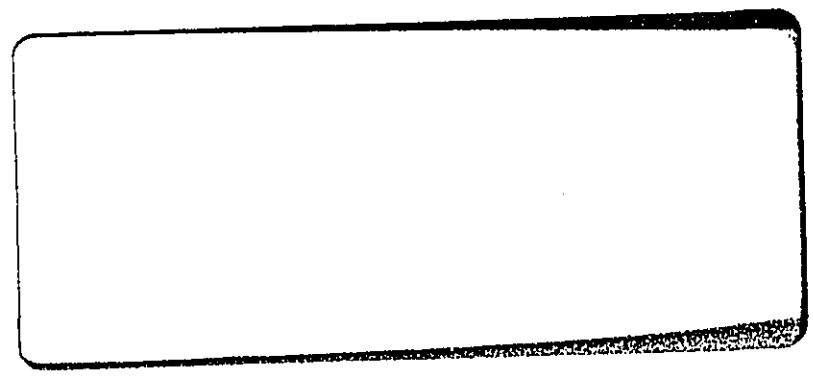
REVISED

ENVIRONMENTAL IMPACT STATEMENT
PANIAU
LALAMILO, SOUTH KOHALA, HAWAII



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ENVIRONMENTAL IMPACT STATEMENT
PANIAU
LALAMILO, SOUTH KOHALA, HAWAII

Prepared Pursuant to Chapter 343, HRS

Prepared for:

KEP ALULI, INC.

Kep Aluli — June 1, 1981

President
Kep Aluli, Inc.

Date

Prepared by:

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Honolulu, Hawaii

May, 1981

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PREFACE

Two technical studies were prepared as part of this Environmental Impact Statement. The reports are

(1) Field Reconnaissance of the Ruddle Property and Adjacent Marine Areas South of Pu'ako, Hawai'i; and

(2) The Archaeology of Paniau.

Because of their length, excerpts from both reports are used in this Statement. Copies of the reports have been submitted to the Office of Environmental Quality Control and the County of Hawaii Planning Department. Persons desiring to review the reports in their entirety should contact the above authorities.

SUMMARY

PANIAU
LALAMILO, SOUTH KOHALA, HAWAII

Proposed Project:	PANIAU
Applicant:	KEP ALULI, INC.
Approving Agency:	PLANNING DEPARTMENT COUNTY OF HAWAII

I. DESCRIPTION OF THE PROPOSED PROJECT

Kep Aluli, Inc. in collaboration with the property owners, proposes to develop a 192-unit leasehold condominium on a 7.42 acre shoreline parcel at Lalamilo, South Kohala, Hawaii. The property is located at Puako at the south end of Puako Beach Drive.

The property will first be subdivided into three separate parcels. Each parcel will then be developed as a self-contained complex consisting of a 4-story structure containing 64 leasehold units, recreation amenities, parking facilities, and support infrastructure. Only one-bedroom units are planned and would be marketed in a range of $125,000 - $175,000.

The cost of the project is estimated at $11 million ($1980). A construction time table has not been set. The cost of the project will be borne by the landowners and the developer.

II. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The property is located beyond the south end of Puako Beach Drive fronting a small but broad sandy cove. Access to the property is gained via a gravel road which generally follows the old Puako-Kiholo trail.

The site is relatively flat but marked by numerous lava bluffs and depressions. Ground elevation averages 9 feet above mean sea level across most of the property. The property is within both a coastal high hazard area and a 100-year flood area.

The site contains 24 archaeological sites incorporating 29 separate features and 6 petroglyphs.

In addition, a number of brackish water ponds or anchialine pools appear on the property. Anchialine ponds possess both physical features and biota sufficiently distinct to be considered a unique type of aquatic ecosystem.

The property is within an Urban land use district; general planned Low Density Residential by the County, and zoned residential (RS-10).

III. POTENTIAL ENVIRONMENTAL IMPACTS

Construction of the proposed project involves major alterations to the existing environment. The land will be graded, depressions filled, and vegetation grubbed. Some archaeological features will be affected but not until they have been investigated further. By the same token, some anchialine pools may be lost during construction and perhaps adversely affected in the long run by man's activities. Dust can be expected as can construction noises. In particular, should a pile driver be used, its defeaning noise could significantly affect nearby residents.

The project is not anticipated to adversely affect available public services. The project would contain its own sewage disposal system and treated effluent is not anticipated to adversely affect water quality. Increases in traffic can be anticipated but not at a level which adversely taxes Puako Beach Drive.

SECTION 1

DESCRIPTION OF THE PROPOSED PROJECT

Kep Aluli, Inc., a registered Hawaii corporation, in collaboration with the owners of the subject property, proposes to develop a low-rise condominium project on a 7.428 acre shoreline parcel in the ahupua'a of Lalamilo, South Kohala, island of Hawaii. The project site (hereafter referred to as property or site), shown in Figure 1, is located at Puako at the south end of Puako Beach Drive and is further identified as TMK: 6-9-01:7.

The objectives of the project are to allow the landowners to achieve the highest and best use of the land and to realize an adequate rate of return on their investment.

As presently proposed, the property first would be subdivided into three parcels. Each parcel would then be developed as a self-contained complex consisting of a 4-story structure containing 64-leasehold units, recreation amenities, parking facilities, and support infrastructure. Each structure will be sited to maximize the natural features of the property. Only one-bedroom units averaging 560 square feet in floor area are planned and would be marketed in a range of $125,000 to $175,000. The proposed site plan is shown in Figure 2.

Amenities include three swimming pools, each furnished with a cabana/comfort station. One-hundred ninety-nine parking stalls for residents (192) and guests (7) will be provided on the mauka portion of the property. An additional twelve stalls will be set aside for boat trailers.

Access would be taken off a corridor marked "Proposed Puako Road Extension" as shown on the tax map for the area (TMK: 6-9-01). The Proposed Puako Road Extension is a right of way some 40 feet wide and 800 feet long. It commences at the end of the paved portion of Puako Beach Drive, traverses State land, borders Lot 10 of the subject property, and terminates at the mauka boundary of the subject property and other State owned lands.

N.T.S.

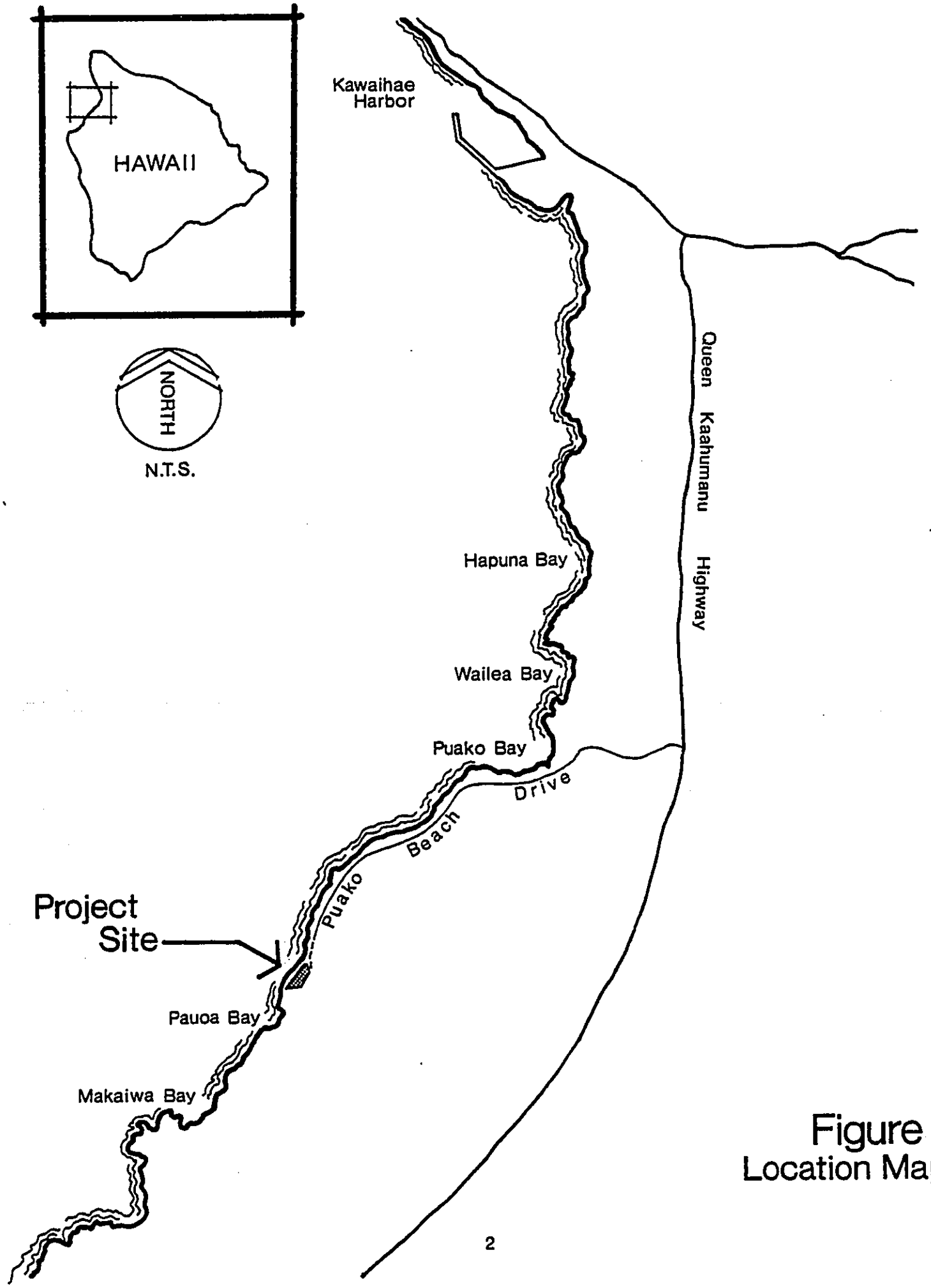


Figure 1
Location Map

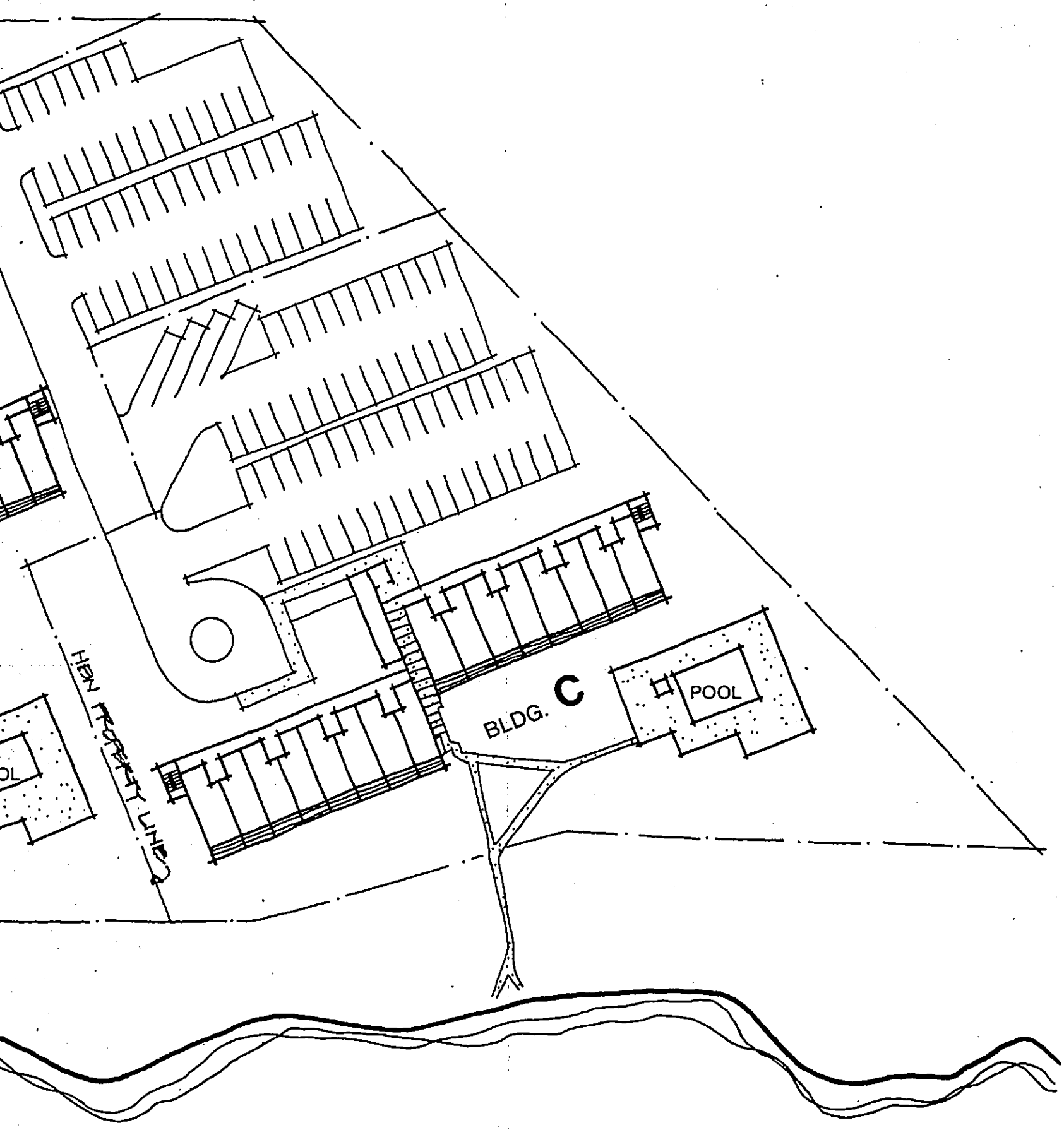
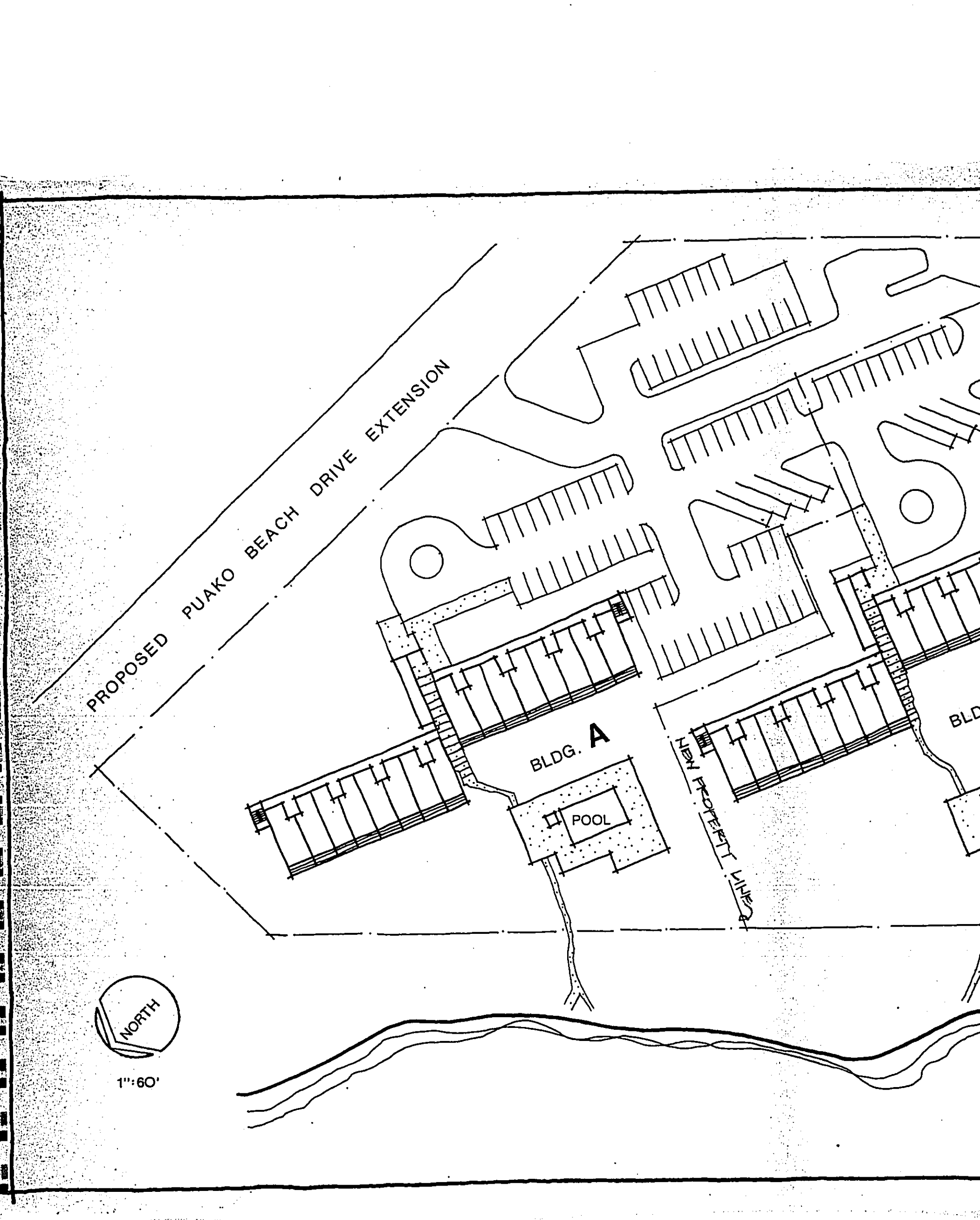


Figure 2
Proposed Site Plan


PROPOSED PUAKO BEACH DRIVE EXTENSION
BLDG. A
POOL
NEW PROPERTY LINE
BLD
NORTH
1":60'

The Proposed Puako Road Extension is shown on maps prepared by the State Surveyor and attached to Land Grant No. 13,613. Said extension was initially proposed by the State in 1958. It's effect is to provide access to State owned lands mauka of the subject property and to the subject property itself.

The area lacks a drainage system, thus runoff would be retained on-site as much as possible. A system of swales and berms would divert runoff from the parking areas and away from buildings into strategically placed depressions and drywells. Water would be retained until it evaporates or percolates into the porous sub-strata.

Water, power, and communication hook-ups will be taken, if approved, from existing systems along Puako Beach Drive. Three sewer treatment plants (one per structure) will be installed on-site. Secondary treated effluent would be discharged *underground.*

Land Ownership: The property, commonly referred to as Ruddle's after the name of the landowners, is owned in fee by the persons named below:

Elizabeth Spielman
George Ruddle
Francis Ruddle
Annabelle Lindsey
Alberta Silva
Francis Ruddle

There are no recorded liens and or easements on the property.

Funding and Phasing: The cost of the project is estimated at $11 million ($1980) and will be borne by the landowners and developer. A firm development timetable has not been established. Construction would be staged in three increments with construction time estimated at one year per increment.

SECTION 2

DESCRIPTION OF THE AFFECTED ENVIRONMENT

A. Location: The property is located beyond the south end of Puako Beach Drive fronting a small but broad sandy cove. Although located on the shoreline, the parcel is legally separated from it by the old Puako-Kiholo trail and a State owned parcel (TMK: 6-9-01:2). Access to the property is gained via a gravel road following this old trail and linking it to the paved end of Puako Beach Drive.

Used for residential purposes, the property contains five wooden houses in various states of disrepair, two outhouses, and cages for livestock.

B. Climate: Climatic conditions in the South Kohala region can be characterized as hot and dry, moderated by relatively cool sea breezes. Rainfall at the Weather Bureau's Puako gauge has averaged 9 inches for the past 36 years. Most of the rainfall for the year occurs during the several storms which occur during the October to April winter season.

Mean annual temperature along this coastal region averages 78^{0} with small daily and seasonal fluctuations.

Winds usually blow onshore from midmorning until sunset and offshore from early evening until the next morning. The average wind velocity is 7 to 8 m.p.h.. The relative humidity is generally under 40 percent and is fairly constant all year around.

C. Geology and Topography: The 7.4 acre property is underlain by prehistoric lavas from the most recent series of flows of Mauna Kea (McDonald and Abbott, 1970). Flows of jagged a'a (lava characterized by a rough, jagged appearance) form the coastline fronting the central and southern sections of the proerty. Relatively smooth pahoehoe flows cover the northern section. The central section is covered primarily by beach sand.

Coastal elevations average 8-feet along the length of the property. At the mauka property line elevation averages 10 feet. This portion of the property was cleared and leveled by a bulldozer in 1973. The low-lying property is marked also by numerous bluffs and depressions throughout the lava covered sections.

D. Drainage and Floods: Portions of the property are within the coastal high hazard and 100-year flood area as delineated on preliminary flood insurance rate maps for the County (HUD, 1980). The base flood height has been calculated at 7 feet in this vicinity. Since the 1930's the property has not been severely damaged by tsunami innundation. Tsunami innundation has manifested itself not as large waves striking the coast but as high tides. During the recent January 1980 storm which struck the Big Island particularly hard, and in which a state of emergency was declared, several homes fronting the beach along Puako Beach Road were demolished. This was due to extremely high waves rushing onshore with subsequent flooding. The subject property was not damaged severely although the homes along the shoreline were flooded.

E. Vegetation and Wildlife: The mauka portion of the property is characterized by kiawe (Prosopis pallida) thickets covering much of (if not all) the terrain. Vegetation on the makai portions (which coincides with the inhabited areas) consist of hau (Hibiscus tiliaceus), koa (Cordia sebestena), hala (Pandanus odoratissimus), tamarind (Tamarindus indicus), date palm (Phoenix dactylifera), noni (Morinda citrifolia), mango (Mangifera indica), heliotrope (Messerschmidia argentea), autograph tree (Clusia rosea), and coconut (Cocos nucifera). Milo (Thespesia populnea) and crown flower (Calotropis gigantea) groves stand near the center of the property.

Although only dogs (Canis familiaris) were observed during a site inspection, feral goat (Capra hircus), mongoose (Herpestes auropunctatus), and avian species such as mynah (Acridotheres tristis), dove (Geopelia striata), and sparrow (Passer domesticus) frequent the property.

F. Marine and Anchialine Biota:

Marine Biota: Off-shore surveys of the marine environment were limited to areas between the shoreline and depths of approximately 40 feet (12 m). Divers noted bottom types, algae, corals, conspicuous invertebrates, and fishes. Appendix A summarizes said observed species.

As elsewhere along the South Kohala and North Kona coasts, ground water seepage is a noticeable feature of the shoreline and nearshore areas fronting the Ruddle property. Although fresh water springs do not gush from crevices as in some areas (e.g., Waiulua Bay), seepage is evident at several points along rocky parts of the shore. The major concentration of springs occurs near sea level at the southern end of the property, but other springs are evident near the northern property marker. Freshwater intrusions are indicated not only by springs along the shore but by brackish water present on the surface of inshore areas. The brackish water is colder than underlying waters and is detectable by water temperature difference as far offshore as the sharp break or escarpment marking the end of the nearshore shelf.

Anchialine Ponds: A number of bodies of brackish water, both temporary (tidal) pools and permanent ponds, are located on the property. These fit into the category of "anchialine" environments, by which is meant coastal zone pools lacking above ground connections to the sea, yet having waters of measurable salinity and showing tidal rhythms (Holthius, 1973). This type of pond is widespread in its distribution around the world, particularly in lavas and limestone formations in low-rainfall, coastal areas (Guinther, unpub.). In Hawai'i, the ponds are common along the South Kohala and North Kona coasts of the Island of Hawai'i where over 300 have been inventoried. Their concentration here is a phenomenon of both geological and hydrological features of the area. Requirements for anchialine environments are low elevation (proximity to the sea) and a highly permeable substratum.

