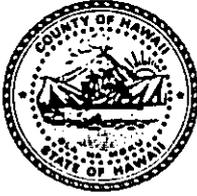


Stephen K. Yamashiro  
Mayor



**County of Hawaii**  
**DEPARTMENT OF PARKS AND RECREATION**  
25 Aupuni Street, Room 210 • Hilo, Hawaii 96720-4252  
(808) 961-8311

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George Yoshida  
'93 MAY -4 A/Director

OFFICE OF ENVIRONMENTAL  
QUALITY CONTROL

May 3, 1993

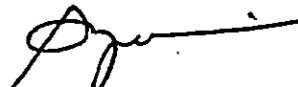
Mr. Brian Choy, Director  
Office of Environmental Quality Control  
220 South King St., 4th Floor  
Honolulu, HI 96813

**Subject:** Negative Declaration for Acquisition of Land for  
Development of a Public Park at Laepao'o, Puna,  
Hawaii  
TMK: 1-4-02: 05, 06 & 61

The Department of Parks & Recreation, County of Hawaii, has received no comments on the draft EA during the thirty day public comment period which ended on April 7, 1993. The Department has determined that this project will not have any significant environmental impact and has issued a negative declaration.

Enclosed is a completed OEQC Bulletin Publication form and four copies of the final environmental assessment for publication.

Thank you and please contact Glenn Miyao at 961-8311 if you have any questions.

  
George Yoshida  
DIRECTOR

Enc. OEQC Bulletin Publication Form  
Final EA (4 copies)

cc: Governor

1993-05-23-H1-PEA - Laepao's Acquisition of Land for  
development of public beach park

MAY 23 1993

NEGATIVE DECLARATION (FINAL ENVIRONMENTAL ASSESSMENT)  
FOR PROPOSED PURCHASE OF LAND FOR PARK AT LAEPAO'O  
PUNA, HAWAII

Prepared By:

RON TERRY, Ph.D.  
HCR 9575, KEAAU, HAWAII 96749

April 24, 1993

NEGATIVE DECLARATION (FINAL ENVIRONMENTAL ASSESSMENT)  
FOR PROPOSED PURCHASE OF LAND FOR PARK AT LAEPAOO

PUNA, HAWAII

TMKS 1-4-002-005, -006, & -061.  
PUNA, HAWAII

APPLICANT:

Hawaii County Parks and Recreation Department  
25 Aupuni Street  
Hilo, Hawaii 96720

CONSULTANT:

Ron Terry Ph.D.  
HCR 9575  
Keaau, Hawaii 96749

APPROVING AGENCY:

Office of the Mayor  
County of Hawaii  
25 Aupuni Street  
Hilo, Hawaii 96720

CLASS OF ACTION:

Use of County Funds.  
Action in Shoreline Setback Area

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[Note: Appendices not included in Final EA. Please Consult Draft EA for full text]

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CHAPTER 1: PROJECT DESCRIPTION

1.1. Technical

1.1.1 Project Location

The proposed project is located at TMKs 1-4-002-005, -006, and -061. These properties are on the makai side of County Road 137, approximately 5500 feet Kapoho-side (northeast) of Isaac Hale Beach Park, at Pohoiki, Puna, Island of Hawaii. (Figure 1).

1.1.2 Nature, Purpose and Objectives of Action

The proposed project involves the purchase of the three parcels for use as a County Park. The Hawaii County Council expressed by Resolution on October 21, 1992, its intent to enter into an agreement to purchase the parcels of land contingent on certain conditions (See Hawaii County Council Resolution 527 92, attached as Appendix 1). The Resolution authorized placement of a refundable deposit of \$7000 to an escrow account and funding for the preparation of this Environmental Assessment.

The background for the project is stated in the supporting statements for the Resolution, which are summarized below.

Since its beginning in 1983, the Kilauea volcano eruption has destroyed 181 residences and many other facilities, including three County beach parks in the Kalapana area of Puna. A proposal is under development by the County of Hawaii to the Federal Emergency Management Agency (FEMA) to fund the replacement of a number of facilities and services lost in the eruption. Requested in the proposal is money for water systems, roads, and beach parks. If the proposal is approved, FEMA would fund 75% of the approved costs of the new parks, including land acquisition.

Three adjoining parcels of land in Pohoiki totalling 5.95 acres with 550 feet of ocean frontage and a half-acre warm spring pond are available for sale and present an opportunity to acquire a unique property for ocean recreation. The Puna Parks Committee, an advisory group made up of area residents, has studied available sites for replacement of lost beach parks and unanimously supports the acquisition of these three parcels of land and their development into a park.

