: italic;">Bold, Italic, Red notes were made during office processing.</p>	

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DESCRIPTIVE REPORT

to accompany
Hydrographic Survey H11911
OPR-W408-NRT4-08

Scale of Survey 1:10,000
Year of Survey: 2008
Navigation Response Team 4
NOAA Launch S1211
Lucy Hick - Team Leader

A. AREA SURVEYED

This Basic Hydrographic survey was conducted in accordance with the Project Letter Instructions for project OPR-W408-NRT4-08, West Lake Erie, Detroit and St. Clair Rivers, MI. The instructions are dated June 2, 2008. These instructions were amended on July 28, 2008 to remove the requirement for 200% SSS coverage and instead require sounding data to be collected at 50 m line spacing. A final amendment was issued on February 18, 2008, which changed the required line spacing from 50 m to 100m.

Lake St. Clair is an expansive shallow basin, with low, marshy shores and a flatly sloping bottom. The lake has a greatest natural depth of 19 feet. St. Clair River flows from the north and enters the north part of the lake through several channels of a wide delta area. The outflow of the lake is at the SW end through the Detroit River. The chief importance of the lake is the dredged deep-draft channel that leads across it to connect Detroit River and St. Clair River. No large commercial facilities or harbors are on the lake.

The main deep-draft channel is included as a critical area. However, the survey of the rest of the area was requested by many Great Lakes constituents, including the Michigan DNR and the Great Lakes Fisheries Commission. They desire sounding data for modeling studies and habitat research.

The survey area, assigned to NRT4, consisted of 16.14 SNM. This included the area from Grosse Pointe Woods to the USACE Channel. Due to the end of the survey season, only the top 5.80 SNM were acquired. A total of 112.62 linear nautical miles (LNM) of mainscheme (MS) and 37.61 LNM of crossline (XL) vertical beam echosounder (VBES) data were collected in this area. However, the crosslines extend through the entire survey area and only 13.89 LNM of XL data were collected concurrent with the MS data.

No bottom samples or detached positions were collected for this survey.

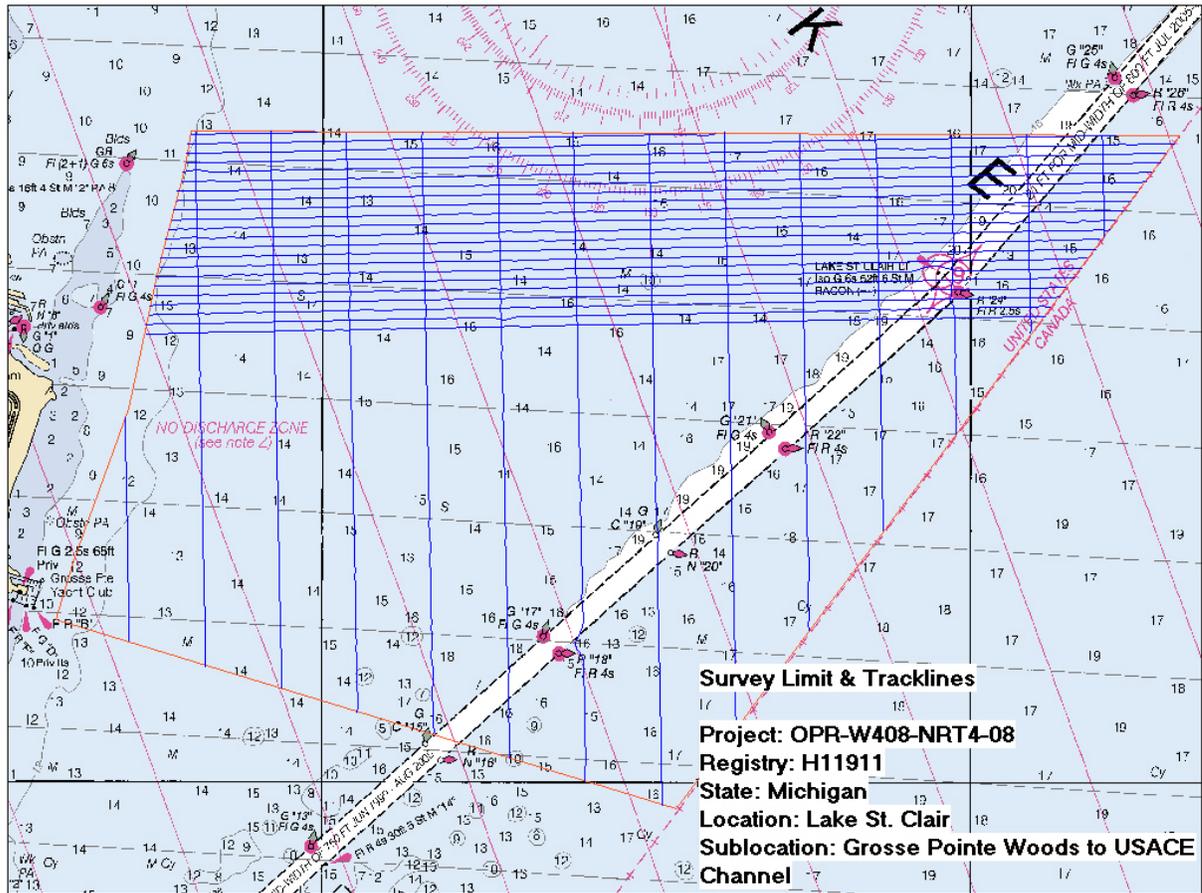
Survey Limits for Sheet E, H11911 are as follows:

42° 24' 44.23" N 82° 52' 14.68" W
42° 28' 53.32" N 82° 43' 18.75" W

Survey Dates: September 29, 2008 (DN: 273) to October 15, 2008 (DN: 289)

Mainscheme VBES data were collected across the lake, in an E-W direction with 100 meter line spacing. Crosslines and shoal investigation lines were collected perpendicular to the MS lines.

Survey limits and tracklines are displayed graphically below.



B. DATA ACQUISITION AND PROCESSING *SEE ALSO THE EVALUATION REPORT.*

B.1. EQUIPMENT

Data were acquired by Navigation Response Team 4 using Survey Launch S1211. The vessel was configured as described in the Data Acquisition and Processing Report (DAPR)* for this project. Major data acquisition systems are summarized below.

NOAA Survey Launch S1211 used to acquire positions, soundings, imagery, and sound velocity data. S1211 was manufactured by SeaArk and has a length overall (LOA) of 9.14 meters (30 feet) and a draft of 0.5 meters. Positions were acquired with a Trimble DSM212L Differential GPS (DGPS) beacon receiver. Soundings were acquired with an ODOM CVX2 single-beam echosounder (VBES) system. Water column sound velocity data was acquired with an ODOM Digibar Pro DB1200 sound velocity profiler.

Data were acquired using Hypack v6.2b and processed using CARIS HIPS & SIPS v6.1 SP2 Hotfix 1.

B.2. QUALITY CONTROL

Data integrity for H11911 was insured by following the Field Procedures Manual and the NOS Hydrographic Surveys Specifications and Deliverables Manual, both dated May 2008.

Differential GPS was used for all hydrographic data acquired on this survey.

Crosslines

Fourteen crosslines, for a total of 37.61 LNM, were acquired by the field party. However, only 13.89 LNM of XL data were collected concurrent with the MS data. This is approximately 12.3 percent of mainscheme acquisition (112.62 LNM). A visual inspection of crossline data and main scheme data showed good comparison. Select MS-XL intersections were examined using the 3-D subset editor in CARIS. Good MS-XL comparison was also seen at these intersections.

Concur

Uncertainty

Uncertainty values were entered into the CARIS HIPS Vessel File (HVF) as per the FPM, Appendix 4. Total Propagated Uncertainty values were then calculated in CARIS. Because Tidal Constituent and Residual Interpolation (TCARI) was used and no tidal uncertainty values were provided with the Project Instructions, a value of zero was entered in the both the Measured

**Data filed with original field records.*

and Zoning Tide value field. A measured Sound Speed value of 4 m/s was used. This is based on the recommended value for 1 cast/ 4 hours, in the FMP Appendix 4. However, for VBES a cast is only recommended at a minimum of once per week (FPM Section 3.5.1). Since actual cast were acquired more frequently than that, so the 4 m/s value was still considered valid.

Concur

A 5 meter resolution BASE Surface (H11911_Uncertainty_5m) was generated in CARIS using these uncertainty values. Uncertainty values seen ranged between 0.10 and 0.15 meters, with the highest uncertainty values located in the deep-draft channel.

Junctions *See also the Evaluation Report.*

No junctioning surveys were provided for comparison with this project.

GPS Quality Control

Daily GPS dropouts were observed, however no particular cause for these dropouts could be determined. If the dropout was short, data continued to be collected and the navigation was interpolated in CARIS. If the dropout continued for a significant period of time, the survey line was ended and acquisition was restarted when the GPS signal returned. Portions of lines with significant GPS dropouts were reacquired. GPS dropouts were noted in the Processing Log for this project.

Timing

During the verification of project H11915, it was discovered that the PC clock time had not been synched to the GPS time. This error was carried though to all sheets of OPR-W408-NRT4-05 and can be seen in H11912. This time offset is around 21 seconds. However the amount of the offset varies on each line, possibly due to PC clock drift.

Correspondence with CARIS and Jack Riley (NOAA, HSTP) has confirmed that all data collected with this error was time stamped from the same source. The PC clock was used to time stamp the digital soundings, the BIN file analog data, and the positions. Therefore, there is no relative offset between any of these data. However there is an offset between the collected data and the water level data, used to reduce the soundings. Downloaded water level data is time stamped, using UTC time. Upon discussion with Jack Riley and Gene Parker (NOAA, AHB), it was determined that this small offset would not significantly effect the final results. Therefore, NRT4 has decided to not correct for this offset on any of the lines.

E-mails, relating to this timing issue, can be found in Appendix V of this report.

Vertical Echosounder Quality Control

While collecting VBES data, the least depths were sometimes not accurately digitized by the echosounder. However, the least depth (LD) was visible in the analog trace. NRT4 personnel adjusted the VBES parameters levels to compensate for this. When this was not effective, the least depths were determined from the analog trace and the digital data was manually edited during CARIS post-processing. This was accomplished by determining the time of the LD of the feature in the Pydro Post Acquisition Tool's BIN File Viewer. CARIS's SB Editor was then used to insert the LD at that time. A visual check was used to ensure that the depth and time corresponded to what was seen in the BIN file. This procedure was only used prior to sound velocity (SV) correcting the VBES data. If a depth was required to be inserted after the SV correction, the entire line was reconverted and reprocessed in CARIS.

The lake bottom in shallow areas, on the east and west sides of Lake St. Clair, was covered with dense vegetation. Usually, the VBES was unable to lock onto the true bottom in these areas. The VBES gains and power levels were adjusted; however it was often impossible to compensate for the vegetation. In these areas, the collected sounding data represented the top of the vegetation, not the actual lake bottom. In general, it was possible to use the analog trace to see where the vegetation had been ensonified. The Pydro Post-Acquisition Tool's BIN Viewer was used to identify areas of vegetation. These erroneous soundings were then rejected in the CARIS SB Editor. Because no SSS data existed to determine if rocks were concealed in these grassy areas, NRT4 was conservative with this editing and only attempted to reject obvious or significantly high grass.

Side Scan Sonar Quality Control

No Side Scan Sonar data was collected for this survey.

B.3. CORRECTIONS TO ECHO SOUNDING

Corrections to echo soundings did not deviate from the methods explained in the DAPR.* A table detailing all sound velocity casts is located in Separate II.*

**Data filed with original field records.*

C. VERTICAL AND HORIZONTAL CONTROL *SEE ALSO THE EVALUATION REPORT.***C.1. VERTICAL CONTROL**

All soundings were reduced to Low Water Datum (LWD) with verified water levels and Tidal Constituent and Residual Interpolation (TCARI).

A Request for Approved Water Levels letter was sent to N/OPS1 on November 21, 2008. A Tide Note and final TCARI grid was received on December 9, 2008. Both of these memos are included in Appendix IV.

The operating National Water Level Observation Network (NWLON) station at St. Clair Shores (903-4052) served as datum control and provided water level reducers for the survey area.

Verified water levels from the N/OPS1 CO-OPS website were downloaded and applied to all soundings for this sheet. *Approved tides were applied during field processing.*

The TCARI grid, H11911-TCARI.tc was used as the final grid to apply water level data to the soundings.

C.2. HORIZONTAL CONTROL *SEE ALSO THE EVALUATION REPORT.*

The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83), projected using UTM zone 17N. The control reference station used for this survey was the USCG DGPS Beacon in the auto-select mode.

Horizontal dilution of precision (HDOP) was monitored daily on Hypack. At no point did HDOP exceed 4.00, and adequate satellite coverage was maintained throughout most of the survey period.

All positioning equipment was operated in a manner consistent with the manufacturer requirements and as described in the DAPR.*

**DATA FILED WITH ORIGINAL FIELD RECORDS.*

D. RESULTS AND RECOMMENDATIONS *SEE ALSO THE EVALUATION REPORT.*

D.1. CHART COMPARISON

Five raster charts and two ENC's are affected by this survey:

Chart	Edition	Edition Date	Issue Date	Update #	Scale
14500	27 th	Oct-02	Feb-09	276	1:500,000
14820	21 st	Oct-05	Feb-09	133	1:400,000
14852	46 th	Jun-06	Feb-09	126	1:15,000
14853	17 th	Mar-08	Feb-09	54	1:15,000
14850	53 rd	Sept-06	Feb-09	31	1:60,000

Cell Name	Edition	Update Application Date	Issue Date
US5MI31M	7 th	Dec-08	Jan-09
US5MI32M	11 th	Dec-07	Dec-08

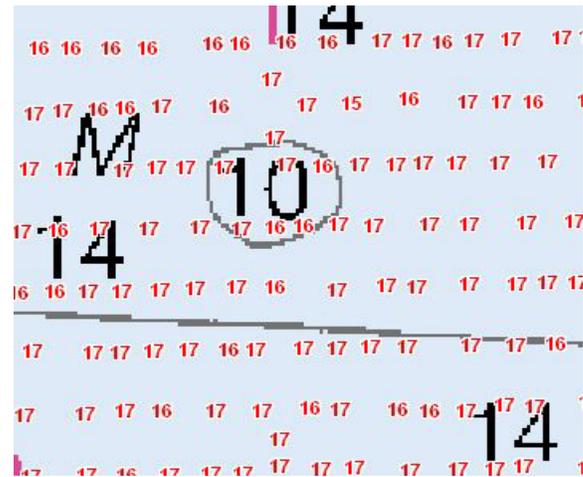
General Agreement with Charted Soundings

In general, soundings acquired in the survey area agreed favorably with currently charted soundings within 1-2 feet. *Concur*

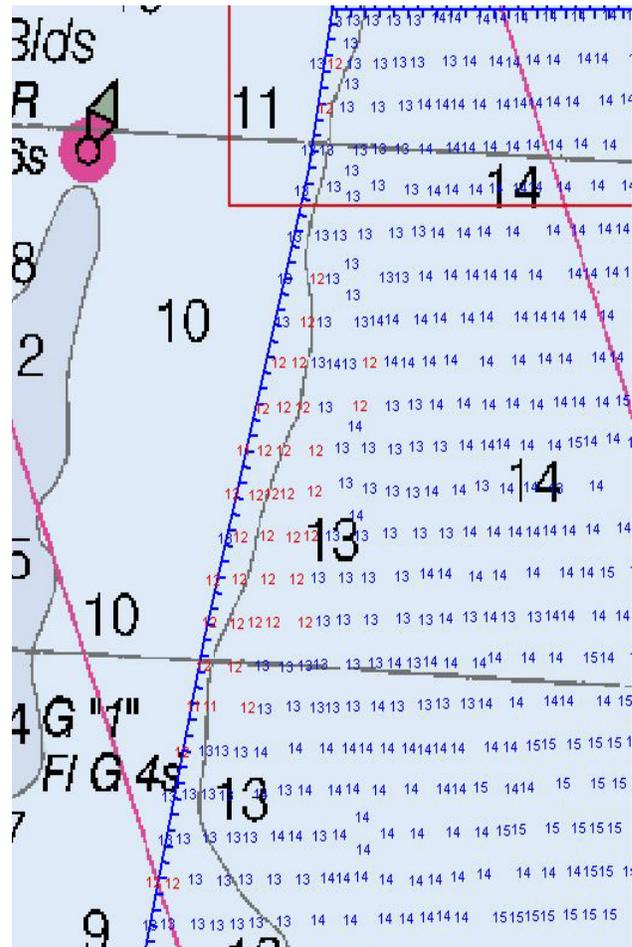
A deep-draft channel runs through the SE corner of the survey area. This channel is has a charted depth of "21 FT FOR MID-WIDTH." All newly acquired soundings in this channel were deeper than 21 ft. *Concur*

The following discrepancies are noted:

1. A 10 ft shoal is charted at approximately 42° 27' 52.43" N, 82° 47' 29.05" W. No evidence of this shoal was seen in the sounding data. Surrounding acquired depths are 16-17 ft. This charted shoal was not developed with closer line spacing. NRT4 recommends retaining this shoal as charted. *Concur*



2. The 12 ft contour, in the W part of the survey area, appears to have migrated eastward towards the center of the lake. This can be seen on the graphic below; soundings, 12 ft and under are colored in red. *Concur*



AWOIS Item Investigations

No AWOIS items were assigned within this survey area. *Concur*

Dangers to Navigation

No Dangers to Navigation were submitted for this project. *Concur*

Bottom Samples

No bottom samples were collected for this project. *Concur*

D. 2. ADDITIONAL RESULTS**Aids to Navigation and Other Detached Positions**

No Fixed Aids to Navigation (AToNs) exist within the survey area. All charted floating AToNs were visually inspected by NRT4 and determined to be on station and serving their intended purpose. *Concur*

Ferry Routes

No charted ferry routes exist within the survey area. *Concur*

Submarine Cables and Pipelines

No charted submarine cables exist within the survey area. *Concur*

Bridges and Overhead Cables

No bridges or overhead cables exist within the survey area. *Concur*

Fish Havens

No fish havens exist within this survey area. *Concur*

Shipwrecks

Several charted exist within the survey area. *No charted wrecks exist within the limits of this survey.*

No uncharted shipwrecks or obstructions were found during this project. *Concur*

APPROVAL SHEET

**OPR-W408-NRT4-08
Basic Hydrographic Survey
St. Clair River
Port Huron to South End of Lake Huron
Michigan
Registry No. H11911**

Field operations for this basic hydrographic survey were conducted under my daily supervision with frequent checks of progress and adequacy. All deliverable files, this Descriptive Report, digital data, and all accompanying records are approved. This approval constitutes the assumption of responsibility for the stated accuracy and completeness of the hydrographic survey.

