Questions and Answers
Vertical Datum

How can I find out more about Vertical Datums?

See www.ngs.noaa.gov/faq.shtml

What is a Vertical Datum?

In surveying and geodesy, a datum is a reference point or surface against which measurements are made. A Vertical Datum is a base measurement point from which all subsequent elevations or depths are determined.

The Sea Level Datum of 1929 was established by the National Geodetic Survey (NGS) and it was the first vertical (elevation) datum for an entire continent in the history of the world. With observations that started in the 19th century, a series of 26 tide gauges (21 in the United States and 5 in Canada) were recorded for over 19 years to establish Local Mean Sea Level (LMSL) for all of the coasts of the United States. The theory was that mean sea level was an equipotential surface, characterized by the fact that over its entire extent the potential function is constant; meaning that the force of gravity is everywhere perpendicular.

However, since LMSL varies from place to place because not only from astronomical phenomena but also due to local winds, river stages, storms, and local gravity... LMSL was not equal to 0.00 ft everywhere. Zero needed to be somewhere, so Galveston, Texas was selected as the Primary Benchmark of the United States, and LMSL there was set equal to 0.00 ft. That elevation of the mean sea in Galveston was within a couple of feet or so to what it was in Biloxi, Mississippi where the closest tide gauge was to New Orleans, back in the late 19th and early 20th centuries.

In an attempt to avoid confusion, the name of the Sea Level Datum of 1929 was changed in 1972 to the National Geodetic Vertical Datum of 1929, or NGVD29. No computations were performed, and no observations were made. This was a name change only.