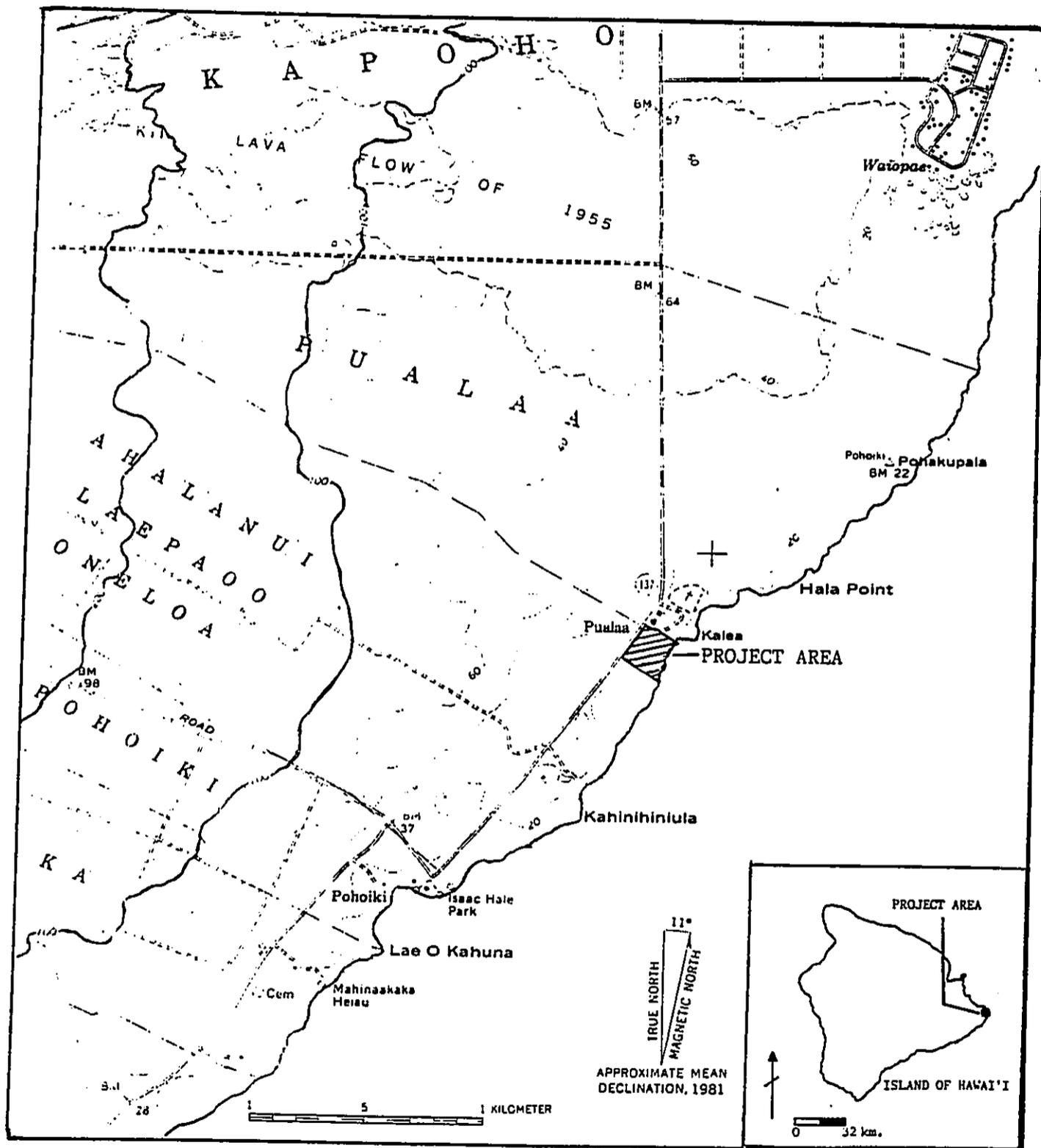


FIGURE 1: USGS KAPOHO QUADRANGLE SHOWING PROJECT AREA.

### 1.1.3 Purpose and Scope of Environmental Assessment

This Environmental Assessment is required under Chapter 343, HRS, because the proposed purchase involves the use of County funds, and because the proposed park lies in the shoreline setback area.

The scope of this Environmental Assessment is to examine the environmental suitability of the site for a county park. The function of the park would be swimming, picnicking, and ocean activities. The existing swimming pond would be modified for safe and healthful public use. Because the actual design plan for specific structures in the park has not been developed, this Environmental Assessment does not encompass the impact of actual structures in specific locations. It is assumed that current structures on the land would be modified to suit park purposes.

It is recognized that should the FEMA proposal gain approval and the County obtain funds for all or part of the beach park improvements it has requested, further environmental studies meeting requirements of Chapter 343, HRS, as well as those of the National Environmental Policy Act (NEPA), will be necessary.

### 1.1.4 Existing and Proposed Improvements

The site currently consists of three separate parcels. Parcels 005 and 006 contain the pond itself, a structure where a caretaker lives, and several storage and equipment sheds. The landscaping on the mauka section is a neatly mowed lawn with ornamental trees and shrubs, and consists of natural lava and milo trees on the makai section near the pond. A chain-link fence surrounds the parcels except on the makai end. Parcel 061 has no buildings, and is essentially an overgrown grassy area with scattered coconut trees throughout and a dense grove of assorted trees just mauka of the shoreline.

The Hawaii County Department of Parks and Recreation plans to convert the area to a park through the following improvements:

1. Convert structures to use as a caretaker cottage, security, storage, and administration.
2. Upgrade the safety level of pond through cleaning, water circulation improvements, construction of railing, steps, lifeguard facilities, and signage.
3. Remove the portion of the chain link fence separating parcels 005 and 006 from 061.

4. Maintain and expand mowed area for public use.

5. Construct bathrooms, showers and picnic facilities.

A detailed listing of the proposed facilities and costs is supplied in Table 1 below.

Table 1:  
PROPOSED PARK IMPROVEMENTS AND COSTS

<u>Improvement</u>	<u>Estimated Cost (Dollars)</u>
Lifeguard Stand	2,000
Children's Playground Equipment	25,000
Restroom, 24 x 30, Seven Stalls	200,000
Picnic Shelters	30,000
Develop Park Grounds (Safety Improvements	242,000
2500 Feet of 6" Water Pipeline & Appurtenances	3,000
TOTAL	502,000

Source: County of Hawaii Improved Project Proposal FEMA 864-DR-HI

In addition, some expenditures for parking will be necessary. Costs are estimated at \$1500 per paved parking stall. Fifty parking stalls would thus add \$75,000 to the cost of the proposed project. Final estimates for parking costs are not yet available, as the County of Hawaii is discussing leasing a portion of an adjacent parcel from an adjacent landowner for a nominal fee. If and when an arrangement is reached, the environmental impacts of the use of that parcel for parking will be examined in a separate document if necessary.

#### 1.1.5 Ownership

Parcels 005 and 006 are currently owned by David De Luz, and parcel 061 is owned jointly by the Merrill L. Carlsmith Trust and the estate of Curtis Carlsmith. Both properties are listed for sale with realty agencies, and both owners have expressed a willingness to sell to the County of Hawaii.

## CHAPTER 2 ENVIRONMENTAL SETTING

### 2.1 Physical Environment Characteristics

#### 2.1.1 Geology, Soils & Geologic Hazards

##### 2.1.1.1 Surface Geology

The surface geology of the project area is composed of flows of pahoehoe lava dated between 400 and 750 years old (Moore and Trusdell 1991). The entire site lies at less than 30 feet elevation above mean sea level.

Cracks and depressions in the lava intersect basal groundwater escaping to sea and form numerous water-filled cracks and ponds. Some of this water has been geothermally heated, and because it exists in various states of mixing with seawater, other groundwater, and rainwater, these water bodies exhibit great spatial and temporal variability in temperature and salinity.

##### 2.1.1.2 Soils

The soil on the site is Opihikao extremely rocky muck, which typically forms a 3-inch layer of dark brown, acidic muck overlying pahoehoe lava. Although the muck is highly permeable, the rock beneath may or may not be permeable depending on the location of cracks, and brief and localized ponding can occur after heavy rains (Sato et al 1973).

In terms of engineering properties, the depth to bedrock is reached within 3 inches in such soil, which allows firm footings for foundations.

##### 2.1.1.3 Geologic Hazards

Three separate geologic hazards have implications in terms of the subject property's suitability for a park: lava flows, earthquakes, and subsidence.

Just as with all development on the East Rift of Kilauea, this project is subject to volcanic hazard, particularly lava inundation. For much of the last three decades the East Rift Zone of Kilauea has been erupting. Individual eruptions in this period have lasted as long as 10 years (Macdonald et al 1986:80; Heliker 1990:24). In earlier history, lava flows penetrated to within 4000 feet of the area occupied by the proposed park in 1955, and to within 2000 feet in 1790. The United States Geological Survey classifies the area as Lava Flow Hazard Zone 2 (Wright et al 1992), on a scale of

ascending risk 9 to 1. Zone 2 is defined as the area adjacent to and downslope of summits and rift zones of active volcanos, and because 15 to 25% of the surface of such areas has been covered by lava since 1800, and 25 to 75% has been covered within the past 750 years, there is considerable risk of lava inundation over relatively short time scales (see Heliker 1990).

Seismically, the area shares with the entire island of Hawaii a Zone 3 on a scale of ascending risk 1 to 4 in the Seismic Probability Rating (Furumoto et al 1973:34). Major damage corresponding to a score of 7 or above on the Modified Mercalli Scale is possible. Although many Puna structures suffered damage in the 1975 earthquake, which was approximately 7.2 on the Richter Scale, most were poorly designed to begin with. The relevant design implications of this setting are simply to follow suitable lateral load specifications according the Uniform Building Code.