This survey is adequate to supersede all prior surveys in common areas, and for application to the relevant NOS nautical charts.

The following survey records have been submitted prior to this report and are not included with this submission:

Hydrographic Systems Readiness Review (submitted by NRT1)	03/01/2008
OPR-W408-NRT4-08 Data Acquisition & Processing Report	11/13/2008
OPR-W408-NRT4-08 Horizontal & Vertical Control Report	11/13/2008

Respectfully,
Submitted:

Lucy Hick
Team Leader, Navigation Response Team 4

APPENDICES

to accompany

Hydrographic Survey H11911

OPR-W408-NRT4-08

Scale of Survey 1:10,000

Year of Survey: 2008

Navigation Response Team 4

NOAA Launch S1211

Lucy Hick - Team Leader

Respectfully,
Submitted:

Lucy Hick
Team Leader, Navigation Response Team 4

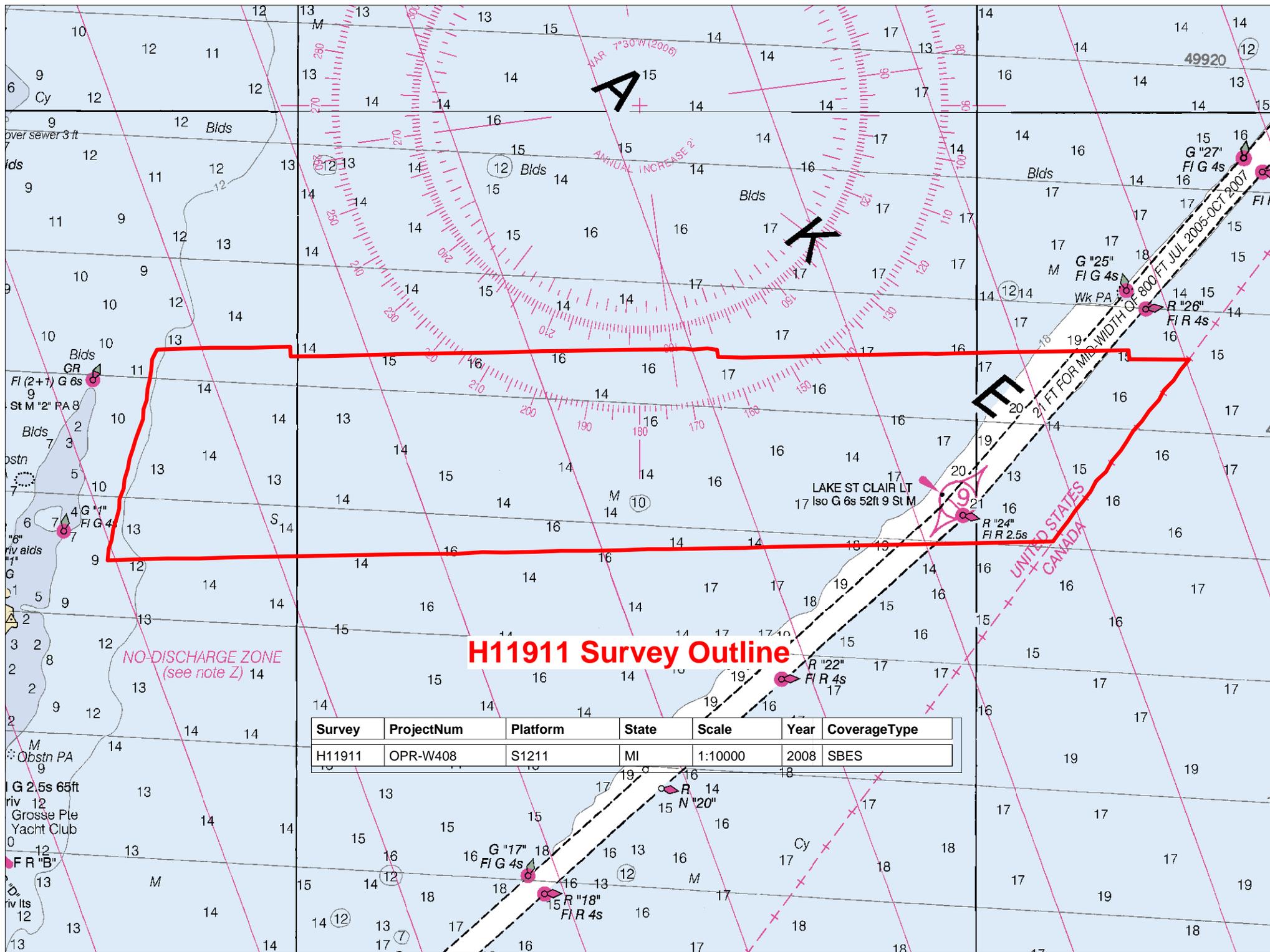
Appendix I: Danger to Navigation Reports

No Danger to Navigation Reports were submitted for H11911.

Appendix II: Survey Features Report

No AWOIS Items were assigned in survey H11912.
No features were located during survey H11912.

Appendix III: Final Project Sketch & Survey Outline



H11911 Survey Outline

Survey	ProjectNum	Platform	State	Scale	Year	CoverageType
H11911	OPR-W408	S1211	MI	1:10000	2008	SBES

Subject: W408 Survey Outlines

From: Lucy Hick <Lucy.Massimillo@noaa.gov>

Date: Wed, 26 Nov 2008 13:27:10 -0500

To: _NOS OCS Survey Outlines <survey.outlines@noaa.gov>

CC: "Lawrence.T.Krepp" <Lawrence.T.Krepp@noaa.gov>

Please find attached zipped archives for the following projects:

H11911
H11912
H11913
H11914
H11915

These are sheets E-I of the Detroit Area Survey Project, OPR-W408-NRT4-08.

If you have any questions or problems, please contact me.

Best Regards,
Lucy Hick

Lucy Hick <Lucy.Massimillo@noaa.gov>

Team Leader

Navigation Response Team 4

National Oceanic & Atmospheric Administration

H11911_SurveyOutline.zip

H11912_SurveyOutline.zip

H11913_SurveyOutline.zip

H11914_SurveyOutline.zip

H11915_SurveyOutline.zip

Appendix IV: Tides and Water Levels

WATER LEVEL INSTRUCTIONS

**OPR-W408-NRT4-2008 Detroit, St. Clair Rivers and Lake St. Clair
(06/02/2008 MMC)**

1.0. TIDES AND WATER LEVELS

1.1. Specifications

Water level data acquisition, data processing, water level datum computation and final zoning shall be performed utilizing sound engineering and oceanographic practices as specified in National Ocean Service (NOS) Hydrographic Surveys Specifications and Deliverables (HSSD), dated March 2007, and OCS Field Procedures Manual (FPM), dated May 2008. Specifically reference Chapter 4 of the HSSD and Sections 1.5.8, 1.5.9, 2.4.5, and 3.4.2 of the FPM.

1.2. Vertical Datums

Refer depths as well as clearances under bridges and overhead cables to Low Water Datum (LWD). The following is a list of the LWD for the operating National Water Level Observation Network (NWLON) stations:

Algonac, MI (9014070) is at elevation 174.58 meters International Great Lakes Datum of 1985 (IGLD 85)

St. Clair State Police, MI (9014080) is at elevation 175.08 meters International Great Lakes Datum of 1985 (IGLD 85)

Dry Dock, MI (9014087) is at elevation 175.50 meters International Great Lakes Datum of 1985 (IGLD 85)

Mouth of the Black River, MI (9014090) is at elevation 175.62 meters International Great Lakes Datum of 1985 (IGLD 85)

Dunn paper, MI (9014096) is at elevation 175.77 meters International Great Lakes Datum of 1985 (IGLD 85)

Fort Gratiot, MI (9014098) is at elevation 175.93 meters International Great Lakes Datum of 1985 (IGLD 85)

St. Clair Shores, MI (9034052) is at elevation 174.40 meters International Great Lakes Datum of 1985 (IGLD 85)

Gibraltar, MI (9044020) is at elevation 173.58 meters International Great Lakes Datum of 1985 (IGLD 85)

Wyandotte, MI (9044030) is at elevation 173.95 meters International Great Lakes Datum of 1985 (IGLD 85)

Fort Wayne, MI (9044036) is at elevation 174.08 meters International Great Lakes Datum of 1985 (IGLD 85)

Windmill Point, MI (9044049) is at elevation 174.34 meters International Great Lakes Datum of 1985 (IGLD 85)

Toledo, OH (9063085) is at elevation 173.50 meters International Great Lakes Datum of 1985 (IGLD 85)

Fermi Power Plant, MI (9063090) is at elevation 173.50 meters International Great Lakes Datum of 1985 (IGLD 85).

The operating National Water Level Observation Network (NWLON) stations at Algonac, MI (9014070), St. Clair State Police, MI (9014080), Dry Dock, MI (9014087), Mouth of the Black River, MI (9014090), Dunn paper, MI (9014096), Fort Gratiot, MI (9014098), St. Clair Shores, MI (9034052), Gibraltar, MI (9044020), Wyandotte, MI (9044030), Fort Wayne, MI (9044036), Windmill Point, MI (9044049), Toledo, OH (9063085) and Fermi Power Plant, MI (9063090) will serve as datum control for the survey area including determination at each subordinate station. Therefore, it is critical that these stations remain in operation during all periods of hydrography.

1.2.1. Water Level Data Acquisition Monitoring

The Team Leader and the Center for Operational Oceanographic Products and Services (CO-OPS) are jointly responsible for ensuring that valid water level data are collected during periods of hydrography. The Team Leader is required to monitor the pertinent water level data via the CO-OPS Web site at <http://tidesandcurrents.noaa.gov/hydro.shtml>, email data transmissions through TIDEBOT, or through regular communications with CO-OPS/Requirements and Development Division (RDD) personnel before and during operations. During traditional non duty hours, the Team Leader may contact the Continuous Operational Real-Time Monitoring System (CORMS) watch stander who is available 24 hours/day - 7 days/week for assistance in assessing the status of applicable water level station operation. The CORMS watch stander may be contacted either by phone at 301-713-2540 or by Email: CORMS@noaa.gov. Problems or concerns regarding the acquisition of valid water level data identified by the Team Leader shall be communicated with CO-OPS/RDD (Tom Landon, 301-713-2897 ext. 191, Email: Thomas.Landon@noaa.gov) to coordinate the appropriate course of action to be taken such as gauge repair and/or developing contingency plans for hydrographic survey operations. In addition, CO-OPS/Field Operations Division (FOD) is required to coordinate with the Commanding Officer/Team Leader before interrupting the acquisition of water level data for any reason during periods of hydrography.

1.2.2. NWLON Water Level Station Operation and Maintenance

The operating water level stations at Algonac, MI (9014070), St. Clair State Police, MI (9014080), Dry Dock, MI (9014087), Mouth of the Black River, MI (9014090), Dunn paper, MI (9014096), Fort Gratiot, MI (9014098), St. Clair Shores, MI (9034052), Gibraltar, MI (9044020), Wyandotte, MI (9044030), Fort Wayne, MI (9044036), Windmill Point, MI (9044049), Toledo, OH (9063085) and Fermi Power Plant, MI (9063090) will also provide water level reducers for this project, reiterating the importance of their operation during all periods of hydrography. See Sections 1.1. and 1.2. concerning responsibilities.

No leveling is required at Algonac, MI (9014070), St. Clair State Police, MI (9014080), Dry Dock, MI (9014087), Mouth of the Black River, MI (9014090), Dunn paper, MI (9014096), Fort

Gratiot, MI (9014098), St. Clair Shores, MI (9034052), Gibraltar, MI (9044020), Wyandotte, MI (9044030), Fort Wayne, MI (9044036), Windmill Point, MI (9044049), Toledo, OH (9063085) and Fermi Power Plant, MI (9063090) by NOAA's NRT4 personnel.

CO-OPS/FOD is responsible for the operation and maintenance of all NWLON primary control stations. If a problem is identified at an NWLON primary control station, FOD shall make all reasonable efforts to repair the malfunctioning station. However, CO-OPS may request assistance from the NOAA ship or NRT personnel in the actual repair of the water level station to facilitate a rapid repair. CO-OPS/FOD and the Commanding Officer (or Team Leader) shall maintain the required communications until the repairs to the water level station have been completed.

1.3. Tide Reducer Stations

1.3.1. For this project, it will be necessary to install and continuously operate a water level measurement systems at a subordinate station location. The station will provide information on water level datums, water level reducers, refinement of final zoning. The station listed in Section 1.2. will provide control for datum computation at subordinate station by using the NOS method of comparison of simultaneous observations.

A 30-day minimum of continuous data acquisition is required. For all subordinate stations, data must be collected throughout the entire survey period in specified areas for which they are applicable, from 4 hours before to 4 hours after the period of hydrography and not less than 30 continuous days. This is necessary to facilitate the computation of an accurate datum reference as per NOS standards. However, if the period of hydrography is less than 30 days, this 30-day requirement is waived beyond the 4 hours after the period of hydrography.

Additionally, supplemental and/or back-up stations may also be necessary based upon the complexity of the hydrodynamics and/or the severity of environmental conditions of the project area. The installation of additional stations is left to the discretion of the Commanding Officer (or Team Leader), subject to the approval of CO-OPS.

The following subordinate stations are required:

<u>Station Number</u>	<u>Station Name</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>
9034057 *	New Baltimore, MI	42° 40.6'	082° 43.9'

* This gauge must be installed before any hydrographic survey work can commence in Lake St. Clair. The gauge is scheduled to be installed by contractor mid-June.

1.3.2. GOES Satellite Enabled Subordinate Stations

This section is not applicable for this project.

1.3.3. Benchmark Recovery and GPS Requirements

This section is not applicable for this project.

1.3.4. Residual Water Level Station(s) Data

Tidal Constituent And Residual Interpolation (TCARI) provides precise water level correction for bathymetric surveys. Download the following water level station(s) data for all periods of survey. Preliminary water level data may be retrieved in one month increments over the Internet from the CO-OPS Home Page at <http://tidesandcurrents.noaa.gov/olddata> and then clicking on "Great Lakes Preliminary Water Level". Preliminary data are six-minute time series data relative to **LWD** in metric units on Greenwich Mean Time. The Team Leader must notify CO-OPS/RDD personnel immediately of any problems concerning the preliminary tides.

If you are collecting hydrography in the following areas, the water level stations in **BOLD** must be operating during all periods of hydrography in those areas.

St. Clair River

<u>Station Number</u>	<u>Station Name</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>
9014070	Algonac, MI	42° 37.2	082° 31.6
9014080	St. Clair State Police, MI	42° 48.8	082° 29.2
9014087	Dry Dock, MI	42° 56.7	082° 26.6
9014090	Mouth of the Black River, MI	42° 58.4	082° 25.2
9014096	Dunn Paper, MI	43° 0.2	082° 25.3
9014098	Fort Gratiot, MI	43° 0.4	082° 25.4

Lake St. Clair

<u>Station Number</u>	<u>Station Name</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>
9034052	St. Clair Shores, MI	42° 28.4	082° 52.8
9034057	New Baltimore, MI	42° 40.6	082° 43.9

Detroit River

<u>Station Number</u>	<u>Station Name</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>
9044036	Fort Wayne, MI	42° 17.9	083° 5.6
9044049	Windmill Point, MI	42° 21.5	082° 55.8
9063085	Toledo, OH	41° 41.6	083° 28.3
9063090	Fermi Power Plant, MI	41° 57.6	083° 15.5
9044030	Wyandotte, MI	42° 12.2	083° 8.8
9044020	Gibraltar, MI	42° 5.5	083° 11.2

1.4. Tidal Constituent and Residual Interpolation (TCARI)

1.4.1. For hydrography in the area of Detroit and St. Clair Rivers, and Lake St. Clair, apply the TCARI grid “W408NRT42008-TCARI.tc” supplied in conjunction with the water level data from Section 1.3.4 to produce a seamless tide correction. Refer to the TCARI Field SOP for detailed TCARI instructions.

1.4.2. This section is not applicable for this project.

1.4.3 TCARI Diagram(s)

A diagram created in Pydro, is provided in both digital and hard copy format to assist with the information provided in section 1.4.1.

1.4.4 TCARI Final Solutions

Upon completion of project OPR-W408-NRT4-2008, submit a Pydro generated request for smooth tides, with times of hydrography abstract and mid/mif tracklines attached. Forward this request to smooth.tides@noaa.gov . Provide the project number, as well as sheet number, in the subject line of the email.

CO-OPS will review the times of hydrography, final tracklines, and six-minute water level data from all applicable water level gauges. If there are any discrepancies, CO-OPS will make the appropriate adjustments and forward a revised TCARI grid and solutions to the field group and processing branch for final processing.

