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WINDWARD KOHALA-HAMAKUA ARCHAEOLOGICAL ZONE, ISLAND OF HAWAII

Prepared by H. David Tuggle
Associate Professor
Department of Anthropology
University of Hawaii-Manoa

With the assistance of
Stella Nakama
Thomas Manabe
Myra J.F. Tomonari-Tuggle

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Contents

PREFACE

Introduction	1
Site Complexes and Features	1
Acknowledgements	2
I. OVERVIEW OF THE WINDWARD KOHALA-HAMAKUA ARCHAEOLOGICAL ZONE	
A. Boundaries	3
B. Environment	4
C. Land Ownership	6
D. Legends and History	7
E. Archaeological Research in the Windward Kohala-Hamakua Area	13
F. Summary of Results and Statement of Significance	13
II. ARCHAEOLOGICAL COMPLEXES BY AHUPUA'A	
A. <u>Pololu Ahupua'a</u>	
1. Background	19
a. Boundary and Environment	20
b. Legend and History	20
c. Recent Archaeological Research	26
d. Archaeological Results	27
2. Pololu Complex I: 10-03-4930	
a. Description	30
b. Sites	
4801	32
4802	32
4803	32
4804	32
4916	33
4917	33
4919	33

3. Pololu Complex II: 10-03-4931	
a. Description	33
b. Sites	
b-1. Test Excavations	36
b-2. Prehistoric Sites	
4838	37
4862	38
4863	39
4864	39
4866	39
4870	40
4871	41
4893	41
4970	42
4972	42
4973	43
4977	43
4981	43
b-3. Historic Sites	
4800	44
4835	46
4836	46
4837	46
4841	46
4842	46
4843	47
4844	47
4845	47
4846	48
4847	48
4848	48
4865	49
4867	49
4868	49
4894	49
4895	49
4960	51
4961	51
4962	52
4963	52
4964	52
4965	52
4966	52
4967	52
4968	52
4969	53

4971	53
4979	53
4982	53
4. Pololu Complex III: 10-03-4932	
a. Description and Research	53
b. Sites	
b-1. Sites of Zone 1: 4856	57
b-2. Sites of Zone 2: 4849	57
b-3. Sites of Zone 3: none	57
b-4. Sites of Zone 4: 4850, 4851, 4852, 4853, 4860	58
b-5. Sites of Zone 5: 4854, 4855, 4857, 4859, 4861	60
b-6. Sites of Zone 6: 4858, 4869	62
B. <u>Honokane Ahupua'a</u>	
1. Background	63
a. Environment	63
b. Legends and History	64
c. Archaeological Research	66
d. Archaeological Results	67
2. Kupehau Complex: 10-03-4933	
a. Background	70
b. Sites	
4940	71
4941	71
4942	72
4943	72
4944	72
4945	73
4946	73
3. Honokane Nui Complex: 10-03-4934 (With some sites in 10-06)	
a. Background	74
b. Sites	

b-1. Sites of the Lower Valley

4809	76
4810	77

b-2. Sites of the Middle Valley

4811	78
4812	78
4813	78
4814	79
4815	79
4816	80
4817	80
4818	80
4819	81
4820	81
4821	81
4822	82
4823	82
4824	82
4825	82
4826	83
4827	83
4828	83
4829	83
4830	84
4831	84
4832	84
4833	85

b-3. Sites of the Upper Valley

4839	85
4874	86
4875	89
4876	89
4877	90
4878	91
4879	91
4880	92
4881	93
4882	93
4883	95
4884	96
4885	97
4886	98
4887	99
4888	100
4889	101
4890 (10-06)	102
4891 (10-06)	103
4892 (10-06)	104

4. Honokane Iki Complex: 10-03-4935

- a. Background 105
- b. Sites
 - 4920 106
 - 4921 107
 - 4922 108
 - 4923 109
 - 4924 110
 - 4925 110
 - 4926 111
 - 4927 111

C. Awini Ahupua'a

- 1. Background 114
 - a. Environment 114
 - b. Legends and History 115
 - c. Archaeological Research 116
- 2. Awini Complex: 10-03-4936
 - a. Background 116
 - b. Sites
 - 4896 116
 - 4897 117

D. Honopue Ahupua'a and Valley

- 1. Background 117
 - a. Boundaries and Environment 117
 - b. Legends and History 118
 - c. Archaeological Research 119
 - d. Archaeological Results 119
- 2. Honopue Valley Complex: 10-03-4937
 - a. Background 120
 - b. Sites
 - 4805 120

4806	120
4807	120
4808	121
4834	121
E. <u>Apua Ahupua'a</u>	
1. Background	122
2. Apua Coastal Shelf Site: 10-03-4938	122
a. Background	122
b. Site 4938	122

PREFACE

Introduction

During the summers of 1972-1974, archaeological research was conducted in the windward Kohala-Hamakua area of the Island of Hawaii by the Department of Anthropology of the University of Hawaii-Manoa, under the direction of H.D. Tuggle. This program involved both research and student training. Permission was obtained from the State of Hawaii, Oceanic Properties, Bishop Estate, and a number of individual land owners for access to property and for survey and excavations of archaeological sites within the research area. The present report has been prepared in compliance with the conditions of permission from the Department of Land and Natural Resources of the State of Hawaii. It is a summary of background information and descriptions of archaeological sites located during the research. It is also presented in the form of a proposed Windward Kohala-Hamakua Archaeological Zone for consideration as 1) a registered state historic area and 2) a nomination to the National Register of Historic Places. A copy of this report has been submitted to all of the owners of property covered herein.

A final research report, in preparation, addresses the basic research problem of prehistoric agricultural change within the Kohala-Hamakua area.

Site Complexes and Features

There is no easy way to define "feature" or "site" for Hawaiian usage. In Pololu Valley there are dozens of surface structures and fragments of structures. Further there are many buried areas of cultural material and structures which have no immediate relationship

to surface features above them. In a real sense a valley such as Pololu is a single site: a complex of surface and subsurface features which have a temporal continuity and spatial association. In the present report the archaeological data are presented by "site complex" and by "site". The site complexes are defined purely on geographic considerations, that is, they are areas with physical boundaries. In this fashion all of the buried sites (whose spatial extents are often undetermined) can be included within the complex. A site is defined as a concentration of archaeological remains; this may be structure or set of structures, a concentration of portable artifacts, or a concentration of buried archaeological deposits.

Although numbers are assigned to complexes and to sites, the basic unit of description in the present report is the complex.

Boundaries of the Proposed Archaeological Zone

The boundaries of the proposed archaeological zone are based primarily on the limits of research (see Map 1). However, the full windward Kohala-Hamakua Archaeological Zone should truly include Waipi'o, Waimanu the Lūpahoehoe land shelves, and the gulches of the highlands. Attention should be given to such a possibility.

Acknowledgments

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survived our presence. Special acknowledgments are due to the people who helped us in the field and who provided invaluable information: Dale Sproat, William Lum, Robert Solomon, and Stanley Lum.

Many people worked in the field and laboratory on research which serves as the background for this report and cannot be acknowledged individually. Those who aided in the preparation of this report were Stella Nakama, Thomas Manabe, and Myra J.F. Tomonari-Tuggle. Sections of this report are taken from material prepared by the following: Thomas Manabe (Honokane Iki), Bertell Davis (Upper Pololu), and Richard Hughes (Honokane Upper Valley). All of this material was edited by Tuggle. Maps were drafted by Myra J.F. Tomonari-Tuggle, Thomas Manabe, and H.D. Tuggle.

Research funds were obtained primarily from the National Science Foundation (Grant No. GS-38069). Supplemental funds were obtained from the Undergraduate Research participation Program of the National Science Foundation, the Hawaii Foundation for History and Humanities, the Associated Students of the University of Hawaii, and the Research Council of the University of Hawaii.

All primary research materials (artifacts, field notes, and photographs) are currently housed at the University of Hawaii-Manoa. Appropriate materials will be returned to the Island of Hawaii when facilities become available.

I. OVERVIEW OF THE WINDWARD KOHALA-HAMAKUA ARCHAEOLOGICAL ZONE

A. Boundaries

The proposed Windward Kohala-Hamakua Archaeological Zone consists of the ahupua'a of Pololu, Honokane, and Awini within

district of Kohala and Honopue, Waikapu, and Apua within the District of Hamakua (Map 1).

The modern boundaries of the ahupua'a as indicated on the U.S.G.S. topographic maps are generally the same as those reported in Mahele and Boundary Certificate records of the 1800's.

B. Environment

The windward Kohala-Hamakua coastline is a series of high cliffs cut by hanging gulches and deep valleys. The ahupua'a extend inward to the backs of the valleys or to the upper reaches of gulch drainages, generally about 4000 feet above sea level and some 8 km inland. These ahupua'a fall short of the crest of the Kohala mountains which is in the domain of ahupua'a extending from the leeward side. There are no landlocked ahupua'a in this area.

The degree of dissection of the area, physiographically a cliff and valley zone, is a measure of both antiquity and rainfall. This area is the oldest exposed surface on the Island of Hawaii, having generally escaped the last eruption of the Kohala volcano, and it receives 75 to 100 inches of rainfall a year at the coast and up to 150 inches a year in the uplands. Permanent streams (some now tapped) fed by springs flow in most of the valleys and gulches, and heavy rainfall brings floods frequently in the winter. Much of the upland forest is ohia lehua*, guava, and strawberry guava. Valley sides and gulches have kukui, ti, and hala. Valley floor vegetation is primarily

*Scientific names are given in appendix.

guava, kukui, java plum, mountain apple, hau, and noni. Stands of ironwood, rose apple, bamboo, and coffee are also found. The grasses and ferns of wet environments are spread throughout the area.

The soils of the upper slopes, outside the valleys proper, are of the Amalu series: "poorly drained, mucky soils that formed in volcanic ash, cinders, and basic igneous rock" (U.S.D.A. 1973:13). The ridgetops which have soil development are Niulii series, silty clay loams that formed in volcanic ash (U.S.D.A. 1973:41), and the valley bottoms are mixed alluvial land, a miscellaneous land type of recent stream deposition. The ridge and upland soils are generally well developed and fairly old, having developed since the extinction of the Kohala volcano.

The basic geology of the area is described in Stearns and MacDonald (1946) with two major series of flows, the Pololu and the Hawi series. The last flow of the Hawi series (primarily andesite) has been dated to around 60,000 years ago (McDougall and Swanson 1972). Very little of the Hawi series flowed into the valleys which thus represent the results of a long period of erosion from high rainfall and surface runoff.

The valley walls are very steep-sided with little talus accumulation; the valley floors are quite level with a very low gradient from mouth to head, conditions produced by heavy alluviation.

Wave action has cut away the original line of flows to produce a series of steep, high cliffs along the ocean side of

the landform. The overall terrain is thus one of very sharp relief, a high cliff face intersected by steep-sided, flat valleys and hanging gulches.

There is no reef and the beaches are predominantly boulder, although Pololu has some deposits of non-calcareous sand and a large dune deposit behind the active beach.

Transportation within the area is difficult. Off the valley floors the terrain is extremely rugged and the vegetation dense. Access by water is not easy due to the high boulder beaches, strong currents, and lack of reefs. Modern transportation within the area is primarily along the Kohala Ditch Trail, constructed for access to the Kohala Ditch.

The area is a high hazard zone for landslides, rockfall, flash-flood, and tsunami.

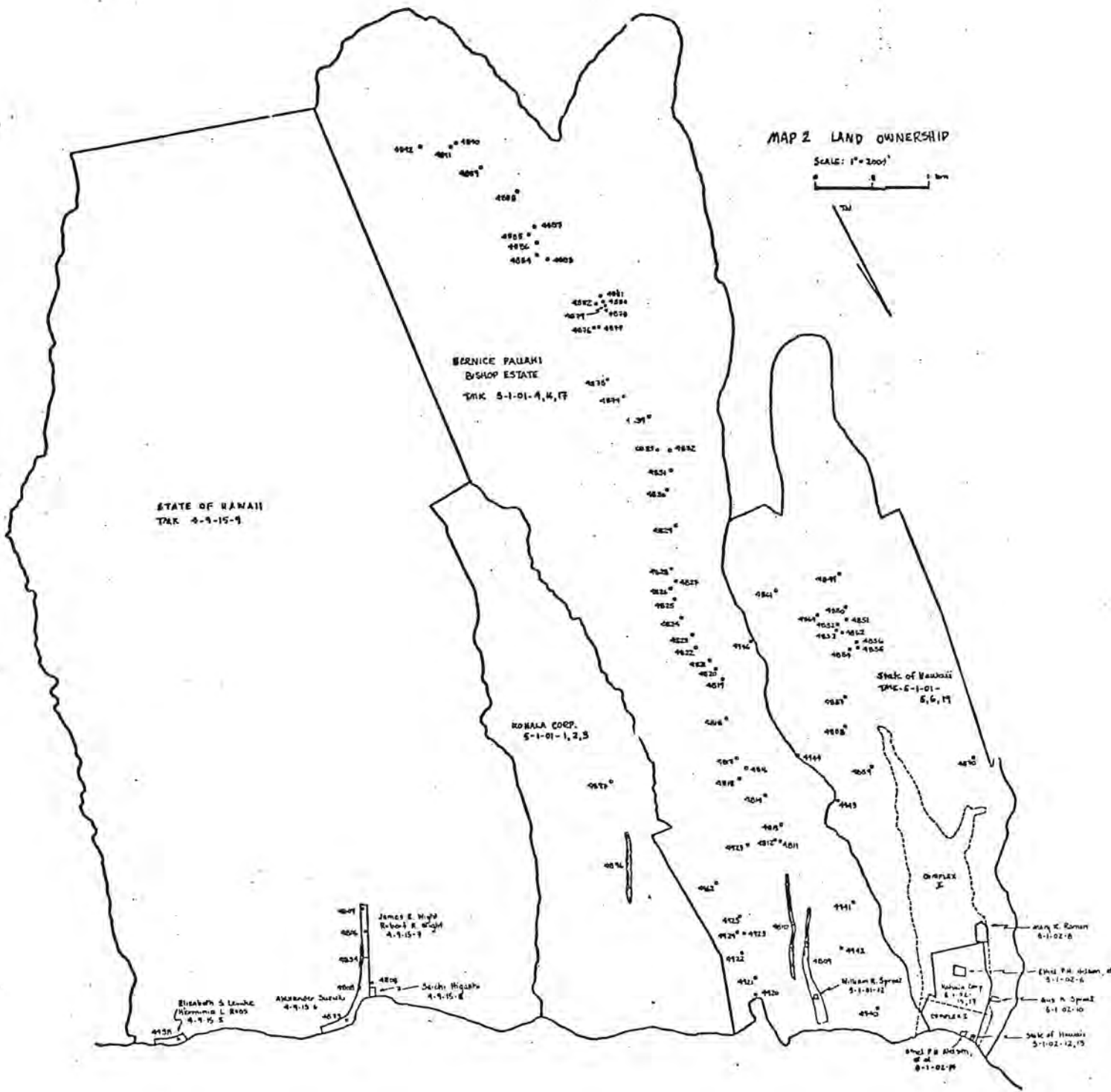
There are no permanent inhabitants in the area today. There are few signs of the 20th century other than the Kohala Ditch and Trail and associated cabins. It remains a rugged country which has been little used by the 20th century, where human modification is seen primarily in the archaeological remains of the prehistoric and early historic Hawaiian occupation.

C. Land Ownership

Land ownership is presented in Map 2. The history of land ownership is discussed briefly under ahupua'a. Except for lower Pololu valley, the entire area is part of the Kohala Forest Reserve.

MAP 2 LAND OWNERSHIP

SCALE: 1" = 200'



STATE OF HAWAII
TRK 4-9-15-9

BERNICE PALAHU
BISHOP ESTATE
TRK 5-1-01-4, 6, 17

KOHALA COOP.
5-1-01-1, 2, 3

State of Hawaii
TRK. 5-1-01-
5, 6, 17

James E. Wight
Robert E. Wight
4-9-15-7

Seichi Higashi
4-9-15-8

Elizabeth S. Louche
Norman L. Knox
4-9-15-5

Alexander Durak
4-9-15-6

William R. Sprunt
5-1-01-12

Mary K. Roman
5-1-02-8

Ethel P.H. Wilson, et al.
5-1-02-6

Amy M. Sprunt
5-1-02-10

State of Hawaii
5-1-02-12, 15

State of Hawaii
5-1-02-11

State of Hawaii
5-1-02-9

State of Hawaii
5-1-02-7

State of Hawaii
5-1-02-5

State of Hawaii
5-1-02-4

State of Hawaii
5-1-02-3

State of Hawaii
5-1-02-2

State of Hawaii
5-1-02-1

D. Legends and History

The windward valleys of the island of Hawaii are divided between two traditional districts, Kohala to the north and Hamakua to the south. These districts receive frequent mention in the traditional literature of Hawaii as Hamakua centers on Waipi'o valley and Kohala is the home of the Kamehameha family. The traditional boundary between Kohala and Hamakua is the valley of Honoke'a, the narrowest and most nearly inaccessible of the windward valleys. The districts of Hawaii Island generally centered on populous areas associated with agriculturally productive zones; district borders tended to fall in areas of low population and marginal agricultural zones.

There was certainly movement and contact along the coast and traditional boundaries were not always observed in land allocations. For example, when Uni-a-Liloa held the island, he placed the land from Waimanu to Pololu in the hands of his adopted son, Ko'i (Kamakau 1961:32).

When Ellis visited Honokane valley in 1823, he went to the house of "Ihikaina, chief woman of the place, and sister to Arapai, the chief of Waimanu..." (Ellis 1963:272).

Ellis had noted earlier (1963:272):

although nearly perpendicular the coastal cliffs were intersected here and there by winding paths ...up which we afterwards saw one or two groups...of travellers pursuing their steep and rugged way.

Most of the major traditions regarding this coastline are centered on the great wet-taro valley of Waipi'o which is not under consideration here. The bones of Liloa, a great chief of

Hawaii commonly associated with Waipi'o, were buried at sea somewhere off the coast of the windward valleys (Fornander 1969, II:100).

One important reference to this coastline occurs in a hula chart recorded by Emerson (1965:51-55; with my underlining) which he describes as follows:

While the girls are making their simple toilet and donning their unique, but scanty, costume, the kumu, aided by others, soothes the impatience of the audience and stimulates their imagination by cantillating a mele that sets forth in grandiloquent imagery the praise of the pa-ú.

Oli Pa-ú

Kakua pa-ú, ahu na kikepa!
 I ka pa-ú, noenoe i hooluu'a,
 I hookakua ia a paa iluna o ka imu.
 Ku ka hu'a o ka pali o ka wai kapu,
 He kuina pa-ú pali no Kupe-hau,
 I holo a paa ia, paa e Hono-kane.

Málama o lilo i ka pa-ú.
 Holo iho la ke ála la Manú i na pali;
 Pali ku kahakō haka a-i,
 I ke keiki pa-ú pali a Kau-kini,
 I hoonu'anua iluna o ka Auwana.

Akahi ke ana, ka luhí i ka pa-ú:
 Ka ho-oio i ke kapa-wai,
 I na kikepa wai o Apua,
 I hopu 'a i ka ua noe holo poo-poo,
 Me he pa-ú elehiwa wale i na pali.

Ohiohi ka pali, ki ka liko o ka lama,
 Mama ula ia ka maluá ula,
 I hopu a omau ia e ka maino.
 I ka malo o Umi ku huná mai.
 Ike'a ai na maawe wai oloná,
 E makili ia nei i Waihilau.
 Holo ke oloná, paa ke kapa.

Hu'a lepo ole ka pa-ú;
 Nani ka o-iwi ma ka maka kilo-hana.
 Makalii ka ohe, paa ke kapa.

Opua ke ahi i na pali,
 I hookau kalena ia e ka makani,
 I kaomi pohaku ia i Wai-manu,
 I na alá ki-óla-óla,
 I na alá, i alá lele
 Ia Kane-poha-ka'a.

Paa ia Wai-manu, o-oki Wai-pi'o;
 Lalau o Ha'i i ka ohe,
 Ia Koa'e-kea,
 I kauhihi ia ia ohe laulii, ia ohe.
 Oki'a a moku, mo' ke kihi,

Mo' ke kihi, ka malúma ka Hoaka,
 I apahu ia a poe,
 O awili o Malu-ó.

He pola ia no ka pa-ú;
 E hií ana e Ka-holo-kua-iwa,
 Ke amo la e Pa-wili-wili
 I ka pa-ú poo kau-poku--
 Kau poku a hana ke no,
 Kau iluna o Hala'a-wili,
 I owili hana haawe.

Ku-ka'a, olo-ka'a wahie;
 Ka'a ka opeope, ula ka pali;
 Uwá kamalii, hookani ka pihe,
 Hookani ka a'o, a hana pilo ka leo,
 I ka mahalo i ka pa-ú,
 I ka pa-ú wai-lehua a Hi'i-lawe iluna,
 Pi'o anuenua a ka ua e ua nei.

This is a typical Hawaiian poem of the better sort, keyed in a highly imaginative strain. The multitude of specific allusions to topographical names make it difficult to translate it intelligently to a foreign mind. The poetical units are often so devised that each new division takes its clue from the last word of the previous verse, on the principle of "follow your leader," a capital feature in Hawaiian poetry.

(Translation)

Pa-ú Song

Gird on the pa-ú, garment tucked in one side,
 Skirt lacelike and beauteous in staining,
 That is wrapped and made fast about the oven.
 Bubbly as foam of falling water it stands,

Quintuple skirt, sheer as the cliff Kupe-hau.
One journeyed to work on it at Honokane.

Have a care the pa-ú is not filched.
Scent from the robe Maú climbs the valley walls--
Abysses profound, heights twisting the neck.
A child is this steep thing of the cliff Kau-kini.
A swelling cloud on the peak of Auwana.

Wondrous the care and toll to make the pa-ú!
What haste to finish, when put a-soak
In the side-glancing stream of Apua!
Caught by the rain-scud that searches the glen,
The tinted gown illumines the pali--

The sheeny steep shot with buds of lama--
Outshining the comely malua-ula,
Which one may seize and gird with a strong hand.
Leaf of ti for his malo, Umi stood covered.

Look at the oloná fibers inwrought,
Like the tricking brooklets of Wai-hilau.
The oloná fibers knit with strength
This dainty immaculate web, the pa-ú,
And the filmy weft of the kilo-hana.
With the small bamboo the tapa is finished.

A fire seems to bud on the pali,
When the tapa is spread out to dry,
Pressed down with stones at Wai-manu--
Stones that are shifted about and about,
Stones that are tossed here and there,
Like work of the hail-thrower Kane.

At Wai-manu finished, 'tis cut at Wai-pi'o;
Ha'i takes the bamboo Ko-a'e-kea;

Deftly wields the knife of small-leafed bamboo;
A bamboo choice and fit for the work.
Cut, cut through, cut off the corners;
Cut round, like crescent moon of Hoaka;
Cut in scallops this shift that makes tabu:
A fringe is this for the pa-ú.

'Tis lifted by Ka-holo-ku-iwa,
'Tis borne by Pa-wili-wili;
A pa-ú narrow at top like a house,
That's hung on the roof-tree till morning,

Hung on the roof-tree Ha-la'a-wili.
Make a bundle fitting the shoulder;
Lash it fast, rolled tight like a log.
The bundle falls, red shows the pali;
The children shout, they scream in derision.

The a'o bird shrieks itself hoarse
 In wonder at the pa-ú—
 Pa-ú with a sheen like Hi'i-lawe falls,
 Bowed like the rainbow arch
 Of the rain that's now falling.

Emerson was not aware of the irony of the remarks which precede his translation. He identified the place names with their most well known localities and failed to recognize that they refer to the series of valleys and cliffs of a single coastline: Pololu to Waipi'o. The seriation or folded effect of the coastline apparently served as an inspiration to a Hawaiian poet in the description of the pa-u.

Additional traditional references concerned with this area refer to specific locales in Honokane described in accounts of battles and to Pololu as a home for Papa and Wakea. These are described within the "complex" information.

The windward Kohala-Hamakua coastline has no safe anchorage for large vessels and there were no large populations outside of Waipi'o, so this area does not figure prominently in the early period of European contact. Passing references were made about the coastline by early European travellers, but it was not until Ellis travelled the coast in 1823 that good descriptions were made. The first journey by a European into the highland Awini area was probably made in 1843 by Father Elias Bond, and the interior areas of Honokane and Pololu were probably not reached until the last half of the 19th century by surveyors.

The population of the valleys of Kohala-Hamakua (excluding Waipi'o) was probably never great and the people in upland areas were few in number. The 1835 census (Kumu Hawaii) gives a total

population for Pololu, Honokane and Awini as 181. The pre-contact population was probably never much greater than twice this. The 1835 census is probably an underestimate, but it certainly also reflects the probability of depopulation, a severe problem in all of Hawaii by this time.

The effects of the Mahele (mid-19th century land division) on the lives of the people is not clear, but it certainly did not produce improvements. There were only a few kuleana awards and land grants. By the end of the 19th century rice was being cultivated in Pololu, a homesteaders' ranch and coffee farm was operating in Awini, and schools were located in Honokane Nui and Pololu. The Kohala Ditch was completed in 1906, removing the water from Honokane and ending habitation there. The Awini farm ended around 1911 and rice went out of production around 1925. By 1930 there was only a scattering of residents in the valleys, some of whom were ditch workers and their families. The 19th century way of life ended in 1925 and the traditional Hawaiian lifestyle had ended or been molded into other forms decades before that. Up to now the 20th century has only lapped at the valleys' borders.

Today there are no permanent occupants in the archaeological zone. The primary activity is the use and maintenance of the Kohala Ditch, pig and cattle farming, hunting, and hiking. There are no roads suitable for vehicles. The last major event to have a significant effect on the valley was the tsunami of 1946 which eroded the Pololu sanddune and destroyed a number of features in the lower portion of the old ricefield.

E. Archaeological Research in the Windward Kohala-Hamakua Area

In the mid-1800's Father Bond recorded several sites within the area (in Thrum 1907), some of which were later visited by Stokes (N.D.) around the turn of the century. Handy (1940) mentions sites in the area but with no reference to his sources of information.

In 1969 a survey of known sites for the County of Hawaii (Loo and Bonk 1970) involved a unsuccessful search for the remains of Ho'olonopahu Heiau in Pololu.

In 1970 a preliminary reconnaissance of Pololu was carried out by three students from the University of Hawaii field school operating then at Lapakahi. This knowledge served as the source for my original interest in the area. I visited Pololu and Honoxane in 1970 and made a cursory examination of the sites. In the summers of 1972-74 I conducted research in the valleys which was primarily concerned with the study of the prehistoric agricultural systems. This study resulted in the location of the sites described in this report and in the brief prehistories presented below.

F. Summary of Archaeological Results and Statement of Significance

Although no major historical events are associated with the Kohala-Hamakua Archaeological Zone, the area has outstanding archaeological sites which represent a range of adaptations to the local Hawaiian environment and which have been little damaged by modern activities.

The environment is unique for the Island of Hawaii. It contains deep valleys suitable for agriculture up to 6 kilometers

inland, plus hanging valleys and coastal shelves which presented unusual and often difficult conditions for Hawaiian life.

Major irrigation complexes (e.g. 4838, 4870, 4809, 4808) are located in all of the valleys and use a wide variety of water sources such as springs, waterfalls, and streams. Some involve water transport for hundreds of meters and others have canals which tap waterfalls and transport the water along the faces of talus slopes. They are found on valley floors, on talus slopes, and in the high marshy gulches above the valley floors.

One site of major research significance is an extensive complex of dry agricultural fields (4871) on the floor of Pololu with evidence that in one area it was replaced by the construction of an irrigation complex in an attempt to intensify cultivation.

Important sites or site complexes include extensive habitation areas (e.g. 4810, 4805), ridge "forts" (e.g. 4927), an adz quarry (4081), heiau and shrines (e.g. 4863).

In a number of places the prehistoric settlements have nineteenth century modifications (e.g. 4810). In addition there are the remains of a "Chinese" rice farming habitation and terrace complex (4800).

Taken individually few of these sites are of major importance (although many are excellent examples of specific types of sites), but the total set of complexes represents a significant totality of Hawaiian life.

Field work was not limited to surface survey. Excavation added much more information regarding sites in this area.

Excavation revealed extensive habitation deposits within the dune of Pololu (4930) and wide areas of agriculture and habitation buried beneath alluvial soils of the main Pololu floor (e.g. 4893).

Current evidence from excavation indicates that windward Hamakua occupation began as early as the 12th or 13th century A.D., while Pololu and Honokane were not permanently inhabited until the 16th or 17th centuries A.D. The latter is quite late in Hawaiian prehistory and may be partly due to a difficult environment, and also related to political control of population distribution and the development of "frontiers" between developing districts.

A portion of the history of Hawaiian adaptation has also been revealed by excavation. Pololu valley was a very difficult area to cultivate. It was plagued by problems of drought, lack of permanent stream waters, and periodic floods of disastrous proportions. The Hawaiians attempted to meet these problems by developing irrigation complexes where only the very minimum supplies of running water were available (e.g. 4838) and by the construction of dryland agricultural field borders which served to limit soil erosion and to conserve moisture.

The research has provided important information regarding the prehistory of these valleys, but it has by no means been exhaustive. The work up to now has had a very specific set of research objectives with many additional problems yet to be solved. Very few sites have been explored in detail.

High research potential for the following problems exists:

- 1) study of windward valley habitation. This is a poorly known subject in Hawaiian studies (in contrast to leeward settlement, especially on the Island of Hawaii). Invaluable information about habitation may be yielded by the extensive deposits of the Pololu sand dune, by the buried habitation features widespread in lower Pololu, and by the complexly integrated and tightly clustered habitation and agricultural features of the Hamakua side of Honokane Nui, and by the extensive (non-dune) settlement spread across the front of Honopue.
- 2) continued study of agriculture. Although this was the primary topic of the research of the past few years, many problems remain unsolved, including the beginnings of agriculture in the valleys and the potential effects of cultivation on the natural environment (deforestation and associated flooding) and the nature of buried agricultural soils. Most of the agricultural complexes of Honokane and Honopue have been but not mapped in detail nor excavated.
- 3) study of specialized sites. Heiau, shrines, forts and special activity areas, such as an adz quarry, have had little or no investigation.
- 4) study of historic Hawaiian settlement. This is a very neglected topic in archaeological research in the islands, yet it is one of the most important for understanding the background of the Hawaiians today and the transition from prehistory to history. Settlements in Pololu, Honokane and Honopue are ideal

for this study because they were abandoned at different times from mid-19th century to the 1920's and none have been disturbed by modern construction or living activities.

5) study of a "chinese" rice farming complex. Study of early 19th and early 20th century immigrant settlements is another area of serious archaeological neglect. Pololu provides an excellent example of a specialized settlement for such a study.

6) specialized anthropological and historical problems. The completeness of remains in these valleys offers an opportunity to examine a number of special problems including population growth, resource use and exchange, environmental deterioration under traditional agriculture, the development of political complexity, soil development, and the effects of differential water supply on agricultural soils.

Thus the Windward Kohala-Hamākua Archaeological Zone has yielded and will yield additional information important to the prehistory and history of Hawaii, and has sites which are excellent representatives of a number of Hawaiian themes, especially agriculture and habitation. The state of preservation is excellent.

There is also a high potential for public interpretation in the form of extensive surface sites in a natural setting, visible along the Kohala Ditch Trail. Although vegetation patterns and water supply have been somewhat altered by recent activities, the general environment and the absence of modern features help create an atmosphere for the appreciation of the

demands of the environment and the complexity of the Hawaiian use and modification of it.

It is recommended that this archaeological zone be considered for the state and national registers.

The preservation of the desirable qualities for public interpretation requires that the area remain undeveloped.

However, if other uses are planned, ones which will alter or destroy sites, the following recommendations are made:

1) further research needs to be done in virtually all areas, including more detailed survey and mapping of those areas where limited work has been done, and extensive excavation, particularly in the Pololu sand dune and the floor of lower Pololu, the irrigation complexes in Honokane, and the habitation and irrigation complexes in Honopue.

2) some sites should be preserved in perpetuity for their unique or outstanding characteristics and/or for their importance to the local residents:

- 4938: a remarkable example of landsheif use; an area of very limited land bounded by ocean and cliff, with house platforms, and an irrigation complex fed by a waterfall.
- 4808: an outstanding example of an irrigation complex, fed by waterfall by a canal built high along a talus slope, and constructed over habitation deposits.
- 4927: a ridgetop sanctuary or "fort."; of great importance to some members of the local community.
- 4810: outstanding example of a compact Hawaiian settlement integrated with an irrigation complex.
- 4838: unique irrigation complex; irrigation fields constructed in a dryland agricultural field complex.

- 4804: area of Ho'olonopahu Heiau; no remains located, but site deserves further examination and should be preserved because of local importance.
- 4863: heiau (?); unusual location, isolated in a small side valley of great importance to some members of the local community.

II. ARCHAEOLOGICAL COMPLEXES BY AHUPUA'A

Nine Complexes are described in this section, 3 in Pololu, 3 in Honokane, 1 in Awini, 1 in Honopue, and 1 in Apua. The general ahupua'a is described in each case before details of the complex and its sites are presented. The designation 10-03 (Island of Hawaii, Honokane Quadrangle) precedes all complex and site numbers in this report except for three sites which are found near the head of Honokane Nui and fall into 10-06 (Island of Hawaii, Kamuela Quadrangle).

A. Pololu Ahupua'a

1. Background

This ahupua'a is divided into three complexes for ease of description: the dune and valley mouth (4930), the lower valley (4931), and the upper valley (4932), (Map 1). Details of the sites of Complexes I and II are found on Maps 3 and 4. Foldouts at the back of the report. Map 3 presents the prehistoric and early historic Hawaiian sites within the lower valley and the areas of excavation. Map 4 presents the historic sites and related excavations within the lower valley. Maps 3 and 4 should thus be superimposed for a complete picture of the lower sites of Pololu (Complexes I and II). It should be noted that some excavations are on both maps: excavations into historic structures which also produced substantial prehistoric

material.

Complex III (Upper Pololu, Map 5) is presented in Maps 1, 6, 7 (Map 7 follows pg. 56).

a. Boundary and Environment





The ahupua'a boundary of Pololu runs generally along the rim of the valley. On the Honokane side, the boundary drops into the valley toward the mouth and in the upland area, on the Mākanikahio side, it leaves the rim to include a swamp and stream headwaters (Map 1). Pololu has two physiographic areas: a lower alluvial flat bottom section, and an upper V-bottom gulch (Map 1). Lower Pololu has a massive sand dune (over 80 feet high) stretching across most of the valley mouth behind a sand and boulder beach. No surface water flows to the ocean permanently today, but there is a stream outlet on the western side, mauka of which lies a swamp extending behind the dune. The tree line on the valley floor begins at the head of the swamp and a guava canopy covers most of the inland lower valley.

A deep canyon and waterfall (o'kupe) separates the upper and lower valleys, making the upper area accessible only by circuitous trails. The rugged terrain of the upper valley has only small land shelves and steep slopes available for occupation.

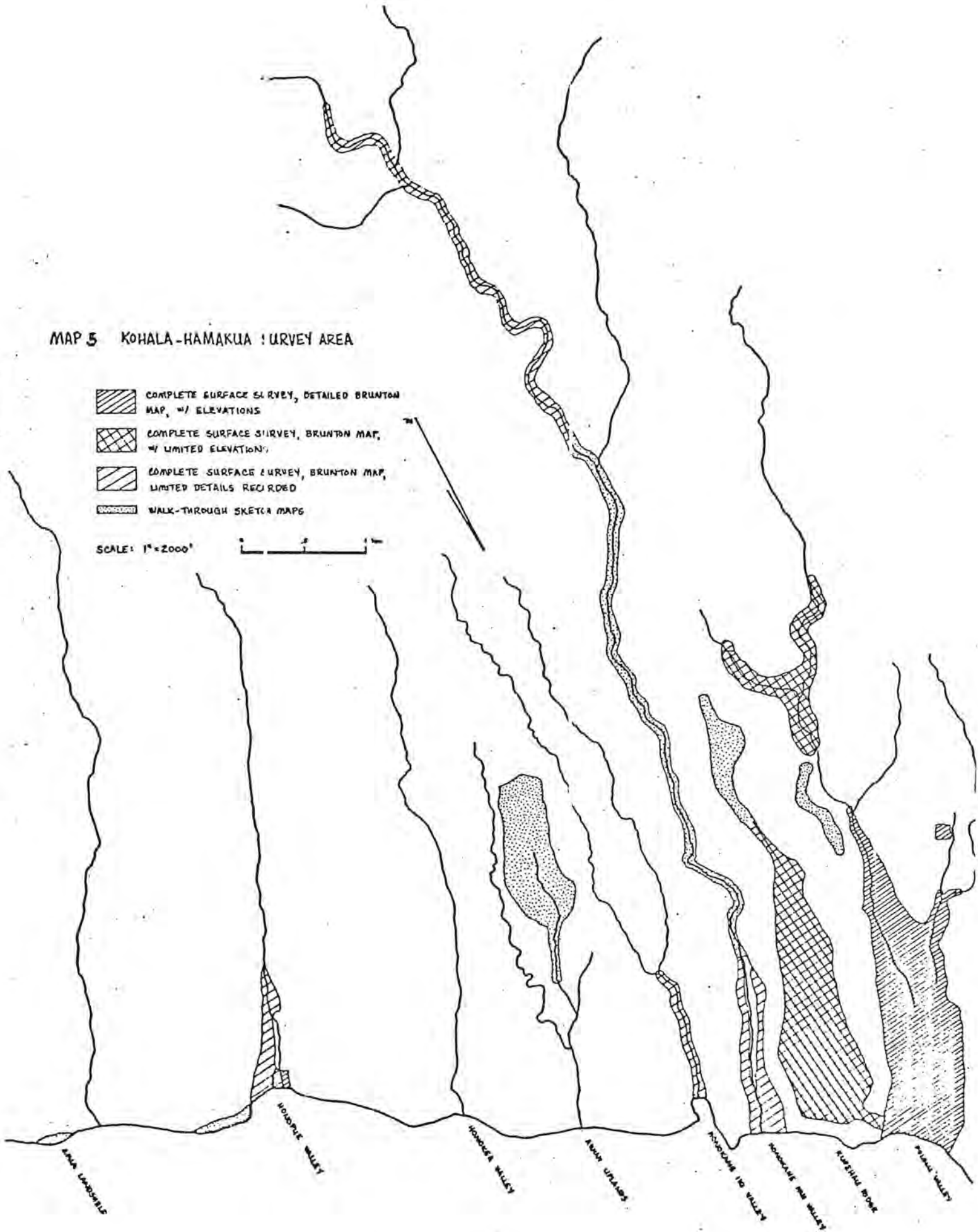
b. Legend and History

In 1825 the Reverend Artemus Bishop travelled through Kohala and recorded the following story from

MAP 5 KOHALA-HAMAHAUA SURVEY AREA

-  COMPLETE SURFACE SURVEY, DETAILED BRUNTON MAP, w/ ELEVATIONS
-  COMPLETE SURFACE SURVEY, BRUNTON MAP, w/ LIMITED ELEVATIONS
-  COMPLETE SURFACE SURVEY, BRUNTON MAP, LIMITED DETAILS RECORDED
-  WALK-THROUGH SKETCH MAPS

SCALE: 1" = 2000'



local people while he was at Pololu (quoted in Damon 1927: 54):

As tradition reports, it [Pololu] was originally the residence of Oakea and Opapa [Wakea and Papa] Damon note. the god and goddess who made Hawaii and all the others of this group of islands. The story relates that they were produced after the ordinary manner of generation in the order in which they stand to each other; viz. Hawaii, the elder sister, Maui, the second, and so of the rest in order. After Opapa had brought forth the islands, men were then created in the same manner, she also being the mother of mankind...

Pololu has associations with the foreign (?) priest Pa'ao, a culture hero of Hawaii. One of his major temples, Mo'okini, was visited by Father Elias Bond in 1841. He was told that

the stones of the enclosure...were brought from Pololu valley; the people having been gathered by the chiefs from various parts of the islands, stood in line from Pololu to Puuepa and passed the stones from hand to hand (quoted in Thurum 1907: 61).*

In 1853 or shortly after, M. Jules Remy recorded a similar story, and added (1868: 10)

At Pololu, toward the mountain, are found fields of a very beautiful verdure. They are called the pastures, or grass-plots of Paa (Namauua Paa). The old priest cultivated these fields himself, where no one since his time has dared to use a spade or mattock. If an islander was impious enough to cultivate the meadow of Paa, the people believe that a terrible punishment would be the

*In recent history sand was brought from Pololu in the 1850's to aid in the construction of the stone church of Father Bond at Iole (Damon 1927: 145).

inevitable consequence of that profanation. Disastrous rains, furious torrents, would surely ravage the neighboring country.

