

APPENDIX B

ARCHAEOLOGICAL RECONNAISSANCE AND HISTORICAL SURVEYS
OF LANDS AT KAPOHO, PUNA, HAWAI'I ISLAND

Part I:

Archaeological Survey
by Elaine H. Rogers-Jourdane

Part II:

A Brief Historical Survey
by Barry Nakamura

Prepared for
THERMAL POWER COMPANY

July 1984

Department of Anthropology
BERNICE P. BISHOP MUSEUM

its construction.

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|---------------|------------------------------|---|
| 1930-
1932 | A. E. Hudson | Conducted archaeological reconnaissance survey on the east coast of Hawaii. Hudson's record provides good general information on the Puna area and was the most comprehensive survey of Puna at that time. |
| 1959 | K. P. Emory | Staff of the Bishop Museum conducted research on the natural and cultural history of the Kalapana extension of Hawaii Volcanoes National Park. Although the report does not cover the Kapoho area, it does provide good information on the land and traditional history of the Puna district. |
| 1965 | C. Smart | Staff of the Bishop Museum conducted further archaeological research for the Hawaii Volcanoes National Park, south of the study area. |
| 1965 | E. J. Ladd | Conducted salvage archaeology along the Chain of Craters right-of-way, Hawaii Volcanoes National Park. |
| 1966-
1968 | V. Hansen | Conducted archaeological surveys in the Puna area, and recorded, mapped, and located numerous sites for the district. |
| 1970 | V. Loo and
W. Bonk | Compiled an inventory of historical sites in the northern portion of the island of Hawai'i, with a good review of the Puna district. |
| 1971 | N. Crozier and
D. Barrère | Staff of the Bishop Museum conducted archaeological and historical surveys of Pualaa, Puna. |
| 1971 | W. Barrera and
D. Barrère | Staff of Bishop Museum conducted archaeological and historical surveys of Kupahua, Puna. |
| 1972 | R. Bevacqua and
T. Dye | Staff of Bishop Museum conducted archaeological reconnaissance of the proposed Kapoho to Kalapana highway. A good description of the known sites of Kapoho. |
| 1973 | N. Ewart and
M. Luscomb | Staff of Bishop Museum conducted archaeological reconnaissance of the proposed Kapoho to Keaukaha highway. A listing of sites to the north of Kapoho. |

1974	F. Ching	Archaeological Research Center Hawaii conducted archaeological reconnaissance south of Kapoho at Kaimū, Puna.
1976	S. Palama	Archaeological Research Center Hawaii conducted further research in Kaimū and Kalapana, Puna.
1982	M. Yent	Conducted archaeological reconnaissance of part of the Nanawale Forest Reserve (<u>makai</u> portion) north of Kapoho.
1982	J. Kennedy	Conducted literature search for known sites in Kahaualea, Puna.

SURVEY METHODOLOGY

The archaeological reconnaissance survey included a systematic walk-through of the 12-acre area proposed for new geothermal sites and expansion of an existing well (see Fig. 1, designated site areas "A," "B," and "Expansion"). The site areas were traversed on foot. The survey was facilitated by stakes delineating the project boundaries. Photographs of the project area were taken. The area within a radius of 1 mile around the immediate survey area was also investigated on a less intensive basis.

SURVEY RESULTS

No archaeological sites were located during the reconnaissance survey. This is not surprising considering the extensive alteration of the land both by man and through volcanic activity. The volcanic eruption of 1955 may have contributed to the lack of archaeological sites on the surface of the survey area, but prior to the 1955

eruption, the land had already undergone extensive modification. On an early map by A. Loebenstein (1895) areas demarked as coffee cultivation can be seen in the Pu'u Honua'ula area. Sugarcane was cultivated in the area at the turn of the century, with land in Puna shifting from coffee to sugar. According to Kelly, "In 1900 Olaa Sugar Company took over land formerly used for coffee cultivation" (Kelly 1981:131).

CONCLUSION

Because of the lack of surface remains, and because it is highly unlikely that subsurface remains will be encountered during the construction phase of this project, no further work is required in this parcel prior to development. However, should construction activities expose any cultural remains, the developer should consult with the State Historic Preservation Office, and a qualified archaeologist should be contracted to monitor further work as well as to implement any necessary mitigation procedures.

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Part II

A Brief Historical Survey of Kapoho and Adjacent Areas, Puna, Hawai'i

by Barry Nakamura

Introduction

The time allotted for this historical research project was two working days of research and one working day of writing up the resultant research. As such, the work is necessarily brief.