Anchialine ponds possess both physical features and biota sufficiently distinct to be considered a unique type of aquatic ecosystem (Maciolek and Brock, 1974). Although the distinctive fauna includes but a few species, several are endemic to Hawai'i. In particular, two species of small, red shrimp (Halocaridina rubra and Metabetaeus lohena) are found in this environment and are present in most of the ponds on the Ruddle property. Because fishes prey on these small crustaceans, the shrimps distinctive of the ponds tend not to occur (or to occur cryptically) in ponds with fish populations.

A number of anchialine environments, including both permanent ponds and ephemereal pools appearing in depressions at high tide, occur on the Ruddle property. Figure 3 shows the locations of ponds examined on September 5, 1980. Most are characterized by clear waters of low salinity (5 to 6 ppt)--conditions typical of anchialine features inventoried by Maciolek and Brock (1974) and Bienfang (1977) along this coast. The ponds on the Ruddle were *not inventoried* by Maciolek and Brock (1974). Pond basins at the Ruddle site vary considerably in shape, surface area, and depth. At least 6 ponds appear to be permanent (i.e. exposed at all tidal stages). Two of these show evidence of considerable human modification. A number of other pools occur in depressions that contain surface water only at high tide. Water reaches all the ponds through fractures and fissures in highly permeable lavas.

Pond A is a large exposure located behind (landward) the houses in the northern portion of the property. A man-made wall of rocks surrounds a muddy bottom, the depth of which reaches 3 or 4 feet (1 to 1.2 m) in the middle of the pond. Salinity is 5 ppt (on Sept. 5). Several molluscs (Melania sp., Theodoxus neglectus, and T. cariosus) are common on the submerged rocky margins of the basin. A green alga, Cladophora sp., also occurs here. The red shrimp, Halocaridina rubra, is not evident, undoubtedly because of the presence of several fishes, including the introduced tilapia, Saratherodon mossambica, the mullet, Mugil cephalus ('ama'ama), and the surgeonfish, Acanthurus triostegus (manini).

Pond B is a small, shallow exposure whose surface is completely covered by floating coconut flowers. Boulders and fine sediment lie at depths of up to 10 inches (0.25 m). The salinity is 6 ppt. The shrimp, H. rubra, is common in this pond.

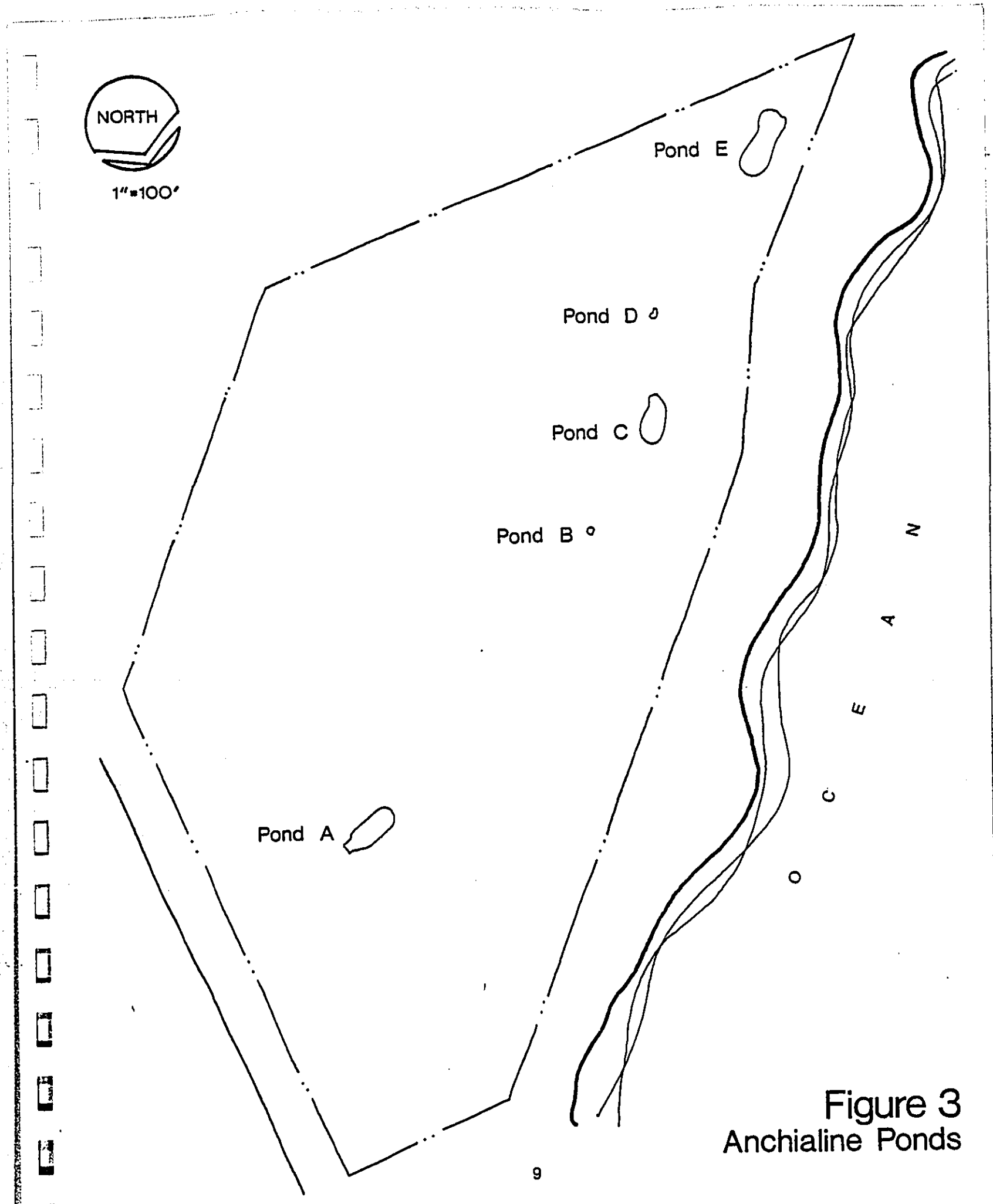


Figure 3
Anchialine Ponds

Halocaridina rubra is abundant in Pond C, a relatively large exposure with a maximum depth of 2 feet (0.6 m). The shallow margin consists of boulders. Pockets of fine sediment are interspersed with boulders at the center of the basin, whose maximum depth is 2 feet (0.6 m). The predatory shrimp, Metabetaeus lohena, also occurs here. Green-colored encrustations of blue-green algae (probably Schizothrix sp.) are common.

Pond D is only about 6 inches (0.15 m) deep and may contain little or no water at low tide. Boulders and bedrock form the margins and bottom of the pond. Salinity is 6 ppt. Halocaridina rubra is present.

Pond E is a large pond at the south end of the property considerably modified (or created) by excavation. The clinkery boulders of the old a'a flow line the margin of the basin and grade to rubble and silty-sand in the middle, where the depth reaches 4-5 feet (1.2 to 1.5 m). The salinity is 6 ppt. The bottom in places is colored green and orange by encrusting algae: Schizothrix sp. and Rhizoclonium sp. These encrustations of blue-green algae are the major flora of the ponds. Fishes are present in this pond, including: mullet, Mugil cephalus ('ama'ama), surgeonfish, Acanthurus triostegus (manini), Abudefduf abdominalis (ma'oma'o), and the surf perch, Kuhlia sandvicensis (aholehole). The presence of these fishes precludes the occurrence in the open of the shrimp, H. rubra. However, in small pockets of water rising between rocks around the margin of the pond, H. rubra is present.

A small but deep exposure of ground water inland of Pond B is indicated as a well on the topographic map of the Ruddle property. The red shrimp, Halocaridina rubra, occurs here, as well as in another permanent pond nearby. Salinity in both ponds is 6 ppt.

Other surface exposures of ground water are evident at high tide in virtually every area of the site having an elevation of one foot or less. These are mostly ephemeral pools, which are not apparent at low tide. Their depth rarely exceeds 6 inches (15 cm), and water salinity is comparable to the ponds (i.e., 6 ppt). Halocaridina is present in many of these pools.

G. Archaeology: Twenty-four archaeological sites incorporating 29 separate features and 6 petroglyphs were located on the subject property. The access road was found to contain 47 sites incorporating 149 separate features including 52 petroglyphs. The descriptions that follow are excerpted verbatim from the archaeological report and is limited to sites located on the subject property. Sites are identified as PAN (for Paniau) 80 (for the year in which the work took place) and an individual accession number.

PAN 80-1 is a small poorly-formed C-shaped structure resting on a bed of pahoehoe lava. This site measures approximately 6 m long and has a maximum width of 1.5 m. The length of the structure runs in a E-W direction; it reaches a height of 70 cm near the center; and crumbles down to approximately 25 cm at the ends. The site is located in kiawe trees about a meter east of an historic pig pen. Excavation is impossible because this site sits atop a lava rock foundation, however, a section of rocks may be removed to investigate the possibility of PAN 80-1 being a crude burial.

PAN 80-2 is a small, but well-defined C-shaped structure 4 m long by 2.5 m wide; it reaches a height of approximately 1 m all around. The length of the site runs in an E-W direction. The general area is rough 'a'a rock about the size of a fist. There are palm trees surrounding the site. The rocks that form the floor of this site are dark and damp and indicate that some brackish water may form in the center of the open area at high tide. This portion of Paniau has many such shallow brackish water pools at high tide.

PAN 80-3 is a wall 44 m in length and approximately 2 m thick; although there are some crumbled areas, it is roughly a meter high. The length of the wall runs in a N-S direction. It is debatable whether or not the wall is actually part of PAN 80-29; at any rate, it runs from the north boundary of that site to the steps of the bottle shaped, brackish water pool. This wall is easily the largest structure at Paniau and could possibly have been constructed as a windbreak at the mauka end of the pool. Between the pool and the wall there is a badly crumbled C-shaped structure (PAN 80-30) and three petroglyphs. The three petroglyphs associated with PAN 80-3 are not very well defined. The two that appear approximately 10 m from the south end of the wall are particularly

feint [sic] and depict a human figure and most likely a dog. Roughly 3 m north of these is a third petroglyph; while better defined, the entire carving consists of a 10 cm triangle. It looks very much like the trunk portion of an unfinished human figurine. The wall is located in an area of thick kiawe just makai of the bulldozed portion of the property.

PAN 80-4 is a large complex structure that fits the description of a men's house - i.e. approximately 100 m^2 in size, comprised of platforms or enclosures with unworked pieces of coral and a platform (that may have served as a shrine). There are at least two large midden areas (averaging 3 m by 3 m) within the complex and two more openings that feature rock floors. The walls are low, never over 60 cm high, but otherwise are well defined.

PAN 80-5, 6, 7 are all cave openings that are located off the legal property boundary.

PAN 80-8 consists of two cave openings that are potential habitation caves and or burials. The cave closest to the ocean features .5 m of brackish water in the bottom of it. Some midden scatter near each opening.

PAN 80-9 is a lava sink 5 m long and 2 m wide. The depression is 50 cm deep. Along the eastern portion of the depression a C-shaped structure has been added. This small feature is 3.5 m long, 1 m thick and reaches a height of no more than 50 cm. The depressed area is divided in half by a smooth pahoehoe flow a meter thick and 2.5 m wide. The floor of the depression appears to have a dirt accumulation of some undetermined depth.

PAN 80-10 is a very well-defined enclosed structure 4.5 m long and 5 m wide. The walls are approximately 1 m thick and 70 cm high all around, save for the SE corner of the structure which is crumbled. The NW portion of the opening has some soil accumulation that may be excavatable. There is a 1.5 m opening in the middle of the western wall.

PAN 80-11 is an enclosed structure built roughly along the same lines as PAN 80-10 and is located just 9 m east of it. While PAN 80-11 resembles its neighbor, it is only half the size, measuring 2.5 m long and 2.5 m wide. There is a 1 m opening built into the middle of the western wall. The walls are about 40 cm thick and are roughly .5 m high.

PAN 80-12 is a low rock mound about 70 cm high at the center. It sits on a small bluff just on the makai edge of the bulldozed area. While this structure appears to be a burial, there is some midden showing through the southeast section of the bluff.

PAN 80-13 is a nicely formed small lava platform 3.5 m long and 3 m wide. The height is approximately 50 cm. The top is level and has small coral rocks mixed in with the lava. 1 m south of the platform is a small depression that opened up after an earthquake several years ago. This structure sits atop a sheet of pahoehoe.

PAN 80-14 is a large C-shaped structure measuring 13 m along its longest wall and is 11 m wide. The walls are tapered and average just over 2 m thick; they rise to a height of almost 80 m. There is a 6 m paved opening between the north and south walls. The open area in this site is covered with lava and coral rubble. The site is located only 150 m from the ocean.

PAN 80-15 is a well-defined lava rock platform 5 m long and 3 m wide. The south end of the platform is formed by three large lava rocks against which are piled many smaller fist-size stones. The top is level and reaches an average height of about 60 cm. There was a passing reference to this being an historic structure, but it also looks very much like a burial mound.

PAN 80-16 is a C-shaped structure measuring 13.5 m long and 5 m wide. The long wall runs in an E-W direction. A 3 m wall sections off the western quarter of the open area. The structure is in varied states of disrepair which is reflected in the height of the walls; they range from 20 cm up to nearly a full meter. The open area of this site is dominated by two coconut palms over 10 feet tall.

PAN 80-17 is the largest C-shaped structure on the property. It measures 10.5 m along the south wall and 9.5 m along the east and west walls. There is a 2 m opening built in the north wall. All the walls taper out and reach a height of nearly a meter. The open area of this site has a sandy soil floor and is presently being used as a vegetable garden.

PAN 80-18, 19, 20, 21, 22 are archaeological features of different descriptions determined to be off the property boundaries.

PAN 80-23 is the designation for two historic petroglyphs that form the letters "D b" and "P P". In association with these petroglyphs is a small broken lava bubble with a shallow dirt accumulation inside.

PAN 80-24 is the designation for an additional historic petroglyph that forms the letter "M" with a five-pointed star located just beneath it.

PAN 80-25 is a cave entrance with an associated wall built along the north side of the entrance. There is an additional "false" wall inside that blocks the entrance into the rest of the tube. Some midden is scattered in the mouth of the cave. It has been reported that the walls were built in historic times by a Mr. Uehara who used this cave to hold his pigs.

PAN 80-26 is actually two sites. The first, and largest is a three-sided enclosure 5 m long and 4 m wide. The walls of this structure average about 50 cm high and approximately 1 m thick. There is some accumulated soil in the interior of this site that may lend itself to testing. 3 m NW of this structure is a small lava sink that is filled with brackish water. There is a small C-shaped wall, 2 m long, built along the western boundary of the lava sink.

PAN 80-27 is a lava sink with a wall built around it on three sides. The wall measures 4 m long and 2 m wide and is approximately 30 cm high. The lava depression is 50 cm deep with a large kiawe stump in the middle of it. There is a brackish water well approximately 3 m north of this structure that was dug out in the 1940s.

PAN 80-28 consists of two separate structures. The first is a wall that rests almost completely under the trunk of af large dead kiawe tree. This wall is approximately 6 m long and a meter wide. There is a lava depression at the west end of the wall. Just a meter northwest of the wall is a low, lava rock mound 3.5 m long and 2 m wide. The mound is in a fair state of repair and reaches a height of 60 cm on three of the four sides. Because of the clearing problem it is difficult to determine if these two features are actually one L-shaped structure or some sort of wall associated with a burial mound.

PAN 80-29 is a large L-shaped structure built atop a small bluff and located at the south end of the great wall (PAN 80-3). The long N-S wall measures 6 m and the shorter E-W wall 3.5 m. There is a great difference in the height of the walls (1 cm to 80 cm) because both are badly crumbled at the ends. It is clear that some stones were robbed from this structure to construct the base for an historic water tank, which stands just a few meters away. The distance from the highest part of the structure to the floor of the site is more than 4 m; this is due to the bluff that the site is constructed on. There is a soil build-up on the floor of the site that may be excavatable.

PAN 80-30 is a C-shaped structure located about 3 m makai of the great wall (PAN 80-3). All three of the walls are approximately 4 m long and about 50 cm high. The site lies under a blanket of fallen leaves and is in such a poor state of repair that it is barely visible.

PAN 80-31, 32 are cave openings that are large enough to have been used and so need to be examined thoroughly. Although no midden or structures are associated with these caves, it is presumed there are burials inside.

H. Infrastructure:

1. Access to the project site follows a gravel road along the shoreline from the end of the paved portion of Puako Beach Drive. Puako Beach Drive including the proposed extension terminates at the project site. The proposed extension extends in a straight line south from the end of the paved portion to the eastern boundary of the property. Puako Beach Drive which has a pavement width of approximately twenty (20) feet and a road right-of-way of 40 feet, is approximately two (2) miles long from its entrance at Queen Kaahumanu Highway to the project site. Recent traffic counts are shown on Tables 1 and 2. It should be noted that counts were available for a seven day period (3/11/80 - 3/17/80) but only two days counts, those having the highest volumes, are presented.

   Although the project site is only a quarter of a mile from the northern boundary of the planned Mauna Lani Resort, Inc. resort development (fka Mauna Loa Land, Inc.), there is no access from this side nor is any proposed.

2. Water: A 2-inch waterline which is laid atop the Puako petroglyph field services the subject property. This line is taken off an 8-inch County waterline serving the Puako Beach lots. The County Department of Water Supply presently has no plans to improve this system. Although improvements to the overall South Kohala water system are being constructed through the development of the Lalamilo Well and proposed water lines, it is not clear if water will be available for the proposed project.

3. Sewerage: There is no municipal sewerage system servicing the Puako area. Sewerage is disposed either through cesspools or septic tanks.

4. Power and Communication: Electrical and telephone services are available to the project site.

5. Solid Waste: Solid waste facilities are available at Puako where the County operates a transfer station.

TABLE 1

TRAFFIC COUNTS
PUAKO BEACH DRIVE
(NEAR DEAD END)

TIME	14 March 1980 Eastbound	14 March 1980 Westbound	16 March 1980 Eastbound	16 March 1980 Westbound
24:00-01:00	3	0	0	1
01:00-02:00	0	0	0	0
02:00-03:00	0	0	3	0
03:00-04:00	0	0	2	0
04:00-05:00	0	0	2	0
05:00-06:00	6	2	0	1
06:00-07:00	20	3	10	3
07:00-08:00	17	5	14	6
08:00-09:00	23	8	11	3
09:00-10:00	19	15	21	7
10:00-11:00	24	8	30	24
11:00-12:00	26	20	40	25
12:00-13:00	35	11	36	25
13:00-14:00	21	12	34	21
14:00-15:00	25	10	35	25
15:00-16:00	38	15	31	19
16:00-17:00	35	12	28	12
17:00-18:00	16	12	28	12
18:00-19:00	18	6	10	4
19:00-20:00	12	10	15	4
20:00-21:00	9	6	9	3
21:00-22:00	5	2	5	1
22:00-23:00	4	4	1	0
23:00-24:00	0	0	4	1
TOTALS	356	171	369	198

Source: Department of Public Works, County of Hawaii

TABLE 2

TRAFFIC COUNTS
PUAKO BEACH DRIVE
(NEAR QUEEN KAAHUMANU HIGHWAY)

TIME	14 March 1980 Eastbound	14 March 1980 Westbound	16 March 1980 Eastbound	16 March 1980 Westbound
24:00-01:00	2	2	0	2
01:00-02:00	0	1	0	2
02:00-03:00	0	0	0	3
03:00-04:00	0	0	1	2
04:00-05:00	0	1	2	2
05:00-06:00	7	4	2	1
06:00-07:00	32	12	10	7
07:00-08:00	30	14	15	12
08:00-09:00	33	22	15	13
09:00-10:00	28	25	35	56
10:00-11:00	28	24	58	40
11:00-12:00	33	42	50	51
12:00-13:00	43	25	49	51
13:00-14:00	26	32	40	53
14:00-15:00	28	37	40	43
15:00-16:00	42	45	37	34
16:00-17:00	37	42	37	35
17:00-18:00	17	27	30	37
18:00-19:00	20	32	25	20
19:00-20:00	16	28	15	18
20:00-21:00	8	15	14	7
21:00-22:00	8	3	5	8
22:00-23:00	2	8	0	2
23:00-24:00	1	4	1	5
TOTALS	457	445	511	504

Source: Department of Public Works, County of Hawaii

I. Public Services and Facilities: In South Kohala, the Fire Department consists of a 24-hour, 13-man, three-vehicle fire station in Waimea; an eight-hour, 1-man, one-truck facility in Kawaihae; and a truck stationed at Puako staffed by volunteers (Belt, Collins and Associates, 1980).

The Police Department maintains an 18-person station at Waimea.

Health services are provided by the Waimea Dispensary and State Hospital facilities in Honokaa and Kohala (north of Hawi). Private health services are available at the Lucy Henriques Clinic in Waimea.

Serving the educational needs of the Kohalas are three public schools: Honokaa Elementary-High (K-12) and Waimea Elementary-Intermediate (K-9) in South Kohala and Kohala Elementary-High (K-12) in North Kohala. In addition two private schools, The Hawaii Preparatory Academy (K-12) and Parker School serve the region and areas beyond.

There are several public and private recreational facilities in the area. There are two (2) public beach parks, one at Spencer Park at Kawaihae, another at Hapuna/Wailea just north of Puako Bay. Small boat launching ramps are available at Puako Bay and at Kawaihae. Public access to the shoreline is available from Puako Beach Drive.

There are two (2) private golf courses in the area; one at Mauna Kea Beach Hotel and the other at Waikoloa Village. Two additional private golf courses are anticipated to be completed in the near future through resort developments to the south.

SECTION 3

RELATIONSHIP TO LAND USE PLANS, POLICIES, AND CONTROLS FOR THE AFFECTED AREA

A. State Land Use Designation: The project is situated within an Urban District as delineated by the State Land Use Commission. All development in Urban Districts are regulated by the Counties and its land use regulations.

B. County General Plan: The North and South Kohala Land Use Pattern Allocation Guide Map of the County General Plan designates the property Low Density Residential. This designation does not permit the intended use hence a general plan amendment to Resort is being sought.

C. Zoning: In conformance with the General Plan, the property is zoned Residential with a 10,000 square foot minimum lot size (RS-10). To implement the proposed project, a change of zone to V-1.5 will be applied for.

D. Special Management Area: The subject property is within the County delineated Special Management Area (SMA). What follows is a discussion of the relationship of the proposed project to SMA objectives and policies. Because all the policies are not applicable to the proposed action only those believed appropriate are cited.

Recreational Resources:

Objective: Provide coastal recreation opportunities accessible to the public.

Policies: Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by;

i. Protecting coastal resources uniquely suited for recreation activities that cannot be provided in other areas;

iii. Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;

Discussion: The subject property abuts the Puako petroglyph field on the north and east and the ancient Puako-Kiholo trail along the shoreline. At this time, applicant does not propose improvements which would obstruct or deny access to both resources.

