# TIDAL DATUMS

( 7tidaldatums.doc, revision – 12/18/2000 )

**DATUM (vertical)** - A datum is a base elevation from which to reckon heights and depths. It is called a tidal datum when defined in terms of a phase of tide. Tidal datums are local datums and should not be extended into areas that have different hydrographic characteristics without substantiating measurements, such as very short-term tide studies. In order that the datums are recoverable after being determined at tide stations, the datums are referenced to fixed points known as tidal bench marks (TBM).

**DATUM (chart)** - The datum to which soundings on a chart are referred. Since 1989, chart datum has been implemented to mean lower low water for all marine waters of the United States, its territories, Commonwealth of Puerto Rico, and Trust Territories of the Pacific Islands. This change was the result of the National Tidal Datum Convention of 1980.

**MEAN HIH WATER (MHW)** - A tidal datum. The average of all the high water heights observed over the National Tidal Datum Epoch (NTDE). For stations with shorter series, simultaneous observational comparisons are made with a control tide station to derive the equivalent or accepted values of the NTDE. The elevation of this datum on the shore is the MHW line.

**NATIONAL TIDAL DATUM EPOCH** - The specific 19-year period adopted by the National Ocean Service (NOS) as the official time segment over which tide observations are taken and reduced to obtain mean values for tidal datums ( e.g., MHW ). It is necessary for standardization because of periodic and apparent secular trends in sea level or simply sea level variations. The present National Tidal Datum Epoch is 1960 through 1978. It is reviewed annually for possible revision and must be actively considered for revision every 25 years.

**APPARENT SECULAR TREND** - The non-periodic tendency of sea level to rise, fall, or remain stationary with time. Technically, it is frequently defined as the slope of a least-squares line of regression through a relatively long series of yearly mean sea-level values. The word "apparent" is used since it is often not possible to know whether a "trend" is truly non-periodic or merely a segment of a very long, or "secular", oscillation that is relative to the length of the series

**MEAN HIGHER HIGH Water (MHHW)** - A tidal datum. The average of only the higher of the high water heights, each tidal day, observed over the National Tidal Datum Epoch. For stations with shorter series, simultaneous observational comparisons are made with a control tide station in order to derive the equivalent or accepted values of the National Tidal Datum Epoch. The elevation of this datum on the shore is the MHHW line.

**MEAN LOW WATER (MLW)** - A tidal datum. The average of all the low water heights observed over the National Tidal Datum Epoch. For stations with shorter series, simultaneous observational comparisons are made with a control tide station in order to derive the equivalent or accepted values of the National Tidal Datum Epoch. The elevation of this datum on the shore is the MLW line.

**MEAN LOWER LOW WATER (MLLW)** - A tidal datum. The average of only the lower of the low water heights, each tidal day, observed over the National Tidal Datum Epoch. For stations with shorter series, simultaneous observational comparisons are made with a control tide station in order to derive the equivalent or accepted values of the National Tidal Datum Epoch. The elevation of this datum on the shore is the MLLW line.

**MEAN TIDE LEVEL (MTL)** - A tidal datum. The arithmetic mean of MHW and MLW. MTL is the same as half-tide level.

**MEAN SEA LEVEL (MSL)** - A tidal datum. The arithmetic mean of hourly heights observed over the National Tidal Datum Epoch. Shorter series are specified in the name; e.g. monthly mean sea level and yearly mean sea level.

**MEAN RANGE OF TIDE (Mn or MR)** - The difference in height between MHW and MLW.

**MEAN WATER LEVEL (MWL)** – A tidal datum. The mean surface elevation as determined by averaging the heights of the water at equal intervals of time, usually hourly, over the National Tidal Datum Epoch. Mean water level is used in areas of little or no range of tide. The elevation of this datum on the shore is the MWL line.

**HIGH WATER MARK** - A line or mark left upon tide flats, beaches, or along shore objects indicating the elevation of the intrusion of high water. The mark may be a line of oil or scum on along shore objects, or a more or less continuous deposit of fine shell or debris on the foreshore or berm. This mark is physical evidence of the general height reached by wave run-up at recent high waters. A high water mark is not a tidal datum and should not be confused with the MHW, MHHW line or MWL line.

**HEAD OF TIDE** - The upstream limit of water affected by the tide in a river. For practical application in the tabulation of computation of tidal datums, head of tide is the inland or upstream point where the MR becomes less than 0.2 foot. Tidal datums are not computed beyond the head of tide. Although the theoretical head of tide is ambulatory, due to annual and storm-caused changes in the water stage of a river, a fixed location based on long term stage averages is usually used. The significance to the surveyor is of great importance. In Florida, the sovereign boundary downstream of the head of tide is the mean high water line. The sovereign boundary upstream of the head of tide is the ordinary high water mark.