

A CONTAMINANT ASSESSMENT OF VIEQUES, PUERTO RICO

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From 1941 to 2003, the U.S. Navy utilized a significant portion of the island of Vieques (Puerto Rico) for military exercises, including significant use as a bombing range. There has been significant concern among the local population about environmental contamination related to military activities on the island. Following the departure of the Navy, the economy has shifted towards being primarily tourism based. This change is expected to result in enhanced development pressures which could increase land-based sources of pollution to fragile coral reef ecosystems. Current land use is a mix of undeveloped land/wildlife reserve, low density residential housing and two small towns (Isabel Segunda and Esperanza). Coastal lagoons support important habitat for birds, fish and land crabs, and the offshore areas include coral reef ecosystems, which support not only tourism, but commercial, recreational and subsistence fishing.

This study presents an island wide quantification of contamination in the marine environment from a variety of potential sources. It also serves as a baseline which can be used to help assess the impacts of future development on the marine environment of Vieques.. In 2007, sediments were collected for contaminant analysis, from both offshore and inland lagoon locations, for approximately 150 analytes including: trace elements (e.g. heavy metals), PCBs, PAHs, selected pesticides (including DDT, chlordane and dieldrin), as well as energetic compounds associated with military activities. A total of 78 sites were analyzed for sediment contamination. Analyte concentrations at these sites can be compared to the nationwide NOAA National Status and Trends (NS&T) Program database, to determine the relative level of environmental contamination at these sites. In order to quantify the linkage between pollution and coral health, coral tissue samples (*Porites astreoides*) were also analyzed for contaminants from 35 sites. Finally, the spatiotemporal variability of surface water nutrients were quantified; 40 sites (both offshore and in lagoons) were sampled a total of 8 times between May 2007 and March 2008. This study is part of a larger integrated coral reef assessment framework which links contaminant stressors to biogeography.

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