It should be noted that the precise location of the Puako-Kiholo trail has not been determined. It is possible that the trail and State land makai of the trail are submerged as wave erosion has obscured property lines. The shoreline will need to be resurveyed to indicate the new shoreline and property boundary.

Historic Resources:

Objective: Protect, preserve, and where desirable, restore those natural and man-made historic and pre-historic resources in the coastal zone management area that are significant in Hawaiian and American history and culture.

Policies: (a) Identify and analyze significant archaeological resources;

(b) Maximize information retention through preservation of remains and artifacts or salvage operations; and

(c) Support State goals for protection, restoration, interpretation and display of historic resources.

Discussion: Archaeological field work conducted by Archaeological Consultants of Hawaii consisted of two parts: a surface survey of the subject property and an archaeological reconnaissance of the State-owned parcel to the north. In all, 24 sites encompassing 29 separate features and 6 petroglyphs were located on the Ruddle property and 47 sites were located on State property.

Scenic and Open Space Resources:

Objective: Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies: (b) Insure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;

Discussion: The project has been designed to blend with and complement natural site features. Each structure will not exceed three floors, maintaining a low building envelope. Public views to the shoreline are presently not obstructed by existing structures on the property and this same condition should prevail in the future. All structures have been sufficiently set-back from the shore thus maintaining views along the coastline.

Coastal Ecosystems:

Objective: Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems.

Policies:

(b) Preserve valuable coastal ecosystems of significant biological or economic importance;

(c) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and

(d) Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate State water quality standards.

Discussion: Although phrases such as "valuable coastal ecosystem" and "significant biological . . . importance" are not defined in Hawaii's CZM Law (Chapter 205A, HRS) nor any supporting rationale given as to why they should be protected or preserved, applicant recognizes the uniqueness of anchialine pools. Because it may not be possible to maintain all the anchialine pools within the confines of the proposed development, applicant is evaluating options for preserving some of the pools.

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Economic Uses:

Objective: Provide public or private facilities and improvements important to the State's economy in suitable locations.

Policies:

(a) Concentrate in appropriate areas the location of coastal dependent development necessary to the State's economy;

(b) Insure that coastal dependent development such as harbors and ports, visitor industry facilities, and energy generating facilities are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and

Discussion: Although this objective/policy set are directed towards administering authorities, applicant has complied with the Planning Department's determination that additional studies be performed prior to any type of project approval. Consonant with this objective/policy set, applicant also seeks to minimize adverse effects in the coastal zone area.

Coastal Hazards:

Objective: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, and subsidence.

Policies:

(a) Develop and communicate adequate information on storm wave, tsunami, flood, erosion, and subsidence hazard;

(b) Control development in areas subject to storm wave, tsunami, flood, erosion, and subsidence hazard;

(c) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and

(d) Prevent coastal flooding from inland projects.

Discussion: The property is located within a coastal high hazard area and 100-year flood area. The base flood height has been calculated at 7 feet which is slightly less than existing elevation along the shoreline.

If required, applicant will comply with the requirements of the Federal Flood Insurance Program.

Managing Development:

Objective: Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

Discussion: This objective and supporting policies are directed to administering authorities.

SECTION 4

POTENTIAL ENVIRONMENTAL IMPACTS AND MEASURES TO MINIMIZE ADVERSE EFFECTS

In evaluating potential environmental impacts, emphasis was placed on particular environmental issues raised by the County Planning Department and comments received during the EIS consultation period. These issues are:

(1) traffic generated by the project and direct and indirect effects to Puako Beach Drive and community;

(2) water requirements and availability of existing or planned public or private sources;

(3) effects on coastal waters and marine reources;

(4) impacts on archaeological resources and measures to mitigate impacts; and

(5) measures which may be planned for mitigating impacts resulting from natural hazards.

Emphasizing these issues does not mean only these impacts will occur. It does mean that given a range of potential effects the aforementioned were significant enough to warrant extensive investigation and analysis.

A. Landform: To implement the development, considerable changes in landform are required. Vegetation will be grubbed, lava depressions filled, lava bubbles collapsed and filled, some ponds filled, and the land surface graded to achieve design contours. Generally the most significant effect resulting from the above activities is erosion. However, given the predominance of surface lava and beach sand (as a soil type) little or no erosion is anticipated during construction.

In the absence of soils, topsoil will have to be imported for landscaping purposes. Until vegetation can establish itself, unlimited erosion opportunities exist. If planting areas are poorly maintained, erosion is likely with soils being deposited in parking areas but more importantly perhaps in off-shore waters and anchialine ponds. Soil loss could be mitigated through a judicious post-construction maintenance program and through design measures such as installing "headers" downslope of planting areas.

B. Air Quality: Construction activities are expected to have some local and temporary effects on air quality. Dust would be raised by vehicle movement and land altering operations, however, due to the sparse soil cover and the lack of nearby residential areas, dust should not pose serious problems. The contractor will be required to suppress dust by frequent water sprinkling or other measures.

Exhaust fumes from construction equipment also are not anticipated to affect adversely ambient air quality. The prevailing winds will dilute and disperse emissions---towards the ocean in the mornings and on-shore from early afternoons to sunset.

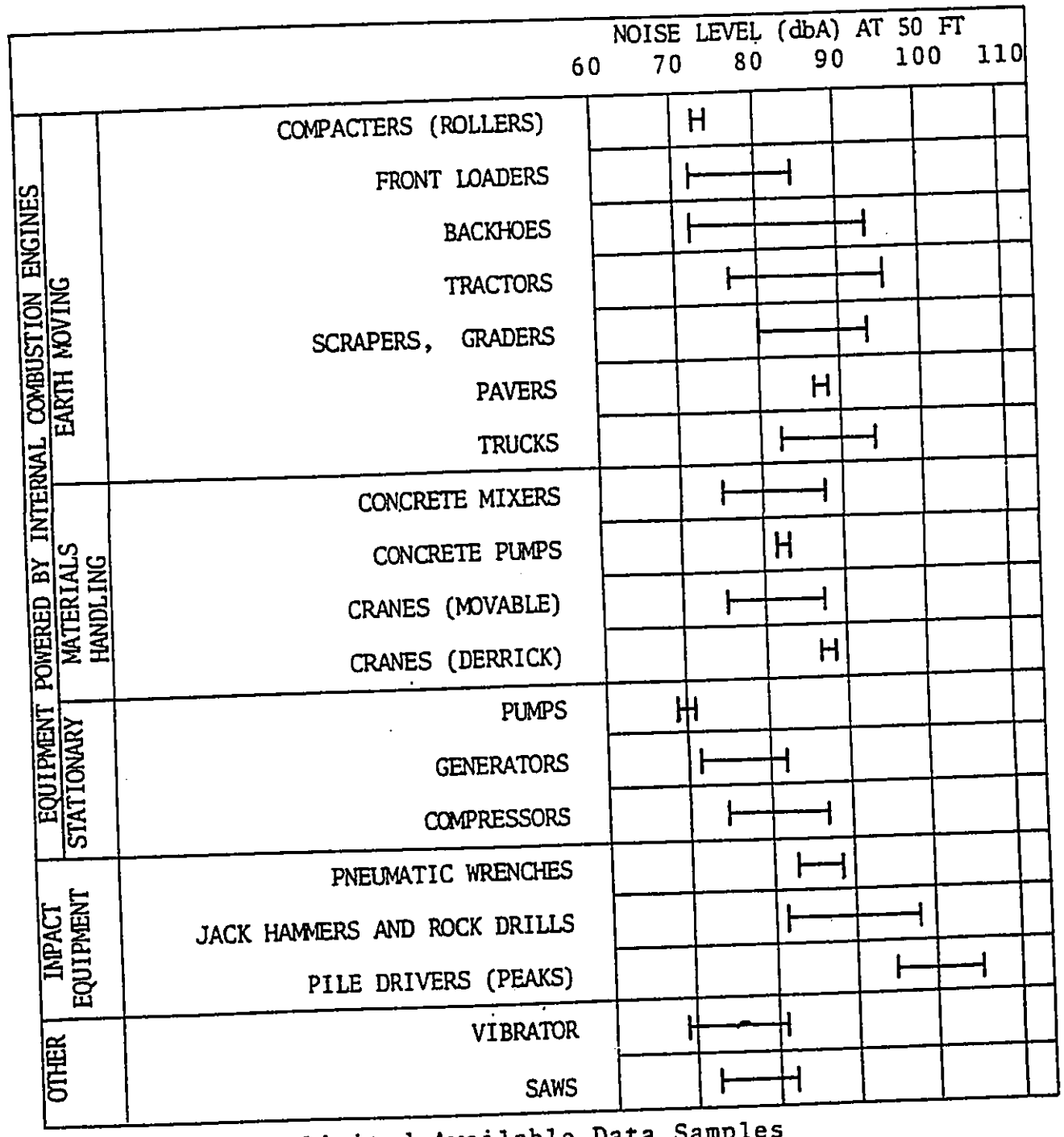
All activities will be performed in compliance with the Air Pollution Control Regulations (Chapter 43) of the State Department of Health and applicable County ordinances pertaining to grading and soil handling.

C. Sound: Construction work is comprised of discrete phases---site clearance, earthmoving, foundation work, building erection, and finishing---each employing different pieces of equipment. Consequently, it is reasonable to anticipate that noise will vary by construction phase and whatever equipment is used in completing particular phases. Noise ranges, in dB(A), for the types of construction equipment to be used are shown in Figure 4. It is anticipated that the more intrusive sounds will result from earthmoving and foundation work.

Given the probability of numerous lava tunnels underlying the property, the building foundations may be set on piles. Constructing a pile foundation can be accomplished by drilling or pile driving. The former method is quieter but more expensive. The latter method is less expensive and time consuming but requires the use of a pile driver which undoubtedly is the most defeaning piece of construction equipment.

FIGURE 4

CONSTRUCTION EQUIPMENT NOISE RANGES



Note: Based on Limited Available Data Samples

Source: Noise From Construction Equipment and Operations Building Equipment, and Home Appliances, EPA, 1971

Based on sound pressure levels from piledrivers shown in Figure 4 (94-106 dB(A) at 50 feet) and assuming pile drivers are used, noise impacts on nearby residents could be significant. Given the open expanse between the project site and nearby residences (350-400 lineal feet), pile driving sounds should be audible but not at levels recorded at 50-feet. It is generally assumed that sound diminishes at a rate of 6 dB(A) with each doubling of distance from the source beyond 50 feet. Solid barriers, such as a wall or building, wind, and atmospheric pressure also play a part in affecting sound transmission. However, because their effects extremely complex and difficult to preduct, they were not considered in this analysis.

More than likely, affected residents will be annoyed and irritated by the rhythmic " hiss-boom" of the pile driver. Limiting the use of pile drivers to certain times of the day would not eliminate noise but could extend the duration of its use. The most obvious means of reducing or eliminating pile driving noises is to not use pile drivers. At this time, the extent to which piles would be needed is unknown. If soils/geological investigations and cost analysis indicate that an alternate foundation is feasible, then noise would not be an issue of concern.

In addition to the possible use (or non-use) of pile drivers, other pneumatic impact equipment will be used to prepare the land for construction. Should blasting be required, a state licensed "powderman" will be placed in charge. Blasting mats will be used to muffle blasting noises and to confine debris within the blast site. Warning signs will be posted prior to any blasting activity.

For the most part (and excluding pile driving) noise should not pose significant problems because of the distance separating the property from nearby residences. But, construction of the access road will generate noises annoying to nearby residents. Employing noise abatement controls (such as mufflers) could reduce some of the related noises but would not significantly alter the situation.

D. Flood/Coastal High Hazards: Any development placed in a flood prone or coastal high hazard area risks structural and property damage and more significantly possible loss of life. Given the intent of the landowners to develop their property, prudent design and engineering techniques will be used to mitigate potential impacts. For this project the buildings may be elevated slightly above grade to allow flood waters to pass under the structure. The exact height has not been determined because the base flood height (7 feet) and property elevation are about equal. Raising a building however does not guarantee that damages will not occur. Damages can be expected for any flood event. This may be in the form of erosion, pavement washouts, loss of landscaping material, structural damages due to water volume, velocity, and floating debris.

E. Vegetation/Wildlife: Implementing the project requires that practically all existing vegetation be grubbed. Some of the larger specimen trees would remain in place or be stockpiled on-site for future landscaping purposes. In most cases, vegetation removal accelerates erosion. Vegetation protects the ground from wind and rain and binds soil particles together. Without this protection, the ground is susceptible to erosion by wind and water. But given the general lack of soil on the property, erosion problems are not anticipated. Sand particles, the predominant "soil type", may be blown or washed away but this already occurs under existing conditions.

Wildlife displaced by vegetation removal would seek habitat elsewhere; either in the kiawe thickets to the east or residential areas to the north. This too is not considered an adverse impact. In the long run, wildlife could possibly return due to improved vegetation.

F. Anchialine Ponds: Anchialine ponds can be destroyed by physical modification of their basins (i.e., deliberate filling or accidental filling as a result of sedimentation), eutrophication of pond waters through nutrient enrichment, or faunal replacement (loss of unique attributes) through introduction of fishes. The two deepest ponds on the Ruddle property with fish (occurring naturally or introduced by man) are already degraded habitat for the distinctive crustaceans.

Preservation of some or all of the existing ponds on the site would require basically the same considerations with respect to avoidance of excessive chemical inputs, mineral and organic sediment accumulations, introduction of exotic biota, and the like. The two largest ponds (Ponds A and E) on the Ruddle property appear the least suitable for preservation in view of their present biota. Further, these ponds have accumulated fine sediments which reduce the rate of turnover of pond waters. Removal of fish and modifications to the basins might succeed in restoring these ponds, although the deciding factor in choosing this course of action should depend on siting relative to the development plans. The existing "pristine" ponds (of which Pond C is the best example) offer the best guarantee of habitat preservation at the present time. However, even if these ponds are untouched and undamaged by construction, conditions of the altered terrestrial environment might cause a rapid demise in anchialine habitat quality.

Designing anchialine ponds into the development has the advantage of insuring that the resulting habitats are suitable, as opposed to retaining the existing ponds without consideration of future suitability of the total environment (adjacent terrestrial areas included). Further, precautions during construction may need to be considered if a course of preservation of existing ponds is undertaken. Excessive siltation during construction could render the existing ponds unsuitable. Depending upon the difficulty of providing protection during construction (in part a factor of pond location relative to building sites), the creation of new ponds after construction (perhaps coincident with landscaping) would seem to have some advantages.

G. Archaeology: All 24 sites on the subject property do not possess the same degree of significance. In the opinion of the consulting archaeologist some sites are worthy of preservation and some are not. In most instances follow up work is necessary. To facilitate development and to assure prudent consideration of archaeological sites in site planning, the following site specific actions are recommended.

PAN 80-1	Investigate the possibility of human remains being interred in this structure.
PAN 80-2	No further action recommended.
PAN 80-3	No further action recommended in regards to the wall; however, the three petroglyphs closely associated with the wall should either be left in situ or else relocated. Proper care should be taken in the relocation process and a suitable location preselected. It seems appropriate to put the petroglyphs with or contained in one of the structures that are to be preserved.
PAN 80-4	This site should be preserved and excavated.
PAN 80-8	These caves must be examined for human remains and any midden areas excavated.
PAN 80-9	Sample excavation where possible.
PAN 80-10	Sample excavation where possible and preserve.
PAN 80-11	Sample excavation.
PAN 80-12	Investigate the possibility of human remains.
PAN 80-14	Sample excavation and preserve.
PAN 80-15	Investigate the possibility of human remains.
PAN 80-16	No further action recommended.
PAN 80-17	Excavate and preserve.
PAN 80-23	No further action recommended.
PAN 80-24	No further action recommended.
PAN 80-25	Examination of possibility of human remains and test excavation.
PAN 80-26	Sample excavation.
PAN 80-27	Some sample excavation.
PAN 80-28	Investigate the possibility of human remains.
PAN 80-29	Sample excavation.
PAN 80-30	Possible sample excavation.
PAN 80-31	Investigate the possibility of human remains and sample excavation where possible.
PAN 80-32	Investigate the possibility of human remains and sample excavation where possible.

H. Land Use: Major impacts to the regional land use patterns both existing and planned are not anticipated. The area has been planned as a major resort destination by the County at least since 1971. With the past construction of the Mauna Kea Beach Hotel, the present construction of major resort developments at Kalauhuipau'a and Anaeho'omalu, the impact of the proposed two-hundred (200) unit condominium proposal is minimal (Planning Department, 1980).

I. Infrastructure:

1. Water: Demand is estimated at 38,400 gallons per day (assuming 200 gallons/bedroom/day). Applicant has inquired with the Department of Water Supply as to the availability of water but has not received a water allotment as yet.

2. Circulation: Puako Beach Drive will serve as the only route to the property from Queen Kaahumanu Highway. Constructing alternate routes either paralleling Puako Beach Drive or through the Mauna Lani Land Co. resort development are not economically feasible from the developers standpoint and therefore not contemplated. Given this consideration, the discussion of circulation impacts is confined to Puako Beach Drive.

A first step in traffic impact analysis is to apportion and project development generated traffic. A useful starting point is the number of parking stalls which in this instance, totals 192 or one per unit. It is anticipated that occupancy will be split between owners (40%) and visitors (60%) with a 25% vacancy factor per day. Assumptions on tenancy and occupancy are important because average trip generation rates are based on them. The rates used in this analysis are 4.0 daily vehicle trips/visitor rental unit and 5.4 daily vehicle trips/resident occupied unit (Belt, Collins and Associates, 1980). Project generated traffic is then calculated as follows:

192 units x .75 (occupancy factor) = 144 occupied units/day

Resident: 144 units x .40 x 5.4/trip rate
= 311 daily vehicle trips

Visitor: 144 units x .60 x 4.0/trip rate
= 346 daily vehicle trips

The resulting traffic estimate is based on 24-hours. However, traffic is not evenly distributed over an entire day. Based on data presented in a previous section there is an 11 hour period when traffic on Puako Beach Drive is 30 vehicles or less per hour. If the remaining 13 hours (6:00 AM to 7:00 PM) comprise the bulk traffic hours it might be assumed that traffic generated by the project would probably fall into this same time period.

Per hour added traffic amounts to twenty-four vehicle trips for residents and twenty-seven vehicle trips for visitors. It should be noted that these estimates are not absolutes. Fluctuations in traffic can be expected depending on external factors which cannot be determined at this time. For example, linking travel behavior (an unknown factor) with vehicle trip rates is at best "a guesstimate" and not an accurate predictor.

A second step in impact analysis is to evaluate whether the affected roadway can handle additional traffic. Usually this can be confirmed through a capacity analysis but one was not prepared for Puako Beach Drive. Capacity analysis assumes access is controlled onto/off the roadway and for the most part the roadway is fairly straight. Both of these do not apply to Puako Beach Drive which winds its way mauka-makai with many if not all private driveways fronting it.

Based on existing traffic counts and the traffic from the project, it is believed Puako Beach Drive can accommodate an additional fifty vehicles per hour. The increase can be expected to increase the frequency of traffic noise but not necessarily the magnitude and perhaps pose additional traffic hazards. This latter impact suggests the greater the traffic the greater the chances for traffic mishaps which is a potential problem wherever development occurs.

3. Sewerage: Three treatment plants (one per complex) would provide secondary treatment of liquid waste. Treated effluent would then be chlorinated and discharged into seepage pits or injection wells placed on site.

To mitigate potential health hazards, the plant must and will be operated and maintained according to Public Health Regulations (Chapter 38) presently in force. The units to be installed will meet Department of Health requirements and will be operated and maintained as required by law. It is also anticipated that vigorous enforcement by the Department of Health should eliminate problems experienced by this type of treatment and disposal system.

In general, two problems are typically associated with the type of waste treatment and effluent disposal proposed: plant failure and seepage. A modern wastewater treatment plant is a complex combination of mechanical, electrical, hydraulic, physical, and biological processes. Any malfunction of these processes will cause an upset to the treatment plant which normally affects the quality of discharged effluent and the amount of solids in the disposal well. Although a plant could fail for the above reason(s), the most common cause of failure is poor operation and maintenance procedures (State Department of Health et al., 1978).

To emphasize the need for and the importance of proper operation and maintenance practices, Chapter 38 of the Public Health Regulations has been revised to correct such deficiencies. The regulations explicitly state:

> No person shall operate a new or existing treatment works unless the person or the owner of treatment works has a permit to operate issued by the Director in accordance with the provisions of Section 6 of this Chapter (Section 3.3).
>
> For a permit to be issued, the new or existing treatment works shall (must) be operated and maintained in accordance with the requirements of an operation and maintenance manual (Section 6.2(B)). The owner must also follow an implementation schedule for meeting subsurface disposal (Section 4.4) and effluent quality requirements (Section 5). Failure to comply with these minimum requirements can lead to denial, suspension, or revocation of the permit.

The regulations clearly place the burden of operating and maintaining the plant on the owner. The plant must be provided with a standby power system, measures to control accessibility, and certification that the treatment works shall be operated and maintained in accordance with all provisions of the maintenance manual. Moreover treatment plant operators must be certified to operate a plant.

Following treatment of sewage, wastewaters from the project may be disposed of in seepage pits at or slightly above the ground water body, through injection wells directly into the ground water body, or through injection wells dug deep into the salt water body beneath the fresh water lens. The flow paths of the wastewater and its discharge into the ocean are controlled more by the wastewater density than the site of its disposal. Most domestic wastewaters have densities lower than that of sea rise above waters of greater density in the surrounding aquifer. Whether they are disposed of in surface pits, injected directly into the fresh water lens, or injected below the lens, wastewater will move seaward with the fresh or slightly brackish water layer. The depth of emergence offshore will be as shallow and as close to shore as the permeability distribution of shoreline geology permits. The discharge of wastewater to the ocean by way of the ground water body may be expected to spread

out along a length of the shoreline whose extent depends on the ratio of the rate of wastewater injection to the rate of natural ground water discharge. Because of its lower density, low salinity ground water seeping into the ocean rises to the ocean surface in a layer a few inches deep where wave action mixes it with sea water.

The effects of any pollutants in the wastewater discharged through coastal springs are likely to be most significant in sheltered bays and other environments protected from wave action. Strong ocean waves and currents along the open coast fronting the Ruddle site are beneficial in rapidly mixing and diluting wastewater entrained in the brackish water discharge.

