

Cultural Impact Assessment

for the

WAINIHA PROTECTIVE FENCE PROJECT



Hinalele Falls and Wainiha Stream at the head of Wainiha Valley, Hanalei District, Kaua'i

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An Assessment of Impacts on Cultural Sites and Practices
at Wainiha Preserve, Hanalei District, Kauaʻi

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Executive Summary

A review of pertinent literature and records, extracts from recently conducted interviews with regional cultural practitioners and elders, and previous investigations by the State Historic Preservation Division (SHPD), and contracted archeologists on sites, features and practices of cultural significance at the proposed fence route in the Wainiha Preserve, Wainiha Ahupua‘a, Hanalei District, Island of Kaua‘i, reveals that there are no archeological sites within the proposed area, and that only lands several kilometers *ma kai* (seaward) of the site include significant sites. This corroborates the described geography of historical activities in the region, concentrated in arable valley bottoms and lower elevations near the coast, and minimal above Lā‘au Ridge. The lands of the proposed fence area bear significance as the *wao nahele* (forested zone) containing native plants and animals of great cultural value, and as *wahi pana* (storied places) tied to the *Mū-‘ai-mai‘a* (the banana-eating Mū people) and the *menehune*. Persistence of *mai‘a* (banana) growing in the remotest parts of upper Wainiha is traditionally pointed to as evidence of past habitation of the *Mū*. Otherwise, the upper valley retains very strong native vegetation, but with the start of significant invasion by alien plants and animals. The proposed conservation actions (fencing and ungulate control), designed to protect the native forest and the native species that reside within it, will enhance the cultural value of the lands and will exercise care to retain traditional access, such as to gather native plant material for hula and other Hawaiian arts.

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CONTENTS

EXECUTIVE SUMMARY	III
INTRODUCTION	1
METHODS:	1
A. SUMMARY DESCRIPTION OF THE AFFECTED ENVIRONMENT	3
<i>Location</i>	3
<i>Hawaiian Cosmogonic background</i>	4
<i>Place Names</i>	5
<i>Winds & rains</i>	6
B. HISTORICAL/ARCHAEOLOGICAL AND CULTURAL SITES	8
<i>No archeological sites reported</i>	8
<i>Consultations</i>	8
<i>Archeological investigation</i>	9
C. CULTURAL AND TRADITIONAL PRACTICES	10
<i>Little reference to traditional practices</i>	10
<i>Agriculture concentrated in lowlands</i>	10
<i>Cultural practices mentioned in interviews</i>	10
D. CULTURAL IMPACTS AND BENEFITS OF THE PROPOSED ACTIONS	11
<i>Alien species control benefits archeological sites</i>	11
<i>Fencing</i>	11
<i>Hawaiian gathering rights</i>	11
E. SUMMARY DESCRIPTION OF THE ACTION'S EFFECT ON CULTURAL SITES AND PRACTICES	13
F. MITIGATION OF CULTURAL IMPACTS	13
SOURCES	14

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**An Assessment of Impacts on Cultural Sites and Practices
at Wainiha Valley, Hanalei District, Kaua‘i**

Introduction

This report meets the requirements and standards of state environmental law, as delineated in Section 343-2 of the Hawai‘i Revised Statutes. This includes the Office of Environmental Quality Control’s (OEQC) requirement for environmental impact statements to consider effects on cultural resources or cultural practices. The Nature Conservancy of Hawai‘i is submitting this concise cultural impact assessment to identify and address the effects of its on-going land management actions on native Hawaiian cultural sites and practices in the remote portions of the Wainiha Preserve. These management actions are detailed in the *Kaua‘i Watershed Management Plan* (KWA 2005).

Methods:

Cultural Impact Assessments (CIA) are a recent additional requirement of the EA process, focusing on both documented and potential impacts of proposed actions on cultural sites and traditional practices exercised at a place by the communities associated with a place.

In ascertaining the potential impacts of its land management activities on cultural sites and practices, the Conservancy consults regularly with appropriate authorities, reviews published and unpublished literature. It also takes advantage of its cultural expertise on staff, which includes Dr. Sam ‘Ohukani‘ōhi‘a Gon III (a cultural practitioner and researcher, now serving as Senior Scientist and Cultural Advisor of The Conservancy).

Extensive prior background research for Wainiha has been conducted, including the entire period of human occupation in the area from traditional Hawaiian times through the Twentieth Century (Maly & Maly 2003). The major task of the background research was a literature review which included a review of Native Hawaiian historical accounts, legends, and traditions, Māhele documents, previous oral history projects, and previous archaeological studies. Research also included examination of the maps, historical photos, and other documents on file at the Hawai‘i State Archives, the Bernice P. Bishop Museum, the State Historic Preservation Division, the State Survey Office, and the Hamilton Graduate Library at the University of Hawai‘i at Mānoa.

