



## WATER RESOURCES RESEARCH GRANT PROPOSAL

**Project ID:** 2002GU11B

**Title:** An Alternative Model for Enhancing Access to Safe Drinking Water in Less-Wealthy Areas: A Low Cost, Equity-Oriented & Participatory Source Water Protection Plan for Chuuk, Federated States of Micronesia

**Project Type:** Research

**Focus Categories:** Water Quality, Education, Management and Planning

**Keywords:** Source Water Protection, GIS & Remote Sensing, Education, Basins, Non-Point Pollution, Planning

**Start Date:** 03/01/2002

**End Date:** 01/28/2003

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**Non-Federal Matching Funds:** \$118,528

**Congressional District:**

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### **Abstract**

Micronesia has a high incidence of water-borne disease, including an alarming out-break of Cholera in the study area of Chuuk in the 1980s. At least 3/4 of the population lacks access to "safe" water, and related diseases are the 3rd largest cause of death. Threats to water quality from non-point pollution are widespread in the islands, and common "at the pipe" western models involving importing expensive technology and consultants are often not a sustainable option. This is especially true given the low GDP, Compact exit strategy, importance of traditional style of local governance, and physically fragmented nature of the country -- all of which discourage costly centralized solutions. No GIS capacity exists to enhance source water protection via planning and coordination, environmental analysis, or environmental education. Methods: A multi-method approach will incorporate geographic techniques. Land use maps and vulnerability indices will be developed for the main islands by basin based on use and threats to source water. Integrated management tools for mitigating non-point pollution include: 1. Land use mapping and

planning in 3-D (including change detection);2. Conservation (including BMPs proven successful elsewhere such as Pohnpei);3. Discharge mitigation of point and non-point sources (i.e. buffers);4. Site design or village-scale planning and placement to mitigate pollution;5. Erosion and sediment control (including storm water management);6. Whole basin (watershed) stewardship and outreach programs; and7. Public policy analysis (including regulations and basin modeling to consider how to meet multiple stakeholder needs while simultaneously protecting source water).Application of these tools for data collection, analysis and planning will be enhanced through literature acquired from the US Geological Survey and Water and Environmental Research Institute in Guam. This, with data collected via elevation models, GPS, and remote sensing will be combined to provide data and information under-girding the creation of a GIS-based decision support system and customized environmental education materials. This will be shared via local NGOs and GOs, schools and community nodes for broad participation in protecting water in a way appropriate for each place. Methods shall facilitate 2-way flows of knowledge between citizens and experts in coordination with a technology transfer that avoids creating dependency. At the core of the approach will be whole basin strategies, decentralized grassroots education and participation, and GIS. We will survey to identify citizens using surface water for drinking and study and monitor 4 pilot areas. This interdisciplinary approach is supported by the formation of a Chuuk NGO, the Micronesian Source Water Protection Coalition, which consists of the Chuuk NGO GATA, Chuuk EPA, The Nature Conservancy (based in Pohnpei), and University of Delaware. The coalition will build a Web site to serve as a clearinghouse for our environmental data and information, and enhance information dissemination regionally. This plan represents a unique opportunity to co-develop a strategy to protect source water, and thus, provide safer water for human consumption.Objectives: Principle objectives for this project are to build capacity for source water protection, environmental analysis and planning, and public participation in water resource management vis -à-vis working through diverse partnerships with Chuuk's communities. Water quality will improve in the streams used as sources of drinking water. By protecting source water public health will be guarded, technical capacity enhanced, and informed participation in stakeholder management of natural resources nurtured.