

# CONNECTICUT ASSOCIATION OF LAND SURVEYORS

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February 20, 2012

Senator Edward Meyer (Guilford area) and  
Co-chair Environment Committee  
LOB Room 3200  
Hartford, CT 06106-1591

Representative Richard Roy (Milford)  
Co-chair Environment Committee  
LOB Room 3201  
Hartford, CT 06106-1591

**SUBJECT: H.B. No. 5127 (RAISED) AN ACT DEFINING THE HIGH TIDE LINE FOR THE TIDAL, COASTAL AND NAVIGABLE WATERS OF THE STATE.**

Senator Meyer, Representative Roy and members of the Environment Committee;

My name is Jay Doody, a professional surveyor and professional engineer in Connecticut. I am here today to speak on behalf of the Connecticut Association of Land Surveyors in support of H.B.5127 (Raised), which DEEP has introduced to revise the High Tide Line. CALS has worked closely and cooperatively with DEEP OLISP on this bill, and has supplied all of the elevation data and that is included in the bill.

The purpose of this bill is to improve the language defining the DEEP OLISP regulatory line along the Connecticut shoreline and tidal and navigable rivers. The improved language will allow the accurate and timely location of these lines for riparian owners who want to know if they need a DEEP construction permit for improvements to their property. The new language will eliminate months of indecision on where the regulatory line is located due to existing multiple and conflicting definitions of the High Tide Line. The Connecticut Association of Land Surveyors members have made numerous measurements along the shoreline and the Connecticut River in support of the proposed language revisions and have assured ourselves that the improved definition of the High Tide Line conforms to existing wrack lines and other evidence we have traditionally used to mark and map the High Tide Line.

My written testimony contains supporting data and images illustrating where the elevations listed in the proposed bill are found in relation to typical shoreline and tidal river evidence. I will be happy to answer any questions you may have, either now or later. I will be happy to answer any email queries you may have.

John J. Doody, PS & PE, for CALS

**SUBJECT: H.B. No. 5127 (RAISED) AN ACT DEFINING THE HIGH TIDE LINE FOR THE TIDAL, COASTAL AND NAVIGABLE WATERS OF THE STATE.**

**SUPPORTING DATA**

**OVERVIEW OF LONG ISLAND SOUND AND THE CONNECTICUT RIVER**

The **western sound** encompasses 59 miles of shorefront in 7 towns from Greenwich easterly to Bridgeport. This area is noted for a flat mean high water (MHW) whose average elevation is 3.3' in the NAVD88 vertical datum. The mean tide range here is 7.0' from high to low tide. **The average proposed HTL elevation is 5.2'. 6 wrack lines were located in the western sound, whose average elevation was 5.1'.** This information, and all the information referenced below comes from *Report & Recommendations for the Establishment of Tidal boundary & Regulatory Lines on CDOT Survey Projects, John J. Doody PS & PE, revised September 23, 2009.*

The **west central sound** encompasses 52 miles of shorefront in 6 towns from Stratford easterly to Branford. This area is noted for an almost flat mean high water (MHW) whose average elevation is 2.8' in the NAVD88 vertical datum. The mean tide range here is 6.1' from high to low tide. **The average proposed HTL elevation is 4.6'. 18 wrack lines were located in the west central sound, whose average elevation was 4.5'.**

The **east central sound** encompasses 63 miles of shorefront in 7 towns from Guilford easterly to East Lyme. This area is noted for a large drop in mean high water (MHW) elevation from 2.7' to 0.9' in the NAVD88 vertical datum. The mean tide range here decreases from 5.9' to 2.6' from high to low tide. **The proposed HTL elevations decrease from 4.1' to 2.1'. Due to the changes in elevation there was no average wrack line that could be determined. Land surveyors working in this portion of Long Island sound are comfortable with the proposed HTL here, which matches their experience.**

The **eastern sound** encompasses 43 miles of shorefront in 4 towns from Waterford easterly to Stonington. This area is noted for a flat mean high water (MHW) whose average elevation is 0.9' in the NAVD88 vertical datum. The mean tide range here is 2.6' from high to low tide. **The average proposed HTL elevation is 2.0'. 9 wrack lines were located in the eastern sound, whose average elevation was 2.2'.**