Hawaiian language newspapers electronically rendered in the digital on-line resource Ulukau.org (Hale Kuamo‘o & Alu Like 2009), were searched for relevant entries based on the place names associated with the Wainiha Preserve in the vicinity of the fence project, such as Wainiha, Lā‘au, Kamaha, Hinalele, and spelling variants for these places, bearing in mind that newspapers of the time did not typically include diacritical marks. Only pertinent data describing the upland portions of these lands were considered in the impact assessment. It is noted later that the vast majority of discussions on Wainiha is associated with the coastal section and arable lands

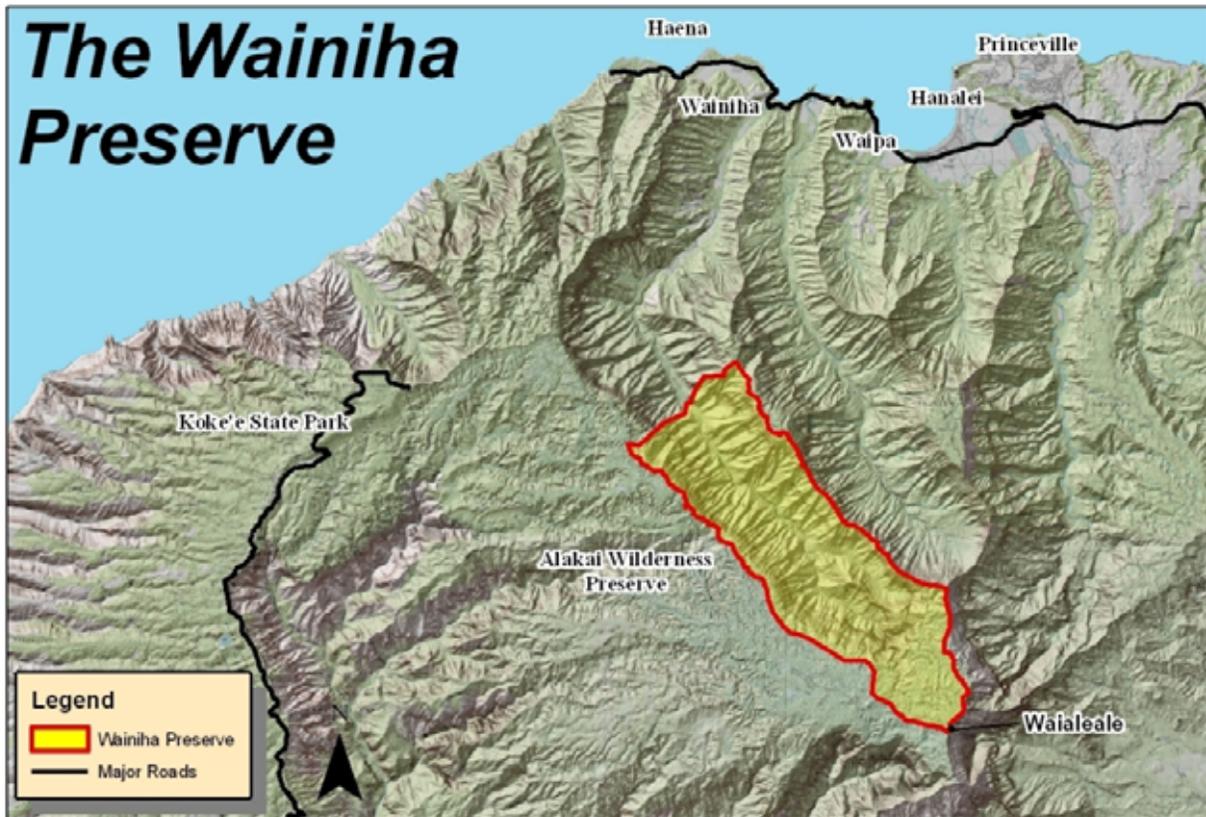
extending a few miles inland, well below the proposed fence area. Activities clearly referring to the coastal and lowland portions of Wainiha were not included in the assessment of history and impacts.

As a coordinator for the Kaua'i Watershed Alliance (KWA), the Conservancy has submitted in 2007 and 2009, Environmental Assessments (EA) for fence projects at Kanaele Bog (OEQC 2007) and in the Alaka'i Plateau areas (OEQC 2009). Both projects received a "Finding of No Significant Impact" (FONSI) and consequently, these projects were officially allowed to proceed. Because the EA for the Wainiha Fence Project is of similar nature to these other wilderness fencing projects, the expectation is that a FONSI will be the result of this current assessment.