Another geological threat to the park is subsidence or ground sinking. Volcanologists have come to realize that subsidence is an ever-present occurrence on volcanoes (Moore 1987). Two basic forms of subsidence are recognized: a slow sinking of a large portion of crust including a whole island, and a more rapid and episodic drop along fault zones on the unbuttressed flank of an active volcano. The history of the Puna coastline supplies abundant evidence of both types. A regional slow subsidence rate of approximately one inch per year has been observed at Hilo. Superimposed on this sinking is an additional episodic subsidence averaging almost 8 inches per year for Puna relative to Hilo. The Kapoho area immediately to the north experienced episodic sinking for many centuries, producing a broad, depressed plain (in fact the name Kapoho means "sunken place"). Sometimes the subsidence is sudden and violent, as occurred on the coastline between Kapoho and Halape on November 29, 1975, when, in association with the largest earthquake in Hawaii in a century, some areas sank over 6 feet in a matter of seconds (Macdonald et al 1983:98-114). Many prehistoric and historic beaches and canoe landings along the Puna coastline are now submerged because of subsidence (Clark 1985:32-55).

It is theoretically possible to conduct a cost-benefit analysis balancing the estimated purchase, construction and maintenance costs of the park against the park's recreational value over an expected lifetime based on the suite of hazards. However, this would probably amount to little more than an academic exercise. The sporadic and unpredictable occurrence of eruptions and subsidence on the East Rift Zone makes any prediction concerning the actual date of the inevitable demise impossible. Small pockets of coastal land nearby have withstood lava inundation and subsidence for well over a

thousand years; other coastal land nearby is being consumed by lava as this sentence is written.

## 2.1.2 Weather and Climate

### 2.1.2.1 Average Weather Patterns

The average annual rainfall at the site is not known precisely but lies between 80 and 100 inches (Giambelluca et al 1986:34). This figure, though high by Honolulu standards, is relatively dry for windward Hawaii. Average monthly totals at the site vary from over ten inches in November to a less than four inches in June (Ibid:35-46). Diurnally, rainfall in the coastal windward lowlands of Hawaii tends to be concentrated in the evening, night, and early morning hours, especially during summer months (UH-Manoa 1983:63). Therefore, despite precipitation totals typical of rainforests, relatively little rain falls during peak demand times for swimming recreation.

No quantitative data on cloud cover are available, but it is well known that coastal Lower Puna is considerably less cloudy than Hilo. Average annual temperature is approximately 75 degrees Fahrenheit, with small diurnal and seasonal variation (UH-Manoa Dept. of Geography 1983:64). Winds are normally easterly or northeasterly, especially during summer, except during synoptic-scale weather disturbances (UH-Manoa Dept. of Geography 1983:65).

The mild and, by windward standards, sunny and dry conditions encourage local residents to fish, gather, sunbathe and hike along the coast. However, the rough waves and rocky coast restrict the range of activities at most sites.

### 2.1.2.2 Storms and Weather Hazards

Occasional storms bring violent weather activity such as high wind, heavy rainfall and high surf.

As with all locations in the Hawaiian Islands, Puna seldom experiences the full impact of a hurricane. Hurricanes directly hit land in the Hawaiian Islands infrequently -- less than once every 20 years. They are thus seldom accounted for in local building design. However, hurricanes on their way across the tropical eastern North Pacific periodically graze the Hawaiian Islands, causing high surf on southern and eastern shores. Several times during the last ten years, notably in August of 1982 and August of 1988, hurricane waves have battered the Puna coast, causing destruction to vegetation and property. The low elevations on the subject property make it vulnerable to wave attack, and in fact the

entire area is classified Flood Zone VE (subject to damage from high waves and tsunami) on the Flood Insurance Rate Maps (Figure 2). On occasion the ponds on the subject property have suffered minor storm damage, most recently in November 1990, and provisions should be made in park planning for periodic repair and/or preventative structural alterations.

Winter storms such as cold fronts, kona storms, and other disturbances periodically supply the region with abundant rainfall, occasionally bringing floods. The U.S. Weather Bureau has estimated that the "Five-Year Storm" (i.e., a rain storm likely to occur on the average every five years) will deliver approximately 10 inches of rain to the area within 24 hours (U.S. Soil Conservation Service 1981:84). High winds also may accompany such storms, with gusts over 50 MPH likely at least once each winter. Damaging windstorms from any source, however, are rare in Puna. Similarly, thunderstorms and lightning are infrequent events in the lowlands of Hawaii. Hilo airport, where measurements of thunderstorm frequency are made, experiences less than 10 per year on the average, most in association with winter storm passage.

These facts concerning storm conditions on the site are relevant to the suitability analysis for several reasons. First and most importantly, high waves generated by hurricanes or other storms may make the site temporarily unsafe for use and may also cause minor property damage. Provisions for surf monitoring and park closure are vital to safe operation of the facility. Second, high rainfall episodes may induce unhealthful bacterial levels in portions or all of the swimming pond. This issue is discussed in more detail in Section 2.1.3.2, but again it is recommended that weather event-triggered monitoring, in this case of bacterial counts, should be a standard feature of park maintenance. Finally, because of the possibility of wind damage, the numerous large trees on the property should be inspected for structural soundness and trimmed if necessary prior to use of the site as a public park.