The **Connecticut River** encompasses 120 miles of **tidal shorefront** in 21 towns from Old Saybrook northerly to Windsor Locks. This area is noted for an increase in mean high water (MHW) elevation from 1.5' in Old Saybrook to 2.3' in Hartford in the NAVD88 vertical datum. The mean tide range here decreases from 3.5' to 2.2' from high to low tide. **The proposed HTL elevations increase from 3.0' to 3.9'.** The Connecticut River contained wracklines similar to the shoreline up to Haddam Meadows State Park, in the town of Haddam, 19.3 miles north of Saybrook Jetty. Two wrack lines were located at the proposed HTL in this stretch of river (see Figure 1). North of Haddam the shoreline reverts to river like characteristics (see figures 2 through 4). The following information is taken from a report to OLISP from a field measuring workshop on the Connecticut River in the fall of 2011:

## DATA SUMMARY CONNECTICUT RIVER FIELD MEASUREMENTS FALL 2011

The evidence measured at each site, if found, consisted of elevations for wrack lines, elevations of stains on maritime structures, highest elevations of aquatic vegetation, and lowest elevations for grass and tree growth. **These elevations were compared and analyzed based on their vertical distance above or below the proposed CALS-DEEP high tide line (HTL).**

The normal evidence found on the Long Island Sound shoreline consisted of the highest wrack line, which conformed to the proposed HTL, and the black stain line caused by cyanobacteria which approximated 0.9' above mean high water (MHW). Wrack lines were found on the Connecticut River up to 23.8 miles north of Saybrook Jetty. At mile 12.9 and 19.3, the wrack lines were at or near the proposed HTL. At mile 23.8 the wrack line was found to be 1.4' above the HTL. Evidence of staining by green algae (not cyanobacteria) was only found at mile 12.9, however it was found to be 0.9' above MHW. Although the Connecticut River at Deep River is fresh water, it has the physical riverbank evidence found along the shore of Long Island Sound.

Evidence of the upper limits of aquatic vegetation was found at 2 sites. At mile 12.9, the upper limit of aquatic vegetation was found to be 2.5' below HTL and 1.0' below MHW. At mile 38.96 the upper limit of aquatic vegetation was at the HTL. **It appears from limited measurements that the upper limit of aquatic vegetation is at or below the proposed HTL.**

Evidence of the lower limit of growth for grass and trees as measured at all sites, as shown in the table below:

MILE	SITE #	TOWN	TREES DISTANCE ABOVE HTL	GRASS DISTANCE ABOVE HTL	COMMENTS
12.9	6	Deep River	-0.5'	-1.5'	
19.3	5	Haddam	-1.0'	-1.8'	
23.8	4	East Hampton	-0.1'	-1.0'	Limited by stone revetment
39.0	3	Rocky Hill	-0.5/ +0.2'	+0.0'	
49.9	2	Hartford	+5.0'	+0.3'	Trees on steep bank

This data shows that trees and grass are going to be growing below the proposed HTL for the Connecticut River, but not significantly

### DATA CONCLUSIONS

Over the course of the tidal portion of the Connecticut River there is a transition from salt water tidal, to fresh water tidal with coastal characteristics, to fresh water tidal with river characteristics. The physical evidence as noted above can provide an approximate idea of the location of the HTL and MHW but cannot be considered definitive. Due to the large volume of river flow, water level at any particular time is irrelevant to the location of the riparian owner's boundary on the Connecticut River. **From our fieldwork, MHW is often in the water even at low tide.** Therefore, the use of elevations for determining MHW and HTL will eliminate guesswork and provide consistency and fairness along the entire length of the tidal Connecticut River. There was no evidence of tidal effects above the proposed HTL. The existing statute defining the HTL relates to tidal evidence, not river evidence, so it stands to reason that MHW and HTL may appear lower than along the shore in relation to river flow.