A. Summary Description of the Affected Environment

Location

The 7,050-acre Wainiha Preserve (below) lies within the upper reaches of the traditional Hawaiian ahupua‘a (land division) of Wainiha.



Map created on July 25, 2008 by Nicolai Barca of The Nature Conservancy

The western edge of the ahupua‘a makes up part of the boundary of the moku (districts) of Hanalei and Waimea, from Mauna Hina and the edge of the Wainiha Pali into the Alaka‘i Plateau to the summit of Wai‘ale‘ale. The proposed project area lies entirely within Hanalei District and Wainiha Ahupua‘a. The furthest mauka (inland) extent of the Wainiha Preserve lies in the Alaka‘i Plateau at the juncture of four of the five moku of the Island of Kaua‘i: Hanalei, Kawaihau, Līhu‘e, and Waimea. Various revisions in the districting boundaries (e.g., via the Māhele of 1848, Civil Code of 1859, Session Laws of 1909, and its 1932 revision) have not substantially altered the traditional context of Wainiha Preserve (see Bier 2004).

Wainiha Preserve [Owner: McBryde Sugar Co., Ltd. (A & B Hawai‘i Inc.), TMK: 4-5-8-001-001; LU Classification: Conservation, Subzone P1 (Restricted)] lies wholly within and occupies a northern portion of the Kaua‘i Watershed Alliance, and the proposed fence occupies the most remote portion of the Preserve (see Fig. 2 below).

