

Horizontal and Vertical Control Report

Project Metadata

Project Name:	Summer Hydro 2015
Project Number:	WXXXXX
General Locality:	Rye, New Hampshire
State or Territory:	New Hampshire
Field Unit:	CCOM/ JHC
Chief of Party:	Capt Andrew Armstrong, Ret. NOAA; Semme Dijkstra
Project Start Date:	2015-06-10
Project End Date:	2015-06-25
Field Year:	2015
DAPR Version:	SH2015_DAPR

Positional and Height Information Utilized for this Project

Horizontal Datum:	World Geodetic System 1987
Realization:	WGS84(G1150)
Ellipsoid:	GRS 80

Image of all Site Locations pertaining to the HVCR

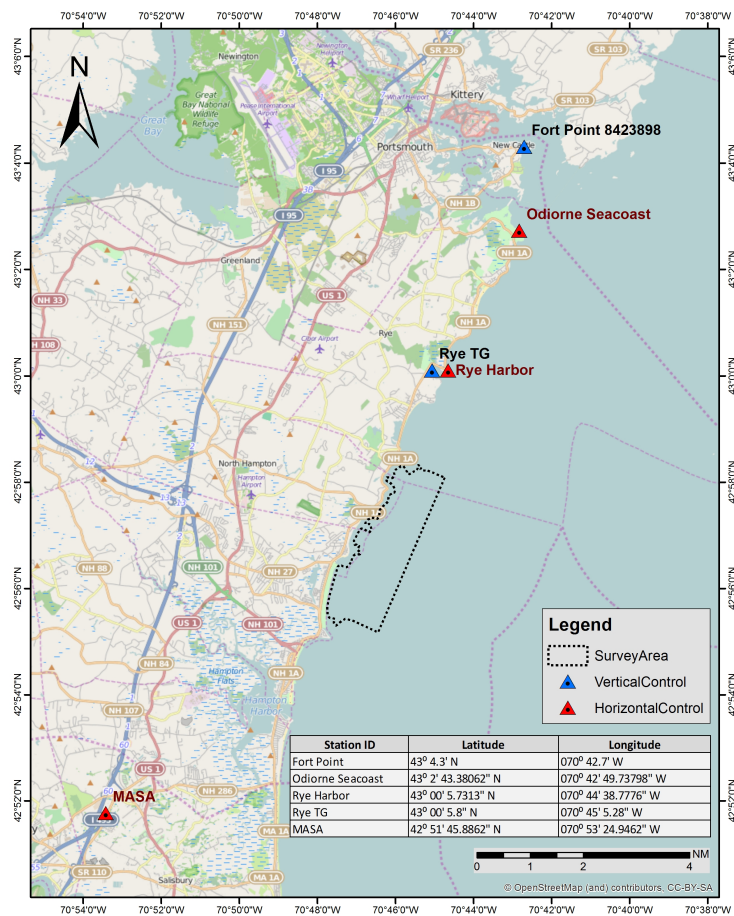


Figure: - 1. Horizontal and Vertical Control Used

Non- User Installed Gauges and Stations

NWLON Gauges		
Station Name	Station ID	
Fort Point	8423898	
CORS Stations		
Station ID	Position	Ellipsoid Height
MASA	Latitude:42.8627461667 Longitude: 70.8902628333	-10.292 meters

User Installed Stations

Site Information	
Site ID	Site Name
2013260	Salisbury



Figure: - 2. MASA CORS Station (<http://www.ngs.noaa.gov/cgi-cors/corsage.prl?site=MASA>)

Vertical Control

Subordinate Gauge				
Station Name	Station ID	Position	Installation Date	Removal Date
Rye Harbor	unknown	Latitude: 43.0016111111 Longitude: 70.7514666667	2015-05-18	2015-07-06

Subordinate Gauge Equipment Information					
Type	Manufacturer	Model	Serial	Firmware	Comments
Radar	WaterLog	H-3611	D900291508D	unknown	This station has approximately 4 minutes delay from Fort Point.

Image(s) of Subordinate Gauge:

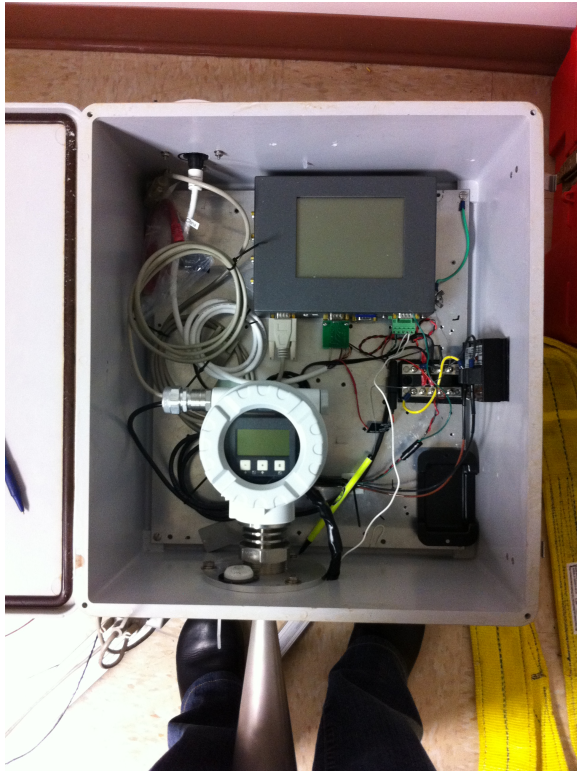


Figure: - 3a. Radar Tide Gauge

Image(s) of Subordinate Gauge:



Figure: - 3b. Radar Tide Gauge and Tide Staff

Primary Benchmark			
Name	Position	Ellipsoid Height	Owner/ Agency
BM-1	Latitude: 43.0016605833 Longitude: 70.75161175	-25.465meters	CCOM / JHC

Photos or rubbings of the benchmark utilized:



Figure: - 4a. BM-1

Photos or rubbings of the benchmark utilized:



Figure: - 4b. BM-1 Unstamped Benchmark

Opus Report	V:\\SH2015\\Final\\HVCR_Images\\BM1_1561_opus.pdf
Quality Control Report	
Field Observation Logs	

Horizontal Control

Site ID: Rye Harbor

Primary Benchmark			
Name	Position	Ellipsoid Height	Owner/ Agency
Rye Harbor	Latitude: 43.0015920278 Longitude: 70.7441048889	-23.887 meters	CCOM / JHC

Photos or rubbings of the benchmark utilized:



Figure: - 5. RTK Setup at Rye Harbor

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Quality Control Report	
Field Observation Logs	

Vertical Techniques

Overview: Observed tidal data from one of the NOAA CO-OPS tide station was used for tide correction.

Discrete Zoning

Non-User Installed Sites
Fort Point

User Installed Sites

Discussion: A zone definition file from NOAA CO-OPS for last year's Summer Hydro was used.

Horizontal Techniques

Overview: There were three (3) sources of RTK corrections during the survey that has been used interchangeably depending on the proximity and availability - Rye Harbor, Odiorne Seacoast and MASA CORS station. All corrections are in CMR+ format with 19200 bps.

Real-Time Kinematic (RTK)

Non-User Installed
MASA CORS Station
User Installed
Rye Harbor
Odiorne Seacoast

Discussion: The GNSS RTK station in Rye Harbor was used most of the survey days. A 2-hr static survey was conducted last 08 June 2015 to establish the position of the control point prior to survey work. The data was submitted to OPUS and the coordinates being used is in WGS84 (IGS08). It transmits 8-bit | 1 stop bit | None Parity correction through radio signal in CMR + format at 19200 bps. This station is being setup every survey day whenever needed. For a half-day survey on DN 166 (15 June 2015), one CORS station was used for real-time correction in positioning. Massachusetts Continuously Operating Reference Station (MaCORS) operated by Massachusetts Department of Transportation broadcasts real-time GPS/GNSS corrections through internet connection. An application called NTRIP (Networked Transport of RTCM via Internet Protocol), specifically Lefebure NTRIP Client, was used to stream CMRP_Near differential corrections from the nearest CORS station, which in this case is MASA at Salisbury, to the positioning system of the vessel as logged in POSPac files. RV Coastal Surveyor has an account in MaCORS. The position solution of the vessel becomes float right after the vessel make a turn to catch the next survey line. Since it relies on the internet connection, this service would be very useful if the survey platform has high-speed and reliable internet connection. Lastly, the RTK correction from Odiorne Seacoast was used during transits since it is somehow being obstructed. It has the same configuration with the Rye Harbor Station except its broadcasting frequency.

Approval Sheet

Supervision Statement: As Chief of Party, field operations for this hydrographic survey were conducted under my direct supervision, with frequent personal checks of progress and adequacy. I have reviewed the attached survey data and reports.

Approval Statement: All field sheets, this Descriptive Report, and all accompanying records and data are approved. All records are forwarded for final review and processing to the Processing Branch.

Adequacy Statement: The survey data meets or exceeds requirements as set forth in the NOS Hydrographic Surveys and Specifications Deliverables Manual, Field Procedures Manual, Standing and Letter Instructions, and all HSD Technical Directives. These data are adequate to supersede charted data in their common areas. This survey is complete and no additional work is required with the exception of deficiencies noted in the Descriptive Report.

Any Additional Statements:

Signing Personnel		
Approver Name	Approver Title	Approval Date
Capt. Andrew Armstrong, Ret. NOAA	Chief of Party	2015-07-10
Semme Dijkstra	Chief of Party	2015-07-10