1.6 Water Level Records

Submit water level data, such as leveling records, field reports, and any other relevant data/reports, including the data downloaded onto diskette/CD within 1 week after the end of each month or the end of hydrography to CO-OPS/RDD. Refer to Section 1.1.

1.6.1 Water level records should be forwarded to the following address:

NOAA/National Ocean Service/CO-OPS
Chief, Requirements and Development Division
N/OPS1 - SSMC4, Station 6531
1305 East-West Highway
Silver Spring, MD 20910



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NOAA NRT-4 (N/CS53x4)
12295 State Hwy 180, c/o Bon Secour NWR
Gulf Shores, AL 36542

November 21, 2008

MEMORANDUM FOR: Chief, Requirements and Development Division, N/OPS1

FROM: Lucy Hick, NOAA NRT-4 (N/CS53x4)

SUBJECT: Request for Approved Tides/Water Levels

Please provide the following data:

1. Tide Note
2. Final TCARI grid
3. Six Minute Water Level data (Co-ops web site)

Transmit data to the following:

NOAA/NOS/Atlantic Hydrographic Branch
N/CS33, Building #2
439 West York Street
Norfolk, VA 23510
ATTN: Chief AHB

NOAA NRT4
c/o U.S. Coast Guard
Bldg 1401
Selfridge ANGB, MI 48067
ATTN: Team Leader

These data are required for the processing of the following hydrographic survey:

Project No.: OPR-W408-NRT4-08
Registry No.: H11911
State: Michigan
Locality: Lake St. Clair
Sublocality: Grosse Pointe Woods to USACE Channel

Attachments containing:

- 1) an Abstract of Times of Hydrography,
- 2) digital MID MIF files of the track lines from Pydro

cc: N/CS33



Year_DOY	Min Time	Max Time
2008_273	14:15:38	19:43:54
2008_283	15:01:15	19:14:47
2008_284	15:18:43	20:17:31
2008_289	14:00:41	19:50:30

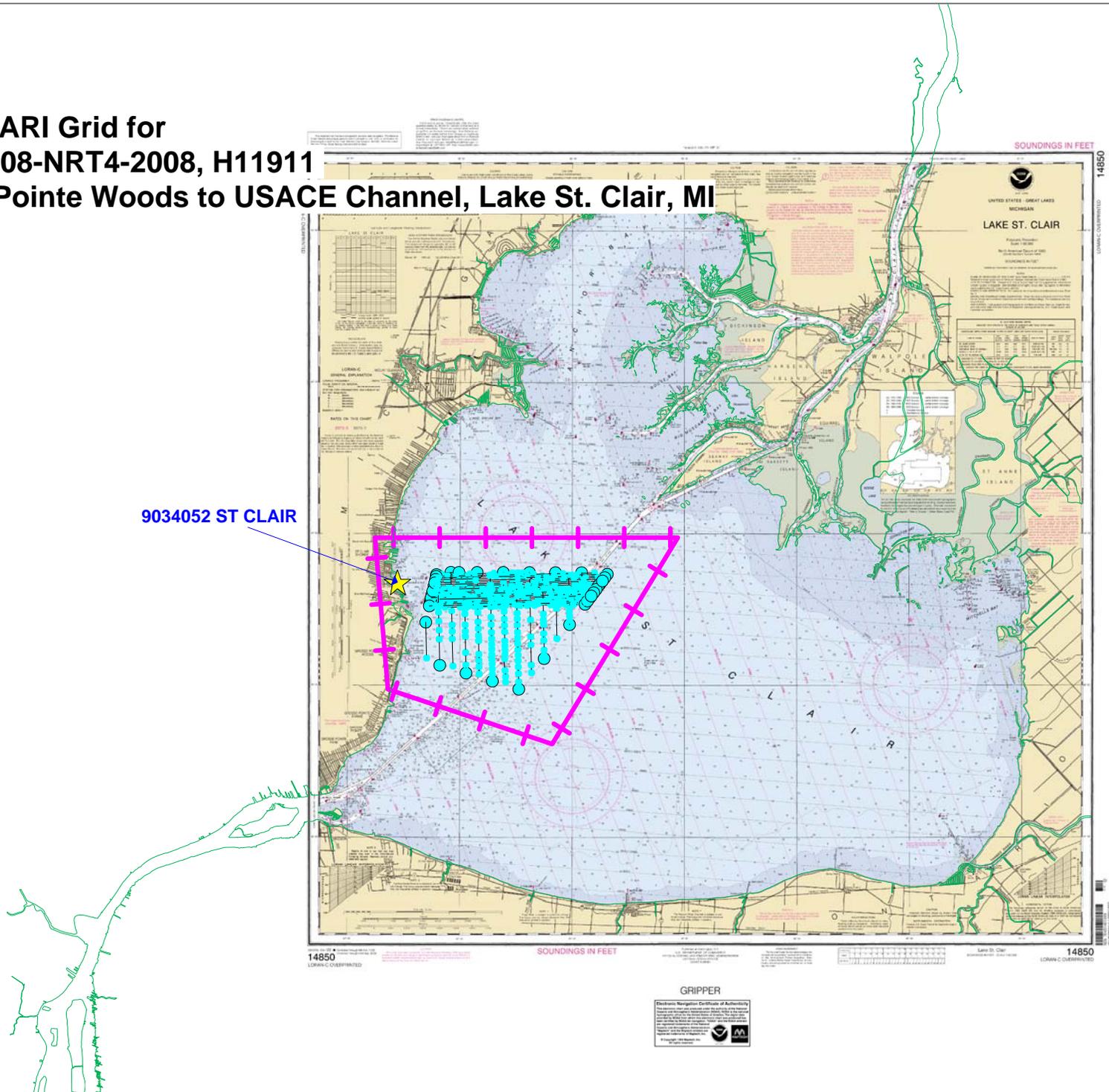


UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Silver Spring, Maryland 20910



**Final TCARI Grid for
OPR-W408-NRT4-2008, H11911
Grosse Pointe Woods to USACE Channel, Lake St. Clair, MI**

9034052 ST CLAIR



GRIPPER
Electronic Navigation Certificate of Authorization
This device is not intended for use as a primary means of navigation.

Subject: Re: Topic for the Coordinating Committee meeting

From: Brian Link <Brian.Link@noaa.gov>

Date: Mon, 31 Mar 2008 13:15:28 -0400

To: Monica.Cisternelli@noaa.gov

CC: Christopher Hare <Christopher.Hare@noaa.gov>, Lucy Massimillo <Lucy.Massimillo@noaa.gov>

Monica,

As far as I know, there was no specific request for this project. It is part of the "standard" rotational schedule for NRT4. The project is primarily ENC validation, however there will be spot areas where full bottom coverage hydrography/multi-beam will be required. The one spot I know of right now is the infamous "scour" area just south of the Bluewater Bridge in the St. Clair River. Folks requesting this area will definitely want a comparison to the 2000 data. If you need more detailed information, contact Chris Hare, in NSD.

Brian

Monica Cisternelli wrote:

Hi Brian

I have not heard from my division chief what he thinks about this trip. I think the Hydro conference that I was scheduled to go to is that same week, or close to it. So, I am not sure which trip will happen.

Our great lakes experts were asking where the request for W408 survey came from? Is it a full multibeam survey or item investigations? We would like to use TCARI but if there is going to be comparison with this years data to data from early 2000, there might be differences if we use different methodologies, so they'd like to know what type of survey it is so we can determine if its OK to use TCARI. Thanks! Hope everything is going well.

Monica

Brian Link wrote:

Tom and Monica,

I have touched base with Scott Thieme and told him I would be happy to update the committee on NRT4 activities in the Huron to Erie Corridor. However, I know little or nothing about TCARI. So, Monica, are you going to attend the meeting? And FYI Tom, you did not misspeak. The NRT4 project covers the area from Toledo, OH to Port Huron, MI, which includes both the Detroit and St. Clair Rivers. Have a great weekend!

Brian

Thomas Landon wrote:

Hi Brian,

NOAA is surveying the Detroit River in the spring of 2008, W408-NRT4, and I was talking with Scott Thieme this morning about having you and Monica brief the coordinating committee on the project and the Tidal Constituent and Residual Interpolation (TCARI) application. Scott, I misspoke saying it was on the St Clair River. The CC meeting is May 6-7 in Burlington, Ontario so it requires foreign travel orders. Although TCARI was designed for tidal waters, I believe it can be used in non-tidal waters, also. You and Monica can provide more insight on this.

Brian, does NOAA routinely notify the Corps of Engineers on the Great Lakes surveys and if so, who is the contact? Scott asked me this morning. I suggest you call Scott at (313) 226-6440 and see if he thinks this is worth adding to the agenda. You and Monica will need to submit foreign travel orders this week if you plan on attending.

Thanks...Tom



--
Brian A. Link
Great Lakes Regional Navigation Manager
NOAA/GLERL - Lake Michigan Field Station
1431 Beach Street
Muskegon, MI 49441

voice - (231)759-1252
fax - (231)759-2414
cell - (231)740-4110

brian.link@noaa.gov

Subject: Re: [Fwd: Re: [Fwd: Re: [Fwd: OPR-W408-NRT4 - Additional Requirements for HEC project]]

From: Lucy Hick <Lucy.Massimillo@noaa.gov>

Date: Wed, 14 May 2008 14:10:46 -0400

To: Brian Link <Brian.Link@noaa.gov>

Thanks Brian.

We are making plans to go get the NRT1 boat next week.

Lucy

Brian Link wrote:

Lucy,

Tom Landon said he thought the requirement for Monroe was dropped and that the New Baltimore (Lake St. Clair) gage would be in by the end of this month. I still need to confirm this with the Great Lakes FOD Chief, who I have a message in to.

Brian

Lucy Hick wrote:

Brian,

Can you please get in touch with Tom Landon and see if he knows if the gauges mentioned in his email have been installed?

Thanks,
Lucy

----- Original Message -----

Subject: Re: [Fwd: [Fwd: OPR-W408-NRT4 - Additional Requirements for HEC project]]

Date: Wed, 14 May 2008 15:11:07 +0000

From: larry krepp <Lawrence.T.Krepp@noaa.gov>

Reply-To: Lawrence.T.Krepp@noaa.gov

To: Lucy Hick <Lucy.Massimillo@noaa.gov>

References: <482AED23.20305@noaa.gov>

Lucy,

Make plans to go get nrt1

Chris should have instructions ready to send. I won't be able to sign them until I'm back in the office.

Will have to check with coops on the status of the gauge for lake st claire

Larry

Sent from my Verizon Wireless BlackBerry

-----Original Message-----

From: Lucy Hick <Lucy.Massimillo@noaa.gov>

Date: Wed, 14 May 2008 09:46:11

To: Lawrence T Krepp <Lawrence.T.Krepp@noaa.gov>, Christopher Hare <Christopher.Hare@noaa.gov>, Brian Link <Brian.Link@noaa.gov>

Subject: [Fwd: [Fwd: OPR-W408-NRT4 - Additional Requirements for HEC project]]

Larry,

I am wondering what is happening with our project in Detroit. Like I said, we would like to begin work on June 2nd. But this is dependent on three

(1) Will we have a boat? I haven't heard word that anything new has happened regarding the contracting to retrofit S3001. Is there any new news?

(2) Are all the necessary water level gauges installed? As we decided on the conference call. we intend to begin work in Lake St. Clair. However,

(3) Will we have project instructions? I would like to have the actual project instructions before we arrive in Detroit, so that we can spend our r

I know that there are intricacies of HQ that I don't understand. But it is frustrating being in the field and feeling like we don't have what we ne

Please Advise.

Thanks,
Lucy

----- Original Message -----

Subject: [Fwd: OPR-W408-NRT4 - Additional Requirements for HEC project]

Date: Tue, 13 May 2008 09:58:42 -0400

From: Brian Link <Brian.Link@noaa.gov> <mailto:Brian.Link@noaa.gov>

To: Lucy Hick <Lucy.Massimillo@noaa.gov> <mailto:Lucy.Massimillo@noaa.gov>

----- Original Message -----

Subject: OPR-W408-NRT4 - Additional Requirements for HEC project

Date: Fri, 18 Apr 2008 14:43:58 -0400

From: Thomas Landon <Thomas.Landon@noaa.gov> <mailto:Thomas.Landon@noaa.gov>

Reply-To: Thomas.Landon@noaa.gov <mailto:Thomas.Landon@noaa.gov>

Organization: National Ocean Service

To: Mike O'Hargan <Mike.Ohargan@noaa.gov> <mailto:Mike.Ohargan@noaa.gov>

CC: Larry Neeson <Larry.Neeson@noaa.gov> <mailto:Larry.Neeson@noaa.gov>, Chris Parish <Chris.Parish@noaa.gov> <mailto:Chris.Parish@noaa.gov>, Mike Gibson <Mike.Gibson@noaa.gov> <mailto:Mike.Gibson@noaa.gov>, Peter Stone <Peter.Stone@noaa.gov> <mailto:Peter.Stone@noaa.gov>, Brian Link <Brian.Link@noaa.gov>

Hi Mike,

The hydro planning team met here yesterday to discuss the requirement for two additional water level gauges, proposed by Jeff Oyler based on his exp

MONROE, LAKE ERIE, MI 906 3087 41 53.9N 83 21.7W
NEW BALTIMORE, LAKE ST CLAIR (not on historical station list) 42 40.7N 82 44.0W

The two stations need to be installed in the next month. Brian Link, nav manager for the Great Lakes, may be able to provide some recon or install at RDD recommends that the acoustic sensor be used unless there is an overwhelming reason to use the shaft angle encoder. The stations must be established. Coordination shall be handled by FOD, CIL, and HPT.

Thanks...Tom

-- Thomas F. Landon National Water Level Product Lead N/OPS1, SSMC4, Station 6409 1305 East West Highway Silver Spring, MD 20910 301-713-2897 x1911 v
-- Brian A. Link Great Lakes Regional Navigation Manager NOAA/GLERL - Lake Michigan Field Station 1431 Beach Street Muskegon, MI 49441 voice - (231)

--
Brian A. Link
Great Lakes Regional Navigation Manager
NOAA/GLERL - Lake Michigan Field Station
1431 Beach Street
Muskegon, MI 49441

voice - (231)759-1252
fax - (231)759-2414
cell - (231)740-4110

brian.link@noaa.gov

[Lucy Hick <Lucy.Massimillo@noaa.gov>](mailto:Lucy.Massimillo@noaa.gov)
Team Leader
Navigation Response Team 4
NOAA

Subject: Re: OPR-W408-NRT4 - Additional Requirements for HEC project

From: Jeff Oyler <Jeff.Oyler@noaa.gov>

Date: Fri, 16 May 2008 18:50:14 -0400

To: Monica.Cisternelli@noaa.gov

CC: Lucy Massimillo <Lucy.Massimillo@noaa.gov>, Chris Hare <Christopher.Hare@noaa.gov>, Thomas.Landon@noaa.gov, Zach Jeffries <Zach.Jeffries@noaa.gov>, Cary Wong <Cary.Wong@noaa.gov>, "_NOS.CO-OPS.HTP" <NOS.COOPS.HPT@noaa.gov>, Tom Mero <Tom.Mero@noaa.gov>

Brian Link called me yesterday and also was going to see that the NRT start at the other areas first or at least start at either the top or bottom but not in the middle. So I think we're ok? As for the Hydraulic corrector, yes we'll need at minimum, a full month of data. I just wish someone could find the data from 1986. The 86 data should be somewhere in the data sets that Brooks kept. If found, we'd probably have a complete data set for computing the HC. Tom Landon, Zach and Cary need to get with Janet Burton and get access to Brooks old files. At minimum, the printed hourly copies should still be around in a file, maybe archived but still around.

Jeff

Monica Cisternelli wrote:

Thanks for the update Jeff. We just received an update on the NRT schedule. The NRT has moved up the start of the survey to June 2, 2008. So, my initial response to this is to have the NRT do all the other areas first, and save the Lake St. Clair area for later. The TCARI grids should be ready by end of next week.

Jeff, Cary and Zach - I was discussing with Cary today, and we need at least 30 days of data to get a hydraulic corrector?

Jeff Oyler wrote:

Bruce:

Per Toms message below we are continuing to plan for the installation of a Hydro gauge in New Baltimore, MI on Lake St. Clair. The GL maintenance contractor will perform the installation the last week in May followed by the survey being performed by Mark Blankenship and team the first week in June. We need a plat ID assignment for this hydro station. Standard for hydro is hourly transmissions. Your call on hourly or 6 minute. The DCP will also be configured with a IP modem. The station info is:

New Baltimore, MI
90340571
East Bird
North 42 40 40.0
West 082 43 57.0

If the ROS has a form that I need to fill out requesting this assignment then please let me know.

Thanks,

Jeff Oyler

Thomas Landon wrote:

Hi Mike,
The hydro planning team met here yesterday to discuss the requirement for two additional water level gauges, proposed by Jeff Oyler based on his experience with the stations involved in this project. Given the short lead time for installation and the need for the additional gauges, it was decided that CO-OPS would use FOD to perform the installations. The two stations are as follows:

MONROE, LAKE ERIE, MI 906 3087 41 53.9N 83 21.7W
NEW BALTIMORE, LAKE ST CLAIR (not on historical station list) 42 40.7N

Subject: Re: New Baltimore

From: Monica Cisternelli <Monica.Cisternelli@noaa.gov>

Date: Wed, 25 Jun 2008 11:40:54 -0400

To: Jeff Oyler <Jeff.Oyler@noaa.gov>

CC: Jason Standridge <Jason.Standridge@noaa.gov>, Cary Wong <Cary.Wong@noaa.gov>, Zach Jeffries <Zach.Jeffries@noaa.gov>, Seth Baldelli <Seth.Baldelli@noaa.gov>, Wally Taylor <Wally.Taylor@noaa.gov>, Lucy Massimillo <Lucy.Massimillo@noaa.gov>

Hi Jeff

Now that the gauge is installed and running, can I inform the NRT that they can start collecting data in Lake St. Clair when they are ready? Or should they wait? Not sure of the process. Thanks

Monica

Jeff Oyler wrote:

All:

I have asked Tim, since he is still in the area to change out the water log encoder at New Baltimore. We are still having some data drop outs which shouldn't be happening. He has replaced the IP, address is 166.161.213.64 and it is working good. He also replaced the encoder cable that was burnt from the lightning hit along with the GOES cable. Jason - Since I'll be out of the office, Tim will call you to check out once the encoder is replaced. Hopefully this will take care of some of the dropouts??