Pa'ao is said to have lived for some 447 years, or for fifteen generations of Hawaiian chiefs, dying during the reign of Ka-maka-'ohua over the district of Kohala (Kamakau 1961: 235).

Ka-maka-'ohua was also, according to Kamakau (1961: 235), chief at the time that Kahu-a-ka-nini, the son of Pa'ao, had his hand cut by the Kalau-maumalei fish and died of hunger at the cliff of Pololu.

Examination of the kin ties of Ka-maka-'ohua, suggests that this was during the reign of Keawenui-a-Umi, some eight generations before Kalaniopu'u or sometime in the beginning of the 15th century A.D. (using the 30 year/generation count).

The heiau of Ho'olonopahu has no references which will allow it to be placed within the traditional history of Pololu, except that Bond reported that it was said to have been built before the time of Kamehameha (Thrum 1907: 62).

The last recorded event to take place in the traditional history of Pololu occurred shortly after the time of Cook's death. Kalaniopu'u had taken his court to Kapa'au in Kohala and his dissolute behavior was justification for chiefs to talk of revolt. One of the suspected rebels was a Ka'u chief named Nu'uauu pa'ahu, a member of the court. The kahuna of Kalaniopu'u slew him by magic. He was enticed to a famous surfing

area off the Kohala coast and was attacked by great sharks. He was bitten during a battle worthy of Ultra-7 and he "lay suffering great pain until he died at Pololu", and there he was buried (Kamakau 1961: 107). Fornander records a similar version (1969, II: 201).

Recorded descriptions of Pololu begin in 1823 with Ellis (1963: 273).

Pololu is a pleasant village, situated in a small cultivated valley having a fine stream of water flowing down its centre... The houses stand principally on the beach...

In the 1835 census Pololu had 36 men, 27 women and 31 children. From 1838 through 1849 Father Bond (Kohala Union Church, Buke I) recorded 16 deaths of church members in Pololu, 16 children's baptisms, and 6 people leaving the valley (for Lahaina, Wailuku, and Honolulu). After the Mahele the records indicate that the native Hawaiian population continued to decline, but due to in-migration the actual valley population probably did not change much.

In the Mahele, one piece of land the 'Ili of Pa-u, was awarded to Keohokalole, the mother of Kalakaua, as L.C.A. 8452:13.

Two other small kuleanas were awarded, each with a segment of wet-taro field inland and a houselot on the beach. The remainder of Pololu went to the Crown and eventually became state land. The front part of the

valley was acquired by the Kohala Sugar Co. (Castle and Cook) and the rear of the valley is in the good hands of the state. Archival data indicate that there was a great deal of trouble over the 'Ili of Pa-u in regard to boundaries, access, and relationship of overseers to local farmers. The problem is evident. The 'Ili of Pa-u was the most important property in Pololu: it was the only land with adequate water supply (from springs) and it had the original rights to offshore fishing. It had in fact been an 'ili kupono.

Under lease this land and adjoining property went under rice cultivation sometime in mid to late 1800's with a predominantly Chinese labor force. The rice entrepreneur was named G.C. Akina, a Kohala merchant. Pololu was one of only three areas on the Island of Hawaii where rice was grown commercially (Coulter and Chee Kwan Chin 1937: 21) reaching a maximum of 72 acres under production around the turn of the century. At this time there were probably 5 or 6 Hawaiian/part-Hawaiian families living in the valley, principally on the dune (cf Sites 4801, 4802, 4803) and on the Kohala side (4895) and around 20 Chinese laborers (according to recent informants living in quarters which had been constructed in the center of the valley, mauka of the rice fields (Site 4800).

The rice market in Hawaii collapsed between 1920 and 1930. By 1926 the rice fields in Pololu were

abandoned and by the '30's most of the residents of the valley had moved away, probably to the adjoining areas of Hawi and Kapaau to work for the sugar companies. Members of one family, descendants of Mary Kainoa Ramon, continued to live on one houselot until the mid '50's. Today the former rice land is under lease for stock raising and the state land is under lease for pasturage.

Construction of the Kohala Ditch in 1905-1906 in the upper reaches of Pololu had little effect on the valley because little water was removed. The Pololu portion of the ditch largely serves to transmit water from other valleys to the kula lands of Kohala. One house was constructed for a ditch worker and his family in upper Pololu, but permanent habitation along the ditch was terminated by the company and this house was removed in 1952.

The 1946 tsunami did a great deal of damage to the front of the valley, removing a portion of the dune and destroying the lower remnants of the rice terraces and creating a swamp in their place. Except for the tsunami effects and vegetation growth, the valley has changed little in the 45 years following its general abandonment.

There are no major historical events associated directly with Pololu. Since the time of the early explorers, most of whom sailed by without written comment, Pololu has been peripheral to the kula lands of Kohala which have been the center of modern population and agricultural development.

The only exception to this is the period of 30 to 40 years when rice was being produced in Pololu.

Historically, Pololu represents what may be a "typical" diminution of Hawaiian occupation of a rural area as settlement pattern changed under the effects of Western contact and the new economy and social order of the 19th century. Pololu is also an excellent example of the transition of a Hawaiian agricultural area into a rice farming system, with the attendant Chinese occupation.

c. Recent Archaeological Research

In 1972 one week of survey by 12 people was carried out resulting in the location of most of the major surface structures in the lower valley. In 1973 about 250 person/weeks were expended on research during a period of 8 weeks. The valley was completely surveyed in both lower and upper sections (although not all site areas were mapped in detail). Major excavations were carried out on the dune, and in selected areas of agriculture and habitation in both the upper and lower valleys. At the same time a transit line was shot from the USGS bench mark at Makanikahio, outside the valley, into Pololu and to the back of the lower valley. All mapping was tied into this line for both horizontal location and elevation. During this time agricultural deposits at previously unsuspected depths in the alluvial deposits were recognized. These deposits became a focus for research in the 1974 season when 8 people worked for a period of 12 weeks, primarily on excavations of agricultural

fields as well as on a few housesites and specific activity areas. The primary purpose of the research was analysis of the agricultural development within the valley.

d. Archaeological Results

The archaeological remains of Pololu are virtually intact, having only limited damage from natural elements. Fifty sites were located in the lower valley and 14 in the upper valley. It should be emphasized that the number for the lower valley is misleading; in that the entire area contains surface and subsurface archaeological remains.

A major portion of the valley floor is devoted to dry cultivation. This archaeological conclusion contradicts an "ethnographic" statement (Handy and Handy 1970:529) that the valley floor was once covered by wet-taro terraces.

On the basis of research, the following series of cultural events is defined for Pololu. The chronology rests on 1) obsidian-hydration and carbon-fourteen age determinations, 2) stratigraphic sequences within the valley, 3) presence or absence of historic artifacts, and 4) archival records.

A.D. 1500-1600: sporadic, temporary habitation of the coastal dune, probably for fishing and for storage and launching of canoes; no evidence of fishhook manufacture; no evidence for habitation within the interior of the valley.

A.D. 1600-1650: construction of taro irrigation terraces within the swamp (later converted into rice terraces:

site 4800); associated habitation adjacent to spring on Kohala side of valley (site 4895); dry cultivation by swidden of interior lower valley floor; swamp cultivation in mauka section of coastal swamp (site 4893); probable construction of dry field boundaries and associated flood control devices in some areas of lower valley floor; heavy floods created extensive alluvial deposits over fields sometime late in this period. Agriculture and habitation may have begun in rear Pololu during this period.

A.D. 1650-1720: flood deposits on valley floor cultivated; dry field boundaries again constructed; construction of two irrigation complexes (4970, 4838) in interior of lower valley and one on bluff of Eliali'i (4870); site 4838 is an unusual terrace complex: it is fed from spring-supplied waterfall by means of a 500 m long canal; constructed into a previous dry-field area and topographically placed to be removed from general threat of flood damage; sites 4838 and 4847 have habitation areas which contain adz manufacturing debris; additional flood deposition occurred near the end of this period.

A.D. 1720-1840: Field cultivation of new alluvial deposits and construction of new dry-field boundaries; construction of standing walls and walled enclosures (e.g. 4843, 4844, 4960, 4961) probably during later part of this period; abandonment of irrigation complexes in rear of lower valley perhaps in later years of this period or

early years of next period; probably beginning depopulation of valley; floods during later part of this period.

A.D. 1840-1880: Taro cultivation continued in front of valley; although probably reduced from former scale; Mahele; after 1850 the major portions of the agricultural areas of the valley mouth were leased to non-Hawaiians; Marriage between Hawaiians and non-Hawaiians taking place; remnants from this and the following period are found in sites 4836, 4895, 4803, 4801.

A.D. 1880-1930: In 1880's or earlier rice cultivation began in the valley mouth area this involved the use with possible modification of the old taro terraces and expansion of the old field area to reclaim a fishpond in the lower area of terraces and swamp in the upper area; a Chinese settlement (72 acres of rice; 4800) constructed mauka of the rice fields; associated with this settlement are also two isolated features (4835, 4865) probably Chinese ovens, an area of collapsed walls (possible Chinese structures) 4982.; and a portion of a flume foundation (4979), the flume running from the Kohala Ditch in a side valley to the rice field area; local families (Hawaiian and part-Hawaiian) continued to live on the Kohala side of the valley and on the dune (4836, 4895, 4801, 4803).

The rice cultivation was abandoned between 1925 and 1930 and the valley was nearly uninhabited by 1935.

Other important features within the valley, probably religious structures, have not been dated and thus cannot be fitted into the chronological sequence.

These include two small shrines: 4866 and one of the structures in 4868,

one probable heiau: 4863 and

one shrine/heiau: 4973.

2. Pololu complex I: 10-03-4930

a. Description

The Pololu dune and the adjacent eastern pali side at the mouth of the valley are included within 4930. The dune is about 430x130 m and 27 m high. It is composed of basaltic (non-calcareous sand). The stream mouth lies on the western side of the dune. The eastern side of the dune abuts the pali. The front has been eroded by tsunami and high surf action producing various exposures of cultural material. The beach is composed of both sand and boulders. The dominant vegetation is ironwood most of which has grown since 1940. Turn of the photographs of the dune show it largely barren of vegetation except for grass.

"Sites" on the dune are defined somewhat arbitrarily: exposed deposits and/or surface fragments of structures were given site numbers which are used to refer to the surrounding area and the excavations within that area (Map 3). Used in this fashion these numbers do not represent discrete sites, but only areas. The excavations

were not extensive enough to allow the stratigraphic relationships between the deposits of the various pits and "site" areas to be determined.

As can be seen by the pits (Map 3) the excavated area is a miniscule portion of the total dune. The dune is thus not adequate sample in any regard. However, in nearly every excavation pit, stratified habitation deposits were located. These deposits contained very small quantities of organic material (marine shell, mammal and fishbone, kukui shells), but large quantities of stone debris (basaltic-glass and basalt flakes) and stone artifacts, predominantly cobble choppers and fragments of adzes. There were no fishhook manufacturing articles or items for fishing or marine collection except for one fragment of a fishhook. While the food remains indicated that some animals were collected from the ocean, the artifactual material suggests that agriculture and animal husbandry provided the main subsistence. Features located in excavations included fireplaces, trashpits, stone pavings, and packed-sand floors. The earliest dates obtained from dune excavations are in the late 1400's A.D., but most of the deposits do not date until the late 1500's. Occupation continued into the 20th century.

The primary threats to the sites are natural elements (especially high storm surf) and vandalism.

b. Sites

4801: eroded face and surrounding area on end of dune near the stream mouth; approximate location of a historic house-site and a portion of Land Commission Award 10581 (Map 5a - which is a blow up of Map 5); excavation revealed a trash accumulation of about 2 m in depth with prehistoric and historic deposits, and 2 or 3 occupation floors.

Examination of the area in 1975 and 1976 indicated that significant erosion of the face is taking place every winter, presumably from storm surf. The facing which was exposed before excavation was completely covered with mounded sand at the end of excavation in 1973. It is now more exposed than before with serious loss of the deposit.

4802: historically identified as "Puu alii" (Map 5a) and a house-site; a few possible paving stones were located on the westernmost knoll of the area and an excavation into the knoll (Pit B) produced cultural deposits 3 m deep (with sterile strata), two horizons of stone paving, and one possible section of a wall; prehistoric and historic occupation; all other pits within the area yielded cultural deposits.

4803: portion of waterworn-stone paving with some pieces of old concrete; historic artifacts, stone artifacts, and marine shell are on the surface and eroding down the side of the sand ridge on which the site is located; no excavations were conducted; site is probable remains of a historic house-site (Map 5a); it was reported in Loo and Bonk (1970) as the remains of Ho'olonopahu Heiau (see Site 4804) but this is a misidentification.

4804: Ho'olonopahu Heiau; survey of the recorded area of the heiau (Map 5a) produced no remains of any kind; however no excavations were conducted; the site was described by Father Bond in 1885 and paraphrased by Thrum in 1907 (p. 62):

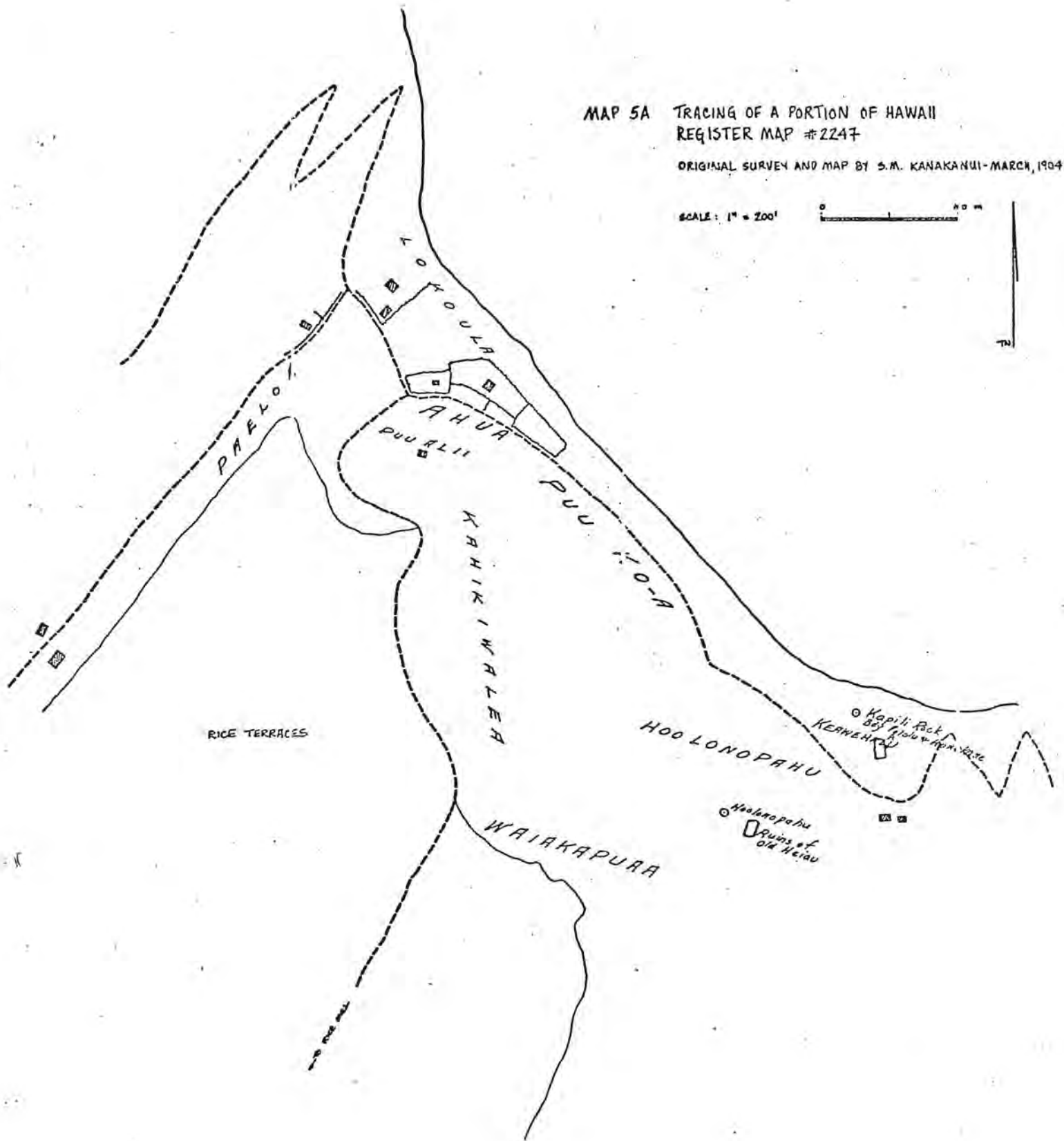
"Hoolonopahu, a small heiau, said to have been built long before Kamehameha's time, and located on the most prominent sand hill in Pololu valley...

The sound of the drum was continually heard during the nights of Ku, proceeding from the locality of this heiau, hence its name. But when search was made the following morning, no drummer could be found. Finally direction was given by the chiefs to search the premises and on

MAP 5A TRACING OF A PORTION OF HAWAII REGISTER MAP #2247

ORIGINAL SURVEY AND MAP BY S.M. KANAKANUI-MARCH, 1904

SCALE: 1" = 200'



failure to find the cause to demolish the heiau, which was done. All that now remains is an inconspicuous pile of stones but a foot or two above the sand..."

In his listing of heiau from Kohala, Thrum (1907, p. 30) refers to this as an agricultural heiau, but he provides no source for this information.

- 4916: portion of area referred to historically as "Puu Ko-a" (Map 5a); although not fully exposed, a stratified deposit appears to extend at least 70 m across the face of the dune; excavation on either end of this deposit yielded important stratified habitation material; Pits G1 and 2 had complex stratified deposits with compacted sand floors, firepits, and cultural debris, with basaltic-glass dates (the earliest for the dune) of late 1400's A.D.; Pits A and B (little more than facings) also showed complex stratified deposits (although with no dates as early as those of Pit G), one of which contained a large oval stone with a fish skeleton petroglyph; other excavations in the area, at lower elevations, produced little of importance; this major deposit is an extremely important site, representing not only an extensive horizontal and vertical occupation, but also one with comparatively old dates and material which tends to substantiate the historical identification of part of the area as a fishing shrine.
- 4917: a waterworn cobble paving and cultural deposit exposed by erosion in a partially slumped area on the eastern side of the valley; it is not on the dune but in slumping soil of the pali face, some 14 m above the beach; it is difficult to estimate how much of the site remains but it is certainly of some importance because of its unusual location; no excavation was attempted (climbing gear would be needed!).
- 4919: a series of small terrace facings and associated platforms in a gully on the eastern side of the valley between the dune and the pali; the terraces are probably agricultural features, but no subsurface investigation of these or the associated platforms was conducted.

3. Pololu complex II: 4931

a. Description

Pololu complex II is a series of sites located on

the alluvial floor, talus slopes, and colluvial fans of side gulches of tower Pololu. The lower valley has two branches, one formed by Pololu stream itself beginning at a waterfall (known as O'kupe) which divides the upper and lower valley, and the second formed by a side stream known as Waiakalae in the plateau above the valley and as Kalowao Iki once it enters the side gulch of Kalowao (also spelled "Kalowai"). Another small stream feeding Kalowao is named Kalowao Mui.

The one site within Pololu Complex II which is not within the valley proper is 4870, antirrigated taro complex located at the brow of the ridge (Eli'ali'i) which separates the rear section of the lower valley from Kalowao. It is located above the Kalowao Iki falls.

The integrity or unity of this complex, although it represents a number of time periods and at least two cultures (Hawaiian and Chinese) is determined by the spatial association and intermingling of features on the valley floor and by the nature of the sites: they represent an economic and technological commitment to survival within the demanding environment of Pololu.

This valley was almost wholly devoted to agriculture and agricultural success was challenged by two major elements: the lack of a perennial stream on the floor of the valley and periods of extreme flooding. Hawaiian agriculture in Pololu depended upon 1) use of rainfall on the floor of the valley (and surviving atten-

dant droughts which are common in Kohala) (cf. 4871)

- 2) controlling the perennial water which did enter the valley from springs (by waterfall in several cases; however, none of these perennial sources created a volume of water sufficient to form a flowing stream on the valley floor; all went underground unless controlled by human activity such as canaling and ponding) (cf. 4878)
- 3) by controlling flood waters by diversion systems away from field areas or by spreading over wide sections (cf. 4871)
- 4) by reconstruction of the system after damage from flooding (cf. Test Excavations and 4893).

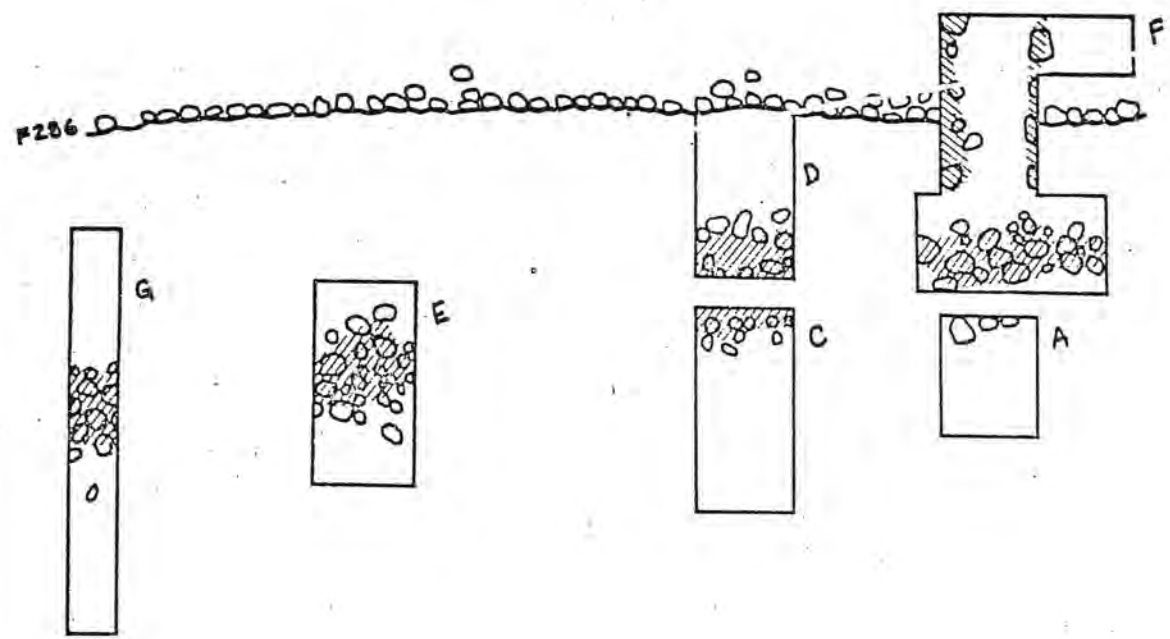
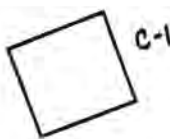
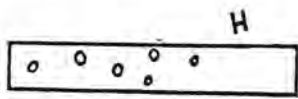
The entire valley floor of lower Pololu contains the features and soils which represent the efforts of Hawaiian control. In addition are associated habitation features and religious structures (the locations of both kinds of features determined by the problems of water control).

Toward the mouth of the valley are the remnants of Chinese rice farming: modified wet-taro terraces and associated habitations (4800).

The valley floor is flat laterally, with poorly developed talus slopes, and is interrupted only by the erosion beds of ephemeral streams and gullies. The floor slopes very gently (from 1 to 2 degrees) from the mouth toward O'kupe Falls. The primary vegetation is guava, with some stands of kukui, java plum, noni, and mountain apple. Toward the ocean the valley floor is swampy area with unidentified grasses and reeds.

MAP 4A - TE 31

Feature A } in Stratum V-VI
Feature B }



The sites of this complex are divided into two chronological groups: those which are prehistoric and early historic Hawaiian with no significant break in continuity from the prehistoric (Map 3); 2) those which are historic: Hawaiian, with divergence from the traditional patterns, or non-Hawaiian (Map 4).

Test pits are located on maps and lettered by site, with the following exceptions: test pits for 4838 and 4863 and TE 31 area (see below) are shown on enlargements. Also, test pits which were not placed in a well defined site or which were originally intended to examine natural features have been identified as TE's (test excavations) and numbered rather than lettered. These TE's are scattered over the valley floor. Many of the areas where TE's are located have subsequently been identified as a single site, the dryfield agricultural complex (4871).

b. Sites

Descriptions of the sites of Complex II are presented in three sections: 1) general results of the TE series, 2) the prehistoric sites, and 3) the historic sites; in each case in numerical order.

b-1. Test Excavations

The majority of test excavations was placed in fields or across field boundaries of Site 4871. These demonstrated that the field boundaries are quite shallow (see 4871) and that agricultural and habitation features lie within the alluvial deposits of Pololu, in some cases up to two meters below the surface. Thus the surface features of Pololu represent only a small segment

of the total archaeological remains of lower Pololu. Almost all of the test excavations had stratified agricultural deposits. In addition, buried field boundaries were located in TE 1, 19, and 31 (Map 4a-4871). Buried cultural features such as fireplaces, earth ovens, and postholes were found in TE 1, 12, 23, 24, 25, and 30, and in Site 4981. (Habitation related to surface features was located in other sites described below). The most extensive excavation of buried habitation and agricultural deposits was given the special site designation of 4893 and is described below.

In sum the entire floor of lower Pololu can well be considered a single stratified site of agricultural and habitational features extending to a depth of two m below the present surface.

b-2. Prehistoric Sites (Map 3)

4838: major irrigation complex located at the base of the nose of Eli'ali'i; terrace facings formed by stacked waterworn cobbles; interior canal(s); associated dryfield areas and habitation (Map 4b)

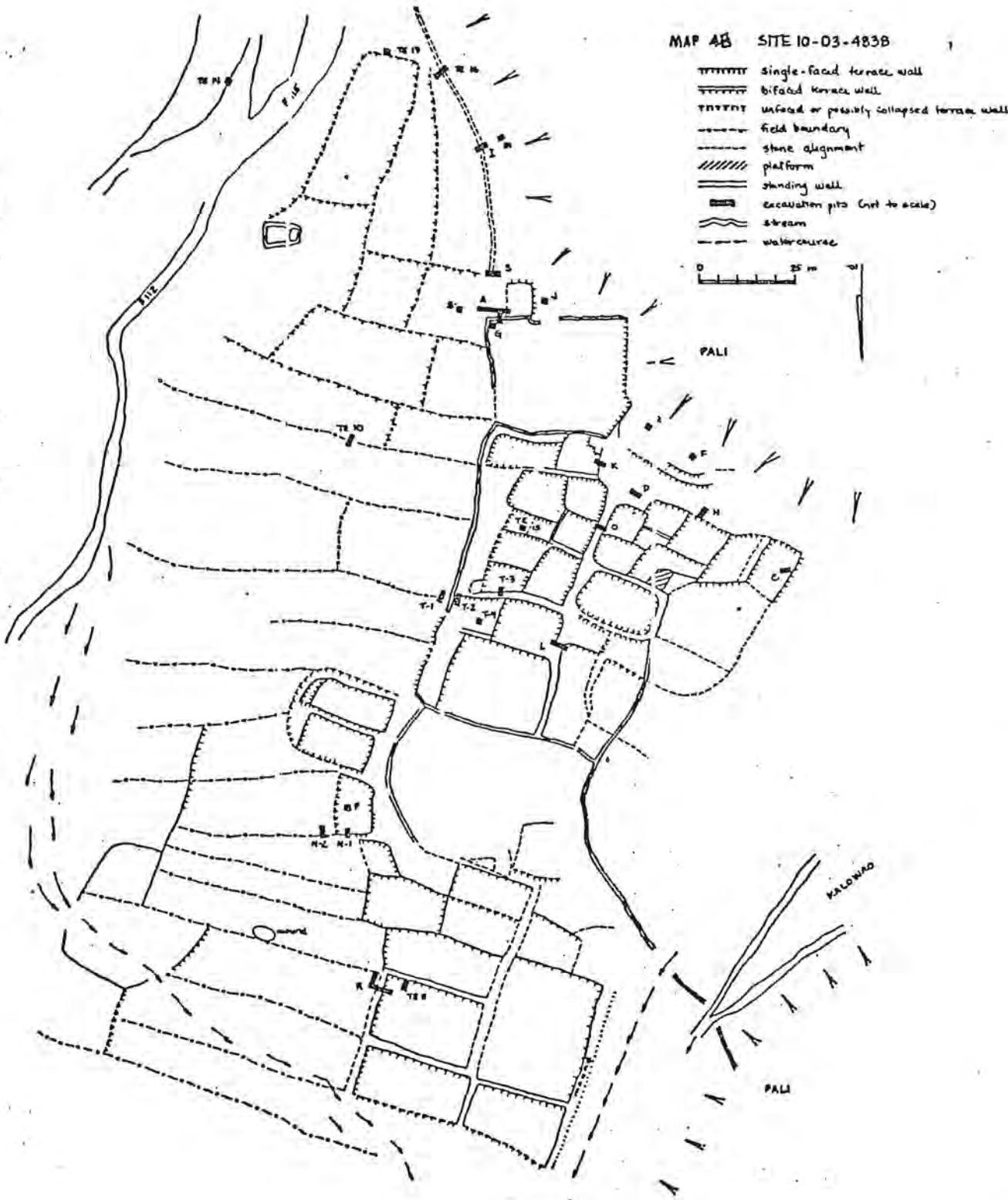
This is one of the few irrigation complexes in lower Pololu. It is an important example of an effort to convert a dryfield area into irrigation fields under conditions of limited water supply. The poor water supply is evident by the poorly developed pond soils and by at least one period of abandonment irrigation. Structural points of interest include 1) associated habitation deposits; 2) the water source; 3) association with dry field areas, and 4) topographic position.

The area was mapped in detail and 23 excavation pits were dug.

The habitation consists of a paved platform located at the head of the terraces and subsurface features elsewhere. Excavations at the edge of the platform produced a stratified deposit with evidence for adz manufacture (from secondary flaking to polishing) and a number of earth ovens, (with pig remains) and fireplaces. The habitation dates as early as A.D. 1600 and continued into the historic period.

The water source was never positively identified. However, evidence points to a permanent waterfall located in a small side gully "waterhole" some 500 m inland of the irrigation fields on the Kohala side of the main lower valley. Water seems to have been directed from the waterfall along a runoff channel at the base of the pali and then

MAP 48 SITE 10-03-4838



into a canal extending along the lower edge of the pali and talus slope before being emptied into the pondfields. This represents an interesting piece of engineering and is somewhat similar to Honopue site 4808.

Excavations of walls and pondfields indicated that the system was probably constructed in at least three stages, the upper end the earliest.

Some of the ponds have several wet agricultural strata, while others show only a slight trace of ponding. There is also evidence of rebuilding within the system, including reconstruction of the central interior canal.

The irrigation complex is in an area of extensive dryfield boundaries (4871). Excavation indicates that the dry fields had been constructed and were under cultivation prior to the building of 4838. When 4838 was built, it followed the basic lines set down by the dry field boundaries. The reasons for this are uncertain. Topography does not seem to be a dictating factor. Social definition of use-areas is one alternative.

Site 4838 is placed on an alluvial ridge which is removed from flood danger from both Pololu and Kalowao streams except under the severest conditions. Thus the basic location and the size of the complex appear to be determined by environmental considerations. It is located above the major flood zone requiring a lengthy canal to the water source and it is limited in size due to the small amount of water available on a permanent basis.

An old wall, probably dating to the turn of the century encloses part of the complex (on Map 4). This may have been used in "trapping" or securing pigs. Several informants indicated that the deep terraces were useful for this.

In general 4838 has a number of unusual features and is certainly one of the most important sites in Pololu.

4862: talus and alluvial fan from a large side gulch (named Kapaoloa) in the rear area of lower Pololu with only meagre evidence for cultural activity presently known. Kapaoloa has a permanent waterfall at its head, but the water goes underground except for periods after very heavy rains. Excavations

yielded evidence of massive recent outpourings of debris born by flash flood from the gully. One possible agricultural soil was located, and one possible wall remnant. The area remains important for investigation because of the paucity of water supply in Pololu. This area would probably not have been overlooked for use. However, the evidence for any such use may be buried beneath several meters of outwash alluvium or else completely eroded away.

Local informants indicate that this area was also used for production of okolehau in the 1930's.

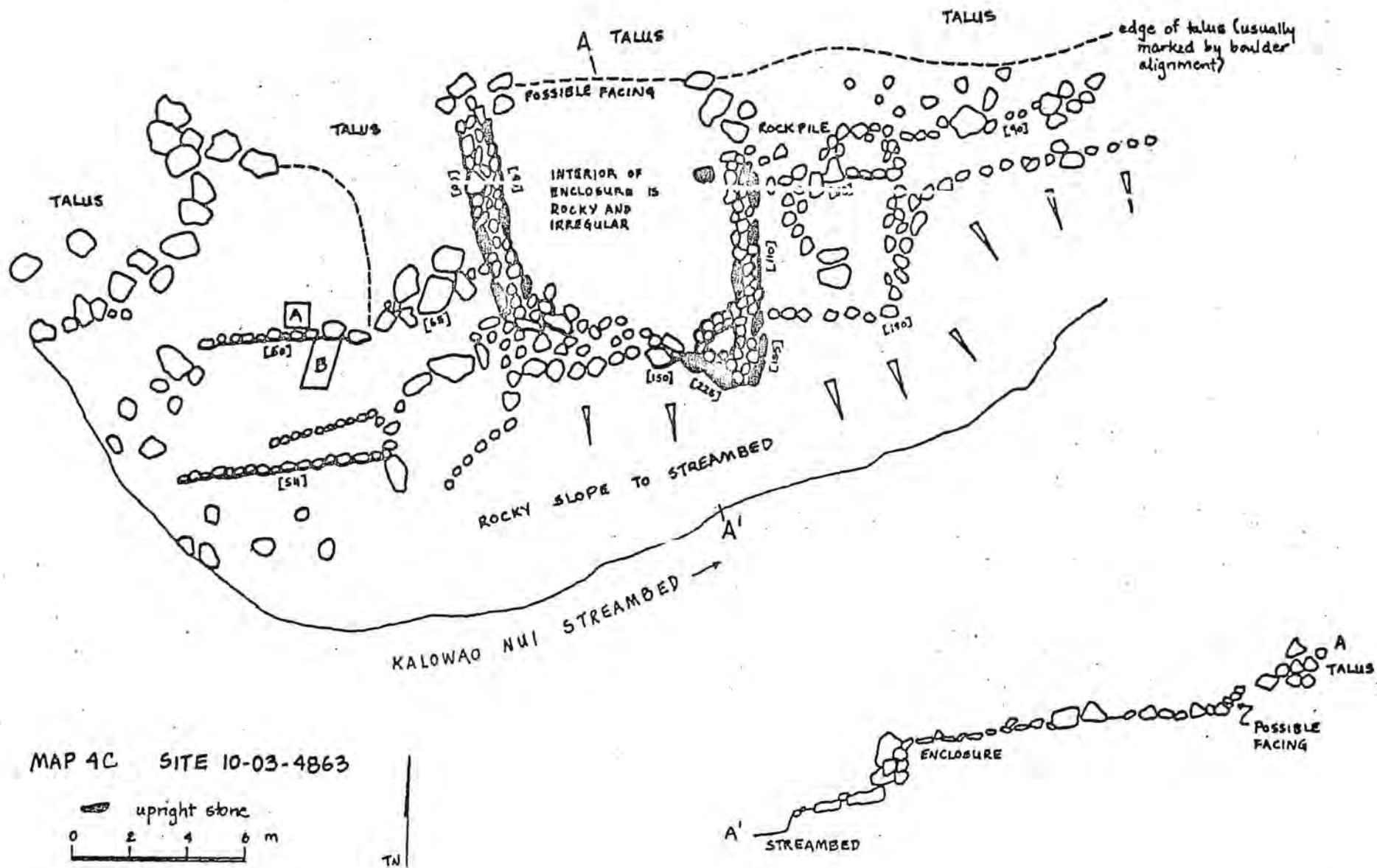
- 4863: a structure of platforms and upright stones located far into the side gulch of Kalowao Nui; possibly a heiau (Map 4c). It is located on the last land bench between the stream bed and the gulch wall within Kalowao Nui and is a partial terracing of the talus slope. The location is very hazardous due to the prevalence for geological missiles to be launched by natural processes from elevations nearly directly above the structure so that they may increase velocity at 32 ft/sec/sec consequently reaching the ground with a mass/velocity so as to render any organic object on said ground into a state of permanent squashedness.

The focus of the site is an enclosure/platform set against the talus slope. A possible facing can be seen against the talus. The three sides of the enclosure were originally well constructed of angular stones. Several large flat boulders are placed upright in the wall. In the southeast corner is a small wall enclosing a pit. The interior is filled with angular cobbles and the floor is very irregular.

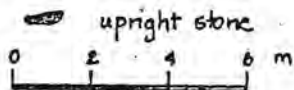
There are no known historic references to this structure but a local Hawaiian informant identified this as a heiau. Its upright stones would lend support to this. Its unusual location would indicate that it is a heiau with a very specific function.

This is an important structure archaeologically, as well as to the people of the area.

- 4864: terraces at the junction of Kalowao Nui and Kalawao Iki gulches. These were not examined in detail or excavated, but they appear to include dry agricultural features and a possible house platform. Old breadfruit trees are growing in association.
- 4866: a large boulder forming a low shelter and associated level areas and alignments, "platforms." This site is located south of the irrigation complex of 4838. The boulder is over 1.5 m high and lies as to form a



MAP 4C SITE 10-03-4863



TN

small shelter. A low wall of stacked stones partially encloses the shelter opening. This may be a shrine and/or shelter. It was not excavated. This is associated with possible habitation platforms which extend along the base of the pali and are bordered by field boundaries to the east and extend to the paved platform associated with Site 4838. The platforms of 4866 are not paved but are created by low stone alignments. Their closeness to 4838 indicate they may be an extension of the habitation which was exposed in the excavation of 4838, Pit A. However no excavation was performed to test this.

4870: an agricultural and habitation complex in the unusual location of the brow of the ridge (Eliali'i) which separates the two main branches of lower Pololu. It is thus out of the valley proper, but located within the Pololu drainage system. Further, it is included within Połolu ahupua'a as defined in the mid-19th century by Hawaiian informants (surveys and Boundary Certificate hearings).

Its relationship to Pololu is evident because its irrigation fields use water which subsequently flow into Pololu and it is connected to the lower valley by what appears to be the remnant of an old trail up the nose of Eliali'i.

It is located about 1300 feet above the valley floor. The present Kohala Ditch Trail passes along the ridge below the site.

Site 4870 consists of some 46 terraces, a combination of wet and dry, and at least one platform living area. Irrigation water came primarily from a spring, with possible supplement from the stream (Kalowao Iki).

Some of the terrace facings are crude in construction (and these are presumably dry) while others are very well formed, and include facings over two meters high. Some of the terrace facings overlook the lower deeper gully of Kalowao Iki just before it drops over the ridge into Pololu valley.

Excavations into a platform area at the head of the site produced evidence of habitation, including fireplaces and earth ovens. Carbon-fourteen dating of material from the ovens indicate that the site was occupied at least by A.D. 1650. It is an important site by virtue of both location and construction and deserves more investigation.

4871: the dryland field boundary complex of lower Pololu; site 4871 thus refers to much of the lower valley floor mauka of the swamp (Map 3).

The field boundaries are formed by alignments of cobble size stones or of low piles of small stones or, on occasion, of a facing two or three courses high. Many of these lines apparently ran the entire width of the valley floor before they were disrupted by erosion. The lines are from 5 to 10 m apart and parallel to one another, with some variation depending upon terrain. Other lines of stone are perpendicular to these cross-valley lines. These perpendicular boundaries appear to be somewhat less regular, and are often much further apart (60 m or more) than the cross-valley lines. The alignments thus form field plots in the shape of very narrow, long rectangles over a great percentage of the valley floor. Their pattern is influenced by topography so that in areas of steeper terrain the lines are closer together and form true terraces. The best preservation is found in the center of the lower valley around Site 4838.

The boundaries are probably the result of a number of factors, including field stone clearing, definition of plots for social purposes, and control of soil movement and silt trapping under periods of low intensive flood. Excavation into the field boundaries in a number of areas indicate that they are always shallow (that is, constructed on the surface with little soil build up), and that in a number of areas they were probably present but destroyed by erosion. Excavations have also indicated that comparable field boundaries are found below heavy alluvial deposits in a number of areas of the valley (e.g. TE 31). The dry agricultural field system which is visible on the surface thus represents only the most recent attempt of a history of efforts to control the agricultural environment of the valley,

4893: an excavation area defined by exposure of stream banks of Pololu Stream, arbitrarily limited to the area from the interior boundary of the rice fields (4800) to 4969 (Map 4d).

Exposed in the stream banks is evidence of alluvial deposition interbedded with agricultural habitation remains.