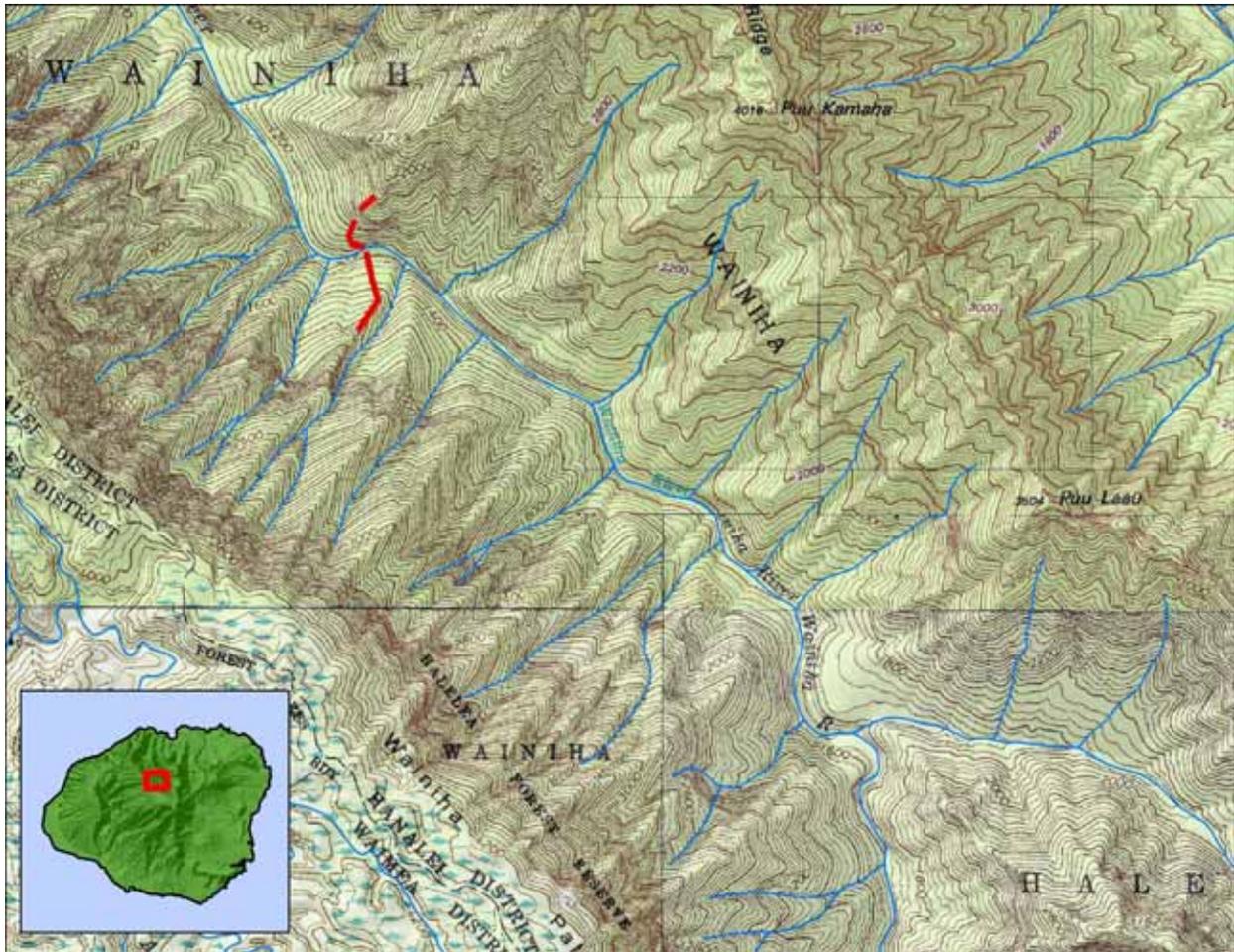


Figure 2. The proposed fence project (red) is situated in a remote portion of Wainiha Preserve.

Hawaiian Cosmogonic background

The Hawaiian cosmogony views the islands of the archipelago as born of Papa and Wākea, primal ancestral parents. Wākea, sky-father inseminates Papa, earth-mother, and islands are born of the union. The island of Kaua‘i is among the last of the island-children born of Papa (Papa-hānau-moku, or Papa-birthing-islands). One traditional creation chant (see Fornander 1917) gives it thus:

*‘O Wākea noho iā Papahānaumoku
 Hānau ‘o Hawai‘i, he moku; Hānau ‘o Maui, he moku
 Ho‘i hou o Wākea, noho iā Ho‘ohokukalani
 Hānau ‘o Moloka‘i, he moku; Hānau ‘o Lāna‘i, ka ‘ula, he moku
 Līlī‘ōpū punalua ‘o Papa iā Ho‘ohokukalani
 Ho‘i hou o Papa, noho iā Wākea
 Hānau ‘o O‘ahu he moku; Hanau ‘o Kaua‘i he moku
 Hanau o Ni‘ihau, he moku; He ‘ula o Kaho‘olawe*

(translation next page)

Wākea lived with Papahānaumoku
Hawai‘i was born, an island; Maui was born, an island
Wākea returned, lived with Ho‘ohokukalani
Moloka‘i was born, an island; Lāna‘i was born, red, an island
Jealous of the second wife Ho‘ohokukalani was Papa
Papa returned, resided with Wākea
Born was O‘ahu an island; Born was Kaua‘i, an island
Born was Ni‘ihau, an island; An afterbirth is Kaho‘olawe

The cultural consequence of this tradition is that the island of Kaua‘i lies upon the genealogical line from the gods forward, tying all Hawaiians to the islands. The general connection of kānaka (people) to the ‘āina (land) stems from this cosmogonic tradition.

Place Names

The cultural significance of places, whether they bear archeological sites or not, is often reflected in their names, which may reflect natural features, natural resources, historical events and figures, or other aspects of the history or cultural uses of an area. Although not exhaustive, the following place names are associated with Wainiha Preserve in the vicinity of the proposed fencing project. Pukui et al (1974) provides some interpretation:

Wainiha – The name of the ahupua‘a, valley, stream, and pali (cliff) system. *Lit.*, "unfriendly water."

Lā‘au – ridge and pu‘u (hill) along the east boundary of Wainiha. *Lit.*, "wood," possibly referring to the forested nature of the landscape.

Hinalele – waterfall (280 feet drop), near the head of Wainiha Valley. *Lit.*, Hina's leap.

Kamaha – hill (4,016 ft), along the ridge separating Wainiha from Lumaha‘i. No translation offered in Pukui et al 1974.

Mahinakēhau – ridge (ca 4000 ft) separating upper Wainiha from Lumaha‘i valley. Not listed in Pukui et al 1974, but prominent on USGS maps of Wainiha, and translated in Pukui & Elbert (1971) as "a variety of sweet potato."

It is instructive that these are the only place names listed for Wainiha valley above about 1000 ft elevation. Below this elevation there are many more names for prominent ridges, waterfalls, lookouts, and other topographic features, such as Kulanaililia, Pu‘u Iliahi, Pōhakuokāne, Makaweia, Hiaupe, Maunahina, Kilohana, Pali‘ele‘ele, ‘Aikanaka, Palikea, Pu‘u Uaha, and Pu‘u Nopili (Bier 2004). It is not within the scope of this assessment to explore these names further, but it is important to point out that the numbers of place names correlates to human presence. Places are nameless when they are not typically visited. The relatively flat arable bottom lands extend up valley only to about 1000 ft elevation (and the optimum growing conditions for kalo are below 500 ft elevation (Ladefoged et al 2009). The dearth of place names specific to upper Wainiha is an indication of its remoteness and a correlated lack of human occupation and use.

