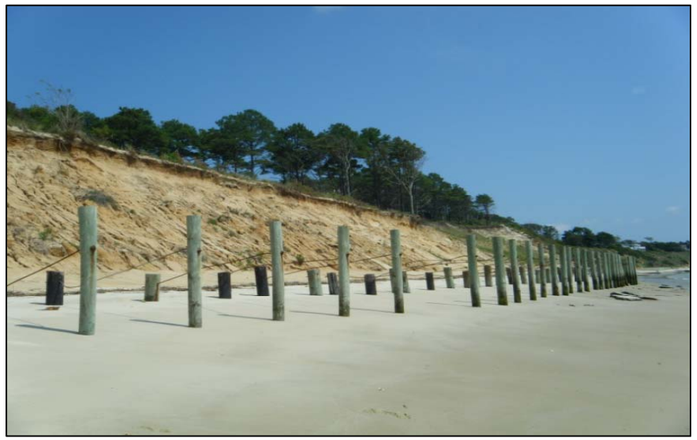
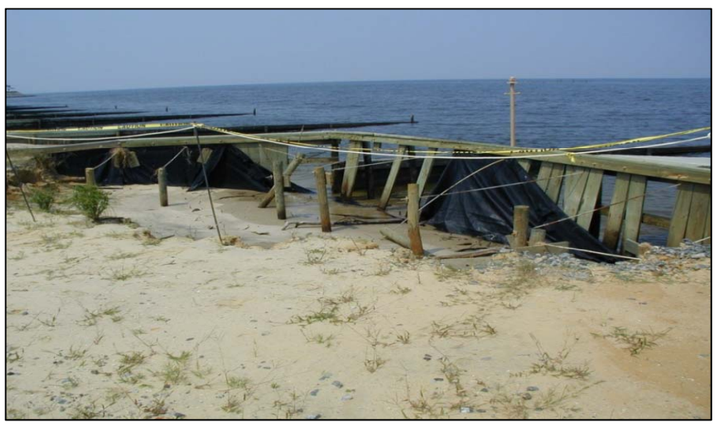
Failed Structures

"**Failed**" structures have missing, broken or collapsed parts.
They are essentially ineffective and no longer serve their original purpose.

Failed Bulkheads

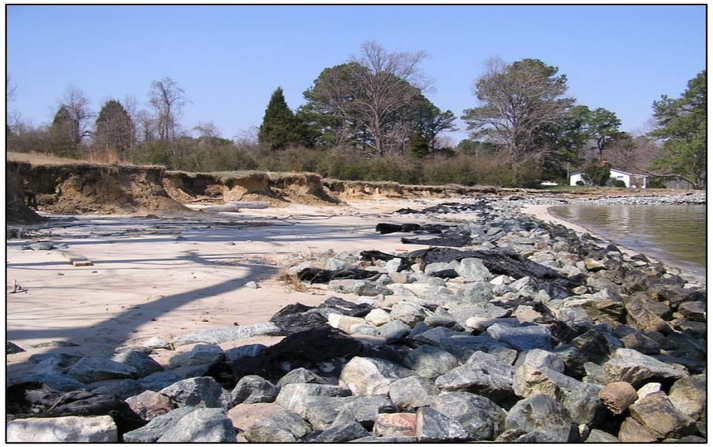
missing sheeting, damaged tieback systems, complete loss of backfill material, erosion and tidal inundation are now occurring behind the entire structure.





Failed Revetments

material scattered beyond original footprint, major erosion still occurring, no longer provide wave attenuation



Failed Groins

with separated sections and missing parts, highly permeable, cannot trap sand anymore, not connected to upland

Serviceable Structures

"**Serviceable**" structures are in relatively good condition or can easily be repaired. This condition includes a proper design for the location based on commonly accepted design standards.