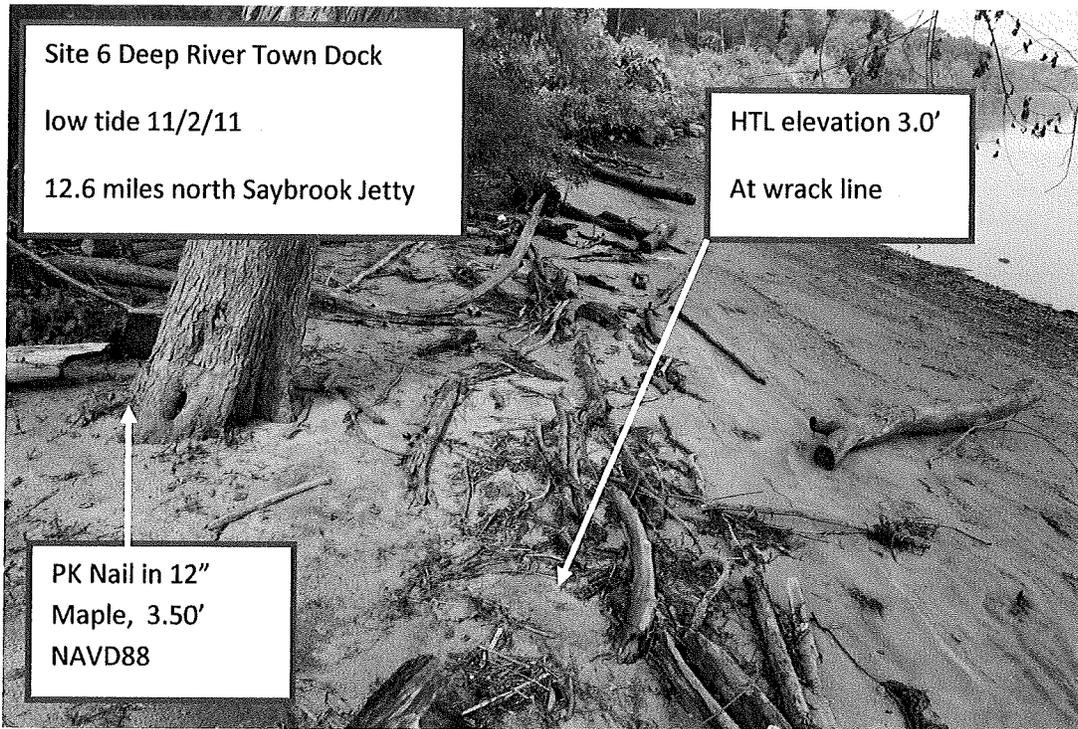


Figure 1: Connecticut River, Deep River, Wrackline Evidence & staking HTL

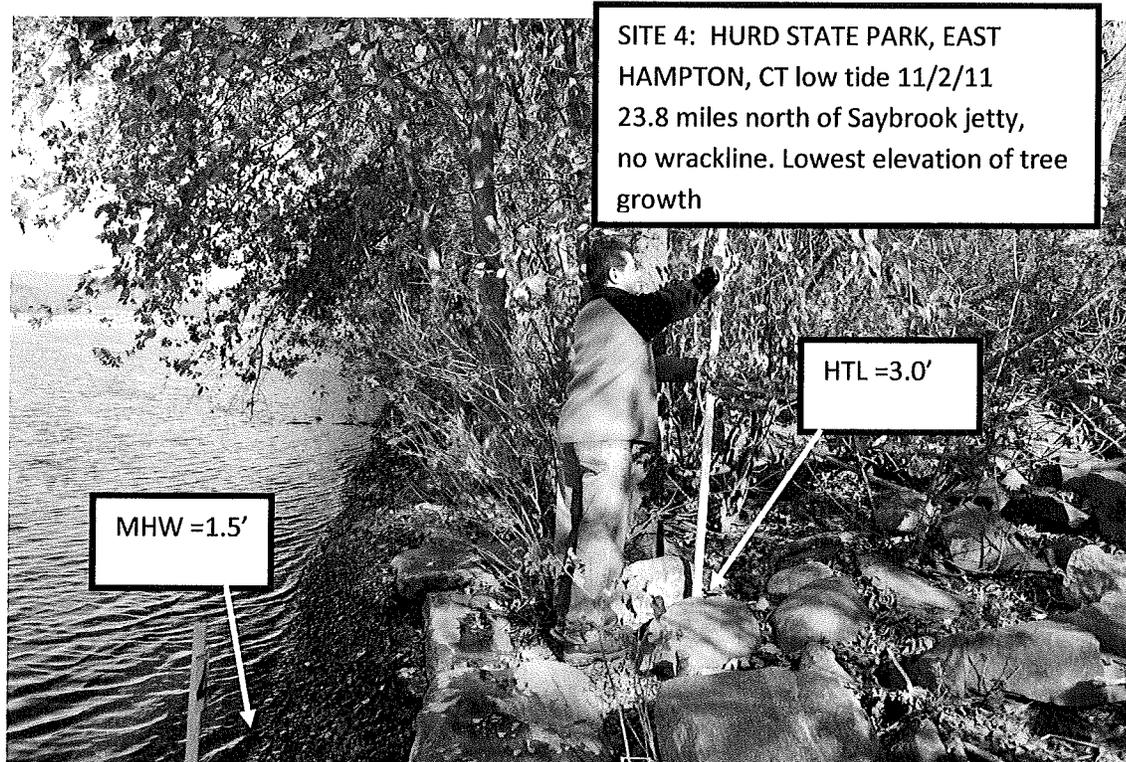


Figure2: Connecticut River, East Hampton, staking HTL, armored shoreline.