Thx,

Jeff

82 44.0W

The two stations need to be installed in the next month. Brian Link, nav manager for the Great Lakes, may be able to provide some recon or installation support. Each site has historical bench marks which need to be searched for and leveled if found. A valid Second Order, class I level tie must be made at each site to at least two marks with dynamic heights published in the NGS database. Being on lakes, I believe each station must collect at least a month of data for comparison to the master control station and determination of the hydraulic corrector. GPS observations must also be made on one observable mark at each station.

RDD recommends that the acoustic sensor be used unless there is an overwhelming reason to use the shaft angle encoder. The stations must be established with the Xpert Dark DCP and 6 minute GOES transmissions. Bruce Servary or Seth Baldelli will assign the plat IDs next week. Either FOD, Brian, or Tim Cooley will need to do a recon sometime soon.

Coordination shall be handled by FOD, CIL, and HPT.

Thanks...Tom

--

Thomas F. Landon
National Water Level Product Lead
N/OPS1, SSMC4, Station 6409
1305 East West Highway
Silver Spring, MD 20910
301-713-2897 x191 v
301-713-4465 fx

Subject: W408

From: Monica Cisternelli <Monica.Cisternelli@noaa.gov>

Date: Fri, 18 Jul 2008 17:22:15 -0400

To: Lucy Massimillo <Lucy.Massimillo@noaa.gov>

Hi Lucy

It is ok to survey in Lake St. Clair. Also, I also think you are having issues with TCARI. Can you explain through email? We have been super busy for the past few weeks, and I have kept missing your calls. Hopefully it is something I can help you with. I will be in all next week.

Monica

Subject: W904 .tc file
From: Lucy Hick <Lucy.Massimillo@noaa.gov>
Date: Tue, 26 Aug 2008 08:56:35 -0400
To: Monica.Cisternelli@noaa.gov

Hi Monica,

We have been working in Lake St. Clair for the past couple of weeks. The old .tc file that you sent us does not include the New Baltimore (9034057) station. However, we need that station for work done in the lake. Can you please generate a new .tc file, which includes the New Baltimore station?

Thanks,
Lucy

Lucy Hick <Lucy.Massimillo@noaa.gov>

Team Leader

Navigation Response Team 4

National Oceanic & Atmospheric Administration

Subject: Re: W904 .tc file

From: Monica Cisternelli <Monica.Cisternelli@noaa.gov>

Date: Wed, 10 Sep 2008 17:39:02 -0400

To: Lucy Hick <Lucy.Massimillo@noaa.gov>

Hi Lucy

I have been having problem getting New Baltimore into the grid. Barry should be coming by my office tomorrow to hopefully fix. So, if all goes well, it should be ready to go out to you by Friday. Thanks for your patience.

Monica

Lucy Hick wrote:

Hi Monica,

Have you had any luck at making us a revised grid W904, including the New Baltimore station. We have just about completed our first sheet in Lake St. Clair and really need to be able to apply tides to our soundings.

Thanks,
Lucy

Monica Cisternelli wrote:

Hi Lucy

Yes, I will send a revised grid including New Baltimore. Hopefully by the end of this week.

Lucy Hick wrote:

Hi Monica,

We have been working in Lake St. Clair for the past couple of weeks. The old .tc file that you sent us does not include the New Baltimore (9034057) station. However, we need that station for work done in the lake. Can you please generate a new .tc file, which includes the New Baltimore station?

Thanks,
Lucy

Monica Cisternelli <Monica.Cisternelli@noaa.gov>

Oceanographer

NOAA/NOS/CO-OPS

Subject: Re: W904 .tc file

From: Monica Cisternelli <Monica.Cisternelli@noaa.gov>

Date: Mon, 15 Sep 2008 18:31:19 -0400

To: Lucy Hick <Lucy.Massimillo@noaa.gov>

Hi Lucy

Barry helped me with adding New Baltimore, so I was successful. I just need to do some checks and it should be ready to go by wednesday.

Lucy Hick wrote:

Hi Monica,

Here is a JPG of our survey area. It is just East of St. Clair Shores. The chart I used was 14850. Hope this helps.

Lucy

Monica Cisternelli wrote:

Hi Lucy

I don't want to make you wait for final tides for your sheets, so could you send some tracklines - or just a picture of them for the first sheet you are completing, just to see if its an area that would not use New Baltimore. Thanks

Monica

Lucy Hick wrote:

Hi Monica,

Have you had any luck at making us a revised grid W904, including the New Baltimore station. We have just about completed our first sheet in Lake St. Clair and really need to be able to apply tides to our soundings.

Thanks,
Lucy

Monica Cisternelli wrote:

Hi Lucy

Yes, I will send a revised grid including New Baltimore. Hopefully by the end of this week.

Lucy Hick wrote:

Hi Monica,

We have been working in Lake St. Clair for the past couple of weeks. The old .tc file that you sent us does not include the New Baltimore (9034057) station. However, we need that station for work done in the lake. Can you please generate a new .tc file, which includes the New Baltimore station?

Thanks,
Lucy

Monica Cisternelli <Monica.Cisternelli@noaa.gov>

Oceanographer
NOAA/NOS/CO-OPS

Subject: Re: New Baltimore
From: <Lucy.Massimillo@noaa.gov>
Date: Thu, 06 Nov 2008 08:29:00 -0500
To: Monica.Cisternelli@noaa.gov
CC: Lawrence.T.Krepp@noaa.gov

Monica,

I'm out of the office on leave right now. Initially, I think we have done all of the areas that require that gauge. We intentionally were trying to do that, since I figured that it would be coming out for the winter. I will let you know for sure on Monday.

Lucy

----- Original Message -----

From: Monica Cisternelli <Monica.Cisternelli@noaa.gov>
Date: Tuesday, November 4, 2008 5:27 pm
Subject: New Baltimore
To: Lucy Massimillo <Lucy.Massimillo@noaa.gov>
Cc: Lawrence T Krepp <Lawrence.T.Krepp@noaa.gov>, "_NOS.CO-OPS.HTP" <NOS.COOPS.HPT@noaa.gov>

Hi Lucy

I have attached a graphic showing the areas that will require the New Baltimore gauge. Could you please indicate to us if these areas have been completed. We are trying to determine if there is a need to re-install New Baltimore again next field season. The gauge will be coming out for the winter. But if the NRT has completed work in the area affected by New Baltimore, then there is no need to install again next year. Please let us know ASAP. Thanks

Monica

Subject: Re: New Baltimore

From: Lucy Hick <Lucy.Massimillo@noaa.gov>

Date: Wed, 12 Nov 2008 09:18:49 -0500

To: Monica.Cisternelli@noaa.gov

CC: Lawrence T Krepp <Lawrence.T.Krepp@noaa.gov>, "_NOS.CO-OPS.HTP" <NOS.COOPS.HPT@noaa.gov>

Monica,

I double checked and we are done with hydro in your outlined area. So we won't need the New Baltimore gauge next season.

Lucy

Monica Cisternelli wrote:

Hi Lucy

I have attached a graphic showing the areas that will require the New Baltimore gauge. Could you please indicate to us if these areas have been completed. We are trying to determine if there is a need to re-install New Baltimore again next field season. The gauge will be coming out for the winter. But if the NRT has completed work in the area affected by New Baltimore, then there is no need to install again next year. Please let us know ASAP. Thanks

Monica



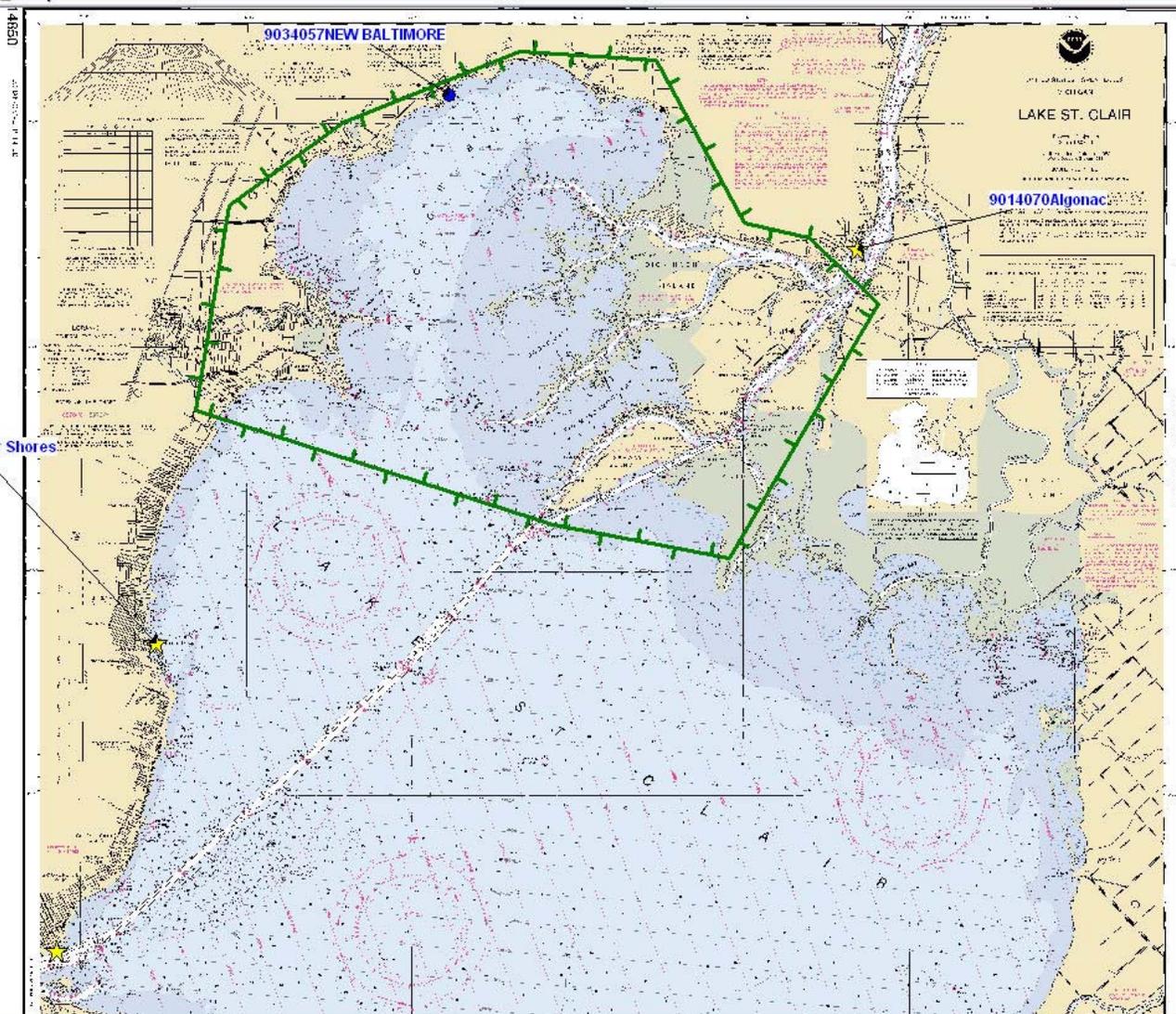
Lucy Hick <Lucy.Massimillo@noaa.gov>

Team Leader

Navigation Response Team 4

National Oceanic & Atmospheric Administration

m (Spherical)
0,700 m (Spherical)



Michigan State University

Subject: revised grid

From: Monica Cisternelli <Monica.Cisternelli@noaa.gov>

Date: Tue, 16 Sep 2008 18:50:04 -0400

To: Lucy Massimillo <Lucy.Massimillo@noaa.gov>

CC: Barry Gallagher <Barry.Gallagher@noaa.gov>

Here is the revised grid for OPR-W408-NRT4-2008. It is called W408NRT42008-TCARI-revised.zip. You can retrieve it under:

ftp://140.90.121.83/pub/outgoing/HPT/Project_Instructions_TCARI/W408NRT42008

Let me know if you have any problems.

Monica Cisternelli <Monica.Cisternelli@noaa.gov>

Oceanographer

NOAA/NOS/CO-OPS

Subject: Hydro Hot List

From: Lucy Hick <Lucy.Massimillo@noaa.gov>

Date: Thu, 13 Nov 2008 14:51:12 -0500

To: nos.coops.hpt@noaa.gov

CC: "Lawrence.T.Krepp" <Lawrence.T.Krepp@noaa.gov>

NRT4 has completed survey ops for the 2008 field season. This includes all work for OPR-W408-NRT4-08. All stations, previously requested to be included on the Hydro Hotlist, can now be removed.

Best Regards,
Lucy Hick

Lucy Hick <Lucy.Massimillo@noaa.gov>

Team Leader

Navigation Response Team 4

National Oceanic & Atmospheric Administration

Subject: Final TCARI grids for OPR-W408-NRT4-2008, H11911, H11912, H11913 & H11914
From: Lijuan Huang <Lijuan.Huang@noaa.gov>
Date: Tue, 09 Dec 2008 14:45:50 -0500
To: Norris A Wike <Norris.A.Wike@noaa.gov>, Lucy.Massimillo@noaa.gov
CC: Gerald Hovis <Gerald.Hovis@noaa.gov>, Christopher.Hare@noaa.gov



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Silver Spring, Maryland 20910

;

DATE: 12/08/2008

MEMORANDUM FOR: LCDR Shepard Smith
Chief, Atlantic Hydrographic Branch

FROM: Gerald Hovis
Products and Services Division, N/OPS1

SUBJECT: Delivery of TCARI Grid and Project Instructions for Hydrographic Surveys

Attached are the Tide Notes for hydrographic survey project OPR-W408-NRT4-2008 registry Nos. H11911, H11912, H11913 and H11914. Final TCARI Grids for OPR-W408-NRT4-2008, H11911, H11912, H11913 and H11914 are being provided at ftp://140.90.121.83/pub/outgoing/HPT/Smooth_Tides_TCARI/W408NRT42008_2/. Six minute verified data for St. Clair Shores, MI (903-4052), Algonac, MI (901-4070) and St. Clair State Police, MI (901-4080) may be retrieved in one month increments over the internet from the CO-OPS Home Page at <http://tidesandcurrents.noaa.gov/olddata> by clicking on "Verified Data".

Please let us know when you have retrieved all files.

--
Name: Lijuan Huang
Title: ERT contractor
Organization: NOAA/NOS/CO-OPS
Address: 1305 East-West Highway
N/OPS3, Sta. 6422, SSMC4
Silver Spring, MD 20910-3218
Phone: 1-301-713-2897 x188
Fax: 1-301-713-4465

H11911.pdf	Content-Type: application/pdf
	Content-Encoding: base64

H11912.pdf	Content-Type: application/pdf Content-Encoding: base64
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H11913.pdf	Content-Type: application/pdf Content-Encoding: base64
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H11914.pdf	Content-Type: application/pdf Content-Encoding: base64
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Subject: Re: [Fwd: Re: Hydro Hot List]
From: Lucy Hick <Lucy.Massimillo@noaa.gov>
Date: Fri, 13 Feb 2009 09:10:27 -0500
To: Christopher Hare <Christopher.Hare@noaa.gov>
CC: Jerry Hovis <Gerald.Hovis@noaa.gov>

Sorry it took me so long to get back to this.

No. I am pretty sure that we will not need the New Baltimore tide gauge for the 2009 season.

Lucy

Christopher Hare wrote:

Lucy,

Will you need the New Baltimore tide gauge for the 2009 season?

Chris

----- Original Message -----

Subject: Re: Hydro Hot List
Date: Wed, 04 Feb 2009 15:50:24 -0500
From: Gerald Hovis <Gerald.Hovis@noaa.gov>
Organization: National Ocean Service
To: Lucy Hick <Lucy.Massimillo@noaa.gov>
CC: NOS.COOPS.HPT@noaa.gov, "Lawrence.T.Krepp" <Lawrence.T.Krepp@noaa.gov>, Christopher Hare <Christopher.Hare@noaa.gov>
References: <491C8530.5090505@noaa.gov>

Lucy,

Will NRT-4 be resuming the survey requiring New Baltimore for 2009?

regards
Jerry

Hick wrote:

NRT4 has completed survey ops for the 2008 field season. This includes all work for OPR-W408-NRT4-08. All stations, previously requested to be included on the Hydro Hotlist, can now be removed.

Best Regards,
Lucy Hick

[Lucy Hick](mailto:Lucy.Hick@noaa.gov) <Lucy.Massimillo@noaa.gov>

Team Leader

Navigation Response Team 4

NOAA

Appendix V: Supplementary Survey Records and Correspondence

Subject: NRT4 Detroit Project

From: Brian Link <Brian.Link@noaa.gov>

Date: Mon, 31 Mar 2008 09:27:41 -0400

To: Christopher Hare <Christopher.Hare@noaa.gov>

CC: Lucy Massimillo <Lucy.Massimillo@noaa.gov>

Chris,

Attached is a graphic showing the area for which hydrography has been requested by the Great Lakes Commission (Roger Gauthier). This area is of concern because of an ongoing investigation into what is causing a scour near the source of the St. Clair River and how fast the area is eroding (see article at <http://www.uswaternews.com/archives/arcsupply/5studblam2.html>).

