

## TWRI MILLS SCHOLARSHIP APPLICATION – FY 2011

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### RESEARCH DESCRIPTION

Because established sedimentation rates for many Texas reservoirs may be skewed by overstated estimates of design capacity, verification of this base figure and assumptions perpetuated through subsequent volumetric surveys is paramount. Multi-frequency reservoir surveys offer the means by which we may improve existing reservoir data and derived sedimentation rate estimates.

As a demonstration, a multi-year acoustic survey of Granger Lake, located in Williamson County, Texas was undertaken. Digital echosounder profiles were obtained on overlapping grids in order to provide high-resolution lake bathymetry and sediment distribution coverage for the reservoir. Objectives of the study were to use multi-frequency hydro-acoustic survey techniques to verify assumptions of original reservoir capacity, accelerated reservoir sedimentation, and general accuracy of previously derived sedimentation rate.

Reservoir capacity at conservation pool elevation (CPE) was identified using high frequency acoustics. Simultaneously, low frequency acoustics were utilized to identify the reservoir's pre-impoundment topography, penetrate and map spatial distribution of unconsolidated sediments, and quantify cumulative post-impoundment sediment. A second hydro-acoustic survey provided for temporal comparison of sedimentation.

Academic Qualifications:

- B.S., Geography ~ Resource and Environmental Studies, Texas State University
- M.S., Ecosystem Science and Management, Texas A&M University, Expected Date of Receipt - Fall 2011

Relevant Coursework Completed at Texas A&M:

- Rangeland Resource Management
- Restoration Ecology
- Ecohydrology
- Fluvial Geomorphology
- Statistics in Research
- Geographic Research Design
- Geographic Information Systems
- Watershed Analysis and Planning

Proposed Use of Funds:

- Scholarship funds received will be used to pay remaining expenses encumbered for my final semester at Texas A&M. These expenses include but are not limited to tuition, fuel, etc.

Intended Career Path:

- Professionally, and upon completion of the requirements for my Master's of Science, I intend on moving forward in my current capacity as water resources researcher. The results of my research have direct implications on the future management of water resources in the State of Texas and beyond and I will continue to employ the techniques to aid land and water managers both in Texas and around the Nation.