Diverse and interesting sources of information were researched on the subject of Kapoho and adjacent areas of Puna, Hawai'i. This report is divided into the following sections:

- (a) Land Divisions in the Project Area, 1983;
- (b) Population Estimates, 1778-1850;
- (c) Puna as a Center for the Development of Hawaiian Religion in Ancient Times;
- (d) Hawaiian Legends and Traditions of the Kapoho Area;
- (e) Early Descriptions of the Kapoho Area, 1823-1929;
- (f) Mid-19th Century Land Commission Awards;
- (g) Native Hawaiian Trails in the Project Area;
- (h) *Kalo* (Taro);
- (i) Volcanic Eruptions and Lava Flows, 1840-1960;
- (j) Sugar and Other Industries around Kapoho in the Late-19th and Early-20th Centuries; and
- (k) Unfinished Matters.

Also included is a Selected Bibliography.

Land Divisions in the Project Area, 1983

The study area is a one-mile wide concentric area centered around the 12-acre proposed project site in Puna (Bechtel Group 1983). This 2,010-acre area includes at least eight *ahupua'a* or land divisions within the Puna district: Kani-a-hiku, Hale-ka-mahina, Ka-poho, Ahalanui, Lae-pao'o, Oneloa, Poho-iki, and Keahi-a-laka. The present research concentrated on Kapoho, as it was the largest of the portions of land within the project area.

Population Estimates, 1778-1850

For the years 1778-1779, at the time of arrival of the British naval captain James Cook and crew, the total population of the Hawaiian Islands

has been estimated to have been 300,000 persons. The population of the island of Hawai'i has been estimated at 100,000 to 150,000 persons (Schmitt 1968:10, 42).

At the time of the first missionary census, 1831-1832, the population of the island of Hawai'i was down to 45,792 (Schmitt 1968). In the 1850 census, Hawai'i Island population had fallen to 25,864 persons (Ibid.). This decline in population should be understood in order to infer effects on the natural environment of the area under study. For example, food production probably declined in a pattern corresponding to population decline.

Puna as a Center for the Development of Hawaiian Religion in Ancient Times

Puna was an important center in the development of Hawaiian religion. At Puna, the priest Paa'o first established his line of priesthood which continued until after the death of Kamehameha I in 1819 (Beckwith 1979:371-375). The first *heiau* or pre-Christian place of religious worship constructed by Paa'o was at Puna (Thrum 1907a:48). Other *heiau* in the Puna district are noted in Thrum (1907b). One *heiau*, "Kukii," is noted at Kapoho and is described as follows:

On hill of same name, at Kapoho, 67 x 120 ft., built by Umi of lava blocks, or slabs, well fitted. Now in ruins; portions of walls only remaining. Some of its stones were brought down by Kalakaua, in 1879, which went into the foundation walls of the palace [Thrum 1907b:40].

Another *heiau* is listed as being in Pohoiki, a subdistrict of Puna located adjacent to Kapoho. This *heiau* is Oolo, at Pohoiki, "said to have been an important *heiau*; now [in 1907] entirely destroyed" (Ibid.:39).

Hawaiian Legends and Traditions of the Kapoho, Puna Area

One of the great romances of Hawaiian literary tradition, the "Legend of Halemano" (Elbert 1979), takes place in part in Kapoho. Handsome Halemano of O'ahu falls deeply in love, through dreams, with beautiful Kamalalawalu, the daughter of the chiefs of Kapoho, Puna, Hawai'i. With the help of his older sister Laenihi, Halemano endeavors to meet Kamalalawalu in Kapoho, then abducts her along with her younger brother Kumukahi and returns to O'ahu.

Traditionally, Puna was one of six districts of the island of Hawai'i around A.D. 1475. The chiefs of the six districts acknowledged Līloa as their supreme chief, but with the death of Līloa, the unity of the six districts was temporarily destroyed. 'Umi was a son of Līloa, but not the acknowledged heir to the title of supreme chief. However, by conquest, 'Umi reunited the kingdom (Barrère 1959:15). The conquest of Puna by 'Umi is described by the Hawaiian historian S. M. Kamakau:

Hua-'a was the chief of Puna, but Puna was seized by 'Umi and his warrior adopted sons, Pi'i-mai-wa'a, 'Oma'o-kamau, and Ko'i. These were noted war leaders and counsellors during 'Umi's reign over the kingdom of Hawaii. Hua-'a was killed by Pi'i-mai-wa'a on the battlefield of Kuolo in Kea'au, and Puna became 'Umi-a-liloa's [quoted in Barrère 1959:16].