As far as a contact name for the Detroit District USACE - use the Operations Office contact: Bill O'Donoghue, Chief, Technical Services Branch at (313) 226-6797.

Let me know if you have any questions.

Brian

--

Brian A. Link
Great Lakes Regional Navigation Manager
NOAA/GLERL - Lake Michigan Field Station
1431 Beach Street
Muskegon, MI 49441

voice - (231)759-1252

fax - (231)759-2414

cell - (231)740-4110

brian.link@noaa.gov



ScourHydroLimits.jpg

Subject: Re: Critical Port List

From: "Lawrence.T.Krepp" <Lawrence.T.Krepp@noaa.gov>

Date: Wed, 02 Apr 2008 12:07:03 -0400

To: Lucy Massimillo <Lucy.Massimillo@noaa.gov>

The MTS 175 list is actually what drives our scheduling to a great extent (not counting response efforts). What we actually get measured against is completing 17 MTS175 ports ENC validation within NRB each year. We'll weight nav manager requests and see if we can make them fit around that list so that we make sure to meet our requirement each year. If you can knock of at least a few of the ports for the detroit project, we will be in good shape.

Larry

Lucy Massimillo wrote:

Cool. Thanks!

So, It looks like it we were to be able to complete the entire survey area (a big if) then we would knock off 6 ports on the list:

- # 39 Detroit
- # 48 Toledo
- # 77 St. Clair
- # 83 Marine City
- # 114 Marysville/Port Huron
- #131 Monroe

Looking forward to surveying!

Lucy

Lawrence.T.Krepp wrote:

Lucy,

The list is the MTS 175 port list. It is attached.

Larry

Lucy Massimillo wrote:

Just for my curiosity, I was wondering where you can find the list of the 120 ports that need to be surveyed. I am looking at the Hydro Survey Priorities and I noticed that there are 6 areas called out in our upcoming Detroit project list: Port Huron, Marysville, Marine City, Detroit, Monroe, & Toledo. Are all these on the list or are they simply labels?

Also, I talked to Brian about the Silver Bay project. He said the guy who originally requested it is no longer there and he thinks it may be better pushed off until next summer. Since we will be in Alpena, it will be an easier drive to Minnesota than if we were to make the trip from Detroit.

Thanks,
Lucy

[LCDR Larry Krepp <Lawrence.T.Krepp@noaa.gov>](mailto:Lawrence.T.Krepp@noaa.gov)

Chief, NOAA Navigation Response Branch

Navigation Services Division

NOAA

Subject: Re: Detroit Obstructions

From: Christopher Hare <Christopher.Hare@noaa.gov>

Date: Wed, 02 Apr 2008 15:59:49 -0400

To: Lucy Massimillo <Lucy.Massimillo@noaa.gov>

CC: Lawrence T Krepp <Lawrence.T.Krepp@noaa.gov>, Brian Link <Brian.Link@noaa.gov>, Frank Younger <Frank.Younger@noaa.gov>, John Doroba <John.Doroba@noaa.gov>

Lucy,

I will not assign anything inside the 3 meter curve. The only thing I will assign is visible wreck and with only a visible search. I will send you the draft of the instruction and so you can look over it and let me know what changes you thing should be made.

Chris

Lucy Massimillo wrote:

Chris,

I know that you are probably still working on it, but I am curious how AWOIS items are going to be assigned for the Detroit project. There seem to be hundreds (perhaps a slight exaggeration) of submerged obstructions along the W bank of the river. When queried, these object are described as snag/stumps. The majority of these items are located in water that is much too shallow for survey ops. As you can see from the attached graphic, there are about 20 or so located in water, shallower than 2m.

First off, I find it almost impossible to identify snags in SSS data, especially in areas where the snags are as dense as these. How do you know which snag is which. Personally, I hate the fact that these are even on the chart, as I feel they are useless and really clutter up the ENC. Second, we can't do anything about them. We can't SSS in water that shallow. So basically, there is no way to disprove them to get them removed.

In the past, we have been assigned these types of items as AWOIS investigation and it always gave me heartburn. I hate turning in a DR with 50 AWOIS items uninvestigated d/t shallow water. It makes us look slack. So, is there some way that these will be culled from the AWOIS database, before the items are assigned for investigation?

Thanks,
Lucy

--
Christopher Hare
NOAA's Office of Coast Survey
Navigation Response Branch
301-713-2730 x172
Cell: 240-205-4698
FAX: (301)713-9312

Subject: Detroit River

From: Christopher Hare <Christopher.Hare@noaa.gov>

Date: Fri, 11 Apr 2008 13:00:06 -0400

To: Lucy Hick <Lucy.Massimillo@noaa.gov>

Lucy,

Hey, I working on the Detroit River stuff now and I should have it out to you next week. Sorry it is taking so long but I have been swamped with alot of stuff.

Thanks,
Chris

[Christopher Hare](mailto:Christopher.hare@noaa.gov) <Christopher.hare@noaa.gov>

Physical Scientist

Navigation Response Branch

Navigation Services Division

Subject: Detroit

From: Christopher Hare <Christopher.Hare@noaa.gov>

Date: Tue, 15 Apr 2008 14:37:39 -0400

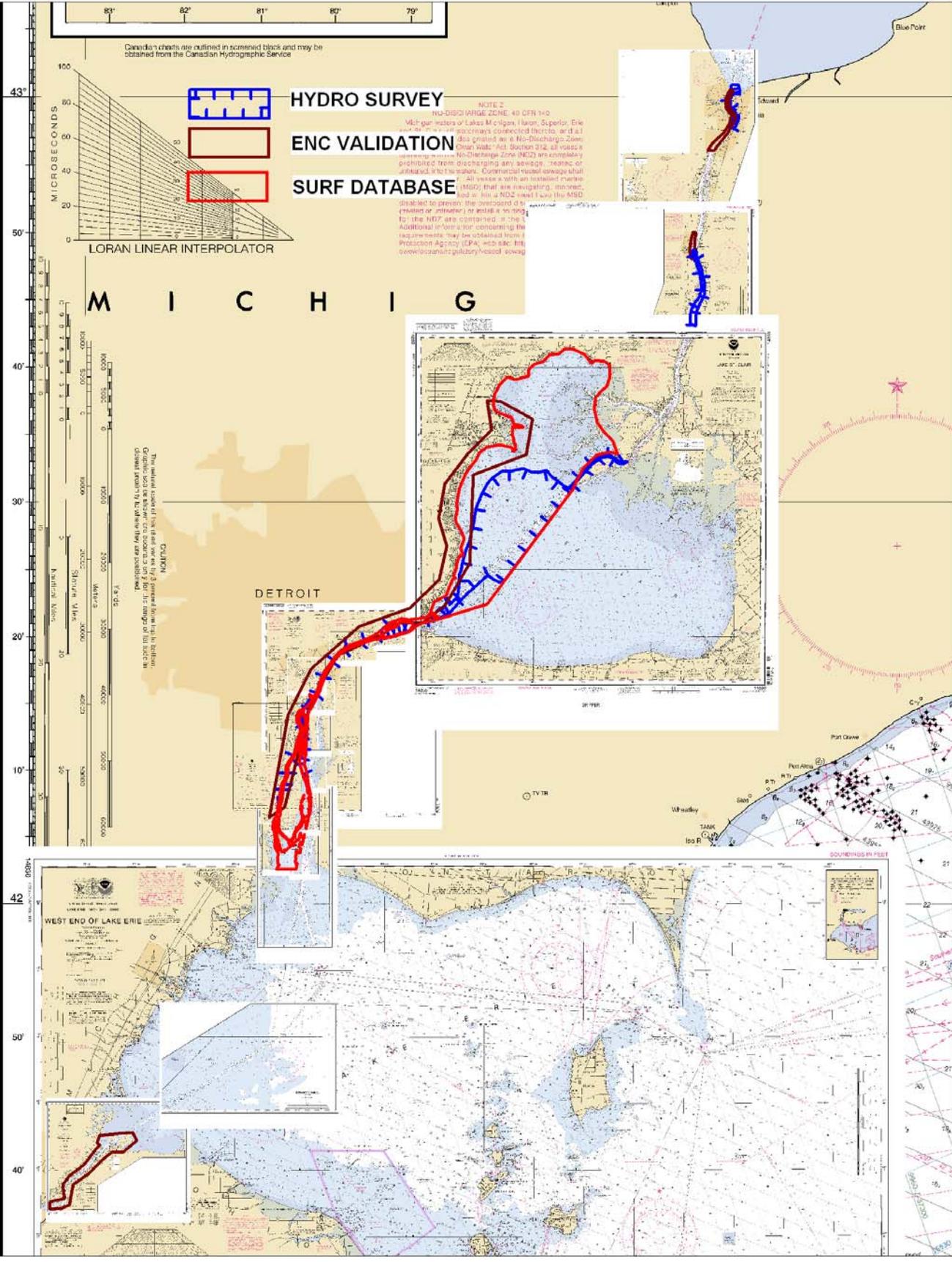
To: Brian Link <Brian.Link@noaa.gov>, Lucy Hick <Lucy.Massimillo@noaa.gov>

Oops, I guess it does help if I send the attachments. Thanks Lucy for letting me know. Sorry!

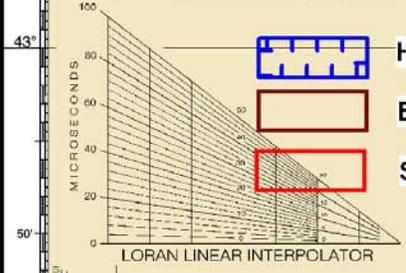
Brian and Lucy,

Attached is a graphic and the MapInfo tables for the Detroit River Project. On the graphic, the blue polygons is the hydro survey and the brown polygons is the ENC validation areas. The red polygons is what was in the SURF database, a request from you. I cut down the request to the 12 foot curve and added the other request that you sent me the other week. There are two other hydro areas I added. Those areas in the river that fell between COE channels. How does this look to you. I know you did a survey up there is 2000.

Chris



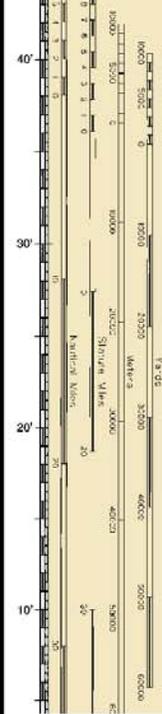
Canadian charts are outlined in screened black and may be obtained from the Canadian Hydrographic Service



HYDRO SURVEY
ENC VALIDATION
SURF DATABASE

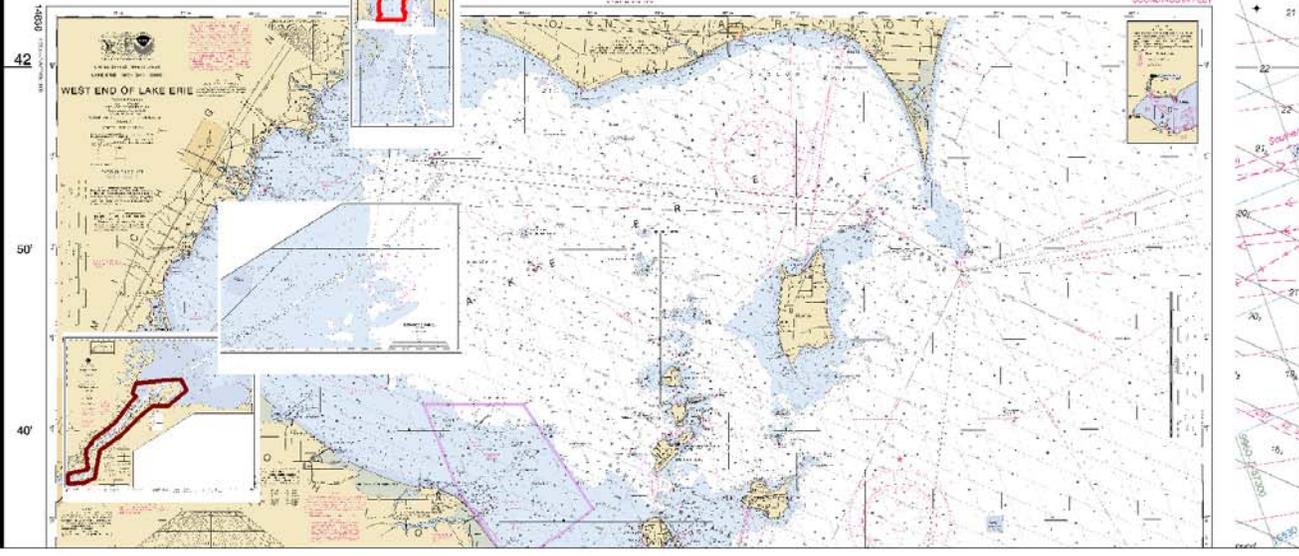
NOTE 2
NO-DISCHARGE ZONE, 40 CFR 140
 Michigan waters of Lakes Michigan, Huron, Superior, Erie and St. Clair are hereby designated No-Discharge Zones (NDZ) and all vessels operating in these zones are completely prohibited from discharging any sewage, treated or untreated, into the water. Commercial vessels operating in these zones are required to have an installed marine toilet that is a NO2 vessel type (MSD) that is prohibited from the use of a pump-out facility or other means of disposal. Additional information concerning the requirements may be obtained from the Protection Agency (EPA) web site: <http://www.epa.gov/waters/gulatory/water/water>

M I C H I G



The red outline of the hydro survey area is for a general hydrographic survey. Other soundings are shown in black unless otherwise indicated. The red outline is shown in dashed lines to show they are published.

DETROIT



[Christopher Hare <Christopher.hare@noaa.gov>](mailto:Christopher.hare@noaa.gov)

Physical Scientist

Navigation Response Branch

Navigation Services Division

Subject: Re: [Fwd: [Fwd: OPR-W408-NRT4 - Additional Requirements for HEC project]]

From: larry krepp <Lawrence.T.Krepp@noaa.gov>

Date: Wed, 14 May 2008 15:11:07 +0000

To: Lucy Hick <Lucy.Massimillo@noaa.gov>

Lucy,

Make plans to go get nrt1

Chris should have instructions ready to send. I won't be able to sign them until I'm back in the office.

Will have to check with coops on the status of the gauge for lake st claire

Larry

Sent from my Verizon Wireless BlackBerry

-----Original Message-----

From: Lucy Hick <Lucy.Massimillo@noaa.gov>

Date: Wed, 14 May 2008 09:46:11

To: Lawrence T Krepp <Lawrence.T.Krepp@noaa.gov>, Christopher Hare

<Christopher.Hare@noaa.gov>, Brian Link <Brian.Link@noaa.gov>

Subject: [Fwd: [Fwd: OPR-W408-NRT4 - Additional Requirements for HEC project]]

Larry,

I am wondering what is happening with our project in Detroit. Like I said, we would like to begin work on June 2nd. But this is dependent on three things:

(1) Will we have a boat? I haven't heard word that anything new has happened regarding the contracting to retrofit S3001. Is there any new news? As we discussed a couple of weeks ago, we would go and get S1211 from NRT1 next week if progress still wasn't being made on our boat. If this is the case, we need to start making plans now. Travel orders will need to be generated & signed in order to get flights down to Pensacola. With everyone in HQ currently on travel, I am concerned that this won't happen in time to fly next week. If we don't go get it next week, we will have to wait until the first week of June.

(2) Are all the necessary water level gauges installed? As we decided on the conference call, we intend to begin work in Lake St. Clair. However, CO-OPS expressed need for the installation of a gauge at this location. As you can see from the e-mail below, there is also need to a gauge in the southern part of the project area. I never saw this e-mail before yesterday, but you can see that there was discussion that FOD might require recon or installation help from Brian. He was never contacted directly about this and we were never contacted at all (we would have been glad to help). Have these gauges been installed? On an additional note, if these projects are planned 1 year in advance and given to CO-OPS at that time, why does it seem like a surprise and a last minute effort to put these gauges in? Shouldn't this have been planned for well in advance of us being in the area?

(3) Will we have project instructions? I would like to have the actual project instructions before we arrive in Detroit, so that we can spend our remaining time here planning our ops and developing line plans. I spoke with Chris yesterday and he said that he could have them to us by Friday. But that's dependent on him receiving water level requirements from CO-OPS. As per the conference call, this project will be a TCARI project, which I have zero experience with. Again, if CO-OPS knew about this project from a year ago, why are we still waiting for requirements from them?

I know that there are intricacies of HQ that I don't understand. But it is frustrating being in the field and feeling like we don't have what we need to do our work. It was probably a mistake not to bring the boat back up here once the original contracting fell through. But, who knew that that things would turn out like they did? Other things (gauges, project instructions, etc.) are out of my control. We are already missing a good part of the hydro survey season up here and we are pretty anxious to get things floating

again back on the water.

Please Advise.