Wastewater disposal from the proposed development will likely elevate the levels of plant nutrients which reach coastal waters by way of ground water seepage and can be expected to increase the growth of marine algae. The existing N:P ratios in offshore waters average about 20:1, which favors growth of phytoplankton over benthic algae. The cellular N:P ratio for marine phytoplankton is about 7:1 (Riley and Chester, 1971). However, the rapid mixing in offshore waters effectively dilutes nutrients discharging by way of ground water and removes phytoplankton too quickly for them to respond to existing nutrient concentrations, which are at levels not limiting to plant growth. The usual chemical composition of sewage effluent produces a low ratio of nitrogen to phosphorous (in the range of 1:1 to 5:1, but averaging 1.5:1), which favors benthic algae at the expense of phytoplankton. If sewage effluent comprises a sufficiently large fraction of total ground water volume to lower the existing N:P ratio, the growth of benthic algae might be stimulated. An increase in algal cover would not necessarily constitute a detrimental effect. A large percentage of the fishes inhabiting nearshore waters off the site feed on benthic algae. Their grazing activity keeps most of the existing algal mats cropped low. If the present food supply is limiting the population of herbivores, increased algal productivity could lead to larger populations of

grazing fishes, whose presence would attract larger fishes higher in the food chain. Inshore areas along the South Kohala coast appear to be under heavy fishing pressure (State Division of Fish and Game, 1980), particularly on weekends and holidays along the coast immediately north of the property (B. Ruddle, pers. comm.). Localized increases in benthic algae might prove beneficial, up to a point, by supporting increases in resident fish populations. Rapid mixing and dilution of nutrient-enriched ground water a short distance from areas of discharge will mitigate against widespread stimulation of algal growth which would tend to be concentrated in the immediate vicinity of submerged steeps of brackish water. Discussion at a recent conference on underground wastewater injection control (sponsored by the State Department of health on July 15, 1980) suggests that periodic surveys of benthic algal growth in areas of underground disposal of wastewater may be an effective means of monitoring effects of domestic sewage seeping to, or injected into, the ground water. Stations for water quality sampling to monitor levels of nutrients entering the ocean from underground wastewater disposal can be selected on the basis of benthic algal growth, especially dense growths of Ulva spp.

An important consideration in the planning and design of a sewage treatment system is the possibility of microbial contamination of ground water percolating seaward from the site of wastewater disposal. In most parts of the Hawaiian Islands the soil is thick and effective in reducing bacterial concentrations in ground water as the water percolates to the discharge points. Microbial contamination is unlikely where long ground water travel paths are involved, except in regions of exceptionally permeable substrata, such as occur in South Kohala. Bacterial contamination of ground and coastal waters has been observed in areas such as Kailua-Kona, but not elsewhere (Cox, 1976). The wastewater "treatment" normally provided by percolation through soil will not be possible at the Ruddle site due to a general lack of soil cover and the highly permeable underlying lavas. This fact should be taken into account in design considerations for the sewage treatment system.

J. Public Facilities and Services: The population that could be accommodated by the proposed development is not anticipated to impact adversely on schools, recreation, and health facilities and protective services. It is anticipated that primarily transient rather than permanent occupants comprise the population, some school age children may be added to the school system. Regardless of population composition, the number of recreation facility users would increase and the development itself necessitates additional responsibilities for protective services.

K. Economic: The immediate benefit will be an infusion of capital and the provision of jobs in the County of Hawaii. The estimated $11 million to be spent on the project will purchase labor and materials both within and outside the County. These expenditures will provide direct tax revenues to the Federal and State governments. Of the total $11 million, approximately 30% or $3.3 million will be spent for labor payroll and fringe benefits. Of that total, approximately 15-20 percent will be devoted to payroll taxes. Additional tax revenues (e.g. gross excise taxes) can be expected from material suppliers and sub-contractors. Although these expenditures are short-term, it provides economic benefits not only because of the infusion of cash but also because of the social benefits derived by providing additional jobs within the construction industry.

In the long run, the project should generate greater real property taxes for the County. This amount will vary over the years in direct relationship to County tax policies, that is, the method(s) for assessing real property and the tax rates set for the kind of improvement proposed.

L. Aesthetics: As described in Section 1, the proposed project will be sited to harmonize with the natural features of the property. The condominium units will be designed in an "Old Hawaii" style of architecture emphasizing such elements as wide lanais, ample fenestration, and using materials such as lava rock facings. However, despite its locational and design attributes, it is difficult to judge whether development results in positive or negative visual effects. Rather than make subjective judgements, visual effects are discussed relative to what observors might view from nearby locations.

At the end of Puako Beach Drive, a dense stand of kiawe trees presently obstructs views to the property. As long as these trees are not removed (note: the trees are on State property), the existing visual condition should prevail into the future. Extending Puako Beach Drive creates a view corridor but the roadway alignment is oriented mauka and away from the project site thus the structures still should not be visible. Driving the extension road, massed plantings around the perimeter would partially obstruct views of the development but more importantly establish the visual image of the development beyond.

From the gravel road along the shoreline, perimeter landscaping would obstruct some views but most of the structures and appurtenant facilities would be visible.

Viewed from the ocean fronting the property, no loss of mauka views is anticipated. The reason for this is that the existing wooden buildings and tall canopy trees already preclude mauka views. Development would replace the existing buildings and landscaping without affecting what cannot be seen presently. At this location, other factors impinge on aesthetics including building mass, design, adequate setbacks, texture and color, landscaping, and open space.

SECTION 5

ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

Impacts associated with the construction of Paniau are generally short-term and unavoidable. These include loss of vegetation, alterations to landform, disruption of faunal populations, and generation of dust and noise. The location of the project site relative to nearby residences suggest the impacts would be localized on site and should not adversely affect neighboring properties or residents.

As indicated by the discussion on historic features, 24 sites are located on the property and 47 sites along the proposed access road corridor. Those sites affected by development generally will be removed and relocated away from the affected area(s). The act of removing and relocating might be considered an adverse but necessary action to preserve or salvage the feature rather than allow its destruction.

Similarly, the existing anchialine ponds may be adversely affected. It was pointed out that sediments or nutrients entering the ponds could upset pond ecology with deleterious effects on this unique ecosystem.

SECTION 6

ALTERNATIVES TO THE PROPOSED ACTION

The objectives of the project are to allow the landowner to achieve the highest and best use of the land and to realize an adequate rate of return on their investment. Given this objective, it appears that there are only two desired alternatives which would achieve these objectives: medium density development and resort use.

In this instance a general plan amendment for Resort use is being requested but resort development is not planned. Should the general plan amendment be approved, applicant proposes to construct a 192 unit condominium complex. Although the proposed use is not entirely consistent with the general plan amendment request, it is a permitted use and a Resort designation maintains future development options. Relative to adjacent existing and proposed uses the proposed medium density development separates (or buffers) resort development to the south from residential development to the northeast. In terms of environmental impacts, both uses would generate similar on-site impacts but in the long-run resort development economics are believed detrimental to stated objectives. The landowners cannot compete successfully with larger existing and planned resort developments given the property size and financial resources needed to operate such developments.

SECTION 6

ALTERNATIVES TO THE PROPOSED ACTION

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SECTION 7

THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The on-site environment will be affected adversely during the construction phase of the proposed project. Noise, dust, land alterations and other effects associated with construction will occur but cease after construction. In return, short-term economic benefits in the form of construction employment is expected.

In the long-run, it is anticipated that development would permit the landowners to achieve their stated objectives. In so doing, the developer/property owners have carefully planned the project and evaluated their decisions in part on the environmental resources found on-site. It is recognized that historical features abound on the property and steps shall be taken to preserve as many significant features as possible. In instances where such features are not worthy of preservation, cultural artifacts shall be retrieved prior to destruction. The landowners and the developer also recognize the uniqueness of the anchialine pools and are evaluating alternatives for maintaining such habitat within the development.

SECTION 8

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Labor and capital would be committed to the project. Simiarly, land would be irreversibly committed over the economic life of the proposed development or until another type use is sought.

Archaeological resources would be irreversibly altered to facilitate development. Such alterations are in the form of salvage and relocation rather than destruction in situ.

Similarly, some of the anchialine ponds will be irreversibly altered to facilitate development. The developer and landowners recognize the uniqueness of the ecosystem and are evaluating options for maintaining some of the pools as part of the development.

SECTION 9

UNRESOLVED ISSUES

The availability of water has not been confirmed. Construction of the proposed Lalamilo Water System, which is designed to supply the South Kohala Coast from Kawaihae to Puako, does not guarantee water availability for this project. The developer has inquired and will continue to consult with the Department of Water Supply on this matter.

SECTION 10

ORGANIZATIONS AND PERSONS CONSULTED

STATE

Department of Land and Natural Resources

COUNTY OF HAWAII

Planning Department
Department of Public Works
Department of Water Supply

See also consultation period comments and responses.

SECTION 11

LIST OF NECESSARY APPROVALS

PERMIT/APPROVAL	APPROVING AGENCY OR BODY
General Plan Amendment	County of Hawaii Council
Special Management Area	County of Hawaii Planning Commission
Change of Zone	County of Hawaii Council
Plan Development Permit	County of Hawaii Planning Commission
Plan Approvals	Planning Department County of Hawaii
Subdivision Approval	Planning Department County of Hawaii
Grading Permit	Department of Public Works County of Hawaii
Building Permits	Department of Public Works County of Hawaii
Private Sewage Disposal System/Treatment Works	Department of Health State of Hawaii
Permit to Construct and Operate Private Treatment Works	Department of Health State of Hawaii
Zoning of Mixing	Department of Health State of Hawaii

SECTION 12

CONSULTATION PERIOD
COMMENTS AND RESPONSES

Sierra Club
moku loa group
Hawai'i Chapter
P.O. Box 1137, Hilo, HI 96720

August 21, 1980

Yuklin Aluli
1725 Ala Moana Blvd
Honolulu, Hawaii

Dear Mr. Aluli

The Moku Loa Group of the Sierra Club wishes to make the following questions concerning the Condominium Project at Puako, Lalamilo, South Kohala, Hawaii. We think the EIS should address the following points, amoung others, normally covered in the EIS.

Water supply to the project and the effect that this project will have on residential water supply along Puako Road.

The effect of sewage effluent on the water along the coastline. Alternatively, the effect of the effluent on the water table assuming there is no ocean discharge.

Traffic effects on Puako Road and Puako residences.

Emergency evacuation effects and procedures in event of tsunami, flood, or high surf.

We would like a copy of the EIS when completed.

Thank you
George M. Winsley
George M. Winsley

October 1, 1980

The Sierra Club
Hawaii Chapter
P. O. Box 1137
Hilo, Hawaii 96720

Dear Mr. Winsley:

This is to acknowledge receipt of your letter dated August 21, 1980. Thank you for your concern in our project. Please be advised that your concerns will be taken care of in the E.I.S.

Very truly yours,

YUKLIN ALULI

YA/pt

PUAKO COMMUNITY ASSOCIATION
PUAKO, KAWAIHAE, HAWAII 96743
150 Puako Beach Drive, Kamuela, Hi.

Nov. 22, 1980

Sidney Fuke, Director,
Planning Dep't, County of Hawaii
25 Aupuni St., Hilo, Hi 96720

In re: Proposed "Ruddle Condominium"
South end Puako Beach Drive

Dear Mr. Fuke:

According to a news article some time back, your department was reviewing plans for the proposed condominium. In your considerations we would like you to consider the following:

1. Puako Beach Drive has only 20 feet of pavement and in many places the utility poles are within a feet of the pavement. While the right of way is 40 feet, shrubbery usually reduces the visual right of way to something less. We have a lot of children whose only playground is the street, and while this is not a good idea and is very dangerous this fact cannot be denied or legislated away. If 150-200 condo units are built we might expect a doubling of traffic on Puako Beach Drive; something that would inevitably increase the danger to our children. Therefore, many of us think it would be preferable if the Ruddle developers ~~xxxxx~~ gained access to their condo via the Mauna Lani property--something they would have to arrange for on their own. In any event, access would have to be across a "neck" of State land surrounding their property.

2. We are in one of 3 very dangerous tsunami zones on this island and due to the flatness of the land mauka we are undoubtedly in the most vulnerable location. There are no escape corridors. A locally generated tsunami would strike us in as little as ten to 15 minutes--insufficient time for those at the south end of Puako to reach the high land at the Puako dump. To expose another 100 people or so to this danger would not be right. Check with Harry Kim of Civil Defense re this problem and its solutions. Again the best solution might be to exit via Mauna Lani Resorts, that is, for the condo guests.

3. Water availability through the 8" Puako pipeline may be another problem that requires attention. In drought times we have had water shortages and unless the condo water comes from new and greater sources they might also have times of restricted usage.

For your information, the people of Puako are opposed to making Puako Beach Drive a through street--something that may not be involved here in the Ruddle matter but which can stand re-stating.

This letter is neither endorsement of the Ruddle project or opposition to it. We shall need more information before taking a position as to such a project. Therefore would you please keep us timely informed of developments on this project?

Yours with aloha,

Ed Austin, President

SECTION 13

EIS COMMENTS AND RESPONSES

LIST OF EIS COMMENTORS

Agency/Organization	Date of Comment	Disposition/Response Date
County of Hawaii		
Department of Research and Development	3-19-81	No Response
Department of Water Supply	3-25-81	No Response
Fire Department	3-31-81	No Response
Planning Department	3-31-81	5-29-81
Civil Defense Agency	4-6-81	5-29-81
Police Department	4-6-81	5-29-81
Utility Companies		
Hawaii Electric Light Company	4-1-81	No Response
County of Maui		
Department of Parks and Recreation	3-19-81	No Response
State		
Department of Agriculture	3-10-81	No Response
Department of Land and Natural Resources	3-16-81	5-29-81
Department of Defense	3-19-81	No Response
Office of Environmental Quality Control	4-3-81	5-29-81
Department of Planning and Economic Development	4-6-81	No Response
Department of Land and Natural Resources	4-7-81	5-29-81
Department of Transportation	4-8-81	No Response
Department of Health	4-15-81	5-29-81
University of Hawaii		
Environmental Center	4-7-81	5-29-81
Water Resources Research Center	4-7-81	5-29-81

Agency/Organization	Date of Comment	Disposition/Response Date
Federal		
United States Army Support Command, Hawaii	3-16-81	No Response
Soil Conservation Service	3-19-81	5-29-81
Headquarters, Naval Base Pearl Harbor	3-24-81	No Response
Corps of Engineers (2)		
(PODCO-O)	3-20-81	No Response
(PODED-PV)	3-31-81	5-29-81
Fish and Wildlife Service	3-7-81	No Response
Private		
Puako Resident (Illegible signature)	3-29-81	No Response
Sierra Club	4-6-81	5-29-81

DEPARTMENT OF RESEARCH AND DEVELOPMENT

COUNTY OF HAWAII • 25 AUPUNI STREET • HILO, HAWAII 96720 • TELEPHONE (808) 961-8366

HERBERT T. MATAYOSHI, MAYOR
A. DUANE BLACK, DIRECTOR

March 19, 1981

MEMORANDUM

TO: Planning Department

FROM: A. Duane Black, Director

SUBJECT: Environmental Impact Statement-Paniau Lalamilo, S. Kohala

We do not have any comments relative to the above subject. We are interested in receiving additional information on the proposed project.

HAWAII FIRE DEPARTMENT • COUNTY OF HAWAII • HILO, HAWAII 96720

Memorandum

DATE March 31, 1981

TO : Planning Department

FROM : Francis E. Smith, Deputy Fire Chief

SUBJECT: GENERAL PLAN AMENDMENT
KEP ALULI, INC.
TMK: 6-9-01:7

This office has no objections to this application provided adequate water distribution and fire hydrants are made part of the requirements. Fire hydrants should be of Class "B" minimum, spaced not greater than 300 feet from the most distant planned structure.

Francis E. Smith

FRANCIS E. SMITH
DEPUTY FIRE CHIEF

FES/mo

COPY

DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
25 A[illegible] STREET • HILO, HAWAII 96720

March 25, 1981

TO: Planning Department

FROM: Manager

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT - PANIAU
LALA ILO, SOUTH KOHALA
TAX MAP KEY 6-9-01:07

Attached is a copy of our letter dated February 23, 1981 responding to an inquiry by Mr. Yuklin Aluli regarding the proposed 190-unit development. The comments of this letter should be incorporated into other comments made during review of the Environmental Impact Statement.

H. William Sewake
Manager

QA

Attm.

cc - Mr. Yuklin Aluli (w/enc. - letter)
Environmental Quality Commission (w/enc. - EIS document)

... Water brings progress...

FEB 27 1981

DEPARTMENT OF WATER SUPPLY • COUNTY OF HAWAII
25 AUPUNI STREET • HILO, HAWAII 96720

February 23, 1981

Mr. Yuklin Aluli
Attorney at Law
1720 Ala Moana Blvd.
Honolulu, HI 96815

PROPOSED 190-UNIT DEVELOPMENT
TAX MAP KEY 6-9-01:07

This is in response to your letters dated February 11 and 13, 1981.

Based on the prevailing water situation in the area, the Department's existing water system facilities is not able to accommodate your proposed development. Merely increasing the size of your waterline from 2 inches to 4 inches is not sufficient. The existing service to the property is presently through a 5/8-inch meter. Your proposed development will require a 4-inch meter. However, a larger sized meter service or a water commitment will not be granted unless an additional source is developed in the Lalamilo Well field.

Presently, there are no funds available for development of another source. Developers may be required to contribute a pro rata share for construction. However, this option is still at a premature stage.

Pursuant to the present departmental policies, no water commitments are granted unless applicable permit applications requiring government approval are officially on file. Further, water commitments will be granted only if the developers state through definite written intentions that they are willing to undergo the source improvements either individually or collectively with other developers.

Should there be any questions, please do not hesitate to contact us.

William Sewake

H. William Sewake
Manager

QA

... Water brings progress...

HAWAII ELECTRIC LIGHT COMPANY, INC.
P. O. BOX 1027 HILO, HAWAII 96720

LIC 2
H-W/R

April 1, 1981

County of Hawaii
Planning Department
25 Aupuni Street
Hilo, Hawaii 96720

Attention: Mr. Sidney Fuke, Director

Subject: General Plan Amendment
Kep Aluli, Inc.
TMK: 6-9-01:7

Gentlemen:

Please advise Kep Aluli, Inc. to notify Hawaii Electric Light Company immediately of their plans and construction schedule upon receipt of approval.

We will require some lead time to prepare our plans, order materials and equipments for our electric facilities in this area to accommodate this anticipated load increase.

Should you have any questions, please call us.

Very truly yours,

Alva K. Nakamura
Manager
Engineering Department

AKN:bk

HANNIBAL TAVARES
Mayor

NOLLE R. SMITH, JR.
Director

COUNTY OF MAUI
DEPARTMENT OF PARKS AND RECREATION
RECREATION DIVISION
200 South High Street
Wailuku, Maui, Hawaii 96793

March 19, 1981

Kep Aluli, Inc.
c/o Yuklin Aluli
1720 Ala Moana Boulevard
Honolulu, Hawaii 96815

Dear Mr. Aluli:

Thank you for the opportunity to review the Environmental Impact Statement - Paniau.

I have no comments that have not been asked in previous correspondence. Major concerns are the environmental effect on the shoreline created by sewage disposal methods and drainage considerations.

Best wishes to you for a quality project that adds in a positive way to the special terrain and life-style of the area.

Yours truly,

Nolle R. Smith
Director

JD:NRS:cr

State of Hawaii
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 Diamond Head Road
Honolulu, Hawaii 96816

19 MAR 1981

HIENG

Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Gentlemen:

Paniau
Lalamilo, South Kohala, Hawaii

Thank you for providing us the opportunity to review your proposed project, Paniau Environmental Impact Statement.

We have completed our review and have no comments to offer at this time.

Yours truly,

JERRY M. HATSUDA
Captain, HANG
Contr & Engr Officer

cc: Kep Aluli, Inc. ✓
Env Quality Coom w/EIS

GEORGE R. ARIYOSHI
GOVERNOR

JOHN FARIAS, JR.
CHAIRMAN, BOARD OF AGRICULTURE

STATE OF HAWAII
DEPARTMENT OF AGRICULTURE
1428 SO. KING STREET
HONOLULU, HAWAII 96814

March 10, 1981

MEMORANDUM:

To: Mr. Sidney Fuke, Director
Planning Department
County of Hawaii

Subject: EIS - "Paniau" - Kep Aluli Inc.
TMK: 6-9-01:7 - "Paniau"
Lalamilo, South Kohala, Hawaii

The environmental impact statement has been reviewed by the Department of Agriculture, and we have no comments to offer.

We appreciate the opportunity to comment.

JOHN FARIAS, JR.
Chairman, Board of Agriculture

STP 8.7190

Mr. Sidney Fuke, Director
Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. Fuke:

Environmental Impact Statement - Paniau
Lalamilo, South Kohala, Hawaii

Thank you for the opportunity to review the subject EIS.

The proposed action is somewhat remote from our facilities and has no direct impact upon our concerns or interests.

Very truly yours,

Kobkichi Higashionna
Director of Transportation

cc: Kep Aluli, Inc.
OEQC

STATE OF HAWAII
DEPARTMENT OF PLANNING AND
ECONOMIC DEVELOPMENT
P. O. Box 2359
Honolulu, Hawaii 96804

April 6, 1981

Ref. No. 2956

Mr. Sidney H. Fuke
Director
Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. Fuke:

Subject: Environmental Impact Statement - Paniau - Lalamilo,
South Kohala, Hawaii

Our staff has reviewed the environmental impact statement of the above proposed project and found the EIS to adequately address the potential environmental impacts which can be expected.

We thank you for giving us the opportunity to review the EIS.

Sincerely,

Hideto Kono

cc: Kep Aluli, Inc. ✓

DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY SUPPORT COMMAND, HAWAII
FORT SHAFTER, HAWAII 96858

APCV-EEE-E

16 MAR 1981

Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Gentlemen:

The Environmental Impact Statement (EIS) for the Paniau Condominium Project, Lalamilo, South Kohala, Hawaii has been reviewed and we have no comments to offer. No Army installations or activities will be adversely affected by the proposed project.

Thank you for providing us the opportunity to comment on the EIS.

Sincerely,

Original signed by

ADOLPH A. HIGHT
COL, EN
Director of Engineering and Housing

Copy furnished
Kep Aluli, Inc.
c/o Yuklin Aluli
1720 Ala Moana Boulevard
Honolulu, Hawaii 96815

HEADQUARTERS
NAVAL BASE PEARL HARBOR
BOX 110
PEARL HARBOR, HAWAII 96860

IN REPLY REFER TO:
002A:amn
Ser 498

24 MAR 1981

Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Gentlemen:

Environmental Impact Statement
Paniau
Lalamilo, South Kohala, Hawaii

The Environmental Impact Statement for the proposed Paniau project has been reviewed, and the Navy has no comments to offer.

At the Commission's request and by copy of this letter, the subject EIS is returned.

Thank you for the opportunity to review the EIS.

Sincerely,

R. D. [illegible]
CAPTAIN, [illegible], U.S. NAVY
FACILITIES [illegible]
BY DIRECTION OF THE COMMANDER

Copy to:
Kep Aluli, Inc.
c/o Yuklin Aluli
1720 Ala Moana Boulevard
Honolulu, HI 96815
State EQC (w/EIS)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
300 ALA MOANA BOULEVARD
P.O. BOX 50167
HONOLULU, HAWAII 96850

IN REPLY REFER TO:
ES
Room 6307

April 7, 1981

Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Re: EIS - Paniau
Lalamilo, South Kohala
County of Hawaii, Hawaii

Gentlemen:

We have reviewed the subject Environmental Impact Statement (EIS). The EIS adequately addresses the concerns for fish and wildlife resources; therefore, we have no comments.

We appreciate this opportunity to comment.

Sincerely yours,

for Ernest Kosaka
Project Leader for
Environmental Services

cc: Kep Aluli, Inc.
HDF&G
NMFS

March 24, 1981
Puako, Hawaii

Sidney Fuke
Planning Dept.
County of Hawaii

Proposed Development - Ruddle Property
Puako, Hawaii

I read in this morning Hawaii Tribune Herald about the opposition to the proposed development above by the Puako residents. I believe this opposition originates from Mr. Edward Austin, Pres. of the Puako Community Association which only represents a few of the people here. I do not want to be considered as one opposed for the following reasons.