The complex and interesting history of Puna, from this period of conquest by 'Umi to the military conquest and control of Hawai'i Island by Kamehameha in 1791, is told by Barrère (1959; see Appendix A).

Early Descriptions of the Kapoho Area, 1823-1929

Kapoho is an ancient place name that can be translated literally as "the depression" (Pukui et al. 1976:88). For Puna, the district in which Kapoho is located, we have two descriptions from the first half of the 19th century; one by Reverend William Ellis, who travelled through Puna in August of 1823, and one by the scientist Chester S. Lyman, who visited the area in July of 1846.

The population of this part of Puna, though somewhat numerous, did not appear to possess the means of subsistence in any great variety or abundance; and we have often been surprised to find the desolate coasts more thickly inhabited than some of the fertile tracts in the interior; a circumstance we can only account for, by supposing that the facilities which the former afford for fishing, induce the natives to prefer them as places of abode; for they find that where the coast is low, the adjacent water is generally shallow [Ellis 1917:203].

Our course the first part of the way lay about S.E. through a level lava country, with a very light soil. The groves of Pandanus were very beautiful, and are the principal tree of the region. There is some grass and ferns, and many shrubs; but the soil is very scanty. Potatoes are almost the only vegetable that can be raised, and these seem to flourish well amid heaps of stone where scarcely a particle of soil could be discovered. The natives

pick out the stones to the depth often of from 2 to 4 feet, and in the bottom plant the potato - how it can expand in such a place is a wonder.

Nearly all Puna is like this...[Lyman Ms.:3].

Another source for descriptions of the Kapoho area is the Bishop Museum's Hawaiian Ethnological Notes File. The following description is from the file (author unknown, translated by Mary Kawena Pukui):

October 15, 1929: After leaving Pahoa we went along till we came to a forest. That is Pahoehe. There one could look and see the lava heaps left by Pele. That place is named Kaniahiku, then the lava forest.

Passing Kapoho, the road went straight on, till we came to the lava, to Kuaokala, a *heiau* on the seaward side of Aa-halanui....Then I saw that Puna is a land where water is found. There are several famous pools, Wai-a-Pele and Wai-welawela in Kapoho, the spring of Ke-ahi-alaka on this side of Poho-iki [Bishop Museum 1929:32].

In 1930, the Reverend A. S. Baker described in general details petroglyphs in the Pu'uloa, Puna area and mentioned the presence of others farther west (Barrère 1959:6).

Land Commission Awards, Mid-19th Century

Land tenure in Hawai'i underwent a fundamental change in the mid-19th century when fee-simple, private ownership of land was legalized through a complex of laws commonly referred to as the Great Mahele. As a result of this change from a feudal system to private ownership of land, the Puna area was divided and ownership in various portions awarded to certain individuals.

In Puna, a small number of individuals were awarded unusually large acreages by the Land Commission (Hawaii [Terr.] 1929:500). Some of the Land Commission Awards in the one-mile radius of this study include:

- (1) 4,060 acres at Kapoho to C. Kanaina--Land Commission Award 8559
- (2) 5,562 acres at Keahialaka, a subdivision of Puna adjacent to Kapoho to W. C. Lunalilo--Land Commission Award 8559-B
- (3) 2,902 acres in Puna to Hazaleleponi Kalama--Land Commission Award 4452.

Equally important are the ranks of the above-named persons. W. C. Lunalilo was king of the Hawaiian Islands from 1873 to 1874 (Kuykendall 1966:242-262),

C. Kanaina was the father of W. C. Lunailo (Kamakau 1961:394), and the adopted daughter of C. Kanaina and Miriam Ke-ka-ulu-ohi was Hazaleleponi Kalama who, in 1837, married the third king of the Hawaiian Islands, Kau-i-ke-aouli (Kamehameha III) (Ibid.:341). Thus, a number of personages in the mid-19th century history of Hawai'i are involved in the complex and interesting history of the area under consideration.

Hawaiian Trails in the Area

A few notes on trails in the area can be made:

- (1) An 1895 Hawaiian Government map (and survey) by A. B. Loebenstein shows trails in the area of Pu'u Honua-'ula, close to the center of the project area.
- (2) The famous "Ellis Trail," travelled by the missionary William Ellis in 1823, passes through Kapoho, Puna (Ellis 1979:296-323) and may be connected with some of the trails in the project area.

