



# Comprehensive Survey of the Current State, Infrastructure, and Usage of Freshwater Resources on Low Islands of Pohnpei State



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**Principal Investigators:**  
Danko Taborosi and John W. Jenson

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Freshwater resources on coral atolls and other low islands in the Federated States of Micronesia (FSM) are under threat of overuse due to changing lifestyles and increasing population pressures, damage by pollution and unsustainable development, and obliteration by global climate change. The extent of specific problems are different on various islands, but cannot be evaluated at present due to the lack of basic field data. Despite the rapid socioeconomic and environmental changes being experienced by the low islands in the FSM, there has been no comprehensive study to examine the current condition, infrastructure and utilization of their freshwater resources. The lack of such information represents a huge obstacle to government planners, resource managers, engineers, educators, environmental scientists, and others dedicated to the sustainable use of freshwater resources in Micronesia. Funding permitting, we therefore propose to carry out a comprehensive study of all low island atolls in Pohnpei State (Ahnd, Pakin, Pingelap, Mwoakilloa, Oroluk, Sapwuahfik, Nukuoro, and Kapingamarangi) and document the condition of their freshwater resources and related infrastructure, as well as examine the local people's relationship with those resources. Such information needs to be made available not only to improve our understanding of the water situation in the low islands, but also to avoid or better respond to fresh water emergencies, agricultural difficulties, food shortages, health problems and other environmental crises that may arise due to lack of knowledge, awareness or preparation. Specifically, we intend to use a combined hydrogeologic/engineering/sociologic fieldwork approach to document hydrologically relevant natural aspects and infrastructure, as well as people's usage patterns and perceptions of freshwater resources on each of Pohnpei's eight low islands. Essentially, the project will comprise

of eight separate research trips (one per island), each of which will include hydrogeologic component comprising of field observations and mapping, engineering component comprising of infrastructure examinations and measurements, and "people-oriented" component comprising of standardized surveys and freeform interviews of local residents. The immediate objectives of the project are to:

- Compile a comprehensive reference source of low islands of Pohnpei State (e.g., descriptions of each island's natural and human environment, highlights of significant natural, man-made, and cultural features).
- Examine and describe the state of freshwater resources and their usage patterns on each island, as well as other relevant lifestyle practices (e.g., waste disposal, burial practices, animal husbandry, etc.)
- Inventory, assess and map the hydrologically significant infrastructure on each island (e.g., rainwater catchment systems, storage tanks, shallow wells, etc.)
- Record island residents' attitudes and other relevant cultural norms, perceptions, and opinions related to freshwater resources.
- Identify and report any critical problems related to freshwater resources.

Information outlined above is urgently needed due to the high rate of development, human modification and population increase in the Micronesian low islands. We plan to make it available as an on-line series of information-packed technical reports, supporting databases, photographic collection, and GIS coverages, so that it is readily accessible to the FSM and US government bodies, regulatory agencies, utility corporations, non-government organizations, research and academic institutions, and the private sector entities involved in the utilization, monitoring, management, and protection of the freshwater resources of Pohnpei State.