November 6, 1998

Mr. Gary Gill, Director
State of Hawaii
Office of Environmental Quality Control
220 South King St, Fourth Floor
Honolulu, HI 96813

Dear Mr. Gill:

FINDING OF NO SIGNIFICANT IMPACT

Having reviewed the comments received on the draft Environmental Assessment for Land Acquisition of the Wainiha Water Tank Site, located at Wainiha, Kauai, Hawaii, TMK:5-8-02:por. 3, during the thirty-day review period which began on October 23, 1995, the Department of Water, County of Kauai has determined that this project will have no significant environmental effect, and with this letter, issues a finding of no significant impact.

We request that you publish notice of this determination in the next issue of the Environmental Notice. Enclosed are four copies of the Final EA and a completed Bulletin publication form. Please call Keith Fujimoto of my staff at (808) 245-5449 if there are any questions.

Sincerely,

Ernest Y. W. Lau
Manager and Chief Engineer

KF:ls
Enclosures

xc: Portugal & Associates, Inc. (w/o enclosures)
ENVIRONMENTAL ASSESSMENT

LAND ACQUISITION
OF THE
WAINIHA WATER TANK SITE

Wainiha, Kauai, Hawaii

TMK: 5-8-02: Por. 3

Prepared For
DEPARTMENT OF WATER

County of Kauai

By

PORTUGAL AND ASSOCIATES, INC.
Civil Engineers and Land Surveyors
1840 Leileioa St., Lihue, HI 96766

February 1997
TABLE OF CONTENTS

I Authority
II Proposing Agency
III Description of the Project
IV Description of the Affected Environment
V Impacts on the Environment
VI Determination
VII Findings and Reasons Supporting the Determination
VIII Land Acquisition

ATTACHMENTS

Exhibit “A” Conservation District Map
Exhibit “B” Location Map
Exhibit “B-1” Kauai Island Map
Exhibit “C” Tank Site Lot and Easement “D”
Exhibit “D” Technical Description, Lot 1
Exhibit “E” Technical Description, Easement “D”
Exhibit “F” Letter from County Attorney to Warren Robinson
Exhibit “G” Letter from County Attorney to Bruce Robinson
Exhibit “H” Letter from William Paty to Ray H. Sato,
Manager-Chief Engineer, Department of Water,
County of Kauai
Exhibit “M” Letter from Gary Gill, OEQC
   to Muriel Nielsen, Manager-Chief Engineer,
   Department of Water, County of Kauai
   Letter to Gary Gill, OEQC
   from Ernest Y.W. Lau, Manager-Chief Engineer,
   Department of Water, County of Kauai

APPENDIX

Botanical Survey for the Proposed Land Acquisition of the Wainiha Water Tank Site by David H. Lorence, Ph.D., Botanist and Timothy W. Flynn, Botanist

Archaeological Investigation of Land Proposed for Acquisition by County of Kauai at Wainiha, Kauai (TMK: 5-8-02: Por. 3) by Hallet H. Hammatt, Ph.D. and Gerald Ida, B.A.

LIST OF GOVERNMENTAL AGENCIES, PRIVATE ORGANIZATIONS, AND INDIVIDUALS CONSULTED IN THE PREPARATION OF THIS ASSESSMENT
I. AUTHORITY

This Environmental Assessment is being prepared in accordance with the requirements of Chapter 343, Hawaii Revised Statutes, and the Regulations for Environmental Impact Statements of the Environmental Quality Commission, State of Hawaii.

II. PROPOSING AGENCY

Department of Water, County of Kauai, Lihue, Kauai, Hawaii.

III. DESCRIPTION OF PROJECT

A. Background:

In 1977, the Department of Water constructed a 100,000-Gallon water storage steel tank in Wainiha, Kauai, Hawaii (See EXHIBIT "B") on land owned by the Estate of Lester B. Robinson. Prior to the construction of the tank, there was some discussion as to the purchase of the land, but no formal agreement was ever reached between the parties involved.

In September 1991, the Department of Water offered to purchase the tank site from the Estate of Lester B. Robinson and obtain at the same time, an access and utility easement through the property owned by the estate of Lester B. Robinson, beginning at the Powerhouse Road, owned by the County of Kauai, to the tank site. See EXHIBIT "C". The tank site lot is identified as Lot 1, with an area of 6,000 square feet. The easement is identified as Easement D, and the area is 15,769 square feet.

However, the tank site and the access and utility easement thereto, are within the State Conservation District, and any subdivision within the Conservation District requires a Conservation District Use Application, which further requires that an Environmental Assessment be prepared, and approval thereof obtained prior to the filing of the Conservation District Use Application. See EXHIBIT "L"

The purpose of this assessment is to address and fulfill that CDUA requirement.

B. Site Description:

The site is identified as TMK: 5-8-02: Por. Parcel 3, Wainiha, Kauai, Hawaii. It is on the right side of the PowerHouse Road, approximately 1000 feet mauka of Kuhio Highway.

Page 1
C. Existing Tank Structure:

The water tank is above-ground. It has a storage capacity of 100,000 gallons, made of steel, and was constructed in 1977. Maintenance is being conducted by County of Kauai Department of Water personnel on a monthly basis. The last time the tank was re-painted was in 1986 according to Mr. Les Yoshioka, the Department of Water Operations Chief.

The water tank is cylindrical, with a diameter of 32 feet, and 18 feet in height. The existing tank floor elevation is 126.50 feet above MSL. It is painted green and not visible from the main highway.

It is the main water storage tank for the Wainiha-Haena water system.

D. Access:

Access to the tank site is through an existing dirt road, which starts from the Powerhouse Road, at an approximate elevation of 53 feet, and winds and rises to an elevation of 126 feet at the site. The approximate grade is 18 percent.

IV. DESCRIPTION OF THE AFFECTED ENVIRONMENT:

A. Site and Location:

The tank site is located within the State Conservation District. It is adjacent to a single family residential development.

The existing soil is classified as rough broken land, mountainous and steep, well-drained, and not suited for machine tillability. The Ag productivity rating is E, meaning that it has the lowest productivity, A being the highest.

B. Vegetation and Rainfall:

Except for a few mango trees, the area is primarily vegetated with haole kea, wild guavas, lantanas, and molasses grass. A flora and fauna survey of the project site has been conducted by qualified professionals as required, and made a part of this assessment.

The annual average rainfall is 60 to 200 inches.
V. IMPACTS ON THE ENVIRONMENT:

a. Flora and Fauna:  
None

b. Noise and Air Quality  
None

c. Archaeological and Historical Sites:  
None

d. Agricultural:  
None

e. Existing Utility Services:  
None

f. Fire and Police Protection:  
None

g. Vehicular Traffic:  
None

VI. DETERMINATION:

The project will not have any adverse impact to the environment. Therefore, an Environmental Impact Statement is not required, and a finding of no significant impact is considered enough and sufficient disclosure of potential environmental impacts.

VII. FINDINGS AND REASONS SUPPORTING DETERMINATION:

A. Flora and Fauna: The land has been considerably disturbed during the construction of the tank and the access dirt road. There are no known endangered species of wildlife and plantlife within the tank site, nor any listed exceptional trees within. A flora and fauna survey by qualified professionals is included as part of this assessment.

B. Air and Noise Quality: There is no planned construction activity to be undertaken by the Department of Water within the site, other than routine for routine maintenance and repair.

C. Archaeological and Historical Sites: There are no known archaeological and historical sites within the project area. An archaeological survey is included as part of this assessment.

D. Utilities, Fire and Police Protection, Vehicular Traffic: All these services are not impacted at all by the tank site acquisition project.
VIII  LAND ACQUISITION

The Department of Water proposes to acquire the property fee simple. Initial discussions with the owners of the property indicate willingness by the Owners to convey the land to the County of Kauai at a fair and reasonable value. The County proposes to have the land appraised at current market value by an independent and reputable Appraiser, and offer to purchase the property at appraised value from the Owners. If the Owners feel that the value is less than what they feel is the fair and reasonable market value, the Owners can have the subject property appraised by at least (3) independent and reputable Appraisers, and get back to the Department of Water, who shall decide at that time whether to accept the average of the appraised values as fair and reasonable, or not, and proceed accordingly.