Remnants of agricultural fields may be traced for the entire distance of the defined site area. At specific points are remains of habitation, including fireplaces, postholes, and scatters of artifacts.

These habitation sites appear to have been temporary occupations probably associated with field cultivations.

Three clearly defined agricultural strata (generally 10 to 20 cm thick) are located in alluvial strata of varying thicknesses. The lowest agricultural stratum is some 2.5 m below the present surface.

Much more research needs to be done on these buried fields and their associated living areas.

4970: a complex of irrigation terraces at the base of a talus and alluvial fan emanating from a small gulch located on the western side of the rear of lower Pololu. Draining into the gulch is a small but permanent waterfall which now goes underground, but apparently was once diverted into the irrigation fields. The head of the irrigation system has been covered with talus and colluvium, so the actual means by which water was obtained is uncertain. The complex consists of at least 6 irrigated plots.

Excavation indicates that there was only one agricultural soil (ponded) within the fields. No origin date has been obtained but pottery in the pond soil indicates that it was probably used in the 19th and perhaps early 20th century.

One of the important construction features is a massive stone facing on the inland side of this complex which serves to protect the irrigation fields from damage from floodwaters coming from Pololu stream through a stream channel adjacent to the site. There is no evidence that Pololu stream ever served as an irrigation source for the main terraces but rather was a threat to the site.

The channel bed itself has several small terraces which were probably used for cultivation.

4972: a large stone facing located at the rear of lower Pololu, adjacent to O'kupe waterfall. This feature is composed of large cobbles and has the remnant of a paved surface. It is probably the remnant of a habitation terrace. Test excavation revealed a fire-pit near the surface of the terrace. This is a logical place for habitation because of the waterfall and pool. The area is relatively free from falling rock and is subject to flood only under peak conditions. There are a number of breadfruit trees in the vicinity. It is probable that additional habitation as well as agriculture occurred in the area, but survey and excavation revealed no evidence for

this. The general area has been damaged by erosion and by talus.

- 4973: a platform remnant on the talus slope on the western side of Pololu. It is probably the feature which was identified on a 1904 survey map (govt. Reg. 2247) as "paepae with god." This notation may have been added to the map after 1904, as the surveyor's notebook does not indicate the source for identification of the "god".

If the "god" is still there it is a very large boulder (2.3 x 1.5 m) lying on its side (face?) on one corner of the terrace. Shrines formed in such a fashion (often called "pohaku-okane") are recorded in general ethnohistoric references (Kamakau 1976:130).

Most of the terrace has been destroyed by talus, but fragments of facings may be seen. No excavations were conducted.

- 4977: Structures in Kalawao gulch. Structures include terraces and platforms, and one small enclosure. A great deal of damage to these has been produced by flooding and talus. Function is not certain but the terraces are almost certainly agricultural, and probably dry in general. Some wet terraces may be present, but are not the majority of the agricultural features. One possible platform was excavated and the results indicated habitation activity.
- 4981: an adz quarry located toward the rear of lower Pololu. The quarry debris (basalt flakes and adz preforms) is found on the surface and in a stratified deposit exposed by the adjacent Pololu stream bed. The known flaking area is some 23 m long by 15 m wide but may be more extensive once subsurface deposits are more fully explored. The debris is adjacent to the pali, which is composed of massive blocks of fine grained basalt which served as the stone source.

In addition to the quarry debris, excavations revealed agricultural deposits and habitation features interbedded with alluvial material.

Adzes and basalt flakes, found in two nearby sites (4838, Pit K, and TE 12),

probably have their origin at this quarry. Adzes were roughed out at this site and then removed to nearby habitation areas for finishing. No wear studies have yet been undertaken, but the primary adz use was probably for forest clearance in cultivation. Additionally the adzes may have been used in soil tilling.

This is an important site. Its location on a valley floor and the stratified deposits are characteristics. Further, the close association with areas of use is significant for comparing manufacturing processes and disposal patterns with those of adzes which come from distant sources (such as Mauna Kea). The site may also contribute to the study of trade patterns.

b-1. Historic Sites (Map 4)

4800: remnants of "Chinese" settlement and rice terraces. The settlement area includes concrete and stone foundations of several structures (map 5a) plus scattered surface artifacts: machinery fragments and glass, with several possible trash dumps. There are also a number of stone-filled depressions which may be from charcoal manufacture. These features are located in the middle of the valley, inland of the upper border of the rice terraces. Additional features which probably belong with this occupation include 4982 (collapsed walls), 4835 and 4865 (both are "ovens") and 4979 (concrete foundation for flume). 4800 is clearly identified with the Chinese occupation of Pololu by historic reference and by the surface artifacts.

The occupation portion of 4800 is on level ground adjacent to the present main Pololu stream bed. The area was probably occupied from the mid-to-late 1800's until about 1926. No excavations or surface collections were made in the settlement area.

On the Govt. Reg. Map 2247 (1904), this area is referred to as "Chinese Quarter" and "Rice Mill." Modern informants indicate that the quarters were primarily for males, whose families lived elsewhere, and included a sleeping house and a cook house. Other structures were for activities related to

rice processing, including threshings; actual milling occurred elsewhere.

The second portion of 4800 is the complex of rice terraces. These are mapped in detail on Gov. Reg. Map 2247 (1904) (72 acres). Abandoned between 1926 and 1930, they were partially destroyed by the 1946 tsunami. The inland sections are still generally intact. The majority are now under swamp grasses but the patterns of the field outlines are perceivable. A small portion of the inland terraces are under tree cover (java plum, noni, guava). The terrace remnants on the inland area of the Kohala side of the valley were mapped and found to be in nearly perfect accord with the 1904 survey map. A good portion of this area is fenced today as a pig lot.

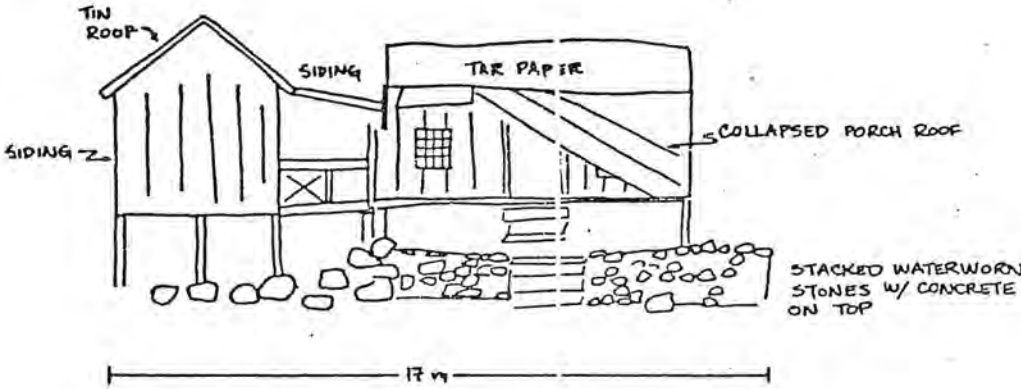
These terraces are probably modifications of earlier Hawaiian taro fields. The extent of modification or expansion was not determined, but an estimate is indicated by comparisons of Maps 3 and 4.

Limited excavations were conducted which demonstrated that multiple wet-field agricultural deposits exist within the main areas of the irrigation system. However, the terraces along the inland border are quite recent and contain no wet soils beneath them. There are stratified deposits which contain the remnants of dryland agricultural activity, probably Hawaiian (associated with the strata in 4893). The upper portion of the rice fields are thus probably an expansion of the original Hawaiian irrigation complex.

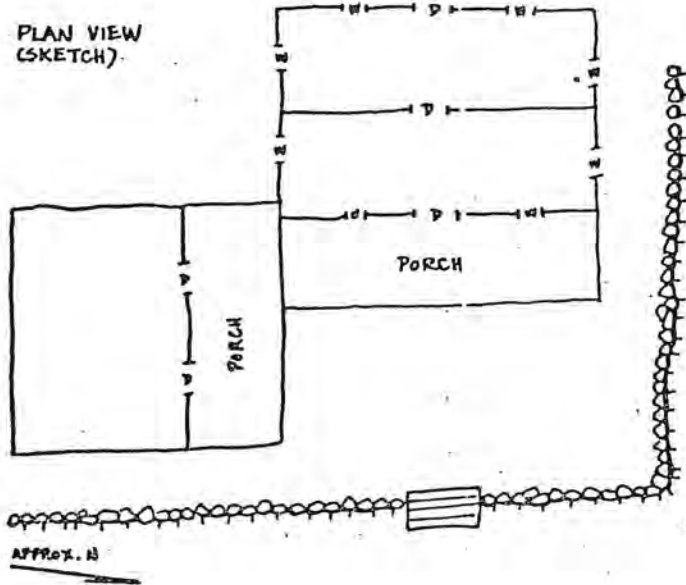
This expansion relates in part to intensification of agricultural production for commercial production, but also relates to a new water source. The Hawaiian terraces were fed primarily from springs located on the Kohala side of the valley. This water supply was supplemented after the construction of the Kohala ditch by a flume (4979) which extended from one of the waterfalls in the side gulch of Kalowao into the rice fields.

Much more research is needed regarding the nature and duration of the Chinese occupation and the nature of agricultural modification of the prior Hawaiian complex.

- 4835: "beehive" shaped structure (ca. 3x3 m and 1.3 m high) made of waterworn cobbles cemented together, with a small opening (30x40 cm) in front at ground level and a smaller opening (20x20 cm) at the rear toward the top. A ramp leads up one side to provide access to the rear opening. The hollow interior includes a floor area which has been dug out below the surface of the ground, making the interior depth from roof to floor about 1.75 m. This appears to be a kind of oven used by Chinese for cooking meat (hung from the rear opening), as described by William Bonk (UH-Hilo). Bonk reports a similar structure associated with the Chinese Society House in Kukuihaile. A similar structure is also found in Pololu (4865). Sites 4835 and 4865 are located inland of the Chinese quarters of 4800, some 150 m and 250 m respectively. Large "charcoal" pits are also found in the general vicinity of each.
- 4836: historic housesite; on the western side of the valley above the rice terraces, the area is generally known as the Ramon property, originally a land grant (No. 9320). The area is fenced, with several stone walls and terraces, and has many domesticated plants. The major structure on the property is a wooden frame, vertical sideboard house, with a tin and tarpaper roof (Map 6). The house was occupied into the 1950's. It has, however, had some upkeep by its owners, some of whom live in nearby areas of Kohala.
- 4837: a large flat-topped mound of stones. It measures approximately 10x10 m and 1.7 m high. Its function has not been determined. While it is possible that it only represents clearing of stones from nearby agricultural fields, it is more likely a purposeful structure, such as for burial. The age of the structure is uncertain. No excavations were conducted.
- 4841: a dry terrace or talus slope of lower eastern side of Pololu. Local talus stones have been stacked to form crude terraces. Some may have been used for agriculture, others only for stabilizing talus. The surface features are probably recent.
- 4842: a large enclosure constructed of stacked waterworn stone located on the eastern side of lower



PLAN VIEW (SKETCH)



Pololu. It measures .50 to 1.10 m high. This is probably an animal pen associated with late 19th century habitation. No excavations were conducted in the area, but it appears that this structure is superimposed over prehistoric dry fields.

- 4843: a large (8.6x9.7 m by 1.45 m high) platform set against a steep talus slope with some crude terraces, located in the eastern side of lower Pololu. Low thick walls are built up on the north and west sides.

A terrace facing has been built up on the talus side some 1.0 m above the platform floor. All of the construction is from talus cobbles.

Prior to excavation it was thought that this was a house platform. However, an excavation trench indicated that it was completely filled with rubble, with no signs of use. It is probably recent in origin (late 19th century at the earliest) and may be associated with 4842 and 4844.

- 4844: a large double enclosure (stacked waterworn stone walls up to 1.5 m high) with stone paving and platform within, located on the Hamakua side of lower Pololu. No excavations were conducted in this feature but it appears to be historic, probably Hawaiian, of the mid-to-late 19th century. One large papaya tree and fallen mango trees are in and around the structure. Houses probably stood on the pavings and platform inside the enclosures. Animals may have been kept in the nearby 4842. Generally this site has the appearance of a "kuleana" houselot of the late 19th century. There are no records to indicate that this is a true kuleana holding, but it is quite similar to such houselots which were located at the front of the valley (as indicated by early maps and photographs). Very little is known about these types of sites and it would thus be of some significance to excavate.

- 4845: stone terraces and walls on a talus and alluvial fan in the first inland gulch of lower Pololu, eastern side. The lower portion of the talus is contained within a 1.5 m high facing. No excavation was conducted here, but the structures seem to be only for stabilization and containment of talus, although

some cultivation within the feature would have been possible. Associated with the features within the gulch is another retaining wall which is located against the base of the pali both north and south of the gulch debris. The wall seems to have been constructed to retain talus. It extends into Site 4846. Fragments of similar walls or talus facing are found along other portions of the pali base, notably in association with 4971 and 4866.

The structures within 4845 are probably historic in origin, but no excavation was done which would demonstrate this.

4846: a series of stone facings and small enclosures along the eastern side of Pololu. All are probably historic in origin. There are also stone alignments beneath the standing structures, which are probably part of prehistoric dryland cultivation as suggested by limited test excavations, and considered to be part of 4871.

4847: stone terraces and walks located in a small side gulch of Pololu, eastern side. The terraces and standing walls are probably historic, stabilization features. The enclosure, probably historic also, may have been an animal pen. Excavation (TE 32) revealed a prehistoric habitation deposit below the level of the enclosure. Nearby is another non-agricultural deposit (perhaps habitation) of basalt flakes interbedded with agricultural deposits (TE 12). This general area needs much more excavation.

4848: stone facings and walls in a gulch mouth on the eastern side of Pololu. A large bifaced wall extends across the gully mouth. At the front of the gully, on the alluvial flats above the adjacent stream bed are rows of stone, and low terraces which are apparently the remnants of a dry-field agricultural system (4871).

Excavations conducted in the gully structures indicate that they are historic and primarily served to retain talus and slope wash.

- 4865: a dome-shaped (now partially collapsed) structure constructed of stacked water-worn cobbles, the upper section is cemented. It is located inland of the rice terraces. There is a small opening at the base of the front and a ramp leading from the front to the rear. The top is collapsed so it is not possible to determine the inside depth. This structure is of the same size and form as 4865. Both appear to be "Chinese" ovens and thus associated with the "Chinese quarters" (4800).
- 4867: terraces and walls creating stabilized slope on western side of Pololu near Kalowao. A large terrace lies downslope at the front of the gully with several small terraces along the gully contour. Some habitation may be in association. Vegetation includes coffee and breadfruit. Most of the construction is probably historic although a prehistoric component may lie subsurface. The overall site was probably for limited habitation and dry cultivation.
- 4868: a stone enclosure, mounds, and platforms on an alluvial flat with dry terraces on the talus behind, on eastern side of the valley. The enclosure is probably historic, but the platforms may be prehistoric. There is a large boulder in association which has a number of small stones placed around it, suggesting a shrine (Pohaku-okane).
- 4894: a large bifaced walled enclosure (stacked water-worn stone wall, up to 1.3 m high) with several clusters of stone piles and a possible platform inside. The enclosure wall is collapsed in several places. The feature is probably historic but was not investigated in detail. It may have been a houselot, an animal pen, or a garden enclosure although no feral domesticates were observed.
- 4895: Platforms and walls located in two gulches on the west side of Pololu Valley, approximately 200 m from the sand dune. The mouths of the gulches are 60 m apart and are separated by sheer pali. A trail cuts across the mouths of both gulches.

About 50 m north from the tree line of the valley floor, the west valley wall gives way to the first and larger of the gulches. This gulch slopes up gradually for about 50 m on the Kohala side of the trail and gives the appearance of a bowl-shaped depression in the valley wall.

Remains of a single-faced wall parallel the trail and may have served as a boundary marker, talus retainer, or barrier to animals.

A tongue of land, about 50 m long, extends about 70 m out into the swamp from the trail and stands approximately 1.5 m above swamp level. Northward and joined to this tongue is a 20 m long extension which protrudes 5 m into the swamp. There are no visible features in either of the extensions.

At the foot of the pali between the gulches are the remains of a single-faced wall running parallel to the trail. The wall measures approximately one m high, and the top of the wall is about two m above the level of the trail. Parts of the wall have fallen, probably due to soil erosion.

In the northern gulch, a one-sided wall about .75 m high runs parallel to the trail. Above this wall is a platform, bordered by the pali to the north, three single-faced terraces to the west, and a boulder, 3 m long, 1.3 m high and 1 m wide, to the south. A jumbled rock wall connects the boulder to the wall along the trail. At the foot of the boulder is a one-course rock wall forming a 1 by 2 m enclosure.

A wall west and parallel to the trail connects to the wall east of the platform. About 7 m from the platform is a break in the wall with a fence post on each side of the break. The wall continues north of the break with remains of a wire fence on it. Due to the poor condition of this section, the extent of the wall is difficult to determine. A flat paved area lies upslope of the wall.

On the eastern side of the trail, a tongue of land 20 m long extends 20 m into the swamp. At the highest point of this tongue a one-course wall in poor condition runs parallel to the trail for about 20 m. It is single-faced toward the swamp. Two parallel terrace walls, below this wall, measure 20 cm high.

The surface of both gullies is littered with historic artifacts: glass, porcelain, and metal.

Historic housesites are noted for these areas on the early map of Pololu Valley (Govt. Reg. 2247).

The areas were tested for the nature and depth

of historic and prehistoric occupation because of their proximity to both the spring and the rice/taro fields. Cultural debris and talus and alluvium were found to a depth of 2.5 m with dates indicating occupation as early as A.D. 1650.

These are valuable sites because of their long history of habitation from the prehistoric period into the 20th century.

4960: a very long, stacked, double-faced core-filled wall (up to 1.2 m high) located in the rear of lower Pololu. The wall extends from the talus fan of a gulch on the Kohala side of the valley more than halfway across the floor of the valley and then turns mauka for over 200 m. It has been disturbed in a number of areas by stream activity and its upper end has been completely destroyed. It may have extended as far as 4970. The wall appears to have been low in many places even before deterioration. This fact and the size of the enclosed area argues against its use as an animal enclosure. It has the general appearance of a 19th century "kuleana" enclosure. No historic identification may be made, but there is a reference to an inland parcel of a kuleana award which was never specifically located. The wall and the award may well relate to 4970, an irrigated taro system, one of the few in Pololu, the only one in this branch of the valley, and thus a valuable piece of property.

4961: a small stone-walled rectangular enclosure located adjacent to 4960 wall. The walls are double-faced, core-filled, and constructed with waterworn cobbles. They are generally 1 m in width and 1.5 m high. The inside facings are in good condition but the outside facings have partially collapsed. A single entrance is defined by large boulders on either side and the entryway is paved with waterworn stones.

Excavation revealed that the structure is constructed on the present surface and that there is no appreciable accumulation of either soil or cultural debris on the interior. The structure was probably constructed in the 19th century, possibly as part of the complex including 4960 wall and 4970 irrigation field. It was probably a house, but was never used for any great length of time. No artifacts were located other than modern trash (the structure is occasionally used by campers.)

- 4962: an irregularly shaped stone walled enclosure in the center of the rear of lower Pololu. The walls are a combination of double-stacked and core-filled, generally 80 cm to 1 m high. Probably an animal pen, it may be associated with 4960 and 4961.
- 4963: a walled enclosure located toward the makai area of the rear of lower Pololu. It has bifaced core-filled walls, generally 1.2 m high. This appears to be a house of 19th century construction, very similar to 4961 and 4964. The structure has been remodeled in the last 10 years by hunters who use the rear area of Pololu. A tin roof has been constructed and camping material piled around.
- 4964: a small, stone-walled enclosure located near the head of the 4838 irrigation system. It has double-faced, core-filled walls (up to 1.2 m high) and a small platform or paving inside. It is probably 19th century in origin and is very similar to 4963 and 4961, all apparently houses used for a fairly brief period.
- 4965: a low-walled enclosure of irregular shape located makai of 4838 irrigation system. Stacked walls only two or three courses high characterize this structure, the interior of which is slightly below outside ground level. This was not investigated in detail, but may be an agricultural feature.
- 4966: a stone-walled enclosure, now collapsed, located in the central area of lower Pololu. This structure appears to have been very similar to 4961, 4963, and 4964; that is, a 19th century house, but no detailed investigations were made to test this possibility.
- 4967: stone facings on talus slope and in small gullies on the Kohala side of Pololu. The terraces may be either agricultural features or only talus stabilization structures. They are probably historic in origin. This and the associated site of 4973 need further investigation. No excavations were conducted.
- 4968: a stone-walled double enclosure with interior pavings, located toward the Hamakua side of Pololu. One cast-iron cooking kettle was found on the surface. This site has the same characteristics as 4844 and probably represents a 19th century houselot, the houses having stood on pavings. No excavations were conducted.

- 4969: stone-walled enclosure located in the center of lower Pololu. This structure is now being used for a "pig trap" and has had a number of modifications. It is similar to 4961, 4963, and 4964 and probably represents late 19th century habitation.
- 4971: a small, stone-walled, semi circular enclosure located toward the rear of lower Pololu. The stones are talus cobbles. The structure does not seem to be a house and no other function is known. It is in an area of flood damage and may have been part of a larger structure.
- 4979: a fragment of a concrete foundation located adjacent to the streambed of Kalowao Nui. Records indicate that a flume ran from both Kalawao Iki and Nui gulches to serve the "Chinese Quarters" and rice fields around the turn of the century. This is probably a fragment of the foundation for the wooden flume bed.
- 4982: area of collapsed walls inland of the rice fields. This site is composed of the remains of an indefinite number of structures. The few artifacts which were located in this area indicate that this may have been part of the Chinese occupation. However, there is neither enough artifactual nor historic information to support this at present. No detailed investigations were conducted in this area.

4. Pololu Complex III: 10-03-4982

a. Description and research

There are four major physiographic regions in upper Pololu: the east branch drained by 'Nameless'* Stream; the upper canyon drained by Pololu Stream; 'Magic Valley'* between the upper canyon and the confluence of 'Nameless' Stream with Pololu Stream; and the lower flanks continuing from 'Magic Valley'.

*Field names, used for convenience only.

The drainage of 'Nameless' Stream forms a short (ca. 1300 meters), relatively shallow, three-sided bowl. Geologically this is a subequal, consequent valley (Wentworth 1943:55) frustrated by the growth of Honokane Nui and defines the east branch of the upper valley. It is traversed by the Kohala Ditch Trail above which surface runoff and soil slippage have somewhat moderated the slope of the valley walls. Here areas of human activity have been identified. Below the trail the walls become exceedingly steep and the stream has cut into a narrow ravine extending down to 'Magic Valley.' No sites were located below the trail.

The upper canyon is a long, steeply walled chasm stretching from the headwall down Pololu Stream to about three hundred meters above its confluence with 'Nameless' Stream. In nearly all of its 2400 meters, the canyon bottom is no less than 480 meters below the valley rim. Apart from two fairly clear stream-cut benches immediately above 'Magic Valley', there is no valley floor in the canyon as it is an extremely active geological feature where, at several places, mass transfer has all but buried the stream bed itself. The one bench on the Hamakua side appears to have never been utilized. But the next upstream-bench on the Kohala side had been the site for one of the Kohala Ditch construction camps. Beyond this point there is no further evidence of human activity in the upper canyon as far as was surveyed.

'Magic Valley' continues from the upper canyon down to the confluence of 'Nameless' Stream. On the Kohala side the valley wall remains equally precipitous as in the upper canyon. The Hamakua wall, on the other hand, is intersected by the east branch of the upper valley thus expanding the valley rim outward. This is virtually the only area in the entire upper valley in which actual valley floor is exposed for human utilization. It is, however, quite narrow as the base of the valley walls are rarely as much as eighty meters apart and here the stream bed averages fifteen to twenty meters across. Nevertheless there are five stream-cut benches in 'Magic Valley', all of which show evidence of both aboriginal and recent utilization and extensive modification.

From its confluence with 'Nameless' Stream, Pololu stream enters a deep, narrow gorge continuing down several falls to the falls at the head of the lower valley. Here, high on the valley walls above the confined stream, there are extensive areas of sloping uplands in which large field systems and likely habitation units were identified. These mid-elevation 'benches' are primarily the result of a single massive intrusion of Hawi Volcanic Series andesites over the east rim of the upper valley, down along the Hamakua wall, and past the present falls at the head of the lower valley (Sterns and Macdonald 1946:176-177). This intrusion and subsequent sheet wash with its associated soil slippage has moderated the average slope

providing nearly thirty-two hectares of land less than thirty degrees of slope. An additional six hectares is located on the Kohala side immediately adjacent to 'Magi: Valley', but it is uncertain if this can be attributed to the andesite intrusion.

The four regions may be re-evaluated in terms of six specific topographic zones, defined by factors relevant to human activities. The criteria are gradients greater or lesser than the maximum usable slope, greater or lesser attendant risk, and finally, the relative availability of water. By these criteria, the six topographic zones are thus defined as:

1. Valley walls of greater than thirty degrees of slope;
2. Stream-cut benches which are subject to frequent rock falls and/or have been mostly or totally impinged upon by subsequent talus accumulation;
3. The stream beds of 'Nameless' Stream and Pololu Stream, except where adjacent to stream-cut benches which are largely free of talus build-up;
4. Stream-cut benches which have undergone little or no talus encroachment and are not generally subject to frequent rock falls;
5. Valley walls of less than thirty degrees of slope; and
6. Small side washes or gullies averaging less than forty-five degrees of slope, or which have, in effect, cut miniature amphitheater gulches.

Both categories one and two may be discarded immediately. The former is too steep for any practical permanent utilization vis-à-vis geological and structural stability, while the latter is equally impractical due

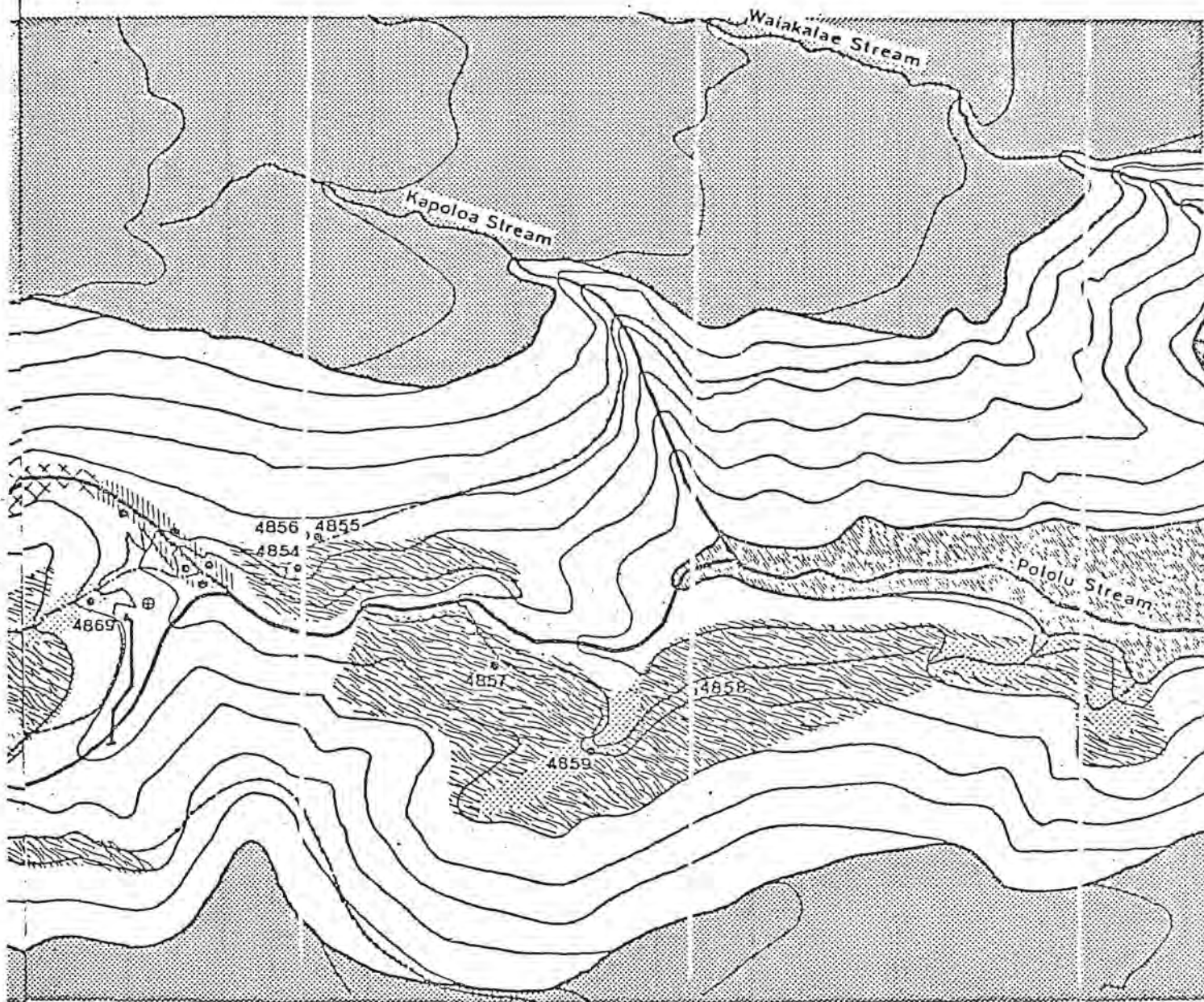
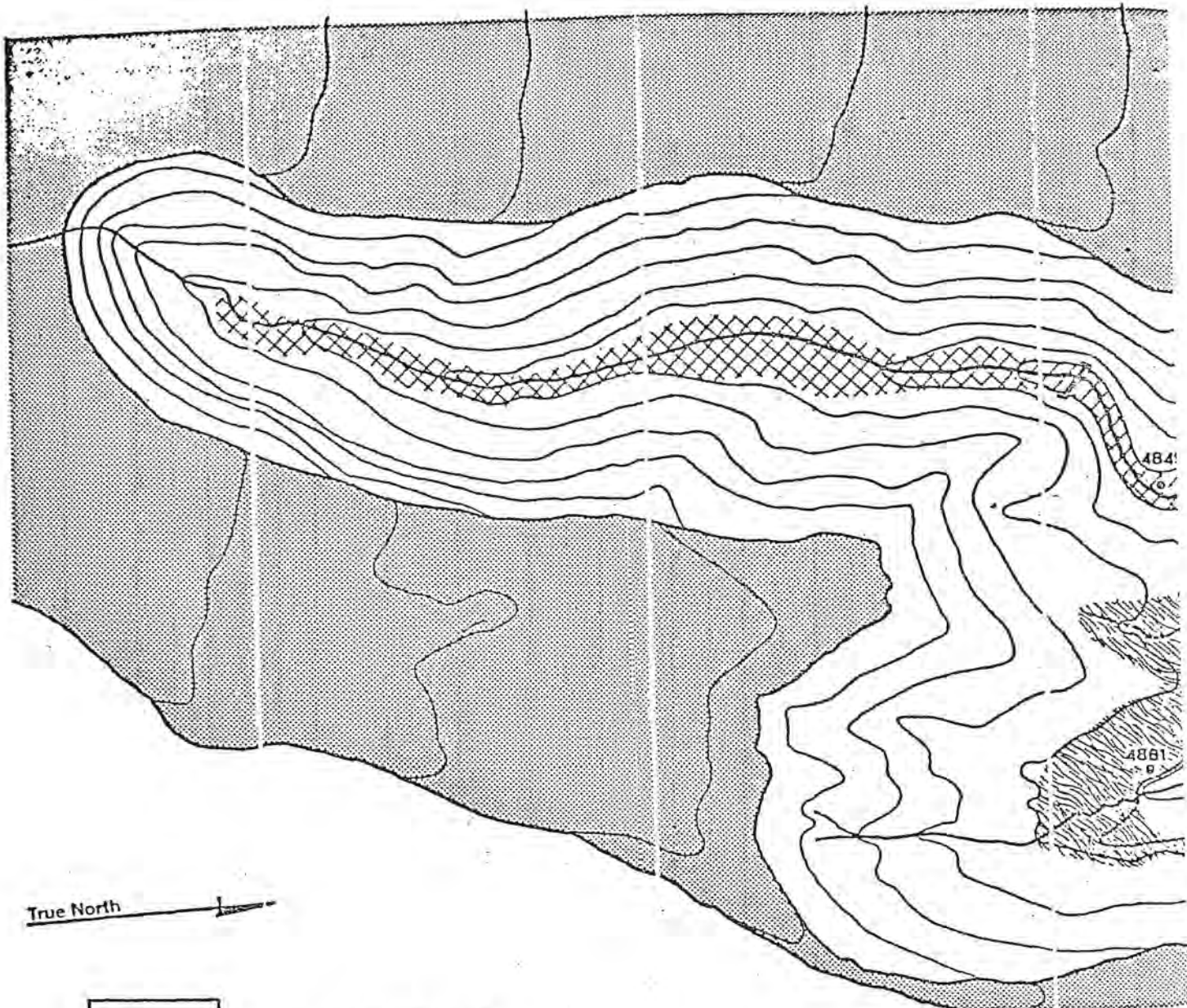
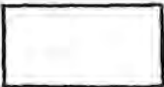





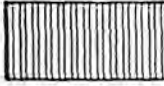



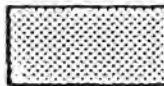
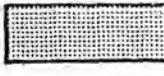


Fig. 7. The upper Pololu Valley, showing the topographic zones and sites discussed in the text. Scale is 1:12,000; contour intervals of 61 meters (200 ft.).



True North 

- | | | | |
|---|--------------------|--|--|
|  | Topographic Zone 1 |  | Upper Valley Camp, rain gauge |
|  | Topographic Zone 2 |  | Upper Valley Sites, for sites in 'Magic Valley' see Fig. 4 |
|  | Topographic Zone 3 |  | Intermittant Stream |
|  | Topographic Zone 4 |  | Kohala Ditch Trail |
|  | Topographic Zone 5 |  | Lower Valley Floor |
|  | Topographic Zone 6 |  | Upper Plateau 'kula lands' |

to the high attendant risk posed by mass transfer. The third category, streambeds, may have been a source for food, as well as water, but no features are present to confirm this.

Three topographic zones remain which are suitable for long-term settlement and subsistence activities. All of the sites in the upper valley, except two which appear solely related to the construction of the Kohala Ditch, are located in these zones.

A crew of 3-5 conducted surveys and excavation for some ten weeks in the summer of 1973 in upper Pololu. Rugged terrain and heavy rain made survey difficult. Walk-through surveys were made and three sites were Brunton mapped and excavated.

b. Sites

b-1. Zone 1: Site 4856

Site 4856 is a stone quarry used during the construction of the Kohala Ditch, 1904-1905. It is located at the base of a large basalt outcrop and consists of piles of stone flakes and quarried basalt blocks. The total area is about 10x25 m.

b-2. Zone 2: Site 4849

Site 4849 is a historic site identified by informants as a camp used by construction workers during the building of the Kohala Ditch, and thus dates around 1904-1905. The site was not mapped. It is about 10x15 m and has several low walls and one possible burial in the form of a slab mound. Many pieces of historic glass cover the site.

There is no evidence on this or adjacent benches of prehistoric occupation. Frequent rockfall and flood make them poor areas for use.

b-3. Zone 3: no Sites.

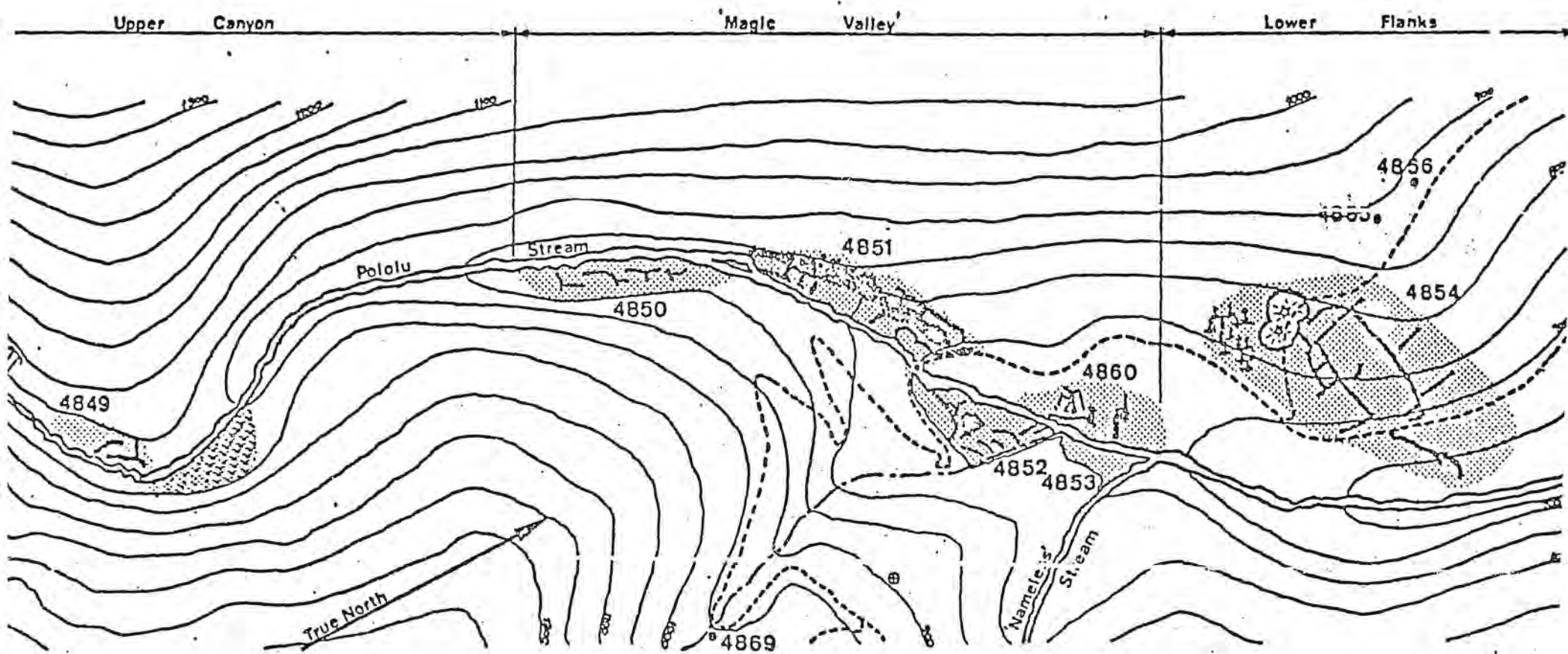
b-4. Zone 4: Sites 4850, 4851, 4852, 4853 and 4860.




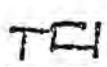




The sites of 'Magic Valley' account for less than two of the fifty-three hectares of useable land in the upper valley. All are situated on primary alluviated, stream-cut benches; all are mainly aboriginal planting areas, most with artificial terracing; all show possibility of having been irrigated, and all but one show evidence of subsequent historic modification. From site 4850 on the Hamakua side of Pololu Stream, they alternate from side to side on the natural benches. The average stream gradient in this area is about ten degrees. The benches, which are never more than two meters above the stream bed at their banks, vary between five and fifteen degrees. This is moderated in all terraced areas by artificial increments less than five degrees of slope. In terms of agricultural requirements, the benches are well suited to more hydrotropic varieties of cultigens including wet taro in several favored areas. This is evident from the predominant kukui forest cover; the lush ground cover of sword fern, Hawaiian ginger, thimbleberry and honohono grasses; and the considerable quantity of feral taro or mana aweu and elephant's ear. The high walls of 'Magic Valley' create shadows, but the photo period averaged eight hours of direct sunlight during the two months of observation.

Site 4850 is farthest upstream in Zone 4. Confined by the abruptly rising Hamakua wall on one side and the stream on the other, this narrow bench has perhaps the greatest attendant risk of any aboriginally used site in the upper valley. Numerous craters from falling rock can be seen in almost every terrace. Eight terraces were identified and may have been irrigated, but no in-flow could be identified with reasonable assurance. No excavation was conducted.

The remains of an abandoned Ditch construction camp were also found in Site 4850. This includes a feature of cut stone, possibly a stoop leading up to a dismantled shack, or perhaps a burial. There are also abundant quantities of Honolulu Brewing Company sake bottles and beer bottles from the Buffalo Brewery of Sacramento.

Site 4851 consists of a number of terraces, probably irrigated, on a large bench (30x100 m). Some terrace facings can be recognized but much of the area is badly damaged by flood and talus. The actual number of terraces is impossible to estimate without much more intensive work. A long, narrow terrace seems to have been paved with cobbles and could have been a company mule trail to the back valley camps.