Serviceable Bulkheads

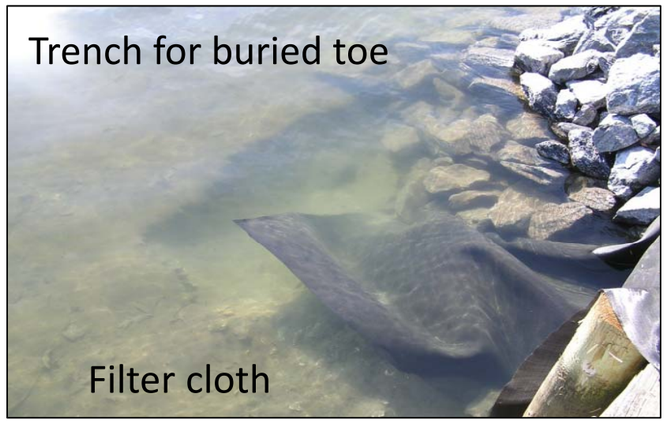
retaining upland bank soil with no apparent structural problems; no erosion above, along toe (at shoreline level), or at the ends of bulkhead. Typically constructed with timber or vinyl sheeting with galvanized hardware.


Timber


Vinyl

Serviceable Revetments

properly sloped with spaces between stones to allow for wave energy dissipation; buried toe (excavated trench) and filter cloth under the stone to distribute weight evenly.



Serviceable Groins

timber or stone intact along entire length; landward ends tie into upland; partial or complete burial under sand indicates they are effective

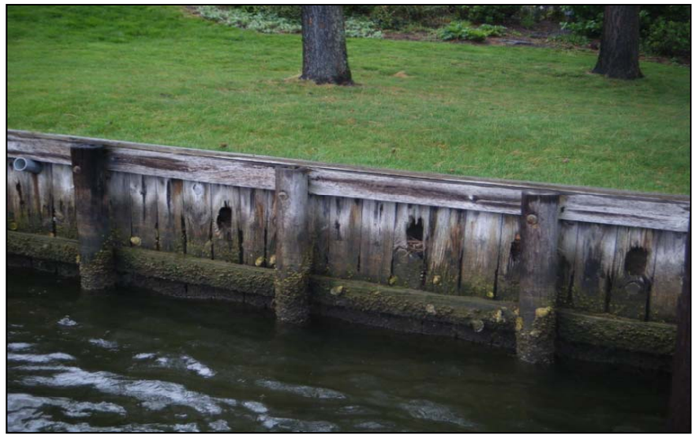
Failing or Flanked Structures

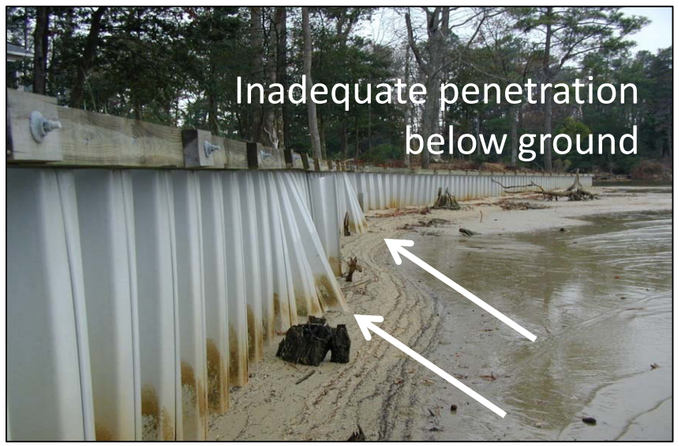
"**Failing"** structures have some evidence of deterioration or material degradation.

"Flanked" structures have erosion above or behind the structure due to material failure or erosion at the ends.

Failing or Flanked Bulkheads

loss of backfill (sinkholes) along top of bulkhead; bowed or leaning sections; rotting timber and/or pilings; missing sheetpiles; erosion is visible behind, above or around end(s) of bulkhead





Failing or Flanked Revetments

slope is flattened, stone is scattered either at toe or above structure, stone is collapsing onto shoreline; **e**rosion is visible behind, above or around end(s) of structure

Failing or Flanked Groins

rotting timber or pilings, loss of beach sand (sinkholes) next to groin; bank erosion landward from groins