The fair and reasonable purchase price is indeterminable at this stage simply because the subdividibility of the tank parcel depends on whether a Conservation District Use Permit is granted or not. This Environmental Assessment is a pre-requisite for obtaining approval of the Conservation District Use Application. No CDUA has been filed yet for this particular reason.
LIST OF GOVERNMENTAL AGENCIES, PRIVATE ORGANIZATIONS, AND INDIVIDUALS CONSULTED IN THE PREPARATION OF THIS ASSESSMENT

1. Department of Water, County of Kauai
2. Planning Department, County of Kauai
3. Public Works Department, County of Kauai
4. Department of Land and Natural Resources
   Division of Forestry and Wildlife
5. Tropical Botanical Garden, Kauai
6. Wayne Hinazumi, Department of Water, County of Kauai
7. Murl T. Nielsen, Department of Water, County of Kauai
8. Galen K. Kawakami, DLNR, Div. of Forestry and Wildlife
9. Keith Nitta, Planning Department, County of Kauai
10. Oscar C. Portugal, Department of Public Works, County of Kauai
11. Hallett H. Hammatt, Ph.D, Cultural Surveys Hawaii
12. Gerald Ida, Cultural Surveys Hawaii
13. David H. Lorence, Ph.D., Botanist
14. Timothy W. Flynn, Botanist
CONSERVATION DISTRICT MAP
EXHIBIT "A"
DESCRIPTION

Lot 1

All of that parcel of land situate at Wainiha, Halelea, Kauai, Hawaii
being a portion of Lot 202, Wainiha Hui Land, being also a portion of R.P.
7194, L.C. Award 11215, Apas 5 to Kekaunoho and being more fully described
as follows:

Beginning at the South corner of this Lot, the coordinates of said point
of beginning referred to Government Survey Triangulation Station "KIMA-2"
being 3,399.91 feet South and 486.57 feet West, thence running by azimuths
measured clockwise from True South:

1. 141° 30' 50.00 feet along the remainder of Lot 202;
2. 231° 30' 120.00 feet along same;
3. 321° 30' 50.00 feet along same;
4. 51° 30' 120.00 feet along Easement D to the point of
   beginning and containing an area of
   6,600 square feet.

Prepared By:

Calvin L. K. Ching
Registered Professional Land Surveyor
Certificate Number 1415 ES

January 17, 1988
Lihue, Kauai
DESCRIPTION

EASEMENT D

All of that parcel of land situate at Mailiha, Halelea, Kauai, Hawaii being a portion of Lot 202, Mailiha Hal Land, being also a portion of R.P. 7194, L.C. Award 11216, Apana 2 to Kekauonoal and being more fully described as follows:

Beginning at the Easternmost corner of this Easement and on the Southwest boundary of Lot B, the coordinates of said point of beginning referred to Government Survey Triangulation Station "NIHA-2" being 3,325.26 feet South and 155.80 feet West, thence running by azimuths measured clockwise from True South:

Along the remainder of Lot 202 for the first eight (8) courses, the azimuths and distances being:

1. 62° 15' 159.38 feet;
2. Thence on a curve to the right having a radius of 100.00 feet, the chord azimuth and distance being: 60° 30' 21.77 feet;
3. 74° 45' 41.50 feet;
4. Thence on a curve to the left having a radius of 50.00 feet, the chord azimuth and distance being: 59° 07' 30" 26.93 feet;
5. 43° 30' 51.00 feet;
6. Thence on a curve to the right having a radius of 20.00 feet, the chord azimuth and distance being: 113° 00' 37.47 feet;
7. 182° 30' 42.33 feet;
8. 141° 30' 15.17 feet;
9. 231° 30' 137.00 feet along Lot 1 and the remainder of Lot 202;
10. Thence along the remainder of Lot 202 on a curve to the left having a radius of 50.00 feet, the chord azimuth and distance being: 187° 30' 69.47 feet;
11. 143° 30' 37.03 feet along same;
12. Thence along same on a curve to the right having a radius of 70.00 feet, the chord azimuth and distance being: 165° 00' 51.31 feet;

EXHIBIT "E"
EASEMENT D (Sheet 2)

13. Thence along same on a curve to the left having a radius of 20.00 feet, the chord azimuth and distance being: 193° 31' 52.4" 21.77 feet;

14. 210° 00' 20.00 feet along Lot A;
   Thence along the remainder of Lot 202 for the next nine (9) courses, the azimuths and distances being:

15. On a curve to the right having a radius of 40.00 feet, the chord azimuth and distance being: 333° 23' 26" 43.74 feet;

16. Thence on a curve to the left having a radius of 60.00 feet, the chord azimuth and distance being:
   345° 00' 36.65 feet;

17. 323° 30' 37.03 feet;

18. Thence on a curve to the right having a radius of 70.00 feet, the chord azimuth and distance being:
   7° 30' 97.25 feet;

19. 51° 30' 77.56 feet;

20. Thence on a curve to the left having a radius of 15.00 feet, the chord azimuth and distance being:
   333° 01' 30" 29.33 feet;

21. 254° 45' 65.18 feet;

22. Thence on a curve to the left having a radius of 80.00 feet, the chord azimuth and distance being:
   361° 30' 147.50 feet;

23. 242° 15' 22.77 feet along Lot B to the point of beginning and containing an area of 15,769 square feet.

Prepared by:

Calvin L. K. C.ing
Registered Professional Land Surveyor
Certificate Number 1415 ES

January 17, 1988
Lihue, Hawaii
September 5, 1991

Mr. Warren Robinson
C/O Gay & Robinson
P.O. Box 88
Makaweli, Hawaii 96769

Dear Mr. Robinson:

The Department of Water wishes to purchase land and obtain an easement through property owned by the Robinson family. The land is known as the Wainiha Water Tank Site and is identified under TMK: 5-8-02-03 (See Attachment). The property is currently being used by the Department of Water and there was some discussion as to the purchase of the land in 1975 but no agreement was ever reached.

The Department of Water is offering to purchase the land and the easement for the currently appraised value of $25,001.00 (Attached hereeto). The acquisition of the land could be through a sale or a "friendly" condemnation action.

Please notify or call me at 245-3688 regarding your decision or the need for further negotiations.

Sincerely,

James K. Tagupa
Deputy County Attorney

Attachment

EXHIBIT "G"
June 1, 1992

Bruce Robinson
P.O. Box 11
Makaweli, Hawaii 96769

Dear Mr. Robinson:

I have not yet received a copy of the Deed for the Wainiha Tank Site identified under TMK: 5-8-02-03. Please send me a copy as soon as possible so that I can prepare the necessary documents to enable the Department of Water to acquire the tank site from you.

If you have any questions, please do not hesitate to contact me at the above address or phone at 245-3688.

Sincerely,

James K. Tagupa
Deputy County Attorney

cc: Ray Sato, Department of Water

EXHIBIT "H"
Mr. Raymond H. Sato  
Manager and Chief Engineer  
Department of Water Supply  
County of Kauai  
P.O. Box 1706  
Lihue, Hawaii 96766-5706  

Dear Mr. Sato:

SUBJECT: Subdivision and Acquisition of the Wainiha Water Tank Site,  
Wainiha, Kauai, IM: 5-6-2: 3

Thank you for giving our Department the opportunity to comment on this matter. We have reviewed your letter dated December 2, 1992 and have the following comments.

A Conservation District Use Application is required for the proposed subdivision of State zoned Conservation District land. There are no exceptions to this requirement.

We have enclosed a Conservation District Use Application form and a copy of our Administrative Rules for your convenience.

Should you have any questions, please feel free to contact our Office of Conservation and Environmental Affairs, at 587-0377.

Very truly yours,

[Signature]

EXHIBIT "L"
October 20, 1995

Murl Nielsen, Manager & Chief Engineer
Kauai Department of Water
PO Box 1706
Lihue Hawaii 96766

Attn: Wayne Hinazumi

Dear Mr. Nielsen:

RE: Draft Environmental Assessment (EA) for Wainiha Water Tank Site Land Acquisition, Wainiha, TMK: 5-8-2: por. 3

Please include the following in the final EA for this project:

1. Please include a full discussion of how the land will be acquired. There is no indication in the draft EA that the current landowner is willing to sell. If the County of Kauai intends to purchase the property in question, the purchase price needs to be disclosed. If this is the case, the use of County funds would be an additional trigger to the EIS law for this project.

2. A map of the island with the project site indicated is required.

3. Include the status of the Conservation District Use Permit application.

4. Please list all State and county agencies consulted as well as all private organizations and individuals.

5. Exhibits E, F, H and L are missing from the draft EA. Please be sure they are included in the final EA.

EXHIBIT "M"
Please keep in mind that if no activity is proposed for this property, the land acquisition may be exempt from Chapter 343 requirements and an environmental assessment may not be needed. The document submitted does not contain the information required to determine Chapter 343 applicability. Our office would be happy to assist you in clarifying this matter.

Please call Nancy Heinrich at 586-4185 if you have any questions.

Sincerely,

[Signature]

Gary Gill

GG/nh

c: Cesar Portugal, Portugal & Associates
October 21, 1998

Mr. Gary Gill, Director
State of Hawaii
Office of Environmental Quality Control
220 South King Street, Fourth Floor
Honolulu, Hawaii 96813

Dear Mr. Gill:

Subject: Environmental Assessment (EA) for Wainiha Water Tank Site Land Acquisition, Wainiha, Kauai, Hawaii (TMK: 5-8-2; por.3)

The County of Kauai, Department of Water (DOW), is ready to submit for publication the Final Environmental Assessment (EA) for the subject land acquisition. This letter addresses the comments on the Draft EA submitted by the Office of Environmental Quality Control (OEQC) in your letter dated October 20, 1995. Your comments are summarized as follows, along with the DOW's response.