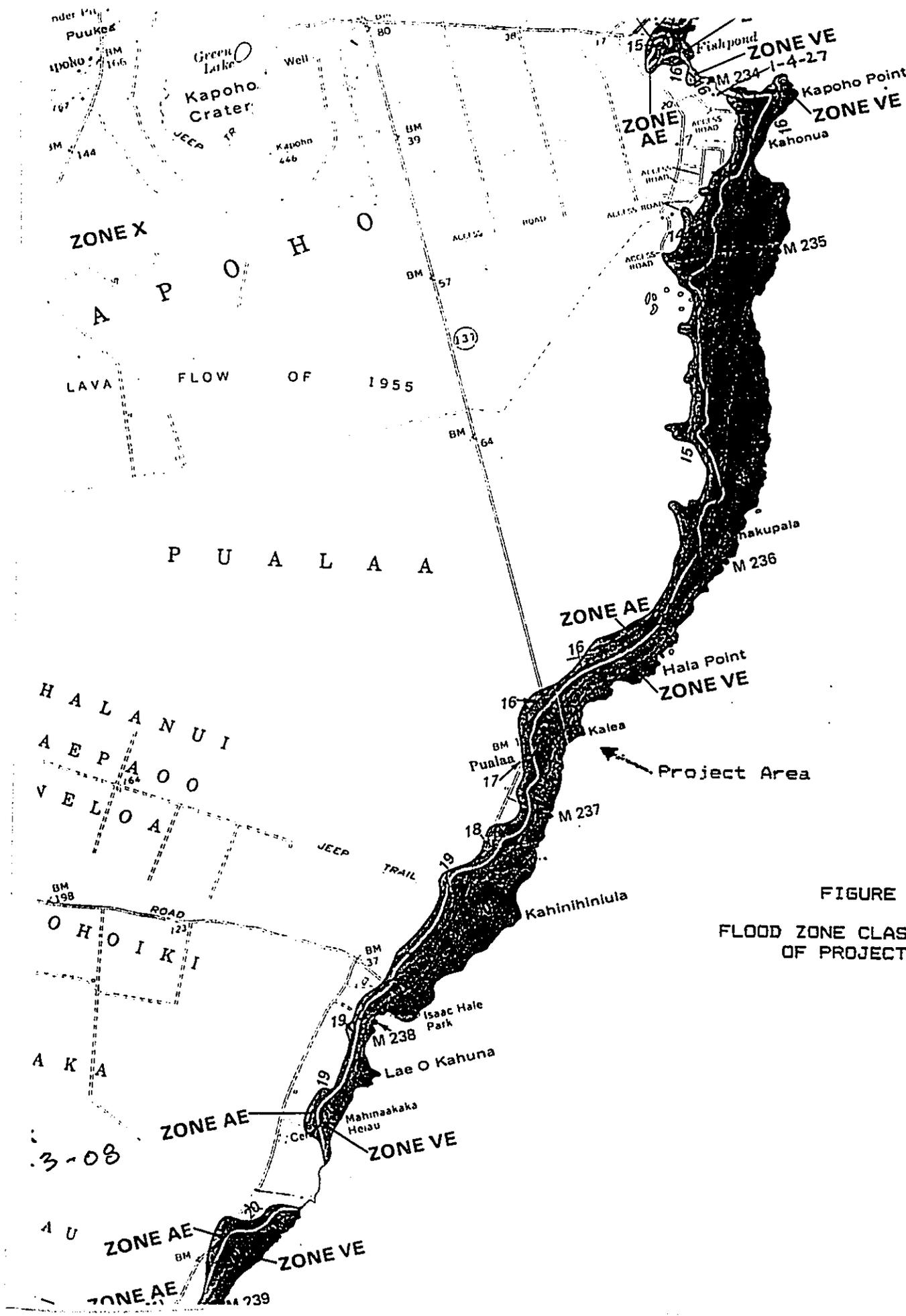


FIGURE 2  
FLOOD ZONE CLASSIFICATION  
OF PROJECT AREA

### 2.1.3 Swimming Pond and Water Quality

#### 2.1.3.1 Origin and Description of the Pond

The central feature of the subject property is the swimming pond. The original pond was natural, a depression in the lava that filled with brackish warm water. Local informants remember it as Maunakea Pond, named after a local family. Long used for swimming purposes, it was enlarged in the 1950s by the Hayes family. After alteration the pond became a kidney-shaped pool of approximately half an acre in extent, with a maximum depth of 6 to 7 feet at null tide. Perhaps in order to raise the pond's temperature, Hayes separated it from the ocean by constructing an artificial cement weir that allows limited passage of tidal and wave-fed water in and out of the pond. On its mauka end it is fed by a thermal spring. A culvert connects it to a natural, brackish pond on adjacent property owned by Bishop Estate.

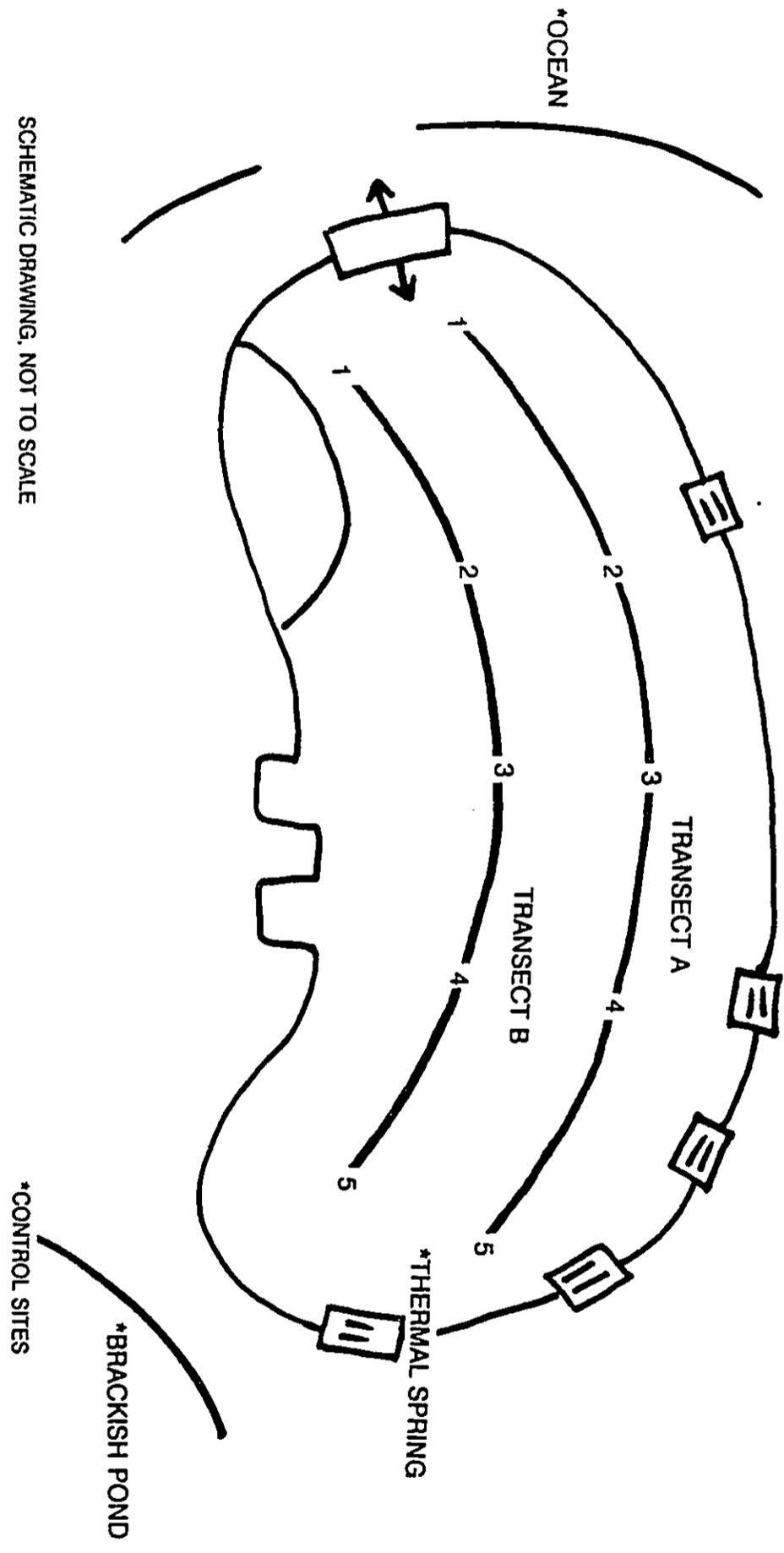
Mr. Hayes was a manager at a local sugar plantation, and the pond was a welcome feature at his private parties and, periodically, at gatherings of plantation employees and kumiai groups. Local informants say that Mr. Hayes used to clean the pond often during this period. In addition, every five years he would use a small dragline to excavate any excess organic mud. The last twenty years have seen less use of the pond, and less maintenance as well. In 1990 the owners accomplished a major cleanup, taking out the accumulated organic litter and trimming the surrounding milo trees in order to reduce future fouling of the pond.

#### 2.1.3.2 Existing Water Quality

In 1992, the Department of Parks and Recreation funded a study by Sherri Miller, a water quality consultant, of the physical properties and water quality of the pond. Subsequent to the first study and a clean-up of the pond, a second was commissioned and paid for by David Deluz, the owner of the property. Miller analyzed the flow patterns, temperature, salinity, and bacterial presence. Her findings are contained in reports at the Hawaii County Department of Parks and Recreation and are summarized below.

