

Proposal to the TWRI Mills Scholarship Program  
Deadline: June 19, 2008

Applicant: Andrew Leidner  
Faculty Advisor: Ronald D. Lacewell

**Applicant information**

Andrew Leidner

**Faculty advisor information**

Ronald D. Lacewell  
Professor, Dept. of Agricultural Economics  
Texas A&M University  
2124 TAMU  
College Station, TX 77843-2124  
E-mail: r-lacewell@tamu.edu  
Office phone: 979/845-8476  
Office fax: 979/845-1527

**Description of Proposed Research**

Texas faces serious challenges for potable water due to increasing population, drought, and international issues. These issues are especially acute for South Texas. The research of my dissertation will investigate mitigating the difference in water supply and water demand by the implementation of large-scale seawater desalination facilities along the Gulf Coast of Texas. Since energy requirements pose a substantial cost to seawater desalination implementation, renewable energy resources (e.g., wind, solar, and biofuel) will be explored as energy supply alternatives to determine if any potential gains exist when desalination plants are coupled with alternative power facilities.

An intensive component of this work will be to apply a cost model developed by Texas A&M AgriLife Research and AgriLife Extension Service economists (i.e., DESAL ECONOMICS©) to the seawater desalination facility in Tampa Bay, Florida. This application will reveal the portion of energy costs associated with operating a seawater desalination plant. In addition to DESAL ECONOMICS©, at least two commercial desalination cost projection models exist in the industry. They are: Reverse Osmosis Desalination Cost Model (RODCM) published by Water Resource Associates, and WTCost© II published by I. Moch and Associates. To confirm the robustness of DESAL ECONOMICS© as well as to evaluate the industry standard cost projection models, this research will conduct a side-by-side cost analysis with DESAL ECONOMICS©, RODCM, and WTCost© II, using primary data from the Tampa Bay plant.

Finally, this research will review and bootstrap the ongoing seawater desalination feasibility study occurring at the Port of Brownsville, funded by the Texas Water Development Board and the Brownsville Public Utilities Board, using results identified while evaluating the Tampa Bay facility. The Rio Grande Regional Seawater Desalination Project has significant implications for the State of Texas and especially the Rio Grande Valley. My dissertation will contribute to a more comprehensive

understanding of the costs of such a proposed desalination project as well as illuminate any opportunities for the project to realize benefits from renewable energy sources.

**Proposed use of TWRI Mills Scholarships**

The planned use of funding from the Mills Scholarship will be to purchase the cost models used by the industry. The academic price for WTCost© II is \$730 (shipping included) and the cost of RODCM is anticipated to be similar, but I have not received a formal quote from Water Resource Associates. If there are funds remaining, they will be allocated to finance my travel to stakeholder meetings at the Tampa Bay desalination plant and South Texas to meet with NRS Engineering.

**Intended career path**

My career objective is to solve water resource issues through research and economic applications, working closely with engineering firms and public entities.