Much of Wainiha Valley, especially in its upper half, is characterized by extremely steep and rugged topography, unsuitable for significant agricultural pursuits (see Figure 3). The highest flat areas, below Lā'au ridge at about 1000 feet elevation, are mentioned as the realm of the *Mū- 'ai-mai 'a* (the banana-eating *Mū* people), and various stories about their shyness, short stature, and quasi mythical nature are presented in Beckwith (1970) and other sources. Although some accounts indicate the *Mū* long ago left Wainiha and returned to their supernatural homelands, the physical manifestation left behind as evidence of their past occupation is the native bananas to be found at certain locations in Wainiha Valley. *Mai 'a* in hanging valleys along the cliffs of Wainiha occur all the way up to the head of the valley, in the vicinity of Hinalale Falls, though their frequency increases downward. Aside from these scattered *mai 'a*, and *kukui* (*Aleurites moluccana*) in the vicinity of the proposed fence route, none of the other Polynesian introductions indicative of past agriculture occur in the upper valley.

Winds & rains

Part of the cultural significance of an area is captured in Hawaiian characterizations of its dynamic natural features, the most prominent of which are winds and rains. Fornander (1917) provided some basic characterizations for the winds of Kaua'i, though there is no description of the extent of these winds into the upland sections that comprise the Wainiha Preserve. For Northern Kaua'i these winds are noted by Fornander (Vol. 5: page 97):

He Hulilua ko Hanaikawaa, He Amu ko Anahola, He Kololio ko Moloaa, He Kiukainui ko Koolau, He Meheu ko Kalihiwai, He Nau ko Kalihikai, He Luha ko Hanalei, He Waiamau ko Waioli, He Puunahela ko Waipa, He Haukolo ko Lumahai, He Lupua ko Wainiha, He Pahelehala ko Naue, He Limahuli ko Haena...

Hulilua is the wind of Hanaikawaa, Amu is the wind of Anahola, Kololio is the wind of Moloaa, Kiukainui is the wind of Koolau, Meheu is the wind of Kalihiwai, Nau is the wind of Kalihikai, Luha is the wind of Hanalei, Waiamau is the wind of Waioli, Puunahela is the wind of Waipa, Haukolo is the wind of Lumahai, Lupua is the wind of Wainiha, Pahelehala is the wind of Naue, Limahuli is the wind of Haena...

The Hawaiian Dictionary (Pukui & Elbert 1971) corroborates the name Lupua and further specifies:

Lū-pua -- n. Wind name associated with Wainiha, Kaua'i. *Lit.*, flower scattering.

Being a very large valley, the Lūpua wind might only apply to the populous areas near the mouth of the stream. Names of rains are often shared with winds, especially if the two occur typically together. For example, the famous rain of Waimea, Hawai'i, the Kīpu'upu'u, is a cold, hard-hitting, wind-driven rain that raises chicken-skin. The name refers to both wind and rain. Thus at least some of the wind names listed above may also refer to rains, though it is not clear from their names.

The many terms for rains of the uplands, typically cold and accompanied by wind and fog/mist, such as ki'owao, ko'iawe, 'awa, kēhau, kilihune, lelehune, noekolo, and uakoko, would apply certainly to the uplands of Wainiha, but are also generally applied to montane wet areas throughout the islands. The lack of described winds and rains specific to upper Wainiha is another indication of its remoteness and a correlated lack of human occupation and use.



Figure 3:
Upper Wainiha in the region of
the proposed fence line. The
area is trackless and remote,
with no archeological features.

Photo credit: John De Mello

B. Historical/Archaeological and Cultural Sites

No archeological sites reported

Information gathered from these sources suggested that no archeological or historical sites have been reported in the area of the proposed fence line. It is highly informative that there are no recorded sites associated with the lands of the Wainiha Preserve, despite relatively intensive land use history and density of archeological sites at much lower elevations in the same land section. It should be pointed out that on Kaua'i, rather unlike other islands, there are a few archeological sites noted from wet, montane locations, the most renown being Ka'awakō *heiau* near the summit of Wai'ale'ale. This is an indication that Hawaiians did, at least occasionally, climb into the *wao akua*. Despite the proximity of Ka'awakō to the edge of Wainiha Valley, the described route to the *heiau* is from the Waimea District, via Waimea Canyon, and the ridges leading up from there through the Alaka'i wilderness to the summit. There are no records of Wainiha as a traditional route to the summit.