Kuykendall explained the evolution of the ancient Hawaiian trail system into modern forms of transportation: "In the meanwhile, roads, what were called roads, were coming into existence in other places by a familiar historical process--'the trail became a road'" (Kuykendall 1966:25). Roads in the project area should be considered in relation to this historical process of ancient Hawaiian trails becoming roads.

Kalo (Taro)

On a portion of the 1895 Hawaiian Government map, "kaloi" is shown on the base of Pu'u Honua-'ula (Loebenstein 1895). *Ka lo'i* is defined as an irrigated terrace for the cultivation of *kalo* or taro.

That *kalo* would have been cultivated at this location is no surprise. The Puna area was considered once to be the richest agricultural region on the island of Hawai'i (Handy et al. 1972:542). *Kalo*, the staple food of Hawaiians, was widely cultivated in this area:

Throughout northern Puna there is ample rainfall for raising taro wherever soil permits, and taro used to be planted along the coast as far as the Hilo boundary.

The fern-covered plains between the forest and seacoast in northeast Puna used to be planted in taro by the burning-over, digging-up, and planting processes [Handy et al. 1972:540].

Volcanic Eruptions and Lava Flows, 1840-1960

The most recent volcanic eruption and lava flow in the Kapoho, Puna area occurred in January 1960 (*Advertiser* 1/14/60:A-1; *Star Bulletin* 1/14/60:1). Five years earlier, in 1955, the first major eruption at Puna in 115 years (*Advertiser* 3/1/55:A-5) caused Kapoho residents to evacuate their homes as lava flowed towards Kapoho (*Advertiser* 3/3/55:A-1; *Star Bulletin* 3/3/55:25). Prior to 1955, the last reported eruption at Puna occurred in 1840 (*Advertiser* 3/1/55:A-5; *Star Bulletin* 2/28/55:1).

The 1955 volcanic eruption and lava flow at Puna reportedly "burned and destroyed [sugar] cane which would have produced approximately 17,000 tons of sugar and eliminated 1,400 acres of productive cane area," according to *Walker's Manual* (1956:242, quoted in Kelly et al. 1981:132).

Sugar and Other Industries around Kapoho in the Early-20th Century

The development of the sugar, rock, lumber, and rubber industries around the Kapoho area can be traced back to the turn of the 20th century. All of these industries are tied in with the development of the Hilo Railroad Company (later the Hawaii Consolidated Railway).

Through the year 1900, the Hilo Railroad Company laid a total of 22 miles of railroad line....This line reached the Olaa Sugar Company mill some 8.3 miles south of Waiakea and headed farther southeast to Kapoho, Puna [Kelly et al. 1981:146].

According to [Benjamin F.] Dillingham, president of the Hilo Railroad Company, the \$1,000,000 from the 1901 bond issue would be used as follows: \$450,000 for development of the "Hilo Division" of the railroad, the line extending from Hilo to the Olaa Sugar Company mill in Puna and then to Kapoho [Ibid.:147].

By the end of 1901, the Hilo Railroad Company completed construction of over 35 miles of railroad line extending south into the Puna District. Of this, the Hilo Division from Waiakea to Kapoho comprised 25.1 miles, including a 5-mile branch to Pahoa [Ibid.:147].

The rock-quarrying industry in Kapoho operated from 1908 to 1925 in conjunction with the Hilo Railroad Company and construction of the Hilo Bay breakwater.

Construction of the Hilo breakwater began in 1908 with the building of a rock fill..., and had an immediate, positive effect upon the revenues of the Hilo Railroad Company. In the first several years of breakwater construction, the railroad hauled all of the rock: most was from the Kapoho quarry in Puna [Kelly et al. 1981:157].

...Rock placed upon the breakwater site in the years 1908 through 1910 amounted to a total of 148,200 tons [Ibid.].

Marshall offered to pay the Hilo Railroad Company \$0.50 a ton for hauling stone from the Puna quarries to the breakwater site, only half of the price...that the Breakwater Company had previously agreed to pay. Hilo Railroad Company President B. F. Dillingham replied that the railroad company "is not justified in accepting such price....This the contractor refused, and he is now endeavoring to develop quarries elsewhere, more particularly at Waipio, a distance of 54 miles from Hilo, where it is proposed to transport the rock by scows" [Kelly et al. 1981:189-190].