It was determined by Miller that the pond has a somewhat complex structure (Figure 3). Flow in the pond responds to both groundwater input and tidal fluctuations. On one test on 14 October 1992, flow rates of up to 12,500 cubic meters per hour were recorded as the pond emptied into the ocean during ebb tide. Temperatures varied from 90 to 97 degrees Fahrenheit, as compared to 75 to 83 degrees for the adjacent

FIGURE 3  
POHOIKI THERMAL SWIMMING POND  
PHYSICAL PROFILE STATIONS



SCHEMATIC DRAWING, NOT TO SCALE

ocean surface. Salinity varied from 8 to 23.5 parts per thousand, with values tending to be lowest near the surface and near the brackish pond.

The water quality sampling in the first phase, in May through August of 1992, revealed high densities of fecal coliform (FC) and enterococci (EC) at a number of locations within the pond. Dye-bomb tests indicated that the property's cesspool was a major contributing factor.

Subsequently, the pond was cleaned out and the cesspool was closed and disinfected. Water samples tested by both the consultant and the State Department of Health (DOH) indicated that the level of sewage pollution was low and probably not a risk to public health. It was decided to conduct another thirty-day study to determine if the water quality of the thermal swimming pond then met standards for nearshore recreational waters as determined by the State DOH Administrative Rules under Title 11, Chapter 54, "Water Quality Standards." The bacterial results are presented in Table 2 below:

Table 2:  
WATER QUALITY ANALYSIS:  
BACTERIAL COUNTS DELUZ PROPERTY POND  
14 SEPTEMBER TO 14 OCTOBER 1992

<u>Site</u>	<u>FC Geometric Mean</u> <u>(FC/100ml)</u>	<u>EC Geometric Mean</u> <u>(EC/100ml)</u>
1: Center of Pond	23	13
2: Channel	14	8
3: Keiki Wading Pool	8	6
4: Brackish Pond	38	82
5: Thermal Spring	18	20
6: Ocean	2	7
DOH Maximum Standard*	200	7

Notes: See Figure 3 for site locations. DOH maximum standards for fecal coliform based on geometric mean for ten or more samples collected in a thirty-day period. For enterococci, based on not less than five samples equally spaced over a thirty-day period. Cf. State of Hawaii, Department of Health Administrative Rules, Title 11, Chapter 54, "Water Quality Standards."

In terms of fecal coliform, the pond met and even exceeded State DOH water quality standards for inland recreational waters. As regards enterococci, however, the values found

almost everywhere in the pond exceeded recommended levels. DOH suggested that bird droppings may be responsible for all or part of the high enterococci readings, and recommended that trees overhanging the pond be trimmed. There may also be a correlation between high rainfall events and abnormally high enterococci counts.

In subsequent discussions, DOH has recommended that repeated sampling for Clostridium perferingins, the preferred bacterial indicator for mammalian fecal water contamination, be conducted (see Appendix 3 for correspondence). Only by sampling over an extended period, e.g., weekly for two months, can it be conclusively established that little risk from fecal contamination exists.

In summary, the existing water quality in the ponds appears to be sufficiently close to DOH standards to expect that the pond could serve as a safe and healthful public swimming facility. However, it is recommended that a systematic program of repeated and regular water quality sampling be implemented to assure safe levels. DOH recommendations regarding the using Clostridium as the bacterial indicator and tree trimming should be followed. In addition, the correlation between high rainfall and enterococci levels should be investigated, and regular post-rainfall monitoring should be implemented if found necessary.

#### 2.1.3.3 Potential Physical Modifications to Pond

It is possible that given the marginal state of existing water quality heavy use of the facilities may tend to degrade water quality to unhealthful levels. Systematic monitoring can warn of this condition and allow temporary closure, but at the cost of diminished public use.

During meetings of the Puna Parks Committee, it was suggested that certain measures to permanently improve water quality on the site be explored:

1. Pumping ocean water into the pond
2. Opening the weir by lowering its height or carving notches
3. Aerating the pond
4. Using a pump to cause vertical mixing of water
5. Barricading water flow from a connected pond on an adjacent property with high bacterial counts

The State DOH and the U.S. Army Corps of Engineers were contacted for their input on the potential efficacy and compliance requirements of these options. DOH responded in writing (see Appendix 3), while the Suzanne Baba of the Operations Branch of the Honolulu District, U.S. Army Corps, supplied verbal comments. These comments are summarized below:

1. Pumping ocean water was considered relatively effective but costly. Depending on the size and nature of the pumping, a Section 401 Water Quality Certification from DOH may be necessary. The U.S. Army Corps would require a permit for a permanent pumping installation, but not for a temporary pump.
2. Opening the weir would require consent from the U.S. Army Corps of Engineers, which might take the form of a Letter of Permission or a General Permit, depending on the judgement of the Corps upon analyzing the specific request. Although a Section 401 Water Quality Certification would probably not be required, because the work would involve construction adjacent to Class AA waters, the DOH would need to approve the work. This option was considered the most cost-effective and practical.
3. Aerating and vertical mixing would require no permits, but were considered to be of minimal efficiency, especially considering their relatively high cost. DOH recommended aeration, however, if monitoring detected that nuisance conditions were creating an adverse impact on water quality.

#### 2.1.4 Flora, Fauna and Ecosystems

##### 2.1.4.1 Original Vegetation

The original vegetation of the project area was Lowland/Coastal Wet Forest (Gagne and Cuddihy 1990:47), but the region has been extensively modified by Hawaiian cultivation and the spread of alien plants introduced since Western contact.

#### 2.1.4.2 Current Vegetation

Vegetation on the subject property today is almost completely human-modified. A small fringe along the coastline contains some natives including sedges (Fimbristylis cymosa), naupaka kahakai (Scaevola sericea), hala, (Pandanus tectorius), beach morning glory (Ipomoea pes-caprae), and 'akulikuli (Sesuvium portulacastrum). Most of the property, however, consists of lawns containing alien grasses, ferns and weeds, dotted with ornamental shrubs and trees, including milo (Thespesia populnea), kamani (Calophyllum inophyllum), Norfolk Island pine (Araucaria heterophylla), ti (Cordyline fruticosa), coconut (Cocos nucifera), dragon tree (Dracaena sp.), bird-of-paradise (Strelitzia reginae), plumeria (Plumeria acuminata), breadfruit (Artocarpus altilis), wai'awi (Psidium cattleianum), and bougainvillea (Bougainvillea spectabilis) among others.

No listed, candidate or proposed endangered species are found on the property. In terms of conservation value, no botanical resources requiring protection are present. However, the arrangement of the vegetation is appropriate for a park, and considerable public expenditure might be avoided by simply retaining the existing landscaping. A complete botanical species list is attached as Appendix 4.

#### 2.1.4.3 Terrestrial Fauna

Native fauna in such disturbed lowland habitats is generally not abundant. No native passerine bird species are known to frequent the area. The two Hawaiian raptors, the Hawaiian hawk or 'io (Buteo solitarius) and the Hawaiian owl or pueo (Asio flammeus sandwichensis) can easily be spotted in the area. The Hawaiian hawk is an endangered species, and the Puna coastal area is part of its regular habitat. No hawk nests are present on the site. The project will have little or no effect on hawk activity. Indigenous and migratory seabirds such as the Pacific golden plover or kolea (Pluvialis fulva) also typically rest or forage on grassy areas, of which there is an abundance on the subject property. Again, the proposed project is not expected to impact such occasional use.

The only native Hawaiian land mammal, the Hawaiian hoary bat (Lasiurus cinereus semotus) may also be present in the area, as it is common in many lowland forest on the island of Hawaii. No impact on bat habitat is anticipated.