Thanks,
Lucy

----- Original Message -----

Subject: [Fwd: OPR-W408-NRT4 - Additional Requirements for HEC project]
Date: Tue, 13 May 2008 09:58:42 -0400
From: Brian Link <Brian.Link@noaa.gov> <<mailto:Brian.Link@noaa.gov>>
To: Lucy Hick <Lucy.Massimillo@noaa.gov> <<mailto:Lucy.Massimillo@noaa.gov>>

----- Original Message -----

Subject: OPR-W408-NRT4 - Additional Requirements for HEC project
Date: Fri, 18 Apr 2008 14:43:58 -0400
From: Thomas Landon <Thomas.Landon@noaa.gov> <<mailto:Thomas.Landon@noaa.gov>>
Reply-To: Thomas.Landon@noaa.gov <<mailto:Thomas.Landon@noaa.gov>>
Organization: National Ocean Service
To: Mike O'Hargan <Mike.Ohargan@noaa.gov> <<mailto:Mike.Ohargan@noaa.gov>>
CC: Larry Neeson <Larry.Neeson@noaa.gov> <<mailto:Larry.Neeson@noaa.gov>> , Chris Parish <Chris.Parish@noaa.gov> <<mailto:Chris.Parish@noaa.gov>> , Jeff Oyler <Jeff.Oyler@noaa.gov> <<mailto:Jeff.Oyler@noaa.gov>> , Zach Jeffries <Zach.Jeffries@noaa.gov> <<mailto:Zach.Jeffries@noaa.gov>> , Cary Wong <Cary.Wong@noaa.gov> <<mailto:Cary.Wong@noaa.gov>> , "_NOS.CO-OPS.HPT" <NOS.COOPS.HPT@noaa.gov> <<mailto:NOS.COOPS.HPT@noaa.gov>> , Mike Gibson <Mike.Gibson@noaa.gov> <<mailto:Mike.Gibson@noaa.gov>> , Peter Stone <Peter.Stone@noaa.gov> <<mailto:Peter.Stone@noaa.gov>> , Brian Link <Brian.Link@noaa.gov> <<mailto:Brian.Link@noaa.gov>> , Bruce Servary <Bruce.Servary@noaa.gov> <<mailto:Bruce.Servary@noaa.gov>> , Chris McGrath <Chris.McGrath@noaa.gov> <<mailto:Chris.McGrath@noaa.gov>> , Tom Mero <Tom.Mero@noaa.gov> <<mailto:Tom.Mero@noaa.gov>>

Hi Mike,

The hydro planning team met here yesterday to discuss the requirement for two additional water level gauges, proposed by Jeff Oyler based on his experience with the stations involved in this project. Given the short lead time for installation and the need for the additional gauges, it was decided that CO-OPS would use FOD to perform the installations. The two stations are as follows:

MONROE, LAKE ERIE, MI	906 3087	41 53.9N	83 21.7W		
NEW BALTIMORE, LAKE ST CLAIR	(not on historical station list)			42 40.7N	82 44.0W

The two stations need to be installed in the next month. Brian Link, nav manager for the Great Lakes, may be able to provide some recon or installation support. Each site has historical bench marks which need to be searched for and leveled if found. A valid Second Order, class I level tie must be made at each site to at least two marks with dynamic heights published in the NGS database. Being on lakes, I believe each station must collect at least a month of data for comparison to the master control station and determination of the hydraulic corrector. GPS observations must also be made on one observable mark at each station.

RDD recommends that the acoustic sensor be used unless there is an overwhelming reason to use the shaft angle encoder. The stations must be established with the Xpert Dark DCP and 6 minute GOES transmissions. Bruce Servary or Seth Baldelli will assign the plat IDs next week. Either FOD, Brian, or Tim Cooley will need to do a recon sometime soon.

Coordination shall be handled by FOD, CIL, and HPT.

Thanks...Tom

-- Thomas F. Landon National Water Level Product Lead N/OPS1, SSMC4, Station 6409 1305 East West Highway Silver Spring, MD 20910 301-713-2897 x191 v 301-713-4465 fx
-- Brian A. Link Great Lakes Regional Navigation Manager NOAA/GLERL - Lake Michigan Field Station 1431 Beach Street Muskegon, MI 49441 voice - (231)759-1252 fax - (231)759-2414 cell - (231)740-4110 brian.link@noaa.gov <<mailto:brian.link@noaa.gov>>

Subject: NOAA NRT4 Detroit Survey Ops

From: Lucy Hick <Lucy.Massimillo@noaa.gov>

Date: Fri, 06 Jun 2008 08:58:08 -0400

To: Brian Link <Brian.Link@noaa.gov>, NicholsonD@dfo-mpo.gc.ca,
Donald.D.Holly@LRE02.usace.army.mil, wayne.lusardi@noaa.gov

The National Oceanic & Atmospheric Administration's Navigation Response Team 4 is about to begin hydrographic survey operations in the Detroit area. Our assigned project is quite extensive and encompasses areas from Port Huron to Toledo. We will be collecting singlebeam echosounder & sidescan sonar data in various areas of the St. Clair & Detroit Rivers, as well as parts of Lake St. Clair. In addition, we will also be conducting field examination surveys in several ports in the area, in order to evaluate and correct the navigational charts and the Coast Pilot.

We have set up our office trailer at the USCG Air Station Detroit at Selfridge ANGB. We currently have our survey launch located at the marina, here on Selfridge. However, we plan to move the launch to different locations as the survey progresses.

We will begin our operations in the St. Clair River, just south of St. Clair, MI. Please see the attached graphic.

If you have any comments, questions, or problems please contact me. We don't currently have a landline, but I can be reached on my cell (312) 330-5073.

Best Regards,
Lucy Hick



[Lucy Hick](mailto:Lucy.Massimillo@noaa.gov) <Lucy.Massimillo@noaa.gov>

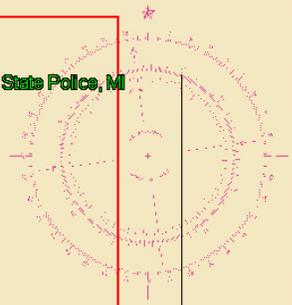
Team Leader

Navigation Response Team 4

National Oceanic & Atmospheric Administration

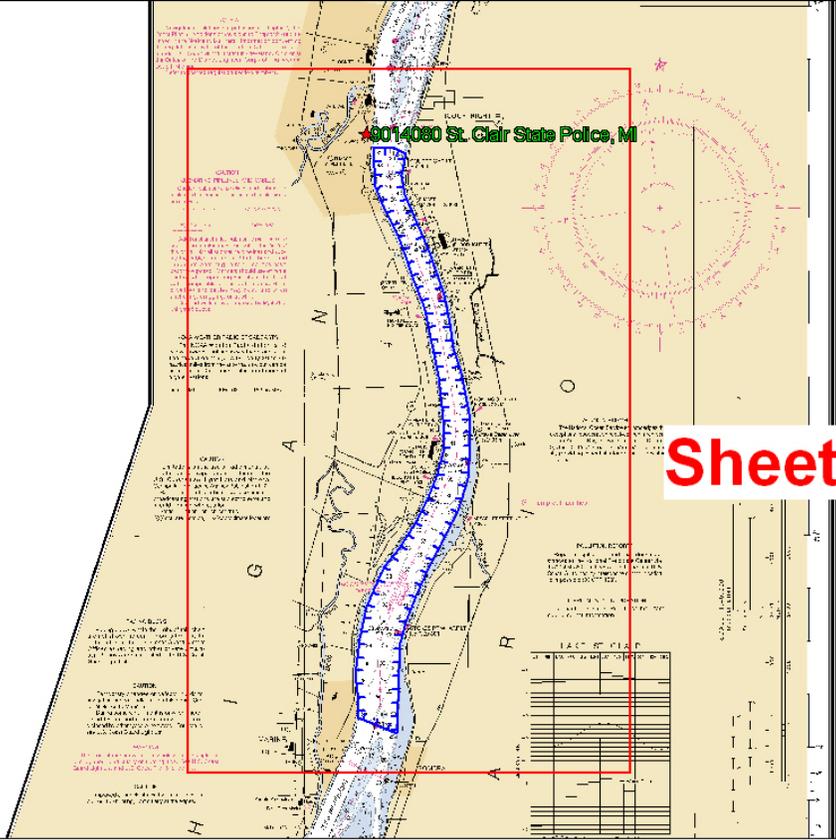
SheetH.jpg

4014080 St. Clair State Police, MI



Sheet H

FEET
850



Subject: Charts 14853 and 14846

From: Christopher Hare <Christopher.Hare@noaa.gov>

Date: Fri, 06 Jun 2008 09:11:54 -0400

To: Jessica Burnett <jessica.burnett@noaa.gov>

CC: Lucy Hick <Lucy.Massimillo@noaa.gov>

May I please order the NOAAs Small Craft Book Charts for 14846 and 14853.

Thanks,
Chris Hare

[Christopher Hare](mailto:Christopher.hare@noaa.gov) <Christopher.hare@noaa.gov>

Physical Scientist

Navigation Response Branch

Navigation Services Division

Subject: End of the 2008 Season

From: "Nigro, Louis J Vol ANG 127 WG/MU" <louis.nigro@miself.ang.af.mil>

Date: Sat, 04 Oct 2008 10:07:39 -0400

To: "Nigro, Louis J Vol ANG 127 WG/MU" <louis.nigro@miself.ang.af.mil>

CC: "McCoy, Edwin J MSgt ANG 127 SFS/SFAR" <edwin.mccoy@miself.ang.af.mil>, "Smith, Dennis J CMSgt ANG 127 SFS/SFM" <dennis.smith@miself.ang.af.mil>, "Regualos, Philip R LtCol ANG 127 SFS/CC" <philip.regualos@miself.ang.af.mil>, "Crawford, Mac A LtCol, ANG 127 MSG/CD" <mac.crawford@miself.ang.af.mil>

Just a reminder that 31 October 2008 is the end of our Marina season for this year and all boats must be removed from our Marina no later than that date.

And to answer three questions: (1) we don't know yet if we will be able to operate the 700-Area Marina in 2009, (2) if we can operate it in 2009, 2008 occupants will get same slip priority, and (3) we don't have storage space yet. If you want to get on the waiting list for storage, call me.

One item being considered for exclusion from the Marina Operating Instruction is the ability to bail out before the end of the season. A number of folks said they were going to do that and didn't, creating a whole lot more work for me. The only exception being considered is for active-duty personnel who get PCS orders. A draft of the new Operating InstructionI will be sent to all 2008 occupants when it is developed

If there are other changes to the Operating Instruction that you feel should be made, please contact me.

Lt Col Louis J. Nigro
Executive Director, Selfridge Military Air Museum
27333 C St, Bldg 1011, Selfridge ANGB MI 48045
586-239-6768
louis.nigro@miself.ang.af.mil

Subject: RE: NOAA AToN Positioning

From: "Shultis, Christopher BOSN4" <Christopher.D.Shultis@uscg.mil>

Date: Fri, 10 Oct 2008 06:51:09 -0500

To: Lucy.Massimillo@noaa.gov

Lucy,

Just give me a heads-up when and where you want to start, getting to most of these aids should not be a problem for you. Cold yes, problem no.

Chris

CWO4 Christopher D. Shultis
SECTOR DETROIT ATON/ICE/SAFETY Officer
Phone 313 568-9523
Cell 313 647-1171

-----Original Message-----

From: Lucy.Massimillo@noaa.gov [mailto:Lucy.Massimillo@noaa.gov]

Sent: Wednesday, October 08, 2008 3:32 PM

To: Shultis, Christopher BOSN4

Subject: NOAA AToN Positioning

Hi Chris,

It was good meeting with you last week at the Working Group meeting.

As we discussed, NOAA Navigation Response Team 4 has been tasked to position many of the stationary aids in the Detroit/Toledo area. The list of aids has been broken down into "High", "Mid", & "Low" priorities. We intend on concentrating on the High priority items and then working our way down the list. We were looking at doing this in our downtime, during the winter freeze. I understand that many of these aids are in locations that will be difficult or impossible to access without a boat. Obviously, we are not looking to do those this winter. Also, some of the aids are located on the Canadian side of the border. We will not be positioning those either.

In order to position the aids, we need to spend approximately 5 minutes on the top, and collect GPS data with our backpack Trimble unit.

If possible, we would like your assistance in doing this.

I am attaching a spreadsheet showing the aids that we have been requested to position. I have made some notes as to which ones we will not be able to do d/t access of location in Canada. The ones that are not highlighted are the ones we would like to try and get. Of course, I'm sure you know better than we do, which ones might prove to be difficult to get to.

We plan on taking out boat out of the water in November and will probably begin positioning the aids after that.

Thank you in advance for your help & cooperation and I look forward to speaking with you about this soon.

Best Regards,
Lucy Hick

Subject: Re: Field work dates

From: Lucy Hick <Lucy.Massimillo@noaa.gov>

Date: Thu, 11 Dec 2008 14:24:56 -0500

To: Christopher Hare <Christopher.Hare@noaa.gov>

H11911 09/29-10/15
H11912 08/12-09/11
H11912 09/23-09/30
H11914 06/19-0806

Christopher Hare wrote:

Lucy,

Do you know when you started and finished the field work for H11911, H11912, H11913 and H11914? I need to update survey tracker.

Thanks,
Chris

[Lucy Hick](mailto:Lucy.Massimillo@noaa.gov) <Lucy.Massimillo@noaa.gov>

Team Leader

Navigation Response Team 4

NOAA

Subject: H11915 Data Directory Size

From: Lucy Hick <Lucy.Massimillo@noaa.gov>

Date: Mon, 15 Dec 2008 14:33:07 -0500

To: _NESDIS NGDC Hydro Information <hydro.info@noaa.gov>

CC: Shepard Smith <Shep.Smith@noaa.gov>, Lawrence T Krepp <Lawrence.T.Krepp@noaa.gov>

Data Acquisition has been completed for Sheet E-I in the Detroit area project, OPR-W408-NRT4-08 for 2008. All data was collected by NRT4 on board NOAA Survey Launch S1211.

Below, please find the data directory sizes for each sheet:

H11915 (Sheet I)

Raw SBES: 0.93 GB

Raw SSS: 4.15 GB

H11914 (Sheet H)

Raw SBES: 1.30 GB

Raw SSS: 6.71 GB

H11913 (Sheet G)

Raw SBES: 0.97 GB

Raw SSS: 3.60 GB

H11912 (Sheet F)

Raw SBES: 4.04 GB

Raw SSS: 0 GB

H11911 (Sheet E)

Raw SBES: 1.46 GB

Raw SSS: 0 GB

Please contact me if you have any questions or comments.

Best Regards,

Lucy Hick

[Lucy Hick](mailto:Lucy.Massimillo@noaa.gov) <Lucy.Massimillo@noaa.gov>

Team Leader

Navigation Response Team 4

NOAA

Subject: Time Stamp Question

From: Lucy Hick <Lucy.Massimillo@noaa.gov>

Date: Wed, 11 Feb 2009 09:38:40 -0500

To: support@caris.com

CC: Olivia Hauser <Olivia.Hauser@noaa.gov>

We recently made a mistake setting up the timing parameters in Hypack during a SBES survey. The PC clock was not synced to the GPS clock. This led to the PC "seconds past midnight" not lining up with the UTC time in the raw Hypack data file. There is now a question of whether there is a timing offset in our data.

I was hoping that you could answer a few questions for me:

- (1) What does CARIS use to time stamp the navigation? Seconds past midnight (PC time) or UTC time (GPS time)?
- (2) What does CARIS use to time stamp the sounding data? Seconds past midnight (PC time) or UTC time (GPS time)?
- (3) Does CARIS use the UTC time for anything?

More specifically, what string & field in that string is used for these time stamps?

If the time stamp for the nav & the sounding data come from the same place, I think we may be ok. The offset between the PC time & the UTC time was approx 21 seconds.

I am attaching an example data file for you to examine.

Best Regards,
Lucy Hick

[Lucy Hick](mailto:Lucy.Massimillo@noaa.gov) <Lucy.Massimillo@noaa.gov>

Team Leader

Navigation Response Team 4

NOAA

002_1718.252	Content-Type: application/octet-stream
	Content-Encoding: base64

Subject: CARIS HelpDesk - Request 00900378
From: CARIS Customer Services <support@caris.com>
Date: Wed, 11 Feb 2009 13:49:57 -0400 (AST)
To: Lucy.Massimillo@noaa.gov
CC: Olivia.Hauser@noaa.gov

CARIS HelpDesk - Support Response to Service Request



Dear Lucy Massimillo:

Please note that request number **00900378**, entitled "**Time Stamp Question**" was updated as indicated below, by **Jamie Parsons** on **Wednesday, February 11, 2009 [13:49]**.

Comments have been added as follows:

Lucy,

Yes, we only use the seconds past midnight and not the GPS String.

Would you like us to change your Profile name or leave it until you change your email address?

Jamie

Best Regards,
CARIS Customer Services
support@caris.com
<http://support.caris.com>
Tel: +1-506-458-8533 Fax: +1-506-459-3849

[Online Customer Support](#)

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Subject: Re: CARIS HelpDesk - Request 00900378
From: Lucy Hick <Lucy.Massimillo@noaa.gov>
Date: Thu, 12 Feb 2009 13:52:04 -0500
To: CARIS Customer Services <support@caris.com>
CC: Olivia Hauser <Olivia.Hauser@noaa.gov>

Hi Jamie,

Thanks for getting back to me so quickly with this. I do have two other questions that I was hoping you could answer.

(1) We have noticed that the first record in the converted data is not the first ping in the RAW Hypack data file. For instance, in the file that I am attaching, the first record is 7 at time 13:58:05.681. However, the first record in the RAW data file happens at 50284.893 (13:58:04.89). Why are the first 6 records not showing up in the SB Editor? Are they not converted? Also sometimes, the first record in the SB Editor is not always 7.

In the same token, the last record in the SB Editor is 255 at time 13:58:40.399. However, there are nine records after that one in the RAW file.

(2) I have noticed in the SB Editor that the depth values change after SV Correction is applied. So the values shown in SB Editor are not always the raw observed depths. Is this right? I have asked this question before but can't find the answer. And I am now being questioned on it.

Thanks,
Lucy Hick

CARIS Customer Services wrote:



Dear Lucy Massimillo:

Please note that request number **00900378**, entitled "**Time Stamp Question**" was updated as indicated below, by **Jamie Parsons** on **Wednesday, February 11, 2009 [13:49]**.

Comments have been added as follows:

Lucy,

Yes, we only use the seconds past midnight and not the GPS String.

Would you like us to change your Profile name or leave it until you change your email address?