The figures for the tonnage of rock quarried from the Kapoho quarry, including the Waiakea and Olaa quarries are as follows (according to Kelly 1981:193):

- (1) between the years 1908 to 1910, from the Kapoho, Waiakea, and Olaa quarries, 148,200 tons
- (2) between the years 1910 to 1912, from the Kapoho and Waiakea quarries, 97,577 tons
- (3) between the years 1924 and 1925, from the Kapoho quarry, 88,657 tons.

The lumber and rubber industries are discussed in relation to the Hilo Railroad Company in 1910:

[L. A. Thurston of the Hilo Railroad Company] also reported on two extensions taking place on the Puna division....The first concerned Pahoa, where, "heavy traffic incident to the Pahoa Lumber Mill, and the great increase in the amount of cane passing over the line made it expedient to change the rails to 60 lbs., and to practically reconstruct the entire line...."

The second extension on the Puna division concerned the area southwest from Kapoho, Puna. "There are considerable bodies of fertile land extending southwest from Kapoho for a distance of approximately eight miles to Kamaili....Messrs. Cant & Bolte have established a lumber mill at Kaueleau, during the year, on the line of this extension, approximately 7 miles from Kapoho.

"The Puna Sugar Co. owns a railroad grade extending approximately 5-1/2 miles...toward this point and tracks on a portion thereof.

"A trackage agreement has been entered into with the Puna Sugar Company, under which the Railroad Company has secured the right to operate over the plantation railroad....

"Cant & Bolte will immediately begin the shipment of ties, lumber and firewood. The extension also reaches the rubber plantation of the Pacific Development Co." [Kelly et al. 1981:162].

Another industry, for which we have only scant information for the Puna District at this time, was the coffee industry. A map of the district shows coffee cultivation by Rycroft around the base of Pu'u Honua-'ula and Pu'u Pilau (Hawaii [Terr.] Survey 1952). This map also shows the railroad tracks adjacent to the project area.

Unfinished Matters

Because of the time limit, no research was done concerning the papaya industry in the Kapoho area. In addition, no interviews were conducted, although this research technique could prove to be important.

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Appendix A
Political History of Puna
by Dorothy B. Barrère*

The main source materials for the early history of Hawaii are the writings of Abraham Fornander and Samuel Kamakau, both of whom collected traditions from the informants of their day, the mid-19th century. The scholarly Fornander recounted the political history of Hawaii in the second volume of An Account of the Polynesian Race, on a basis of what he considered historically acceptable facts. Kamakau, writing for the Hawaiian newspapers, recounted all traditions as equally factual, making no distinction between history and legend. However, as Kamakau writes from a Hawaiian point of view, his account of certain events, particularly those dealing with the inheritance and control of lands, may be nearer a true picture than that of Fornander.

We find that Puna, as a political unit, played an insignificant part in shaping the course of the history of Hawaii island. Unlike the other districts of Hawaii, no great family arose upon whose support one or another of the chiefs seeking power had to depend for his success. Puna lands were desirable, and were eagerly sought, but their control did not rest upon the conquering of Puna itself, but rather upon control of the adjacent districts, Ka-'u and Hilo. An attempt to follow in detail the course of Puna's history is meaningless, since her history is bound up with the fortunes of the ruling families on either side of her. Only such mileposts as were significant to the district itself are therefore given here.

Puna in the time of Liloa - circa 1475 A. D. - was one of the six district kingdoms of Hawaii whose chiefs were autonomous within their own districts, but who all acknowledged Liloa as their supreme chief. After Liloa's death, his son 'Umi killed Hakau, his half-brother, the oldest son of Liloa and acknowledged heir to the kingdom. Hakau's death left 'Umi in possession of Hamakua, the home

*IN Emory, et al. (1959) "Natural and Cultural History Report on the Kalapana Extension of the Hawaii National Park." Ms. in Dept. Anthropology, B. P. Bishop Mus.

seat of the government, but destroyed the unity of the island kingdom. The district chiefs declared themselves fully independent of 'Umi, and it was only after conquering them individually that 'Umi reunited the kingdom. This is Kamakau's version (Nov. 3 and 24, 1870). Fornander's differs sharply. He says that Hakau had been so unpopular that the district chiefs "cordially received and freely acknowledged the sovereignty of 'Umi" (1880, p.96), and that "During his and their lifetime peace and quiet obtained on Hawaii" (p. 106).