#### 2.1.4.4 Aquatic Flora and Fauna

The subject property contains or borders areas with diverse aquatic habitats, including brackish and thermal ponds, tidepools, and low-cliff and boulder coastlines. Organisms present include algae, coral, worms, mollusks, arthropods (e.g., crabs), echinoderms and fishes, among others. The pond itself has a restricted biota, including snails and algae. Milkfish or awa (Chanos chanos) are frequently found in the pond, along with manini (Acanthurus triostegus), mamo (Abudefduf abdominalis), damselfish, and various Chromis fish. Eels are seen occasionally in the pond.

The first and most obvious attraction of the shoreline at the proposed park would be fishing. Despite the rough coastline of Puna, many hundreds each weekend use similar areas for shorefishing, opihi and crab gathering, and even skin diving. The Parks and Recreation Department should expect that many park visitors would engage in fishing.

The location and existing facilities offer the proposed park an opportunity to house some form of marine education exhibits or instruction. More investigation of the specific resources and recreational/educational sites would be needed to determine to what extent such activities might be possible.

#### 2.1.5 Air Quality and Noise

Air pollution in the area is minimal. Periodic deterioration in Puna's air quality does occur when occasional southerly winds blow volcanic emissions ("vog") northwest.

Ambient noise in the area is low, and comes mainly from natural sources. The park will add considerable noise during daylight hours, but there are few nearby existing uses that would suffer. One residence lies within 1000 feet of the park, and may experience noise from the park, particularly from automobiles and car stereos.

### 2.2 Social, Cultural and Economic Setting

#### 2.2.1 Historical and Existing Land Uses

The Puna coastline has served humanity as a site for residences, agriculture, and recreation for centuries. The site lies near Puala'a, an old village near the border of the ahupua'a (traditional Hawaiian land division) of Ahalanu'i and Puala'a. Archaeological investigations associated with other activities in these ahupua'a have revealed agricultural and residential structures as well as burial sites (Kennedy 1991;

Paul Rosendahl Inc. 1991). Although no pre-Contact archaeological features remain on the site (see Section 2.3), it is certain that here, as elsewhere in Puna, coastal locations were in probably inhabited (see McEldowney 1979).

The Reverend William Ellis, the English missionary who circled the Big Island in 1823 and produced the best Western account of this critical era in Hawaiian history, visited Puala'a while travelling the Puna coast. He breakfasted there with the missionaries Thurston and Bishop, remarking on the "most beautiful and romantic landscape." He later engaged in a spirited debate with several elderly Hawaiian priests, whom he credited with an eloquent defense of their traditional religion (Ellis 1963:205).

As described in the archaeological report (Appendix 5), several large land awards and grants were issued during the mid-19th century near the project site. The entire ahupua'a of Puala'a was awarded posthumously to the prominent ali'i William Pitt Leleiohoku as LCA 9971:14. Grant 1016 was issued to Peleula in 1852 and consisted of a 30.6 acre parcel which extended along the makai side of the coastal road. This area included parcel 061 of the present project area. Grant 2982 was given to Kalauwaa in 1865 and consisted of parcel 005 of the present project area. Parcel 006 of the present project area also contained a school (closed before 1900) that preceded Peleula's 1852 grant.

Cattle raising dominated land use during the late 19th century. Much of Puala'a ahupua'a was leased to Shipman and Eldarts in 1878 for this purpose (Crozier and Barrere 1971:17). In nearby Pohoiki, the entrepreneur Robert Rycroft had settled in 1877 and soon began a series of ventures including 'awa shipping, an 'ohi'a sawmill, and a coffee plantation (Community Management Associates 1992:10). Despite this evidence of economic activity, the population in Puna remained the lowest of any district on the island, reaching a nadir of 834 in 1890 (Ibid.:10).

According to John Hale, who was born in Pohoiki in 1919 and has lived in the area most of his life, the area around the pond had no houses during the early 20th century. Local residents would gather at the pond for bathing and swimming. Later, according to Hale, the Boy Scouts built a house (since dismantled) on an adjacent property and would often visit the pond. In the 1950s the site became the home of a local plantation manager Gilbert Hayes, who would periodically host picnics at which area residents were able to enjoy the warm swimming pond.

In the 1960s, the owners of these and adjacent parcels sought to subdivide and create a resort hotel in the area. The State

Land Use Commission (LUC) granted a Special Permit for this purpose in 1962, which was renewed and revised in 1968. However, the resort was never built, and when the LUC reclassified the area Conservation in 1969 the viability of the Special Permit was questioned. The current owners of parcels 005 and 006 bought the property in 1980 have since used the property as a vacation home. The other parcel, 061, was also purchased in 1980 but has seen only casual use and lacks any structures.

#### 2.2.2 Neighboring Land Uses

Current land uses in the vicinity of the proposed project are mainly low-density residential and agriculture. Immediately adjacent to the southwest are several vacant residential lots and beyond them a private home, and to the northeast is Bishop Estate land slated for development as an outdoor education center, which would benefit from the proposed park.

#### 2.2.3 Social Setting

The proposed park would serve both residents and visitors to the coast of Puna, but would probably see particularly heavy use from residents of lower Puna.

Data from the 1990 Census of Population showed a total of 10,575 persons living in Lower Puna (for purposes here, this is defined as Pahoā, Hawaiian Beaches, Nanawale, Kapoho, Pohoiki, Opihikao, Kalapana and intermediate areas). Adjacent areas also likely to use the park include Hawaiian Paradise Park, with 3389 residents, and the subdivisions across Highway 130, which have approximately 2000 residents. Thus, the proposed park would serve a resident population exceeding 15,000. An unknown but probably significant number of local and off-island visitors would also be expected to use the park.

The population of Lower Puna has certain characteristics that would suggest a greater than average demand for safe swimming parks. The median age for the Kalapana-to-Hawaiian Beaches area is 31.4, as compared to 34.3 for Hawaii County and 35.2 for the Hilo District. Contributing to this low median age (the lowest of all areas in the county) is the proportion of the population under 16, which is at 30.9% as compared to 25.9% for Hawaii County as a whole (Sources: Assorted publications of U.S. Bureau of the Census). No facilities are currently available in Lower Puna to satisfy the demand for swimming sites among young people. For this reason, the Pohoiki Boat Ramp near the subject property is often crowded with swimmers, despite regulations forbidding swimming. It is

likely that the proposed park would fill a very real recreational need for a large group of residents in Lower Puna.

#### 2.2.4 Transportation and Utility Infrastructure

##### 2.2.4.1 Roads

Currently, the subject property is served by County Road 137, which connects Pohoiki and Kapoho. The road is a frequently traveled segment of a "loop" along which traffic is conducted from much of Puna and Hilo to recreational and residential areas of Lower Puna. According to a solicited communication from the Hawaii County Department of Public Works, the road is

"below County standard. In order to upgrade this road, right-of-way will need to be acquired. It is narrow and has a roller-coaster profile. It will be expensive to bring up to county standards." (See Appendix 3 for full text)

The Puna Parks Committee estimated that some \$860,000 would be necessary to upgrade the road between Pohoiki and where the improved section currently begins, 6800 feet towards Kapoho. Because visitors are likely to approach the park from both the Pohoiki and Kapoho directions, and because emergency vehicles also may need access from both directions, the ideal road upgrade would cover this entire unimproved section. This would create a road whose entire length from Pohoiki to Pahoa (via Kapoho) met County standards.