(1.) increase of heavy auto traffic on Puako Beach Drive. Dept: Two years ago when I was chairman of our Safety and Public Works committee we ~~study~~ did a study of this traffic with cooperation by Mr. Mitsunori of the County Traffic Dept. The results were that the traffic was very light, less than almost any road on this island. Even if this was doubled you wind up with nothing. I reported these findings to the Puako association. Our problem is a few speeders, usually visitors who

care less. If our police could issue tickets to a few the problem would lessen.

(2) Hazardous because of bad tsunami area and no escape routes.

Reply: In the history of this island going back to the bad local tsunami of 1858 and those of 1946 and 1959 no wave action occurred at Puako. The bad Kona storms are the problem. In 1980 waves carried coral inland as much as 300' in a few places. The bad damages occurred where people had not constructed good sea walls or elevated their homes you see.

The escape on Puako Beach Drive in a tsunami through the section in Puako Bay would be the last choice. Tsunamis inundate the county road here of several feet in height.

Our county has been asked repeatedly to provide at least one escape route, perhaps centralized near the Catholic church that would help escape and also serve as a Fire Break.

(3) Opposition to development on general principles. I feel the native part-Hawaiian Puddle family has been here for 30 years longer than any of us.

They have every right to develop their own property after having owned it for 50 years. What possible justification can one propose when approval has been given for vast developments by mainland and foreign nationals? This would indeed be a sad day in Hawaiian history if our own people cannot do what the transplants have.

(4). Right to use domestic water:

I understand fully that Lalamilo Well water was for the general public with a certain amount earmarked for the developers who are to pay back the County Bds. of about 2 million. Our State tax funds are to better than 1 million dollars in this project. The Puddle family have been paying State taxes for 50 years. They have as much right to water as anyone.

I urge you to assist the Puddle family in granting the necessary permits. They know nothing of this letter which was written to promote fair play. You will find most local people favor the project by our own part Hawaiian people.

Leon A. Thevenin

COUNTY OF HAWAII

PLANNING DEPARTMENT

25 AUPUNI STREET • HILO, HAWAII 96720

HERBERT T. MATAYOSHI
Mayor

SIDNEY M. FUKE
Director

DUANE KANUHA
Deputy Director

March 31, 1981

Ms. Yuklin Aluli, Attorney
1720 Ala Moana Blvd.
Honolulu, HI 96815

Dear Ms. Aluli:

EIS/Paniau, Lalamilo, South Konala, Hawaii
Kep Aluli, Inc. General Plan Amendment Petition

We have reviewed the EIS prepared for Kep Aluli, Inc. and submit the following comments.

1. While specific site design aspects are not particularly critical at this General Plan amendment stage of the proposal, please be advised that minimum parking requirements are calculated at 1.25 stalls per unit. Therefore the 199 parking stalls mentioned on page 1 of the EIS is an underestimation and that at minimum 240 parking stalls would be required for the proposed project.

2. In the discussion on the anchialine ponds (pg. 8), the statement is made that "Halocaridina rubra, is not evident, undoubtedly because of the presence of several fishes, including the introduced tilapia, Saratherodon mossambica, the mullet, Mugilcephalus . . ." While this may be a factor, it may not be necessarily so since the fish listed are primarily herbivores and would not oridnarily feed on the crustaceans.

3. The EIS should include a site plan locating the archaeologcal sites superimposed by the proposed building and parking layout.

4. In calculating water demand requirements, the figure of 200 gallons/bedroom/day was used to estimate demand at 38,400 gpd. Please be advised that the Department of Water Supply

calculates demand estimates at an average of 400 gpd per multiple family unit. Thus the estimated demand should at minimum be 76,800. Further, the calculations did not include other water requirements such as might be needed for landscaping, swimming pools and other ancillary uses. Thus the demand estimates should be reconsidered. Additionally, the discussion should include estimates of the existing Puako system's capacity consumption and outstanding commitments. The EIS notes on page 16 that Puako is served by an 8 inch distribution line and that a 2 inch water line serves the project site from the end of Puako Beach Drive. In discussing impacts, the EIS should consider whether this existing distribution system is adequate for the demand estimate or whether further improvements will be necessary. Comments from the Department of Water Supply note that water is not available unless an additional source is developed at the Lalamilo Well field. Thus the statement on page 45 should be revised.

5. In the discussion relating to impacts to vehicular circulation, it appears that some of the rates used in the analysis was taken from the Lalamilo Water System EIS done by Belt, Collins and Associates, which in turn used an earlier Vorhees Study. It does not appear however that the analysis carried the same methodology completely. For example, rather than discussing peak hour estimates, the analysis was based on an average per hour estimate over a 13 hour period. Nor did the EIS provide enough information to follow through the analysis to come to the conclusion that 50 additional trips per hour can be accommodated by Puako Beach Drive. Additionally, the EIS did not discuss traffic impacts during times of emergencies.

6. Puako Beach Drive is a County road. At present, there are no plans to improve the road, nor extend the alignment beyond the existing paved portion. It is not clear whether the applicant is willing to improve and extend the alignment. If so, it would be necessary to obtain the approval of the Board of Land and Natural Resources (Pg. 47). If not, and improvements necessary to extend the alignment must come through State or County funds, then this can be considered an impact to government resources and should be discussed.

Please be advised that we are still awaiting comments from the Divisions of Sewers and Sanitation and Civil Defense and will be forwarding you them at a later date.

A copy of comments submitted by the Department of Education is enclosed for your information.

Should you have any questions, please do not hesitate to contact our office.

Sincerely,

SIDNEY FUKE
Planning Director

VKG:wkm/lgv

Enclosure

GERALD PARK • URBAN PLANNER
URBAN PLANNING • POLICY ANALYSIS • ENVIRONMENTAL ASSESSMENTS

May 29, 1981

Sidney Fuke
Planning Director
County of Hawaii
Planning Department
25 Aupuni Street
Hilo, Hawaii 96720

Subject: EIS/Paniau
Lalamilo, South Kohala, Hawaii

Dear Mr. Fuke:

Thank you for reviewing the subject EIS and for your helpful comments on parking and water requirements. We offer the following responses to your concerns.

1. Parking

If 1.25 parking stalls per unit are required, thus a need for 240 parking stalls rather than the 199 stalls cited in the EIS, then the number of units (i.e. density) shall be reduced. It does not appear possible to place 192 units and 240 parking stalls on the property given environmental and regulatory constraints. The consulting architect shall be informed of this matter.

It is believed that development at a lower density does not significantly alter applicants intent or the impacts disclosed in the EIS. Our responses to all comments are therefore predicated on the project as described in the EIS.

2. Anchialine Ponds

Although the fish observed during the AECOS survey are all herbivores, other species known to inhabit anchialine ponds in other places or at other times (aholehole, papio) prey on the shrimp. Since all studies of anchialine ponds along the Kohala Coast have noted the relationship between the presence of fishes and absence of shrimp, it is presumed that shrimp hide from fishes in general.

3. Archaeological Sites Mapping

We do not believe such a map is necessary for the EIS.

1110 UNIVERSITY AVENUE SUITE 507 HONOLULU HAWAII 96822 (808)847-2488

4. Water Requirements

The Department of Water Supply has notified the developer that the Departments existing water system facilities is not able to accommodate the proposed development. Quoting from the Department's communication, "the proposed development will require a 4-inch meter, however, a larger sized meter service or a water commitment will not be granted until an additional source is developed in the Lalamilo well field. Presently there are no funds available for development of another source. Developers may be required to contribute a pro rata share for construction. However, this option is still at a premature stage."

In response to this communication, the developers have informed the Department of Water Supply of their willingness to participate in developing a water source.

5. Circulation

We chose not to use a peak hour method. The Voorhee Study calculated peak hour traffic based on approximately 10% of total daily traffic. If this method had been followed, traffic generated by the project would amount to about 66 vehicles (657 vehicles x .10) during peak hours (say 7:00 - 8:00 AM and 4:00 - 5:00 PM). One of the key assumptions in this method is that if a roadway can accommodate peak hour flow, then it can accommodate non-peak hour traffic.

Our intention was to discuss traffic for more than the peak hours hence we averaged traffic over thirteen hours. As indicated in the EIS, the estimate is not absolute and could be higher or lower than "guesstimated".

Our conclusion is a subjective one based on traffic counts provided by the County of Hawaii and observations of traffic patterns. Traffic counts were available for a seven day period but only two days counts, those having the highest volumes, were presented in the EIS. Based on the seven day count (or even those in Tables 1 and 2) we judged that the counts are indicative of light hourly traffic conditions. It should be noted that 16 March was a Sunday, generally a beach going day, and the high traffic count may include a substantial number of beachgoers. In addition, the total volume for that day was about 150-300 vehicles more than the daily total for the remaining six days.

To check traffic flow patterns, on-site observations were made on a weekday during October, 1980. The observations revealed that traffic density is light and generally flow conditions showed a 1-2 minute interval between passing vehicles. Because of this lag interval and light traffic volume, it is believed that Puako Beach Drive can accommodate an additional fifty vehicles per hour.

It is difficult to evaluate traffic impacts during emergencies (we assume you mean tsunami evacuation). Many factors affect traffic during such times --- advance warning time, residents awareness to evacuate, time of day, agency assistance during evacuation, and mode of transportation for example. Assuming worst case conditions (i.e., minimum warning, night evacuation, no agency assistance) then it is reasonable to assume that Puako Beach Drive would not be able to safely accommodate all residential vehicle traffic. Under these conditions (or others) reaching high ground by alternative means (i.e. walking) makes more sense than attempting to drive Puako Beach Drive.

6. Puako Beach Drive

Applicant is willing to improve and extend the alignment.

We hope that we have responded satisfactorily to your concerns.

Sincerely,

Gerald Park

GP:hg

cc: Kep Aluli, Inc.

HAWAII COUNTY CIVIL DEFENSE AGENCY

34 A Rainbow Drive
HILO, HAWAII 96720

Phones 935-0031
935-0032

April 6, 1981

Mr. Sidney Fuke, Director
Planning Department
County of Hawaii
Hilo, HI 96720

Dear Mr. Fuke:

Subject: Kep Aluli, Inc.

The residents of Pusko have been concerned about the single access to the area and consequently about traffic congestion in the event of an evacuation due to surf, tsunami or other natural disaster. Residents have also been concerned of the inadequacy of sirens in this location. All of these concerns are valid ones. The continued development of this area will only add to the concerns of the existing problems pointed out by the Punko Association.

In the event of a tsunami warning, the proposed development will be in the area of ordered evacuation.

Yours truly,

HARRY KIH
Administrator

GERALD PARK • URBAN PLANNER

URBAN PLANNING • POLICY ANALYSIS • ENVIRONMENTAL ASSESSMENTS

May 29, 1981

Mr. Harry Kim
Administrator
Hawaii County Civil Defense Agency
34-A Rainbow Drive
Hilo, Hawaii 96720

Subject: Kep Aluli, Inc.
EIS/Paniau

Dear Mr. Kim:

Thank you for your comments on the subject EIS and follow-up response to our query about evacuation plans for Puako.

Because you mentioned resident concerns of the inadequacy of sirens in this location, applicant will consult with you about possibly placing a warning siren on the property or nearby.

With regards to a single access, applicant is not planning to construct a second access road to the area. Building a second road would render the proposed project economically unfeasible.

Thank you for participating in the EIS process.

Sincerely,

Gerald Park

Gerald Park

GP:hg

cc: Kep Aluli, Inc.
Hawaii County Planning Department

1110 UNIVERSITY AVENUE SUITE 507 HONOLULU HAWAII 96826 (808)947-7486

POLICE DEPARTMENT

COUNTY OF HAWAII
349 KAPIOLANI STREET
HILO, HAWAII 96720

OUR REFERENCE

YOUR REFERENCE

GUY A. PAUL
CHIEF OF POLICE

April 6, 1981

TO : SIDNEY FUKE, PLANNING DIRECTOR

FROM : GUY A. PAUL, CHIEF OF POLICE

SUBJECT: GENERAL PLAN AMENDMENT
KEP ALULI, INC.
TMK: 6-9-01:7

The above application for a general plan amendment has been reviewed and the following is submitted for your consideration.

It is recommended that a second access road other than Puako Beach Drive be constructed to provide access to the proposed development.

Puako Beach Drive is near sea level and the road is subjected to inundation during high seas and tsunamis. The added population resulting from the proposed development seriously increases the potential for disaster should Puako Beach Drive become impassable during such times.

GUY A. PAUL
CHIEF OF POLICE

RLP/k

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May 29, 1981

Guy A. Paul
Chief of Police
County of Hawaii
349 Kapiolani Street
Hilo, Hawaii 96720

Subject: General Plan Amendment
Kep Aluli, Inc.
TMK: 6-9-01:7

Dear Chief Paul:

Thank you for your comments on the subject request. We offer the following comments to your concerns.

Second Access Road

It is not clear if this recommendation is directed to the County (through the Planning Director) or the applicant. If it is to the applicant, then building an access road to serve only the proposed project renders the project economically unfeasible.

As you indicate Puako Beach Drive is subject to inundation during tsunamis and high surf conditions. The potential for disaster already exists and an evacuation plan has been prepared by the County Civil Defense Agency. Mr. Harry Kim, the County Civil Defense Administrator, has indicated to us that the only modification needed to accommodate the anticipated population increase is to develop an escape route. This has been pursued by the Puako Community Association for several years.

We hope that we have satisfactorily responded to your concerns. Thank you for participating in the EIS Process.

Sincerely,

Gerald Park

GPthg

cc: Kep Aluli, Inc.
Hawaii County Planning Department

1110 UNIVERSITY AVENUE SUITE 507 HONOLULU HAWAII 96822 (808)847-3486

GEORGE R. ARIYOSHI
Governor of Hawaii

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF STATE PARKS
P. O. BOX 621
HONOLULU, HAWAII 96809

DIVISIONS:
CONSERVATION AND ENFORCEMENT
CONVEYANCES
FISH AND GAME
FORESTRY
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

March 16, 1981

Mr. Sidney Fuke, Director
Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. Fuke:

SUBJECT: Review of Environmental Impact State for Paniau, Lalamilo, South Kohala, Hawaii
TMK: 6-9-01: 7

A review of the Environmental Impact Statement for the proposed development in Paniau, Lalamilo, South Kohala, Hawaii Island indicated that archaeological concerns must be addressed prior to development. An archaeological survey by Archaeological Consultants (Kennedy, 1980) appears to be a thorough job of mapping and describing the surface archaeological sites and features in the development area. We concur with Kennedy's recommendations regarding the individual sites and the need for further archaeological work prior to development. We have only a few additions to these recommendations.

1) Site PAN 80-13 was not included in the list of sites and recommendations. Site PAN 80-13 is described as a well-formed platform. Kennedy should be consulted in the work he would recommend for the site but testing, and possibly preservation, seem appropriate.

2) No further action was recommended for sites PAN 80-23 and PAN 80-24. These sites refer to historic petroglyphs and although we do not recommend preservation, we would request a photographic record of the petroglyphs since there is a high chance of destruction.

3) We understand sample excavation to mean testing and that the results of the initial testing will determine the significance of the site and the extent of the excavation. The sampling and/or salvage need to be sufficient to mitigate or negate the adverse effects on the archaeological resources.

4) There was no mention of the archaeological sites in the corridor for the access road. We assume that a similar procedure of site evaluation for further archaeological work will be carried out prior to development.

Assuming that the development planning is continuing and there will be another phase of archaeological work to include testing and salvage, we emphasize the need for an archaeological research design. Such a research design is essential for maximizing the information retrievable from the archaeological data and incorporating Paniau into the larger Kohala cultural complex. We request that any corresponding reports be forwarded to this office for evaluation.

Sincerely yours,

Ralston Nagata, Director
Historic Sites Section

cc: Kep Aluli, Inc.
c/o Yuklin Aluli

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May 29, 1981

Mr. Ralston Nagata
Director
Historic Sites Section
State of Hawaii
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Subject: Environmental Impact Statement for Paniau
Lalamilo, South Kohala, Hawaii

Dear Mr. Nagata:

Thank you for reviewing and commenting on the subject EIS. Responses to your comments are offered by the consulting archaeologist.

1) Your reviewer is quite correct. Site PAN-80-13 somehow was not included in the list of sites and recommendations. Here is the missing recommendation:

"PAN-80-13 Investigate the possibility of human remains."

2) Photographs were made for the record and will be available in the final report.

3) Your understanding is correct. Sample excavations will determine the significance of the site and the extent of the follow-up excavation.

4) Your reviewer said, "There was no mention of the archaeological sites in the corridor for the access road." I can only suppose that some sort of edited copy of my report reached your office, for page 51 is filled with a long list (47 sites) of archaeological material on the access road, clearly labeled as such. Page 52 features a reasonable sketch map of the location of these sites and is entitled 'Sites on Access Road'. Furthermore, I should like to point out that the so-called "Access Road" carries a different TMK than the Ruddle property and that the land is currently the property of the State of Hawaii. It is in no way determined at this time that the land will carry the access road to the proposed development at Paniau. Mr. Aluli contracted us to do a brief reconnaissance of this parcel of state land (at his expense) to investigate the archaeological consequences of this route. I made a duplicate copy of The Archaeology of Paniau and donated it to your library in December of last year. I suggest you check that volume with an eye for pages 51 and 52; again, I believe it will help to clarify the situation.

1110 UNIVERSITY AVENUE SUITE 507 HONOLULU HAWAII 96826 (808)847-7488

We hope that these responses satisfactorily covers all your concerns. Thank you for participating in the EIS process.

Sincerely,

Gerald Park

GP:hg

cc: Kep Aluli, Inc.
County of Hawaii Planning Department

GEORGE R. ARIYOSHI
GOVERNOR

HARRY Y. AKAGI
Acting Director

TELEPHONE NO.
548-6915

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

550 HALEKAUWILA ST
ROOM 301
HONOLULU, HAWAII 96813

April 3, 1981

Mr. Sidney Fuke, Director
Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

SUBJECT: Environmental Impact Statement for Paniau, South Kohala, Hawaii

Dear Mr. Fuke:

We have reviewed the subject statement and offer the following comments for your consideration:

GOVERNOR'S ACCEPTANCE

Page 1 of the EIS indicates the access to the proposed action will require a road that traverses state land. Please be informed that actions involving state lands will require an EIS acceptance by the Governor; moreover, that the Governor shall be the final accepting authority for this EIS.

PARKING

The proposed action will have 192 units and will provide 192 parking stalls for residents and 7 parking stalls for guests. Twelve stalls will also be set aside for boat trailers. Will any stalls be set aside for beachgoers?

PUBLIC ACCESS

Will public access to the beach be included in the proposed action? Where will the public right-of-way be located?

ANCHIALINE PONDS (p. 7)

The EIS should also note that these ponds may occur worldwide but in the United States, the ponds only occur in Hawaii. More importantly, it should be noted that these unique ponds are rapidly being filled. These resources located at Anaeho'omalu, Kalahuipua'a, Kapalaoa, and Puako are being permanently lost to development. Thus, the ponds which are described as being common along the South Kohala and North Kona coast are being threatened.

SEWAGE DISPOSAL (p. 16)

The EIS should indicate the amount of sewage to be generated by the proposed action.

ENERGY

Consideration should be given to energy efficient devices, natural ventilation, and landscaping to reduce the consumption of energy.

TRAFFIC (p. 34)

Although the EIS presents a discussion on traffic, the worst condition should be depicted in order to fully anticipate the environmental impacts. Will air pollution be a problem?

CLARIFICATION (p. 37)

The EIS states, "The existing N:P ratios in offshore waters average about 20:1." The term "N:P" should be defined to eliminate confusion.

MONITORING SEWAGE DISPOSAL (p. 38)

The EIS discusses periodic surveys of benthic algal growth in the areas of underground disposal as a means of monitoring nutrient levels. Who would be responsible for monitoring if such means of disposal is chosen? If monitoring reports indicate high nutrient levels, will other means of disposal be needed?

NEED OF THE PROJECT

Page 39 indicates that the proposed action will be for mainly the transient population. Taking into account the recent slump in the visitor industry and its impact on the Big Island and the need for a general plan amendment, we are questioning the need for the project. Is the proposed action fulfilling the housing need? What are the benefits for the island of Hawaii if the project is implemented?

ECONOMIC (p. 39)

The EIS indicates that the estimated $11 million dollars to be spent on the project and some of that capital will produce revenues within the state and county. However, public expenditure for the construction of infrastructures such as roads, water lines, and police and fire protection will be required for the proposed action. If the project benefits are greater than public costs, then it would be reasonable to imply the project will produce economic and social benefits.

ALTERNATIVES (p. 42)

The "no action" alternative should also be discussed in the EIS as outlined in EIS Regulation 1:42 g.

BEACH EROSION

Consideration should be given to the probable impact of beach erosion that may result from construction or natural occurrence. Has there been any history of past beach area fluctuations? What is the direction of the littoral drift? Will the project affect the beach area? In addition, careful consideration should be given to destruction of the vegetation line during construction. We strongly recommend a discussion on this matter.

BIG ISLAND REQUIREMENT

The proposed is a resort development which requires a general plan amendment. We question whether an environmental impact statement is also required under the EIS ordinance.

If the subject EIS is to fulfill both requirements, then this should be explicitly stated.

Thank you for the opportunity to review this statement. If you should have any questions regarding this matter, please do not hesitate to contact us.

Sincerely,

Harry Y. Akagi
Acting Director

cc: Kep Aluli

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May 29, 1981

Mr. Harry Y. Akagi
Acting Director
Office of Environmental Quality Control
550 Halekauwila Street
Room 301
Honolulu, Hawaii 96813

Subject: EIS/Paniau
Lalamilo, South Kohala, Hawaii

Dear Mr. Akagi:

Thank you for your comments on the subject EIS. We offer the following responses to your concerns.

Governor's Acceptance

We have been apprised by the Planning Director, County of Hawaii, that for purposes of the General Plan amendment, the Planning Department is the accepting authority for the subject EIS. We were also informed that "should the amendment petition be approved and State lands actually be involved in the implementation of the proposed condominium project, the Department of Land and Natural Resources will be responsible for compliance with Chapter 343, HRS."

Parking

Public parking will not be set aside for beach goers.

Public Access

Public access to the beach through the subject property is not proposed as said property abuts State-owned property running from Puako Beach Road to the sea. This abutting State land is presently used as a parking area for beach users. Applicant is proposing that such activities be legitimatized by placing the said State-owned land into a park use under the control of the State Park System.

Anchialine Ponds

You are correct that in the United States anchialine ponds are found only in Hawaii. We would like to add that in addition to being found along the Kohala-Kona coastline concentrations of anchialine ponds are also found at Cape Kinau, Maui, and Barbers Point, Oahu.

As indicated in the EIS (page 23), the applicant is aware of the uniqueness of anchialine pools and is evaluating options for preserving some of the pools.

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Sewage Disposal

Approximately 28,800 gallons/day based on 75% occupancy.

Energy

Your suggestions shall be passed on to the appropriate design consultant for consideration.