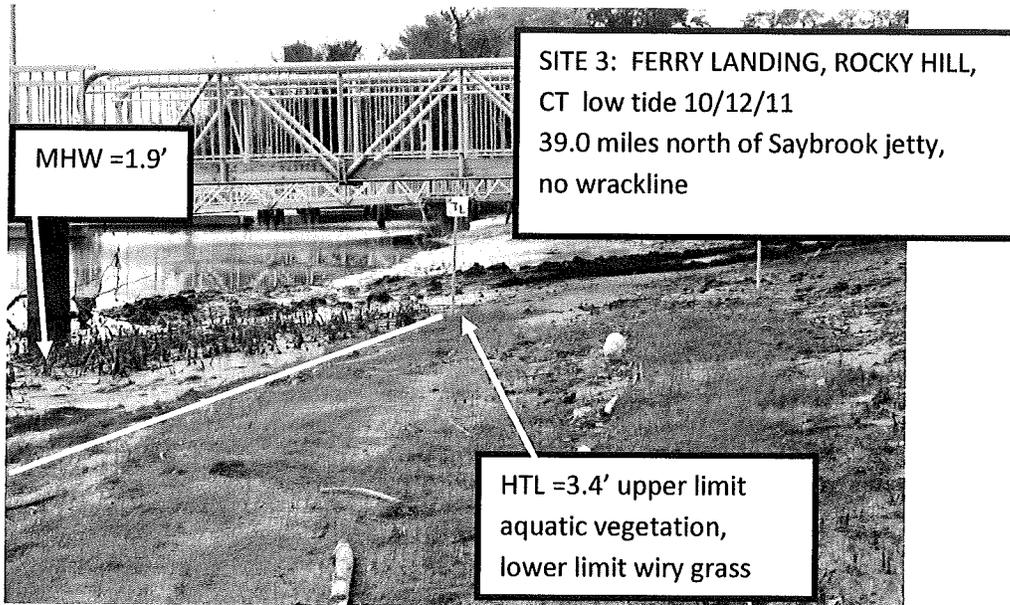


Figure 3: Connecticut River, Rocky Hill, staking HTL

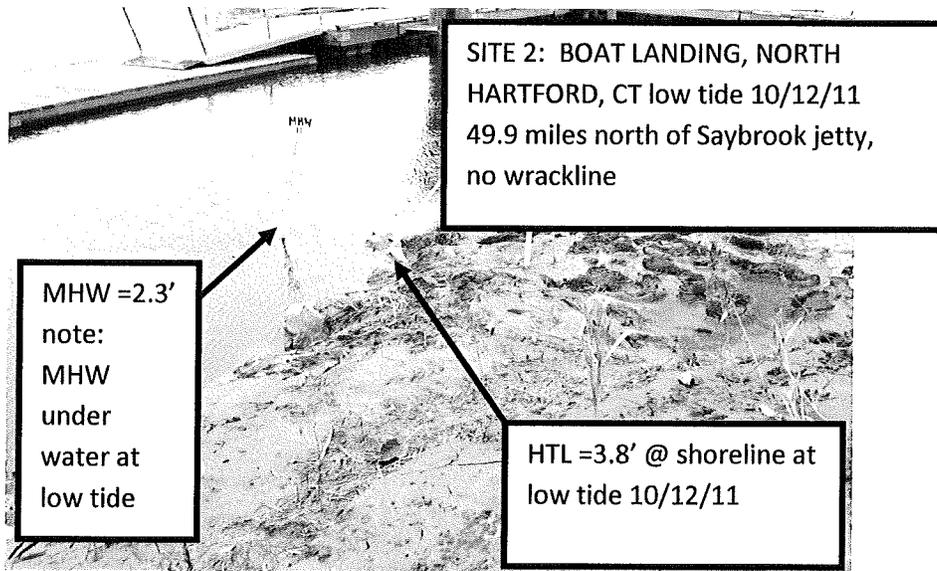


Figure 4: Connecticut River, North Hartford Boat Ramp, staking HTL

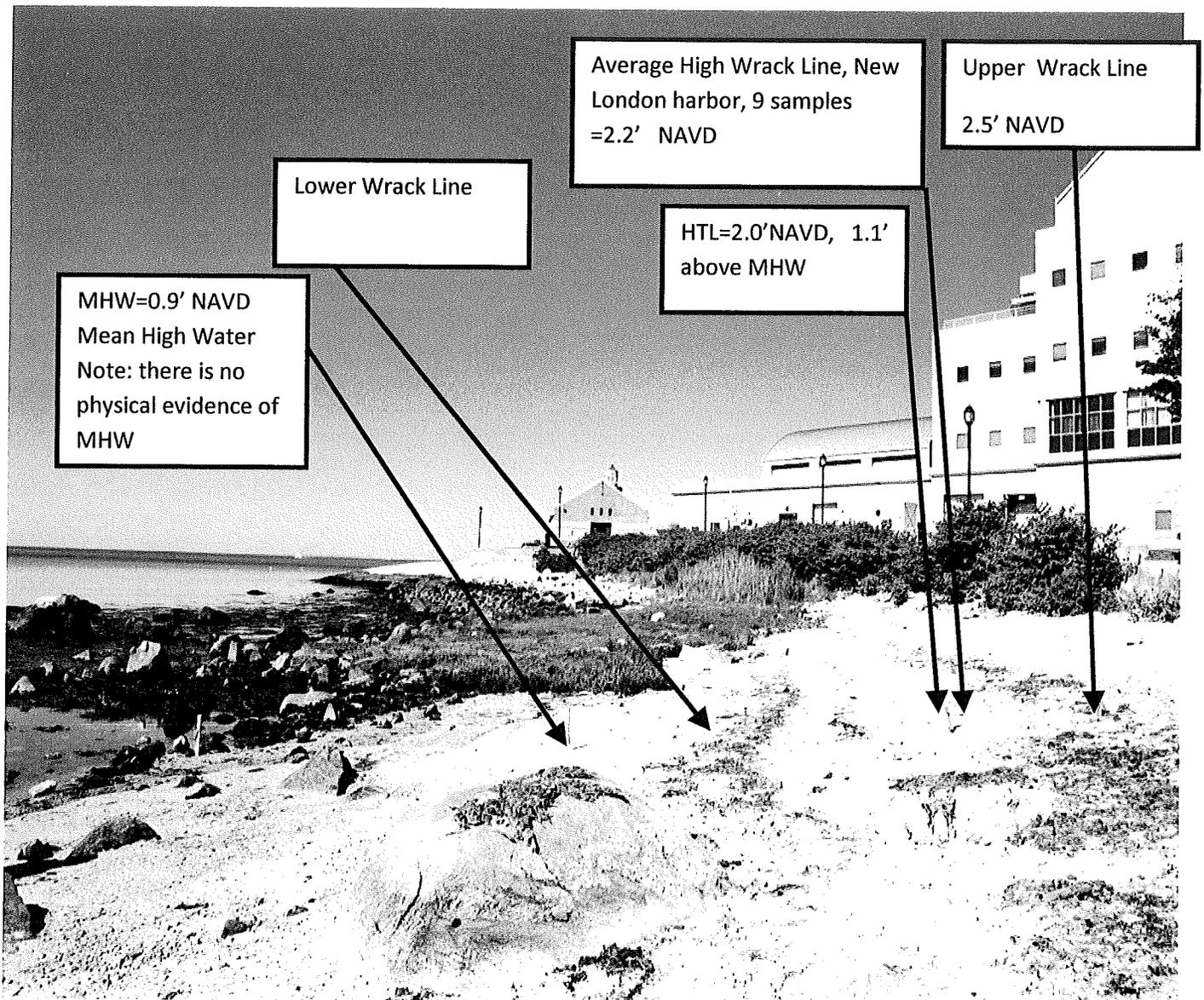


