

Hydro-Acoustic Monitoring of Fort Hood Water Resources

Assessing Water Resources on Military Training Lands

Blackland Research and Extension Center (BREC) has developed and implemented hydrographic survey/mapping techniques to determine the current capacities and longevity of Fort Hood's sediment retention ponds as well as provide current volumetric analysis of sediment deposition at the confluence of Cowhouse Creek and Belton Lake. A shared objective of both undertakings is to use sediment accumulation data to:

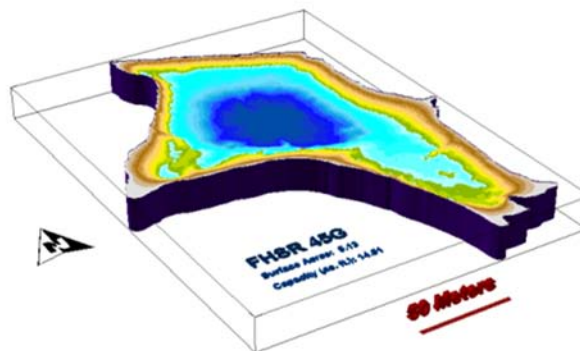
- identify training areas showing signs of excessive sediment transport and implement appropriate training landscape management strategies,
- facilitate the timely maintenance of these retention structures, thereby averting the compromise of surrounding training resources, and
- determine, the long-term effectiveness of erosion reducing conservation practices implemented on the Fort Hood Military Reservation.

The survey methodology uses a hydro-acoustic system coupled with a Differential Global Positioning System (DGPS) to collect geo-referenced water and/or sediment depths. Collected data sets are then used for generation of a sub-surface digital terrain models (DTMs) from which volumetric analysis can be conducted. Periodic surveys allow Fort Hood resource managers to further implement and/or better target erosion mitigating strategies across the training theater.

BREC continues the Bathymetric assessment program to determine long term impacts of sedimentation on Fort Hood water resources. Future objectives include periodic survey of sediment retention structures to determine sedimentation rates, as well as assessing quantities of deposition requiring removal and beneficial use of dredge material.

Findings

- Surveyed the upper reach of Lake Belton's Cow House Creek. Discovered upper reach contained 1.3MM cubic meters of sediment from Cow House Watershed.
- Surveyed sediment storage capacity for 20 of 27 Sediment and Flood Control Structures on Fort Hood. Many structures have attained 85% of their capacity to trap sediments



Support

Department of Defense, Integrated
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