Jamie

Best Regards,
CARIS Customer Services
support@caris.com

<http://support.caris.com>

Tel: +1-506-458-8533 Fax: +1-506-459-3849



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```
<?xml version="1.0" encoding="ISO-8859-1"?>
<HIPSVesselConfig Version="2.0">
  <VesselShape>
    <PlanCoordinates>
      <Entry X="-1.040000" Y="-4.490000"/>
      <Entry X="1.440000" Y="-4.490000"/>
      <Entry X="1.440000" Y="2.330000"/>
      <Entry X="0.200000" Y="4.660000"/>
      <Entry X="-1.040000" Y="2.330000"/>
      <Entry X="-1.040000" Y="-4.490000"/>
    </PlanCoordinates>
    <ProfileCoordinates>
      <Entry Y="-4.490000" Z="1.180000"/>
      <Entry Y="-4.490000" Z="-0.100000"/>
      <Entry Y="2.330000" Z="-0.100000"/>
      <Entry Y="4.660000" Z="1.180000"/>
      <Entry Y="-4.490000" Z="1.180000"/>
    </ProfileCoordinates>
    <RP Length="4.490000" Width="1.440000" Height="0.100000"/>
  </VesselShape>
  <DepthSensor>
    <TimeStamp value="2006-001 00:00:00">
      <Comment value="R=0.01m / A=0.01m"/>
      <Latency value="0.000000"/>
      <SensorClass value="Swath"/>
      <TransducerEntries>
        <Transducer Number="1" StartBeam="1" Model="oecv">
          <Manufacturer value="Odom"/>
          <SerialNumber value="23031"/>
          <Offsets X="0.000000" Y="0.000000" Z="0.000000" Latency="0.000000"/>
          <MountAngle Pitch="0.000000" Roll="0.000000" Azimuth="0.000000"/>
        </Transducer>
      </TransducerEntries>
    </TimeStamp>
  </DepthSensor>
  <NavSensor>
    <TimeStamp value="2005-061 00:00:00">
      <Comment value=""/>
      <Latency value="0.000000"/>
      <Manufacturer value="Trimble"/>
      <Model value="DSM12/212_L"/>
      <SerialNumber value="0220261525"/>
      <Ellipse value="NA83"/>
      <Offsets X="0.200000" Y="-0.770000" Z="-3.670000"/>
    </TimeStamp>
  </NavSensor>
</HIPSVesselConfig>
```

```

    </TimeStamp>
  </NavSensor>
  <SVPSensor>
    <TimeStamp value="2005-061 00:00:00">
      <Latency value="0.000000"/>
      <DualHead value="Yes"/>
      <Offsets X="0.000000" Y="0.000000" Z="0.000000" X2="0.000000" Y2="0.000000"
Z2="0.000000"/>
      <MountAngle Pitch="0.000000" Roll="0.000000" Azimuth="0.000000" Pitch2="0.000000"
Roll2="0.000000" Azimuth2="0.000000"/>
      <Comment value="SBE 19 cast"/>
    </TimeStamp>
    <TimeStamp value="2006-001 00:00:00">
      <Latency value="0.000000"/>
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      <Offsets X="0.000000" Y="0.000000" Z="0.000000"/>
      <MountAngle Pitch="0.000000" Roll="0.000000" Azimuth="0.000000"/>
    </TimeStamp>
  </SVPSensor>
  <WaterlineHeight>
    <TimeStamp value="2005-061 00:00:00">
      <Comment value=""/>
      <Latency value="0.000000"/>
      <WaterLine value="-0.500000"/>
      <ApplyFlag value="Yes"/>
      <StdDev Waterline="0.000000"/>
    </TimeStamp>
  </WaterlineHeight>
  <DraftSensor>
    <TimeStamp value="2008-070 00:00:00">
      <Comment value="S&S 2008"/>
      <Latency value="0.000000"/>
      <ApplyFlag value="Yes"/>
      <DraftEntries>
        <Entry Speed="0.000000" Draft="0.000000"/>
        <Entry Speed="3.926566" Draft="-0.013000"/>
        <Entry Speed="5.812095" Draft="0.008000"/>
        <Entry Speed="6.997840" Draft="0.013000"/>
        <Entry Speed="8.339093" Draft="0.008000"/>
        <Entry Speed="9.505400" Draft="-0.024000"/>
        <Entry Speed="13.587473" Draft="-0.102000"/>
      </DraftEntries>
    </TimeStamp>
    <TimeStamp value="2008-266 00:00:00">
      <Comment value="After New Outboard Install"/>
      <Latency value="0.000000"/>
      <ApplyFlag value="Yes"/>
      <DraftEntries>
        <Entry Speed="3.246220" Draft="0.031000"/>
        <Entry Speed="4.023758" Draft="-0.075000"/>
        <Entry Speed="6.434125" Draft="-0.056000"/>
        <Entry Speed="7.833693" Draft="0.056000"/>
        <Entry Speed="9.660907" Draft="0.006000"/>
        <Entry Speed="12.537797" Draft="0.048000"/>
      </DraftEntries>
    </TimeStamp>
  </DraftSensor>
  <TPEConfiguration>
    <TimeStamp value="2008-092 00:00:00">
      <Comment value="2008 TPE Calm days"/>
      <Latency value="0.000000"/>
      <Offsets>
        <MRUtoTransducer X="0.000000" Y="0.000000" Z="0.000000" X2="0.000000"
Y2="0.000000" Z2="0.000000"/>
        <NavigationToTransducer X="0.000000" Y="0.000000" Z="0.000000" X2="0.000000"
Y2="0.000000" Z2="0.000000"/>
        <Transducer Roll="0.000000" Roll2="0.000000"/>
        <Navigation Latency="0.000000"/>
      </Offsets>
    </TimeStamp>
  </TPEConfiguration>

```

