

NUTRIENTS INPUT TO SOUTH KANEOHE BAY DURING STORMS

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ABSTRACT

After diversion of sewage from the Bay in 1978, water quality in Kaneohe Bay has dramatically improved, and coral reefs have shown signs of recovery. Most recently the water quality in Kaneohe Bay has become even more “pristine”. However, “bubble algae” still exist in Kaneohe Bay and their abundance even increased significantly based on results of a 1990 survey. Therefore, it is reasonable to hypothesize that there remains an overload of nutrient inputs from streams to Kaneohe Bay during storms that affect bay ecosystems.

This study collected and analyzed water samples from streams during storms in November 2003 to May 2004. Two stations were located in the South Kaneohe watershed. One station was in Hoomaluhia botanical garden at Luluku Stream. This station has minimal pollution since it is situated in the conservation zone. The second station was located down stream in an urban zone consisting mostly of residential and commercial areas. Additional water samples were collected manually in Southern Kaneohe Bay. The concentration of phosphate, nitrate and nitrite, ammonium, and silicon dioxide were determined in the water samples.

Waters from Luluku and Kaneohe Streams had higher concentrations of nutrients during storms than concentrations observe in surface water during base

flow. The concentrations of nitrate suggest an influence from human activities. Nutrient loads in Kaneohe Stream during storms affected the water quality of South Kaneohe Bay. High levels of dissolved nutrients in South Kaneohe Bay likely represent a cumulative effect of freshwater input from Kaneohe, Keahaala, and Kawa Stream. These streams input accounted for most of phosphate, silica dioxide, and about fifty percent of nitrate plus nitrite in Southern Kaneohe Bay.