Granted that some of Kamakau's stories of the subjugation of the various district chiefs smack of legend, we must accept them as having had some foundation of truth. By doing so, later inconsistencies between Fornander and Kamakau become reconcilable. Both writers note that Hua-'a was the chief of Puna during 'Umi's time and the account of his conquest as given by Kamakau is quoted here:

Hua-'a was the chief of Puna, but Puna was seized by 'Umi and his warrior adopted sons, Pi'i-mai-wa'a, 'Oma'o-kamau, and Ko'i. These were noted war leaders and counsellors during 'Umi's reign over the kingdom of Hawaii. Hua-'a was killed by Pi'i-mai-wa'a on the battlefield of Kuolo in Kea'au, and Puna became 'Umi-a-Liloa's (Dec. 1, 1870).

In speaking of another chief, Fornander admits the existence of traditions suggesting that all was not "peace and quiet." He says of this chief, I-mai-kalani:

Some legends refer to difficulties between Umi and Imaikalani, the powerful blind chief of Kau and parts of Puna, and though others intimate that Piimaiwaa was despatched to bring the obstinate old chief under subjection, yet it is not clear that any open rupture occurred between Umi and his great feudatory during their lifetime (1880, p. 99).

The only legend surviving of Imaikalani's death is that given by Kamakau (Dec. 1, 1870), and it is not difficult to see that Fornander could not accept this as historical truth. An extract of Kamakau's version follows:

Imaikalani was the chief of Ka-'u. He was blind, but noted for his strength and skill in battle. Many chiefs who had fought against him were destroyed... 'Umi-a-Liloa feared Imaikalani. Although he was blind and unable to see, his hearing was keen. He had pet ducks that told him in which direction a person approached, whether from in front, at the back, or on

either side. All depended on the cries of the birds. In former days Imaikalani was not blind, and 'Umi was never able to take Ka-'u. The war lasted a long time....After Imaikalani became blind the fight between him and 'Umi continued.

Imaikalani was never taken captive by 'Umi, but Pi'i-mai-wa'a was crafty and studied the reason for his great strength and skill with the spear. Pi'i-mai-wa'a discovered the reason for the skill and fearlessness of this blind man. Ducks flew overhead and cried, and when he heard them, before, behind, or on either side, he declared, "A man approaches from the rear." The man who guided him about answered, "Yes, there is a man." ...Whenever a bird cried, there was a man....As Pi'i-mai-wa'a studied and knew every angle of Imaikalani's strength and marvelous skill, he said to himself, "I shall kill you yet." He went to kill the bird guards, the two men who led Imaikalani on each side, and the forty men who carried his weapons, long and short spears. All these men were destroyed by Pi'i-mai-wa'a, and the blind man was at a loss for the lack of helpers. Well could Pi'i-mai-wa'a say in a boast, "Death to him from Pi'i-mai-wa'a." After Imaikalani's death Ka-'u became 'Umi-a-Liloa's. (Pukui translation; see also Fornander, 1916, pp. 218, 226-228).

Fanciful though it may be, this story is worthy of preservation as Imaikalani's name is usually associated with this tale.

Imaikalani is the first chief of Ka-'u mentioned as having had sway over "parts of Puna." Fornander credits him with a restoration of Waha'ula heiau (1880, p. 35), an indication of his supreme authority in at least that part of Puna. Our modern authority, Mary Kawena Pukui, herself a descendant of Ka-'u chiefs, notes that from time immemorial Ka-'u and Puna people have been closely connected by blood ties. The sobriquet "Ka-'u Makaha (Ka-'u-the-savage)" has its counterpart in "Puna Kumakaha (Puna-resembling-the-Makaha)." Imaikalani may well have been the connecting link in their blood relationship. Certain it is that he was a chief of power and prestige, and his name is found on several chiefly genealogies, including that of Queen Emma.

Imaikalani's son Kahalemilo and Hua-'a's son Lililehua are recorded as having been killed by 'Umi's son, Keawe-nui-a-'Umi, who gained control of the island in the next generation (Fornander, 1916, p. 318). This seems to have extinguished both their lines as autonomous chiefs of Ka-'u and Puna. Hereafter we

find Ka-'u being ruled by some member of the Ima chiefs' family, which stemmed from Keawe-nui-a-'Umi. All of Puna is linked with Ka-'u until the time of Keawe-i-kakahi-ali'i-o-ka-moku [of Hale o Keawe fame], when we find that the I family of Hilo control "part of Puna" (Fornander, 1880, p. 132; Kamakau, Oct. 20, 1866). The other "part" is not mentioned specifically, but the inference is that it was still linked with Ka-'u.