Although upgrading this section of Highway 137 is not essential to the operation of the proposed park, it would undoubtedly enable safer and more efficient traffic flow to and from the park. Emergency services such as fire, police and ambulances would also be more efficient if the road were improved. Of course, any improvements would also benefit others served by the road: e.g., tourists or residents driving from Kapoho to Pohoiki or along the "loop" drive.

Funding for the southwestern 1800 feet of the road, estimated to cost \$360,000, has been included as part of the FEMA proposal. The Puna Parks Committee suggested County fuel tax funds as a revenue source for the improvements of the remaining 5000 feet, whose cost was estimated at \$500,000.

#### 2.2.4.2 Electricity and Telephone

Neither electricity nor telephone service are currently available to this property. In research conducted by the Puna Parks Committee, it was determined that 45 electric poles would be needed to bring electricity to Laepao'o. The Hawaii Electric Light Company estimated that \$135,000 would be required to install electricity. The amount of electricity expected to be consumed by the park would be negligible, consisting of domestic demands for the caretaker's cottage, a small number of outdoor lighting fixtures, and some maintenance tools.

For reasons of emergency communication, telephone services accessible to both the lifeguard and the general public (for off-duty hours) are vital. The Puna Parks Committee determined that establishing telephone service would cost approximately \$75,000.

Much of the funding for establishing telephone and electricity service may be generated or recovered under the FEMA proposal currently under development.

#### 2.2.4.3 Water Supply

According to a solicited communication from the Department of Water Supply (DWS), the Department

"has recently installed an 8-inch waterline along the Kapoho Road fronting the property. The project will be completed before May of the next year. At that time, water will be available for the proposed park on a limited basis." (See Appendix 3 for full text)

Subsequent communication with DWS has clarified that it is anticipated that there will be sufficient water for park development and use.

The Puna Parks Committee research determined that the cost of the lateral line extending into the proposed park would be approximately \$3000.

#### 2.2.4.4 Wastewater

The proposed park lies within the area in which new cesspools are prohibited by the State DOH. Because of potential problems with water quality in the swimming pond, it is vital that no sewage finds its way into the groundwater. For this reason, a septic tank system in which all sewage is removed

from the site for treatment is being proposed by the Department of Parks and Recreation. This system is estimated to cost between \$15,000 and \$20,000 (this cost is subsumed in the estimate for restroom development in Table 1). Although this system is more costly to maintain than on-site leach-fields for wastewater disposal, it is possible that a private company may dispose of the effluent at no cost, for use as raw material for a fertilizer operation.

#### 2.2.5 Police, Fire and Emergency Services

In solicited communications, the County Police and Fire Departments and the County Civil Defense Agency all stressed the need for an improved roadway, telephone services, sufficient water for fire-fighting, and lifeguards as important considerations for the proposed park (See Appendix 3). The proposed project would not cause an increase in personnel or material requirements for these agencies.

#### 2.2.6 Shoreline Access

Currently, shoreline access along this coastline is problematic. The owners of these and adjacent properties, justifiably concerned about privacy and liability issues, have vigorously guarded against access to the shoreline through their properties.

Every shoreline development in Hawaii is obliged by State and County policy to respect the right to shoreline access and include provisions for reasonable access. As a public park, the proposed development would enable access to the shoreline in the Puna District.

#### 2.2.7 Economic Setting

The economic structure of the Puna District has changed greatly since the era when sugar cane plantations dominated the landscape. The Technical Reference Report, Puna Community Development Plan (CMA 1992) showed that in 1980, 36.3% of the Puna population was in the labor force. Of the total, 15.4% were managerial, 21.6% were involved in technical, sales, or administrative work, 13.0% were in service occupations, 15.8% in farming, forestry, or fishing, 15.1% in precision production, crafts, or repair work, and 6.2% were operators, fabricators, or laborers. Government workers made up 19.0% of the total, self-employed workers were 14.6%, and the remainder, 65.9%, were private wage and salary workers. Puna had and continues to have a diverse economy, even if many of the jobs are actually situated in Hilo. In contrast with

former years, small businesses employ more workers than any large concerns.

More recent data from the 1990 Census reveals a median annual per capita income of \$8028 in Lower Puna, far below the state average of \$15,770. Although this low figure is mitigated somewhat by the (relatively) low cost of living on Puna, almost 33% of the population is classified as living at poverty level. Construction and maintenance of the park in addition to the secondary benefits of another small tourist attraction in Puna will provide only very modest economic benefits to the area.

### 2.3 Archaeology and Historic Sites

An archaeological assessment was conducted by Dr. Robert L. Spear of Scientific Consultant Services, Inc. His research is included in Appendix 5 and is summarized below.

According to models of prehistoric Hawaiian settlement, the coastal area was in prehistoric times the most densely settled zone in much of Puna (McEldowney 1979:15). Several archaeological projects carried out in the general vicinity of the subject property revealed a number of residential, agricultural, and ceremonial sites, encompassing many features such as walls, mounds, platforms, enclosures, pits and paths. It was clear from the review of previous archaeological research that, if excessive disturbance were absent, the subject property could also be expected to contain archaeological sites.

Discussions with local informants and detailed field inspections, however, revealed that the entire project area had been bulldozed long ago. Coconut planting, filling for the house lot, and enlargement of the pond also modified the ground surface. These activities altered the surface so significantly that no trace of cultural deposits were found. It was thus concluded that no significant archaeological features exist within the project area. Dr. Spear concluded that any future development of the project area for a park has no risk of impacting significant archaeological remains.

The State Historic Preservation Office (SHPO) has concurred with Dr. Spear's assessment of the subject property's lack of potential to contain significant historic sites in a letter of clearance (Appendix 5).

## 2.4 Relationship to State and County Plans

### 2.4.1 State Recreational Functional Plan

The Hawaii State Plan, revised in 1991 (Hawaii Revised Statutes, Chapter 226, as amended), establishes a set of goals, objectives and policies that are meant to guide the State's long-run growth and development activities. The Hawaii State Plan provides for the preparation of Functional Plans by the state agencies responsible for certain program areas. These Functional Plans deal with specific areas of concern, and each contains objectives, policies, and implementing actions necessary to accomplish the goals of the plan.

The State Functional Plan for Recreation (1991) contains several policies and objectives that pertain to such as the proposed project. Objective I-A(1) urges agencies to "address the problem of saturation of the capacity of beach parks and nearshore waters." Policy I-A(1) calls for acquiring "additional beach parkland and rights-of-way to remaining undeveloped shorelines to provide increased capacity for future public recreational use." Objective I-C aims to "resolve conflicts between different activities at heavily used ocean recreation areas," an idea reiterated in Policy I-C(4): "Take action to minimize or alleviate potentially dangerous user conflicts." The rapidly expanding Puna population clearly suffers from a lack of public recreational facilities, as well as conflict at remaining sites. Isaac Hale Beach Park is an example of potentially dangerous conflict among swimmers, surfers and fishing boats. The proposed purchase could provide the foundation to alleviate the lack of facilities and dangerous conflicts.