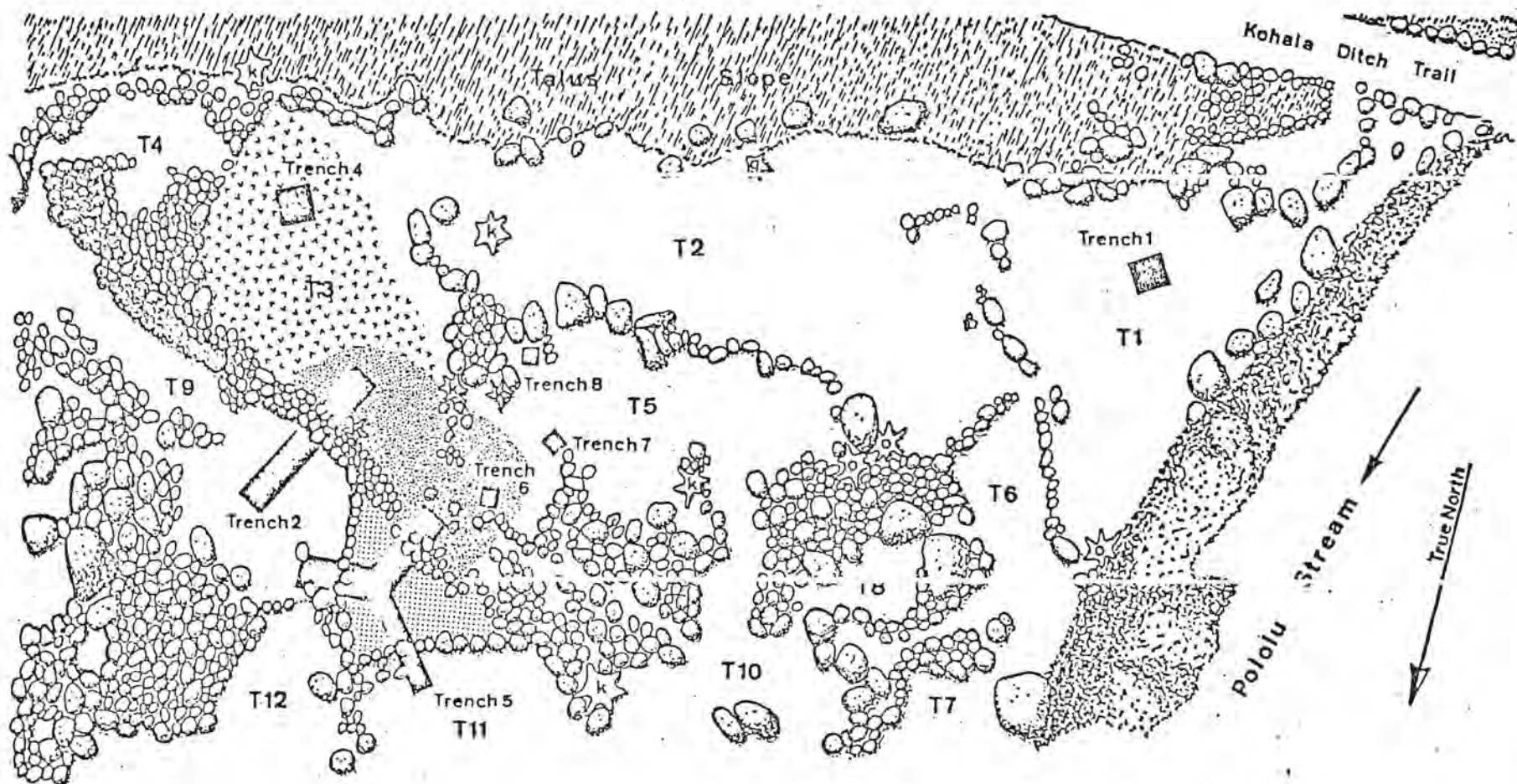
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|  | Sites identified in text |  | Kohala Ditch Trail and Government Trail |  | Kohala Ditch Flume |
|  | Stone structures, walls, etc. |  | Upper valley camp; rain gauge |  | Feral pineapple patch |
|  | Unutilized stream-cut bench | | |  | 'Banyan' Trees (<u>Ficus</u>) |

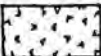
Map 8 Archaeological sites in 'Magic Valley' and immediate vicinity, showing relationship between the sites and the major structural features within. The Kohala Ditch construction camp, Site 4849, and the intervening unutilized bench are shown separated to the far left. Scale is 1:3000, contour intervals of 15.25 meters (50 ft.).


Site 4852 is a combination habitation and agricultural site which lies on the next bench downstream of 4851. The total area of the bench is 35x70 m. The lower portion of the side is some 25 small agricultural terraces, whether irrigated or dry was not determined. Another section of the site contains nine stone-free circles within a boulder area which apparently served for cultivation. The upper portion of the site (Map 7a - a blowup) was at first thought to have been agricultural but excavation produced evidence that the terraces were at least in part habitation platforms. The extent of agricultural use was undetermined. Historic artifacts were found in the topsoil.


Site 4853, only site not significantly modified by historic activities is on the last bench in 'Magic Valley'. This is a bench about 60 m long and less than 15 m wide, part of which is covered by substantial rock fall. It lies immediately downstream from 4852, separated by a large basalt outcrop, and ends at the confluence of 'Nameless' Stream with Pololu Stream. Surface indications and the only test trench excavated in the Site show that the fifteen terraces above the rock fall may have been irrigated by diverting water from Pololu Stream. The test trench cut into a possible habitation area, an isolated, raised terrace-platform. This was re-enforced by its proximity to several sizable openings in the rockfall that could have provided dry shelter and in which a 'digging stick' had been found. But excavation showed a disturbed alluvial soil overlying deep, structured alluvium, pointing more to agricultural use. The only cultigens found in 4853 were bananas. To the downstream side of the rock fall a possible agricultural shrine was also identified along with several more small terraces. Here a broken monochrome, stoneware jar was the only portable artifact recovered.

Site 4860 is a series of features on a bench measuring about 20x70 m. The bench is divided in half by a platform and two free-standing walls, one of which is core-filled. The downstream half may have been an irrigated planting area. Feral taro was growing in a small runoff channel against the talus margin. However, the core-filled wall and the quantity of historic material in and around the platform suggest recent activity. Furthermore, the upper half of the site is dominated by a large, welldefined terrace upon which are two well-constructed enclosures. These are Ditch Company mule pens dating from the construction of the Kohala Ditch (D. Sproat, personal communication, 1973). Without sub-surface testing it is uncertain whether the terrace itself may date to an earlier agricultural occupation.



 Probable extent of
artificial terrace fill

 Probable extent of
charcoal disturbance

 Platform fill

Map 7a Upper terrace complex of Site 4852, upper Pololu Valley. The suggested habitation area is comprised of Terraces 1 thru 5, noted T1, T2, etc. Figure based on plane table measurements. Scale of figure is 1:200.

b-5. Zone 5: Sites 4854, 4855, 4857, 4859 and 4861.

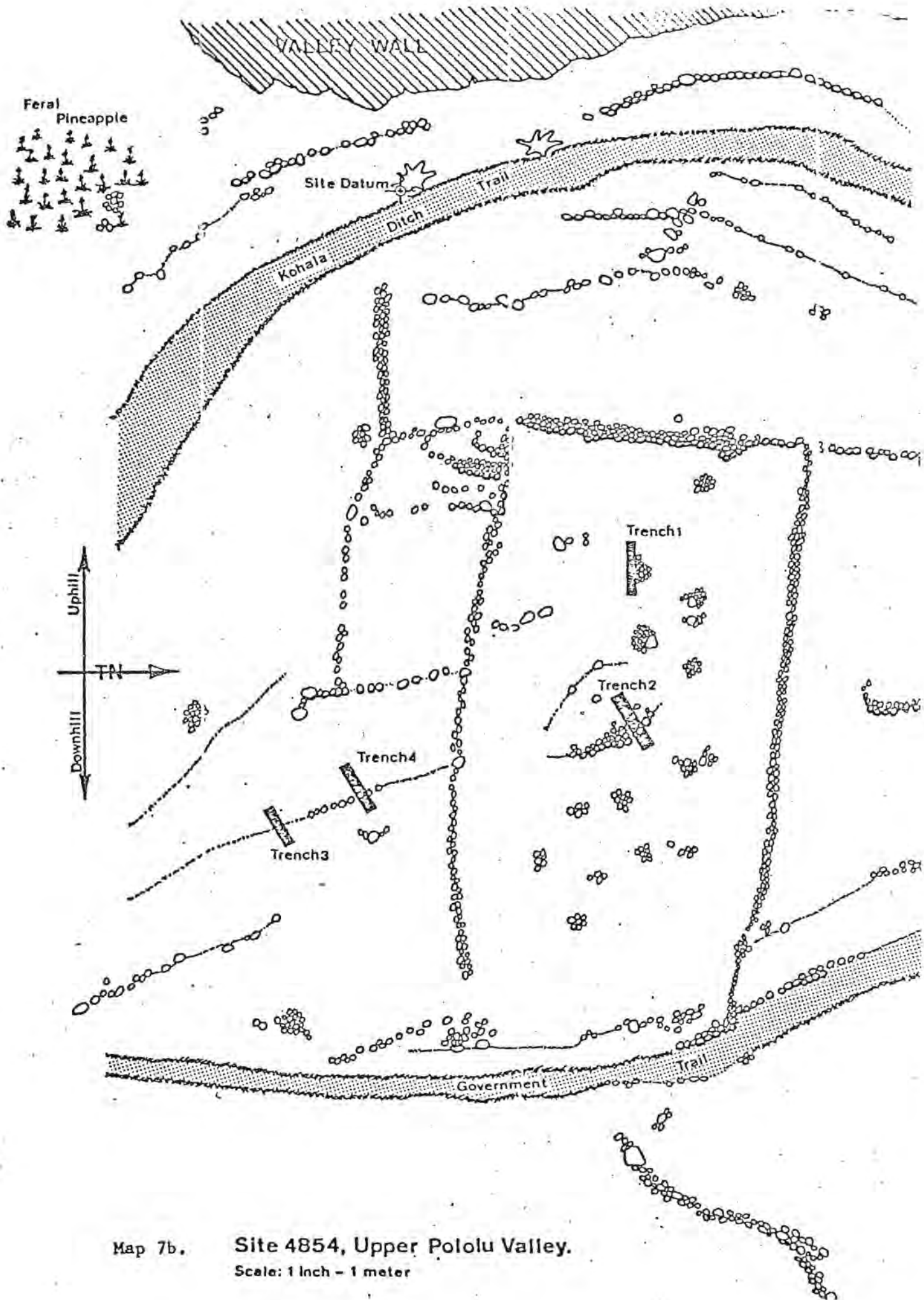
Zone 5 is composed of hillsides where the average gradients are less than thirty degrees of slope. Straddling an old trail, thirty-two hectares of this zone are high on the Hamakua wall and six more hectares lie on the Kohala wall adjacent to 'Magic Valley'. Thirteen hectares are located in the east branch of the upper valley. This accounts for approximately ninety-five percent of all useable land in upper Pololu Valley. Sites were identified in all areas with the two most extensive along the trail; however, not all the available land appears to have been utilized.

The geologic and hydrologic differences between the stream benches and the hillsides have already been presented. It is sufficient here to point out that these soils are all either residual or mass transported detritus, generally unstructured.

4854: hillside complex of boundary walls, terrace facings, numerous rock mounds and dispersed platforms (Map 7 - follows pg. 56). Below the Kohala Ditch Trail, it extends seventy m downhill to an old trail and then continues for another thirty m before disappearing under the dense vegetation near the cliff's edge high above Pololu Stream. Between the two trails an area some sixty m in width is divided into eleven fields of various sizes. Slope ranges from fifteen to twenty degrees. There is one quite substantial faced terrace at the upper end of this area. Nearly two m high, it significantly moderates the natural slope in this portion of the site. Directly below the terrace is the largest of the eleven fields. Bounded by two large boundary walls oriented uphill-downhill, it contains 15 piled rock mounds (Map 7b - a blow up). The lower limit of this field is defined by a remnant wall, only one corner of which remains intact. The old trail, which is never really more than a foot-path, parallels this wall line indicating this may have been part of a Hawaiian trail when the complex was still in use.

The area below the trail was clear of cultural features except for the crumbled remains of a single wall running diagonally downhill across the natural contours. Above the Kohala Ditch Trail another three small but well-defined terraces extend to the cliff face about 10 m further up.

The only surface artifact was a blue-on-white porcelain "rice bowl" lying on one of the mounds. The vegetation in Site 4854 is not much different than what



Map 7b. Site 4854, Upper Pololu Valley.
Scale: 1 inch = 1 meter

has already been described for Zone 5 in general. However, along the Ditch Trail are two large, mature trees of the banyan group and above the trail is a small patch of feral pineapple. No native cultigens were found anywhere in 4854.

Four test trenches were excavated. The soil horizon was shallow, rarely exceeding thirty or thirty-five centimeters in depth; in all cases either in situ bedrock or consolidated taluvium was the saprolitic source of the overlying soil.

Test Trench 1 sectioned through a large piled rock mound two meters in diameter and about one half meter high. Results confirm the deliberate construction of the mound. It may be argued that these mounds are the result of field preparation, or that they served to elevate root crops, such as yams or sweet potato, above ground level to promote better drainage.

A possible agricultural soil containing charcoal flecks was found beneath recent humus and above a sterile saprolitic basement. Test Trench 2 cut through a well-defined terrace and exposed a pit which contained great quantities of charcoal and intact fragments of charred wood, but no midden or manufactured artifacts except for one piece of worked hardwood. The charred fragments recovered appeared to be guava and one identifiable fragment appears to be an ax-cut end of a small hardwood log. Lack of time prevented a more complete excavation so the extent and total content of the pit have not been determined. As such, the fire can neither be associated nor disassociated with activities related to habitation on the platform.

Trenches 3 and 4 cut through the approximate dividing line between two planting fields.

Trenches 3 and 4 were intended to obtain soil profiles and to determine if soil was accumulated behind the stone alignments. The stratification proved similar to that of Trench 1 and there was no significant accumulation of soil related to the stone alignments.

In Trench 3, 23 pieces of basaltic-glass were found in the agricultural soil. No features were encountered. The basaltic-glass is postulated to be derived from nearby habitation features, but time did not permit testing this possibility. Three pieces of glass were dated, all dates centering around A.D. 1640. This suggests occupation of this area at a time comparable to the agricultural development of lower Pololu.

Local informants indicated that some cultivation occurred in this rear area of Pololu, but no specific areas were pointed out. This is supported by the presence of the pineapple and the historic artifacts and excavated feature. Some of the surface features of 4853 may well be part of historic agricultural activity. However, the basaltic-glass indicates that a prehistoric component exists in this area. Further work is needed to more clearly separate the historic from the prehistoric.

Site 4855 lies immediately above and to the side of 4854. This is a complex of a half dozen small terraces, one of which appears to have been a platform for habitation. The exact status of this site, however, is not clear since there were some indications of intermittent running water over the surface of the terraces.

Site 4857 and Site 4859 are separated by another Zone 6 unit, but they otherwise appear to be essentially similar agricultural complexes. Site 4857 is under an almost impenetrable cover of staghorn fern and was not surveyed. Site 4859 is more visible under a guava forest. It consists of large, free-standing boundary walls, well-constructed retaining walls and quite obvious platforms, but no mounds were noticed. The full extent of the site is not known, but features are visible lower in the valley. Below the site, where the guava thins as hala becomes dominant. This is the only local concentration of hala in the upper valley.

Site 4861 is the last in Zone 5. The effect of recent extensive soil slips in this area is unknown as the limits of the site have not been determined. This is the only site in Zone 5 situated entirely above three hundred and seventy meters. The predominant forest canopy in this area is ohia lehua with some koa. There is also a fair sized grove of mamani trees, which may have been part of a cultivated grove.

b-6. Zone 6: Sites 4858 and 4869.

Two areas of the upper valley were defined as Zone 6: the small side washes and miniature amphitheater gullies. Site 4858 is located on the Hamakua side between 4857 and 4859. Site 4869 is along the small lateral stream feeding 4852 and lies just above the present Kohala Ditch Trail. Together they total less than one hectare of land.

Site 4858 a number of small terrace dams constructed in a small, apparently perennial stream. Although much overgrown with Hawaiian ginger and other hydrotopic species, taro remains well represented in these terraces.

These are well-formed terraces and may be historic or at least historically maintained, perhaps as late as abandonment of a Ditch cabin in 1952.

Much less evidence is available from Site 4869. There are four accessible gullies arranged in steps along the small stream leading to 'Magic Valley'. In these gullies were feral taro and banana. The only structural evidence visible was the remnants of a possible 'auwai, or irrigation channel and an access tunnel to an underground portion of the Kohala Ditch, both in the lowest of these gullies. It was difficult to tell how much more there may have been under the dense cover of sword fern, amaumau fern, thimbleberry and Hawaiian ginger.

B. Honokane Ahupu'a

1. Background

The ahupua'a of Honokane includes the main valley of Honokane Nui, the small valley of Honokane Iki, and the ridge Kupehau between Honokane Nui and Pololu. Each of the areas is treated as a site complex.

1. Environment

The Honokane valleys are quite different from adjoining Pololu. Honokane Nui is narrower and deeper than Pololu and has always had a permanent source of water from dikes in the rear of the valley. The narrow canyon of Honokane winds some 9 km inland, ending in an active amphitheatre head. The occupation zones of Honokane are discontinuous land shelves (natural stream terraces) set against the pali sides created by the active stream which meanders through the canyon. While Pololu is in some ways a single site, Honokane Nui is a series of topographically discrete sites. Nonetheless, Honokane is virtually a single occupation area, because all the land shelves show evidence

of Hawaiian occupation. Honokane Iki, across a sharp ridge from Honokane Nui is a small version of the larger valley.

Vegetation on the land shelves in these valleys is predominantly guava, bamboo, kukui, mountain apple, java plum and various ferns and low ground cover.

b. Legends and History

Few references to Honokane in the traditional literature have been located, except for the battles of Puumanao/Pohakumano where Umi, Keawenui-a-Umi, and Lonoikamakahiki are each said to have won decisive battles for island unity. Later, Kalaniopu'u put down a rebellion at a battle on Pohakumano. All of the references indicate that these may be ridges (perhaps only one ridge) in the Honokane area. (Details of these histories are presented under Sites 4946 and 4927).

The isolation of Honokane has probably contributed to this lack of information in two ways: first, major events in the history of Hawaii did not occur in areas generally removed from population centers; and secondly the local stories and tales generated in isolated areas were not disseminated in the general Hawaiian population and were not ordinarily collected by the early chroniclers and folklorists. Even the Makahiki god in Kohala did not journey to Honokane and beyond. As given in Fornander (1919-20: 204), during the month of Melehu, two gods make their rounds, one to east and one to west. On day 25,

"the god journeys until it reaches Pololu and stops."

On day 26, "The god repairs to Mookini."

Early historic references to Honokane are rare.

Ellis remarked in the early 1800's (1963: 273):

We landed at Honokane, and went through the village to the house of Ihikaina, chief woman of the place... Ihikaina received us kindly, and for our refreshment provided a duck, some vegetables, and a small quantity of excellent goat's milk, large flocks of which are reared by some of the natives for the supply of ships touching at the islands for refreshments.

The valley contained fifty houses...

The 1835 census of Honokane lists 66 people (with no distinction between Honokane Nui and Iki). Father Bond's records (Kohala Union Church, Buks I) shows 58 adult conversions from 1838 to 1872 and 25 children's baptisms. From 1839 to 1882, nine people are recorded as moving from the valley, 7 of whom went to Honolulu. There were 25 recorded deaths during this period.

At the time of the Mahele the ahupua'a was awarded to Victoria Kamamalu and has since become the property of the Bishop Estate. Four "kuleana" Land Commission Awards were the only exclusions from the ahupua'a award.

In archival records there are a few hints of conflicts between residents and outside land holders under the new land system, but the major local event with consequences for Honokane was the construction of the Kohala Ditch.

There were still a number of Hawaiians farming areas in Honokane Nui around the turn of the century (according to a modern informant) and a school was present.

After the Ditch was completed in 1906, no more water was available for taro cultivation and the valley was abandoned. Later residence was set up in the rear of the valley by Kohala Ditch workers and their families. One family continued to live in Honokane Iki into the first half of this century, and was followed by a caretaker who remained until the tsunami of 1946 (Wm. Aproat personal communication). The valley has had no permanent residents since then.

Honokane Iki is used now primarily by hikers and as a passage for the trail to inland Awini. Honokane Nui is used for raising pigs and cattle. The upper valley has a cabin which is maintained for Kohala Ditch crew but has no permanent residents.

Kupehau has no historic references (except in survey records). It was part of the Mahele award to Victoria Kamamalu. It is today used for cattle pasturage and has a trail connecting the coastal trail with the Kohala Ditch Trail.

c. Archaeological Research

In the summer of 1972 a crew of 12 spent five days surveying Honokane Nui. Nine worked on detailed Brunton mapping of the two main sites in the lower valley (4809, 4810). Three people surveyed approximately four km of the valley floor (sites 4811 - 4839) from the lower valley to the Ditch Co. cabins in the upper valley, with time available for location and sketching of sites, but not

detailed mapping.

In the summer of 1973 a crew of 3 spent 10 weeks on survey and excavation of sites in the upper valley of Honokane Nui (4874 - 85).

Additional excavations were conducted in the upper valley by a crew of three for two weeks in the summer of 1974.

No work was done in the middle valley in either 1973 or 1974. In the summer of 1974 a crew of four completed the mapping of 4809 and conducted test excavations in 4809 and 4810.

Honokane Iki was surveyed by a crew of two in some six days in the summer of 1974. The ridge of Kupehau was surveyed by a crew of two for four days in the summer of 1974. No excavations were conducted in Honokane Iki or on Kupehau.

d. Archaeological Results

Seven sites were located on Kupehau, 44 in Honokane Nui, and 8 in Honokane Iki. The sites of Kupehau are generally amorphous pavings or boulder lines, some of which may not be cultural. Material eroding from the ridge does suggest the necessity for more detailed examination which will probably produce evidence of agriculture and habitation. The sites of Honokane Nui and Iki are generally coterminous with river benches and are predominantly irrigation complexes and other forms of agricultural sites. The preservation of sites is excellent, the great-

est damage coming from lateral stream erosion.

No excavation was conducted in Honokane Iki or on Kupehau, so little can be said regarding the prehistory of these areas. Basaltic-glass pieces removed from an exposed face of cultural deposits (4920) at the mouth of Honokane Iki provide late dates.

Only limited excavation was conducted in Honokane Iki and this is the basis for the summary which follows. In general, however, the prehistory of Honokane is poorly known and much more research is needed. Not only have few sites been excavated (and these insufficiently), but many sites have only been sketch mapped.

Honokane Nui appears to have had significant occupation involving agriculture about the same time as Pololu, that is in the early 1600's A.D. The settlement of the valley was, however, rather rapid as sites of more or less equal age are found in both the lower and the upper areas. All of the current evidence indicates that in contrast to Pololu the sites of Honokane Nui are quite shallow. There has been no major alluvial build-up on the valley's land shelves since the time of first occupation.

The settlement pattern of Honokane is quite distinct: every piece of land which seemingly could be irrigated is the location of a wet-terrace complex. The only exception to this is areas in the lower valley which were devoted to habitation. However, here, the habitation structures are dense, rather than scattered as is more frequently the

case elsewhere, and often mixed with wet fields. There is only very meagre evidence for habitation in the rear of the valley. However, the dense vegetation in this area makes such conclusions uncertain without much more excavation. In the rear of the valley, areas which could not be irrigated were modified for dry cultivation.

The irrigation systems in the valley employ several means for obtaining water: canals which take off from the main stream, tapping springs adjacent to the site, and run-off canals down slopes from perched springs.

In excavations of the irrigation complexes in both the lower and upper valley there is evidence for only one stratum of pond soil, except for the most seaward portion of 4809. This indicates that water was well controlled in these systems, that there was no oversilting of the ponds and there was no flood alluviation which covered the fields. Only the lower portion of 4809 has multiple agricultural ponded strata and some reconstructed walls, a function of silt deposition in the very lowest section of the large irrigated field system.

The general preservation of sites throughout Honokane Nui is remarkable. Except in areas of very dense vegetation it is possible to walk from terrace to terrace and to follow canals for long distances. The higher portions of virtually every site are largely undisturbed and, except for vegetation growth, appear to have been abandoned only recently. However, the sites are gradually

being destroyed by erosion from Honokane Stream. The stream presently flows only after a period of heavy rains, at which time it often runs heavily for some time. It seldom overflows its banks, but is downcutting and cutting laterally into the banks of the land shelves which contain the sites.

2. Kupehau Complex: 10-03-4933

a. Background

Kupehau is a traditional name for at least one section of the ridge between Pololu and Honokane Nui. The ridgetop is quite narrow at the rear saddle but generally increases in width until it is nearly 500 m across near its front edge, where it ends abruptly some 120 m above the ocean. The ridge is about 4.5 km in length and rises fairly steeply (6 to 15 degrees) from the front cliff to its inland termination about 640 m above sea level. The vegetation in the lower areas is scrub, including stunted guava and grass. The vegetation in the higher areas is ironwood, pine, strawberry guava, and ohia lehua.

The primary surface features today are trails, fences, and a few old and unused telephone poles (a line once connecting to the cabins in the rear of Honokane Nui). There are no structures or standing walls.

The archaeological sites are rather indistinct and no excavation was conducted to clarify their nature. Most are portions of stone pavings or low stone alignments. One possible terraced field system exists and one possible

fortification is found near the narrow saddle. This may be the site of one of the recorded battles which took place on the Kohala ridges.

One local informant (R. Solomon) indicated that some of his family once lived on the ridge in the early part of this century, but I do not know the location.

b. Sites

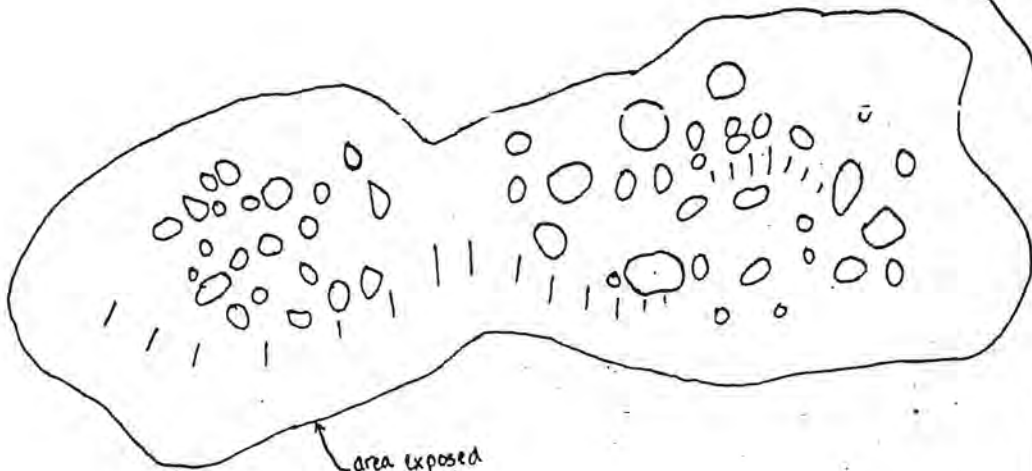
- 4940: roughly rectangular pebble pavement or facing, only partially exposed.
 Area: approximately 40-50 cm wide by 150 cm long
 Vegetation: immediate site area covered with grasses and o'i adjacent area covered with scrub guava and christmas berry.

The site consists of waterworn, close grain basalt pebbles averaging 10 cm x 5 cm in size, laid some 10 to 20 cm below the present ground level. The facing is constructed roughly perpendicular (E-W) to an 11° slope on Kupehau Ridge (N-S). This site is partly sub-surface, with its total extent unknown. There were no surface artifacts or midden except for some possible fire-cracked basalt nearby. No excavation was conducted except for clearing the soil from a small area to determine if the stones continued sub-surface. The function of this paving (definitely cultural) is undeterminable without excavation.

- 4941: possible boulder facing
 Area: 3 x .5 m
 Vegetation: immediate site area covered with grasses and o'i adjacent area covered with scrub guava and christmas berry with chi'a lehua trees

This site consists of subangular close grain basalt cobbles in various stages of decomposition, set into the side of a gully running N-S on Kupehau Ridge. Exposed portions of possible facings indicate an area of approximately 3 m by 50 cm for the main portion of identifiable construction with a face height of 15 to 20 cm. Cobbles are approximately 30 x 40 cm and appear to be exposed by the erosion of the gully side. Identification of this site as cultural is questionable as this may be exposed or eroded rocks in natural formation. No surface artifacts or midden were evident.

EDGE OF VEGETATION

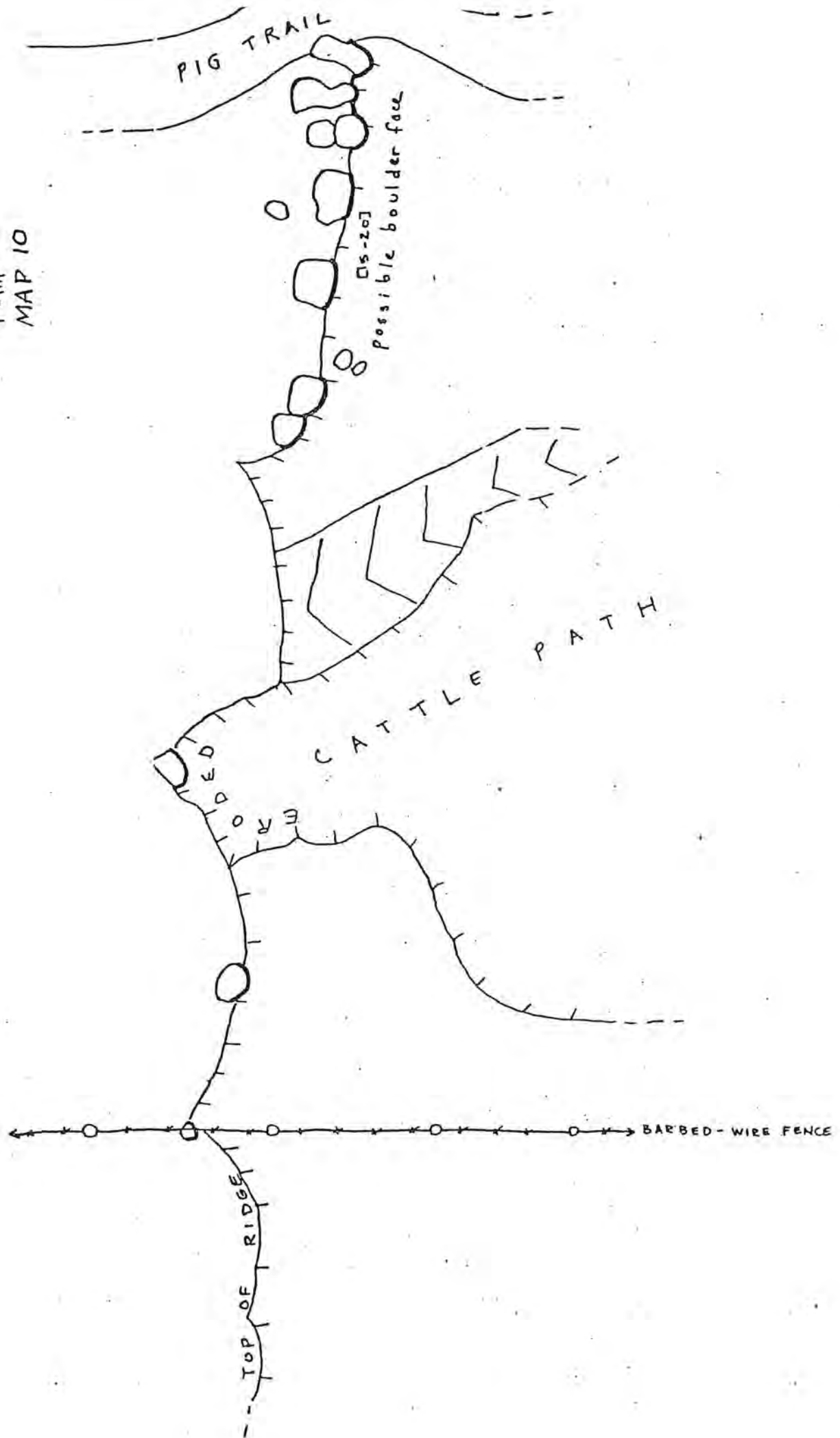


area exposed
to delineate
feature

↑ slope

1940
2" = 1m
MAP 9

N
4941
1" = 1m
MAP 10



- 4942: cobble facing
 Area: approximately 2 x 1.5 m with a 15 to 20 cm face height
 Vegetation: immediate site area covered with grasses adjacent area covered with scrub guava, christmas berry, and o'i

This site is a basalt cobble facing running in an east-west direction on a 15° slope of Kupehau Ridge. It is located between several eroded ruts on the ridge trail. The cobbles are of decomposing close-grain basalt ranging in size from 20 x 20 cm to 50 x 80 cm. This site could be of natural origin but it also happens to be the upslope boundary of a relatively high surface concentration of volcanic glass. The downslope limits to this concentration are approximately 60 m north. Together with the possibly worked volcanic glass fragments (possible cores) were fragments of manufactured glass and porcelain found largely on the trail and a battered waterworn close-grain basalt hammerstone.

Thus whether or not the feature is cultural, cultural activity has occurred in this area, and the site demands further examination.

- 4943: facing of piled cobbles between two large boulders
 Area: 3 m long, approximately 60 cm high
 Vegetation: immediate area covered with grasses and o'i, young guava and scattered oh'i'a lehua trees

This site lies perpendicular to the slope of a small gully and is partially built on an earthen step, creating a flat area in front of the facing. Between the two boulders are piled sub-angular basalt cobbles and pebbles, forming a depression measuring roughly 70 cm in diameter. A manufactured glass fragment was found beneath the depression. The large boulders measure .5 x .5 m and 1.4 x .5 m.

A dry wash runs through the site and may have caused some disturbance.

- 4944: possible pebble paving
 Area: 2 x 1 m, 10 cm high
 Vegetation: immediate area covered with grasses, o'i, and paumakani.
 adjacent area covered with scattered oh'i'a lehua, strawberry guava, and guava.

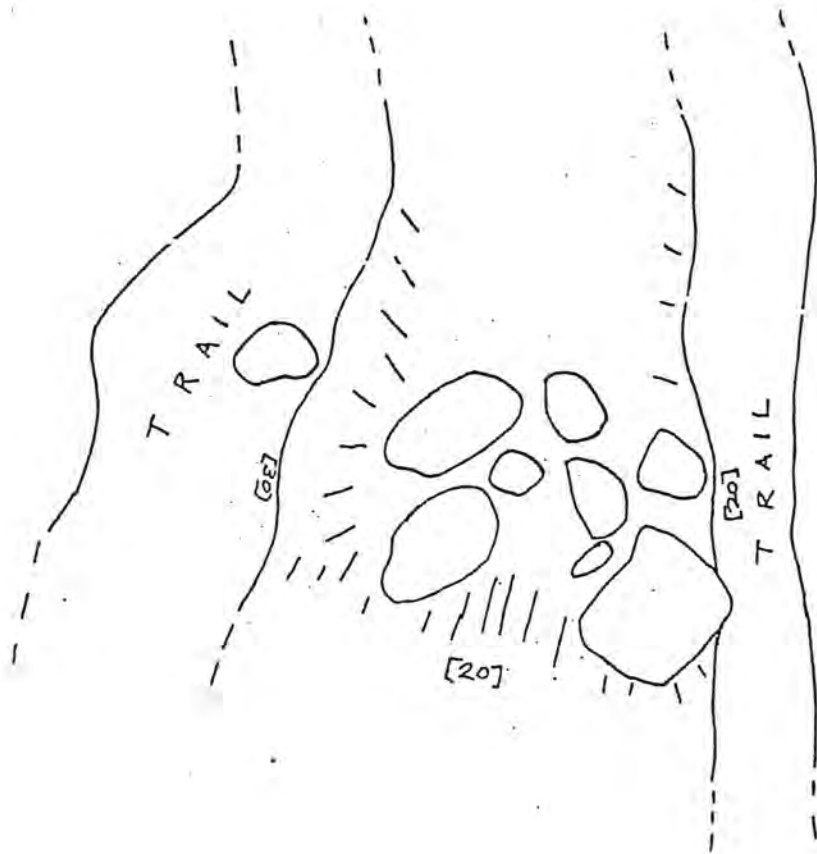
This rectangular feature is located on Kupehau Ridge, where a 2° slope intersects a flattened area. Pebbles are of waterworn close-grain basalt approximately 10 to 15 cm by 5 cm. This site runs

1
VW

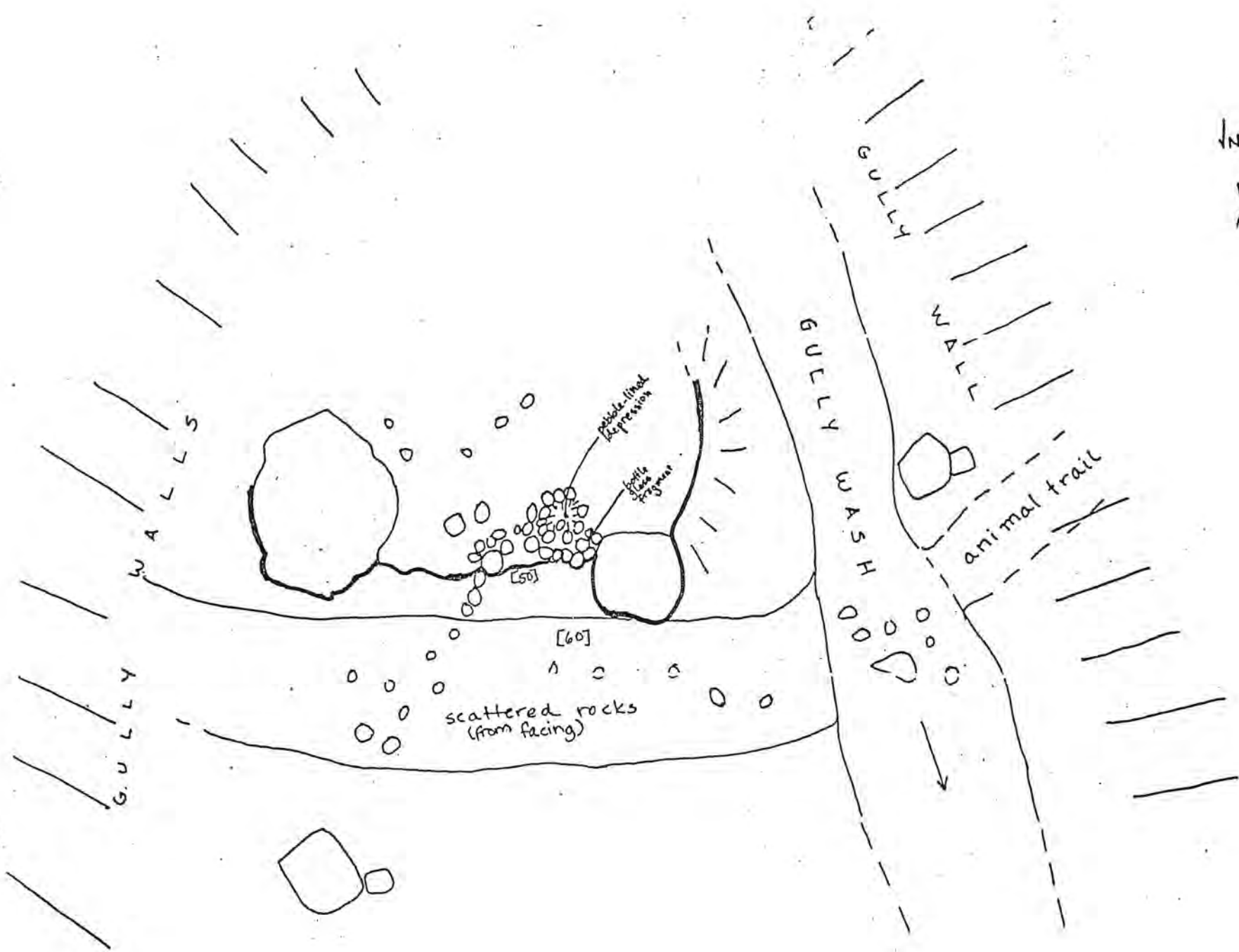
4942 (southern limits)

1" = 1m

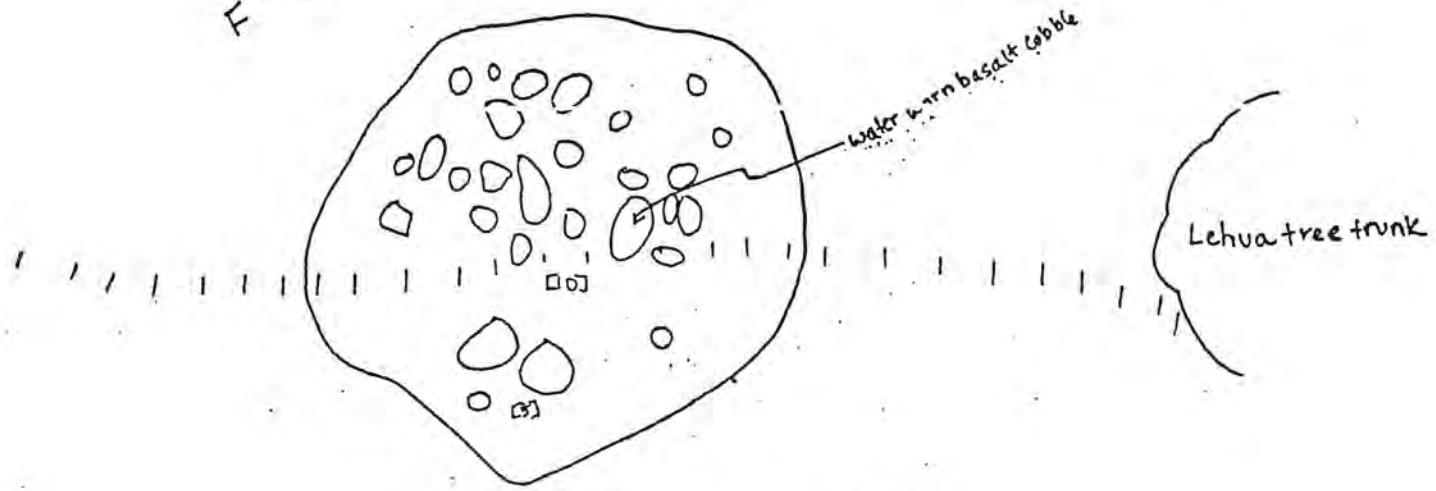
MAP 11



↓ N
4943
1" = 1m
MAP 12



F L A T A R E A



↑ 2° slope

√N 4944
2" = 50cm
MAP 13

roughly perpendicular to the slope and is partially exposed by erosion.