Traffic

We believe that the 50 vehicles/hour added to Puako Beach Drive is indicative of worst case traffic conditions. Air pollution is not anticipated as a problem.

Clarification

N:P ratio is the ratio of Nitrogen to Phosporous.

Monitoring Sewage Disposal

The statement about periodic benthic surveys was mentioned in passing as one means for monitoring effects of domestic sewage entering the ground water should such information be desired. Such monitoring is not proposed for the project.

Need of the Project

The project is not intended to fill a housing need. Some of the economic benefits to the County of Hawaii were discussed on page 39 of the EIS.

Economic

Applicant will bear the costs of extending Puako Beach Road to the site, waterlines, and other infrastructure items.

Alternatives

A no action alternative would maintain the present low density use of the property. Existing environmental features would probably remain intact. The no action alternative would deprive the property owners from achieving their stated objectives.

Beach Erosion

Construction is not planned on the beach, hence construction induced erosion is not anticipated nor will the vegetation line by destroyed.

The beach fronting the subject property is a cobble beach judging from the predominance of limestone rubble and rounded basalt cobbles thrown by waves striking the shore. The beach is unstable as evidenced by the possibility of State lands makai of the property being submerged.

Although current movement was not studied, oceanographic data suggest that a northward current dominates the Keahole Point-Kawaihae area.

Big Island Requirement

We do not understand the comment. Chapter 343, HRS (343-4(E)) requires an EIS for a general plan amendment except for county initiated amendment. The County of Hawaii Planning Department has determined that an EIS is required. Hence, this document was prepared.

If your question refers to the SMA (and not EIS) ordinance of the County of Hawaii, then yes, this document if approved will be submitted in partial fulfillment of the requirements for an SMA permit. An EIS prepared and accepted pursuant to Chapter 343, HRS can be submitted under the County of Hawaii's Rule No. 9 (Section 9.11(d)).

We hope that we have satisfactorily responded to your comments. Thank you for participating in the EIS process.

Sincerely,

Gerald Park

Gerald Park

GP:hg

cc: Kep Aluli, Inc.
County of Hawaii Planning Department

April 7, 1981

Honorable Sidney Fuke, Director
Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. Fuke:

Last month we reviewed the Environmental Impact Statement (EIS) for the proposed Paniau condominium in Puako, and sent you our comments (March 16, 1981), regarding the archaeological aspects of the site. There are other aspects which should be addressed, and we do so here:

1. Access. The site plan indicates access to an extension of Puako Drive. This extension is yet to be built. Moreover, it is located on State land, and approval of the extension by the Board of Land and Natural Resources is needed before the extension can be constructed.

2. Sewage Disposal. According to the EIS, treated sewage will be discharged "underground" (p. 4). However, the subject parcel is close to the sea in an area where shoreline seepage is sufficient to produce an extensive layer of freshwater on the surface of nearshore ocean waters (p. 7). Since the substratum is so porous (p. 7), the treated effluent may be expected to appear at the ocean surface at and adjacent to the proposed project. The effluent would surface, since "most domestic wastewaters have densities lower than that of sea" (sic, p. 36).

   The EIS suggests that "strong ocean waves and currents" will ensure rapid mixing (p. 37). However, the EIS also explains that the surface layer remains sufficiently unmixed as to be detectable "as far offshore as the sharp break or escarpment marking the end of the nearshore shelf" (p. 7; apparently as much as 700 feet or more offshore according to Figure 2, p. A-6). We therefore expect that the relatively undiluted effluent would be just beneath the soil surface of the proposed project; penetrate the remaining anchialine ponds; and float on the surface of inshore ocean waters at Puako.

3. Shoreline. The EIS states that nothing proposed would obstruct access to the ancient Puako-Kiholo trail which passes through a strip of State shoreline land makai of the proposed site (p. 21). However, the EIS continues that the State land and trail may, in part, have been eroded away and that the shoreline should be resurveyed (loc. cit.). Until the results of such a resurvey are available, it is impossible to determine what effect the proposed project would actually have on public shoreline access, both adjacent to and southward from the proposed site.

4. Anchialine ponds. The EIS notes the presence of six permanent and numerous ephemeral anchialine ponds on the proposed site and correctly observes that certain species inhabiting these ponds occur nowhere else in the world than along the Kona Coast (pp. 7-10). While such ponds are not restricted to the proposed site, their number has been greatly diminished in recent years by piecemeal development of the coastline (e.g., the adjacent Mauna Lani Resort project, which will eventually include five resort hotels, three golf courses, condominium and subdivision residential developments, and a commercial development). The EIS states "the applicant is evaluating options for preserving some of the pools" (p. 23), more specifically, the possibility of designing new ponds in more convenient locations to replace the existing ponds (p. 31). We concur that efforts should be made to preserve the diminishing habitat available to the biotic community unique to Hawaiian anchialine ponds. However, we are not convinced that artificially constructed ponds can adequately substitute for natural ponds.

   We further note that blasting may be utilized (p. 29). Since ponds are found in all low-lying sections of the proposed site (p. 10), and since "water reaches all the ponds through fractures and fissures in highly permeable lavas" (p. 8), from the standpoint of aquatic resources, we would object to any use of explosives inasmuch as blast shocks produced in any part of the site would be transmitted to all the interconnecting ponds.

5. Soils. The EIS indicates that erosion should present few problems during construction (since the "soils" are largely lava flows with a little sand). Topsoils would be imported for landscaping purposes. In view of the proximity to the ocean and to the anchialine ponds, we strongly suggest that landscaping be designed to require a minimum of imported soil; that careful precautions be taken to keep introduced soils vegetated or otherwise covered; and that biologically active substances such as fertilizers and pesticides be used as little as possible, and only with extreme caution.

6. Flood. The EIS notes that "the property is located within a coastal high hazard area and 100-year flood area" (p. 25), that "damages can be expected for any flood event . . . in the form of erosion, pavement washouts, loss of landscaping material, structural damages due to water volume, velocity, and floating debris" (p. 30), and that structural damage in the area has resulted from tsunamis (before 1930) and severe Kona storms (most recently in 1980; p. 6). The EIS contains no measures to protect property (or the surrounding environment) from such impacts, or contingency plans to safeguard human life.

Very truly yours,

Susumu Ono

SUSUMU ONO
Chairman of the Board

cc: Kap Aluli, Inc.
c/o Yuklin Aluli
1720 Ala Moana Blvd
Honolulu, HI 96815

GS:jmk

GERALD PARK • URBAN PLANNER
URBAN PLANNING • POLICY ANALYSIS • ENVIRONMENTAL ASSESSMENTS

May 29, 1981

The Honorable Susumu Ono, Director
State of Hawaii
Department of Land and Natural Resources
P. O. Box 621
Honolulu, Hawaii 96809

Subject: Environmental Impact Statement - Paniau
Lalamilo, South Kohala, Hawaii

Dear Mr. Ono:

Thank you for reviewing and commenting on the subject EIS. We offer the following responses to your concerns.

1. Access

Thank you for apprising us of the need for approval by the Board of Land and Natural Resources before the extension can be constructed.

2. Sewage Disposal

Your statements regarding the flow of water (and waste disposal of underground) are correct. However, the seepage of nutrient-enriched water into coastal waters is already occurring (and was discussed in a technical report prepared by AECOS, Inc.). The effects of such discharge was discussed on pages 36-37 of the EIS.

3. Shoreline

A response is not required.

4. Anchialine Pools

Some species inhabiting anchialine pools are endemic to Hawaii but their presence is not restricted to ponds along the Kona Coast. The same species found in the ponds on the subject property also have been observed in ponds at Cape Kinau, Maui.

The possibility of constructing artifical ponds was suggested in a technical report prepared by AECOS, Inc. Perhaps the term equivalent habitat rather than artificial pond should be used to describe what is proposed. The following is excerted from the AECOS report:

1110 UNIVERSITY AVENUE SUITE 507 HONOLULU HAWAII 96826 (808)947-7488

"Existing pond basins destroyed intentionally or unintentionally during development of a site could be replaced by equivalent habitat. The pond basins are merely low-lying depressions in recent lavas which occur at sea level. Ground water moving through cracks and crevices in the lava produces ponds where the ground surface dips below the water table. In a very real sense, the ponds are an opening or "window" into an extensive subterranean ecosystem. Basins excavated into clinkery a'a lava at the lowest elevations on the site could serve as anchialine habitats supporting the distinctive and characteristic biota. Man-made basins which are connected to the ground water table through fractures and other interstices in the lava would be colonized by biota moving beneath the ground surface in these interstices. Careful site selection and proper design of replacement pond basins is essential to avoid degradation during development of the property and to assure that the ponds are largely maintenance-free. Proper design can not be over-emphasized if the purpose is to provide replacement habitat. One need only view the dozen or so ponds along Puako Beach Drive to realize the range of conditions which the replacement ponds could assume: from clear waters populated by a distinctly Hawaiian (and unique) flora and fauna to murky (and smelly) basins supporting little desirable biota.

Maintenance of water quality is believed to be one of the most important factors in the persistence of the distinctive pond biota. Cyclical variation in pond volumes, caused by tidal exchange, is a major factor in pond waters, tidal exchange is responsible for the high turnover rates of the waters. Rapid flushing is important in maintaining water clarity (i.e., low phytoplankton levels), as well as controlling the temperature and salinity ranges in the ponds (Bienfang, 1977). Dominant aquatic plants in natural ponds are benthic (attached to the bottom). Their growth is stimulated in the presence of abundant nutrients in the ground water but the plants are not removed by water exchange, as are planktonic algae. Decreases in flushing in natural or man-made basins reduces the removal rate of phytoplankton and result in increased turbidity, upsetting pond ecology. Sediment entering existing or man-made ponds as dust or runoff from construction activities could pose a major threat to the ecosystem. Fine sediments can fill interstices in the lavas forming the pond basins and plug up the pores through which water is exchanged. Prior to development of man-made basins to replace anchialine ponds filled on the Ruddle site, examples of good and poor quality ponds along Puako Beach Drive should be investigated. A good example of a man-made anchialine pond is a basin constructed on the Mauna Loa Land Development property several years ago. When last checked, the pond contained the red shrimp, Halocaridina rubra, and its waters were clear.

Although rapid flushing of pond waters appears to be the major design criterion for establishment (and preservation) of the unique biota, this may not be the only consideration. The exceptionally clear waters of many pristine anchialine ponds may be attributed to other factors such as the absence of certain trace elements, solar inhibition of phytoplankton growth, or fluctuating salinity. These factors have received little consideration in studies of anchialine ponds."

5. Soils

Your comments are well taken and will be passed on to the landscape architect.

6. Flood

Aside from elevating the buildings, specific measures for mitigating potential flood/coastal high hazards have not been determined. Although preliminary flood insurance rate maps were cited in the EIS as a reference, the Federal Flood Insurance Program has not been implemented for all the Big Island. If the program is implemented with supporting regulations specifying structural and floodproofing standards prior to plan approval, applicant will comply with the standards contained therein. If the program is not implemented, applicant will adhere to structural and floodproofing measures recommended by the consulting engineers and the approving agency.

We hope that we have satisfactorily responded to your concerns. Thank you for participating in the EIS process.

Sincerely,

Gerald Park

GPshg

cc: Kep Aluli
County of Hawaii Planning Department

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

April 15, 1981

GEORGE A. L. YUEN
DIRECTOR OF HEALTH

JOHN F. CHALMERS, M.D.
DEPUTY DIRECTOR OF HEALTH

HENRY M. THOMPSON, M.A.
DEPUTY DIRECTOR OF HEALTH

MELVIN H. HOKUNAN
DEPUTY DIRECTOR OF HEALTH

ADELINA MADRID SHAW, M.A., J.D.
DEPUTY DIRECTOR OF HEALTH

In reply, please refer to:
File: EPHS-SS

MEMORANDUM

To: Director, Planning Department, County of Hawaii

From: Deputy Director for Environmental Health

Subject: Environmental Impact Statement - Paniau
Lalamilo, South Kohala, Hawaii

Thank you for allowing us to review and comment on the subject EIS. We submit the following comments for your information and consideration:

Municipal drinking water and wastewater treatment systems are recommended as the most appropriate alternative because of the magnitude of the proposed project.

Sewage Disposal

1. The proposed wastewater treatment works must comply with the requirements of Section 3.7, Chapter 38, Public Health Regulations. Wastewater treatment works involving subsurface disposal methods is usually prohibited in areas where an existing or potential potable water source may be contaminated.

   It is the policy of the Department of Health to disallow the installation of both disposal well and a drinking water source well on the same project site for public health reasons. It is our understanding at this time that this project proposes to develop its own water supply at the project site.

2. It is also the policy of the Department of Health that the disposal of wastewater does not contaminate or pollute the ground or surface waters of the State. Since the project area is within a region of exceptionally permeable strata, any subsurface discharge of wastewater or treated effluent would possibly be in violation of the water quality standards for the project area.

3. Due to the constraints mentioned above, this project should utilize innovative and alternative technology in the design of its sewerage system. A more detailed review of the adopted system will be made after the Chief Sanitarian, Hawaii District, has completed his initial review of the proposed sewage treatment works.

4. The County Environmental Assessment and Policy Guideline Consistency Determination Form need to be completed for all proposed subdivisions, and land developments where sewage concerns are projected for the potable groundwater sources, unstable groundwater tables and surface receiving waters. These forms are available at the Hawaii District Health Office, Environmental Health Section.

5. Please submit sewage flow calculations and proposed plans of the sewage treatment and disposal system prepared by a Registered Engineer to the Chief Sanitarian, Hawaii District, P. O. Box 916, Hilo, Hawaii 96720.

Drinking Water

It is our understanding that the present water supply issue remains unresolved. Please be advised that in the event that the project is not able to obtain expansion of the existing two-inch municipal water line and therefore decides to develop a private source of domestic water, that Chapter 49, Potable Water Systems, Public Health Regulations (PHR) sets down requirements for "public water systems" as defined in Chapter 49. The size and nature of the Paniau Project would clearly qualify it as a "public water system."

Section 29 of Chapter 49 requires that all new sources of potable water serving or intended to serve a public water system be approved by the Director of Health prior to its use. This section would be applicable to all new sources as well as existing sources not presently serving public water systems as defined. Source approval is based primarily on the submission of an engineering report adequately addressing all concerns as found in Section 29. This report is required to be prepared by a registered engineer and bear his stamp upon submittal.

Section 30 of Chapter 49 applies to new or substantially modified public water systems. This section pertains to the design and construction of new water distribution systems or substantial modifications of existing distribution systems of public water system as defined by Chapter 49. In the case of the Paniau Project, Section 30 would be applicable if the project developed its own water source or if it chose to obtain water from an existing public water system other than one belonging to the Department of Water Supply. (This exception for the Department of Water Supply is based on the prior review of design standards required by that Department and the delegation of Section 30 authority to the Department for all work performed on its systems). Approval of the new or modified distribution systems by the Director of Health must be acquired prior to construction. Approval in this instance primarily involves the review of design plans and specifications for the distribution systems and the determination that the system is capable of serving water which meets the minimum water quality standards for potable water as contained in Chapter 49.

In summary, Chapter 49 contains requirements which will have to be met by the Paniau Project in the event that the project decides either to develop its own source of potable water or to seek a water commitment from an existing public or non-public water system other than the County of Hawaii Department of Water Supply system. Once approved, the water system will be subject to the applicable terms and conditions of Chapter 49.

In addition, the development of a potable water source or sources on the project site may affect the location of private wastewater treatment facilities and/or waste injection sites planned for the project. Chapter 38, Private Wastewater Treatment Works & Individual Wastewater Systems, Public Health Regulations contains requirement for protection of potable water sources from such activities. The full impact of a potable water source on the project site should be reviewed with the Pollution Technical Review Branch as well as the Drinking Water Program of the Department of Health.

Other Comments:

Fugitive dust and solid waste disposal during grubbing and grading activities need to meet the requirements of Public Health Regulations, Chapter 43, Air Pollution Control, and Chapter 46, Solid Waste Management Control. The incorporation of a dust and erosion control plan in the construction plans is recommended.

We realize that the statements are general in nature due to preliminary plans being the sole source of discussion. We, therefore, reserve the right to impose future environmental restrictions on the project at the time final plans are submitted to this office for review.

for MELVIN K. KOIZUMI

cc: Chief Sanitarian, Hawaii
Office of Environmental Quality Control
Kep Aluli, Inc.

GERALD PARK • URBAN PLANNER
URBAN PLANNING • POLICY ANALYSIS • ENVIRONMENTAL ASSESSMENTS

May 29, 1981

Mr. Melvin K. Koizumi
Deputy Director for Environmental Health
State of Hawaii
Department of Health
P. O. Box 3378
Honolulu, Hawaii 96801

Subject: Environmental Impact Statement - Paniau
Lalamilo, South Kohala, Hawaii

Dear Mr. Koizumi:

Thank you for reviewing and commenting on the subject EIS. We submit the following responses to your concerns.

Sewage Disposal

Applicant will comply with all appropriate requirements of Chapter 38, Public Health Regulations.

The developers do not plan to develop a water source on the project site. Rather, the developers proposed to increase the size of an existing water line leading to the property. The Department of Water Supply has since informed the developers that the existing water system facilities is not able to accommodate the proposed development. Quoting from the Department's communication, "the proposed development will require a 4-inch meter, however, a larger sized meter service or a water commitment will not be granted until an additional source is developed in the Lalamilo well field. Presently there are no funds available for development of another source. Developers may be required to contribute a pro rata share for construction. However, this option is still at a premature stage."

In response to this communication, the developers have informed the Department of Water Supply of their willingness to participate in developing a water source.

Drinking Water

This comment (and information) is considered in the preceding response.

Other Comments

Dust and erosion control measures shall be included in the grading plan. Applicant will comply with the appropriate requirements for dust control and solid waste disposal contained in Public Health Regulations (Chapters 43 and 46 respectively).

1110 UNIVERSITY AVENUE SUITE 507 HONOLULU HAWAII 96822 (808)947-7488

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May 29, 1981

Diane C. Drigot, Ph.D
Acting Director
Environmental Center
University of Hawaii at Manoa
Crawford 317
2550 Campus Road
Honolulu, Hawaii 96822

Subject: Environmental Impact Statement
Paniau Condominium
Lalamilo, South Kohala, Hawaii

Dear Dr. Drigot:

Thank you for reviewing and commenting on the subject EIS. We offer the following responses to your concerns.

Drainage and Flooding

The tsunami run-up height of 7 feet was derived from preliminary flood insurance rate maps prepared by the Corps of Engineers. Unless that estimate is changed by the Corps, it will be used as the basis for further site planning and structural engineering.

The property has been in continuous residential use since its acquisition in the 1930's. According to the property owners, the property has not been inundated by tsunamis since they acquired and built homes on the land. The owners do point out that high surf conditions have resulted in minor flooding and damages to the contents of the five residents. Despite their dilapidated condition, the five residences which stand on concrete block footings, have not been moved from their footings by wave run-up.

A more detailed analysis of potential tsunami hazard may be carried out if recommended by the structural engineers. Infrastructure items shall be engineered to minimize failure should the site be inundated.

At this time, the Federal Flood Insurance Program has not been implemented for all the Big Island. Therefore, there is no "Federal Flood Insurance Policy Guidelines" in force. If the program is implemented with supporting regulations (in similar form and content to that of the City and County of Honolulu for example) prior to plan approval, then applicant will comply with the construction standards contained therein. If the program is not implemented, applicant will adhere to structural and floodproofing measures recommended by the consulting engineers and the approving agency.

1110 UNIVERSITY AVENUE SUITE 507 HONOLULU HAWAII 96822 (808)847-3488

Measures for handling runoff during construction have not yet been specified. The civil engineers, in preparing a grading plan, will determine the type of measures to be implemented. The grading plan also will specify where swales, berms, and dry wells are to be placed. The grading plan will be submitted to the appropriate agency for review and approval prior to site work.

Sewage Treatment and Effluent Disposal

Existing nutrient levels were measured in off-shore and pond waters. The potential effects of added nutrients (from treated effluent) were discussed quite thoroughly in the technical report prepared by AECOS, Inc.

(1) Wastewater flow is estimated at 200 gallons/bedroom/day. Assuming a daily occupancy rate of 75%, the project will generate approximately 28,800 gallons/day.

(2) Sludge will be disposed in accordance with Chapter 38, Public Health Regulations (Section 4.5.C.) which states:

C. Wastewater sludge shall only be disposed of in the following manner:

(1) By a private, county, or state solid waste disposal facility which has a permit pursuant to Public Health Regulations, Chapter 46, to accept wastewater sludge, or

(2) By reclamation or reuse for agricultural purposes except for direct contact with edible food crops, or

(3) By incineration which meets all applicable requirements of Public Health Regulations, Chapter 43, or

(4) By a private, county, or state facility which has specific written authorization to dispose of sludge pursuant to the applicable provisions of HRS, Chapter 342.

The treatment plant operator will be responsible for removing or overseeing sludge removal from the plant. It is presumed that operators at the receiving facility will then be responsible for proper disposal.

(3) Each plant will serve a separate complex (EIS, page 1) and will be maintained and operated by separate condominium owners association.

(4) Yes.

(5) The statement about microbial activity was made to disclose a potential siting problem with sewage treatment and disposal. It is anticipated that adherence to proper operating procedures and compliance with effluent requirements (contained in Chapter 38, Public Health Regulations (Section 5) should mitigate this potential effect.

(6) No.

(7) No. The sewage treatment plans will be shown on construction drawings.

Anchialine Ponds

Nutrient levels are already above the limits to plant growth. When nutrient levels can support plant growth adding more doesn't matter. What matters is the ratio of nitrogen:phosphorous, which can influence the form of plant growth, and the rate of flushing of the system.

Concrete will not be mixed on-site.

Specific measures to prevent pond siltation have not yet been devised. Two options have been recommended for incorporating ponds in the design scheme. First, retain some of the existing ponds (of which Pond C is the most "pristine"), and second, create an equivalent habitat. Either option may require re-siting the buildings and parking lots. (Note: Re-siting may also be necessary to preserve significant archaeological features). Based on the AECOS report, it is believed that replacement habitat can be created and survive in this setting.

Archaeology

If all necessary permits and approvals are granted thus allowing applicant to proceed with this project as described, then additional detailed archaeological work will be performed. Your comments for a Phase II survey shall be submitted to the consulting archaeologists for consideration.

It should be noted that this Phase I survey was a surface survey and not a "walk-through" or reconnaissance survey.

Traffic

Our conclusion is a subjective one but based on traffic counts provided by the County of Hawaii and observation of traffic patterns.

The traffic count during the period 6:00 A.M. - 7:00 P.M. on 14 March 1980 (Table 1) totals 460+ vehicles. However, the hourly count is the important factor, not the total. The modal traffic hour is 3:00 - 4:00 P.M. when 53 vehicles were counted for two traffic lanes. We believe that the count is indicative of light traffic conditions.

To check traffic flow patterns, on-site observations were made on a weekday during October 1980. The observations revealed that traffic density is light and generally flow conditions showed 1-2 minute interval between passing vehicles. Because of this lag interval and light traffic flow, it is believed that Puako Beach Drive can accommodate an additional fifty vehicles per hour.

We hope that we have satisfactorily responded to your concerns. Thank you for participating in the EIS process.