1. Provide a discussion of how the DOW will acquire the property.

As discussed in Section VIII of the Final EA, the DOW intends to purchase the property from the current landowner, at the fair market price. The fair market price has not as yet been established and agreed upon with the current property owner, but when established, the purchase is a public action of the Board of Water Supply. At present, we anticipate that the land acquisition cost will be approximately $30,000.

In the event that a purchase agreement with the property owner is not achieved, the Department may pursue the land acquisition by exercising our power of eminent domain. This process also involves establishment of the fair market price for the property being acquired.

2. Provide a map of the island that indicates the project site.

Please refer to Exhibit B-1 in the Final EA.

3. Indicate the status of the Conservation District Use Permit Application.

As discussed in Section VIII of the Final EA, the Conservation District Use Permit Application required for the subdivision of land associated with this property acquisition has not as yet been filed, pending the completion of this EA process.
4. **Provide a list of State and County agencies, private organizations and individuals consulted during the preparation of the EA.**

A list of agencies, organizations and individuals consulted during the EA process is attached following page four of the EA.

5. **Include Exhibits E, F, H and L in the Final EA.**

The referenced exhibits are included in the Final EA.

The DOW appreciates your comments, and will attach your comment letter and this response to the Final EA, which will be submitted for publication under separate cover. Based on our recent discussions with your staff, we understand that we should provide a listing of any permits that are required for the project. For this land acquisition project, a CDUA is required from the State Department of Land and Natural Resources. Subdivision approval from the County of Kauai is also required.

In the event that you have any further questions on this project, please contact Mr. Keith Fujimoto at (808) 245-5449.

Sincerely,

[Signature]

Ernest Y.W. Lau
Manager and Chief Engineer

ET:et

cc: Portugal & Associates
    Estate of Lester B. Robinson

EXHIBIT “M”
Botanical Survey for the Proposed
Land Acquisition
of the Wainiha Water Tank Site

David H. Lorence, Ph.D.
Botanist

and

Timothy W. Flynn
Botanist

May 1995
Botanical Survey for the Proposed Land Acquisition of the Wainiha Water Tank Site

Timothy W. Flynn and David H. Lorence

A botanical survey of the vegetation found on the Wainiha water tank site (TMK: 5-8-02: Por. Parcel 3, Wainiha, Kauai, Hawaii) was conducted on 13 May 1995. This parcel lies just north of the Powerhouse Road, approximately 1000 ft. from the junction of the Powerhouse Road and Highway 56.

Access to the site is along a gently sloping road that rises some 40-50 feet through secondary vegetation dominated by the naturalized tree species *Psidium cattleianum* (waiawi, or strawberry guava), *Psidium guajava* (common guava), and *Syzygium cumini* (java plum). Overgrowing all of these trees are the naturalized vines *Passiflora ligularis* (sweet granadilla) and *Canavalia cathartica* (maunaloa). The understory and edges of the road are dominated by *Stachytarpheta urticifolia*, *Elephantopus mollis* (elephant’s foot), *Neptholepis multiflora* (Boston fern), and *Schizachyrium condensatum*, all naturalized species. Scattered individuals of the indigenous fern *Odontosoria chinensis* (pala’a) are also found here, being most common on the north side of the road cut. As the road climbs and turns onto the tank “pad”, *Schizachyrium* dominates the roadside.

The graded tank “pad” is dominated by the water tank itself, occupying a mown “lawn” of various introduced herbs and grasses including *Desmodium incanum* (Spanish clover), *Desmodium tortuosum* (Florida beggarweed), *Sida rhombifolia*, and *Paspalum conjugatum* (Hilo grass). Two plants of the possibly indigenous grass *Paspalum scrobiculatum* (ricegrass) were also found in this area. The pad is bordered on the east-southeast by five large mango trees that are replaced first by strawberry guava and then *Schizachyrium* as one heads down slope to the access road. The west and northwest sides of the pad abut the cut slope and are clothed with a mixture of boston fern, pala’a, *Spathoglottis plicata* (Philippine ground orchid), elephant’s foot, and *Schizachyrium*.

On the ridge above the tank alien species, with one exception, again dominate the vegetation. Strawberry guava and java plum are the most common tree species, and they are almost uniformly overgrown with sweet granadilla. The open areas between the trees are clothed with a mixture of the native fern pala’a, elephant’s foot, *Schizachyrium*, and Philippine ground orchid. In some areas of the slope pala’a forms small, pure stands. Three other native species, *Peliotum nudum* (moa), *Metrosideos polymorpha* var. *glaberrima* (‘ohi’a lehua), and *Wikstroemia oahuensis* var. *oahuensis* (‘akia), were also seen on this slope. Single individuals of ‘akia and moa were seen while two individuals of ‘ohi’a lehua were found.

The vegetation of the site is overwhelmingly dominated by naturalized, alien (introduced) species, although five species that are either endemic or indigenous to the Hawaiian Islands were found. With the exception of the fern *Odontosoria chinensis* (pala’a), all of the native species were represented by one or two individual plants. Pala’a was abundant and in fact dominant in some areas of the slope above the tank as well as being found along the access road. *Paspalum scrobiculatum* (ricegrass), a questionably indigenous species, was represented by two individuals found near the tank. A single plant of *Peliotum nudum* (moa) was found growing in the crotch of a java plum on the lower southwest slope above the tank pad. A single individual of *Wikstroemia oahuensis* var. *oahuensis* (‘akia) and two individuals of *Metrosideos polymorpha* var. *glaberrima* (‘ohi’a lehua) were seen on the slope above tank, all at
least 25 feet from the rim. All of the native species found are relatively common and widespread and are not considered to be rare, threatened, or endangered by either the State of Hawaii (Division of Forestry & Wildlife) or the U. S. Fish and Wildlife Service. A list of all of the species seen on the site follows below.

**VASCULAR PLANT SPECIES LIST**  
_Wai'ulani Watertank site survey, 13 May 1995_  
(*Native species are in Bold Face type*)

<table>
<thead>
<tr>
<th>FAMILY</th>
<th>Scientific name</th>
<th>Common name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANACARDIACEAE</td>
<td>Mangifera indica L.</td>
<td>Mango</td>
</tr>
<tr>
<td>APIACEAE</td>
<td>Centella asiatica (L.) Urb.</td>
<td>Asiatic pennywort</td>
</tr>
<tr>
<td>ARALIACEAE</td>
<td>Schefflera actinophylla (Endl.) Harms</td>
<td>Octopus tree</td>
</tr>
<tr>
<td>ASTERACEAE</td>
<td>Elephantopus mollis Kunth</td>
<td>Elephant’s foot</td>
</tr>
<tr>
<td></td>
<td>Emilia fosbergii Nicolson</td>
<td>Flora’s paintbrush</td>
</tr>
<tr>
<td></td>
<td>Pluchea carolinensis (Jacquin) G. Don</td>
<td>Sourbrush</td>
</tr>
<tr>
<td>CASUARINACEAE</td>
<td>Casuarina equisetifolia L.</td>
<td>Ironwood</td>
</tr>
<tr>
<td>DRYOPTERIDACEAE</td>
<td>Nephrolepis multiflora (Roxb.) F. M. Jarret ex C. V. Morton</td>
<td>--</td>
</tr>
<tr>
<td>FABACEAE</td>
<td>Canavalia cathartica Thouars</td>
<td>Maunaloa</td>
</tr>
<tr>
<td></td>
<td>Chamaecrista nictitans (L.) Moench</td>
<td>Partridge pea</td>
</tr>
<tr>
<td></td>
<td>subsp. patellaris (DC ex Collad.) H. Irwin &amp; Barneby</td>
<td>Spanish clover</td>
</tr>
<tr>
<td></td>
<td>var. glabrata (Vogel) H. Irwin &amp; Barneby</td>
<td>Florida</td>
</tr>
<tr>
<td></td>
<td>Desmodium incanum DC</td>
<td>beggarweed</td>
</tr>
<tr>
<td></td>
<td>Desmodium tortuosum (Sw.) DC</td>
<td>Koa haole</td>
</tr>
<tr>
<td></td>
<td>Leucaena leucocephala (Lam.) de Wit</td>
<td>Sensitive plant</td>
</tr>
<tr>
<td></td>
<td>Mimosa pudica L.</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>var. unijuga (Duchass, &amp; Walp.) Griseb.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Paraserianthes falcatoria (L.) I. Nielsen</td>
<td></td>
</tr>
<tr>
<td>LINDSAAEACEAE</td>
<td><em>Odontosoria chinensis (L.) J. Sm.</em></td>
<td>Pala’a</td>
</tr>
<tr>
<td>MALVACEAE</td>
<td>Sida rhombifolia L.</td>
<td>--</td>
</tr>
</tbody>
</table>
MELASTOMATAECAE
Clidemia hirta (L.) D. Don
\ var. hirta
Koster’s curse

MYRTACEAE
*Metrosperma polymorpha Gaud.
\ var. glaberrima (H. Lév.) St. John
Psidium cattleianum Sabine

Psidium guajava L.
Syzygium cumini (L.) Skeels
'Ohi'a lehua
Waiau, strawberry
\ guava
Common guava
Java plum

ORCHIDACEAE
Spathoglottis plicata Blume
Philippine
\ ground orchid

PASSIFLORACEAE
Passiflora ligularis Juss.
Sweet
\ granadilla

PLANTAGINACEAE
Plantago major L.
Broad-leaved
\ plantain,
laupahi

POACEAE
Paspalum conjunctum Bergius
*Paspalum scrobiculatum L.
Pennisetum clandestinum Chiov.
Pennisetum cl. setaceum (Forssk.) Chiov.
Sacciolepis indica (L.) Chase

Schizachyrium condensatum
Hilo grass
Ricegrass
Kikuyu
Fountain grass
Glenwood
\ grass

POLYPODIACEAE
Phymatosorus grossus (Langsd. & Fisch.) Brownlie
Lauae

PROTEACEAE
Grevillea robusta A. Cunn. ex R. Br.
Silk oak

PSILOTACEAE
*Psilotum nudum (L.) P. Beauv.
Moa

THELYPTERIDACEAE
Theleyptis parastica (L.) Fosberg

THYMELAEACEAE
*Wikstroemia oahuensis (A. Gray) Rock var. oahuensis
'Aokia

VERBENACEAE
Lantana camara L.
Stachytarpheta urticifolia (Salisb.) Sims
Lantana

---
GLOSSARY

Endemic: Plants native and confined to a particular geographic area. In this case it refers to the Hawaiian Islands.