No artifacts or midden were found, though scattered waterworn basalt cobbles were found in the vicinity.

4945: terraces

Area: triangular area approximately 500 m on a side.

Vegetation: sparse ground cover of grasses, o'i, ginger, thimbleberry various ferns, with scattered strawberry guava under a guava and java plum canopy.

This site consists of a series of terraces located on the rear knoll of Kupehau Ridge. The area is characterized by numerous, distinct earthen terraces perpendicular to the slope of the ridge. There is no evidence for running water except for a few small rain gullies.

The terraces have two possible functions. The first is that of dry agriculture. The second is habitation, some possibly historic as there are two charcoal pits in the northwest area. The hill may have served as a "fort" or sanctuary in association with site 4946.

Surface artifacts include a bifaced "chopper" of close-grain basalt found in a concentration of cobbles of similar composition, and a hand-blown, seamless liquor bottle found near one of the two charcoal pits.

4946: an artificial "notch" in the narrow saddle between the hill of 4945 and the termination of the ridge at the inland Kohala plateau.

The notch (4x8 m and ca. 3 m deep) is a feature characteristic of Hawaiian fortified ridges. This site is comparable to 4927. It is possible that this is the fort referred to in the traditional histories as Pohakuomane'o, although there are no corroborating sources in surveys or boundary descriptions containing such a name for this location. There also may have been confusion between this and the area of 4945. Kamakau records the following: (1961:82).

On Hawaii Ke'e-au-moku had set up a fort on a hill between Pololu and Honokane. Ka-lani-'opu'u had climbed the mountain and attacked him, but he got to the sea by being let down by rope over the cliff,

and escaped by boat. This battle was called "Itching rock" (Pohaku-o-mane'o) and "Tearing Crab" (Papa'i-hae-hae).

Kamakau also refers to this as the "fort of Pohakuomane'o" (1961:111).

This revolt of Ke'eaumoku (the father of Ka'ahumanu and a later champion of Kamehameha) against Kalaniopu'u occurred sometime between A.D. 1759 and 1765, according to Fornander's chronology (1969, II:147-148). Fornander's version is that Ke'eaumoku (1969 II:148):

intrenched himself at the fort of Pohakuomane'o, between Pololu and Honokane, in North Kohala. When informed of the revolt...Kalaniopuu crossed the mountains with an adequate force, took the fort by assault...but missed the arch-rebel; for Keeaumoku escaped over the Pali, reached the shore, and obtaining a canoe, was safely landed on Maui... (italics original).

This feature and 4945 deserve further investigation.

3. Honokane Nui Complex: 10-03-4934 (with some sites in 10-06)

a. Background

Honokane Nui is a flat-bottomed, steep-sided, narrow and deep valley. It presently has a high boulder beach with a single stream outlet. The valley is divided into three physiographic sections: lower, middle and upper valleys. The lower valley is about 250 m wide at the ocean, and extends for some 1.5 km inland where the valley narrows to 100 m wide at an elevation of about 160 feet above sea level. The lower valley has two land shelves, separated by the stream bed, each containing a single site. The shelves are from 1 to 4 m above the present stream bed. Fragments of other sites, unmapped, are

located on "islands" in the streambed. The vegetation is predominantly guava, bamboo, and java plum.

The middle valley is quite narrow, 50 to 100 m wide, some 4 km long, with sides 1000 to 1500 feet high along its winding passage. There are some 22 land shelves formed from heavy alluvial and talus deposition and cut by the stream bed. The hazard from rock fall and flash flood in this canyon is great. All of the shelves have sites, many of which are irrigation complexes. There is little evidence for habitation within this section of the valley but the activity involved in construction and maintaining agricultural fields was certainly intensive.

The beginning of the upper valley is marked by the branching of Honokane Nui. Archaeological work was concentrated in the west branch, here defined as the upper valley; the east branch was never explored due to its narrowness.

The floor of the upper valley, less than 4 km long, rises from some 800 feet above sea level to 1600 feet above sea level at the amphitheater head. The valley sides are generally over 2000 feet high. The upper valley is much more rugged than the lower sections. The land shelves are much higher above the stream bed (up to 20 m) than those below. The vegetation is extremely dense, and springs flood many of the land shelves. The Kohala Ditch and Ditch trail have been cut through the back part of the valley to tap the water in the extensive

dike system. The stream flows uninterrupted in the interior portion of the upper valley (before it is trapped by the Kohala Ditch), making travel possible only during dry periods when the stream is only at waist level. Survey in this area is very difficult.

Irrigation complexes are found on benches with available water, while dry agriculture and habitation sites are located on other benches.

b. Sites

b-1. Sites of the Lower Valley

4809: irrigation and habitation complex, western side of lower Honokane.
 Area: total area: 47,379 sq. m. area of irrigated terraces: 41,805 sq. m. total length of site: 960 m. length of irrigation area: 760 m.
 Vegetation: guava, java plum, kukui, bamboo, christmas berry.
 Slope: 2-3 degrees.

The site terrain is a bench, which is a combination of alluvial and mass wasting material, with very little structure. It seems to be the result of early post-Pleistocene fill with subsequent stream downcutting in a central streambed. The subsurface fill is quite massive without any fine alluvial interbedding such as is characteristic of Pololu. The only fine-grained sediments which were in the terrace agricultural soils. The slope of the bench is gradual (2 to 3 degrees) and the contact area between the valley floor and the pali is fairly sharp, with little talus development.

The irrigation complex covers most of the bench (Map 8-1 - foldout at back). There is one major canal, stonelined and about 1x1 m in width and depth, which probably ran off the stream. The entrance into the system has been destroyed by erosion and there is no evidence of a dam. There are several distributary canals. The pond fields (approximately 145 total) being at the very edge of the boulder bench and extend inland in gradual steps, each terrace facing generally no more than 30 to 90 cm high, constructed of stacked waterworn cobbles. Excavations and erosion facings demonstrate that

the system is a veneer on the subsoil. Most of the site has a cultivation soil which has accumulated on the surface due to the construction of the terraces. There is little evidence for modification or reconstruction of the terraces except for those at the mouth of the valley which were subject to some silt accumulation. There are three stratified pond soils in these lower field terraces and corresponding reconstruction of the terrace facings. There are four small habitation areas (prehistoric and historic) among the surface features of the overall complex. However, in excavation, there was evidence for habitation before the construction of terraces in the lower third of the system. Dates from two habitation areas indicated that occupation of the valley began within the first part of the 17th century A.D.

Erosion has destroyed portions of the stream side of the system. A map of the area (McDougal; Bishop Estate) indicates that the total area under cultivation in 1890 was approximately 55,000 sq. m.

- 4810: irrigation and habitation complex, eastern side of lower Honokane.
 Area: total area: 32,700 sq. m. total length: 975 m.
 upper irrigation complex area: 5,200 sq. m.
 upper irrigation length: 215 m.
 Vegetation: guava, java plum, kukui, bamboo, christmas-berry, mango.
 Slope: 2-4 degrees.

The geological characteristics are the same as those of 4810. The inland portion of this site is an irrigation complex of some 53 terraces, fed by one main canal, with water distributed by additional branches within the system. The head of the site is destroyed so the actual intake area cannot be defined. It is possible that the source was a spring rather than the stream.

The slope of the system is gradual (2 to 3 degrees) and the terrace facings are generally low (30 to 60 cm), constructed of stacked waterworn cobbles.

The lower segment of 4910 is a very complicated intermixing of habitation structures and wet fields. The habitation includes large numbers of pavings and platforms (probably prehistoric) and many walls and walled enclosures (many of which are probably historic). There are many historic artifacts on the surface. The limited survey time did not allow detailed mapping of the complicated structures. Brief test excavations were conducted but no datable material was recovered. Detailed excavation is required to determine the function of many of the structures, the time periods involved, and the interrelationship of habitation and agriculture. There is an extremely important area for further research.

b-2. Sites of the Middle Valley

4811: remnant of irrigated terraces

Area: 120 x 30 m (bench area)

Vegetation: kukui, guava, and mountain apple

One fragment of a terrace face remains. The site originally had four to five pond fields.

4812: a set of very small terraces

Area: 20 x 30 m

Vegetation: kukui, guava and ginger

This site is located on a low, wide bench at the mouth of the middle valley. The full site could not be investigated due to dense bamboo growth, but the portion which was visible contained about 25 terraces, measuring from 1 x 3 m to 1 x 1 m in size, with low facings, from 30 to 40 high, of waterworn cobbles. The size of the terraces and their configuration makes this an unusual complex worthy of detailed investigation.

4813: badly eroded terraces

Area: 100 x 50 m

Vegetation: guava, kukui and ginger

This site originally consisted of approximately 10 terraces on a river bench, which is now badly damaged by erosion. Details of the site are not determinable until more careful investigation has been completed.

4814: irrigation system with a double level set of terraces

Area: 150 x 40 m

Vegetation: guava and bamboo

This site is located is on a land bench consisting of two shelves: the lower shelf is set some 3 m above the stream bed, the higher shelf is set another 3.5 m higher. The lower set of terraces has been badly eroded but appears to have had some 20 large fields. The upper land shelf is narrow (about 14 m wide) with terrace facings running perpendicular to the long axis of the bench, and gently curving with the curve of the shelf. Terrace facings, 30 to 50 cm, are of stacked waterworn stones. The upper end of this complex is covered in bamboo, so the water entry is not determinable. However, the terraces are so high above the streambed that it is likely that a spring source was used. No canals are evident and the water was dropped from terrace to terrace. The spiraling terrace pattern determined by the topography creates a rather unusual complex.

4815: a series of walls and enclosures

Area: 60 x 30 m

Vegetation: guava

This is a historic habitation area, some of the enclosures being suitable for penning animals. It

is probable that this was a prehistoric occupation area before modification in the 19th century.

4816: four boulder enclosed plots and one possible paving

Area: 80 x 30 m (bench area)

Vegetation: guava, kukui, and bamboo

Further investigation is needed, but evidence suggests the area had some form of habitation and small agricultural areas. Each plot measures approximately 2 m across.

4817: terrace complex

Area: 250 x 50 m

Vegetation: guava, kukui, and ginger

The site is a multi-tiered complex measuring 250 m long, with a central canal. The individual fields were not mapped, but probably number over 100. Water was taken from the stream and diverted into a reconstructed erosion gully, run through fields, and then into a central canal, from which it was redistributed.

One prehistoric habitation area may be in association and one section of standing walls suggests 19th century use. The site is an excellent example of Hawaiian engineering and water control.

4818: terrace remnants

Area: 240 x 25 m (bench area)

Vegetation: guava and ginger

This site is a long narrow bench with only

fragments of terraces remaining after erosion. The original site was probably comparable to 4817.

4819: terrace remnants

Area: 180 x 20 m (bench area)

Vegetation: guava and ginger

This site is on a long narrow bench with fragments of terraces remaining after erosion. The site was probably not as extensive as 4817 because it was more frequently subject to erosion. A few boulder terraces remain on the lower end. However, the site has one specialized element uncommon in Honokane Nui. A talus slope, 30° to 45°, which drops onto the bench, has a number of facings forming dry agricultural terraces.

4820: terraces

Area: 30 x 40 m (bench area)

Vegetation: guava and ferns

This site is on a small bench heavily overgrown with fern. There are approximately ten agricultural terraces, some possibly not irrigated.

4821: land bench with possible cultural features

Area: 150 x 30 m

Vegetation: fern and ginger

This site is on a bench with heavy fern growth and with large boulders, some of which contain soil which may have been used for cultivation. No excavation tested this possibility. In addition, there

are a number of distinct facings in a talus slope (40°) well above the stream bed (ca. 10 m) which probably served as dry agricultural terraces.

4822: possible soil catchment areas

Area: 120 x 25 m

Vegetation: guava and banana

This bench is well-covered with large boulders creating soil catchment areas suitable for cultivation. Feral bananas and taro are presently growing.

4823: soil catchment areas

Area: 60 x 30 m

Vegetation: guava, kukui, and banana

This bench is covered with boulders which form soil catchment areas. Some artificial facings were noted suggesting modification of the area for cultivation.

4824: terrace system

Area: 270 x 35 m

Vegetation: guava, bamboo, kukui, and ginger

This site is a long, narrow terrace system, with large, deep terraces in the central area. This system extends for about 200 m, and is stepped down from the pali in two and three tiers of terraces. The total number of terraces is around 70. The water intake is uncertain.

4825: Area: 20 x 50 m

Vegetation: guava and ginger

4826: wall fragments

Area:

Vegetation:

This site is on a small land shelf.

4827: possible terrace system, with historic modification

Area: 120 x 30 m

Vegetation: guava, ginger (light cover)

This site is a land bench with suggestions of agricultural terraces, but with historic modifications probably from construction of the Kohala Ditch and Ditch Trail. The Kohala Ditch Trail runs across the upper end of this bench. Structures on the bench are fragments of an old section of paved trail, stone mounds, rough pavings, and fragments of double-faced, core-filled walls. In addition, historic artifacts, bottles, and metal occur on the surface. No informant information was obtained regarding this area, but the evidence indicates previous use as a construction camp.

4828: terraces

Area: 25 x 100 m

Vegetation: heavy fern cover

This is a small bench, with heavily eroded terraces. An estimated five to eight terraces were located on this bench.

4829: wet agricultural system

Area: 40 x 170 m

Vegetation: heavy fern

This site is a wet agricultural system partially obscured by heavy vegetation and by Kohala Ditch Trail construction. Approximately 25 irrigation plots are definable at present. The original number was probably around 35. The Kohala Ditch Trail runs along the stream edge of the fields and construction of the trail included stones taken from the terraces. The trail steps up terrace facings along part of its route.

4830: terrace remnants

Area: 30 x 60 m

Vegetation: fern, ginger, and guava

This site is a small bench with remnants of terraces in highly fragmentary state. It is not possible to estimate the number of original terraces.

4831: terrace remnants

Area:

Vegetation:

This is a small bench with remnants of terraces in highly fragmentary state. It is not possible to estimate the number of original terraces.

4832: possible terraces

Area: 55 x 30 m

Vegetation: fern, ginger, and guava

This is a long bench under extremely dense vegetation. There are some suggestions of terraces,

but clearing is required before this can be verified.

4833: platform

Area: 2.5 x 4 m

Vegetation:

This site is located at the edge of a small terrace; and is paved with small stones, level and about 10 cm high. The purpose of the site is unknown.

b-3. Sites of the Upper Valley

4939: a land shelf which contains the cabins of the Kohala Ditch Company and two sets of agricultural terraces

Area: 300 x 80 m

Vegetation: guava, staghorn fern, and cultigens

This is one of the widest land areas in all of Honokane and is thus a relatively safe location for habitation, an important factor in the location of the cabins. Other cabins (4891, 4882) constructed further upstream were destroyed by landslides. The Ditch Co. originally maintained work crews and their families in these cabins, but this practice was abandoned over 20 years ago. Two cabins still stand and a third has been allowed to collapse. There are a number of small sheds, stone walls, and fences. A set of irrigation terraces in the rear of the cabins may be prehistoric terraces, but they show signs of having been historically reconstructed.

Additional terraces are located in dense fern growth at the northern end of the bench. They were

not mapped.

4874: Irrigated Terrace System (with historic modification)

Location: East side of upper Honokane Nui. Slightly upslope of the cable bridge crossing next to the KDC cabins.

Vegetation: Dense honohono grass, sword fern, soft ferns and midnight sweetness. Some guava and kukui trees are present.

Dimensions: 65 x 174 m

Slope: 2 to 3 degrees

Photo-period: 6½ hours per day of direct sunlight during the month of July

Site 4874 is the largest irrigated system in the upper valley. Detailed maps, including three site profiles, were drawn and Brunton slope readings were recorded from terrace to terrace in areas that the flow patterns were questionable.

Fire pits were excavated to obtain details of construction and to determine the history of land use.

This site is situated on a bench of 4 to 7 m elevation above stream level. The bench is the largest in land area within upper Honokane. A lower bench separates the site and the stream. The distance between the site bench facing and stream ranges from 0 m to an estimated 30 m. The site is bordered by a sharply rising talus on the E and a finger ridge on the S. This ridge, which was formed by a landslide, extends steeply and perpendicularly from the pali and truncates at the stream edge. Its truncated facing is vertical and is an estimated 12 m high. The northern border of the site has no well defined boundary, as site features become progressively harder to define due to poor condition. The western side has been eroded and terrace remnants stand at the edge of the bench.

Guava is the predominant tree type, with some kukui. The underbrush is primarily honohono grass and swordfern. Swordfern grows only on the W side of the trail and is extremely dense. No other vegetation

is present except guava. A sharp swordfern-honohono grass interface occurs W of and within a few meters of the trail. This honohono grass forms a 18 meter wide mid-site strip (N-S). Soft fern and midnight sweetness are found E of the honohono growth. The soft fern and swordfern areas are shaded by trees while the honohono area is not.

The KDC trail bisects the site in a N-S orientation. It is curbed and raised (25 to 30 cm) above ground level, paved in places and also "ramped" in areas close to terrace faces.

A 1.5 x 4.75 m stone faced, concrete rectangular platform is located in the central area. Its side facings average 35 cm in height and are constructed of waterworn boulders (20 to 35 cm) locked in place with mortar. The surface is smoothly paved. This feature is assumed to be of KDC construction; its function is unknown.

A site-long embankment (N-S) is situated slightly E of the mid-site axis and forms a prominent feature. (Fe. 06).

A KDC retaining wall is "L" shaped, measuring 12 x 3.5 m. The long segment functions as a trail embankment; the function of the short segment is unknown. It is 70 m high, of good construction, and in excellent preservation.

A total of 70 terraces was counted, with the major ones located between the embankment and stream drop-off. Planting areas averaged 4.5 x 4.5 m and ranged from 15 x 14 m to 3 x 2 m. Facing heights averaged 40 cm and ranged from 1.0 to .3 m.

At the southern (upstream) end of the site, high in the talus by the finger ridge cutting out to the stream, is an erosion channel that, with the aid of some cultural modification in the form of check dams or settling basins, feeds into a canal. The canal runs for 126+ m (3/4 of the length of the site) parallel to the talus and stream. Construction of the canal was examined in Pits A and C and found to be generally large water worn boulders with hints of crude bottom paving, and lenses of clay, sand, and alluvial fill.

One curious bend in the canal occurs near the middle of the site between Pits A and C. The canal above the bend runs along the down slope side of a reinforced embankment and may be taking advantage of an old natural erosion channel. However at the

bend, the canal makes a sharp right angle turn to the west toward the river then after 8 - 10 m, it turns sharply north again to resume its course parallel to the river. The canal runs away from the embankment for its remaining 40 m. Additionally, the last 10 m have curb stone walls built up to heights of 1+ meter in places with the curbing doubling as a terrace wall.

Traces and actual pockets of grey clay were found in the terraces immediately adjacent to the canal. Pits B and D (on the stream side and down slope of the canal) contained various amounts and kinds of deposits of grey clay, strongly suggesting wet field agriculture for this complex. Pit E, above the canal and in a rougher talus area, contained no such clay layer, suggesting dry agriculture.

The water source has been hypothesized to be a spring originating some where up the talus/ cliff face to the south-east of the site. This hypothesis is supported by the fact that the canal originates at the base of slightly modified talus run-off channels and the river is an average of 8 m below the level of the wet terraced area.

Several embankments (some culturally reinforced) run through the bench generally parallel to the present stream course and are most probably old river banks formed by the meandering of the river (alluviation erosion). The most prominent embankment forms the west border of the site. There are possibly two benches below, and at least one major reinforced embankment above the boundary embankment just described. The upper embankment is incorporated into a wall supporting the upper dry terrace area, and bordering the lower wet agricultural complex.

The construction above the reinforced embankment is generally low irregular alignments of talus stone and boulders, which may have served as small plot borders or soil retainers. The construction below this wall, at an elevation where it is possible to irrigate from the canal is a more regular layout of terrace plots, with finer construction of the walls. The terraces are rectangular to square with large plots conforming to level ground, and smaller plots for more sloping ground. The field areas are level and generally free of stone, being retained on the down slope sides (generally north and west sides) by low stacked-rock walls. This wall construction was examined in Pits B and D and appears to be sloped stacks of rock, usually water worn 35+ cm and "in situ" boulders of basalt (porous and dense), with mixed

soil fill on the upslope side for reinforced strength to hold up the wet pond soil above.

No evidence for prehistoric habitation was found.

4875: Irrigated Terrace System

Location: An estimated 60 meters South of site 4874.

Vegetation: Predominantly swordfern and honohono grass with some scattered guava

Dimensions: 80 by 45 meters

Slope: 2 degrees

Photoperiod: Estimated 6½ hours per day of direct sunlight during July

This site is bounded by the talus on the east and a 7 m dropoff on the west. A canal runs along the talus border. Segments of this feature are well defined by curbing but the larger part remains uncurbed and a canal-like depression is all that is evident. It averages 80 cm in width and 50 cm in depth. Length of this feature is estimated at 50 meters and its water source was not evident but is speculated to be from spring or waterfall activity on the East pali. The stream as a water source is improbable due to the bench height above stream level, plus the upstream topography of this site does not look conducive for water diversion.

Twelve terraces were located and are in fair to poor condition. Wall heights average 50 cm and planting areas average 5 by 5 meters. Stones are missing from terrace faces, perhaps for construction of the Ditch Company trail which bisects the site. All features are of multiple stack construction.

4876: Terrace System

Location: On up-slope side of trail (about 35 meters South of presently cultivated, fenced-off taro and watercress patch.)

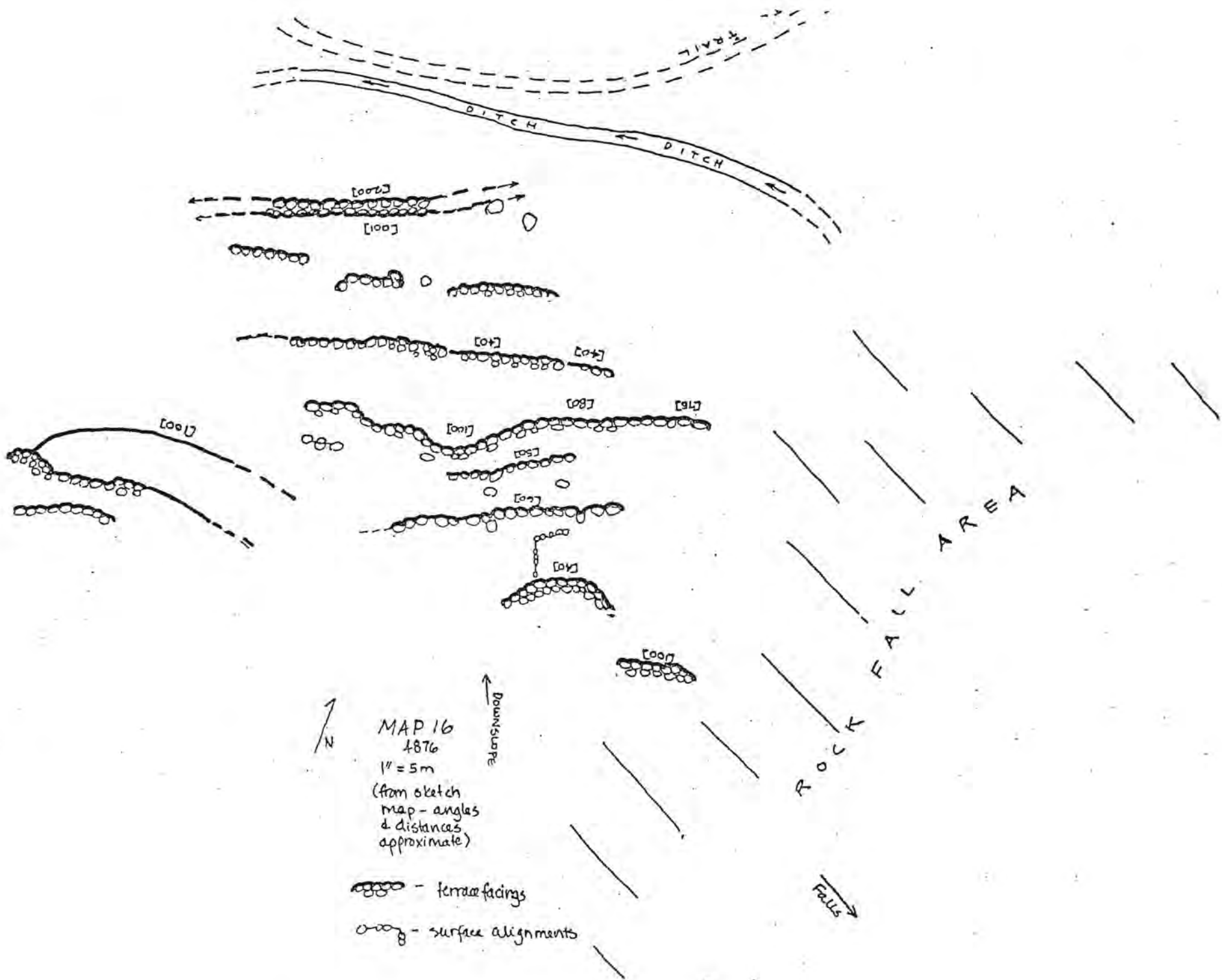
Vegetation: Moderately dense fern and ginger. Some guava trees and banana plants are also present.

Dimensions: 25 by 45 meters.

Slope: 13 degrees

Photo-period: Estimated 6½ hours per day of direct sunlight during July.

This site is bounded on the north by a small concrete ditch (auxiliary to the Kohala Ditch) with the trail running parallel to it. On the east is a steeper slope and active rockfall area. The system terminates on the south where a vertical



MAP 16
4876
1" = 5m
(from sketch
map - angles
& distances
approximate)

↑
DOWNSLOPE

- terrace facings
- surface alignments

ROCK
FALL
AREA

Falls

facing marks the base of the pali.

Fifteen terraces were noted, all of which are in a fair to poor state of preservation. Wall heights are between 1.0 and .4 m. Construction is fairly crude. Lengths vary between 12 and 3 meters and generally conform to the topography.

A waterfall exists up-slope and 30 to 40 meters SE but no water diversion features were evident. The only flowing water source to this site, if any, must have come from the pali area to the south. The site is 15 to 19 m above the stream with no possible means of diverting water to the area.

It cannot be definitely stated whether or not this site is irrigated. The crudeness of construction does not appear conducive to an irrigated system nor does the degree of slope; the erosional effects of water flowing on this degree of slope would be hard to control. Underground seepage keeps the soil wet enough to support a non-irrigated crop of taro.

4877: Irrigated Terrace System

Location: Stream side of trail (ten meters south of cultivated taro and watercress patch.)

Vegetation: Dense honohono grass with some fern, ginger, and thimble berries.

Dimensions: 35 by 15 meters.

Slope: 3 degrees

Photo-period: Estimated 6½ hours per day of direct sunlight during July

This site is bounded on the south by the 3 to 4 m trail embankment and on the north by a 3 to 4 m drop-off to the stream. The downhill slope and long axis of the site is aligned with that of the stream.

The range in terrace dimensions is from 10 by 7.5 m down to 1 by 2 m planting area. Two large contiguous terraces incorporate the SW end of the complex and it is down-slope of these that the terraces become variable in orientation and smaller in size. Erosion of the bench facing along the drop-off border has caused the partial destruction of the border terraces. Terrace facings are generally between 75 and 35 cm in height but a few reach 1.7 m.


No water source is evident for this system. The site lies about 12 meters above and 24 meters from the stream. Water diversion from the stream seems feasible but would have to have been done a fair distance upstream. Possibilities of spring and/or

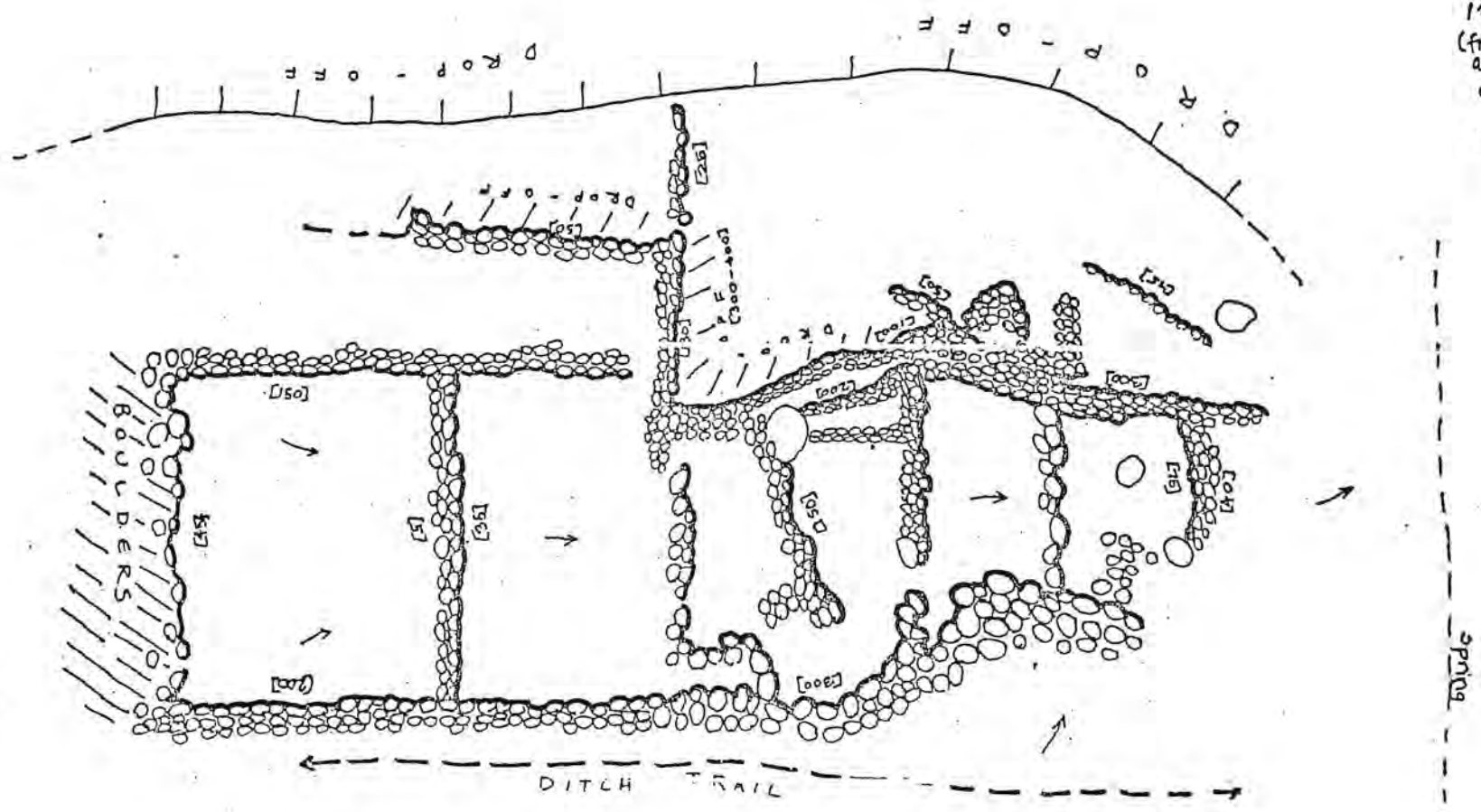
← Stream ~25m

↘ NW

MAP 17 4877

1" = 5m
(from sketch map -
angles & distances
approximate)

 - terracofcings



waterfall sources are also quite feasible but not evident. The construction of the Kohala Ditch Company flume has changed the Hydrology of Honokane East Branch and this makes speculation of site water sources even more difficult.

This system is labelled as irrigated on merit: of it's size, well constructed terraces and the readily available water source up-slope from this site.

4878: Wall

Location: 35 meters east of the Kohala Ditch Company (KDC) storage shed adjacent to the pump and dam site.

Vegetation: Extremely dense high ginger.

Dimensions: Unknown.

This feature is a free-standing wall found in the vicinity of other KDC construction (dam, storage shed and pumphouse). Five meters of it's length were cleared and sketch-mapped. Average height is 60 cm.

Because of it's excellent condition and association with other historic features, it is assumed to be of KDC construction. These features are shown on

4879: Terrace System

Location: 50 meters up-trail from the storage shed and on the east side of the trail

Vegetation: Moderate growth of fern and honohono grass.

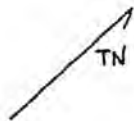
Dimensions: 40 by 8 meters

Slope: 5 degrees

Photo-period: Estimated 5 hours per day of direct sunlight during July

The trail and pali run parallel to each other at 10 m apart and have a shallow depression between them. On the north, a large stone buttress runs perpendicular to and abuts the trail and pali on each of its ends. It is 5.5 m in height at its point of contact with the pali and slopes down to 0 meters where it contacts the trail. This is the northern boundary of the site and is of KDC construction. Iron cables were incorporated in it's construction. The purpose of this structure is unknown.

It is within the depression area that the pre-historic portion of 4879 lies. Terraces were not well delineated, partially due to crude construction



MAP 18

4878

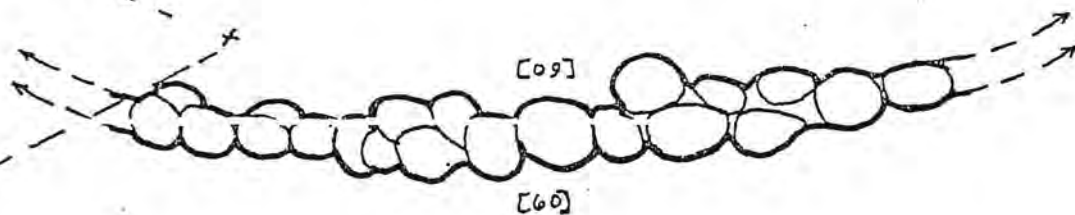
2" = 3m
(from sketch map -
angles & distances
approximate)



- free standing
stacked wall

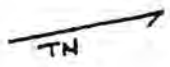
260° -
~ 40m to
center of storage
shed

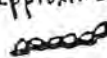
210° -
50-60m
to intersection
of buttress & cliff

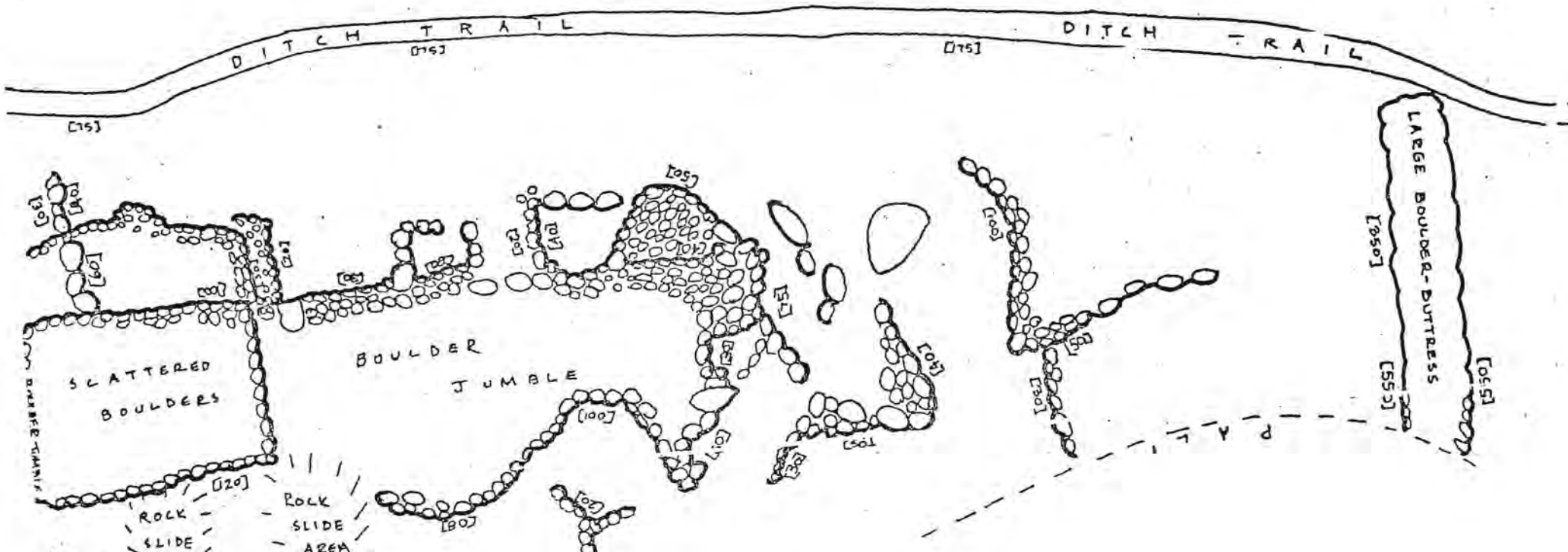


MAP 19
4879

1" = 4m
(from sketch map -
angles + distances
approximate)



 - terrace



but mostly as a result of rockfall damage. Nine terraces of differing sizes and orientations were found. Many boulders were in the area at the time of modification and these are pushed together in irregular piles. Terrace heights, configurations and wall thicknesses vary widely. The highest terrace is 1 meter.

Of special interest on this site is a 4 by 6 meter platform of excellent construction and preservation that stands 1 m high. Its function is unknown. There is a lower stepped-down platform of 2 by 4 m abutting the main one on its West side. Both are roughly paved and these features occur on the site's south border. Construction expertise and preservation differ widely between this and the terrace features. It can only be speculated as to whether these platforms are a historical intrusion over the original site.

No water sources or diversional and control features were observed. The stream at this point in the valley runs along the opposite pali which is an estimated distance of 60 meters and 20 meters below site level.

