

C.1 VERTICAL CONTROL

The vertical datum for H12160 is Mean Lower Low Water (MLLW). The Project Instructions specified NOAA tide station 8651370 Duck, NC as the tide source for water level correctors. During initial processing and analysis, significant tidal discrepancies were observed on H12160 using 8651370 Duck, NC. Additional zoning based on 8631044 Wachapreague, VA was acquired by SAIC and applied to a subset of data to see if the tidal discrepancies improved. The results showed a marked improvement in data agreement using NOAA tide station 8631044 Wachapreague, VA (37° 36.4' N 075° 41.1' W). A full explanation of the tide zone assessment is detailed in Section C.5 of the DAPR. For H12160, 8631044 Wachapreague, VA was the source of all final verified water level heights for determining correctors to soundings. All data for H12160 were contained within four tide zones which were provided from NOAA and are summarized in Table C-1.

Table C-1. Water Level Zoning Parameters Applied on Sheet H12160

Zone	Time Corrector (minutes)	Range Ratio	Reference Station
SA46	-66	0.87	8631044
SA46A	-72	0.87	8631044
SA55	-66	0.90	8631044
SA55A	-72	0.90	8631044

The primary means for analyzing the adequacy of zoning was by entering the observed verified water level correctors from 09 April 2011 to 09 May 2011 and 20 June 2011 to 30 June 2011 from adjacent zones into a spreadsheet. This comparative zone-to-zone analysis (summarized in Table C-2) compared the difference in observed verified water level correctors at 6-minute intervals. The results supported the adequacy of the NOAA provided preliminary zone boundaries and zoning parameters based on 8631044 Wachapreague, VA. Adequacy of zoning was also carried out by analyzing zone

boundary crossings in the navigated swath editor, SAIC’s **Multi View Editor (MVE)**, reviewing differences between overlapping swath data as well as crossline versus main scheme data. Details regarding zone correctors and analysis can be found in Section C.5 of the DAPR. SAIC did not revise the delivered tide zones for tide station 8631044 Wachapreague, VA as the water level zoning parameters provided by National Ocean Service (NOS), Table C-1, were deemed adequate for the application of observed verified water levels. As a result, they were accepted as final and applied to all H12160 multibeam data.

Table C-2. Comparison of Verified 6 Minute Water Level Data at Tide Zone Boundaries for Dates Inclusive of Sheet H12160

Zone Boundary	SA46-SA46A	SA46A – SA55A	SA46 – SA55A	SA55 – SA55A
Minimum Difference	-0.045	-0.062	-0.085	-0.047
Maximum Difference	0.043	0.008	0.030	0.045
Average Difference	0.000	-0.024	-0.024	0.000
Standard Deviation	0.018	0.012	0.022	0.018

No final tide note was provided by the NOAA Center for Operational Oceanographic Products and Services (CO-OPS). SAIC is not required to have a final tide note from CO-OPS. SAIC has provided a final tide note in Appendix IV.