Indigenous: Plants native to more than one geographical area, i.e., native to the Hawaiian Islands as well as other areas in the tropical Pacific.

Introduced: Plants that were brought to the Hawaiian Islands by man. Also referred to as weedy or alien species.

Native: Plants that arrived and/or became established in the Hawaiian Islands without the aid of man (they can be either endemic or indigenous). These species are generally regarded as having been in the islands before the arrival of the Polynesians.

Naturalized: Plants that are thoroughly established and reproducing by vegetative or sexual means, but originally coming from another area. These species were introduced, intentionally or unintentionally, by man or human activities.

REFERENCES


Archaeological Investigation of Land Proposed for Acquisition by County of Kaua‘i at Wainiha, Kaua‘i (TMK 5-8-02:Por.3)

by
Hallett H. Hammatt, Ph.D.
and
Gerald Ida, B.A.

for

Portugal and Associates

Cultural Surveys Hawaii
August 1995
ABSTRACT

An archaeological survey was conducted of the project area on August 3, 1995. The project area of approximately 21,000 sq. feet, includes an existing water tank and a road easement. No archaeological sites were encountered. The water tank site itself has been cut from the hillside to form a level platform well below the natural slope. Previously, (May 5, 1993) a survey was conducted by Cultural Surveys Hawaii on Lot 3 of TMK 5-8-02-3 (60' X 50' lot) in an area adjacent area to the water tank. The properties lie on the west side of Wainu Valley above the flood plain above the Old Wainuha Power House Road. Neither the 1993 survey or the present survey located any archaeological sites or any potential subsurface cultural materials. Therefore no further archaeological research is recommended.
ACKNOWLEDGEMENTS

Fieldwork for this project was performed by Mr. Kaipo Akana of Cultural Surveys Hawai‘i on August 3, 1996. Maps for the present study were provided by Mr. Caesar Portugal of Portugal and Associates.

All historical research and writing was conducted by Mr. Gerald Ida of Cultural Surveys Hawai‘i on Kaua‘i, utilizing the resources of Kaua‘i Community College, the Kaua‘i Museum and The Garden Island newspaper. Computer help was provided by Dr. Vicki Creed of Windword Processing, Kailua, O‘ahu.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT</td>
<td>i</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>ii</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>iv</td>
</tr>
<tr>
<td>GLOSSARY</td>
<td>v</td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>A. Project Area Description</td>
<td>1</td>
</tr>
<tr>
<td>B. Scope of Work and Methods</td>
<td>4</td>
</tr>
<tr>
<td>C. Work Accomplished</td>
<td>4</td>
</tr>
<tr>
<td>II. CULTURAL AND HISTORICAL BACKGROUND</td>
<td>5</td>
</tr>
<tr>
<td>Setting</td>
<td>5</td>
</tr>
<tr>
<td>Wainiha in Legends and Myths</td>
<td>6</td>
</tr>
<tr>
<td>Settlement and Land Use</td>
<td>7</td>
</tr>
<tr>
<td>LCAs in the Project Area</td>
<td>9</td>
</tr>
<tr>
<td>Rice Cultivation</td>
<td>9</td>
</tr>
<tr>
<td>The Wainiha Hui</td>
<td>12</td>
</tr>
<tr>
<td>III. PREVIOUS ARCHAEOLOGY</td>
<td>15</td>
</tr>
<tr>
<td>Bennett, 1931</td>
<td>15</td>
</tr>
<tr>
<td>Earle, 1978</td>
<td>16</td>
</tr>
<tr>
<td>Barrera, 1982-1984</td>
<td>19</td>
</tr>
<tr>
<td>Ida, Hammatt and Duncan (1993)</td>
<td>20</td>
</tr>
<tr>
<td>Recent Shoreline Studies</td>
<td>20</td>
</tr>
<tr>
<td>Research at Hā'ena</td>
<td>21</td>
</tr>
<tr>
<td>Implications for Archaeology of Wainiha</td>
<td>23</td>
</tr>
<tr>
<td>IV. SURVEY RESULTS</td>
<td>25</td>
</tr>
<tr>
<td>V. SUMMARY AND CONCLUSIONS</td>
<td>26</td>
</tr>
<tr>
<td>VI. REFERENCES</td>
<td>27</td>
</tr>
<tr>
<td>APPENDIX A: Place Names of Wainiha Valley</td>
<td>31</td>
</tr>
<tr>
<td>APPENDIX B: Photographs</td>
<td>34</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Fig. 1 State of Hawai'i .................................................. 2
Fig. 2 Kaua'i Island Location Map ........................................ 2
Fig. 3 USGS Topographic Map 7.5 Minute Series, Ha'ena Quad, Showing Project Location .................................................. 3
Fig. 4 TMK Map Showing Project Area in Wainiha, 6-8-02. ............. 10
Fig. 5 Map Showing Bennett's Sites in Wainiha (Sites 148-153) (from Bennett, 1931:98) ......................................................... 17
Fig. 6 USGS Map of Halele'a Showing Agricultural Systems in Wainiha Valley, From Earle 1978:196 ........................................... 18
Fig. 7 Water Tank Site, View to South ...................................... 35
Fig. 8 Water Tank Site, View to North ...................................... 35
GLOSSARY

Aeolian - deposited by the wind
A-horizon - a soil layer characterized by the accumulation of organic matter at the ground surface
Ahu - heap, pile, collection, mass, altar, shrine; a traplike stone enclosure made by fishermen for fish
Ahupua'a - a traditional Hawaiian land unit extending from the mountain to the sea
Ali'i - chief, chiefess, nobility
Archaeological feature - the discrete remains of past activity preserved in the ground
Artifact - any object made by man
'aueria - irrigation ditch
B-horizon - a subsurface soil layer characterized by clay accumulation
Carbonate - Calcium carbonate
cms - centimeters below soil surface
Flake - a piece of stone struck from a larger piece
Historic - in Hawaii, the period after the landing of (post contact) Captain Cook in 1778
Hui - association or organization
'ili - a small land unit, a subdivision of an ahupua'a
'ili hāpono - a nearly independent 'ili within an ahupua'a, paying tribute to the ruling chief and not the chief of the ahupua'a
in situ - the place of original deposition
kalo - taro
ko'ele - small land unit farmed by a tenant for the chief
konohiki - headman of an ahupua'a under the chief
kula - unirrigated field

kuleana - a small land claim inside another's land

lei - garland, wreath, necklace of flowers, leaves, shells, ivory, feathers, or paper, given as a symbol of affection

lo'i - a wetland taro field

loko - fishpond.

makai - towards the sea

mauka - towards the mountains

Menahune - legendary race or small people who worked at night, building fish ponds, roads, temples;

midden - faunal and floral remains from archaeological deposits, usually food remains

moku - district, island, section

mo' o (mo' o kalo) - a narrow strip of land; a division of land next less than an 'ili (a strip of wetland taro)

mū - Legendary people of Lāau-haele-mai, Kaua'i

ohana - a kin group of extended families

pali - cliff, precipice, steep hill

pedogenic - related to soil forming processes

pedogenic carbonate - naturally occurring carbonate precipitated in a soil horizon

poi - Hawaiian staff of life, made from cooked taro corms, see also kalo

profile - the vertical section of the ground

soil texture - describes the size of the mineral grains in soil

soil structure - describes the aggregates of soil particles

stratigraphic boundary - the contact between two distinct strata
stratum - a visually distinct layer of sediment
volcanic glass - a structureless cooled lava which occurs naturally in lava flows and was used by Hawaiians as small cutting tools.
I. INTRODUCTION

The present study area contains a County water tank located in TMK 5-8-02:Por Parcel 3, (Lot 3) Wainiha, Kaua'i. It is on the right side of the PowerHouse Road, approximately 1,000 feet mauka of Kuhio Highway. This survey area is also in the same general area explored in the survey of May 1993 by Cultural Surveys Hawaii, in conjunction with an archaeological survey for the proposed construction of a GTE telecommunication hut for Wainiha, Kaua'i in the same parcel (TMK 5-8-02:3) but in the adjacent Lot (Lot 1). The presently proposed acquisition of the water tower in Lot 1 requires an environmental assessment of the 6,000 sq. foot area (Lot 1) where a 100,000-Gallon water storage steel tank now exists and an 15,769 sq. feet utility easement on land owned by the Estate of Lester B. Robinson.