### 2.4.2 County General Plan

The General Plan for the County of Hawaii is a policy document expressing the broad goals and policies for the long-range development of the Island of Hawaii. The plan was adopted by ordinance in 1989. The General Plan is organized into thirteen elements, with policies, objectives, standards, and principles for each. There are also discussions of the specific applicability of each element to the nine judicial districts comprising the County of Hawaii. Under the theme of recreation, one county-wide goal is to "Provide a wide variety of recreational opportunities to residents and visitors of the County." A policy supporting this goal is that "The County of Hawaii shall adopt an ongoing program of identification, designation, and acquisition of areas with recreational resources, such as land with sandy beaches and other prime areas for shoreline recreation." For the district of Puna, there are a number of suggested courses

of action. Although many are still applicable, the eruptive events of the 1990 rendered many of the specific actions meaningless. The basic need expressed in the courses of action -- to provide recreational opportunities for Puna beachgoers -- are even more pressing today.

## CHAPTER 3 ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

### 3.1 Short Term Impacts:

There will be slight interruptions in normal traffic patterns during construction. Some noise, dust and excess runoff will also result temporarily from the grading and renovation work.

Construction will provide one-time economic benefits of a very minor degree for the area.

### 3.2 Long Term Impacts:

#### 3.2.1 Traffic and Circulation

The proposed project would add several hundred visitors per day to the site area, many of whom currently use the recreational facilities at Pohoiki. Thus, somewhat greater traffic may be expected on the mile-long portion of Highway 137 between Pohoiki and the subject property. If more recreational facilities are developed at or near the existing Isaac Hale County Park, then there might also be a net increase in traffic between Kapoho and the subject property and Pahoia and Pohoiki.

#### 3.2.2 Social, Land Use, Population and Employment

Property owners along the direct route would benefit from the improvement of infrastructure and the presence of an attractive recreational facility. The improved road that may accompany the park would benefit residents of the general area because of improved accessibility for themselves, visitors and service vehicles, and emergency services.

The establishment along County Road 137 of infrastructure necessary or helpful to the park, such as an improved roadway and electricity and telephone service, may accelerate development of certain parcels whose owners have heretofore delayed development because of the lack of such infrastructure. Few parcels along this route, however, are currently eligible for development. Any further subdivision leading to growth in the area is subject to County and, where applicable, State review and approval. Therefore, excessive growth would not be a direct or inevitable outcome of the proposed project.

### 3.2.3 Water Quality

The proposed resumption in use of the swimming pond will negatively impact the water quality, which is currently above minimum healthful standards. Several modifications to the pond meant to improve circulation, and thereby water quality, have been discussed with the State DOH and the U.S. Army Corps of Engineers. These include overturning the water to mix the salt and fresh components, aerating, and modifying the weir to allow greater exchange with ocean water. The precise remedial measures have yet to be decided upon, but any combination would probably impact water quality in a positive way. It is proposed that regular (perhaps weekly) monitoring of the variables of rainfall, visitor count, and water quality be implemented in order to inform decisions about swimming pond use. A firm understanding of the relationship among the variables can help establish warning criteria for pond shut-down and maximum use levels.

### 3.2.4 Recreation

The proposed use would pose a significant benefit in terms of recreational opportunities for Lower Puna, which are currently lacking.

### 3.2.4 Drainage and Flooding

No significant drainage impact is expected. The site lies in an area designated Flood Zone VE, and is exposed to flooding from high waves and/or tsunami. No increase in flood potential would result from the proposed use. To avoid exposing park users to danger, it is recommended that park authorities carefully monitor extreme weather events such as hurricanes and close sections or all of the park when high waves threaten the Puna coast. Property losses from storm hazards may be mitigated by minimizing costly improvements in areas subject to high wave inundation. It is suggested that park design incorporate this as one of its guidelines.

### 3.2.5 Flora and Fauna

No significant impact to flora and fauna is expected.

3.2.6 Archaeology and Historic sites

No significant impact to archaeological or other historic sites is expected.

3.2.7 Visual and Noise

The development of the parcels for a county park combined with the parking lot across the street could possibly impact the scenic character of the picturesque site. It is recommended that native plant landscaping be planted as a screen between the parking lot and the highway in order to mitigate degradation of the scenery.

The use of the property as a public park would raise noise levels in this quiet, rural area. The attenuation of sound along the distance between the proposed park and any residences, however, should mean minimum disturbance to neighbors.

3.2.8 Exposure to Geologic Hazards

The proposed park would expose the County to possible property loss and economic loss from lava flows and subsidence. Such events are infrequent but potentially devastating. Balanced against this loss are the benefits of recreation that cannot be duplicated in less hazard-prone areas.

There are few practical mitigating measures for property damage from geologic hazards, other than avoidance of the East Rift Zone of Kilauea.

3.3 Permits and Approvals

1. Permits Required for Construction

- o Grading Permit, County Public Works Dept.
- o Building Permit, County Building Dept.
- o Special Management Area Permit, County Planning Dept.

2. Permits That May be Required if Pond is Modified

- o General Permit, U.S. Army Corps of Engineers
- o Water Quality Certification, State Dept. of Health

## CHAPTER 4      ALTERNATIVES

### 4.1    No Action

If the County fails to replace the parks lost during Kilauea's eruption, the recreational deficiency of growing Lower Puna will be exacerbated. Overflow conditions already experienced at Isaac Hale County park will worsen, including problems of a lack of water, conflict between boat ramp users and swimmers, excessive crowding of the limited picnic and parking facilities, and water quality.

### 4.2    Alternative Site Locations

There are a number of alternative park sites available along the Puna coastline, but few appear to have the ideal combination of location, access to roads and utilities, in-place swimming facilities, and owners willing to sell at a price affordable to the County of Hawaii.

For reasons of economy and simplicity, a suitable parcel already held by the County, or perhaps the State, would be preferable. A review of the area by the Puna Parks Committee revealed no such parcels. Other, privately held sites with at least some swimming potential include Haena (TMK 1-6-01-24, 5, por. 1) near Keaau (which is distant from Lower Puna and would undoubtedly require condemnation to wrest it from its present owners) and Kapela Bay (TMK 1-4-03-38) at Kahuwai (which is closer but similarly unavailable for sale). There are various sites near Kapoho that have swimming potential, but much of this area has very poor water quality because of the density of cesspools. As stated earlier, the Puna Parks Committee has studied available sites for replacement parks and unanimously decided upon the subject property as the most suitable location for a County park with swimming facilities.

CHAPTER 5 FINDINGS AND REASONS

1. The proposed project will not involve an irrevocable commitment or loss or destruction of any natural or cultural resources.
2. The proposed project will not curtail the range of beneficial uses of the environment.
3. The proposed project will not conflict with the State's long-term environmental policies.
4. The proposed project will not substantially affect the economic or social welfare of the community or State.
5. The proposed project will not involve substantial secondary impacts, such as population changes or effects on public facilities.
6. The proposed project will not involve a substantial degradation of environmental quality.
7. The proposed project will not substantially affect any rare, threatened or endangered species of flora or fauna or habitat. No endangered species of flora or fauna are known to exist on the project site.
8. The proposed project will not detrimentally affect air or water quality or ambient noise levels.
9. Although the proposed project is located in an zone exposed to tsunamis, high waves, and hazardous geology, there are no alternative sites that lack such drawbacks but contain the necessary qualities for a coastal swimming park. Furthermore, the proposed use does not pose a threat to any sensitive aspect of the natural environment, and will not expose the public to unreasonable risks.

For the reasons above, the proposed project will not have any significant effect in the context of Chapter 343, Hawaii Revised Statutes and section 11-200-12 of the State Administrative Rules.

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