Puna seems then to have enjoyed a brief resurgence of at least semi-autonomous rule. Two generations after Keawe, in the time of Kalani'opu'u, I-maka-koloa, the only other Puna chief of note besides Imaikalani, becomes powerful. It is tempting to describe Imakakoloa as a descendant of Imaikalani -- certainly his name, which means "I-duck-eyes" connotes some relationship, perhaps through the I family, of whom Imaikalani was also an ancestor. At any rate, Kalani'opu'u, having gained control of all Hawaii, found his latter days troubled by suspected rebellion on the part of this Puna chief and of a chief of Ka-'u. Abstracting from Fornander:

Imakakoloa, a great chief in the Puna district, and Nuuanu-paahu, a chief of Naalehu in the Kau district became the head and rallying-points of the discontented. The former resided on his lands in Puna, and openly resisted the orders of Kalaniopuu and his extravagant demands for contributions of all kinds of property....

After disposing of Nuuanu-paahu, who was with his court in Kohala,

Kalaniopuu started with his chiefs and warriors for Hilo, in order to subdue the rebel chief of Puna....The rebel chieftan fought long and bravely, but was finally overpowered and beaten. For upwards of a year he eluded capture, being secreted by the country-people of Puna....In the meanwhile Kalaniopuu moved from Hilo to the Kau district....Finally, exasperated at the delay, and the refuge given to the rebel chief by the Puna people, Kalaniopuu sent Puhili, one of his Kahus, to ravage the Puna district with fire, i.e., to burn every village and hamlet until Imakakoloa should be found or the people surrender him. Commencing with the land of Apua, it was literally laid in ashes. It is said that through some accident one of Imakakoloa's own nurses became the means of betraying his hiding-place. He was found, captured, and brought to Kalaniopuu in Kamoa, Kau.

Imakakoloa is represented to have been a young man of stately aspect, and with hair on his head so long as to have reached to his heels. That he had secured the affection of his people is shown by the war he waged and the shelter he found among them when the war was over, and he was hunted as an outlaw by Kalaniopuu's warriors and servants.

When Imakakoloa was to be sacrificed at the Heiau of Pakini, the performance of the ceremony devolved on Kiwalao, as representing his father.... But...Kamehameha catches hold of the slain chief and offers him up...." (1880, p. 200).

Kamakau (Feb. 16, 1867) tells the same story and indeed, seems to have been Fornander's source. We add to it a modern footnote given by Mary Kawena Pukui, who relates a Ka-'u tradition to the effect that a young relative who resembled Imakakoloa was substituted for him and sacrificed in his place. Taylor (Feb. 21, 22, 24, 1952) relates the same story in the detail she received it from Anne Hall. Whether or not the "right" I was slain, rebellion ended and Puna once more came under Kalani'opu'u.

Soon after the death of Kalani'opu'u in 1782, Kiwala-'o, his eldest son and heir to the government, was killed at the battle of Moku'ohai. Then began some ten years of civil war on Hawaii. The antagonists were Kamehameha, cousin of Kiwala'o; Kiwala'o's half-brother Keoua Kuahu'ula, and Kiwala-'o's uncle, Keawe-a-ma'u-hili. Kamakau and Fornander agree on the districts who gave their support to each. Fornander's being the more specific, his account is quoted:

The result of the battle of Moku'ohai was virtually to rend the island of Hawaii into three independent and hostile factions. The districts of Kona, Kohala, and portions of Hamakua acknowledged Kamehameha as their sovereign. The remaining portion of Hamakua, the district of Hilo, and a part of Puna, remained true to and acknowledged Keawemauihili as their hoi; while the lower part of Puna and the district of Kau, the patrimonial estate of Kiwalao, ungrudgingly and cheerfully supported Keoua Kuahu'ula against the mounting ambition of Kamehameha (1880, p. 311).

The battles among these three chiefs culminated in the triumph of Kamehameha, as is well known. The subsequent history of Puna is inseparable from the history of all Hawaii.