The historical background and previous archaeology sections of this report includes material from the earlier report by Gerald Ida, Hallett H. Hammatt and Ed Duncan (1993) and the previous work on Wainiha Valley by Ida and Hammatt (1992). The 1992 study revealed that the land section most heavily utilized in both pre-historic and historic times is concentrated in the flood plain section nearest the Wainiha River as opposed to the steep ridge sections of the valley slopes, such as the present location. It was therefore considered unlikely that the survey of the present parcel would encounter archaeological elements. The field survey included examination of stratigraphic layers in the cut behind the water tank as well as along the access road. No archaeological sites or cultural material were observed.

A. Project Area Description

The study area is located on the west side of the old PowerHouse Road, ft. upslope from the shoreline and the northwest flood plain of Wainiha Stream (Fig. 3) and 1,000 feet from Kuhio Highway and 126.5 ft. above mean sea level. The water tank parcel
FIGURE 1
State of Hawai‘i

FIGURE 2
General Location Map, Kaua‘i Island
comprises 6,000 sq. feet and the access and utility road comprises 15,769 sq. feet.

Present vegetation consists of Hau growth, with wild guava, lantana and molasses grass. There are five mango trees growing in a line on the downside of the water tank.

The average rainfall in this area is between 60 and 200 inches per year.

B. Scope of Work and Methods

The archaeological fieldwork was conducted on August 3, 1995 by Mr. Kaipo Akana
and took approximately 2 hours. This survey included examination of stratigraphic
profiles in and adjacent to the property. One brief oral history interview of a kamaʻaina
resident was conducted during the fieldwork. Historical background research of Wainiha
Valley was conducted mostly as the result of previous surveys. The report for this project
is a component of the required Environmental Assessment for the land acquisition. No
construction or land alteration is anticipated.

C. Work Accomplished

During the survey, Mr. Kaipo Akana interviewed Mr. Ipo Haumea, 77-year old
kamaʻaina of Wainiha. Mr. Haumea related that he and his father have no knowledge of
sites in this immediate area and knows the land well because of activity as a pig hunter.

The cut banks of the Wainiha Powerhouse Road as well as the access road and the
water tank site itself provided an adequate stratigraphic profile for the purpose of
evaluating the soil distinctions of both the former and the present study areas. Photos
were taken of the water tank site (Appendix B). Laboratory and report preparation
consisted of historical research on Wainiha, a summary of previous archaeology and the
written documentation of field results.
II. CULTURAL AND HISTORICAL BACKGROUND

Setting

Wainiha, literally "unfriendly water" (Pukui, 1974:226), is a valley and ahupua'a on the north shore of the island of Kaua'i. It is part of the old land district or moku of Halele'a which also includes the ahupua'a of Kalihiwai, Kalihiki, Hanalei, Wai'oli, Waipā, Waikoko, Lumaha'i and Ha'ena.

Of these, Wainiha is second in size only to Hanalei. The valley, though relatively narrow, is approximately 13 miles long, stretching from the ocean well into the interior of the island where its steep walls reach over 4,000 feet high (Handy & Handy, 1972:419).

The Wainiha River is fed by many small tributary streams, some of which drain directly off of the Alaka'i Swamp on the north side of Wai'ale'ale. Fertile alluvial areas exist along the river and on islands created as the waterway splits and criss-crosses as it flows towards the sea. There is, however, no alluvial plain at the mouth of the river valley (Earle, 1978:32).

A well-formed reef exists off-shore which undoubtedly provided valley residents with a wealth of resources. However, Wainiha is vulnerable to inundation by tsunamis originating in the north Pacific Ocean. A 1957 tsunami caused a 38 foot rise in sea level at Wainiha and low-lying areas as far as 4,000 feet inland were inundated (DLNR, 1975).

Flooding due to heavy rainfall is a frequent occurrence in Wainiha and results from stream-channel overflow and ponding which is due to overland flow. The valley has recorded rainfall as high as 24 inches in 24 hours this century. Beginning in 1956, there have been at least 8 damaging floods in Wainiha, one of which caused loss of life (Ibid.). The flooding of Wainiha is even mentioned in folklore (Pukui, 1951:67). Perhaps it is this natural characteristic of the valley which explains the origin of the name "unfriendly
Wainiha in Legends and Myths

Perhaps the most popular mention of Wainiha in the folklore of Hawai‘i is as the home of the legendary menehune and mā people. Described as shy and dwarf-like, some say they were the original inhabitants of Kaua‘i, driven to the interior of the island by the arrival and flourishing of the Hawaiians.

A census of Wainiha taken by the konohiki of the ahuapa‘a during the time of Kaumuali‘i lists in part, 65 men of Lā‘au as menehune (Lydgate, 1913:126).

J.H. Kaiwi, Thurum’s informant for the “Story of the Race of Menehunes,” says his grandparents became familiar with the menehune while spending time collecting sandalwood in an area called Wainekl in the Alaka‘i Swamp, overlooking Wainiha (Thrum, 1923:219).

The upper reaches of the valley were also where the bird-catchers or po‘e kahai manu practiced their skill at collecting the colorful feathers of forest birds which adorned capes, helmets, lei(s) and other objects usually associated with the ali‘i class. In “A maiden from the Mu,” Pukui (1951:67-75) relates the tribulations of Kiamanu, a bird-catcher of Wainiha, who marries a mā girl.

Wainiha bird-catchers also figure into the tales of “Kanaloa-huluholu” and Lauhaka by Wichman (1985:114-124).

Many of these stories mention a well-traveled trail from Waimea on the southwest coast of the island, up through Kōke‘e and across the Alaka‘i Swamp, finally dropping down into Wainiha. In historic times, politician and outdoorsman Eric Knudsen (1946:202) traversed the island along this ancient trail on an annual basis.

Wainiha is briefly mentioned in the epic myth of Pele and Hi‘aka as the place
where Malaeha'akoa, the lame fisherman and seer was raised. When Hi'iaka arrived on
tūi during her mission to bring Pele's lover Lohiau back to the island of Hawai'i, it
was Malaeha'akoa who met her at Hā'ena and eventually told her of Lohiau's death

Finally, the famous "Legend of Kuapaka" when Kuapaka's chants the names of
the winds of Kaua'i, Lōpua is given as the wind of Wainihia (Fornander, 1918-1919:96).

Settlement and Land Use

Literary sources give only an incomplete picture of the aboriginal settlement of
Wainihia, but a degree of insight may be gained from their examination.

Lydgate (1913:126), as mentioned before, reported on a census taken by the
konohiki of Wainihia during Kaumuali'i's time. Kaumuali'i was the reigning chief of Kaua'i
from 1794-1825 (Kamakau, 1961:169, 265).

At this time "upward of 2,000 souls" resided in the valley in the villages of (listed
makai to mauka) Naue, Pā'ie, Maunaloa, Pali'ele'ele, Maunahaia, Pōhakuloa, Opaikea,
Hōmaikalani and Lā'au. Lydgate goes on:

...Lā'au, the hamlet farthest mauka in the depths of the mountains, where
the valley contracts to a narrow gorge, with a brawling stream running
white in the bottom...All along up the river, wherever the encroaching palis
on either side leave the least available space, the land has been terraced
and walled up to make 'loa.' And so the whole valley is a slowly ascending
stairway of steps, broad in tread and low in the rise, all the way to Lā'au,
where the last available space was won, if not by dwarfs, at least by
someone who understood this kind of agricultural engineering. These
artificial lands have long since reverted to the wilderness from which they
came, and it is only by chance that the traveler stumbles upon them,
beating his way through the jungle. But they bear witness to a large
population...

A check of the USGS map shows that Lā'au (ridge) is more than 7 miles inland.

Lydgate's (or the konohiki's) population count was likely exaggerated, however his
statement does point to an extensive and well developed agricultural system.

A census taken by the missionaries in 1834-35 gave the population of Wainiha as a more reasonable 216 (Schmitt, 1973). A count by the Dept. of Public Instruction in the spring of 1847 showed a decline to 154 residents (Schmitt, 1969:229).

Bennett (1931:136), during his survey of Kaua‘i in 1928-29, observed the remains of many terraced house sites and irrigated fields at Maunahina Ridge (Site 153), about 4½ miles from the sea.

Interestingly, Maunahina is said to be the location of the ancient trail (Wichman, 1985:114) which leads out of Wainiha, up to Kilohana at the north edge of the Alaka‘i Swamp, through Koke‘e and down to Waimea on the southwest side of the island. Undoubtedly, the trail was used to take advantage of the resources of Alaka‘i and as a shorter (however, more difficult) overland alternative route to Waimea. The use of this thoroughfare tempers the perception of Wainiha as simply a high-walled valley, open only at the shoreline, and perhaps was at least part of the incentive for habitation and development in the valley’s upper reaches.