Consultations

In the extensive compilation of interviews conducted by Kepā Maly of residents of the north coast of Kaua'i, the narratives paid "particular attention to the lands of Wainiha, Hā'ena, Limahuli and Kē'ē" (Maly & Maly 2003).

None of these kama'āina informants were aware of any archaeological sites in the high mountainous areas of Wainiha. Descriptions of mountain resources did not include pigs or other feral animals, but more typically were either stream or vegetation-related. A few examples are excerpted here, although the full interviews are to be found in Maly & Maly 2003, and those interviews should be read in full to provide the correct context to these examples.:

Excerpts from interview with Wayne Takashi Harada (WH), February 9, 2003 conducted by Kepā Maly (KM), Carlos Andrade (CA), Chipper Wichman (CW) and Takashi Harada (TH):

Discussing travels in the uplands above Lumaha'i, Wainiha and Hā'ena:

CA: Did you folks ever go *mauka* to pick *mokihana* or *maile* or anything like that?

WH: I used to pick up *maile* in Wainiha Valley, and then we used to go, what was that name by the dry cave, Maniniholo?

CW: Maniniholo? Mānoa Valley, yeah.

WH: Mānoa outside the dry cave. We used to pick up there.

WH: And I hunted all the way to the waterfall over Maniniholo.

KM: Wow!

WH: I could see people at the park.

Excerpts from interview with Annie Tai Hook-Hashimoto (AH), February 10, 2003 conducted by Kepā Maly (KM) and Chipper Wichman (CW):

Families went *mauka* [in Wainiha] to gather *wī* and '*ōpae*.

AH: We used to go get only *wī*. We never used to go catch '*ōpae* because we had one Aunty, Ella Doroin, she was Kanei. They only went when get big water, flood, then they go by the side of the stream and catch all the '*ōpae*. So every time we wanted to eat '*ōpae* we got it from them.

KM: She would take care?

AH: Unless my brother-in-law would bring from up the power plant, you know the tunnel?

KM: Yes, yes.

AH: The mountain, *kala 'ole*, that kind.

Archeological investigation

To further ascertain the potential of encountering archaeological sites and traditional cultural property in the Wainiha Fence Project area, TNC conducted, with Dr. Tom Dye, T.S. Dye & Colleagues, Archeologists, Inc., an ethno-historic investigation of the upper elevations of Wainiha in the region of the proposed fence line. They reviewed with Dye et al the proposed fence sites to determine the necessity of site visits by qualified archaeologists. No sites were encountered in this survey (Dye et al 2009).

C. Cultural and Traditional Practices

Little reference to traditional practices

Correlating with the dearth of archeological sites in the mauka lands of the ahupua‘a comprising the Wainiha Preserve, there is very little reference to traditional activities associated with upper Wainiha Valley. Even the descriptions of land use along Lā‘au Ridge characterize the area as occupied by the Mū-‘ai-mai‘a (the banana-eating Mū people), described in some accounts as short, stocky, hairy, and shy (e.g., see accounts by Lydgate 1920).

Of the few references in Maly & Maly (2003), none relate to farming or other practices that would have caused significant displacement of native forest; all descriptions of farming were below the lower boundary of the Wainiha Preserve. The mention of activities in upper Wainiha related to the practice of the *kahuna kiamanu* (bird-catching specialist) strongly suggests that the portion of Wainiha currently in the Preserve were not used for any of the typical needs of the *maka‘āinana* (common people).

Agriculture concentrated in lowlands

Similarly, references to land uses and sites in Wainiha Valley refer to agriculture and residence of the portion at and below Mauna Hina ridge, which marks the "dog leg" turn of the valley, and which lies well outside the Wainiha Preserve. All of the sites described by Bennet (1931), for example, are located along the lower leg of the valley. This is corroborated by the oral histories transcribed and published by Maly & Maly (2003).

Thus, as was typical in precontact, missionary, and monarchical times, agriculture was concentrated in the lowlands, in valley bottoms fed by continuous perennial streams and springs, and in areas of wet, mesic (and even dry) lowlands near the coast but above the influence of salt spray. This is consistent with a lack of significant archeological sites in the Wainiha Preserve, and a pattern of crown ownership of the uplands.

Cultural practices mentioned in interviews

According to the *kupuna* and *kama‘āina* of Wainiha interviewed by Maly & Maly (2003), even the lower reaches of the Wainiha Preserve are only rarely visited by cultural practitioners for gathering of adornment, e.g., maile (*Alyxia oliviformis*). No problems have ever been reported regarding access from the landowners for traditional gathering practices. Primarily because of its remoteness, the Wainiha Preserve has not seen a long history of customary use as a hunting area, nor are there yet inordinately large numbers of feral animals in the upper portions of the Preserve that are the subject of this proposal.