Figure 5: Avery Point, Groton, CT, Image adapted from: J. Doody. 2008. *A Seaweed Safari Along Connecticut's Shore, Elevation Evidence of Natural Phenomena in the Supralittoral & Intralittoral, New London harbor, Connecticut*. CDOT, Unpublished. Showing HTL and tidal elevations staked.

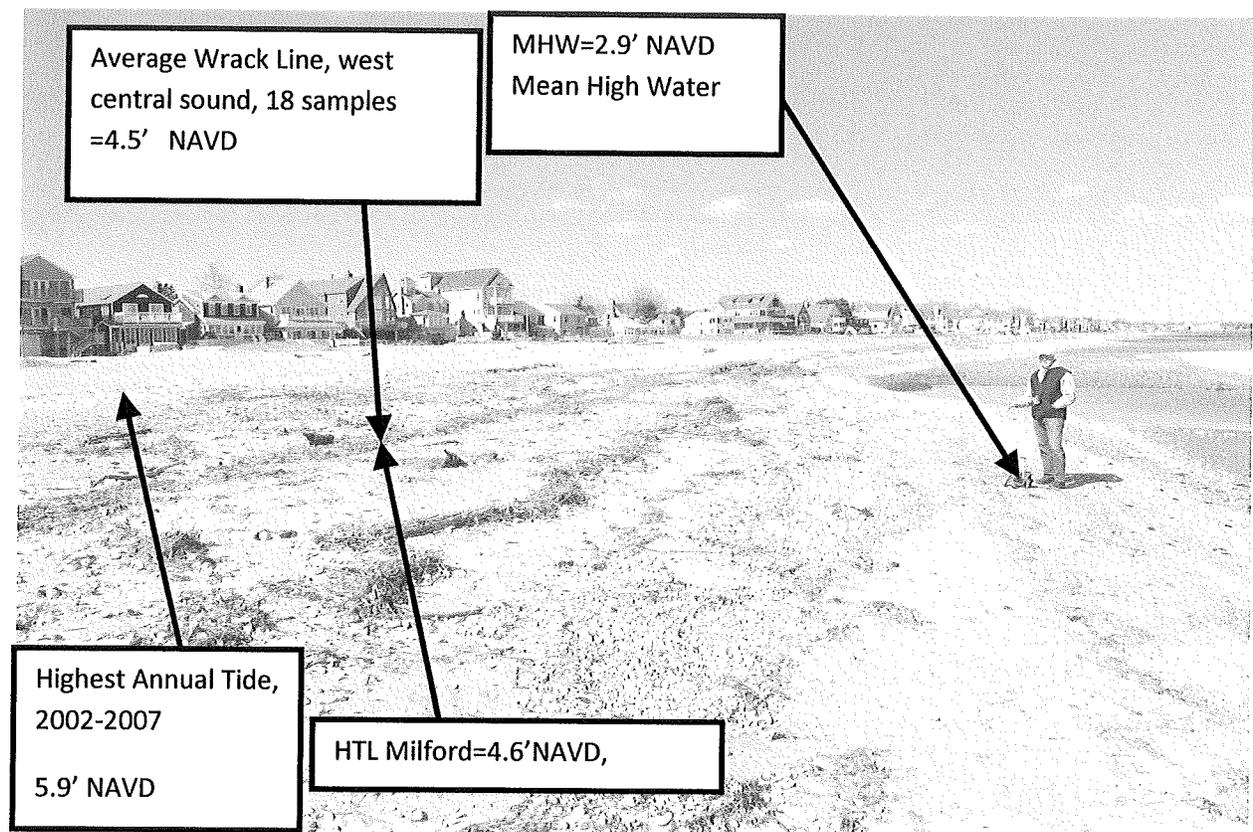


Figure 6: Milford Point, CT Mean High Water and HTL staked, April, 2011. Note the great variety of wrack lines in evidence. Note that there is no physical evidence for mean high water, only an elevation.