APPENDIX B

ARCHAEOLOGICAL RECONNAISSANCE AND HISTORICAL SURVEYS
OF LANDS AT KAPOHO, PUNA, HAWAI'I ISLAND

Part I:

Archaeological Survey
by Elaine H. Rogers-Jourdane

Part II:

A Brief Historical Survey
by Barry Nakamura

Prepared for
THERMAL POWER COMPANY

July 1984

Department of Anthropology
BERNICE P. BISHOP MUSEUM

Part I
Archaeological Survey

by Elaine H. Rogers-Jourdane

INTRODUCTION

At the request of Thermal Power Company, the Department of Anthropology, Bernice Pauahi Bishop Museum, performed an archaeological reconnaissance survey of specified lands (TMK 1:4:01:1, 2, 19) located in Kapoho, Puna, Island of Hawai'i. This report summarizes the findings of the survey conducted on January 26 and 27, 1984, by James Landrum and the author.

The purpose of the reconnaissance survey was to determine the presence or absence and general nature of any archaeological resources evident on the surface of the project area, combined with a historical literature search of relevant materials. The historical literature search was done by Mr. Barry Nakamura and is included as a separate report.

ENVIRONMENTAL SETTING

The project area comprises c. 12 acres of land located in the ahupua'a of Kapoho in the district of Puna. Puna lies between the districts of Hilo to the north and Ka'u to the south, and extends in an east-west direction from Cape Kumukahi to the slopes of Mauna Loa. The land is composed of overlapping lava flows, faults, steam vents, and numerous spatter and cinder cones (Macdonald 1941:1). Because of its exposure to the prevailing northeast trade winds, Puna receives a relatively high rainfall, ranging from 50 to 150 in. annually (Newman 1970:21).

The immediate study area in Kapoho is located around Pu'u Honua'ula (Fig. 1), a spatter cone along the east rift zone of Kilauea volcano. The general topography consists of well-drained soils over pahoehoe and aa bedrock. The soils are gently sloping with elevation of the project area ranging from 400 to 600 ft a.s.l. (Foote et al. 1973:43). Other major geological features in and near the project area consist of spatter and cinder cones (e.g., Pu'u Iena, Kahawai, Pu'u Pilau), fissures, and faults.

The project site area has undergone major alteration in the recent past. During the 1955 volcanic eruption, fissures appeared and lava flowed from the south side of Pu'u Honua'ula. This flow covered areas to the south and east of Pu'u Honua'ula, and extended downward to the coast (Macdonald and Eaton 1955:2). Most of the project area, therefore, has been covered by this lava flow.

Vegetation of the area is sparse and consists of lichens, mosses, and ferns on the unaltered aa. Vegetation on the lava cones consists of ti (Cordia terminalis), bamboo, kukui (Aleurites moluccana), 'ohi'a (Metrosideros sp.), strawberry guava (Psidium cattleianum), and various grasses and ferns. At present the land is in active papaya (Carica papaya) production, with some parcels of previously cultivated fallow sugarcane.

PREVIOUS ARCHAEOLOGICAL WORK

Archaeological research has been conducted in the Puna area since the early 1900s. In the Hawaiian Islands in general, early archaeological research concentrated on the major stone structures,

such as heiau, related to religious practices. The interest broadened to the study of petroglyphs, and by the 1930s more comprehensive surveys of archaeological sites were being conducted (Newman 1968).

Although the district of Puna has been the subject of numerous archaeological studies, the major concentration of research has been along the coastal areas. Five sites have been recorded for Kapoho. The Kapoho petroglyphs (State Site No. 50-10-46-2501), are located on the south side of Kapoho crater, ca. 3.5 miles east of the project area. Ka Eclua o Kahawali (State Site No. 50-10-46-5245), a cinder cone that in legend was the site of a sledding contest between the Puna chief Kahawali and Pele, is located ca. 1.5 miles east of the project area (Green 1928:3-9). Two site complexes consisting of walled enclosures and platforms (State Site Nos. 50-10-46-4254 and -4255) are located on Kapoho Point, ca. 5 miles east of the project area. Also located on the coast, at Cape Kumukahi ca. 5 miles to the east, are two possible grave sites (State Site No. 50-10-46-4251). Two other sites, Kukii Heiau (State Site No. 50-10-46-2500) and the Kings' Pillars (State Site No. 50-10-46-4250) are located in the ahupua'a adjacent and to the north of Kapoho. These sites are located from 4 to 5 miles east of the project area.

The major archaeological work for the Puna district is summarized below.

DATE	RESEARCHER	DESCRIPTION
1906	J. F. G. Stokes	A survey of the religious structures of Hawaii. Stokes recorded two heiau in the Puna District.
1907	T. G. Thrum	Description of Kukii Heiau, in Kapoho and