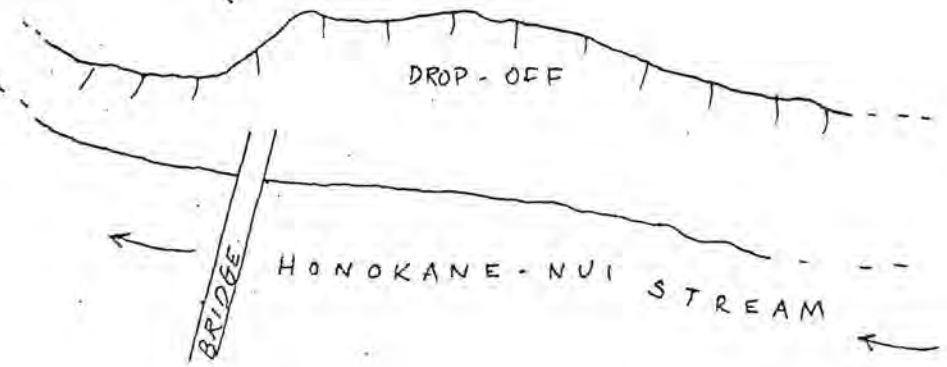
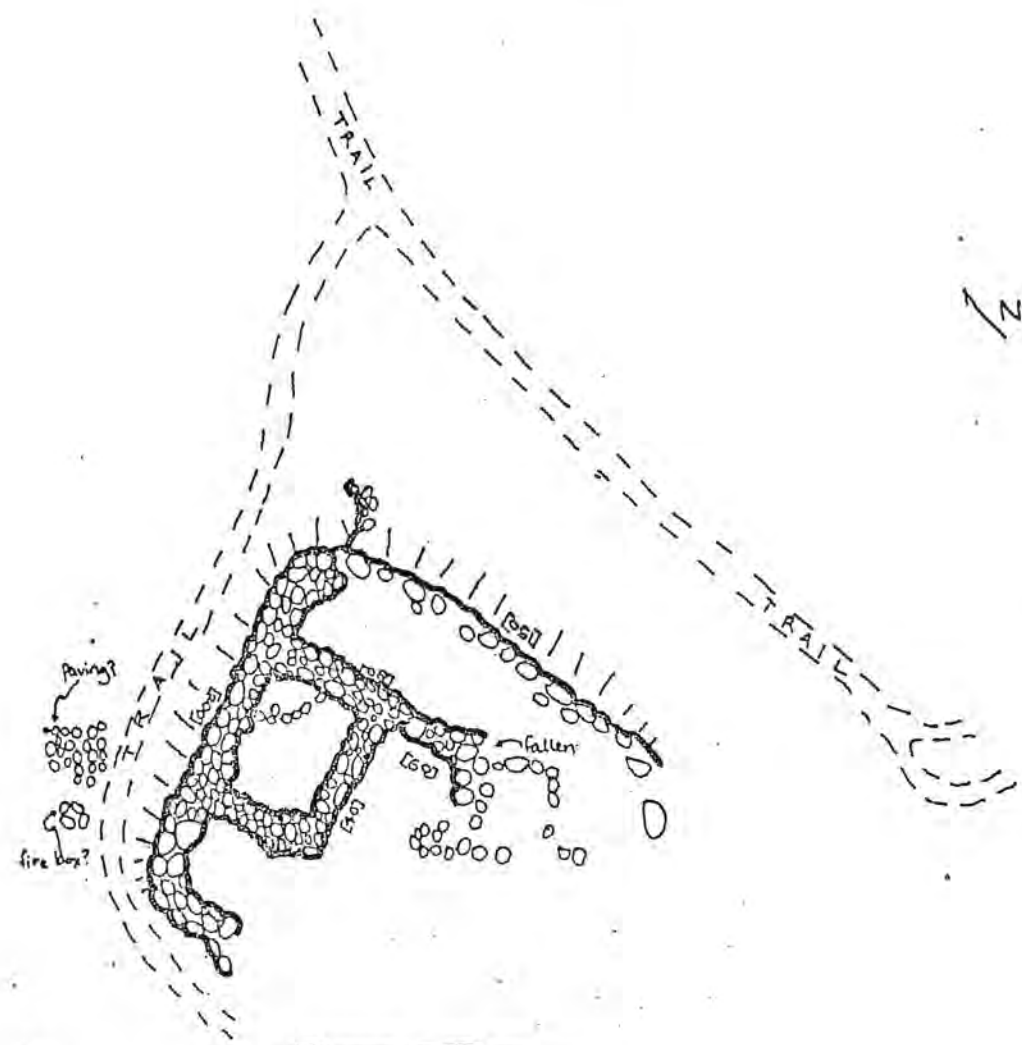
4880: House Site with Adjoining Walls

Location: 10 meters east of small cable bridge
 Vegetation: Moderately dense honohono grass, fern, ginger with some guava and ohia lehua trees
 Dimensions: 15 by 10 meters.

This site is situated on a slight rise with a 15 meter drop-off to the stream on the west and a long 2 meter depression bordering it on the east. The trail runs parallel with the and borders the opposite side of the depression from the site. A fork from the KDC main trail to the cable bridge cuts across the northern extreme of the site.

The main features of this site are a 1.5 m high "L" shaped retaining wall which borders the depression and the bridge trail on its two sides, and a low walled square-shaped enclosure which abuts against the trail side segment of the retaining wall. This enclosure is 4 by 4 m and averages 50 cm in height. Immediately to the south are hints of two more enclosures. There is no definite boundary to the south of the complex. The features become less distinct and blend into the surrounding area of scattered boulders. Enclosure interiors are unpaved and only the main one shows any sign of an interior partition. In this case, a single alignment stone arc sections off the NE corner.

MAP 20
4880
1" = 5m
(from sketch map-
angles + distances
approximate)



A possible fire-box and 2 by 2 m paved area exist at the NW extreme of the site but are not well defined and are non-associated with other features. The bridge trail bisects this paved area and it is possible that the paving may be due to trail construction.

This site is suggested as habitation area with one or more house enclosures located within it. The area is raised and the orientation of features suggest the above explanation.

4881: Irrigated Terrace System

Location: 15 meters SE of cable bridge and on West side of stream. A few meters off trail to the right.

Vegetation: Fern, ti, banana, guava, ginger and honohono grass

Dimensions: 10 by 10 m

Slope: 4 degrees

Photo-period: Estimated 4 hours per day of direct sunlight during July

This site is situated on a stream bench 7 m above stream level and close to the pali which is nearly vertical in this area. The KDC flume flows within this pali facing and a trail leads to a flume portal located approximately 10 to 15 m to the SE. Recent rockfall is strewn along the bench and one slide area exists 20 meters to the West at the base of the pali. An artificial embankment was constructed up to the portal and supports the trail. This feature is the SE boundary of the site.

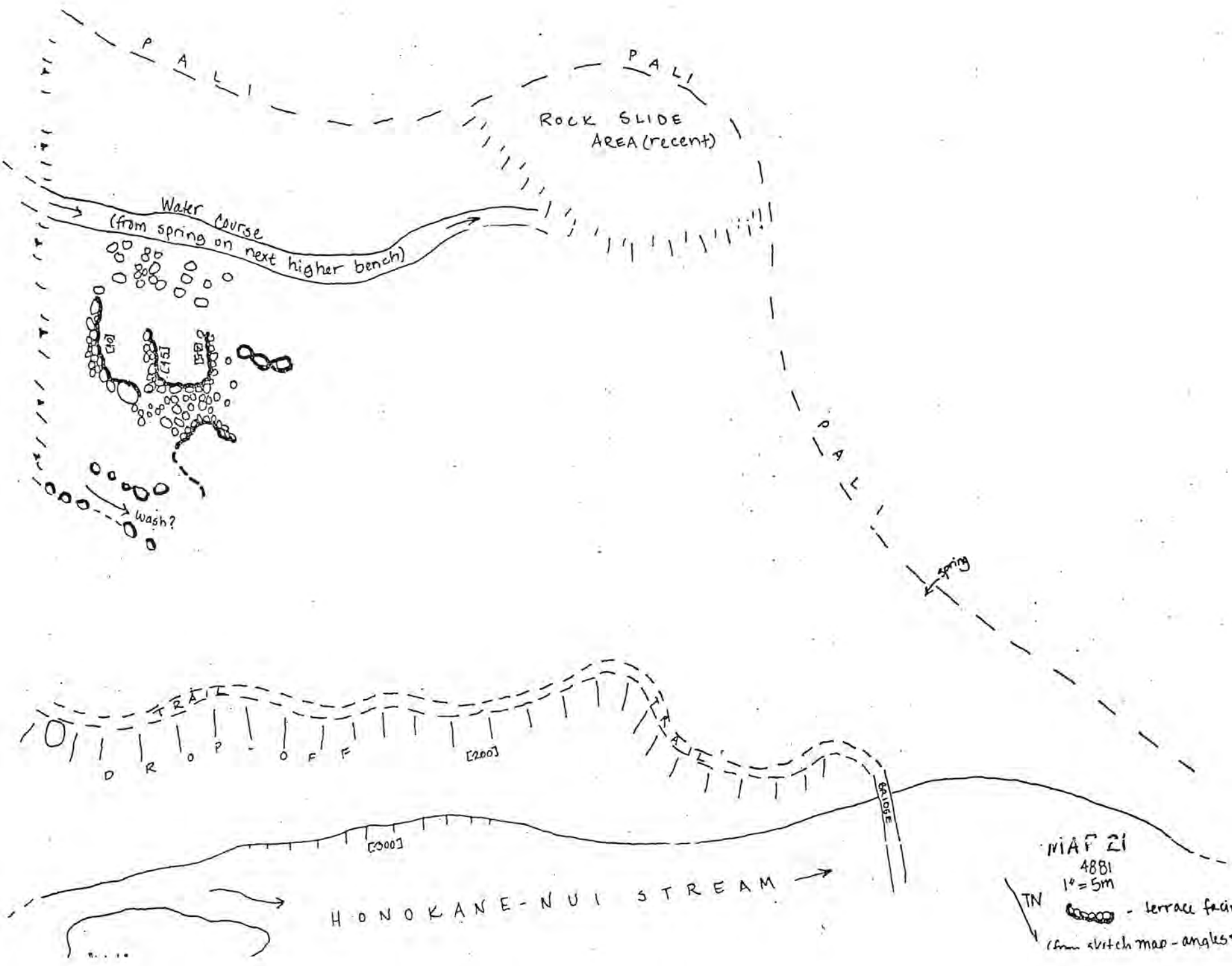
A few minor terraces were located; about 8 planting areas in all. These were crudely constructed and are 45 cm at the highest. Here again, as in site 4879, irregular piles of boulders were associated with and are presumably the results of clearing for the planting areas. All terraces are in poor condition.

Water from a small spring to the SE meanders through the site area.

4882: Historic House Site

Location: 50 meters West of the Awini Trail junction and 10 meters South of the main trail

Vegetation: Ferns, honohono grass, ginger and thimbleberry predominate. Large kukui trees, scattered guava and three lemon trees were also noted.



MAF 21
 4881
 1" = 5m
 TN
 [Symbol] - terrace facing
 (from sketch map - angles & distances)

Dimensions: 70 by 30 m
Slope: 3 degrees
Photo-period: 4½ hours per day of direct sunlight during July

The stream, pali and trail run roughly parallel (E-W) and the site is situated between the trail and stream on a bench area which is 15 m above stream level. Several lower and smaller benches step-off below the main bench. The main bench is 40 m wide. Recent rockfall is found throughout the site area.

The main features of this site are the house foundations, 10 terraces, a possible pen and two boundary walls.

The boundary walls are located at the east and west extremes of the complex and are oriented N-S. The south wall abuts the pali, intersects the trail and terminates at the edge of the river bench; a distance of 14 m. The trail appears to have been built after the wall as manifested by the way in which the wall is disturbed. Ninety m away, the counterpart of this boundary wall runs 18 m from the trail to the edge of the stream bench. No contiguous segment was found on the pali side of the trail although it is hypothesized as once existing.

The house site is located midway between the boundary walls. No superstructure is presently standing nor can the foundations be easily traced. Adjoining walls are evident, one of which is up to 2 meters in height and width. It runs a distance of twelve m and each end tappers off into rubble. The function of this feature is unknown. On its east end is a grinding store, a masonry fireplace with metal grate, and a trash dump.

Most of the terraces are located between the house site and the west boundary wall. Terraces are in random dispersal, conforming to the terrain and have different wall heights and lengths. Construction is generally crude. Associated with the terraces is an irregular jumble of large boulders which appear to have been piled when the terrace areas were cleared.

West of the house site is a pen. This enclosure is situated at the base of a slight rise where boulders of 1 to 1.5 meters in height have been pushed against the embankment in a horseshoe shape. At the open end of the horseshoe is constructed a 50 cm high wall which closes off the structure. The inside area of this feature is 5 by 6 m.

Fifteen m east of the west boundary wall and west of the terraces and pen, a small open-ended enclosure is situated on the top of a rise. Dimensions of this feature are 5 by 2.5 m and construction is of single alignment boulders up to 1 m in diameter. The interior is flat and clear of partitions. The bench drop-off on the south and an area of large scattered boulders on the north border this feature.

From a conversation with Dale Sproat (summer of 1973) the following information was obtained concerning this site. It was the second of two KDC cabins which have been destroyed by rockfall from the cliffs above. A Japanese farmer was the last to occupy it and abandoned it during 1936. The grinding stone was what he used to pound his mochi.

4883: Habitation Site

Location: On the South end of the first bench upstream of Awini Weir on the West side of the Stream.

Vegetation: Fern, honohono grass, ginger, banana plants, small ohia lehua and guava trees

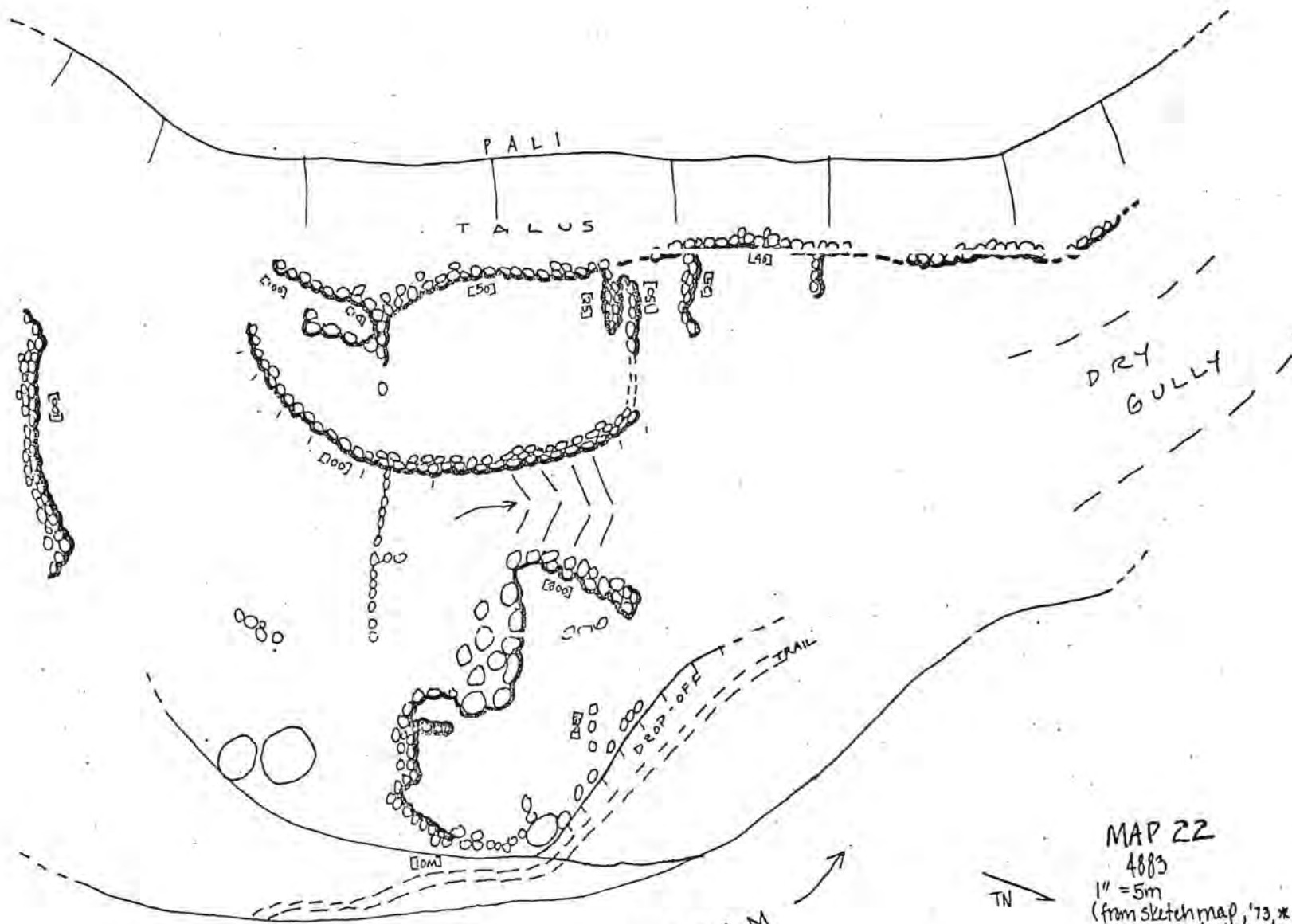
Dimensions: 20 by 15 m

The bench is in two levels with the pali on the West and the stream to the east. The facing of the lower level is where the trail is located and it is just above this facing that the site lies. It is bounded between the embankment up to the second bench (5 m) and the drop-off from the first (4 m).

The main features of this site are two structures constructed on relatively flat terrain. Both are roughly rectangular with low walls and stone alignments used in their construction.

The larger structure is 12 by 5 m and situated up against the embankment. A 50 cm high retaining wall forms the embankment segment of the enclosure. The opposite segment is a 1 m high crescent-shaped terrace-like wall which bends in towards the interior of the structure and whose ends deteriorate to make determining their end points difficult. Two partially subterranean alignments form the end walls.

Eight m east and against the edge of the drop-off the second feature is situated. Its dimensions are 1 by 3 m. The interior is slightly lower than the surrounding terrain and the walls are of multiple stack construction of a fairly even height of 45 cm. It is open ended on the east and in good condition.



MAP 22
 4883
 1" = 5m
 (from sketchmap, '73, *
 angles & distances
 approximate)

- terrace facing
- boulder alignment

* pit locations in approximate position using
 1974 feature map

Hints of low walls and possible terracing exist between these two features. Large boulders are scattered around this area and are roughly faced into alignments in some areas. This activity might be the result of clearing the bench area. No other function at this time can be attributed to these boulder alignments.

A third interesting feature of this site area is an oblong boulder (1 x 1.3 m) in an upright position totally above ground resting on three other boulders. This may be a shrine.

Habitation at this site could be in association with the agricultural complexes across the stream (4884, 4885). Excavation at this site included two pits dug in Feature 01, on the upper natural terrace of the bench. The feature consists of a rough one-course rock wall along the base of the pali and small crude terraces running perpendicular to this wall. No unambiguous evidence for either habitation or agricultural activity was uncovered.

Feature 02, on the lower terrace, consists of 2 or 3 small crude terraces. Two pits were excavated: a basalt tool, a nodule and basaltic glass, a possible paving and a fireplace were uncovered supporting the possibility of habitation.

4884: Irrigated Terrace System

Location: On the first major stream bench above Awini Weir on the east side of the Valley

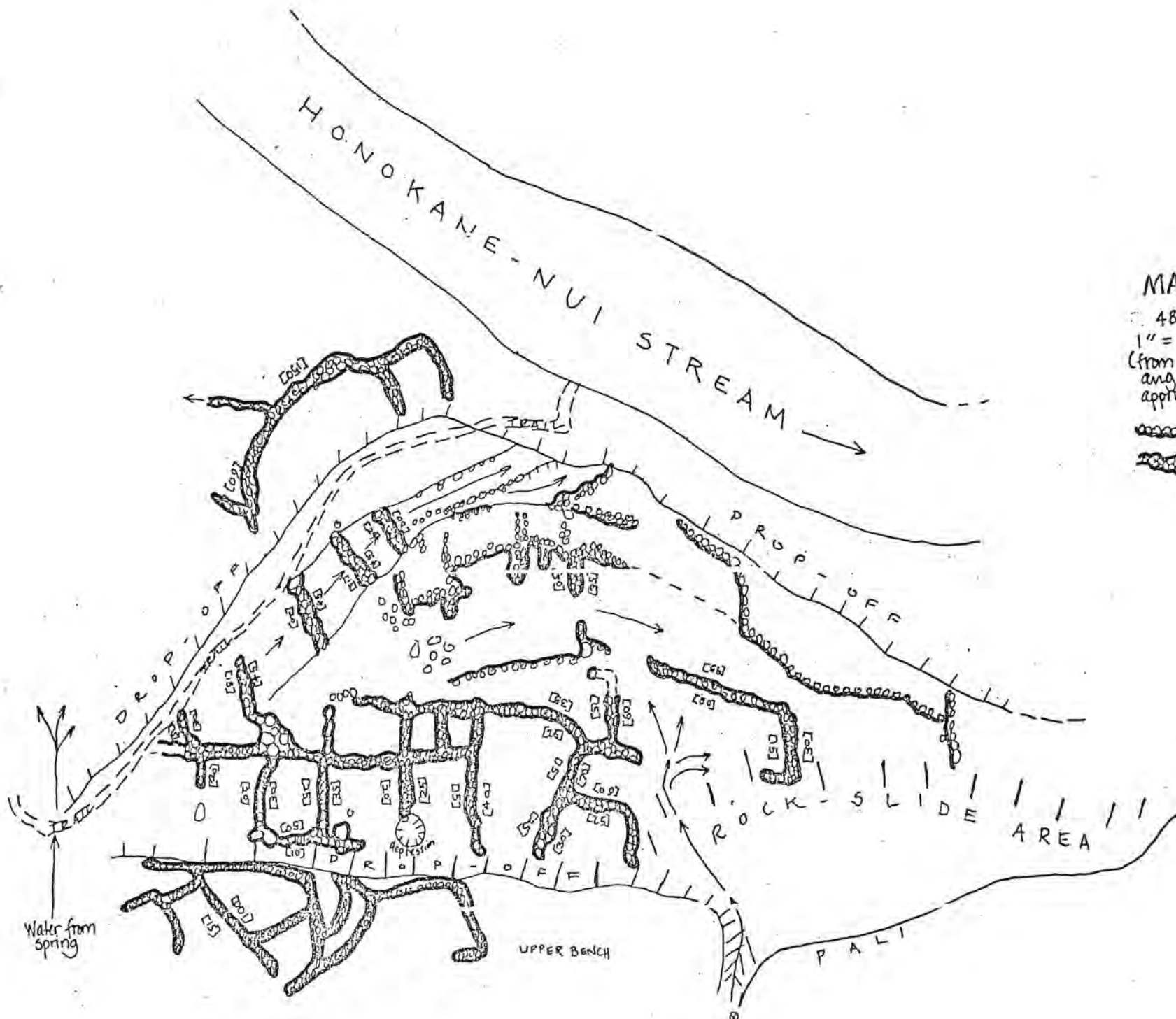
Vegetation: Mainly 20 to 30 feet tall guava trees and moderately dense low fern

Dimensions: 60 by 40 m

Slope: 2 degrees

Photo-period: Estimated 6½ hours of direct sunlight per day during July

This site is located on the first bench up from the stream and is bounded on the east by a 9 m embankment up to the second bench. The bench area is generally flat and subject to rockfall, especially on the NE sector where a considerable disturbance of the area has resulted. Falling rocks have left craters up to 2 m in diameter and one m in depth. If terraces once existed in this area, and there is a good chance they did, they have been destroyed by the pelting of boulders that this sector has undergone. A slight 2 to 3 meter rise runs along within the eastern boundary of the site and on top of which are seven terraces.



MAP. 23

4884 300

1" = 10m
 (from sketch map
 angles & distances
 approximate)

- terrace facing
- free-standing wall

A total of 40 terraces has been located. In the flat area is where they are best constructed and most symmetrical. These are the largest terraces in the system and are generally 5 by 5 m with 30 cm step-offs and are single alignment with some low multiple stack construction. The terraces in the two gullies number about 12, are of multiple stack construction, step-off between 3 to 4 m intervals and have facings averaging 50 cm. The depressions' sides appear crudely and randomly faced in an effort to keep soil from eroding into the gully.

The hypothesized water source is a spring located 60 m SE of the site at the pali base where it contacts the second bench. Its run-off water is estimated at 100 gallons per minute and it flows directly down-slope crossing the southern border of the site. At present no water flows into the system from this spring.

4885: Irrigated Terrace System

Location: On the second bench above and 100 meters south of site 4884.

Vegetation: Honohono grass, fern and banana plants.

Dimensions: 40 by 60 m

Slope: 10 degrees

Photo-period: Estimated 6½ hours of direct sunlight per day during July

This upper bench has an average slope of between 8 and 10 degrees and the site portion lies 15 m above stream level. The cliffside boundaries are strewn with rockfall to form a small talus but the entire bench area is also subject to this activity. Six hundred feet above the bench a spring emits from a dike in the pali and the resulting waterfall streams narrowly down the face to form a slight pool at its base. The rate of flow could be measured in hundreds of gallons per minute. Run-off from the pool traces a diagonal path (SE-NW) across the bench as it makes its way to the stream. The distance between the cliff and bench drop-off is an estimated 50 meters.


A sample section of this site was cleared and sketch mapped. Twelve terraces were included in the map; an area of 20 by 20 m.

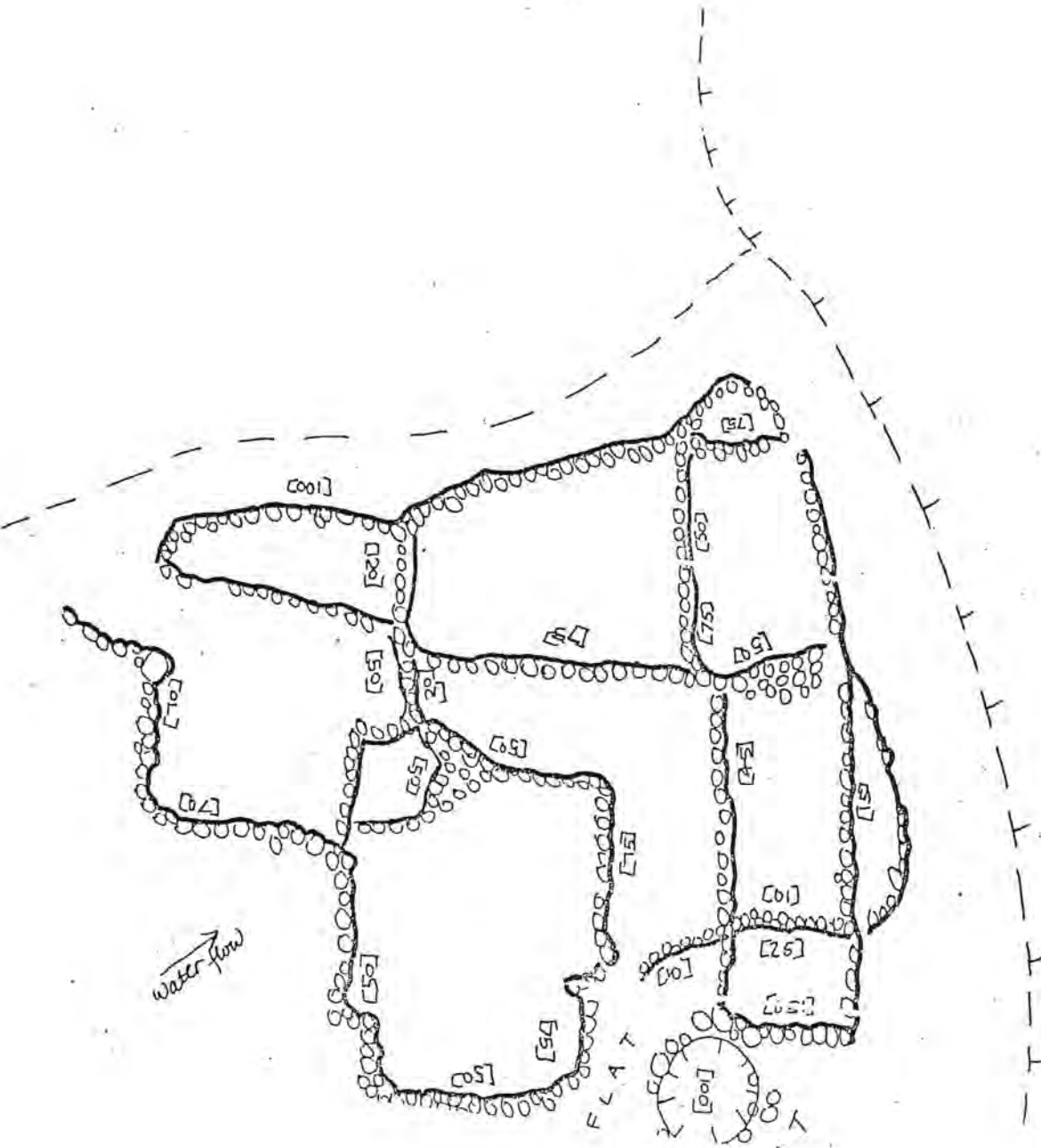
Terraces varied greatly in their size and configurations. All were of multiple stack construction with wall heights ranging from .45 to 1.2 meters, with an average of 60 cm. An estimation of 25 well-preserved terraces exist within the site boundaries. At the outer fringes features become less obvious

→ TN

MAP 24

4885 (sample section)
1" = 5m
(from sketch map -
angles & distances
approximate)

 - terrace face



and of cruder construction and lesser preservation.

It is assumed that the aforementioned waterfall is the irrigation source for the site although no water diversion or control features were observed.

Shortly after our 1974 field season an exploratory lateral hole was drilled in the dike as a part of a water study (). I have not visited the site since and thus I do not know if any damage from the drilling occurred.

4886: Low Walled Complex

Location: Directly across the stream from site 4885.

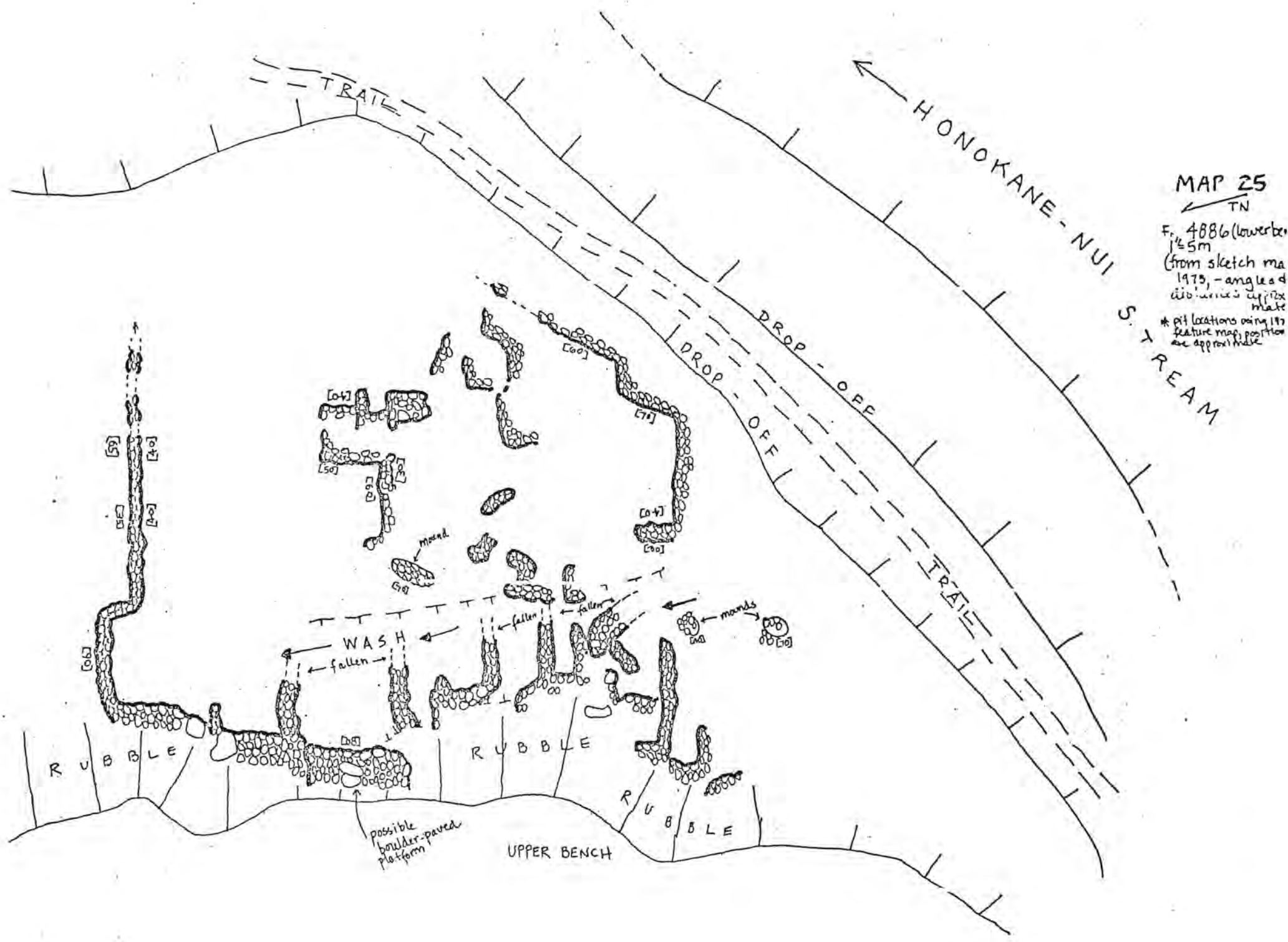
Vegetation: Dense honohono grass, some fern, ti, ginger, guava and a couple of large ohia lehua trees

Dimensions: 30 by 20 meters

This site is located on the lower step of a two step stream bench, and encompasses most of the bench area. It is bounded on the west by the embankment up to the higher bench and on the East by the trail which is on the drop-off edge. The lower bench is between 7 and 8 m above stream level. A gentle slope prevails along the bench.

Almost the entirety of the site features are indistinct low wall segments that are discontinuous and appear in random fashion. The longest of these walls is 5 m. Some segments form an "L" but most are straight. Purposeful truncation on some walls is evident but for most of the features this is hard to determine. Lack of rubble as signs of the wall once continuing on do not generally exist and the end points are deteriorated enough that purposeful truncation cannot be determined. Robbing of stones for KDC construction may be an possible explanation for the occurrence of these segmented walls. On the south end of the site a few terrace-like walls are present and oriented on the terrain in a normal terrace fashion for water retention.

Only three well constructed features exist on this site: two mounds and a paved platform. The mounds are located on the southern extreme of the site and are 70 and 40 cm high with diameters of 1 m and lie 3 m apart. They are well constructed with medium to small sized stones and are in good preservation. Neither are directly associated with other features of the site and their function is undetermined but speculated as planting mounds



MAP 25
TN

F. 4886 (lower ben
1/2 5m
from sketch ma
1975, - angle d
circ. lines approx
mate
* pit locations using 1975
feature map, position
are approximate

The platform is situated roughly on the median of the site up against the embankment of the higher bench. It is 4.5 m long, 2 m wide, 80 cm high and is paved. The paving reaches the embankment and terminates. This feature is faced on three sides and has a terrace-like appearance. In the center of the paved area rest two 80 by 50 cm boulders resting together in a semi-upright position. The possibility exists that they rolled down from the embankment but more generally they appear placed. No other associations were noted which could yield evidence of this feature's function.

Four pits were excavated in various features. The results were generally inconclusive. Some basaltic glass flakes were found in secondary context and yielded dates from A.D. 1667 to 1768. This is the only set of archaeological dates obtained from upper Honokane.

The site is probably a combination of dry agriculture and temporary habitation.

4887: Terrace System

Location: On the next upstream bench from site 4886 and on the west side of the stream. Also a few m off the trail on a bearing (true) of 242 degrees from the emission point of the spring above site 4885.

Vegetation: Dense fern, honohono grass and ginger with some guava trees and banana plants.

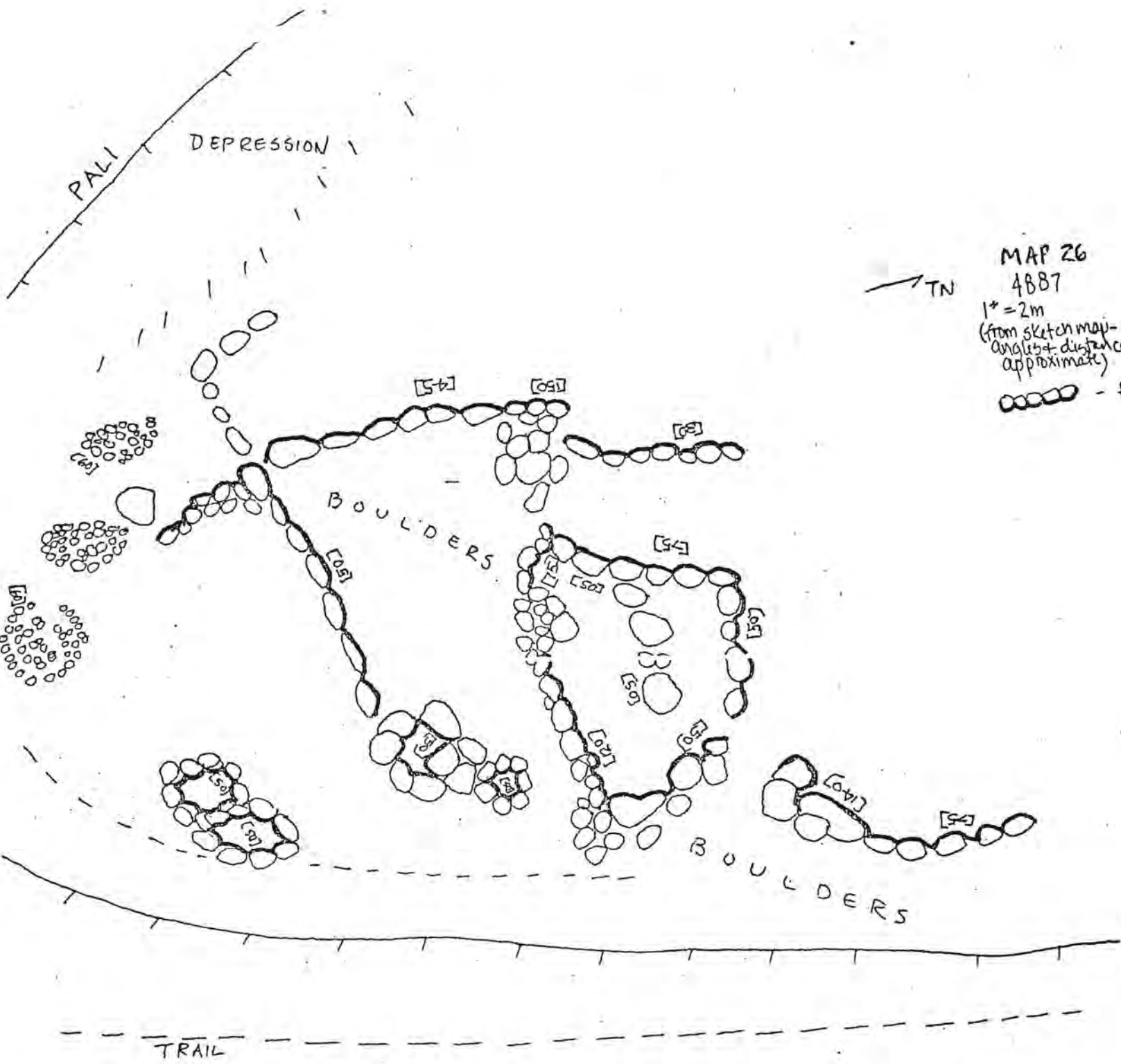
Dimensions: 12 by 8 m

Slope: 2 degrees

Photo-period: Estimated 6 hours of direct sunlight per day during July

This site is situated on the up-stream section of a bench approximately 8 m above stream level. The trail runs along the stream-side edge of the bench and is close enough to the site that its construction has contributed to the destruction of this site. The terrain is fairly flat and strewn with large boulders of better than 1 m in height. A quite active rock-fall area lies along the intersection of the bench and pali. Fresh rockfall was also noted in the site area.

Terraces were not well defined and usually consisted of single alignments of stones although in one case multiple stack construction was used. The single stone alignments were constructed of stones between 30 and 80 cm in diameter. These averaged 60 cm in height with wall lengths varying



MAP 26
4887

1" = 2m
(from sketch map -
angles + distances
approximate)

○○○○ - terrace facings

between 2 and 4.5 m. In general, construction was crude and the features themselves are in a fair to poor state of preservation. This combined with the number of extraneous boulders located in the area made feature identification a difficult task; nonetheless a total of 7 terraces were delineated and three small stone mounds located.

Two of these mounds are 60 cm and 100 cm in diameter. The third is half the size of the others. All three of these features are located at the southern extreme of the site and are in alignment with no greater than 1.5 m between them.

Two small pit-like structures were located a few m NE of the mounds. These features are 50 cm deep and are ringed with small boulders. Their diameters are 60 cm.

This site could most easily be labeled as a non-irrigated agricultural terrace complex. The lack of up-slope water to the site and elevation above stream level eliminate the possibility of irrigation. On the whole the site is crude and does not appear to have been in an intensive state of agriculture. The mounds, by their association with the terraces, can best be hypothesized as of an agricultural function also.

4888: House Site with Associated Terraces

Location: On the next bench upstream of site 4887 and on the west side of the stream. A stand of bamboo can be seen from the trail and this is in the site boundary.

Vegetation: Dense horohono grass, fern, ti, a bamboo cluster and some ohia lehua trees

Dimensions: 40 by 20 m

Photo-period: Estimated 6 hours of direct sunlight per day during July

The main site area lies 12 m above stream level on a single bench. The trail borders along the site next to the bench drop-off. A near vertical pali is the western border of the bench. Along this border is evidence of recent rockfall.