Admission of visitors to the Kaua‘i watershed has been controlled by the individual landowners (e.g., Alexander & Baldwin, Kamehameha Schools, The State of Hawai‘i). Every landowner within the KWA, however, has indicated via the KWA management plan that they honor native Hawaiian gathering rights.

D. Cultural impacts and benefits of the proposed actions

Alien species control benefits archeological sites

Under the direction of the KWA, the Wainiha Fence Project represents continued progress in the protection of cultural sites in the high elevations of the Kaua‘i watershed, initiated by the fencing project of the Alaka‘i, that includes protection of the heiau Ka‘awakō near the Wai‘ale‘ale summit (OEQC 2009). Ungulates, particularly feral pigs, cattle and goats, are known to disturb archaeological sites because they knock over stone walls, turn over soil, spread noxious weeds, and initiate accelerated erosion and landslides. Strawberry guava (*Psidium cattleianum*) is a weedy tree spreading rapidly in the Kaua‘i Watershed, in part, because of the foraging of feral pigs. Strawberry guava forms impenetrable thickets and develops strong root systems that can destroy the integrity of an archaeological site. One of the long-term goals of the KWA is to stop the spread of invasive weeds such as strawberry guava and restore native forest cover.

Fencing

The Wainiha Fence Project is focused on protecting native forest cover by constructing strategic fences and removing non-native animals and weeds. Neither of these activities is meant to impede human access or cultural practices. Project fences across traditional trails or more modern routes used by hikers can have gates installed to make for easier crossings if necessary. Even this courtesy is unlikely to be necessary for the remote Wainiha fence, but as needed, these gates may be of the same design as planned for the Alaka‘i and Kanaele fence projects.

It is suggested here that further outreach to inform the community about the purpose of the fences will help alleviate negative perceptions. In this vein, the KWA has expanded its outreach activities to local communities around the mountain highlighting the need for watershed protection.

Hawaiian gathering rights

Every landowner within the KWA has indicated that they honor native Hawaiian gathering rights. The Kaua‘i Office of The Nature Conservancy of Hawai‘i (TNCH) defers access questions to the appropriate landowner for disposition. On its own lands, TNCH has maintained a specific policy to honor traditional access rights since 1983, which was further elaborated on in 1996 to include intellectual property rights (TNCH 1996). These practices apply to all TNCH lands in Hawai‘i. No problems have ever been reported regarding access to upper Wainiha for traditional gathering practices.

The watershed protection efforts occurring on Kaua‘i will help protect and maintain populations of native plants important to native Hawaiian cultural practices (KWA 2005). The project area also represents refugia for endemic plants that historically had great cultural or economic significance to native people. Examples include: the famous laua‘e fern (*Microsorium spectrum*) used in lei; olonā (*Touchardia latifolia*) used for remarkably strong cordage for fishnets, a base for feather capes, and rope; and ma‘oloa (*Neraudia melastomaefolia*) the bark fibers of which were used to produce ceremonial kapa. By protecting ethnobotanical plants, the project is enhancing the renaissance of Hawaiian culture, and ensuring continual practice into the future.

The Wainiha Fence Project is also benefiting traditional native Hawaiian gathering of freshwater animals including mountain ‘ōpae (*Atyoida bisulcata*), ‘o‘opu (various species of gobiid fish), and hīhīwai (*Neritina granosa*). These aquatic organisms thrive with abundant clean, cool stream flow and are dependent on healthy watersheds for their survival.

Within the Wainiha Fence Project area, access to Wainiha Preserve proper is by permit only and will only be approved for legitimate scientific or cultural activities that do not significantly impose negatively impacts on the living native resources of the preserve. There are no well-used trails into the project area, and the project does not curtail legitimate Hawaiian cultural access.

E. Summary Description of the Action's Effect on Cultural Sites and Practices

The KWA, of which the Conservancy is a management coordinator, is committed to reversing the current degradation of the natural resources of the Kaua'i Watershed caused by the damaging effects of non-native plants and animals. Reduced populations of ungulates and aggressive weeds will also help to protect the integrity of the region's cultural sites. The fence segments proposed for the Wainiha Fence Project will not impede legitimate public access, nor is it anticipated that the KWA management activities will curtail any existing, legal public use of the watershed. Any person who is in good enough physical condition to hike to a strategic fence will have no problem crossing over the fence. Field workers will be instructed to halt fence work and report to proper authorities should they encounter any evidence of a suspected archaeological site. With regard to Wainiha Preserve proper, the conclusion of Dye et al 2009 is that, relative to State Historic Preservation Division (SHPD) guidelines, the proposed activities will have no negative effect on significant historic sites.

