Environmental Impact of FUDS and Brownfields Sites in Watersheds on the Eastern Side of Saipan. Phase 1: Contaminant Analysis of Soil and Sediments

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Principal Investigators:
John A. Starmer, Brian G. Bearden & Gary R.W. Denton

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The massive clean-up and redevelopment of Saipan at the end of WWII presented waste disposal problems that were largely solved by either bulldozing unwanted materials into the ocean, burying them in caves, or dumping them at specific locations on land. Virtually every kind of material used in warfare were among the items disposed of in this way, in addition to demolition and construction debris and other residual materials associated with the rebuilding effort. At the time, little if any thought was given to the impact of these dumpsites on the surrounding environment. As a consequence, the majority of disposal sites that arose out of that period in Saipan's history were soon overgrown by natural vegetation and largely forgotten within the space of a few years. Renewed interest in their existence did not come until almost half a century later following the implementation of the Department of Defense (DOD) Formerly Used Defense Site (FUDS) Environmental Restoration Program in 1986 and the Brownfields Program that evolved out of the Brownfields Revitalization and Environmental Restoration Act of 2001. Shortly thereafter, thirty two confirmed FUDS were identified throughout the CNMI. Twenty three of these were located in Saipan along with forty one other suspected Brownfields sites.

To date, inventories of materials disposed of in the FUDS and Brownfield sites of the CNMI are based largely on visual assessment with unexploded ordnances, munitions and demolition materials ranking among the more obvious wastes present. What little chemical data there are indicate that heavy metals, pesticides, PCBs, organic solvents (TCE, PCE, vinyl chloride, methyl tertiary butyl ether), petroleum and polycyclic aromatic hydrocarbons are the most commonly encountered contaminants. Few studies have attempted to quantitatively delineate the extent of any chemical contamination at these sites and no definitive watershed studies, other than those conducted by WERI along the western seaboard of Saipan, have assessed the impact of any bioaccumulative compounds present (e.g., metals, pesticides and PCBs) on the edible quality of aquatic resources harvested for food in downgradient locations.

The study described herein builds upon the earlier WERI studies by extending them to the eastern seaboard of Saipan where no such information currently exists. It will be conducted in two discrete phases. Phase 1 is the subject of this proposal and aims to identify potentially troublesome dumpsites in watersheds on the eastern side of the island, along with potential drainage pathways that could facilitate the movement of chemical contaminants downgradient towards the coast. Extensive soil and sediment sampling within impacted watersheds and along the coast will delineate the existence and severity of any such contamination. Phase 2 will follow at some later date and determine contaminant levels in aquatic resources from impacted areas as well as evaluate potential health risks associated with their long-term consumption. Overall, the study will add significantly to the existing contaminant database and command the interest of all involved with environmental remediation and resource management in the CNMI. It will also provide the necessary foundations for the continued monitoring and assessment of pollution problems in the area. Such information is vital for the overall protection and sustainable development of aquatic resources in Saipan's watersheds and coastal waters.