Earle’s analysis of the Land Commission Awards of 1850 (1978:58-67, 126) shows by that time, far inland sites were already abandoned and active use of the valley extended only about 1½ miles from the sea. In this area of activity, Earle’s field survey identified six separate irrigation systems.

Besides the irrigated fields of kalo, it can be assumed that all of the common Hawaiian agricultural crops were raised in Wainiha. Handy and Handy (1972:420) state:

There were, of course, house sites all through the valley on ground not suitable for irrigation. On such land sweet potatoes were planted. Bananas flourished: in 1931 ma‘a Poʻolapola (Borabora banana, musa pehl) was found in gulches. This Tahitian banana, which bears its fruit on an upright stalk, is said by local Hawaiians to be indigenous to Wainiha. ‘Awa of several varieties was growing there also, and undoubtedly the economic
staples wauke and clona were planted. Specimens of yams were collected in 1931.

The Foreign Testimony before the Land Commission (1850) indicates that Hawaiians were also raising more recently introduced crops such as oranges and coffee.

LCAs in the Project Area

No individual Land Commission Awards or Kuleana were awarded specific to the project area, however it is part of a larger LCA of M. Kekauonohi, great granddaughter of Kekaulike, King of Maui and granddaughter of Kamehameha the Great (Fig. 4). The commission to Quiet Land Titles (commonly referred to as simply the Land Commission) was formed as a result of the Great Mahele in 1848 which revolutionized Hawai‘i’s land system and for the first time allowed private ownership of parcels. Hawaiian farmers could initiate a claim for lands they cultivated and lived on, and after proving their tenancy through third-party testimonies before the Land Commission, and paying surveying and processing fees, they would be granted title to the land. These parcels were known as kuleana.

A study of all the claims and their supporting testimony for Wainiha shows a typically well-developed land system in place. Many of the names of ‘ili, ‘ili kāpono, kōʻele, moʻo, as well as man-made and natural geological features are mentioned. A complete list of place names culled from these documents are presented as Appendix A.

Rice Cultivation

The cultivation of rice came to Wainiha like many other kalo-growing areas in Hawai‘i, during the late 1800s. Immigrant Chinese rice growers took over former lo‘i
devoted to kalo and founded a major cash crop industry catering to Hawai‘i’s growing Asian population.

By the early 1900s Wainiha had its own Chinese community which included not only the rice farmers, but also merchants and other business people (The Garden Island, 1/12/15).

The rice industry eventually went into decline due to disease, pests, and competition from outside of Hawai‘i, and rice lands reverted back to kalo. Rice cultivation probably served the unintended purpose of keeping the ancient irrigation systems and lo‘i operational throughout this period. In the 1930s Handy (1940:73) reported both crops being grown simultaneously in Wainiha with actually recent shoreline more land seemingly devoted to kalo than rice. The valley even had its own commercial poi mill at the time.

The cultivation of kalo remains till this day, the biggest active agricultural activity in the still rural Wainiha Valley.
The Wainiha Hui

No history of the valley would be complete without at least a mention of the Wainiha Hui. A detailed and sometimes colorful account of the hui’s origins and dealings is given by Lydgate (1913) and continued by Thrum (1924). The story gives an understanding of the changing socio-economic aspects of land ownership in Wainiha following the Great Mahele and entering into the 20th century. What follows is a greatly abbreviated version.

Sometime after the Mahele, Kekauʻonohi, a chief, held the konohiki lands of Wainiha, those being all of the remaining lands in the valley not awarded to the tenant farmers as kuleana.

Seeking a quick profit on a sandalwood deal, Kekauʻonohi convinced Aldrich & Co. of Honolulu to back his venture to the amount of $10,000. He purchased a schooner, the Manuokawai, hired a captain and crew, filled the ship with sandalwood and sent it off to the far east. Whether the ship was wrecked at sea or as Lydgate implies, was stolen by the captain who had less than a pristine reputation, she was never seen in Hawai‘i again and the chief lost everything in the uninsured venture.

Able to raise $1,000 on his own, Kekauʻonohi still needed $9,000 to pay off Aldrich & Co. His plan was to sell his land at Wainiha to the kuleana owners there.

The chief arranged a meeting with the valley residents and amidst promises of the prestige and power that came with being the owners of a large tract of land, tried to convince them to make the purchase. He thought that if 90 residents could put up $100 each, his problems would be solved.

---

1 According to Kamakau (1961), Keahikuni Kekauʻonohi was a high-status chiefess from Maui, granddaughter of Kamehameha the Great and wife of (among others) Keliʻiahonui, the son of Kaumualiʻi. She was appointed governor of Kauaʻi in 1842. The chief in Lydgate's story is referred to as a male and is probably a descendant of Keahikuni Kekauʻonohi and heir to her lands.
The residents agreed to the plan but most of them were still basically subsistence farmers and did not have the cash on hand to close the deal. Kekau'ōnohi gave them one year to raise the capital.

By the time the year was up, 71 people of Wainiha had convinced Princeville Plantation of Hanalei to underwrite their venture at $100 each with the residents signing notes for the future delivery of agricultural goods, services and labor to the plantation. This only amounted to $7,100 but Kekau'ōnohi persuaded his creditor to let the residents assume the rest of the debt with interest, of course (Lydgate, 1913).

And so it was in 1877 that the Hui Kū'āi 'Āina O Wainiha, the "group to purchase the land of Wainiha" was officially formed. The Wainiha Hui, as it was commonly called, now owned approximately 15,000 acres of the valley (The Garden Island 11/25/47).

A plan was instituted to give each shareholder 10 acres of arable land - 5 acres mauka and 5 acres makai. The land was never formally surveyed nor legally partitioned and disputes were settled by an executive committee. In the coming years the hui members, in debt and paying property taxes, found that being large landowners was not at all like what Kekau'ōnohi had promised. Shares in the hui had essentially become a liability.

Around the turn of the century, McBryde Sugar Co. was looking for a source of electrical power to run its irrigation pumps and mill operations at 'Ele'ele on the southwest side of the island. They proposed to build a hydro-electric power plant at Wainiha and pay the hui $1,500 a year for the water rights (Thrum, 1924:95-112). The Kauai Electric Co. was formed to construct and operate the power plant. They built a landing and warehouse on Wainiha Bay with a light rail system to carry materials up the valley, along with roads, trails, and laborers' camps, not to mention the plant itself and
the transmission line that traversed the island (Gartley, 1908:141-146).

The power plant was completed in 1908 and the revenue from the water rights lease finally afforded the paying of dividends to the shareholders of the hui. In 1911 the annual dividend was $10 per share (The Garden Island 9/12/11). In 1915 it was $15 (Ibid. 9/16/15). The hui also initiated other business activities such as the exporting of ‘awa from Wainiha (Ibid. 6/27/11).

While there were other similar groups formed on Kaua‘i, most notably at Ha‘ena and Moloa‘a, the Hui Kō‘ai ‘Āina O Wainiha remained a singular success story.

The lands of Wainiha were finally partitioned and the hui dissolved in 1947 after legal action was initiated by McBryde Sugar Co. Each of the original 71 shares was then worth about $5,000. Through the years McBryde had bought up most of the shares and owned 48. The Robinson brothers, Aylmer and Sinclair, held 10 and 6½ shares respectively. Only the remaining few shares were still in the hands of the heirs of the original hui members (Ibid. 11/25/47).
III. PREVIOUS ARCHAEOLOGY

Bennett, 1931

Bennett in his systematic, but not exhaustive survey of archaeological sites on Kaua‘i describes a number of sites in Wainiha as follows:

Site 148. *heiau* on Popoki knoll. Popoki knoll is located next to the road (inland side) in front of Site 149 near the Wainiha river. It is said to have been a *heiau* site, but nothing remains to mark it.

Site 149. Kaunupepeiao *heiau*, back of the first house on the first pali east of the mouth of the Wainiha river. A flat place about 30 feet wide and 20 feet deep with stones along the front edge meet the description given by Thrum: "A 12-foot open-paved *heiau* of husbandry class; probably simply a place of offering."

Site 150. Laumaki *heiau*, on a knoll west of the "Power House" road—about one mile from the government road, in Wainiha valley. Thrum describes this *heiau* as "A small, open platform, paved *heiau*, 2 feet high, of husbandry class." The platform measures 20 feet wide and 10 feet deep and faces the sea. It is paved with river stone.

Site 151. Aapukaalea *heiau*, adjoining the "Power House" road on the east side, inland from Site 150 in Wainiha valley.

The remains of recent occupation together with modern stone platforms, walks, graves with tombstones, and other such work, make the distinction of this *heiau* difficult. The *heiau* consists of a small, square, paved area about 35 feet on a side. The east wall is 15 feet wide, and badly tumbled on the outside, though 3 feet high on the inside. The north wall is irregular, about 15 feet wide, and 2 feet high. A projection inwards forms a platform 10 by 15 feet. The west wall is just a trace of stone, but seems to have been 15 feet wide. The south wall is of varying width and runs from the road to the bluff, a distance of 130 feet. It is about 3 feet high. To the west of this enclosure is a flat space with two lines of stone traversing it, while on the east are two paved house sites about 10 feet square.