Sincerely,

Gerald Park

Gerald Park

GP:hg

cc: Kep Aluli, Inc.
County of Hawaii Planning Department

University of Hawaii at Manoa

Water Resources Research Center
Holmes Hall 283 • 2540 Dole Street
Honolulu, Hawaii 96822

7 April 1981

Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Gentlemen:

Subject: EIS - Paniau

We have reviewed the subject EIS and offer the following comments:

1. Water quality. Possible contamination of groundwater, anchialine ponds and nearshore coastal waters by sewerage effluent discharge was discussed mainly in a narrative way. More detailed analysis should be made of its impact, especially regarding excessive nutrients and bacterial loading.

2. Flooding and tsunami. More amplification and expansion is needed on the mitigating measures to be employed to reduce Flood/Coastal High Hazards (p. 30). The most undesirable environmental impact is the possible loss of human life due to development in a known hazard area. Therefore, this site requires considerable more care in ensuring that such risks are minimized.

This material was reviewed by WRRC and affiliate personnel. Thank you for the opportunity to comment.

Sincerely,

Edwin T. Murabayashi

Edwin T. Murabayashi
EIS Coordinator

ETM:jm

cc: C. Liu
H. Gee
Y.S. Fok
Kep Aluli, Inc.

AN EQUAL OPPORTUNITY EMPLOYER

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URBAN PLANNING • POLICY ANALYSIS • ENVIRONMENTAL ASSESSMENTS

May 29, 1981

Mr. Edwin T. Murabayashi
EIS Coordinator
Water Resources Research Center
University of Hawaii at Manoa
Holmes Hall 283
2540 Dole Street
Honolulu, Hawaii 96822

Subject: EIS/Paniau
Lalamilo, South Kohala, Hawaii

Dear Mr. Murabayashi:

Thank you for reviewing and commenting on the subject EIS. We offer the following responses to your concerns.

1. Water Quality

The discussion of sewage effluent discharge was excerpted from a more analytical and quantitative report prepared by AECOS, Inc. As such, and as you point out, the discussion is presented mainly in a narrative way. The AECOS report contains a rather detailed discussion on nutrients (existing nutrient levels) and effects of increased nutrients on water bodies. We will contact the Environmental Center and have them forward a loan copy to your office.

The report does not emphasize bacterial loading because bacteria rapidly die in contact with salt water.

2. Flooding and Tsunami

Aside from elevating the buildings, specific measures for mitigating potential flood/coastal high hazards have not been determined. Although preliminary flood insurance rate maps were cited in the EIS as a reference, the Federal Flood Insurance Program has not been implemented for all the Big Island. If the program is implemented with supporting regulations specifying structural and floodproofing standards prior to plan approval, applicant will comply with the standards contained therein. If the program is not implemented, applicant will adhere to structural and floodproofing measures recommended by the consulting engineers and the approving agency.

1110 UNIVERSITY AVENUE SUITE 507 HONOLULU HAWAII 96826 (808)947-7488

We hope that we have satisfactorily responded to your concerns. Thank you for participating in the EIS process.

Sincerely,

Gerald Park

GP:hg

cc: Kep Aluli, Inc.
County of Hawaii Planning Department

United States Department of Agriculture — Soil Conservation Service

P. O. Box 1089, Kamuela, HI 96743

Subject: Environmental Impact Statement – Paniau Lalamilo, S. Kohala, HI

Date: 3-19-81

To: Planning Department
County of Hawaii
25 Aupuni Street
Hilo, HI 96720

Page 4, second paragraph states that drainage for water will be by use of dry wells or by holding water until it percolates or evaporates.

There is a large drainage area above thb site and the volume of runoff is very large. If the whole property were a pond it may not store all the water in a large storm. It doesn't seem feasible to construct a holding structure large enough to do the job and still have any land for development.

The use of drywells is also questionable as the ground water table is already high.

Page 16 under sewerage states that septic tanks or cesspools would be used to dispose of sewerage. Again, the high water table will not allow this type of system to function properly. The water table is now enting the ocean at some points on the property. This sewerage in the water table would tend to pollute the ocean for both humans, fish and other forms of sealife.

Pages 24 & 25 Coastal hazards. It states that the area is within the 100 year flood plains and the estimated base flood height is 7 feet.

This could be even greater than 7 feat with the increased runoff from the development and possible restriction of water drainage by the buildings.

Page 26 Dust during construction. It states that sprinkling during construction will be used to reduce dust and plantings will be established to reduce erosion after the earthmoving is completed.

If a storm runoff of high frequency occurs while the topsoil is bare the ocean will have a silt bottom instead of the existing sandy bottom. The grading and filling should be done in small increments so the whole area is not bare at one time.

Structures could be built to take drainage water around the disturbed area until vegetation is established.

If the area is to be revegetated and maintained it will need a dependable water supply. The quantity of water available for this project is questionable at this time.

The Soil Conservation Service is an agency of the Department of Agriculture

SCS-AS-:
10-79

There are a lot of unanswered questions as to exactly how they plan to treat some of these problems. More details are necessary before a complete evaluation of the project can be made.

E. J. Sprague
District Conservationist

cc: Kep Yuklin, Inc.
Jack Kanalz

GERALD PARK • URBAN PLANNER
URBAN PLANNING • POLICY ANALYSIS • ENVIRONMENTAL ASSESSMENTS

May 29, 1981

E. J. Spraque
District Conservationist
Soil Conservation Service
P. O. Box 1089
Kamuela, Hawaii 96743

Subject: Environmental Impact Statement for Paniau
Laiamilo, South Kohala, Hawaii

Dear Mr. Spraque:

Thank you for reviewing and commenting on the subject EIS. We offer the following responses to your concerns.

Page 4

No reference to a holding structure was made in the EIS. Non-structural measures (e.g. depressions) would be used to hold water until it evaporates or percolates into the ground.

Page 16

This concern was discussed on pages 35-38 of the EIS.

Pages 24 and 25

The 7-foot base flood height was derived from preliminary flood insurance rate maps prepared by the Corps of Engineers.

Page 26

We agree that if a severe rainstorm occurs prior to vegetation establishment, soil materials may be deposited into ocean waters. To minimize such impacts, the landscape architect will be asked to emphasize plant materials that do well in sandy conditions thus requiring a minimum of imported soil. Although the EIS stated that the project would be developed as three self-contained complexes, we should have added that each would be developed incrementally.

1110 UNIVERSITY AVENUE SUITE 507 HONOLULU HAWAII 96826 (808)947-7486

The Department of Water Supply has notified the developer that the Departments existing water system facilities is not able to accommodate the proposed development. Quoting from the Department's communication, "the proposed development will require a 4-inch meter, however, a larger sized meter service or a water commitment will not be granted until an additional source is developed in the Laiamilo well field. Presently there are no funds available for development of another source. Developers may be required to contribute a pro rata share for construction. However, this option is still at a premature stage."

In response to this communication, the developers have informed the Department of Water Supply of their willingness to participate in developing a water source.

We hope that we have satisfactorily responded to your concerns. Thank you for participating in the EIS process.

Sincerely,

Gerald Park

Gerald Park

GPchg

cc: Kep Aluli, Inc.
County of Hawaii Planning Department

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858

PODCO-O

20 MAR 1981

Kep Aluli, Inc.
c/o Yuklin Aluli
1720 Ala Moana Boulevard
Honolulu, HI 96815

Gentlemen:

We have reviewed your Environmental Impact Statement (EIS) for the proposed Paniau Condominium Project at Pusko, South Kohala, Hawaii.

The EIS indicates that there are several anchialine ponds that would be filled to support construction of the proposed project. These ponds are considered waters of the United States and any discharge of dredged or fill material into the ponds requires a Department of the Army (DA) permit under Section 404 of the Clean Water Act (33 U.S.C. 1344). Consequently, Section 11 (List of Necessary Approvals) of the EIS should be revised to include the DA permit requirement.

Inclosed are DA permit application forms, an instruction booklet to help you prepare the application, and other information on the Corps permit program. Please note that environmental assessment information is a required part of the application. The assessment should generally follow the inclosed outline and should include a thorough evaluation of alternatives, including development without filling the ponds and other locations or construction methods to avoid filling the ponds. This evaluation of alternatives should demonstrate the need for filling the ponds for a non-water dependant activity.

If you have any questions, please contact my Operations Branch, telephone 438-9258.

Sincerely,

ALFRED J. THIEME
Colonel, Corps of Engineers
District Engineer

KENNETH E. SPRAG
LTC, Corps of Engine
Deputy District Engi

1 Incl
As stated

Copy Furnished:
Planning Dept, County of Hawaii
Environmental Quality Commission, State of Hawaii

POOED-PV

31 March 1981

Director
Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Sir:

We have reviewed your Environmental Impact Statement (EIS) for Lalamilo, South Kohala, Hawaii sent to us on 12 March 1981 and we provide the following comments.

a. The proposed project involves filling of several anchialine ponds located on the project site. These ponds are considered waters of the United States, therefore, a Department of the Army (DA) permit is required for filling these ponds pursuant to Section 404 of the Clean Water Act. No mention of the DA permit requirement is made in Section 11, List of Necessary Approvals, of the EIS. Consequently, we will advise the project's proponents of the DA permit requirement by separate correspondence.

b. We recommend that the alternatives section of the EIS be revised to present a more thorough evaluation of other locations, other methods of construction, etc., to justify the need for filling the ponds for a non-water dependent activity.

c. Sewage treated and injected into wells or pits on site (p. 35) will enrich groundwaters thereby adversely impacting the water quality of anchialine ponds. There is no discussion of this impact on the ponds.

d. We recommend that applicant investigate acquiring other lands to develop, because the presence of unique aquatic and archaeological resources in the proposed project area will make issuance of a DA permit difficult.

e. The proposed project site appears to be prone to inundation by tsunami action (Zone VII). The inundation limits along this area will extend between 200 to 400 feet inland. The remaining portion of the proposed project area appears to be in the Zone "C" designation (Incl 1), which indicates an area of minimal flooding and thus not subject to any regulatory practices with regard to riverine flooding.

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858

PODCO-O

20 MAR 1981

Kcp Aluli, Inc.
c/o Yuklin Aluli
1720 Ala Hoana Boulevard
Honolulu, HI 96815

Gentlemen:

We have reviewed your Environmental Impact Statement (EIS) for the proposed Paniau Condominium Project at Pusko, South Kohala, Hawaii.

The EIS indicates that there are several anchialine ponds that would be filled to support construction of the proposed project. These ponds are considered waters of the United States and any discharge of dredged or fill material into the ponds requires a Department of the Army (DA) permit under Section 404 of the Clean Water Act (33 U.S.C. 1344). Consequently, Section 11 (List of Necessary Approvals) of the EIS should be revised to include the DA permit requirement.

Inclosed are DA permit application forms, an instruction booklet to help you prepare the application, and other information on the Corps permit program. Please note that environmental assessment information is a required part of the application. The assessment should generally follow the inclosed outline and should include a thorough evaluation of alternatives, including development without filling the ponds and other locations or construction methods to avoid filling the ponds. This evaluation of alternatives should demonstrate the need for filling the ponds for a non-water dependent activity.

If you have any questions, please contact my Operations Branch, telephone 438-9258.

Sincerely,

ALFRED J. THIEDE
Colonel, Corps of Engineers
District Engineer

KENNETH E. SPRAG
LTC, Corps of Engine
Deputy District Engi

1 Incl
As stated

Copy Furnished:
Planning Dept, County of Hawaii
Environmental Quality Commission, State of Hawaii

PODED-PV

31 March 1981

Director
Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Sir:

We have reviewed your Environmental Impact Statement (EIS) for Lalamilo, South Kohala, Hawaii sent to us on 12 March 1981 and we provide the following comments.

a. The proposed project involves filling of several anchialine ponds located on the project site. These ponds are considered waters of the United States; therefore, a Department of the Army (DA) permit is required for filling these ponds pursuant to Section 404 of the Clean Water Act. No mention of the DA permit requirement is made in Section 11, List of Necessary Approvals, of the EIS. Consequently, we will advise the project's proponents of the DA permit requirement by separate correspondence.

b. We recommend that the alternatives section of the EIS be revised to present a more thorough evaluation of other locations, other methods of construction, etc., to justify the need for filling the ponds for a non-water dependent activity.

c. Sewage treated and injected into wells or pits on site (p. 35) will enrich groundwaters thereby adversely impacting the water quality of anchialine ponds. There is no discussion of this impact on the ponds.

d. We recommend that applicant investigate acquiring other lands to develop, because the presence of unique aquatic and archaeological resources in the proposed project area will make issuance of a DA permit difficult.

e. The proposed project site appears to be prone to inundation by tsunami action (Zone VII). The inundation limits along this area will extend between 200 to 400 feet inland. The remaining portion of the proposed project area appears to be in the Zone "C" designation (Incl 1), which indicates an area of minimal flooding and thus not subject to any regulatory practices with regard to riverine flooding.

POED-PW
Director

31 March 1981

f. We suggest that you identify the source of the outline you are using for the material on pages 21-25. Is it a Coastal Zone Management document?

Thank you for the opportunity to comment on this EIS.

Sincerely,

ALFRED J. THIEDE
Colonel, Corps of Engineers
District Engineer

1 Incl
As stated

CC:
Kep Aluli, Inc.
c/o Yuklin Aluli
1720 Ala Moana Boulevard
Honolulu, Hawaii 96815

GERALD PARK • URBAN PLANNER
URBAN PLANNING • POLICY ANALYSIS • ENVIRONMENTAL ASSESSMENTS

May 29, 1981

Alfred J. Thiede
Colonel, Corps of Engineers
District Engineer
U.S. Army Engineer District, Honolulu
Ft. Shafter, Hawaii 96858

Subject: EIS/Paniau
Lalamilo, South Kohala, Hawaii

Dear Colonel Thiede:

Thank you for your comments on the subject EIS. We offer the following responses to your concerns.

(a) We have been apprised via separate correspondence that a Department of the Army permit will be required if several anchialine ponds are filled to support construction of the project.

(b) Your comment about alternative construction methods is being considered with respect to building foundations. Given the probability of numerous lava tubes underlying the property, the building foundation may be set on piles. However, should a soils/geological investigation prove otherwise, alternatives to that type of foundation is a likely outcome. The final decision remains with the consulting structural engineer.

It is also possible that the buildings may be sited differently than depicted in Figure 2 of the EIS. An alternative site plan would be based on the location of archaeological sites to be preserved, maintaining of existing anchialine pools or the location of a replacement habit (if this option is indeed the "best" solution), and composition of the underlying geological strata.

(c) The discussion on anchialine habitats and wastewater impacts on pond quality was excerpted from a detailed technical report prepared by AECOS, Inc. Copies of the technical report were submitted to the County of Hawaii Planning Department and Environmental Quality Commission. AECOS's discussion on water quality (from their report) is as follows:

"Anchialine ponds can be destroyed by physical modification of their basins (e.g., deliberate filling or accidental filling as a result of sedimentation), eutrophication of pond waters through nutrient enrichment, or faunal replacement (loss of unique attributes) through introduction of fishes. The two deepest ponds on the Ruddle property with fish (occuring naturally or introduced by man) are already degraded habitat for the distinctive crustaceans.

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Maintenance of water quality is believed to be one of the most important factors in the persistence of the distinctive pond biota. Cyclical variation in pond volumes, caused by tidal exchange, is a major factor in pond waters, tidal exchange is responsible for the high turnover rates of the waters. Rapid flushing is important in maintaining water clarity (i.e., low phytoplankton levels), as well as controlling the temperature and salinity ranges in the ponds (Bienfang, 1977). Dominant aquatic plants in natural ponds are benthic (attached to the bottom). Their growth is stimulated in the presence of abundant nutrients in the ground water but the plants are not removed by water exchange, as are planktonic algae. Decreases in flushing in natural or man-made basins reduces the removal rate of phytoplankton and result in increased turbidity, upsetting pond ecology. Sediment entering existing or man-made ponds as dust or runoff from construction activities could pose a major threat to the ecosystem. Fine sediments can fill interstices in the lavas forming the pond basins and plug up the pores through which water is exchanged. Prior to development of man-made basins to replace anchialine ponds filled on the Ruddle site, examples of good and poor quality ponds along Puako Beach Drive should be investigated. A good example of a man-made anchialine pond is a basin constructed on the Mauna Loa Land Development property several years ago. When last checked, the pond contained the red shrimp, Halocaridina rubra, and its waters were clear.

Although rapid flushing of pond waters appears to be the major design criterion for establishment (and preservation) of the unique biota, this may not be the only consideration. The exceptionally clear waters of many pristine anchialine ponds may be attributed to other factors such as the absence of certain trace elements, solar inhibition of phytoplankton growth, or fluctuating salinity. These factors have received little consideration in studies of anchialine ponds."

(d) Applicant acquired the subject property in 1937. Said property is bounded on one side by the Mauna Lani resort development (fka Mauna Loa) and on the other side by State-owned land presently used as a parking lot by beachgoers. There are at present five old shacks on the subject property. The resort and park use surrounding the property places applicants present residential use in an untenable position. Applicant wishes to continue to own these lands held by applicant's family for 45 years and to bring its use into conformity with surrounding uses. It is not a question of applicant acquiring other lands but of applicant being able to use the subject property in a manner conforming to existing uses of the abutting properties.

(e) A response is not required.

(f) The materials were taken from the County of Hawaii's Rule No. 9, Special Management Area Rules and Regulations of the County of Hawaii. The objectives and policies contained therein are the objectives and policies of Chapter 205A, HRS, Hawaii's Coastal Zone Management law.

We hope that we have satisfactorily responded to your comments. Thank you for participating in the EIS process.

Sincerely,

Gerald Park

Gerald Park

GPihg

cc: Kep Aluli, Inc.
County of Hawaii Planning Department

We hope that we have satisfactorily responded to your concerns. Thank you for participating in the EIS process.

Sincerely,

Gerald Park

GP:hg

cc: Kep Alull, Inc.
County of Hawaii Planning Department

University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

Office of the Director

April 7, 1981

RE:0327

Planning Department
County of Hawaii
25 Aupuni Street
Hilo, Hawaii 96720

Dear Sir:

Environmental Impact Statement
Paniau Condominium
Lalamilo, South Kohala, Hawaii

The Environmental Center review of the above Draft EIS has been conducted by Larry Olson, Archaeology; Bertell Davis, Archaeology; Jacquelin Miller and Alexis Cheong Linder, Environmental Center. Robert Kinzie, Department of Zoology, has reviewed the Field Reconnaissance Study of the Ruddle Property and Adjacent Marine Areas, South of Puako, Hawaii.

Generally, there are four areas that we feel are highly significant with regards to environmental impact: 1) drainage and flooding, 2) sewage treatment and effluent disposal, 3) anchialine ponds and 4) archaeology. Other concerns will also be addressed but were considered to be of lesser significance than the above mentioned areas.

Drainage and Flooding

Portions of the project site are located within the coastal high hazard area and 100-year flood area (p. 6 and 25). The tsunami studies conducted by James Houston et. al. have determined that runup height in this area is 9 feet not 7 as noted in the text. Furthermore reference to the lack of damage by tsunamis since 1930 is misleading. Damages are dependent on the structures or property uses subject to inundation. What is the use/structural history of this site with respect to tsunami inundation? A more detailed analysis of the potential tsunami hazard is critical to the design and construction of the condominiums and their related sewage, water, roads, etc. infrastructure. This should be fully addressed in the Final EIS. Is the applicant required to make provisions in the building design to comply with Federal Flood Insurance Policy Guidelines? If the applicant is required to comply with Federal guidelines, this issue must be addressed. During the construction and preliminary landscaping how will runoff problems be handled? Extreme caution must be employed during the early development phases to avoid siltation of the anchialine ponds. The document notes that the area lacks a drainage system, and run-off (upon completion) will be retained on-site. Where will the swales and berms utilized to divert runoff be located? The area has a porous sub-strata (p. 4, 38) that will allow for rapid

percolation of run-off into the ground water body. Such intrusion again, bears the potential of having detrimental effects on the anchialine ponds due to increased nutrient loads resultant from chemical fertilizers or pesticides used for landscaping purposes.

Sewage Treatment and Effluent Disposal

The sewage effluent generated from the proposed project will be chlorinated and disposed of via seepage pits or injeciton wells (p. 35). We feel that such methods will threaten the ecological stability of the anchialine ponds and impact the coastal water quality. Because the sub-strata is highly porous effluent discharge by the aforementioned methods will permit seepage of nutrients into the ground water and adjacent coastal waters. The pond waters are a combination of both ground and ocean waters; problems of excess nutrient levels or other sources of contamination such as microbial or chlorine levels will surely upset the fragile pond ecology. Although elevated nutrient levels could encourage growth of benthic algae which will be a food source for fish (and thus support recreational fishing) the potential detrimental impacts on pond ecology and coastal water quality need closer scrutiny before final plans are approved. Specific questions which should be addressed in the Final EIS include the following:

1. How much sewage will the proposed project generate?
2. By what method will sludge disposal be conducted? Who will be responsible for proper disposal?
3. Why is there a need for the building, operation and maintenance of three sewage treatment plants (p. 4)? The alternative of only one STP should be addressed.
4. Is the installation, operation and maintenance of three treatment plants for private use compatible with the State's policies in the coastal zone management area?
5. If the effluent is expected to rise to the surface of coastal waters what will the impacts be on water quality particularly with reference to microbial activity? The highly porous substrate (p. 38) does not allow for "filtration elimination" of bacteria and virus which are potential health hazards.
6. Has the applicant considered utilizing effluent water for irrigating landscaped areas?
7. Is there a map depicting the location of the three sewage treatment plants? Could this be included for future reference?

Anchialine Ponds

We wish to reemphasize the uniqueness of this habitat in accordance with the technical report conducted by AECOS (p. 22). The report is an adequate baseline study and there are numerous issues of concern which should be addressed by the developer.

Effects of Effluent Disposal and Site Run-off

The ecological balance of the ponds will undoubtedly be altered if effluent disposal is conducted by either of the two proposed methods. High soil porosity may permit seepage and elevation of nutrient levels in the ponds; this impact will be cumulative since the pond water originates from both ground and coastal water. Siltation of the ponds will be a problem particularly during the construction phase. If concrete is to be mixed on-site the run-off generated could seep into the ground water and possibly seal porous openings for pond water exchange. What mitigative measures will be undertaken to address this issue? Are there any measures to prevent pond siltation from occurring if the project is established? How will the ponds be incorporated into the design scheme? Is this a viable alternative, i.e., can ponds of ths nature be successfully incorporated and "survive" in this setting?

There is an imminent need for the study and establishment of a pond resource management plan that will identify the significant anchialine environments and develop and implement a reasonable management scheme to preserve these unique and fragile habitats. We realize that this is not within the jurisdiction of the developer, however, this issue should be addressed by State and County agencies before extensive elimination of these environments occurs. Incremental elimination does not promote policies that are supportive of sound resource management.

Archaeology

The Phase I "walk-through" survey was an adequate assessment of the existing surface sites. However, the Phase I walk through survey provides no information on the critical subsurface materials. Panlau is an extremely important archaeological area since it is relatively undisturbed. Thus a Phase II survey with test excavations is essential. The Phase II survey should include consideration of the following:

1. the identification of specific sites to be preserved or salvaged as determined by appropriate testing and excavation methods.
2. detailed investigation of cave sites.
3. a detailed mapping of all features and determination of chronology.
4. an evaluation and recommendations for future work.