The main feature is a three sided 10 by 5 m enclosure located on the southern, higher portion of the bench. Its walls are of multiple stack construction averaging 60 cm in height and it opens towards the south. The interior is relatively flat and free of partitions. Extending from the NE corner is a 10 m long wall (N-S) which snakes along conforming

to the topography of the rounded slope. The down-slope facing is between .75 and 2.0 m high and the wall itself is of terrace-like fashion, only rising slightly above ground on the up-slope side. This feature is also of multiple stack construction and well made. A few meters before this feature truncates and slightly lower on the slope another wall begins and extends another 12 m along also conforming to the terrain.

This wall is of cruder construction and a lower profile than the first. The slope steepens to an embankment and this feature travels along its base and takes on an apparent retaining wall function. It is presently in poor condition and some segments are ill defined. No planting area exists on the up-slope side of this feature; just the steep embankment.

An estimated 20 m north of the enclosure a well constructed three-sided terrace wall averaging 1 m in height and of multiple stack construction is located up against the same embankment. The east wall, when it meets the embankment, bends and travels along the base of the embankment for another 10 meters. The construction of this segment is markedly cruder than that of the actual terrace. The terrace is 2 by 4 m in planting area.

Ten meters to the south of the enclosure lie two stone mounds and a scattering of 6 low walled, sometimes single alignment, terraces. The longest terrace is 7 m; all are of crude construction and average 30 cm in height. The mounds are not unlike those found on the other sites and are postulated to be planting mounds. These features are in a fair state of preservation.

No up-slope water source was located and the height of the terraces above stream level indicate that the terraces are non-irrigated. The house site definition for the semi-enclosed structure is by no means definite and should be further investigated.

4889: Irrigated Terrace System

Location: 250 m north of the Waihoolana rivulet intersection with Honokane Stream and on the west bench.

Vegetation: Fern, honohono grass, ti and banana plants.

Dimensions: 25 by 6 m

Slope: 3 degrees

Photo-period: Estimated 6 hours of direct sunlight per day during July

This site is situated on a narrow bench of land bordered by a 10 m drop-off to the stream and the talus on the West. The bench is of irregular shape, only 15 m at its widest and is one level. The general topography of the bench is a gentle slope from up to down-stream with a long shallow depression running parallel and between the trail and pali. It is in this depression that the terraces are located.

Five terraces were recorded. All are oriented in a single-file fashion, each with an east side bordering the base of the talus and west side bordering the slight rise on which the trail is located. Two retaining walls are faced inward towards the terraces and form the boundaries along talus and trail. The terrace walls are perpendicular to these retaining walls whose function seems to be to keep the mud from the sides of the depression from slumping into the planting areas.

Terrace construction technique varies within the system. Single alignments of boulders up to 90 cm in diameter were used on the upper two terraces and these had facing heights of 20 and 30 cm. The lowest wall in the system was constructed in like fashion as these but is segmented, 2.5 m long and contacts neither of the east or west retaining walls.

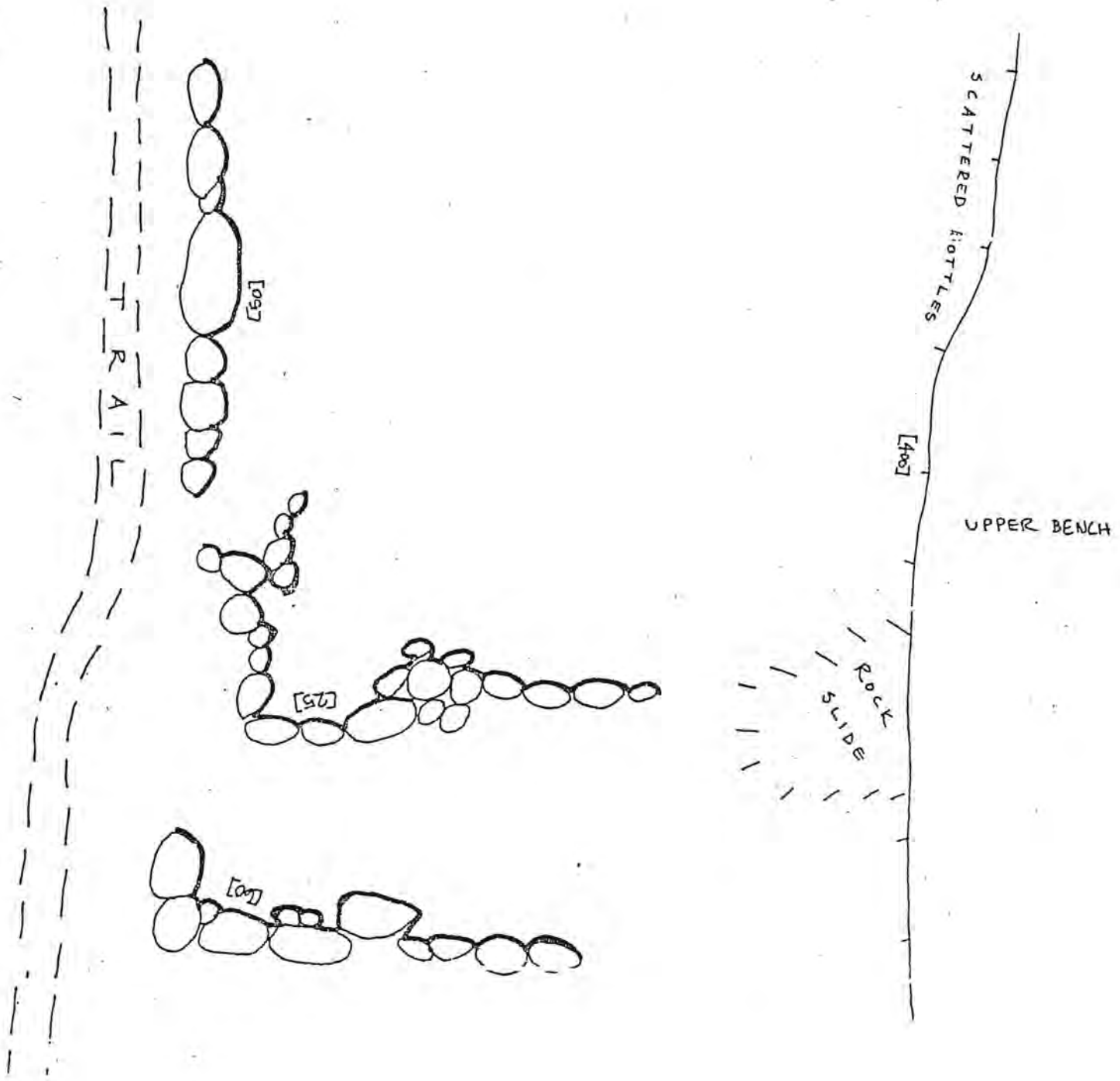
The other form of construction is multiple stack with facing heights of 1.2 and .5 m. The talus and trail retaining walls are of both types of construction and average .5 to .75 m in height. This site is moderately well constructed and in a good state of preservation.

An estimated 30 m to the south and at the base of the pali, a small spring is percolating through the rock and trickles downslope towards the site area depression. Standing water forms shallow ponds on the up-slope side of the site. The soil in this area is deep mud, as it is also within the terraces. The possibility exists that, through excavation, more terraces can be found subterranean in the standing water area.

From the evidence observed there is little doubt that these terraces were irrigated. The construction expertise and the situation of this system in relation to the spring support this hypothesis.

4890: Possible House Site

Location: On first stream bench on east side of stream above the Waihoolana Rivulet intersection



MAP 29
 4890
 1" = 4 mi
 (from sketch map -
 angles & distances
 approximate)

oooooo - terrace
 facing

372° TN

with Honokane Stream.

Vegetation: Extremely dense honohono grass and fern. Also some ti plants and small ohia lehua trees

Dimensions: 5 by 3 m

This site is situated on the lower level of a three-stepped bench and located at the base of the embankment up to the second level (site 4891 is located above on the second level). The lower bench at this point is an estimated 35 m wide and 10 m above stream level. The trail crosses within four meters of this site on its west side.

It is uncertain as to whether this site is cultural. The "construction" is crude and the general scattering of boulders in the area makes delineation and positive identification of this site as cultural quite difficult.

This semi-enclosure does have a roughly rectangular shape with the south and east walls averaging 25 cm high. No north wall and only a partial west wall exist. The construction of these "walls" is generally single stone alignments with occasional segments of low multiple stack construction.

What evidence there is shows this feature to be a partial enclosure which may possibly be the remaining foundation of an aboriginal house site or it might be associated with site 4891 (historic house site) and have resulted from this historic habitation period.

4891: Historic House Site

Location: On the first land bench on the east side of the stream above the Waihoolana Rivulet-Honokane Stream intersection.

Vegetation: Extremely dense swordfern with some honohono grass and guava trees.

Dimensions: 20 by 10 m

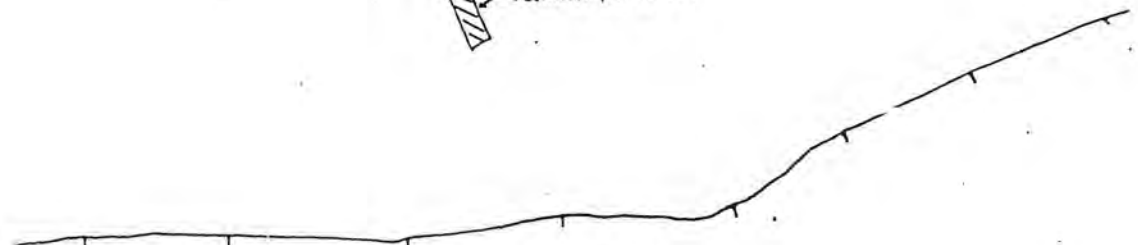
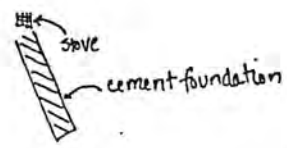
This site is centered on the second level of the bench and at an elevation of 15 m above stream level. The pali lies to the NE with a steep talus sweeping down to the bench.

The entire site was not cleared and only enough walk-through to get the general dimensions.

No superstructure is presently standing and the entirety of this feature is overgrown with dense vegetation. Rotting timber, roofing paper and corrugated roofing metal were strewn over much of the



MAP 30
4891
1" = 5m
(from sketch map -
approximate)



LOWER BENCH

area and lay under the vegetation. On the northern most corner is located a cooking area with cement frame and metal bars for the grill. In close association with this were 8 glass gallon jugs intact with traces of kerosene in some of them. A segmented telephone wire is strung from tree to tree and leads from the site in a down-stream direction.

In conversations with Dale Sproat (summer of 1973) we gathered information that the KDC had constructed cabins on two previous locations in the East Branch of Honokane Nui Valley. The first was close to the valley head and was abandoned due to its partial destruction by rockfall. A second cabin was constructed further towards the mouth of the valley (site 4882) which was eventually also destroyed in a like manner.

This site is assumed to be the first cabin constructed by the KIC.

4892: Irrigated Terrace System

Location: On the eastern land bench above that of site 4891. A waterfall exists slightly downstream and an old bridge crossing exists upstream (estimated distance of 80 m).

Vegetation: Dense honohono grass and fern, some banana and taro plants.

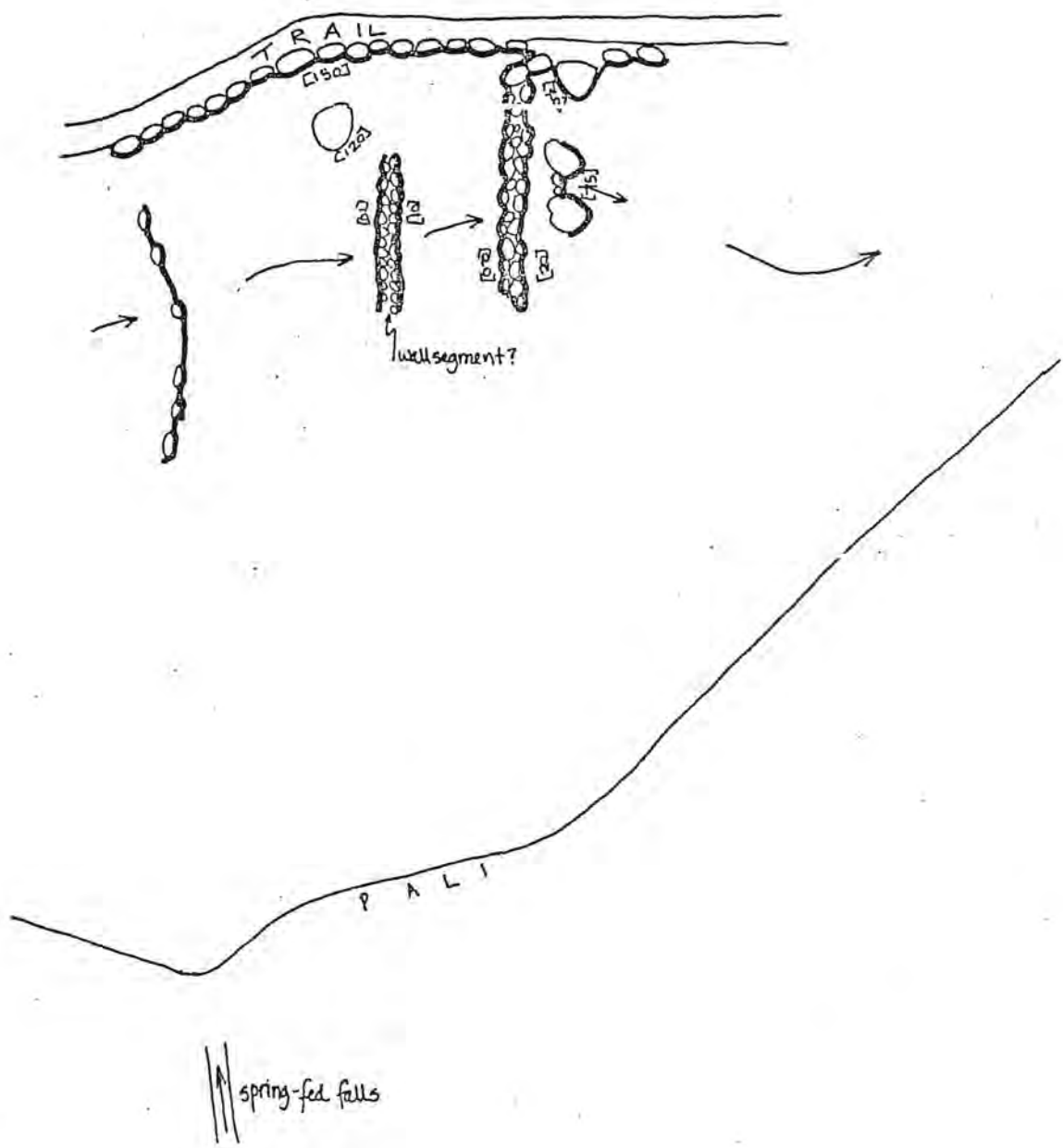
Dimensions: 18 by 10 m

Slope: 2 degrees

Photo-period: Estimated 6 hours of direct sunlight per day during July

This site is situated on a single level stream bench of 8 m elevation above stream level. A slight talus exists at the base of the near vertical pali on the east. Towards the top of the talus and 25 meters S-E of the highest terrace is located a spring whose waters flow down the talus and then, through the site in an uncontrolled manner. Some erosion is evident on one of the terrace walls where the water has broken through. The soil along the bench is a dark mud, which is at least 1 m in depth as manifested from observation where boulders have penetrated to that depth after falling from the pali.

Terraces are five in number and step down-slope in single file. Average wall lengths are four m and are of multiple stack construction. The southernmost terrace is barely visible above ground due to encroachment of mud over it. Terrace heights average 20 cm. The trail bounds the terraces on the west and forms a boundary of the system. No terraces exist on



MAP 31

4892
 1" = 5m
 (from sketch map -
 angles + distances
 approximate)

- terrae facing
- free standing wall

the west of the trail.

This site is an irrigated system based on the relationship with the spring and construction technique of the terraces.

4. Honokane Iki Complex: 4935

a. Background

Honokane Iki serves as the windward entry way into Kohala by sea. It is the last true valley in Kohala as one goes toward Hilo, the remainder of the district being the hanging valleys of Awini. It has a well-protected small bay and a segment of a sand beach allowing successful small boat landing. I know of no traditional references to Honokane Iki.

The valley of Honokane Iki extends inland for some 1.2 km before branching into very narrow, steep-sided valleys. The lower valley is generally less than 100 m wide. It contains a number of land shelves, on the general pattern of Honokane Nui, formed by the winding of the stream across the valley floor. The original stream was probably permanent, but it now has been intercepted by the Kohala Ditch and only flows during wetter periods. Vegetation is generally guava, kukui, and mountain apple, except in the lower area where many cultigens and miscellaneous exotics have been introduced.

The sites include recent habitation near the mouth of the valley and enclosures and irrigation terrace systems on the benches running through the lower valley. Survey did not extend into the two rear branches due to the

hazardous conditions. There was no excavation but a few pieces of basaltic-glass were obtained from the ocean face of 4920.

Ellis landed in Honokane Iki after travelling by boat along the Hamakua-Kohala coast, but he made no comments about it. The valley was part of the Mahele award to Victoria Kamamalu and is now owned by the Bishop Estate, but under lease.

b. Sites

4920: sub-surface deposit and historic house platform

Area: 10 x 15 m

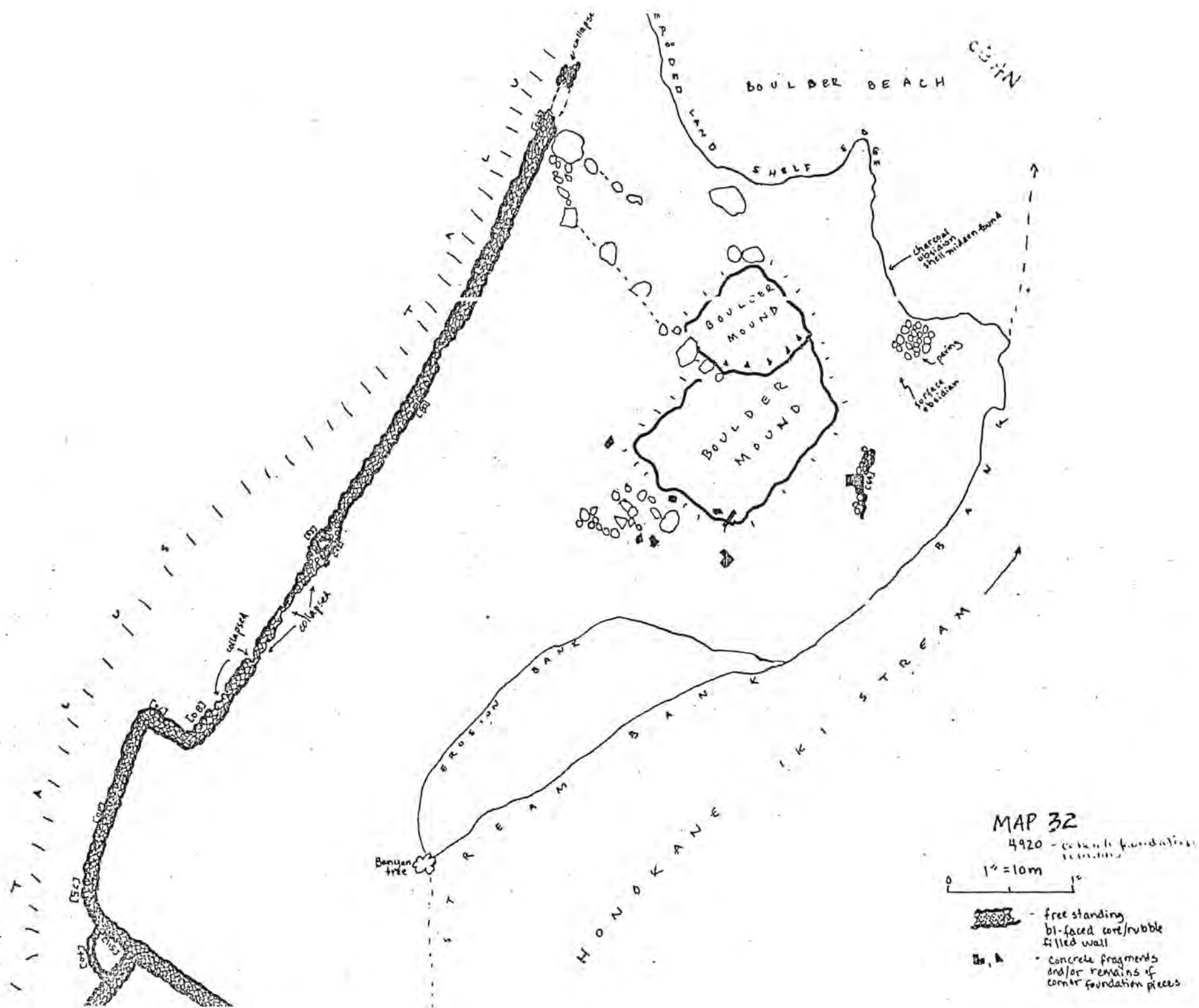
Vegetation: general area of site within kamani grove with scattered coconut palms; ironwood trees along stream bank; grasses scattered throughout site area; hala along the talus fan

This site is located on the west bank of Honokane Iki Stream near the mouth of the valley. The stream lies approximately 10 m east of the site; the eroded beach face is 10 m north. The site is bordered on the west by the talus slope and a stacked stone wall of sub-angular basalt, which extends up to a cabin immediately north of the coastal trail.

The historic site is in poor condition with only three concrete corner pieces and small fragments of scattered concrete remaining. Within the limits of the three corner pieces is a mound of sub-angular basalt cobbles and boulders, forming a rough rectangle. The corner pieces utilized nearby and naturally occurring basalt, ranging in size from 30 x 30 cm to 60 x 60 x 30 cm.

Surface artifacts include manufactured and volcanic glass fragments, bottle fragments, porcelain fragments, basalt fragments, rusted metal, and pots and pans. Coral and marine shells are found on the surface.

There is probably traditional habitation evidence now somewhat obscured by the historic construction. The area should have detailed excava-



tion to determine the nature and extent of prehistoric habitation and the nature of the transition to modern occupation.

The sub-surface deposit exposed at the beach is about 20 cm thick and contains marine shell and basaltic glass flakes, some of the latter yielding dates of late 1700's and early 1800's.

4921: structures on a land bench on the mauka side of the coastal trail.

Area: 100 x 120 x 70 m

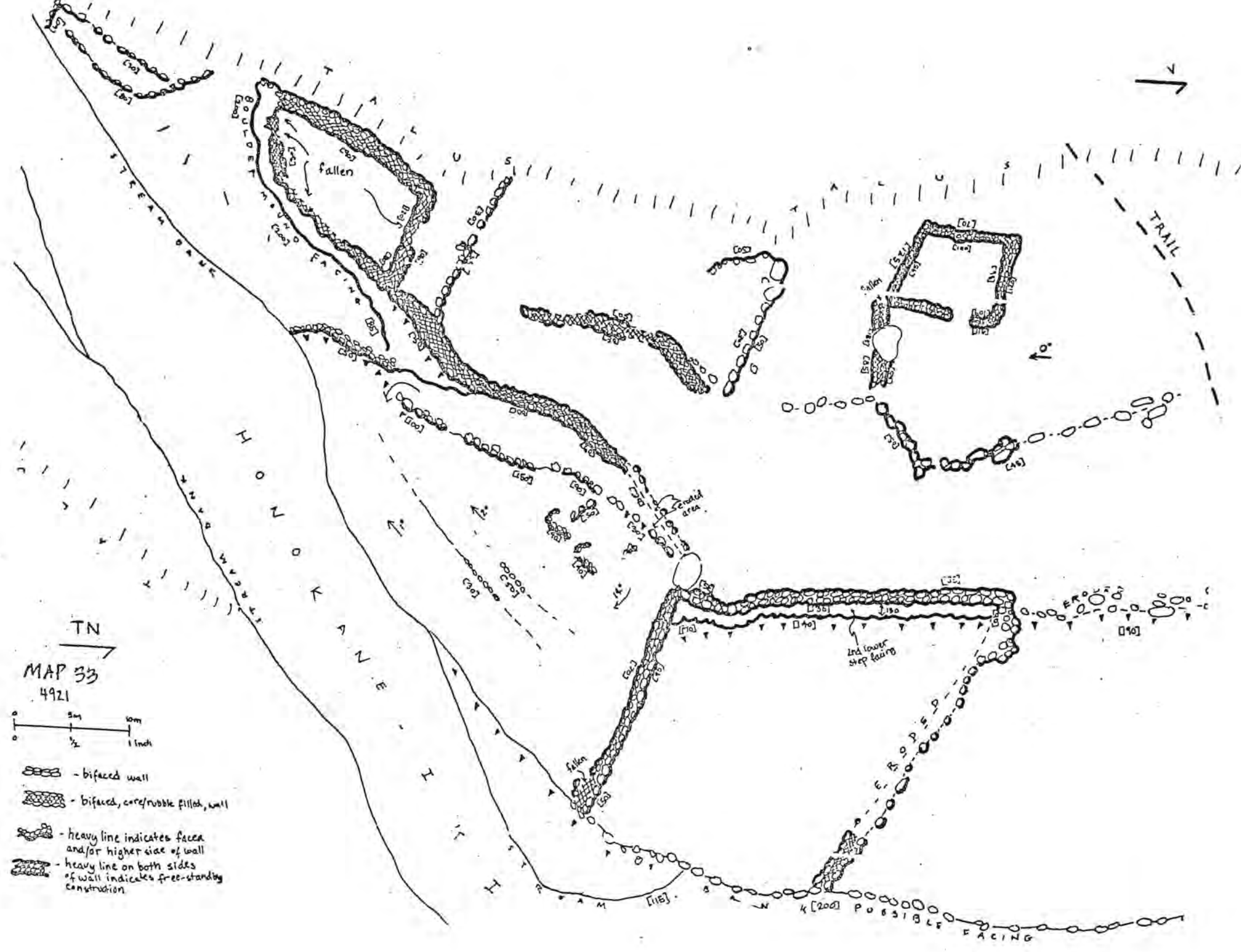
Vegetation: relatively sparse; consists of grasses, o'i, hala (especially toward the talus), ginger, konane; predominantly guava canopy; large banyan tree at northwest edge of site area of site area

This site is located on a triangular-shaped bench, bordered on the west by talus, on the east by the stream, and on the north by the coastal trail. The land bench is divided into two shelves, both with an average slope of 1° on a north-south axis. They are separated by a double-stacked, core-filled wall, approximately 70 m long, which terminates at its southern end in a 10 x 20 x 20 m triangular enclosure. The wall is 90 cm high on the upper shelf and 2 m high on the lower shelf. Below the wall is a terrace measuring 30 x 20 m.

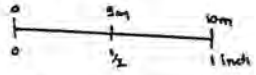
The stream appears to be faced for 50 m mauka of the trail where it intersects the northeast corner of the terrace on the lower shelf.





The upper shelf has an enclosure and several walls. The enclosure is located on the northwest side adjacent to the talus. It measures approximately 10 x 10 m, with wall heights ranging from 70 cm on the talus side to 175 cm on the south side. Interior wall heights range from 95 to 109 cm. The enclosure is constructed of sub-angular basalt reinforced with concrete, with a concrete floor. There is a two m wide entrance on the eastern side. A double-stacked, core-filled wall segment runs 10 m to east from the southeast corner of the enclosure.

Another bifaced, core-filled wall about 20 m long, runs in a north-south direction between the two enclosures, but does not join either of them. A boulder alignment, 35 m long, runs in the same direction between the northern enclosure and the large wall separating the two shelves. Two other



MAP 33
4921



-  - biconvex wall
-  - biconvex, core/rubble filled, wall
-  - heavy line indicates faces and/or higher side of wall
-  - heavy line on both sides of wall indicates free-standing construction

BOULDER FACING
fallen

2nd lower step facing

TRAIL

HONOKANE

TN

[115]

[170]

[130]

[150]

[160]

[180]

[190]

[130]

[150]

[160]

[180]

[190]

[200]

[170]

[150]

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[150]

[160]

[180]

[190]

[200]

[170]

[150]

[160]

[180]

[190]

[200]

alignments lie roughly perpendicular to the upper land shelf.

The main wall and both enclosures are in good condition.

Surface artifacts include metal water pitchers, pumps, record players, nails, glass fragments and bottles, lumber and remnant building material, especially near the northern enclosure. Opihi shells were found on the surface about 5 m south of the southern enclosure.

The site appears to be historic construction over the remnants of prehistoric agricultural features.

4922: walls and enclosures

Area: 180 x 190 x 50 m

Vegetation: ground cover consists of grasses, o'i, and white ginger; predominantly guava canopy with scattered lukui and hala; within the large enclosure is an immature breadfruit tree and one old mango tree; within the small enclosure is white ginger and wild pineapple; three old mango trees border the site on the south





This site is located on the first land bench mauka of the trail, on the east side of Honokane Iki Stream. The bench is roughly triangular in shape and is bordered by the talus on the east and by the stream on the north and west. It is divided into two shelves with structures on the higher and larger shelf. A very large, rectangular enclosure of bifaced, core-filled construction about 50 x 30 m in size is found on the southern part of the shelf. Interior wall heights measure from 50 to 120 cm high. A 30 m collapsed remnant of a bifaced, core-filled wall and about six rock mounds are contained within it. To the north, a smaller, entrance-less enclosure of similar construction connects with the larger enclosure. It is roughly square-shaped, measuring approximately 10 x 10 m. Interior wall heights average about 1 m. In the northeast corner of this structure is an upright stone about 85 cm high and 35 cm in circumference in a phallic shape. A depression about 10 cm in diameter is pecked into the top, with a pecked motif on the northwest side possibly representing a face. In the northwest corner of the same enclosure is a rusted pick ax head.

Connected to the smaller enclosure to the north are two platforms which step down to the north.

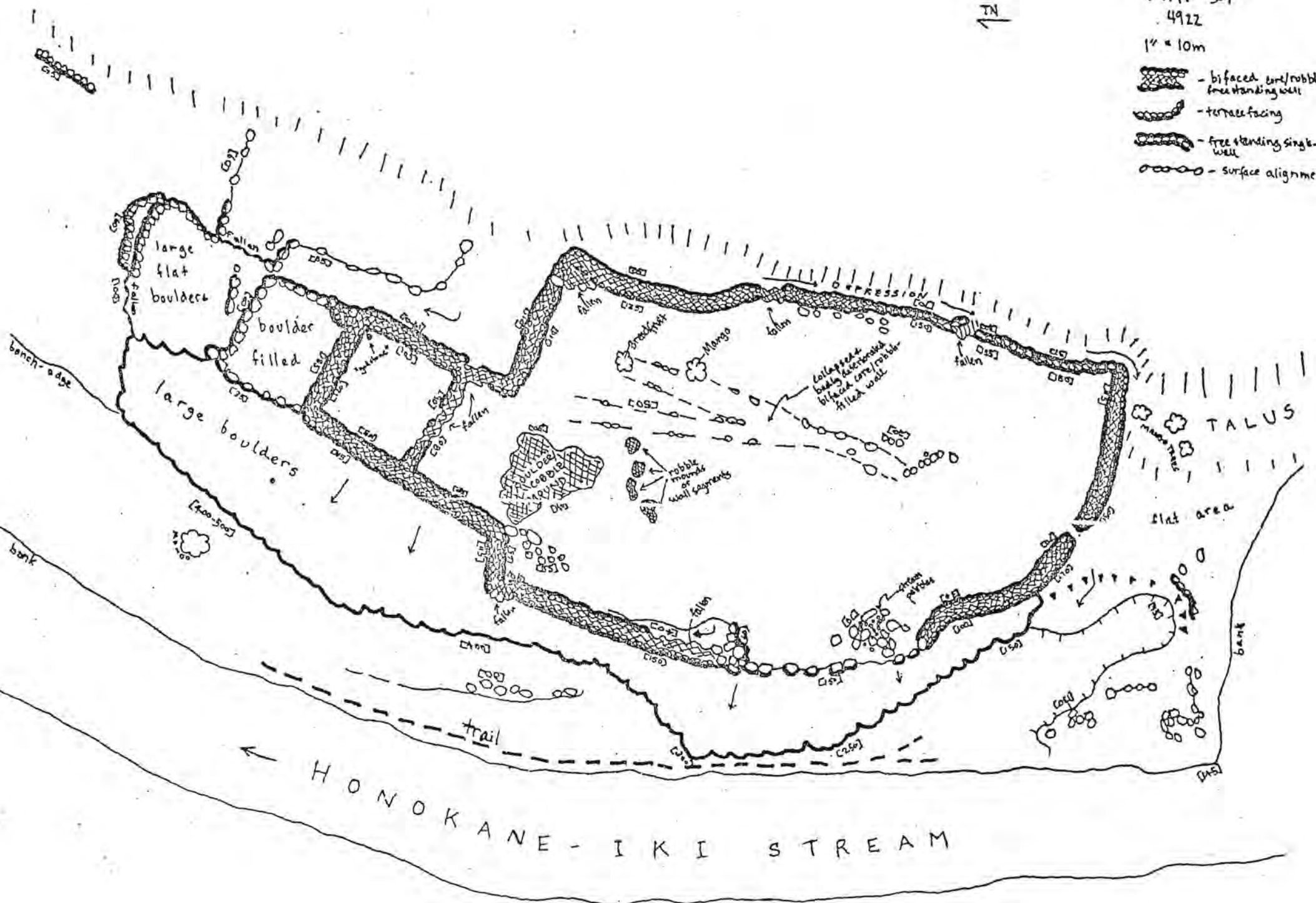
MAP 34

4922

1" = 10m

-  - bifaced core/robbles free standing well
-  - terrace facing
-  - free standing single well
-  - surface alignmer

TN
↑



HONOKANE-IKI STREAM

They measure 10 x 10 m and 15 x 10 m. There is a 20° slope from north to south from the platforms to the small enclosure; the large enclosure is level. Construction of all walls is with sub-angular talus rock. The walls closest to the talus in the large enclosure have collapsed in places. The construction of the remainder of the walls in this site are probably the best stone work in the valley.

The phallic-shaped rock is mentioned by various informants and this site is said by local people to be a shrine.

The site has historic structures over agricultural features.

4923: mound, walls, and facings on land bench

Area: 230 x 200 x 70 m

Vegetation: primarily a guava canopy with some kukui and mountain apple; scattered ape plants; ground cover consists of grasses, o'i, ti and shampoo ginger.



This site is located on the southern section of the second land bench on the west side of Honokane Iki Stream, mauka of the trail. The land bench is roughly triangular in shape and bounded by the talus to the west and by the stream on the east and north. There are three sub-benches which are progressively higher upstream. The makai and lowest shelf contains possible wall segments but is too eroded to allow any distinct identifications. The mauka and highest shelf is roughly triangular measuring approximately 130 x 120 x 20 m. The average north-south slope is 1.5°. Parts of the sub-bench banks appear to be faced, but this area is extremely eroded. There are two unrelated wall segments running approximately north-south: one is an alignment in the middle of the sub-bench about 7 m long and the other is a bifaced, core-filled wall about 18 m long with a collapsed section; the wall stands between 80 to 136 cm high. Neither segments are associated with any visible features. The extreme southern tip of this sub-bench contains a boulder mound measuring 40 x 35 x 10 m; a wash channel runs between it and the pali on the west. Possible boulder facings may exist at the northern end of the mound.

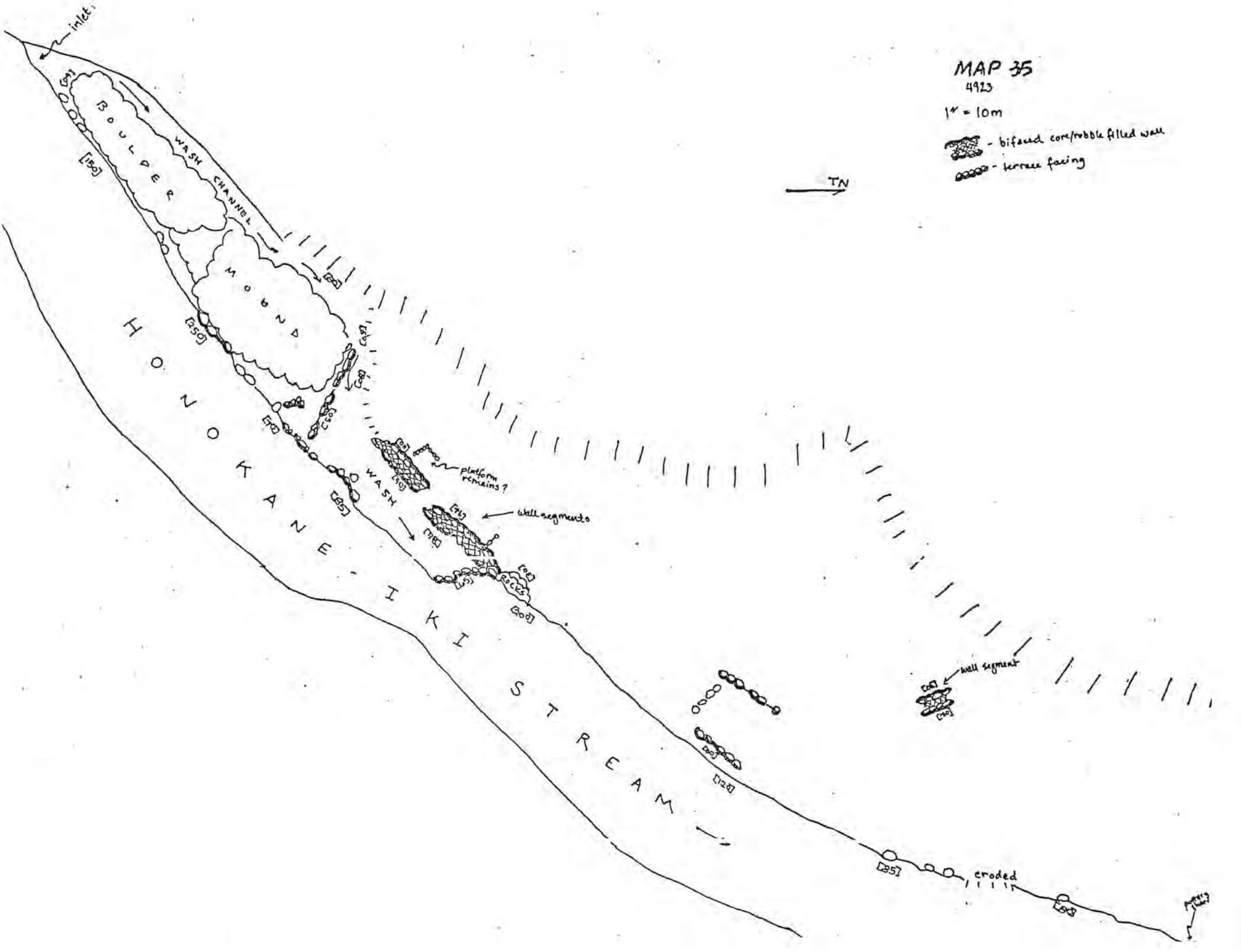
A shard of "blue on white" pottery was found on the surface at mid-bench, unassociated with any structures.

MAP 35

4923

1" = 10m

 - bifaced core/robbie filled wall
 - terrace facing



The site has historic construction over agricultural features.

4924: walls and facings on land bench

Area: 350 x 300 m

Vegetation: mixed canopy of guava and mountain apple, scattered hala; ground cover of grasses and shampoo ginger

This site is located on the second branch on the east side of Honokane Iki Stream mauka of the trail. There are two basic sub-benches: the lower, level shelf contains segments of possible facings; the upper shelf has structures covering a roughly rectangular area measuring about 70 x 30 m in size. Two bifaced, core-filled walls lie perpendicular to the length of the bench; they are about 20 m apart, and run from the talus to the edge of the shelf. Both are about 20 m in length and range in height from 40 to 120 cm. Construction is rough, and the walls are partially collapsed.

South of the two walls is a boulder alignment, about 45 m long, which runs along the base of the talus and intersects with a bifaced, core-filled wall at its southern extent. The wall is 10 m long.

Two boulder mounds are located between the southern wall and the other two walls. The larger of the mounds is about 20 x 5 m and is fronted by three boulder alignments which form right angles. This may be a platform. The smaller mound is about 10 x 5 m in size.

No surface artifacts were found.