Site 152. Taro terraces, about one mile above the Wainiha powerhouse on the intake trail.

This interesting taro section is high on the side of the valley utilizing a little stream and a small flat area. The hill is on one side and the stream and a bluff on the other, leaving
a fairly steep section in between. At one place above the terraces stones are built across the stream as an intake, which could, with the addition of a few more stones, shunt the water into a ditch which runs between large rocks and dirt walls. All along the edge of the stream is a wall built to keep the water from running back. The terraces are from 6 inches to 3 feet high.

Site 153. House sites, on Mauna Hina ridge in Wainiha Valley. Remains of many old house sites and much irrigated land. The house sites are mostly of the terraced type and 10 to 15 feet wide (Bennett, 1931: 135, 136).

Bennett's listing shows 2 heiau near the mouth of Wainiha Stream (Sites 148-149) and two heiau slightly upstream (Fig. 5).

Of greatest interest are the two upriver sites (152-153) both of which contain taro lo'i and the upper of which contains house sites at Mauna Hina.

Clearly, the flat portions of the upper reaches of the valley were modified for terracing and associated habitation. The trail from Kōke'e across the Alaka'i Swamp and down Wainiha Valley could well have traversed one of the three ridges of Mauna Hina descending down the pali from Kilohana Ridge.

Earle, 1978

One of the classic archaeological/anthropological studies done in the Hawaiian Islands concerns irrigated taro cultivation systems in the Halale'a District and their implications for traditional social structure (Earle, 1978).

As one of the nine separate ahupua'a of the district, Earle documents irrigated taro systems in Wainiha and locates them on a map of the valley (Fig. 6).

He describes an abandoned system (Site KaD6-11) (System 13) as an island in Wainiha Stream which was abandoned in the 1950s. This system comprises approximately 3.7 hectares (Earle, 1978:96-100). Systems 11 and 12 are small up valley
Fig. 5 Map Showing Bennett's Sites in Wainiha (Sites 148-153) (from Bennett, 1931:98)
Fig. 6 USGS Map of Halale'a Showing Agricultural Systems in Wainiha Valley, From Earle 1978:196
systems fed by tributary streams.

Systems 14 and 15 are downstream alluvial flats and were in use in the 1970s when Earle did his fieldwork. All of these systems comprise a total of 15 hectares and over 100 separate lo'i. Generally, the field boundaries and terrace berms were of earthen construction with occasional stone reinforcement (Earle, 1978:56-66).

Earle observed that the lower portion of Wainiha Valley was extensively used for taro cultivation through the 1850s (presumably on the basis of Land Commission Awards) (Earle, 1978:32).

Many small systems existed in the interior of the valley and its tributaries but were apparently abandoned before the 1850s.

Barrera, 1982-1984

William Barrera of Chiniago, Inc. conducted three separate archaeological studies in conjunction with environmental study for a proposed hydroelectric power house and access road (Barrera, 1982; 1984a; 1984b).

The three separate studies consisted of reconnaissance survey, and mapping, followed by selective excavation.

During these various studies, Barrera located three archaeological sites: Site 1500 — an extensive irrigated agricultural system at elevation 770 feet above sea level in the main valley; Site 1501 — a basalt flake scatter located above Pawaiinui Falls; and Site 1502 — a charcoal concentration and pit in soil slopes near Site 1500. Site 1500 was mapped and described. Test pits showed varied stratigraphic units but unfortunately radiocarbon chronology was not obtained. Site 1500, in which Barrera identified both ponded and dry terraces was recommended for preservation and is now the most.
upstream documented loi system in Wainiha with over 20 separate agricultural terraces. Presumably this system is the one that Earle refers to as having been abandoned before 1850. Judging by the photographs and written descriptions in Barrera's report much stone work was involved in the construction system. This characteristic contrasts to the lower valley systems which are mostly earthen. Differing alluvial environment may be a factor but changing construction techniques through time may also be involved along with modern modifications of the more recently used systems.

Ida, Hammatt and Duncan (1993)

The adjacent Lot (Lot 2) and its neighboring areas were surveyed on May 5, 1993 for the proposed construction of a GTE telecommunications hut (Ida, Hammatt and Duncan). There were no archaeology identified and the stratigraphy of the road cut alongside the property revealed no cultural material. At the time Lot 3 was surveyed, the adjacent lot (Lot 1) was also explored and no cultural or archaeological materials were found and a determination of no impact on Lot 3 was made.

Recent Shoreline Studies

Joseph Kennedy conducted an inventory survey for a house lot (TMK 5-8-09:24) along the western shoreline of Wainiha Bay. The excavation of 5 backhoe trenches in the approximately 1-acre property showed a widespread prehistoric cultural layer along the mākai portion in beach sand deposits. The layer yielded fishing-related artifacts and radiocarbon dates of 1360±70 B.P. (from an octopus lure shell dates are known to be unreliable on the early side) and a date on charcoal of 140±50 B.P. (Kennedy, 1990). At a later date, during residence construction, a single human burial was discovered in the sand deposits.
More recently Robert Spears conducted an inventory survey for another house lot adjacent to the Kennedy project. Approximately 7,000 square feet of the property was subjected to backhoe testing with a single long backhoe trench and three short hand-dug trenches. A buried cultural deposit was located in all areas tested.

Various soil features, artifactual, and midden materials were located along with a single human burial. Intensive multi-functional shoreline occupation is indicated. A radiocarbon date was obtained on charcoal and is clearly in the prehistoric period A.D. 1270-1650 (Spear, 1992).

Research at Há'ena

Há'ena ahupua'a borders Wainiha to the west and because considerable archaeological research was conducted here which is of relevance to Wainiha for comparative purposes a summary of the Há'ena work is included.

In their bibliography of Hawaiian archaeology, Spriggs and Tanaka (1988:300) list some eighteen archaeological studies specifically on the ahupua'a of Há'ena but only one of these predates 1977 (Emory, 1929). Until the 1970s what few studies and travelers' accounts there were on the prehistory of Há'ena were largely focused on the wet and dry caves and the "ruins at Ke'e." These later sites, including Ka'ulu'a Paoa heiau, the immediately mauka hula platform and Lohi'au's house have been much mentioned in travelers' accounts as they figure prominently in Hawai'i's greatest saga -- the Pele and Lohi'au legend, also called the Hi'iaka myth (Emerson, 1978).

Wendell Bennett (1931:136-138) conducted fieldwork on Kaua'i in 1928 and 1929 but only recorded the above-mentioned three sites within the ahupua'a of Há'ena proper.

In the early 1970s Timothy Earle conducted fieldwork on the drainages of Há'ena for his doctoral dissertation (1973) which was revised as a monograph titled Social and Economic Organization of a Complex Chiefdom: The Halele'a District, Kaua'i, Hawai'i.
This research focused in detail on irrigation systems, terraces and pond fields near Limahuli and Mānoa Streams at Hā'ena, but paid relatively little attention to coastal areas like Hā'ena Point whose coral sandy soils were less intensively utilized for agriculture. His work is still the best overview on the prehistory of Hā'ena and Halele'a District.

Subsurface archaeological investigations at Hā'ena really began with research for the Hā'ena State Park (Griffin et al., 1977; Hammatt et al., 1978) and continued with several related projects (Hammatt and Meeker, 1978; Riley, 1978; Yent, 1980).

These studies identified prehistoric cultural layers which appear to be discontinuous, but widespread along the backshore beach and dune deposits of coastal Hā'ena and Wainiha. These deposits extend from Ke'e Beach in the west at least to Wainiha Bay in the east, and have been reported in a number of short archaeological reports prepared in conjunction with conservation district use permits for single family residences.

The largest exposure of these beach front cultural layers occurs at Hā'ena State Park and stretches from Limahuli Stream to Ke'e Beach. The Hawaiian occupation and adjacent mauka lo'i which occur along virtually every stream in Halele'a were the subject of intensive studies from 1977 to 1979 (Griffin et al., 1977; Earle, 1978; Hammatt et al., 1978; and Hammatt and Meeker, 1979). The marine-oriented occupation at Ke'e Beach was dated to between 900 and 1,000 A.D. (Hammatt et al., 1978). Intensive development of irrigated agriculture dates to after 1200 A.D. (Ibid., 1978).

Recent work at the Zimmerman Property (State Site #50-30-02-1089) at Hā'ena Point (Hammatt and Shideler, August 1989) dated an extensive prehistoric cultural layer to 1280-1410. This study noted that midden was generally less concentrated than at the
earlier Ke'e Beach sites; suggesting less intensive utilization of the area, but the midden contained a higher percentage of mammal and bird bone suggesting increased use of terrestrial resources in later Ha'ena occupations. The artifact assemblage in the Zimmerman excavations was sparse but the presence of an abundance of basalt waste flakes, eight polished adz flakes, and an adz tip reinforces the impression of a strong orientation toward terrestrial resources.