Traffic

The total traffic count (estimated from Table 1) under existing conditions was averaged to be approximately 538 counts daily during the hours from 6 a.m. to 7 p.m. (a reasonable representation of resident trip generation). If projected trip generation due to the proposed project is considered this will bring total counts to be approximately 1200 vehicle trips/daily. If a capacity analysis for Puako Beach Drive was not conducted (p. 34), what basis is there for the statement on page 35 that "...it is believed Puako Beach Drive can accommodate an additional fifty vehicles per hour"?

We appreciate the opportunity to review this document and look forward to your response.

Yours truly,

Diane C. Drigot, Ph.D.
Acting Director

LK

cc: KEP Alull, Inc. ✓
OEQC
Larry Olson
Bertell Davis
Robert Kinzie
Jacquelin Miller
Alexis Cheong Linder

Sierra Club
moku loa group
Hawai'i Chapter
P.O. Box 1137, Hilo, HI 96720

April 6, 1981

Planning Department
County of Hawaii
25 Aupuni St
Hilo, Hawaii 96720

Gentlemen

The Moku Loa Group of the Hawaii Chapter of the Sierra Club submits the following comments on the Environmental Impact Statement (EIS) for the Paniau proposed condominium development at Puako, Lalamilo, South Kohala, Hawaii.

During the consultation period for the EIS, the Moku Loa Group submitted a letter to the applicant requesting certain issues be addressed. Those issues were

Water Supply
Traffic
Sewage Treatment
Emergency Evacuation Effects

In our review of the EIS, we particularly were interested in the foregoing issues which we again comment on as follows.

WATER SUPPLY There are paragraphs on 3 pages of the EIS (p 16. 33, &45) addressed to water supply. The net conclusion is that water supply is not assured. Water supply is listed as an unresolved issue (p. 45). The EIS should not be accepted until information on water supply is resolved. Water is such a basic commodity that without it, the project cannot be feasible. In our review, we note there is an 8 inch water line serving Puako Beach Lots. at the very minimum, the EIS could have addressed the following questions. What is the supply capability of that line? Is it sufficient to serve existing residences even in time of drought? What is the quality of the water? Is the water source sufficient to serve the existing demands and the estimated 38,400 gal per day usage of this development? If it is not sufficient, will the County Dept of Water supply improve the system? Will the developer pay for any portion or all of the costs of the water line improvement? It would be most helpful if the Department of Water Supply Statement in response to these issues could be included in the improved EIS.

TRAFFIC The EIS addresses the traffic issues with a good deal more detail than the water issues. The conclusion of the issue appears to be stated on page vi is that increases in traffic can be anticipated but not at a level which adversely

affects Puako Drive. That conclusion is wrong. Projected traffic from the development estimated on the basis of 75% occupancy will double traffic at the end of Puako Beach Drive and increase traffic at the entrance of the drive by 50%. These increases are based on traffic counts taken on admittidly heavy traffic count days. This is a significant impact on the Puako community with its narrow 20 foot road winding past many private drives. Additionally, many houses are mauka of the road requiring those residents to cross Puako Drive to have access to the ocean. The times when the condo units are filled to capacity will generate even greater traffic increases. Thus we conclude traffic will have an adverse significant impact on the Puako Community.

SEWAGE TREATMENT While issues are treated in a general way, we feel some necessary specific have been left out of the EIS. Page 36 says treated effluents may be disposed of in seepage pits above the ground water body, through injection wells into the ground water body, or through injection wells into the underlying salt water. What will the method be? Secondly, on page 38 the possibi of microbial contamination of the ground water is said to exist particularly in view of the permeable lavas underlying the area and shor: water travel paths. It is stated these facts will be taken into account in the design of the treatment system. However the EIS is not specific on the complete sewage treatment system and whether the system selected (if any at this point) will do the job. What assurances does the public have that the system contemplated will do the job with reliability. This lack of specifics in sewage treatment processes requires additional data and should be incorporated prior to acceptance of the EIS.

EMERGENCY DESIGN AND EVACUATION This development is proposed in a coastal high hazard area and on a 100 year flood plain. Either designation raises development advaisability questions and together they cry out loud for detailed attention. The EIS passes off both designation lightly. TOO lightly. The January 1980 storm flooded shoreline homes on the property. The property is nine feet abo sea level. 2 feet above flood level. Only TWO feet. The property has not been damaged by tsunami's since the 30's. That is only 50 years ago. The developmen hopefully will last another 50 years (tsunamis permitting). How many storms and tsunamis will likely affect the development. Admittidly that is impossible to answe But it is possible to provide more specifics. How will the buildings resist storm damage? What will their base elevations be? Will the management post tsunami warning information in each apartment? In the lobby? Will there be a warning siren on the property? Can one be heard from the property? Will evacuation procedures be developed? Will each landlord who rents his unit be required to warn tennants of their vulnerability to natural disaster and evacuation procedures?

Page 25 makes the statement that "if required, applicant will comply with the requirements of the Federal Flood Insurance Program." We think that any develo would want to comply in every way possible and even exceed the minimum standard to alivate any questions early in the planning process. These compliance specifics should be set forth and made part of the EIS. Until they are set forth, the EIS stands deficient and should not be approved. The health and safety of the general public and residents of this development demand no less.

There are several other considerations we wish to address.

First, no alternatives to the project are explained at all. Discussion of alternatives is a required part of the EIS procedure. There are alternatives. One is no development. Another is one great big mansion encompassing 7 acres of beautiful landscaped grounds complete with boat house, secluded natural pools and ancient Hawaiian artifacts and living sites. Another would be subdivision into 30, RS-10 lots and development and sale of each lot. Both would be legal and could be accomplished under existing general plan designation and zoning. The EIS is deficient in discussion of alternative courses of action.

Page 12. Is there any justification that 12 boat parking stall are required or are sufficient?

Page 21. Will the developers guarantee public access along the shoreline, if the shoreline survey reveals that the Puako-Kiholo trail is submerged and the property boundary extends into the water? How is the seaward property boundary legally defined in the property description?

Page 22 The last paragraph states "each structure will not exceed three floors, maintaining a low building envelope" However, page 1 states the development will be 3-4 story structures of 64 units each which matches with the rest of the EIS. Therefore the page 22 statement should be corrected. The balance of the statement then becomes questionable that a 4 story building is a low building envelope when compared to other one and two story structures at the end of Puako Beach Drive.

Page 23 "Valuable coastal ecosystem" should also relate to the shallow, reef-protected waters of the Puako shoreline. This area is a unique shoreline on this island. A second point is that the proposed sewage system should not endanger the shoreline qualities now found.

Page 31 and 43. Suggestion is made that the anchialine ponds may be designed into into the project. Will they or won't they? Please be specific.

Page 33 "Major impacts to the regional land use pattern, both existing and planned, are not anticipated. This is incorrect. The area is planned low density urban and zoned RS-10. The necessary change of general plan to Resort (requiring county council approval) and change of zoning to VS .75 is a significant and major change to the Puako Community and the island as a whole as evidenced by the fact that this whole EIS process is necessary for development and change of this nature.

Page 43 A faulty statement is made when stated "historical features abound on the property and steps shall be taken to preserve as many significant features as possible. Page 32 lists 23 such sites plus there are 5 ponds. Yet only 4 historical features and no ponds are listed for preservation. This is not "preserving significant features" It is getting them out of the way of the buldozers.

In summary, we view the EIS as being deficient in several areas. These are

Water Supply
Sewage Treatment
Emergency Design and Evacuation
Alternative Actions

We recommend that the EIS not be approved until additional information is provided.

These comments will be hand delivered to the approving authority on April 7, 1981 and will be mailed to the proposing party on the same date.

Sincerely

George M Winsley

George M. Winsley
EIS reviewer

cc Kep Aluli Inc

GERALD PARK • URBAN PLANNER
URBAN PLANNING • POLICY ANALYSIS • ENVIRONMENTAL ASSESSMENTS

May 29, 1981

George M. Winsley
c/o Sierra Club
Hawai'i Chapter
P. O. Box 1137
Hilo, Hawaii 96720

Subject: EIS/Paniau
Lalamilo, South Kohala, Hawaii

Dear Mr. Winsley:

Thank you for your comments on the subject EIS. We offer the following responses to your concerns.

Water Supply

The Department of Water Supply has notified the developer that the Departments existing water system facilities is not able to accommodate the proposed development. Quoting from the Department's communication, "the proposed development will require a 4-inch meter, however, a larger sized meter service or a water commitment will not be granted until an additional source is developed in the Lalamilo well field. Presently there are no funds available for development of another source. Developers may be required to contribute a pro rata share for construction. However, this option is still at a premature stage."

In response to this communication, the developers have informed the Department of Water Supply of their willingness to participate in developing a water source.

Traffic

Your comments address both effects on Puako Beach Drive and the Puako community. With respect to Puako Beach Drive, the traffic counts for the seven day period and not only the two highest count days presented in the EIS are indicative of light hourly traffic volume for a two-lane roadway. For analytical purposes, hourly volume is more important than the daily total (referred to as average daily traffic). To check traffic patterns, on site observations were made on a weekday during October, 1980. The observations revealed that traffic density is light and generally flow conditions showed a 1-2 minute interval between passing vehicles. Based on this lag interval and light traffic volume, it is believed that Puako Beach Drive can accommodate an additional fifty vehicles per hour.

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Effects of Puako residents resulting from the increased traffic are more difficult to ascertain. Certainly the frequency of traffic noise will increase as will the potential for traffic mishaps. The latter effect is subject to many variables---excessive speeding and driver or pedestrian inattentiveness for example---for which the applicant has no control. What we are suggesting is that given the anticipated increase in vehicular traffic motorists and pedestrians must exercise more caution when driving or crossing/walking along Puako Beach Drive.

Sewage Treatment

A method of effluent disposal (seepage pits or injection wells) has not yet been decided. Similarly, a specific treatment system has not yet been selected. These decisions will be left to the consulting sanitary engineers.

To mitigate potential health hazards, the plant must and will be operated and maintained according to existing Public Health Regulations (Chapter 38). Some of the operational requirements contained in the Regulations were discussed on pages 35-36 of the EIS.

Emergency Design and Evacuation

Aside from elevating the buildings, specific measures for mitigating potential flood/coastal high hazards have not been determined. Although preliminary flood insurance rate maps were cited in the EIS as a reference, the Federal Flood Insurance Program has not been implemented for all the Big Island. If the program is implemented with supporting regulations specifying structural and floodproofing standards prior to plan approval, applicant will comply with the standards contained therein. If the program is not implemented, applicant will adhere to structural and floodproofing measures recommended by the consulting engineers and the approving agency.

A warning siren can be placed either on the property or near the end of the existing paved portion of Puako Beach Drive. Applicant will consult with the Hawaii County Civil Defense Agency on this matter.

A plan of evacuation already has been devised for Puako Beach Drive by the County Civil Defense Agency.

Applicant will place warning signs throughout each building if such notice is required for all developments in flood/coastal high hazard areas.

Other Considerations

Alternatives

The only real alternative to the project is no action. Should the project not be allowed to proceed, the site would retain its present low-density use and environmental qualities. The no action alternative also deprives the property owners from achieving their stated objectives.

Your other suggested alternatives are inconsistent with the property owners objectives.

Page 12

Boat parking stalls are an added feature for the occupants.

Page 21

Public access cannot be determined until the shoreline is resurveyed.

The State of Hawaii owns all lands below the upper reches of the wash of waves, usually evidenced by the edge of vegetation or by the debris left by the wash of waves. This being the case, the State of Hawaii is the party to whom questions of shoreline access should be addressed.

Page 22

The statement "each structure will not exceed three floors" is incorrect. Each structure will not exceed four floors in height.

Page 23

The treatment system will comply with the requirements of Chapter 38, Public Health Regulations. As such, adverse effects on nearshore waters are not anticipated.

Page 31 and 43

Anchialine ponds will be designed into the project.

Page 33

This conclusion was reached by the County of Hawaii Planning Department in its assessment of the proposed action and was noted as such in the EIS (page 33).

Page 44

The 4 sites recommended for preservation by the consulting archaeologist are based on a surface examination of the features. Further archaeological work will focus on subsurface examination of sites. Following this phase of work, additional features may be recommended for preservation.

We hope that we have satisfactorily responded to your concerns.

Sincerely,

Gerald Park

GPihg

cc: Kep Aluli, Inc.
County of Hawaii Planning Department

APPENDIX

APPENDIX A - SPECIES RECORDED OFF THE RUDDLE PROPERTY, PUAKO, HAWAI'I

Transect areas are indicated in text Figure 2. Numbers in the body of each table are estimates of abundance based on a scale of 1 to 4 as given in Appendix A.

SPECIES OF ALGAE AND THEIR RELATIVE ABUNDANCE IN TRANSECT AREAS OFF PUAKO
(P. Bartram)

	TRANSECT AREA		
	I	II	III
CYANOPHYTA			
Lyngbya majuscula		2	3
Schizothrix/Rhizoclonium		(anchialine ponds)	
CHLOROPHYTA			
Cladophora sp.		(anchialine ponds)	
Enteromorpha sp.		4 (shoreline)	
RHODOPHYTA			
Porolithon onkodes		3	4
Pterocladia caerulescens		2	3
PHAEOPHYTA			
Colpomenia sinuosa			4

APPENDIX A: SPECIES LIST

SPECIES OF INVERTEBRATES AND THEIR RELATIVE ABUNDANCE IN TRANSECT AREAS OFF PUAKO
(E.B. Guinther)

	TRANSECT AREA		
	I	II	III
CNIDARIA			
ZOANTHINIARIA (Soft corals)			
Fam. Zoanthidae			
Palythoa tuberculosa (Esper)	3		
SCLERACTINIA (Stoney corals)			
Fam. Acroporidae			
Montipora verrucosa (Lam.)	4	4	
Montipora flabellata Studer		4	
Fam. Faviidae			
Leptastrea purpurea (Dana)	4	4	
Fam. Pocilloporidae			
Pocillopora meandrina Dana	4	3	
Fam. Poritidae			
Porites lobata Dana	3	2	2
Porites compressa Dana			2
ARTHROPODA (CRUSTACEA)			
DECAPODA			
Fam. Atyidae			
Halocaridina rubra Holthuis	(anchialine ponds)		
Fam. Alpheidae			
Metabetaeus lohena Banner & Banner	(anchialine ponds)		
Fam. Grapsidae			
Grapsus tenuicrustatus (Herbst)	(shoreline)		
MOLLUSCA			
GASTROPODA			
Fam. Thiaridae			
Thiara granifera (Lam.)	(anchialine ponds)		
Fam. Neritidae			
Nerita picea (Recluz)	(shoreline)		
Theodoxus neglectus (Pease)	(nearshore and anchialine ponds)		
T. cariosus (Wood)	(anchialine ponds)		
Fam. Littorinidae			
Nodilittorina picta (Philippi)	(shoreline)		
Fam. Cypraeidae			
Cypraea caputserpentus L.	3		
C. mauritiana L.	4		
Fam. Conidae			
Conus ebraeus L.	4		
ECHINODERMATA			
ECHINOIDEA			
Fam. Toxopneustidae			

APPENDIX A: SPECIES LIST

Tripneustes gratilla (L.)	1	3
Fam. Echinometridae		
Echinometra mathaei (Blainville)	1	1
E. oblonga	1	1
Heterocentrotus mammillatus (L.)	4	3
Fam. Diadematidae		
Echinothrix diadema (L.)	2	3
Echinothrix calamaris (Pallas)	3	3
Diadema paucispinum A. Agassiz	4	4
ASTEROIDEA		
Fam. Acanthasteridae		
Acanthaster planci (L.)	3	4
Fam. Ophidiastridae		
Linckia multifora (Lam.)	3	
HOLTHUROIDEA		
Fam. Holothuridae		
Holothuria atra Jaeger	4	
H. cf. *cinerascens* (Selenka)		4

APPENDIX A : SPECIES LIST

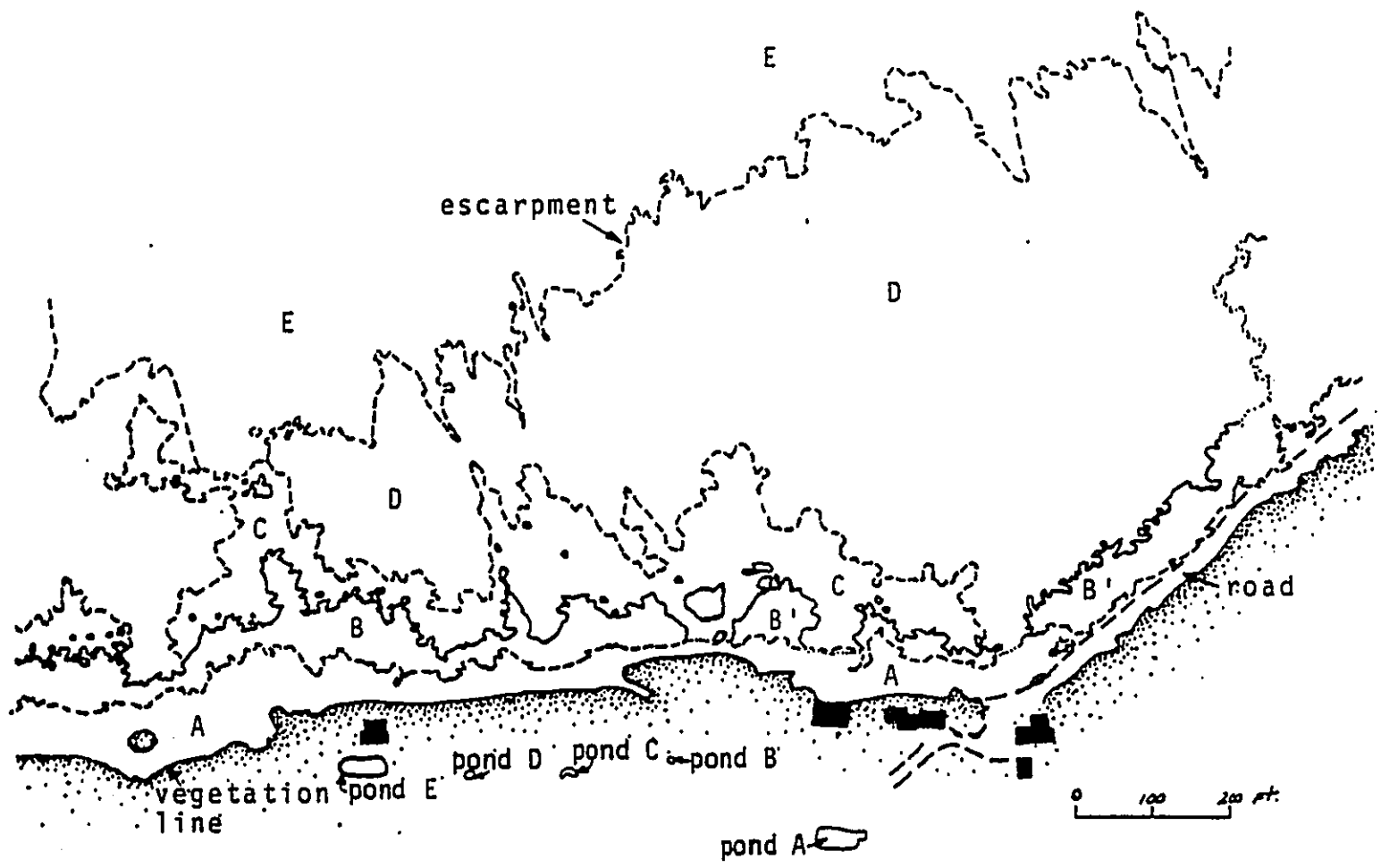
SPECIES OF FISHES AND THEIR RELATIVE ABUNDANCE IN TRANSECT AREAS OFF PUAKO (Wm. Madden)

	TRANSECT NO.		
	I	II	III
Aetobatis narinari		4	4
Spratelloides delicatulus	1		
Synodus dermatogenys			3
Lycodontis flavimarginatus	3	4	3
Belone platyura			3
Aulostomus chinensis		3	3
Adioryx xantherythrus			2
Myripristis sp.			2
Neomyxus leuciscus	2		
Mugil cephalus	3		
Kuhlia sandvicensis	2		
Cephalopholis argus			4
Caranx melampygus (juv.)	4		
Mulloidichthys flavolineatus	2		3
Parupeneus bifasciatus		3	
P. chryserydros	3		3
P. multifasciatus	3	2	2
P. pleurostigma	2		
Kyphosus cinerascens	3		3
Forcipiger flavissimus		3	2
Centropyge potteri			2
Chaetodon auriga	3		
C. fremblii		3	
C. miliaris	3		
C. multicinctus	2	2	2
C. ornatissimus	3	3	2
C. quadrimaculatus	3	2	3
C. trifasciatus	3		
C. unimaculatus	3		4
Paracirrhites arcatus	2	3	2
Cirrhitus pinnulatus			3
Cirrhitops fasciatus		3	2
Abudefduf abdominalis	2	3	2
A. sordidus	3		
Plectroglyphidodon imparipennis	2	1	
P. johnstonianus		4	
Stegastes fasciolatus		3	2
Chromis agilis			3
C. hanui			3
C. vanderbilti	2	2	2
Labroides phthirophagus	3	4	3
Thalassoma ballieui			3
T. duperreyi	1	1	1
T. fuscum	2	2	

APPENDIX A: SPECIES LIST

T. purpureum	3	2	
Gomphosus varius	2	2	
Coris gaimardi	4		3
Halichoeres ornatissimus	3		
Cheilinus rhodochrous	3	4	
Stethojulis balteata	2		
Calotomus sandwicensis	3		
Scarus dubius (juv.)		2	
S. sordidus	2		
S. taeniurus	3		
Scarus spp. (juv)	2		
Zanclus cornutus	3	3	2
Acanthurus achilles			3
A. guttatus	2	3	
A. nigrofuscus	1	1	1
A. nigroris	2		2
A. olivaceus		2	2
A. triostegus sandvicensis	1		
Ctenochaetus strigosus	2	3	2
Zebrasoma flavescens		1	1
Naso lituratus		3	2
N. unicornis (juv.)	3	2	
Exallias brevis		3	3
Cirripectes obscurus		3	3
Plagiotremus ewaensis	3		
Rhinecanthus aculeatus		2	
R. rectangulus	2		
Melichthys niger		1	1
M. vidua			2
Sufflamen bursa			3
Pervagor melanocephalus		3	2
P. spilosoma		2	
Ostracion meleagris	4		
Arothron meleagris			4
Canthigaster jacator	3	2	2
Diodon hystrix			4
Total number of fish species in each transect area	45	38	52

Total fish species recorded in study = 81



A - Beach and (mostly) storm beach of coral rubble, boulders, and sand.
B - Rugged lava shelf at the shoreline. B' is a similar shelf representing a pahoehoe flow.
C - Shallow, nearshore zone. Transect Area I.
D - Offshore shelf. Transect Area II.
E - Offshore slope beyond the escarpment. Transect Area III.

FIGURE 2. SHORELINE AND MARINE ZONES IN THE VICINITY OF THE RUDDLE PROPERTY.

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