

## A. VERTICAL CONTROL

### A.1 Tide Station

Tide/water levels for this project were provided exclusively by NOAA as verified data from NOAA Tide Station 872-3214, Virginia Key, FL. The survey site is located entirely within Zones FSE1, FSE2, FSE5, FSE6 and SA228 as indicated by preliminary tidal zoning data included in the project Statement of Work. Time and range corrections were applied to all Virginia Key (872-3214) verified data according to Table 1. Figure 1 depicts the survey area, tide zone delimiters and the location of the Virginia Key tide gauge.

**Table 1**  
**Tide Zones Associated with Survey H11898**

<b>Zone</b>	<b>Time Correction</b>	<b>Range Correction</b>
FSE1	-48 min	1.12
FSE2	-48 min	1.12
FSE5	-30 min	1.05
FSE6	-30 min	1.07
SA228	-48 min	1.20

Coordinated Universal Time (UTC) was used to annotate the tide records and all other data obtained in this project.

Preliminary tide correctors were retrieved daily from the CO-OPS website. Verified tides were retrieved on a weekly basis once they were made available by CO-OPS. Tide data were applied to processed soundings employing the CARIS “apply tides” function. The “multiple station” function was used allowing for correction of the verified tide data for zoning factors.

Based on the results of the cross line analysis presented in Separate IV, it appears that the time and range factors for Zones FSE1, FSE2, FSE5, FSE6 and SA228, as provided in the preliminary zoning scheme, are adequate.

### A.2 Unusual Tide Conditions

OSI home office and field personnel monitored preliminary tide data available on the NOAA CO-OPS website. The NOAA Virginia Key (872-3214) gauge experienced an approximate one week data gap between May 21 (DN 141) at approximately 23:18 UTC and May 27 (DN 147) at approximately 20:18 UTC. According to email correspondence, the gap in water level data was the result of a lightning strike. Verified water level data for the data gap were made available on July 21 (DN 202).

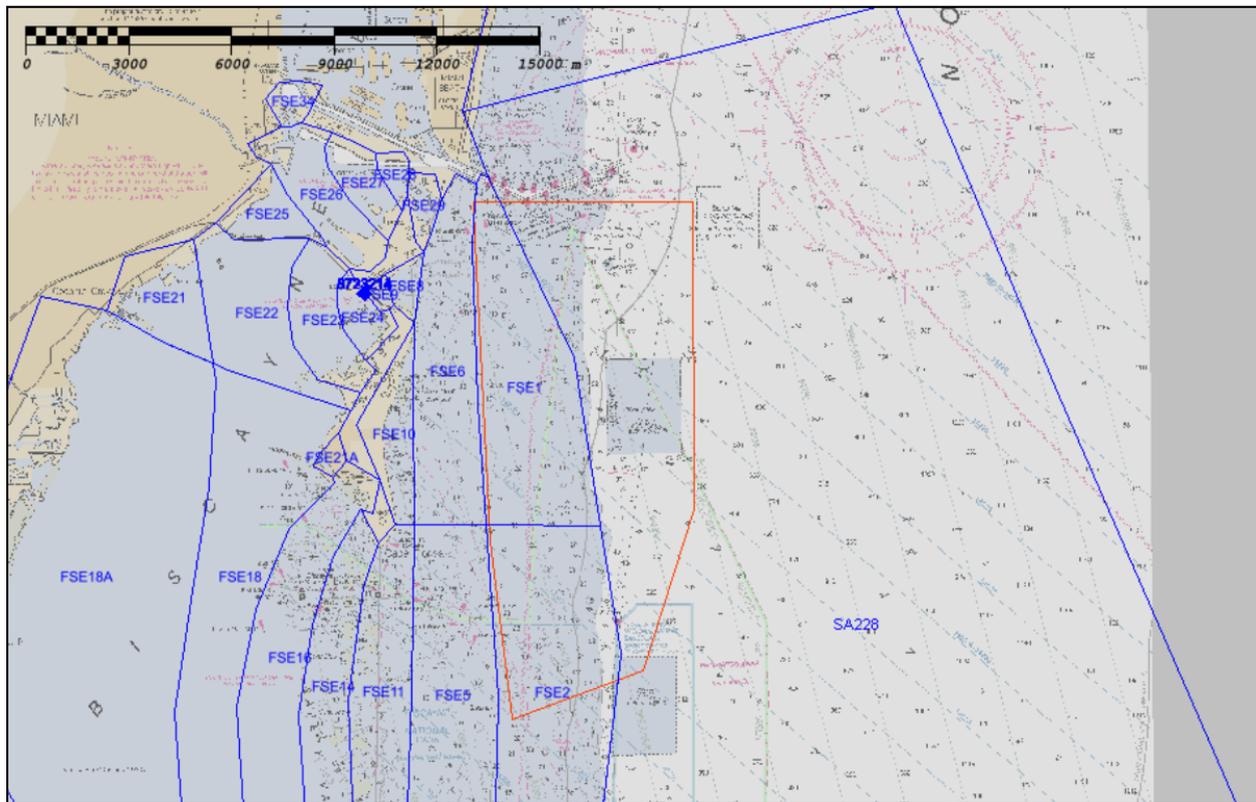


Figure 1. NOAA chart showing the Virginia Key tide station, tide zone scheme and approximate survey area.

Geodetic Survey's Online Users Positioning Service (OPUS). The OPUS-reported position solution was assigned to the point and "CG2" was then later used as the reference for daily navigation system accuracy verification.

The temporary XY point was established using  $\geq 3$ -hour OPUS observations. The location established for this point is given in Table 2. The OPUS report follows Table 2.

**Table 2**  
**OPUS Solution**

<b>Reference ID</b>	<b>Easting UTM 17N, NAD83 (meters)</b>	<b>Northing UTM 17N, NAD83 (meters)</b>
CG2	585574.34	2850707.45