The cultural layers located in various properties at Ha'ena Point are almost certainly of comparable age to that of Ke'e Beach and represent the beach occupation component of those people exploiting the extensive io'i in Mānoa Stream which have a large associated ceremonial terrace (Earle, 1978:93). Ha'ena is unique among the ahupua'a of the Halele'a District in being blessed with a long reef-fringed coastline and two permanent streams -- Limahuli to the west and Mānoa to the east. This richness in resources is reflected in an "archaeological richness, likely the greatest in the State" (Griffin et al., 1977:8). Ha'ena has been called "one big archaeological site" and has been suggested to "hold the key to understanding earliest Tahitian or Marquesan colonization in Hawai'i" (Kenneth Emory, 1977 quoted in Ibid. 1977:2).

Implications for Archaeology of Wainiha

Earle's 1978 study remains the primary source for wetland agriculture in Wainiha Valley supplemented by Barrera's mapping of one inland valley system. Clearly, Wainiha, because of its lengthy valley (one of the longest on Kaua'i) and plentiful water and level irrigated alluvial terrain was a preferred settlement center throughout pre-history. Reef resources are also plentiful and future studies along the sandy coastal plain will certainly document an almost continuous beach occupation with culturally rich organic layers as
well as human burials. Wainiha will prove to be every bit as rich archaeologically as Ha'ena as work continues but will also show its unique character derived from its deep valley environment.
IV. SURVEY RESULTS

The present survey found no midden, artifacts, or other definable evidence of culture on the surface of Lot 3, or the surrounding area. Examination of the cut banks also showed no evidence of cultural layers in this steep slope environment. The 1993 (Ida et al.) report contains a profile description of the cut bank of the old PowerHouse Road. This description also applies to the present project area and is typical of a ridge soil developed on decomposed heavily eroded lava. The profile description is continuous with little or no variation throughout the project area.
V. SUMMARY AND CONCLUSIONS

No archaeological deposits or materials were encountered during the 1993
archaeological surface survey of the adjacent or during the present 1995 survey. The
project area is too steeply sloped for agricultural or habitation use.

Recommendations

Given the lack of surface and subsurface archaeological materials within the
project area further archaeological research is not recommended. The subdivision of the
conservation land on which the water tank stands, for acquisition by the County of
Kaua‘i, will have no impact on archaeological resources. However should any cultural
materials be encountered at some future time, during any land moving work related to
the Water Tank property, all work in that immediate area should be stopped and the
State Historic Sites Division should be notified.
VI. REFERENCES

various  The Garden Island, (newspaper). On microfilm, index on card file - Kauai Community College Learning Resource Center.

Barrera, William M., Jr.  

Barrera, William M., Jr.  

Barrera, William M., Jr.  

Bennett, Wendell C.  
1931  The Archaeology of Kaua‘i, Bishop Museum Bulletin 80, Honolulu.

Department of Land and Natural Resources (DLNR)  
1975  Wainiha Flood Hazard Area (map), Honolulu.

Earle, Timothy K.  

Emerson, N.B.  
1978  Pele and Hi‘iaka, Honolulu.

Emory, Kenneth P.  
1929  "Ruins at Ke‘e, Ha‘ena, Kaua‘i: Famous Court of Lohi‘au," Thrum’s Hawaiian Annual 88-94.

Folk, William H.  
1990  Archaeological Reconnaissance of the Paskal Residential Property at Ha‘ena, Halele‘a, Kaua‘i, Cultural Surveys Hawaii, Kailua.

Fornander, Abraham  
1916-1919  Hawaiian Antiquities and Folklore (Vols. IV and V), Bishop Museum Press, Honolulu.

Gartley, A.  
Griffin, P. Bion, R. Bordner, H. Hammatt, M. Morgenstein, C. Stauder
1977 Preliminary Archaeological Investigations at Hā'ena, Halele'a, Kaua‘i Island
ARCH 14-22 1, Archaeological Research Center Hawaii, Lāna‘i.

Hammatt, Hallett H., and David W. Shideler
1989 Archaeological Investigations at Site 50-30-02-1809 Residential Property
(TMK 5-9-02-31), Hā'ena, Halele'a, Kaua‘i (Anawalt Property), Cultural
Surveys Hawaii.

Hammatt, Hallett H. and David W. Shideler
1989 Excavations at Site 50-30-02-1809 at a Residential Property (TMK 5-9-02-34)
Hā'ena, Halele'a, Kaua‘i (Zimmerman Property), Cultural Surveys Hawaii,
Kailua.

Hammatt, Hallett H. and David W. Shideler
1989 Excavations at Site 50-30-02-1809 at a Residential Property (TMK 5-9-02-35)
Hā'ena, Halele'a, Kaua‘i (Rasten Property), Cultural Surveys Hawaii, Kailua.

Hammatt, Hallett H. and Virgil Meeker
1979 Archaeological and Ethnohistorical Investigations at Hā'ena Halele'a Kaua‘i,
Archaeological Research Center Hawaii, Lāna‘i.

Hammatt, Hallett H., M.J. Tomonari-Tuggle and C.F. Streck
1978 Archaeological Investigations at Hā'ena State Park, Halele'a, Kaua‘i Island:
Phase II: Excavations of Beach Localities and Visitors Facilities Area,

Handy, E.S. Craighill
1940 The Hawaiian Planter, Volume 1, Bishop Museum, Bulletin No. 161.,
Honolulu.

Handy, E.S. Craighill and Elizabeth G. Handy
1972 Native Planters in Old Hawaii: Their Life, Lore, and Environment, Bishop
Museum Bulletin 233, Honolulu.

Ida, Gerald, Hallett H. Hammatt and Edward D. Duncan
1993 Archaeological Survey of Proposed Telecommunication Hut for GTE
Hawaiian Tel at Wainiha, Kaua‘i (TMK 5-8-02-3), Cultural Surveys Hawaii,
Kailua, HI.

Kamakau, Samuel Maniaikalani

Kennedy, Joseph
1991 Report on the Treatment of Human Remains, Site 50-30-2-1875, Wainiha,
Kaua‘i, Archaeological Consultants of Hawaii.

Kennedy, Joseph

28
1990

Archaeological Inventory Survey for TMIK: 5-8-99.25, Located at Wainiha, Island of Kauai with Addendums (2) Archaeological Consultants of Hawaii.
Knudsen, Eric

Lydgate, John M.

Pukui, Mary Kawena
1911 The Water of Kane, Kamehameha Schools Press, Honolulu.

Pukui, Mary K., Samuel H. Elbert and Esther Mookini
1974 Place Names of Hawaii, University of Hawaii Press, Honolulu.

Riley, Thomas J., and Jeffrey Clark

Schmitt, Robert C.

Schmitt, Robert C.

Spear, Robert L.

Spriggs, Matthew J. and Patricia L. Tanaka

Thrum, Thomas G.
1907-1938 Hawaiian Almanac and Annual 1875-1949, Honolulu.

Wichman, Frederick B.
1985 Kauai Tales, Bamboo Ridge, Honolulu.

Yent, Martha
1980 Preliminary Archaeological Testing of House 4, Ha'ena State Park, Halele'a, Kaua'i.
APPENDIX A: Place Names of Wainiha Valley
PLACE NAMES OF WAINIHA VALLEY

The following list of place names of the ahupua'a of Wainiha was compiled from the Native Claims and accompanying Foreign Testimony presented to the Commission to Quiet Land Titles in the mid-1800s. It includes names of land divisions, man-made and natural geological features, as well as general localities. Translating the names and locating these places would provide much useful information, not to mention a heightened awareness of the thought processes of the ancient Hawaiians. However, this would be a major research project in its own right and is left at this time for future study.

General Localities

| Hopecokia | Kipapa | Paulehlu |
| Kaeluahee | Maunaloa | Poapinaa |
| Kalaopa | Naue | Polo |
| Kawaihoa | Pahoa |

**Creek or Brook**

| Aikahi | Kawaihae | Opunaha |
| Io | Kipapa | Paieie |
| Kaeluahee | Kaulama | Papakahaekai |
| Kamaleiai | Laukalo |
| Kapapa | Mene |

**Pali**

| Apaukalea | Kaawakiki | Paieie |
| Io | Opunaha |

**River**

Wainiha

| 'Ili | Kapohaku | Mai |
| Kaeleala | Kaumiai | Oiiai |
| Kaluanui | Kiiula | Punalolilo |
| Kaluapoo | Kulaulki |

*Ili Kupono (Ku)*

Kapaloa

32
Moko (Mo'o Kalo)
Kaelemaneo - Kaakau - Kaohia
Kaaliili - Kaulu

Ko'ale (Po'alima)
Koahiaiki - Kauhukiauela
Koahianui - Kuwalaua

Lei
Halilaukaa - Kaulukea
Kapae'u - Omolehulehu

Kula
Mahunoenoa

Loko
Kapauki

House Lot (Kahua Hale)
Apanakales - Mene
Kahokekia
APPENDIX B: Photographs