```
<StandardDeviation>  
  <Motion Gyro="0.000000" HeavePercAmplitude="0.000000" Heave="0.035000"  
Roll="0.000000" Pitch="0.000000" PitchStablized="0.000000"/>  
  <Position Navigation="1.000000"/>  
  <Timing Transducer="0.010000" Navigation="0.010000" Gyro="0.000000"  
Heave="0.000000" Pitch="0.000000" Roll="0.000000"/>  
  <SoundVelocity Measured="0.000000" Surface="0.000000"/>  
  <Tide Measured="0.000000" Zoning="0.000000"/>  
  <Offsets X="0.000000" Y="0.000000" Z="0.000000"/>  
  <MRUAlignment Gyro="0.000000" Pitch="0.000000" Roll="0.000000"/>  
  <Vessel Speed="1.530000" Loading="0.010000" Draft="0.010000"  
DeltaDraft="0.010000">  
    <StDevComment value="(null)"/>  
  </Vessel>  
</StandardDeviation>  
</TimeStamp>  
</TPEConfiguration>  
</HIPSVesselConfig>
```

[Lucy Hick](#) <Lucy.Massimillo@noaa.gov>

Team Leader

Navigation Response Team 4

NOAA

002_1358.217	Content-Type: application/octet-stream Content-Encoding: base64
---------------------	--

1211_SB.hvf	Content-Type: text/xml Content-Encoding: 7bit
--------------------	--

Subject: CARIS HelpDesk - Request 00900378
From: CARIS Customer Services <support@caris.com>
Date: Wed, 11 Feb 2009 11:59:40 -0400 (AST)
To: Lucy.Massimillo@noaa.gov
CC: olivia.hauser@noaa.com

CARIS HelpDesk - Support Response to Service Request



Dear Lucy Massimillo:

Please note that request number **00900378**, entitled "**Time Stamp Question**" was updated as indicated below, by **Jamie Parsons** on **Wednesday, February 11, 2009 [11:59]**.

Comments have been added as follows:

Hello Lucy,

When you open a Hypack RAW file, as you have attached, you will see past the Header a Identifier, Device Number and a Timestamp. This is the only Timestamp we read on Conversion, it is seconds past midnight, using the TND date for the midnight date.

If this timestamp is 21 seconds off, you can correct the data in the HVF with a Time error in all sections or you can instead convert the data using the Generic Data Parser and use the offset value to correct the error on conversion.

Also, I see your name is Lucy Hick, but your profile is under Lucy Massimillo, did you change it recently? If so, did you email change as well? Can you let us know and we can change your profile accordingly.

Jamie

Best Regards,
CARIS Customer Services
support@caris.com
<http://support.caris.com>
Tel: +1-506-458-8533 Fax: +1-506-459-3849

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Subject: Re: CARIS HelpDesk - Request 00900378
From: Lucy Hick <Lucy.Massimillo@noaa.gov>
Date: Wed, 11 Feb 2009 11:40:26 -0500
To: CARIS Customer Services <support@caris.com>
CC: olivia.hauser@noaa.com

Hi Jamie,

Just to clarify, the UTC time, contained in the GGA string (highlighted in red below) isn't used. The only timestamp that is read is the seconds past midnight (highlighted in blue below). And the TND message is only used to get the date at midnight.

MSG 0 **62307.555**

\$GPGGA,**171804.00**,4228.7122292,N,08247.4650791,W,2,08,1.2,146.01,M,0.00,M,4.2,0114*61

I have changed my last name to Hick. However, I am still using the old e-mail address:
Lucy.Massimillo@noaa.gov.

Thanks,
Lucy

CARIS Customer Services wrote:



Dear Lucy Massimillo:

Please note that request number **00900378**, entitled "**Time Stamp Question**" was updated as indicated below, by **Jamie Parsons** on **Wednesday, February 11, 2009 [11:59]**.

Comments have been added as follows:

Hello Lucy,

When you open a Hypack RAW file, as you have attached, you will see past the Header a Identifier, Device Number and a Timestamp. This is the only Timestamp we read on Conversion, it is seconds past midnight, using the TND date for the midnight date.

If this timestamp is 21 seconds off, you can correct the data in the HVF with a Time error in all sections or you can instead convert the data using the Generic Data Parser and use the offset value to correct the error on conversion.

Also, I see your name is Lucy Hick, but your profile is under Lucy Massimillo, did you change it recently? If so, did you email change as well? Can you let us know and we can change your profile accordingly.

Jamie

Best Regards,
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[Lucy Hick](mailto:Lucy.Massimillo@noaa.gov) <Lucy.Massimillo@noaa.gov>

Team Leader

Navigation Response Team 4

NOAA

Subject: CARIS HelpDesk - Request 00900378
From: CARIS Customer Services <support@caris.com>
Date: Thu, 12 Feb 2009 15:29:36 -0400 (AST)
To: Lucy.Massimillo@noaa.gov
CC: Olivia.Hauser@noaa.gov

CARIS HelpDesk - Support Response to Service Request



Dear Lucy Massimillo:

Please note that request number **00900378**, entitled "**Time Stamp Question**" was updated as indicated below, by **Jamie Parsons** on **Thursday, February 12, 2009 [15:29]**.

Comments have been added as follows:

Hi Lucy,

1. In the SBEditor there is an approximate position calculated, so there needs to be a Position record with a timestamp prior to the Depth Record to be shown as accepted in the SBEditor. The data is converted, that is why you get Record 7, but not shown because there is no position information for it. Same thing at the end of the line.
2. The SBEditor shows the ObservedDepths which are initially converted, this data is w.r.t. to the sonar head, when you SVC you are taking the range and time information to recompute the ObservedDepth data, so SBEditor will show the changed depths.

If you have any comments, you can add them to this request.

Thank you.

Jamie

Best Regards,
CARIS Customer Services
support@caris.com
<http://support.caris.com>
Tel: +1-506-458-8533 Fax: +1-506-459-3849

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Subject: Re: CARIS HelpDesk - Request 00900378
From: Lucy Hick <Lucy.Massimillo@noaa.gov>
Date: Thu, 12 Feb 2009 15:07:22 -0500
To: CARIS Customer Services <support@caris.com>
CC: Olivia.Hauser@noaa.gov

Thanks again...one last question and then I hope that I am through.

Does CARIS use the positions from the POS record (Northings & Eastings I think) for it's navigation? Is the information (Lat & Lon), contained in the MSG record GGA string, used at all for position?

Best Regards,
Lucy

CARIS Customer Services wrote:



Dear Lucy Massimillo:

Please note that request number **00900378**, entitled "**Time Stamp Question**" was updated as indicated below, by **Jamie Parsons** on **Thursday, February 12, 2009 [15:29]**.

Comments have been added as follows:

Hi Lucy,

1. In the SBEditor there is an approximate position calculated, so there needs to be a Position record with a timestamp prior to the Depth Record to be shown as accepted in the SBEditor. The data is converted, that is why you get Record 7, but not shown because there is no position information for it. Same thing at the end of the line.

2. The SBEditor shows the ObservedDepths which are initially converted, this data is w.r.t. to the sonar head, when you SVC you are taking the range and time information to recompute the ObservedDepth data, so SBEditor will show the changed depths.

If you have any comments, you can add them to this request.

Thank you.

Jamie

Best Regards,
CARIS Customer Services
support@caris.com
<http://support.caris.com>
Tel: +1-506-458-8533 Fax: +1-506-459-3849



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[Lucy Hick](mailto:Lucy.Massimillo@noaa.gov) <Lucy.Massimillo@noaa.gov>

Team Leader

Navigation Response Team 4

NOAA

Subject: CARIS HelpDesk - Request 00900378
From: CARIS Customer Services <support@caris.com>
Date: Thu, 12 Feb 2009 17:05:14 -0400 (AST)
To: Lucy.Massimillo@noaa.gov
CC: Olivia.Hauser@noaa.gov



Dear Lucy Massimillo:

Please note that request number **00900378**, entitled "**Time Stamp Question**" was updated as indicated below, by **Jamie Parsons** on **Thursday, February 12, 2009 [17:05]**.

Comments have been added as follows:

When using the Geographic the RAW identifier is user and Ground uses the POS. You can use the Generic Data Parser to reparse the Navigation from the MSG string, not in the Converter.

Best Regards,
CARIS Customer Services
support@caris.com
<http://support.caris.com>
Tel: +1-506-458-8533 Fax: +1-506-459-3849



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Subject: Re: [Fwd: Re: [Fwd: CARIS HelpDesk - Request 00900378]]
From: "Castle.E.Parker" <Castle.E.Parker@noaa.gov>
Date: Fri, 13 Feb 2009 09:02:21 -0500
To: Lucy Hick <Lucy.Massimillo@noaa.gov>

Good Morning,

I hear ya.... don't do anything to your other surveys, go ahead and submit as it now exists. The thing that gets me is that it's like working with your hand tied behind your back. The hardware is limiting (coverage) and the conversion increases the variance of positioning (interpolated) and corrected depths between the converted, SV correction and raw data. I don't like the way Caris converts the raw Hypack file, as it appears crude by means of interpolating the position. It seems that nav positioning has to be established first in the conversion before EC1 depths can be associated with a position. I think that HSD is hoping that VBES goes away!

One reason for the depth difference of a data point post SV correction, is that SV correction may apply draft (RP to waterline) during SV correction. If the software doesn't notice the draft correction has been applied or corrected, it will apply it during the merge process. This is how it works with MB. Changing depth values (editing) of the observed depth re-writes the slant range file; it re-writes the two way travel time based upon the speed of sound in water (velocity cast rates).

I reviewed your DAPR section B and it pointed to DAPR Appendix 8. I don't think it adequately describes the method of editing VBES as you have described below. Your description below should be inserted to DAPR Section B. A lot of this issue has allowed me and AHB to learn what you are doing with your data and your method.

Having to go back and reconvert the raw file in order to insert a depth or edit a depth Z value appears to be wrong; one shouldn't have to do that. It seems that if one edited a Z value, the observed depth should just change the Z value, but since it's re-writing the SLR time it should use the velocity that was applied in lieu of the standard 1500 m/s used for the VBES. So, the observed depths are sort of processed depths but not entirely, as it won't take into account tides. Just as the observed depths are approximate positions, the observed depths appear to be approximate as well.

I swear, this is it, the issue is dead, we'll go from here.... If you have your surveys ready, then submit them I will pass this information to AHB personnel that conducts the ESAR.

Have a good holiday weekend!
Gene

Lucy Hick wrote:

Gene,

I know you are sick of talking about this, but I just wanted to say a couple of more things. I appreciate you looking into this. I said it before, I am not trying to make trouble for anyone, but I am really trying to figure out the right thing to do. I am not trying to be argumentative but I have no one here to bounce things off of. Please see blue comments below.

Castle.E.Parker wrote:

Hey and good morning, Boy did I open a can of worms!

I'm finding out the time offset is critical, then again it's not that critical. I do apologize for the raising this issue and the heightened awareness, but when all attributes of the time, depth, and ping don't match consistently, something is awry. This has bit me in the butt, as well. I've spent some time looking at the data and comparing; it just doesn't jive all the time. It's strange. Usually, we look for parity of timing between all components including nav, depths, and attitude. After working with this issue, the nav position is what it is, whether a time offset occurred between the raw file and the converted file. It is strange for the Caris converter to reference sec since midnight, when the time stamp is in the GGA message; why a time stamp difference.... because the PC clock is not synched to the GPS (GGA message). I don't think that Caris chooses the correct time stamp for reference in the conversion.

The 21 sec offset is not significant for tide (water level); if the offset was close to 6 minutes or longer, then it would be a problem. I had to shelve H11915 for a short time period and will get back to working on it. I noticed several things going on and don't guess that it really matters. These items are listed below:

1. the first ping in the bin file is not the first converted ping. When querying the first Caris converted ping it is attributed with some other number than 1. It can vary between 3 to 8 and is not always the same ping number offset and can vary from line to line.

example:

DN 217\Line 008_1627

Caris converted: 1st ping is ping 5 time = 16-27-23.580

Bin: Ping 1 is ping 1 time=16-27-24.445

An insert : Caris: ping 165 time 16-27-45.580

Bin: ping 154 time 16-27-45.580

DN 217\Line 007_1633

Caris converted: 1st ping = 5 time =16-33-04.413

Bin: 1st ping =1 time =16-33-03.974

An insert: Caris: ping 186 time =16-33-29.941

Bin: ping 184 time=16-33-29.853

These are just two examples. The first ping from Caris never matched the first ping in the BIN file. These differences vary from line to line. Being as inconsistent that it is, it's very confusing as to exactly what's going on.

I e-mailed CARIS about this. They said, "In the SBEditor there is an approximate position calculated, so there needs to be a Position record with a timestamp prior to the Depth Record to be shown as accepted in the SBEditor. The data is converted, that is why you get Record 7, but not shown because there is no position information for it. Same thing at the end of the line." I looked at the RAW data file vs. the converted data in SB Editor for DN 217\Lin 008_1627. When queried in CARIS, the first record is #5, 16:27:23.480. If you look at the RAW Hypack data record, this corresponds to the 5th EC1 record, at time 59243.480 (16:27:23.480). The time tag for the first position record is 59243.416 (16:27:23.416). So, the first 5 records, which are time tagged before this, are simply not shown.

Also I notice the depth values vary as well. It almost appears that the bin file depths are corrected for the TX to water surface, while the Caris observed depths does not take into account the TX offset to

water surface.

Once again, according to CARIS, "The SBEditor shows the ObservedDepths which are initially converted, this data is w.r.t. to the sonar head, when you SVC you are taking the range and time information to recompute the ObservedDepth data, so SBEditor will show the changed depths."

In the first graphic (001_1355_Converted.jpg) the depth and the time for this small feature (which I did not add) are consistent in both the BIN file and SB Editor. In this graphic, all I have done was convert the RAW data file.

In the second graphic (001_1355_SVCcorrected.jpg), you can see that the depth in the SB Editor have changed. All I have done here is apply SV Correction. This is why we always add our depths immediately upon conversion. If a depth has to be added after SV Corrections were applied, we go back and reconvert the line and start processing over.

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Search Folders

(Documents and Settings\NRT4 NOAA\Desktop)\Timing

Hypack .BIN Viewer - Pydro v8.7 (r2586)

0.0
0.4
0.8
1.2
1.6
2.0
2.4
2.8
3.2
3.6
4.0
4.4
4.8
5.2
5.6
6.0
6.4
6.8
7.2
7.6
8.0
8.4
8.8
9.2
9.6
10.0
10.4
10.8
11.2
11.6

CARIS HIPS Single Beam Editor

13:55:31.000

Y:\OPR-W408-NRT4-08\H11915\CARIS\Preprocess\HYPACK\51211sb_Odom\08042008\001_1355.BIN
Y:\OPR-W408-NRT4-08\H11915\CARIS\Preprocess\HYPACK\51211sb_Odom\08042008\002_1358.BIN
Y:\OPR-W408-NRT4-08\H11915\CARIS\Preprocess\HYPACK\51211sb_Odom\08042008\003_1401.BIN
Y:\OPR-W408-NRT4-08\H11915\CARIS\Preprocess\HYPACK\51211sb_Odom\08042008\004_1407.BIN

13:55:31.646 50131.646 Show Frequency(s) Show Gridlines .4 Time : 13:55:48.830 (50148.830)

Hi Lo Show RawFile Depths Depth : 6.30 M

Hi/Lo Lo/Hi Profile : 122

The screenshot displays a software interface for processing bathymetric data. At the top, a menu bar includes 'Insert', 'Format', 'Options', 'Tools', and 'Help'. Below it is a toolbar with icons for 'Spell', 'Attach', 'Security', and 'Save'. The main window is titled 'Hypack .BIN Viewer - Pydro v8.7 (r2586)'. The left side of this window shows a vertical y-axis with depth values from 0.0 to 11.6 in increments of 0.4. The right side shows a 'CARIS HIPS Single Beam Editor' window with a zoomed-in view of the depth profile, with a y-axis from 4.3 to 10.2. The bottom of the interface contains a status bar with the following information: '13:55:31.646', '50131.646', 'Show Frequency(s)' (with 'Hi' selected), 'Show Gridlines' (checked, value .4), 'Show RawFile Depths' (checked), 'Time : 13:55:48.830 (50148.830)', 'Depth : 6.30 M', and 'Profile : 122'. A list of file paths is visible in the bottom right corner of the main window.

When looking at the time and ping of the bin file and comparing to the Caris converted, the time is usually very very close. However, the ping number is off. Why... I don't know but only assume it's the way Caris converts the Hypack file and drops some pings until the navigation is established. It somewhat appears that the latency of the ping offset to the bathy ping may be related to converting the nav and the method of interpolating from the nav point in the past to the present to the next nav

input.

One thing that kicked this off was the fact that the sec since midnight (SSM) and the GGA message didn't match when referencing the raw hypack file. If position is coming from the GGA message, then the timing of the line is offset from the GGA message. Inherently, this isn't right. So, if you synch your PC clock to the GGA message then parity is achieved. Display the Com port or the device window such that you can see the GGA appear and do a count down and set the clock time to a stamp as in the GGA message; then check this every morning during your setup process.

I can remember talking about the Caris VBES converter to other in NOAA and Caris reps and they admitted that it's weak. It's not at all as precise as the MB timing and conversion (of course the set up and data parsing is different). The timing of the MB systems is much tighter due to fact of correlating and correcting for attitude adjustment, GPS input rates, sound velocity ray tracing, and the MBES ping rates as well.

I just used Pydro's Pst ACQ tools, liner correction (adjust time) by subtracting -21 seconds. The nav and attitude are corrected immediately. The observed depths are corrected as well, but one needs to re-load SVP and then merge; I think this re-writes the slant range file and Observed depths time stamps. Once the correction is completed, the observed depth time matched the attitude and navigation time. So, the Pydro time correction tool is working properly. Using this tool sort of covers up the timing offset from the GGA message to PC clock; if you use Caris method of hvf correction, the it's obvious of the timing discrepancies.

Bearing in mind all that is discussed within this email, this is an example of why AHB does not like VBES surveys that don't run with POS MV. There appears to be data discrepancies and a lot of this has to do with the setup and the devices; nav input at only once a second, the Caris converter ping number compared to the bin file.

I understand this, but I can only work with the equipment and software, which I am provided.

At AHB if things don't have parity or jive together, we attempt to find out what's going on and how it affects the survey data.

Discussions with Shep is... "so what if the time is off", but time is the standard to which everything references. No matter what the time stamp is... the nav at that point is valid. If I'd never looked at the raw Hypack file, I would have never noticed that the Caris time stamp did not match the GGA message. The GGA message I feel should be the source time stamp for that position.

If you don't want to adjust the time, then send the survey in as it is. This issue has probably been overlooked for years and it can vary depending upon the PC clock timing. Each PC clock may have a different time drift rate.

I feel like since the PC clock was used to time tag the BIN data, as well as the positions & soundings in CARIS, there isn't any relative offset between any of them. Both you and Jack stated that the small offset between the PC clock and the UTC time, used for the Water Level data isn't significant. So, I guess I am choosing to not adjust the time. I also still believe that our method for inserting depths was valid. I am not saying that there weren't other things wrong with the data, which you discussed with me in Norfolk.

Enough said about this...? What you do to your data is up to you... I think you will make the best decision. I need to bet back to verifying another survey. If you feel the need to talk, then call.

757-441-6413 ext108. Just remember, it's all a learning lesson and a commentary of how our organization trains and communicates and last but not least.... it's related to "point of perspective."

I'm not upset that this came up, because I have (and am still learning) quite a bit.

the best to ya,
Gene

Lucy Hick wrote:

Gene,

I did some digging into the timing problem in our Detroit survey. I've contacted both CARIS & Jack Riley. The same time stamp, seconds past midnight (PC time) was used to time stamp the Navigation, SB soundings, and the BIN file. So there is no relative offset between any of these. Therefore, using time to add shoal, from the BIN file into the CARIS SB Editor, should be valid.

The only offset is with respect to water levels. Since the water level data is time tagged to UTC time, it will be 21 seconds (or whatever) off from the sounding data. This doesn't seem like a huge problem here in the Great Lakes. What do you think?

I am forwarding you a couple of more e-mails from CARIS.

Lucy

----- Original Message -----

Subject: Re: [Fwd: CARIS HelpDesk - Request 00900378]

Date: Wed, 11 Feb 2009 15:51:36 -0500

From: Jack L. Riley <Jack.Riley@noaa.gov>

To: Lucy Hick <Lucy.Massimillo@noaa.gov>

CC: Olivia Hauser <Olivia.Hauser@noaa.gov>

References: <49931616.7020107@noaa.gov>

Lucy,

Yes, I concur: no relative timing issue between nav & sounding data--both .RAW & .BIN timing per Hypack PC clock. And if you now have the synch-to-ZDA (or whatever) option enabled, then you won't have any offset between real-world time (UTC) and this Hypack PC data time. And that ZDA synch may be critical if you decide to feed GPS into the Odom--otherwise the .BIN file would be offset from the nav & sounding (.RAW).

Jack

Lucy Hick wrote:

Jack,

If I understand this correctly, the nav & the sounding data are time stamped the same. So, we shouldn't have to worry about correcting for this timing error? Like you said in the phone conversation, the 21 seconds shouldn't really affect the time data.

Would you agree with this?

Lucy

----- Original Message -----

Subject: CARIS HelpDesk - Request 00900378

Date: Wed, 11 Feb 2009 13:49:57 -0400 (AST)

From: CARIS Customer Services <support@caris.com>

To: Lucy.Massimillo@noaa.gov

CC: Olivia.Hauser@noaa.gov



Dear Lucy Massimillo:

Please note that request number **00900378**, entitled "**Time Stamp Question**" was updated as indicated below, by **Jamie Parsons** on **Wednesday, February 11, 2009 [13:49]**.

Comments have been added as follows:

Lucy,

Yes, we only use the seconds past midnight and not the GPS String.

Would you like us to change your Profile name or leave it until you change your email address?

Jamie

Best Regards,
CARIS Customer Services
support@caris.com

<http://support.caris.com>

Tel: +1-506-458-8533 Å Fax: +1-506-459-3849



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Castle Eugene Parker <castle.e.parker@noaa.gov>

Physical Scientist - Hydrographic Team Lead

Atlantic Hydrographic Branch

NOAA Office of Coast Survey

Part 1.1.1.4	Content-Type: application/x-unknown-content-type Content-Encoding: base64
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Part 1.1.1.5	Content-Type: application/x-unknown-content-type Content-Encoding: base64
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Subject: Re: Quick Easy Question

From: "Castle.E.Parker" <Castle.E.Parker@noaa.gov>

Date: Fri, 13 Feb 2009 11:28:41 -0500

To: Lucy Hick <Lucy.Massimillo@noaa.gov>

DMS for DR and Appendix 2 (export from Pydro)

ATON Report FPM Section 5.2.3.35. This is the only reference I find.

Lucy Hick wrote:

Gene,

I can't seem to find reference to it, but do you guys require positions in DMS or decimal degrees?

Thanks,
Lucy

Castle Eugene Parker <castle.e.parker@noaa.gov>

Physical Scientist - Hydrographic Team Lead

Atlantic Hydrographic Branch

NOAA Office of Coast Survey

H11911 COMPILATION LOG

REGISTRY No.	<i>H11911</i>
PROJECT No.	<i>OPR-W408-NRT4-08</i>
FIELD UNIT	<i>NRT4</i>
PRE-COMPILER	
LARGEST SCALE CHART	<i>14853, edition #17, 20080301</i>
CHART SCALE	<i>1:15,000</i>
SURVEY SCALE	<i>1:10,000</i>
DATE OF SURVEY	<i>09/29 -10/15/2008</i>
CONTENT REVIEW DATE	

Components	File Names
<i>Product Surface</i>	<i>H11911_PS_5M.HNS</i>
<i>Contour Layer</i>	<i>H11911_Contours.hob</i>
<i>Survey Scale Soundings</i>	<i>H11911_SS_Soundings.hob</i>
<i>Chart Scale Soundings</i>	<i>H11911_CS_Soundings.hob</i>
<i>ENC Retain Soundings</i>	<i>H11911_ENC_Retain_Soundings</i>
<i>Meta-Objects Layer</i>	<i>H11911_Meta.hob</i>

META-OBJECTS:

a. M_COVR attributes

Acronym	Value
SORDAT	<i>20081015</i>
CATCOV	<i>1</i>
SORIND	<i>Us,us,survey,H11911</i>

b. M_QUAL attributes

Acronym	Value
CATZOC	
INFORM	<i>H11911, OPR-W408-NRT4-08, NOAA NRT4, NOAA Launch S1211</i>
POSACC	<i>10</i>
SORDAT	<i>20081015</i>
SORIND	<i>Us,us,survey,H11911</i>
SUREND	<i>20081015</i>
SURSTA	<i>20090929</i>
TECSOU	<i>Echo sounder</i>

c. DEPARE attributes

Acronym	Value
DRVALV 1	<i>11.00</i>
DRVALV2	<i>36.00</i>
SORDAT	<i>20081015</i>
SORIND	<i>us,us,nsurf,H11911</i>

d. M_CSCL attributes

Acronym	Value
CSCALE	<i>60000</i>
SORDAT	<i>20081015</i>
SORIND	<i>US,US,survey,H11911</i>

**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT to Accompany
Surveys H11911 (2008)**

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

B. DATA ACQUISITION AND PROCESSING

B.1 DATA PROCESSING

The following software was used to process and review data at the Atlantic Hydrographic Branch (AHB):

CARIS HIPS/SIPS version 6.1 SP2 HF 1-4
CARIS BASE Manager 2.1 SP1 HF 1-8
CARIS HOM ENC 3.3
PYDRO, version 8.7 r2586
CARIS S-57 Composer 2.0
DKART HOM version 1.0

B.2 QUALITY CONTROL

H-Cells

The AHB source depth grid was generated as a 5m resolution BASE surface. Survey scale soundings were extracted from AHB generated 5m Base surface at a 1:10000 scale using a radius of 1.75m. Soundings were selected for charting by hand using the latest raster charts 14850 and 14853. Soundings were then checked for conflicts, corrected to remove conflicts, and edited to allow for proper sounding compilation placement with respect to existing charted depths outside the survey area. The BASE surface was referenced when selecting the chart scale soundings, to ensure that the selected soundings portrayed the bathymetry within the common area.

Depth curves were drawn from the Base surface by hand. The contours are included in the final H-Cell product. The curves were utilized during chart scale sounding selection at AHB.

H11911

The compilation products and Stand Alone HOB Files (SAHOB) are detailed in the Compilation Process Log of this document. All individual SAHOB files were assembled in BASE Editor during H-Cell compilation.

The completed H-Cell was exported as a Base Cell File (ENC.000) in S-57 format with all values in metric units. The metric equivalent ENC.000 file was then converted to NOAA chart units (ENC_CS.000) with all values measured in feet following NOAA sounding rounding rules.

The H11602 CARIS H-Cell final deliverables include the following products:

H11911_CS.000	1:15,000 Scale	H11911 Selected Soundings (Chart Scale)
H11911_SS.000	1:10,000 Scale	H11911 Selected Soundings (Survey Scale)

JUNCTIONS

H11912 (2008) to the north

Survey H11912 (2008) junctions with the present survey to the north. Present survey soundings are 1 foot deeper than survey H11912 (2008).

C. VERTICAL AND HORIZONTAL CONTROL

Final vertical correction processing was completed by the field unit with no additional corrections required by Atlantic Hydrographic Branch personnel. The field unit applied verified water levels in conjunction with the preliminary tidal zoning which was accepted and approved by N/OPSI CO-OPS as the final zoning for H1911. Sounding datum is Mean Lower Low Water (MLLW). Vertical datum is Mean High Water (MHW).

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD83), UTM projection zone 17. Office ENC processing of this survey required translating the datum to meet S-57 ENC requirements. The horizontal geodetic datum was translated to Latitude and Longitude (LLDG) World Geodetic System-84 (WGS-84) during CARIS Base Manager processing.

D. RESULTS AND RECOMMENDATIONS

<u>Chart Comparison</u>	<u>14850 (53rd. Edition, Sep. /06</u> Corrected through NM, Aug. 30/06 Corrected through LNM, Aug. 19/06 Scale 1:60,000
<u>Chart Comparison</u>	<u>14853 (17th. Edition, Mar. /08</u> Corrected through NM, Mar. 22/08 Corrected through LNM, Oct. 18/08 Scale 1:15,000
<u>ENC Comparison</u>	<u>US4MI31M</u> Lake Saint Clair Edition 7 Update Application Date 2008-12-09 Issue Date 2009-01-13 References: Charts 14850

Hydrography

The charted Hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in Section D. of the Descriptive Report.

Several depths were brought forward from Chart 14850 to supplement the present survey.

Adequacy of Survey

The present survey is adequate to supersede the charted bathymetry within the common area. Any features not specifically addressed either in the H-Cell File or the Blue Notes should be retained as charted. Refer to the Descriptive Report for further survey requirements recommended by the hydrographer.

Miscellaneous

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland. See Section D.1. of this report for a list of the Raster Charts and Electronic Navigation Chart (ENC) used for compiling the present survey.

APPROVAL SHEET
H11911

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, representation of critical depths, cartographic symbolization, and verification or disproof of charted data. All revisions and additions made to the H-Cell files during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with National Ocean Service and Office of Coast Survey requirements except where noted in the Descriptive Report and the Evaluation Report.

All final products have undergone a comprehensive review as per the Atlantic Hydrographic Branch Processing Manual and are verified to be accurate and complete except where noted.

Norris A. Wike
Cartographer
Atlantic Hydrographic Branch

I have reviewed the H-Cell files, accompanying data, and reports. This survey and accompanying Marine Chart Division deliverables meet National Ocean Service requirements and standards for products in support of nautical charting except where noted.

Approved: _____
Shep Smith
Commander, NOAA
Chief, Atlantic Hydrographic Branch