F. Mitigation of cultural impacts

Given the sparse historical/traditional use of the lands comprising the Wainiha Preserve, reflected by a lack of archeological sites, the key mitigation actions for cultural impacts are to provide protection of irreplaceable native species and ecosystems forming the living foundation of Hawaiian culture, and ensure appropriate and sustainable access to these resources for traditional use. There is no current need for additional mitigation, aside from maintaining and practicing in accordance with landowner policy.

Sources

Andrews, L. 1865. *A Dictionary of the Hawaiian Language*. Privately published, Lahaina, Maui, HI.

Bennett, W.C. 1931. Archeology of Kaua‘i. *Bernice Pauahi Bishop Museum Bulletin* 80: 156 pp + figures.

Beckwith, M. 1970. *Hawaiian Mythology*. University of Hawai‘i Press, Honolulu.

Bier, J.A. 2004. *Map of Kaua‘i*. University of Hawai‘i Press.

Dye, T. et al 2009. *An Archeological Survey for an Animal Control Fence in Wainiha Valley, Kaua‘i*. Archeological Survey produced for The Nature Conservancy for the benefit of the Kaua‘i Watershed Alliance, to accompany the Environmental Assessment for the proposed fence in Wainiha Valley.

Fornander, A. 1917. Fornander Collection of Hawaiian Antiquities and Folk-Lore. The Hawaiian Account of the Formation of Their Islands and Origin of Their Race with the Traditions of Their Migrations, Etc., As Gathered from Original Sources. *Bernice Pauahi Bishop Museum Memoirs: Vol. IV*. Bishop Museum Press, Honolulu, Hawai‘i

Kaua‘i Watershed Alliance. 2005. *Kaua‘i Watershed Alliance Management Plan*. Prepared by The Nature Conservancy of Hawai‘i, published privately. Līhu‘e, Kaua‘i.

Ladefoged, T.N., P. Kirch, S. Gon, O. Chadwick, A. Hartshorn, P. Vitousek. 2009. Opportunities and constraints for intensive agriculture in the Hawaiian archipelago prior to European contact. *J. Archaeol. Sci.* (2009), doi:10.1016/j.jas.2009.06.030

Lydgate, J.M. 1920. The Winning of the Mu-Ai-Maia Maiden. *29th Annual Report, Hawaiian Historical Society*.

Maly, K. & O. Maly. 2003. "Hana ka lima, ‘ai ka waha:" a collection of historical accounts and oral history interviews with kama‘āina residents and fisher-people of lands in the Halele‘a-Nāpali region on the island of Kaua‘i. Prepared for: The Nature Conservancy of Hawai‘i, 923 Nu‘uanu Avenue, Honolulu, Hawai‘i 96817 & The National Tropical Botanical Gardens – Limahuli Gardens, Hui Maka‘āinana o Makana, Limahuli Garden ICMI Project.

Office of Environmental Quality Control (OEQC). 2007. Final Environmental Assessment for Kanaele Bog Protective Fence. Online at:
http://oeqc.doh.hawaii.gov/Shared%20Documents/EA_and_EIS_Online_Library/Kauai/2000s/2007-05-KA-FEA-Kanaele-Bog-Protective-Fence.pdf

Office of Environmental Quality Control (OEQC). 2009. Final Environmental Assessment for East Alaka‘i Protective Fence. Online at:

http://oeqc.doh.hawaii.gov/Shared%20Documents/EA_and_EIS_Online_Library/Kauai/2000s/2009-03-08-KA-FEA-East-Alakai-Protective-Fence.pdf

Pukui, M.K., & S.H. Elbert. 1971. *Hawaiian Dictionary*. University of Hawai‘i Press, Honolulu.

Pukui, M.K., S.H. Elbert & E.T. Mookini. 1974. *Place Names of Hawai‘i*. The University Press of Hawai‘i, Honolulu.

The Nature Conservancy of Hawai‘i. 1996. *Practice and Principles for Working with Indigenous Communities: Hawai‘i Draft*. Internal policy statement prepared by S. Gon, R. Hagenstein & S. Case.

Hale Kuamo‘o, Ka Haka ‘Ula O Ke‘elikōlani & Alu Like, Inc. 2009. *Ulu kau: The Hawaiian Electronic Library*. URL: <http://ulukau.org/> University of Hawai‘i at Hilo: College of Hawaiian Language.