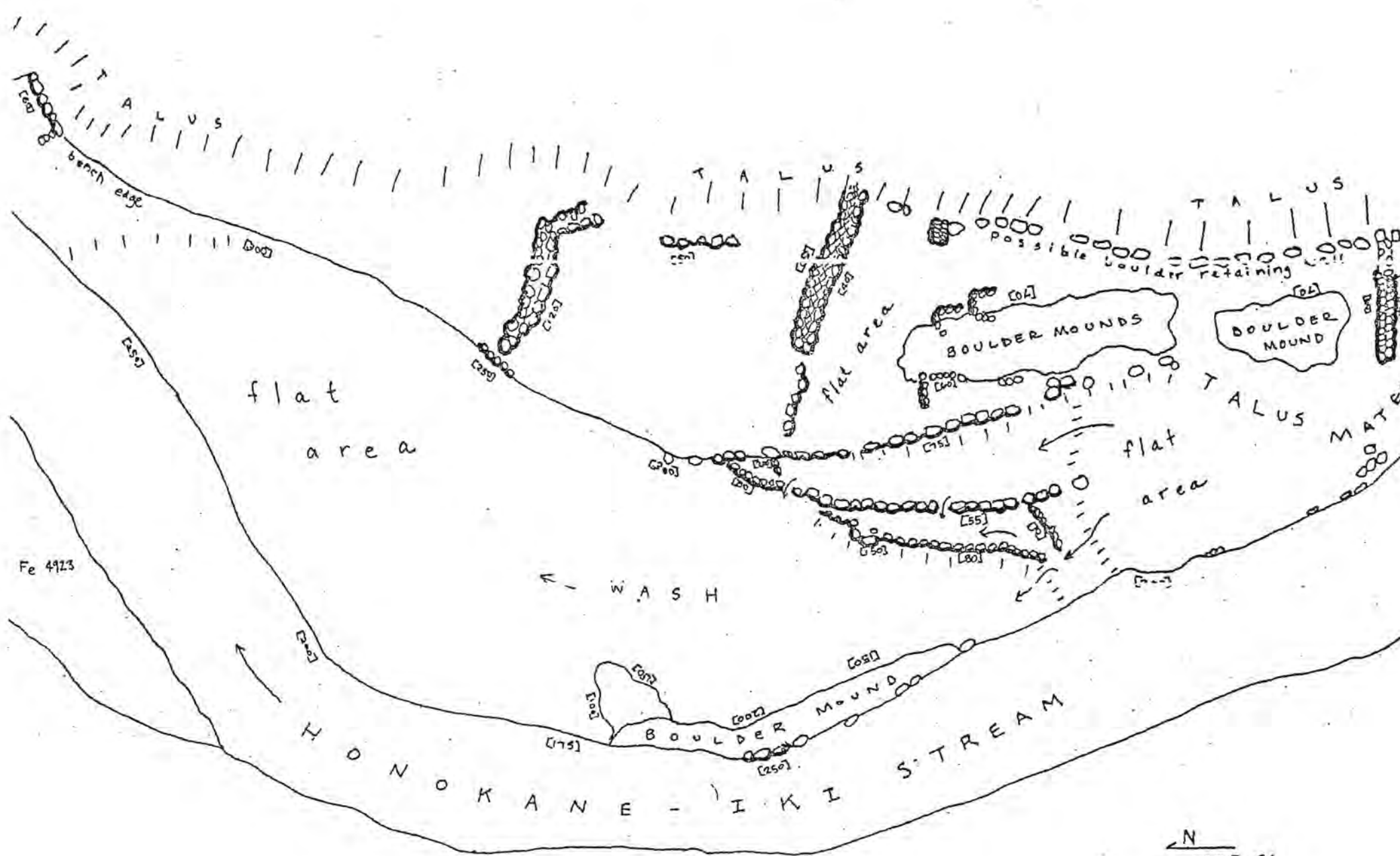
The site is primarily agricultural in function; with some irrigation segments.

4925: platforms and alignments

Area: 170 x 130 x 20 m (bench area)

Vegetation: guava, mountain apple, and some hala; some bamboo and breadfruit

This site is located on the third land bench on the west side of Honokane Iki Stream, mauka of the trail. At the widest point of the bench is a rectangular platform with bifaced, core-filled walls of sub-angular basalt. It measures roughly 10 x 11 m, with walls ranging in height from 25 to 130 cm.






N
 MAP 36
 4924
 1" = 10m

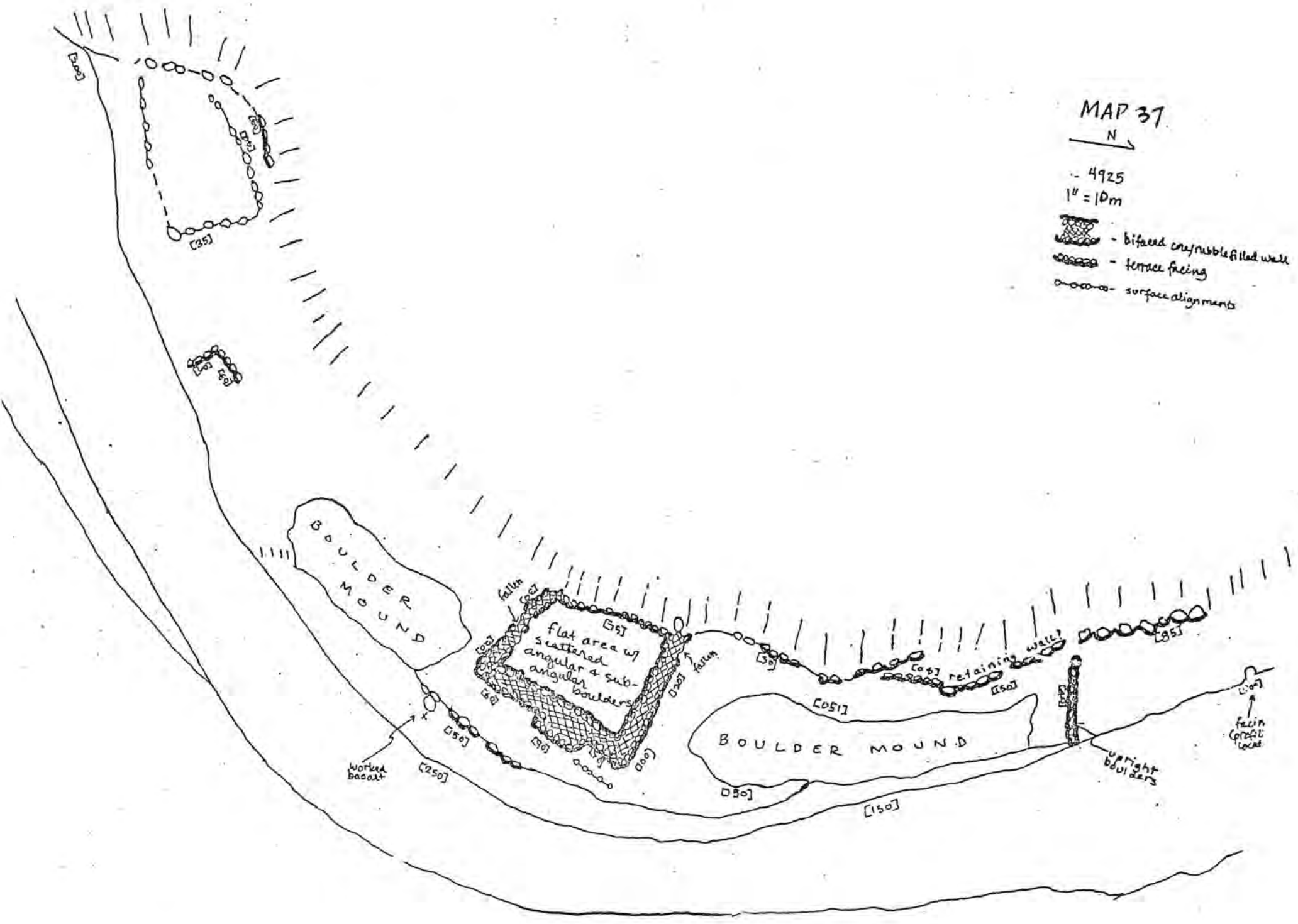
MAP 37

N

4925

1" = 10m

-  - biface craynubble filled wall
-  - terrace facing
-  - surface alignments



The south wall is partially collapsed. A boulder alignment, about 55 m long, located along the base of the talus, runs into the west wall of the platform. It ranges in height from 35 to 150 cm. This platform is well-built and in good preservation.

Approximately 50 m south of the platform and at the limits of the bench are the remains of another rectangular platform, about 10 x 20 m in size. Only boulder alignments, suggesting walls and the rectangular shape, remain. This feature is located within a bamboo grove.

Examination of the stream bank showed the presence of agricultural soil, probably ponded. The feature may be an old agricultural complex which has been partly modified by historic activity. There may also be remains beneath the enclosure and prehistoric habitation.

4926: terraces

Area: 60 x 60 x 50 m. (bench area)

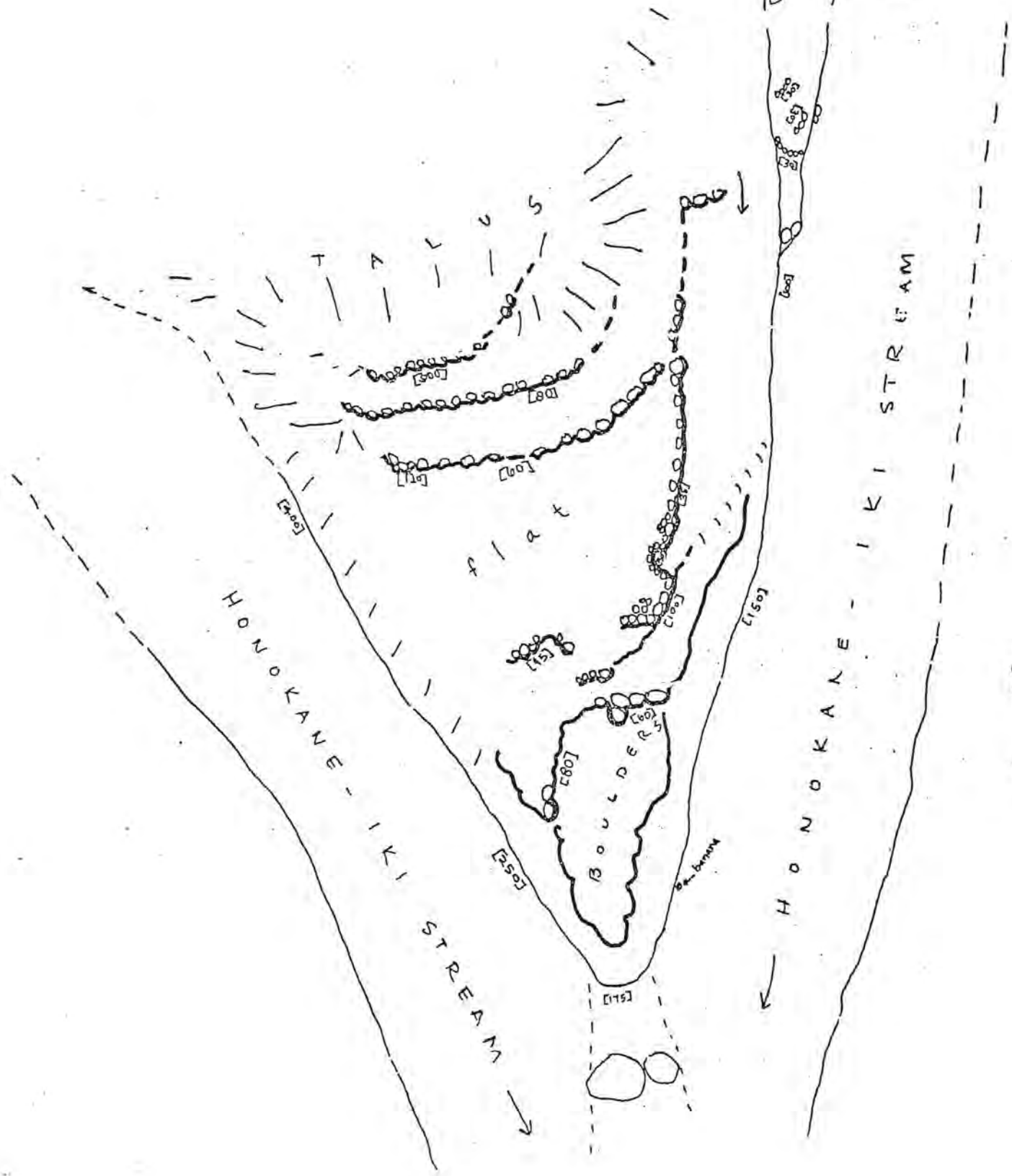
Vegetation: bamboo, scattered guava and mountain apple; ground cover of grasses, paumakani, and shampoo ginger; one young banana tree growing in streambed adjacent to site area.

This site is located on the land bench formed by the branching of Honokane Iki Stream. It is roughly triangular-shaped with a 8° slope. At the southern end of the bench are three small terraces, with sub-angular basalt facings measuring 60, 80 and 300 cm, from lowest to highest. The width of the lowest terrace is 5 m; the width of the middle one is about 3 m. The lowest facing is 30 m long; the length of the middle facing is 25 m. The three facings form semi-circles and correspond to the rising contour of the land shelf. The apex of dividing ridge lies above the upper most terrace.

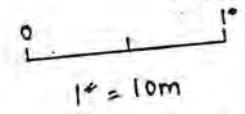
No surface artifacts or midden were found.

The site was probably for dry cultivation but no excavation was conducted to test this possibility.

4927: A "fortified" knoll in the Honokane Iki area. The site is about 500 m long and from 5 to 15 m wide. The makai end is marked by a notch cut into the ridge, about 5 x 5 meters in floor dimensions with the faces 3.5 and 6 m in height. The base material is a crumbly basalt which could be broken out reasonably easily. This "notch" is in effect a ditch



MAP 38
4976



 - facing

which would require attackers to pass through before gaining the central area of the knoll. The sides of the cliff are extremely steep and covered with loose stones so that if cleared of vegetation they would be very difficult to negotiate. On the inland bluff of the notch are four piles of waterworn stones, each pile ca 1 m in diameter. Many of the stones are from 10 to 15 cm in length. Also flaked cobbles ("choppers") and basalt flakes are found on the surface. Charcoal fragments and basalt flakes are eroding from one side of this upper bluff. The other side of the bluff has a partial stone facing. The stones appear to be piles of weapons awaiting use against those who might storm the fortification. From the notch further inland toward the crest of the knoll are a number of small (ca. 5 x 5 m) platforms and terraces. At the top of the knoll toward the inland side are a number of boulders, some of which appear to have been aligned across the ridge. The site ends by a 4 m drop (without a notch) after a long incline down from the knoll toward the inland side. On the bluff above the notch are scattered waterworn stones, a possible paving, and artifacts which include basalt flakes, a basalt core, choppers, and adzes.

The dominant vegetation is *ohi'a lehua* and strawberry guava, with grasses in the unforested areas.

This is possibly the *heiau* and "battle hill" of *Puu'uomane'o*. Three battles associated with the unification of the island of Hawaii occurred at *Pu'uomaneao*.

The site and one battle were described by Father Elias Bond from information obtained in the mid-1830's (as summarized by Thurmon 1907: 61);

Pu'uomaneao (sic.) is a *heiau* and *puukaua* (battle hill), 18 to 24 feet long and about four feet high, originally built up with some regularity, situate on the ridge...near the eastern limits of North Kohala. It consists of a large heap of *a-la* (smooth or waterworn) stones, which are said by an old native to have been carried up from the bottom of (the valley) for use as missiles in an anticipated battle against Umi who was approaching by the mountain route from Kau and the Konas.

However, Umi surprised by attack from the rear.

This fact, with the great number of

people in his army, caused the would-be defenders to flee incontinently leaving their heap of stones unused, to remain to the present day.

Fornander records the story of the son of Umi, Keawenui-a-Umi who after the death of his elder brother, engaged in a series of battles for the sovereignty of Hawaii. He slew the chiefs of the six major districts. According to Fornander, the major victory was at "Puumaneo, in Kohala district" (1969, II: 111).

Fornander argues that Keawenui-a-Umi recognized that his kingship was illegitimate and on his deathbed he thus conferred the succession to Kaikilani, who was the daughter of the son of his elder brother, the rightful heir, and also the joint wife of two of his own sons, one of whom was Lonoikamakahiki (Fornander 1969, II: 114). Later when Lonoikamakahiki attained the full paramount position of Hawaii he insulted his brother and the relatives of Kaikilani (by nearly killing her). They lead a revolt against Lonoikamakahiki, which took eight battles for him to put down, the last at "Puumaneo, on the high lands above Pololu" (Fornander 1969, II: 121).

As far as I can find, Kamakau refers to none of these battles (although in Sterling (1974: 71) there is an index reference to "Pu'umaneone (Pu'umaneone), battle," but no page number is given and this is not listed in Appendix A on battles). Thus no corroborating source is available.

In the Fornander: Collection of Hawaiian Antiquities, (1916-17: 308-330) the tales of the battles of Keawenui-a-umi and Lonoikamakahiki are given in detail. In the battle of Lonoikamakahiki, it is noted that he "rendezvoused at the upper part of Pololu at the top of the knoll of Puumaneo, where the battle was fought ..." (Fornander 1916-17: 330). There is thus some possible confusion with the location of Puumaneo as recorded by Bond and Fornander. There is also a question of the distinction between Puumane'o and Pohakuomane'o. Finally there is the question of the number of battles fought. It is perhaps remarkable that three generations of chiefs (living in the 16th century A.D. according to the traditional 30 year generation chiefly chronology) should successively solidify their kingdoms on the same isolated battleground.

Whatever the historical reality may have been, site 4927 is of major importance because of the

research potential for warfare evidence and it is also an outstanding site because of the surface evidence of conflict. It is in this regard a very fragile site and should be protected from looting and vandalism. For this reason the location is not given here with precision. The research potential also includes the possibility of testing some of the traditional stories and perhaps actually moving us a step closer to at least one historical reality. Sites 4945 and 4946 should also be included in this possibility.

The one final point which should be emphasized is that not only does Bond (via Thrum) identify Pu'uomane'o as a heiau, its probable location (4927) is considered a heiau by local people who see it as being an extremely important (sacred?) site. This should be taken into consideration in regard to both preservation and research.

C. Awiri Ahupua'a

1. Background

a. Environment

Awini is the final remote ahupua'a of Kohala, extending from Honokane to the valley of Honokea and the Hamakua District border. Awini has no coastal valleys within its borders but it does include a section of Honokane Iki and Honokea so that coastal access seems to have been assured. Awini is an extremely rugged dissected plateau, or wide ridge which begins at sea cliffs some 600 feet high and rises toward the interior with a rather steep grade to an inland elevation of 6000 feet some 9 km inland. The effective occupation area of Awini is approximately from one to two km from the coastal cliffs. Within this area are stream beds suitable for small wet terraces and some areas suitable for habitation. However, even here the terrain is

rough, heavily vegetated, and dangerous. The Kohala coastal trail turns inland on the ridge and joins the Kohala Ditch Trail at one of the Ditch Co. cabins, about 2 km inland and at an elevation of 1800 feet above sea level.

The vegetation is guava, strawberry guava, ohia lehua, and ferns.

b. Legends and History

Kamakau records that when Cook came close to the Kohala coast in 1778 (1961: 98):

"the whole population of Kohala...flocked to the cliff-side....They came from Awini to Kekaha...

Awini was the hinterland:

Ellis makes no mention of Awini. Father Bond visited Awini in 1834 and remarked that he is the first missionary to succeed in doing so (Damon 1927).

The 1835 census lists Awini with 13 men, 10 women and 8 children (Kumu Hawaii 1835). How long Hawaiians remained in Awini is unknown. Bond's record book lists the date of last conversion as 1843, the last child baptism as 1875, the last death as 1881.

Awini was made government land during the Mahele. A number of tracts were sold as land grants under the title of Awini homesteads.

In 1898 the homesteads became the Awini Ranch and then in 1907 the Awini Coffee, Fruit and Stock Co. with the Kohala Sugar Company as proprietor (Polk-Husted's Directory). After 1911 Polk-Husted has no reference for

Awini. The property is now owned by the Kohala Corporation and used only as an access area to the Kohala Ditch. The one cabin is used on occasion for Ditch Company crew.

Several informants have mentioned that there was at least one okolehau still in the area, remnants of which are said to still(!) exist.

c. Archaeological Research

In 1972 a crew of three was shown an irrigation system (4896) in one of the upland gullies and remains of "Awini village" (4897). Other irrigation terraces are said to exist in the area but have not been located. In 1974 a crew of four spent an additional four days in the upland Awini area doing survey but were unable to locate additional sites, due in part to the extremely dense vegetation and dangerous terrain. No excavations were conducted.

2. Awini Complex: 10-03-4936

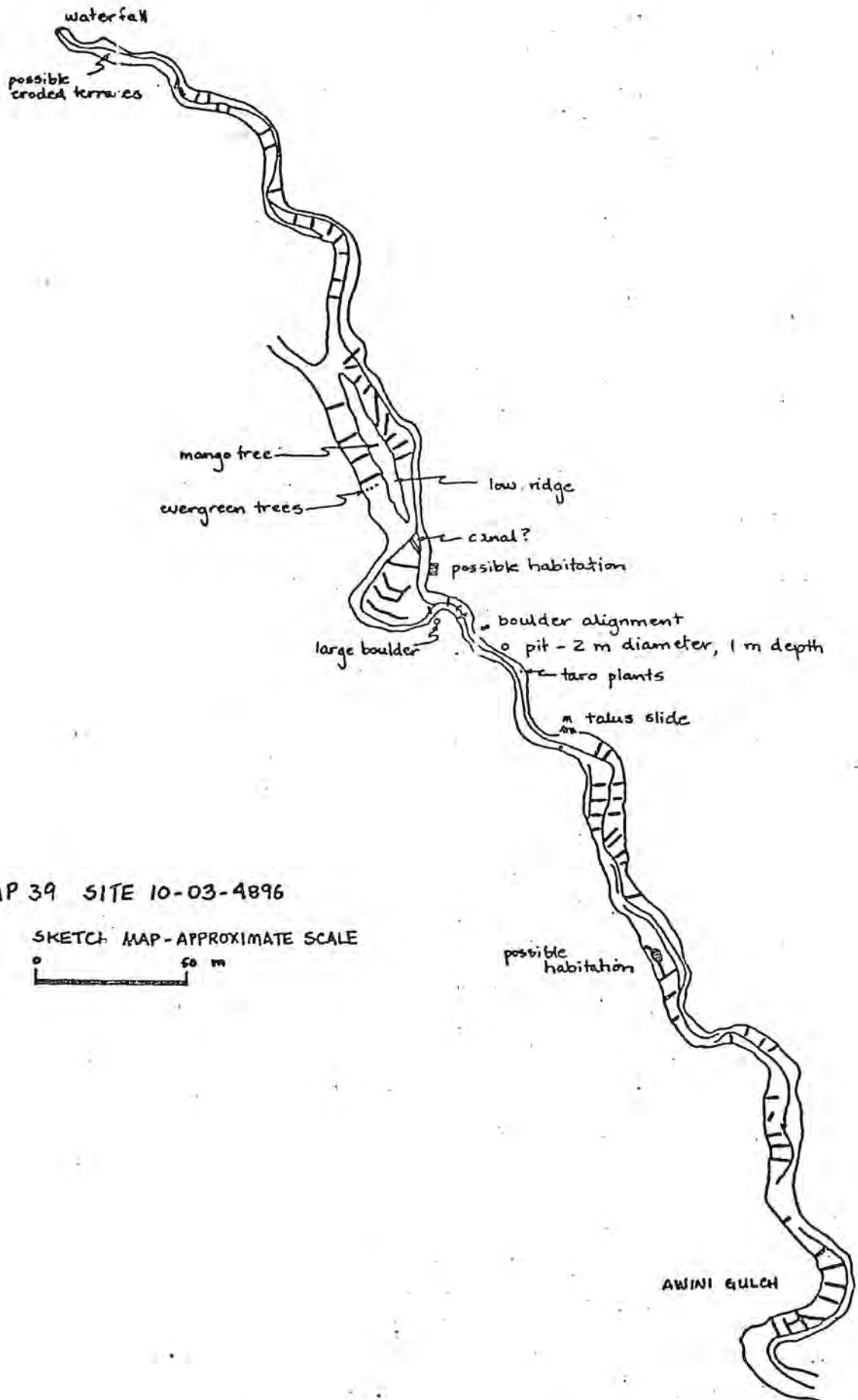
a. Background

Only two sites have been located in the upland Awini area, but others undoubtedly exist. Knowledge of these highland sites is quite important in understanding the full range of adaptations in Hawaii as well as for providing insight into political elements of population distribution in marginal areas.

b. Sites

4896: irrigated terrace system

This site is located in one of the branches of Waipahi Stream at an elevation of around 1300 feet above sea level, with vegetation primarily



MAP 39 SITE 10-03-4896

SKETCH MAP - APPROXIMATE SCALE



ohia lehua and dense fern. The terraces are constructed within the narrow streambed itself and number approximately . The site was sketched but steeping down at a slope of ca 10 degrees. The site was not mapped in detail nor excavated.

4897: "Awini village."

The location of this site on the map is approximate. The site was seen on a brief visit and it has not been returned to. A few historic artifacts, glass fragments and pieces of metal, are the only evidence of the village on the surface. Detailed excavation should be carried out.

D. Honopue Ahupua'a and Valley

1. Background

a. Boundaries and Environment

Honopue is the northernmost valley in the District of Hamakua. It is about 150 m wide at the mouth and its floor extends for about 1 km inland (defined as the lower valley) at a slope of about 3 degrees before the valley becomes extremely narrow and the section of effective occupation ends. The valley has a high boulder beach and a permanent stream which flows to the ocean a good part of the year. There are two permanent waterfalls on the southern side of the valley, one at the mouth and one about 1.5 km inland. The valley walls are quite steep and are from 1000 to 1500 feet high. Access to the valley by land is quite difficult. Travel along the landshelves at the base of the cliffs from Waimanu to Honopue is possible in good weather and periods of low tide. There is also the remnant of an old trail on the southern side of the valley which may be reached from

the Kohala Ditch Trail, but the descent is very hazardous.

The valley floor is an alluvial plain, somewhat dissected by stream action. Talus slopes are generally meagre. The vegetation in the lower section of the valley (up to .5 km inland) is an extremely dense scrub. Beyond this vegetation is primarily mountain apple and the valley floor is relatively open.

b. Legends and History

To my knowledge most of the historical records are silent regarding Honopue. In many ways the isolation of Honopue has left it as a no-man's land between the populous center of Waipi'o to the south and Kohala to the north.

The valley was not mentioned by Ellis. Lorenzo Lyons, from the Waimea mission visited the valley at least three times, but he left no descriptions. The Waimea Church Records indicate that the population of the valley was 47 in 1842. There are no good records for the depopulation of the valley but it was probably uninhabited by 1900, with the exception of one individual who continued to live on a small land shelf at the base of the cliff just to the Waimanu side of the valley mouth (William Sproat, personal communication), a spot called Makakiloia (Handy and Handy 1972: 537).

During the Mahele the valley was awarded to W.P. Leleiohoku, who gave it in turn to the government in commutation. Three land grants were subsequently sold

in 1852.

There has been no significant activity within the valley for probably a hundred years.

c. Archaeological Research

In 1972 a crew of 12 surveyed and test excavated the valley during a period of 7 days. A good portion of the lower valley could not be surveyed during this time because of the dense vegetation.

d. Archaeological Results

The surveyed areas turned up irrigation complexes and housesites. Particularly the habitation complex (prehistoric-19th century - 4805) in the front of the valley is rather remarkable by its compactness and the degree of its preservation. In other areas irrigation systems are still intact. One system (4808) has one of the valley mouth waterfalls as a source of water. An eroded portion of this site produced evidence of pre-agricultural habitation. Excavations in the rear of the valley in agricultural fields indicated early cultivation by swidden and later construction of irrigation terraces. Carbon-fourteen dates from both the front and the rear of the valley indicate that occupation may have been as early as A.D. 1200, considerably before the settlement of Pololu and Honokane, thus providing evidence for differential settlement of the Kohala-Hamakua coast and for a fairly long history of occupation of Honopue itself.

2. Honopue Valley Complex: 10-03-4937

a. Background

Limited time prevented full survey of the lower floor, so there are certainly many features and sites not yet recorded.

b. Sites

4805: habitation area at the mouth of the valley.

Immediately inland of the boulder beach is a series of platforms, pavings, walls, and enclosures which constitute this habitation site, which is on a level equal to that of the general valley floor. The basement of this habitation is unknown because of the lack of excavation, but it is probably alluvial. The location of this feature is an interesting problem because of the contrast with Honokane which has a similar topographic and alluvial pattern, but whose habitation complex sets to the side of the valley in an area which is somewhat inconvenient for irrigation. At the front of Honokane are irrigation terraces extending to the boulder beach (with only small living areas), the location held by habitation in Honopue.

The area mapped was 50 x 80 meters, but more features may be under adjacent vegetation. The vegetation on the site is hala.

This is a very important habitation site because of its location, density, preservation (including many surface artifacts and food remains), and its representation of transition from a prehistoric occupation, followed by 19th century abandonment.

4806: a small habitation complex toward the rear of the lower valley, with low stacked stone walls and clearings. The site is probably predominantly prehistoric, with a brief period of historic activity. Test excavations were conducted but no significant material was produced.

4807: an irrigated terrace complex located at the furthest inland portion of the lower valley. The arable land in this area is limited and somewhat eroded leaving a series of "islands" or

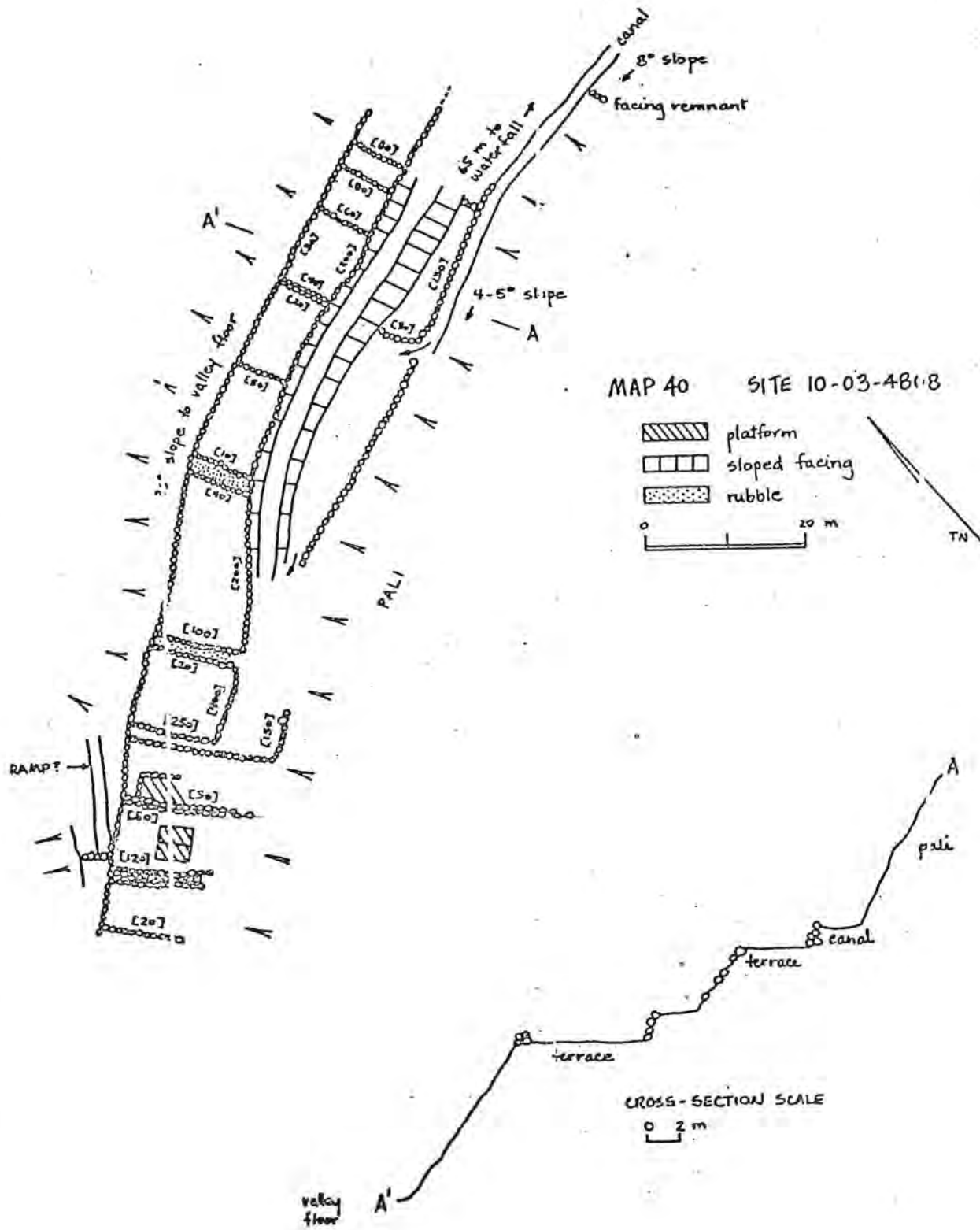
small segments suitable for cultivation. Terraces are constructed on these land pieces utilizing the stream as a water source. Some of the systems involves massive stone walls to form the terrace fields. The reason for this is not clear, although protection from flood is one possibility

Excavations into the field areas yielded data to suggest a period of "extensive" or swidden cultivation prior to the construction of the terraces. The earlier fields date to the 12-13th centuries A.D., while the later irrigation system may be as late as A.D. 1700.

- 4808: an irrigation terrace complex located on a talus and alluvial slope at the eastern side of the mouth of the valley. A rather steep slope has been terraced to take advantage of a waterfall which dropped over the bluff at the edge of the valley and falling into the sea. The waterfall was tapped (with bamboo) and the water brought into a canal constructed on the talus slope some 25 m above the floor of the valley and transported into the valley along the talus for over 60 m before it was brought into the top of the terraces. The water was then spread in toward both sides of the system. The inlandmost and highest terrace was not used for agriculture but rather for habitation and contains two platforms. A stone ramp leads from the valley floor up the face of the terraces to these platforms. The ocean side of the terraces has been eroded by storm surf. It exposed a number of habitation features, primarily fireplaces and earth ovens lying beneath the ponded terrace floors. Carbon from these structures was dated to the 13th century A.D.

This is a very impressive set of terraces, in good preservation, demonstrating important elements of Hawaiian engineering, the efforts expended to obtain irrigation water, and the change in activities in one locale from habitation to irrigated agriculture. Excavation of this terrace system would provide important information about developmental changes in Hawaiian agriculture.

- 4834: an irrigation system extending down the eastern side of the valley. This system is constructed in an old run-off stream channel (or ancient stream bed). The terraces are primarily facings set at various intervals along the dry bed, with occasional well-constructed terraces off to one side. Portions of the system have been destroyed



by erosion as a result of flood. This is a particularly interesting example of the use of a natural feature modified only the amount necessary to make it a productive agricultural area.

E. Apua Ahupua'a

1. Background

This highland ahupua'a has no valley openings to the ocean. The coastal segment is a very small, isolated shelf, the only area surveyed. It is quite probable that there are highland sites as well.

2. Apua Coastal Shelf Site: 10-03-4938





a. Background

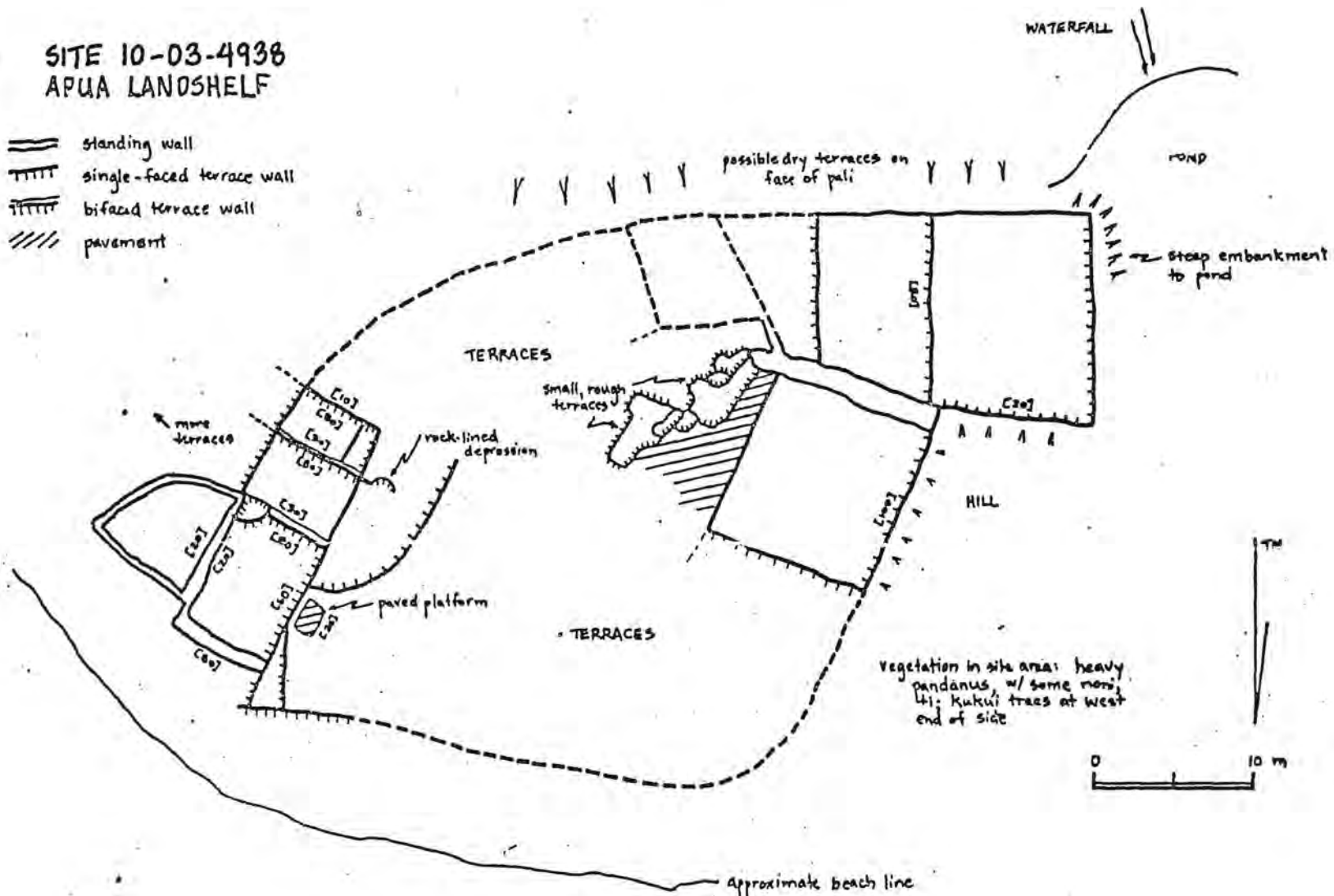
Apua is one of the most isolated coastal segments in the Hawaiian islands. It is a small coastal bench lying beneath the 1200 foot cliffs of the Hamakua coastline. This area was not included in the original research area and was only noted and sketched as the research crew hiked from Waimanu to Honopue. It is recorded because it is perhaps one of the best illustrations of the Hawaiian concern with finding flowing water for irrigation.

b. Site 4938: irrigation and habitation complex

The total land area of the Apua bench is around 1000 sq m. It is largely covered with habitation platforms and irrigation terraces. The source of water for the terraces is a waterfall which drops at the rear of the complex. The rear terraces are approximately 5 m above the level of the pool at the base of the falls, so the means by which water was channelled into the fields is unknown. In addition the fall is by no means always tranquil; after heavy rains it becomes a torrent, blasting its way to the shore. Any structures designed to trap water would be destroyed after each heavy rain.

MAP 4 SITE 10-03-4938
APUA LANDSHELF

-  standing wall
-  single-faced terrace wall
-  bifaced terrace wall
-  pavement



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Comparable sites exist further south along the coast on the Laupahoehoe land shelves.

Research Potential regarding Hawaiian occupation and development of marginal/hazardous environments is very high. This is an excellent example of an isolated Hawaiian house and agricultural system.

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Appendix

Plant Names

bamboo: Barbusa spp.

banyan: Ficus microcarpa

breadfruit: Artocarpus communis

christmas-berry: Schinus terebinthifolius

guava: Psidium guajava

hala: Pandanus tectorius

hau: Hibiscus tiliaceus

Hawaiian ginger: Zingiber zerumbet

honohono grass: Commelina mediflora

ironwood: Casuarina spp.

java plum: Eugenia malaccensis

koa: Acacia koa

kukui: Aleurites moluccana

mamani: Edwardsia chrysophylla

mango: Mangifera indica

mountain apple: Eugenia malaccensis

noni: Morinda citrifolia

ohi'a lehua: Metrosideros collina

o'i: Verbena litoralis

rose apple: Eugenia jambos

strawberry guava: Psidium cattleianum

swordfern: Nephrolepis exaltata

taro: Colocasia esculenta

ti: Taetsia fructicosa