District Engineer (PODCO-O)
U.S. Army Corps of Engineers
Building 230
Fort Shafter, Hawaii 96858

Dear Sir:

PODCO-O 1756-S
Nani Pua Gardens
Kaneohe Stream, Kaneohe, Oahu

The proposed activities for which a Corps of Engineers permit is requested include the filling of some 15 acres of wetland and certain stream-bank alterations to permit the construction of 107 moderate income single family housing units adjacent to Kaneohe Stream, Kaneohe, Oahu, Hawaii.

This Environmental Center review has been prepared with the assistance of James Parrish, Hawaiian Cooperative Fisheries Research Unit; Sheila Conant, General Science; Matthew Spriggs, Anthropology; and Jacquelin Miller and Mark Ingoglia, Environmental Center. The following comments are offered for your consideration.

The need for preservation of wetlands for their ecological and flood control characteristics has long been recognized in both federal and state statutes and policies. In Hawaii there has been increasing recognition that wetlands are likely to include archaeological remains.

From the limited information available in the public notice, the significance of the ecological and cultural resources of the wetland in question are unclear, hence its loss as a wetland cannot be evaluated. Major concerns include the loss of potential archaeological resources, general wetland values, and potential impacts on native aquatic fauna in Kaneohe Stream. These concerns are amplified below.

Native Stream Fauna

In the reference Stream Channel Modification in Hawaii Part A: Statewide Inventory of Streams: Habitat Factors and Associated Biota (Timbol and Maciolek, 1978), Kaneohe Stream is described as being 25 percent altered and containing at various locations, the Hawaiian prawn, Macrobrachium grandimanus; Attyd shrimp; Attya bisulcata; the O'opu naniha, Awaous genivittatus and the O'opu nakea, Awaous stamines. These stream fauna are all endemic except for O'opu naniha which is indigenous. The effect of the proposed stream channelization on these species is uncertain. Timbol and Maciolek 1978, found
Kaneohe Stream to be moderate to low in ecological and/or water quality. Since both species of O'opu require clean fresh water, and significant discharges through comparatively unaltered stream channels (Timbol and Maciolek, 1978), any further alteration of Kaneohe stream could be harmful to the O'opu's survival.

This proposed stream channelization will add to the existing 25 percent of stream bed channelized as of 1978. The cumulative effects of this channelization on the native stream fauna needs to be considered. The public notice does not indicate the length of the new stream channel. Channelization length is important since short channels that are environmentally stressful may be tolerated by the stream fauna for the brief periods necessary for their crossing whereas longer similar channels may prove lethal to the stream fauna. While hydraulically effective, the proposed channel is not likely to provide suitable habitat for native stream fauna. A low-flow channel might help to mitigate impacts on stream fauna.

**Wetlands**

If the wetland is filled and no longer functions as a natural filter during times of high sediment transport due to stream flooding, the rate at which sediment will enter the estuary and Kaneohe Bay will increase. Furthermore, if dredged material from the stream bed is used to fill the wetland, the stream fauna may be severely affected by the resulting turbidity.

Both EPA Policy (38 FR 10834, March 20, 1973) and Executive Order 11990 stress the need to minimize destruction, loss or degradation of wetlands and to preserve them because of their aesthetics, natural productivity and diversity.

**Cultural Resources**

The statement that there are no registered properties or properties determined eligible for inclusion within the proposed permit area in the National Register of Historic Places is misleading. The National Register of Historic Places lists less than 1 percent of the archaeological resources known to exist in the Hawaiian islands and provides no basis for suggesting that cultural resources will not be impacted if filling is allowed in this wetland.

The wetland area, and the underlying alluvial soil (Hanalei silt-loam 0-21) constitute a habitat frequently used by the prehistoric Hawaiians for growing taro in irrigated fields. Adjacent drier areas might well have contained dry land gardens and/or house sites. An archaeological survey should establish whether surface archaeological features exist. In alluvial areas, stream flooding often covers archaeological features such as irrigated fields, etc., necessitating subsurface archaeological investigation. Strategies to be considered might include (1) examination of stream banks for evidence of buried soil horizons and features (2) a systematic program of auger coring to locate buried features and to examine the question of prehistoric landscape change (3) backhoe trenching to allow detailed examination of the stratigraphy of the wetland area. The work should involve an archaeologist with a good knowledge of soils and geomorphology, laboratory analysis of the sediments, and dating of any archaeological features recovered. Search for Land Commission Awards, etc. relating to the parcel should indicate the historic (and by extension) prehistoric land use patterns, as well as any historic alteration of the site. This will aid greatly in planning the archaeological work, and in its interpretation.
Based on the information provided in the Corps of Engineers Public Notice (PODCO-O 1756-S) we would suggest that an Environmental Assessment covering the biological, and archaeological resources of this wetland be prepared prior to issuance of the requested permit.

Yours truly,

Doak C. Cox
Director

cc: James Parrish
    Sheila Conant
    Matthew Spriggs
    Jacquelin Miller
    Mark Ingoglia